



Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

## **Criterion 1- Curricular Aspects**

### **1.3- Curricular Enrichment**

#### **1.3.2**





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### Criterion 1- Curricular Aspects

#### Key Indicator - 1.3 Curriculum Enrichment

#### 1.3.2. Percentage of students undertaking Project work/field work/internship (Data for latest completed academic year)

Sr. No.	Content (Document)
1.	List of Students undertaking project work/fieldwork/internship (latest completed academic year)
A.	AY-2021-2022 Syllabus Details 2019 pattern (First Year B. Arch, Second Year B. Arch & Third year B. Arch) <ul style="list-style-type: none"><li>• Letter of implementation of syllabus (2019 Pattern) .</li><li>• Course structure of syllabus (2019 Pattern)</li><li>• Course details of syllabus that includes project work/fieldwork/internship</li></ul>
B.	AY-2020-2021 Syllabus Details 2015 pattern (Fourth Year B. Arch, Fifth Year B. Arch) <ul style="list-style-type: none"><li>• Letter of implementation of syllabus (2015 Pattern) .</li><li>• Course structure of syllabus (2015 Pattern)</li><li>• Course details of syllabus that includes project work/fieldwork/internship</li></ul>
2.	AY-2021-2022 Experience Certificate of Fifth Year B. Arch Students in Practical Training course (5201570)
3.	AY-2021-2022 List of topics of Fifth Year B. Arch Students in Architectural Design Project course (5201571)
4.	AY-2021-2022 Reports of the courses that include project work/ field work/ Internship





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## 1.3.2.

### 1.3.2.1. Percentage of students undertaking Project work/field work/internship (Academic Year 2021-2022 )





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**1.3.2.1. In the Academic Year 2021-22, Students of 1st Year**

**Architecture participated in following courses.**

Course Title	Course Code
Basic Design	1201901[Ss]
Building Construction And Materials I	1201903 [Sv]
Communication Skills	1201907 [Ss]
Workshop I	1201908 [Ss]
Architectural Design I	1201909 [Sv]
Building Construction And Materials Iii	1201911 [Sv]
Workshop Ii	1201916 [Ss]

The students list as follows:

List Of 2021-22	
Sr. No.	Name Of Student
1	ABHISHEK SANTRAM KASHID
2	GUND SAHIL SUNIL
3	KALE MAHESH BALASAHEB
4	ROHAN SHIVAJI JATHAR
5	PRITHVI RANJEETSINGH THAKUR





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**1.3.2.1. In the Academic Year 2021-22, Students of 2<sup>nd</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
2201917(SV) [2019 Pattern]	Architectural Design II
2201919(SV) [2019 Pattern]	Building Construction & Materials III
2201921(SS) [2019 Pattern]	Computer Aided Drawing & Graphics
2201924(SS) [2019 Pattern]	Building Services I
2201926(SV) [2019 Pattern]	Architectural Design III
2201928(SV) [2019 Pattern]	Building Construction & Materials IV
2201933(SS) [2019 Pattern]	Building Services II

**List Of 2021-22**

Sr. No.	Name of Students
1	ADEP GAUTAMI SANJAY
2	BAVISKAR GAYATRI PRABHUDAS
3	BENDRE RUTVIK DATTATRAY
4	BHANDARI MOSES
5	DHUS SHUBHAM POPAT
6	GAJARE KALYANI SUNIL
7	JADHAV AARYA VISHAL
8	KERKAR SOHAM JAIDEEP
9	KHULE AMEYA SACHIN
10	KUMBHAR VAISHNAV VIJAY
11	MORE SIDDHI UMESH
12	MORE SUSHMITA MUKUNDRAO
13	MULLA AMAAN ABDUL AZIZ
14	NAGARGOJE PRASAD PANDURANG
15	PATILARE SIDDHI JAGANNATHI
16	RAYAKAR SHRUTI PRAKASH
17	DHUS SHUBHAM POPAT
18	SATPUTE ROHAN RAJENDRA
19	SAWANT SANKET SUNIL
20	SINHA ANKITA RANJANKUMAR
21	SONAWANE KAJAL BALASAHEB
22	THIKEKAR SIDDHI PRAKASH
23	THORE VIJAY SADASHIV





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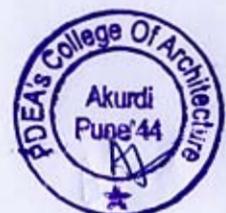
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**1.3.2.1. In the Academic Year 2021-22, Students of 3<sup>rd</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
3201935/3201944 (SV) [2019 Pattern]	Architectural Design IV/V
3201936/37 (SV) [2019 Pattern]	Building Construction & Materials V/VI
3201939 (SS) [2019 Pattern]	Landscape Architecture
3201941/3201942(SS) [2019 Pattern]	Building Services III/IV
3201943/3201952 (SS) [2019 Pattern]	Working Drawing I/II

List Of 2021-22	
Sr.No.	Name of Students
1	ANJALI PRABHAKAR MALAS
2	BODKHE KARAN KAILAS
3	GADHAVE SIDDHARTH MAYUR
4	GHARE SAKSHI VIJAY
5	MANJREKAR ARATI MAHESH
6	MOHALKAR ABHISHEK DATTATRAY
7	MOKATE SHREYA RAJENDRA
8	PATIL DIVYA MADHUKAR
9	POKHARKAR PRASHANT VASANTRAO
10	TAWARE RUTUJA PANDHARINATH
11	THORAT VAISHNAVI VISHWANATH
12	ZAGADE RUTUJA BALASAHEB





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**1.3.2.1. In the Academic Year 2021-22, Students of 4<sup>th</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
4201953/4201960 (SV) [2019 Pattern]	Architectural Design VI/VII
4201954/4201961 (SV) [2019 Pattern]	Advanced Building Construction & Services I/II
4201955 (SV) [2019 Pattern]	Urban Studies I/II
4201958/4201965 [2019 Pattern]	Quantity Surveying & Specification Writing I/II
4201966[2019 Pattern]	Project Management

Sr. No.	Name of Students
1	BALKAWADE AMEY LATISH
2	CHINTAMANI ADITYA SUNIL
3	DABADE SHRUSTI SAYAJI
4	DESHMUKH ABHISHEK MILIND
5	DHANAWADE SHUBHAM SANJAY
6	GAIKWAD SONALI JAILINDER
7	GUDE AISHWARYA KRISHNA
8	HIVRE KRISHNA HIRAN
9	JADHAV TRUPTI DATTATRAY
10	KALE ATHARVA RAJU
11	KALOKHE ANKITA SANTOSH
12	KARALE RAKSHITA PRAKASH
13	KARANDE ISHA SUBHASH
14	KHALANE DIMPLE VINAYAK
15	KHEDKAR SHRUSHTI BABURAO
16	LENDE AKSHAY SANTOSH
17	MAGARE RENUKA LILADHAR
18	MALVIYA YUVRAJ KAILASH
19	MANE HARSHVARDHAN UMESH
20	MARAL SHWETA DNYANESHWAR
21	MODAK ANKITA PUNJABRAO
22	NALAWADE POOJA MADHUKAR
23	PASALKAR SANKET RAMESH
24	RAUT ABOLI MILIND
25	RAUT YOGESH MAHINDRA





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26	SALUNKE SIDDHI SUNIL
27	SAWANT SHANTANU BALASAHEB
28	SHAILKH MUJAHIDULLAH ASHFAQUE
29	SHELKE PURVA SHIRISH
30	SHINDE SAURABH SANDIP
31	SHINDE SUJAY SUHAS
32	SURVE SHRADDHA MANOHAR
33	THORAT RIDDHI RAHUL
34	WABALE KOMAL TULSHIRAM
35	WALKE SIDDHI PANDIT
36	WANI SURAJ SATISH





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**1.3.2.1. In the Academic Year 2021-22, Students of 5<sup>th</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
5201570 (SV) [2015 Pattern]	Practical Training
5201571 (SV) [2015 Pattern]	Architectural Design Project
5201572 (SS) [2015 Pattern]	Elective IV

List Of Passout 2017-18	
Sr. No.	Name
1	AHIR TEJAS SHIVRAM
2	BAGADE MAYURI SHARAD
3	DASARI YUGA RAMESH
4	GARIBE OMKAR KAILAS
5	GELOT NUTAN BHARAT
6	JAGTAP LEENA VIKAS
7	KAMTHE SIDDHI SANJAY
8	KANADE ANKITA SANDIP
9	KHAIRNAR SAYALI KESHAVRAO
10	LIMKAR ADITYA SUBHASH
11	MUNGSE RUTUJA RAMESH
12	NIGHOJKAR PRAJWAL AVINASH
13	PAKHALE POOJA RAJENDRA
14	PARMAR SHUBHAM HARSHAD
15	PATIL NEHA NETAJI
16	PATIL SHWETA SANJAY
17	POTE SAURABH BHAGWAT
18	SHELAR BHUSHAN PRAKASH
19	SHIRVANDKAR GAYATRI MANGESH
20	TANKSALE VAIDEHI SHRIDHAR
21	THOTANGARE KIMAYA ASHOK
22	UBALE VAISHNAVI VINOD
23	WAGHERE VISHWAJEET DNYANESHWAR





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**शैक्षणिक विभाग**

गणेशखिंड, पुणे-४११ ००७

दूरध्वनी क्र. : ०२०-२५६०१२५०/५६/५९

ई-मेल : boards@pun.unipune.ac.in

संकेतस्थळ : www.unipune.ac.in

संदर्भ क्र : CB/SST/631

**सावित्रीबाई फुले पुणे विद्यापीठ**  
(पूर्वीचे पुणे विद्यापीठ)

**Savitribai Phule Pune University**  
(Formerly University of Pune)

**Academic Section**

Ganeshkhind, Pune - 411 007

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E-mail : boards@pun.unipune.ac.in

Website : www.unipune.ac.in

दिनांक : ०४/०७/२०१९

परिपत्रक क्रमांक. १४५/२०१९

**विषय :-** विज्ञान व तंत्रज्ञान विद्याशाखेअंतर्गत वास्तुशास्त्र पाच वर्ष बी.आर्च (२०१९ पॅटर्न) चा सुधारित आराखडा व प्रथम वर्ष अभ्यासक्रम शैक्षणिक वर्ष २०१९-२० पासून सुरू करणेबाबत...

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, विज्ञान व तंत्रज्ञान विद्याशाखेअंतर्गत वास्तुशास्त्र पाच वर्ष बी.आर्च (२०१९ पॅटर्न) चा सुधारित आराखडा व प्रथम वर्ष अभ्यासक्रम शैक्षणिक वर्ष २०१९-२० पासून सुरू करण्यास मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi - Academic Year 2019 - Faculty of Science and Technology (Architecture) या शीर्षकाखाली उपलब्ध आहे.

मा. प्राचार्य, सर्व संलग्नित वास्तुशास्त्र महाविद्यालये यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधितांच्या निदर्शनास आणून द्यावा.

*(Signature)*

उपकुलसचिव  
(शैक्षणिक विभाग)





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प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:—

१. मा. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा
२. मा. प्राचार्य, सर्व संलग्नित वास्तुशास्त्र महाविद्यालये
३. मा. संचालक, सर्व मान्यताप्राप्त परिसंस्था
४. मा. संचालक, परीक्षा व मूल्यमापन मंडळ
५. मा. संचालक, स्पर्धा परीक्षा केंद्र
६. मा. उपकुलसचिव, परीक्षा (१,२)
७. मा. उपकुलसचिव, नियोजन व विकास विभाग
८. मा. उपकुलसचिव, शैक्षणिक पात्रता विभाग
९. मा. उपकुलसचिव, सभा व दफ्तर विभाग
१०. मा. संचालक, आंतरराष्ट्रीय केंद्र
११. मा. उपकुलसचिव, शैक्षणिक प्रवेश विभाग
१२. सहायक कुलसचिव, गोपनीय कक्ष
१३. सहायक कुलसचिव, परीक्षा—एस.अॅण्ड टी. विभाग
१४. सहायक कुलसचिव, परीक्षा समन्वय
१५. सहायक कुलसचिव, मा. प्र—कुलगुरू कार्यालय
१६. वरिष्ठ कायदा अधिकारी
१७. जनसंपर्क अधिकारी
१८. कक्षाधिकारी, बहिःस्थ विभाग
१९. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब १ पीए/१/२०१९, दि. ११जून, २०१९





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संदर्भ क्र. : CB/S&T/115

**सावित्रीबाई फुले पुणे विद्यापीठ**  
(पूर्वीचे पुणे विद्यापीठ)

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दिनांक : 12/02/2020

परिपत्रक क्रमांक. ४१ / २०२०

**विषय :-** विज्ञान व तंत्रज्ञान विद्याशाखेतर्गत वास्तुशास्त्र द्वितीय व तृतीय वर्ष बी.आर्च (२०१९ पॅटर्न) चा अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून सुरू करणेबाबत.....

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, विज्ञान व तंत्रज्ञान विद्याशाखेतर्गत वास्तुशास्त्र द्वितीय व तृतीय वर्ष बी.आर्च (२०१९ पॅटर्न) चा अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून सुरू करण्यास मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi - Academic Year 2020 - Faculty of Science and Technology (Architecture) या शीर्षकाखाली उपलब्ध आहे.

मा. प्राचार्य, सर्व संलग्नित वास्तुशास्त्र महाविद्यालये यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधितांच्या निदर्शनास आणून द्यावा.

*Dalsi*

उपकुलसचिव  
(शैक्षणिक विभाग)





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प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:-

१. मा. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा
२. मा. प्राचार्य, सर्व संलग्नित वास्तुशास्त्र महाविद्यालये
३. मा. संचालक, सर्व मान्यताप्राप्त परिसंस्था
४. मा. संचालक, परीक्षा व मूल्यमापन मंडळ
५. मा. संचालक, स्पर्धा परीक्षा केंद्र
६. मा. उपकुलसचिव, परीक्षा (१,२)
७. मा. उपकुलसचिव, नियोजन व विकास विभाग
८. मा. उपकुलसचिव, शैक्षणिक पात्रता विभाग
९. मा. उपकुलसचिव, सभा व दफ्तर विभाग
१०. मा. उपकुलसचिव, परीक्षा-एस.एंड.टी. विभाग
११. मा. उपकुलसचिव, शैक्षणिक प्रवेश विभाग
१२. सहायक कुलसचिव, गोपनीय कक्ष
१३. सहायक कुलसचिव, संलग्नता कक्ष
१४. सहायक कुलसचिव, परीक्षा समन्वय
१५. सहायक कुलसचिव, मा. प्र-कुलगुरू कार्यालय
१६. वरिष्ठ कायदा अधिकारी
१७. जनसंपर्क अधिकारी
१८. कक्षाधिकारी, बहिःस्थ विभाग
१९. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.
२०. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट

वि.प. ठराव क्र. ब २०पीए/२०/२०२०, दि. २३, जानेवारी २०२०





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**SAVITRIBAI PHULE PUNE UNIVERSITY**

[Formerly the University of Pune]



**COURSE STRUCTURE**

**FIVE YEAR DEGREE COURSE IN ARCHITECTURE**

**[B.ARCH.]**

**TO BE IMPLEMENTED FROM 2019-20**

**BOARD OF STUDIES IN ARCHITECTURE  
FACULTY OF SCIENCE AND TECHNOLOGY**





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**BACHELOR OF ARCHITECTURE  
COURSE STRUCTURE AND RULES**

**PREAMBLE**

The New Syllabus of the B.Arch. course hence forth to be referred as the 2019 Pattern, to be implemented from the year 2019-20, is designed to address the rising expectations of knowledge to be borne by an architect. The interdisciplinary nature of the field of architecture demands integration of knowledge domains from various disciplines such as humanities, art, and technology and so on. However, what distinguishes an architect is the design knowledge and ability to employ the knowledge from the various disciplines for arriving at a solution to a problem.

Hence the syllabus has been designed such that the professional core subjects are supported by building science and technology courses, professional ability enhancement courses and the elective courses. The professional ability enhancement courses and the practical training of one semester focus on connecting the students with the practice. The elective courses enable an exposure to some other domain or nurtures the students' proficiency or skill. The Audit courses are introduced to acknowledge the knowledge that the student seeks in his/her area of interest but not directly contribute to the CGPA.

At the end of the course the graduating student shall be able to methodically approach a problem of creating a built environment be it a small house or a township by employing knowledge from various domains and at the same time making it safe, equitable, feasible and environment friendly. Education needs to equip the student to face the challenges and demands in the field by imbibing first principles.

As per the University guidelines, the course is structured upon the Credit System Based Assessment. The syllabus is structured with the following objectives and expected outcomes

**PROGRAM EDUCATIONAL OBJECTIVES[PEO]-**

1. **Theoretical Base**—To establish strong theoretical base and understanding of Architecture and work of an architect.
2. **Knowledge and Skills**—To inculcate design sensitivity and ability, as well as knowledge in the domains of humanities, technology & art and impart skills so as to equip the graduate student to undertake work of an architect.
3. **Values** - Sensitize the students to the universal values of equity, environmental care, accessibility, and respect for heritage and equip them to address these through design.
4. **Research** -Train the students to methodically research a issue or a situation to find a creative solution to meet the contextual challenges in the realm of changing technologies, socio economic and cultural changes.
5. **Practice and Ethics**- To enable the students to practice as architects and imbibe them with the knowledge of the professional practice and ethics.
6. **Changes and Diversification**- To expose the students to the changes in architectural practice, diversifications and evolving role of an architect.





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**PROGRAM OUTCOMES [PO]**

1. **Knowledge** -Understanding about role of various knowledge domains such as humanities, technology, and environment in design of built environment.
2. **Principles & Theory**- Knowledge of principles of architecture & theoretical knowledge and its application in design.
3. **Creativity** - Creative and design thinking ability.
4. **Practice** - Ability to understand real life situation of Architectural Practice and to work with ethical and professional responsibilities.
5. **Collaborative Working** -Ability to communicate effectively and work in interdisciplinary groups.
6. **Inclusivity** -Sensitivity in design for inclusivity, equity, environment, diverse cultures, and heritage.
7. **Technological Knowhow**-Ability to review, comprehend and report technological developments in the profession of architecture and construction.
8. **Ability to choose Area of Specialisation or Practise**- Able to judge one's area of interest and accordingly choose the field of practice.

**Rule no.1: ELIGIBILITY FOR ADMISSION.**

Eligibility Criteria: Students seeking admission to First year of Bachelor's degree course in Architecture must fulfil the eligibility criteria laid down by Savitribai Phule Pune University / Govt. of Maharashtra / Council of Architecture as applicable from time to time.

**Rule no.2: SCHEME OF ASSESSMENT.**

A candidate to be eligible for the degree of Bachelor of Architecture will be required to appear for and pass examinations as under:

	<b>Semester Numbers</b>	<b>Credits</b>
1	Semester 1	28
2	Semester 2	28
	<b>Total credits for First Year B.Arch.</b>	<b>56</b>
3	Semester 3	28
4	Semester 4	28
	<b>Total credits for Second Year B.Arch.</b>	<b>56</b>
5	Semester 5	28
6	Semester 6	28
	<b>Total credits for Third Year B.Arch.</b>	<b>56</b>
7	Semester 7	28
8	Semester 8	28
	<b>Total credits for Fourth Year B.Arch.</b>	<b>56</b>
9	Semester 9	14
10	Semester 10	24
	<b>Total credits for Fifth Year B.Arch.</b>	<b>38</b>
	<b>Total credits</b>	<b>262</b>

**Total Credits of the Course = 262**

Colleges may offer the students audit courses one per semester [Sem I to Sem VIII]. The students may choose to opt these courses. The passing in audit courses is by clearance and they are non-credits courses and are not part of the SGPA / CGPA calculation.





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**Rule no. 3: GRANTING OF TERM.**

Academic year shall consist of two semesters of minimum 90 teaching days each. The candidate will be permitted to appear for examination **only** if he/she produces testimonials from the Principal of the College for:

1. 75% attendance in each head of passing of theory and/ or sessional work as prescribed by the University.
2. Satisfactory completion of the sessional work prescribed for each subject and securing minimum required marks in the internal assessment for the same.
3. Good Conduct.

**Rule no. 4: RULES OF PASSING**

- 4.1 To pass sessional [SS] / sessional viva [SV], the student has to earn minimum 50% marks.
- 4.2 To pass the theory subject head the student has to earn minimum of 45% marks in the End semester exam and minimum 45% average marks (In- Semester Assessment + End semester).
- 4.3 A student shall be promoted to higher class only if she/he scores 50% marks in the aggregate of the total marks of the year.
- 4.4 **For theory subjects** the failing student can repeat the end semester exam to pass the head in any semester and the In-semester assessment exam marks will be retained as it is. Or the failing student can repeat end semester exam as well as In-semester assessment for the head of even semester in the even semester only and for the head of odd semester in the odd semester.
- 4.5 To earn credits of a course (paper/SS/SV) student must pass the course with minimum passing marks / grade.
- 4.6 Student can apply only for the revaluation / photocopying / verification of answer sheets of End semester theory exam only.

**Rule no. 5: RULES OF A.T.K.T.**

- 5.1A student can be admitted for the third semester if he/she earns minimum 50% credits of the total of first and second semester.
- 5.2A student can be admitted for the fifth semester if he/she earns minimum 50% credits of the total of third and fourth semester and all the credits (100%) of the first and second semester and passing grade of aggregate for first year.
- 5.3A student can be admitted for the seventh semester if he/she earns minimum 50% credits of the total of the fifth and sixth semesters and all the credits (100%) of the third and fourth semesters and passing grade of aggregate for second year.
- 5.4A student can be admitted for the ninth semester if he/she earns minimum 50% credits of the total of the seventh and eighth semesters and all the credits (100%) of the fifth and sixth semesters and passing grade of aggregate for third year.



5.5A student would be awarded B.Arch. only if he/she earns **262 (100%) credits** and gets passing grade in all the courses specified in the syllabus and gets passing grade of aggregate within the time permissible by the University.

**Rule No. 6: PREREQUISITES FOR ENROLLING FOR THE SUBJECT OF ARCHITECTURAL DESIGN and ARCHITECTURAL DESIGN PROJECT**

**6.1** A candidate shall not be permitted to enrol for the Architectural Design course in a semester unless he/ she has completed [*attended the course, submitted the work*] of the Architectural Design course of the previous semester and satisfied prerequisites as per 6.2.

**6.2 Prerequisites for appearing in Examination**

Sr.No.	Appear for examination in	Passing grade to be obtained in
01	Architectural Design III	Architectural Design I[SV]
02	Architectural Design IV	Architectural Design II[SV]
03	Architectural Design V	Architectural Design III[SV]
04	Architectural Design VI	Architectural Design IV[SV]
05	Architectural Design VII	Architectural Design V[SV]

**6.3** A candidate shall not be permitted to enrol for the tenth semester Architectural Design project course unless he/ she has successfully completed [*passed*] and received passing grades in Practical Training/ Internship and Architectural Design VI & Architectural Design VII.

**The rules of Passing, ATKT and Prerequisites have to be read in conjunction with each other and not in isolation.**

**Rule no. 7: ASSESMENT AND GRADE POINT AVERAGE**

**7.1** A grade assigned to each head based upon marks obtained by the student in examination of the course.

**Table 1  
GRADING SYSTEM FOR PASSING HEADS (THEORY)**

Grade	Grade Points	% of Marks Obtained	Remarks
O	10	90-100	Outstanding
A	9	80-89	Very good
B	8	70-79	Good
C	7	60-69	Fair
D	6	50-59	Average
E	5	45-49	Below average
F	0	Below 45	Fail



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**Table 2**  
**GRADING SYSTEM FOR [SESSIONAL/ SESSIONAL VIVA and AGGREGATE]**

Grade	Grade Points	% of Marks Obtained	Remarks
O	10	90-100	Outstanding
A	9	80-89	Very good
B	8	70-79	Good
C	7	60-69	Fair
D	6	50-59	Average
F	0	Below 50	Fail

- 7.2 Passing grades for various heads:** The grades O, A, B, C, D & E are passing grades for theory papers. The grades O,A,B,C & D are passing grades for sessional and/or sessional viva voce heads. A candidate acquiring any one of these grades shall be declared as pass only in that particular head.
- 7.3 Passing grades for Aggregate:** The grades O, A, B, C & D are passing grades in the aggregate.
- 7.4 F grade for various heads:** The grade F is a failure grade. The student with F grade will have to pass the concerned course by reappearing for the examination.
- 7.5 F grade for aggregate:** The grade F is a failure grade for aggregate. The student with F grade will have to appear for paper &/ or sessional &/or sessional viva voce for improvement of aggregate.

**Rule no. 8: EXAMINATIONS.**

The type of examination / assessments are as follows

- I. In Semester Examinations for Theory conducted and assessed at the college
- II. End Semester Theory Paper conducted by the University and assessed at the CAP by the University.
- III. Continuous Assessment for Sessional to be maintained and record to be kept by the subject faculty. The progressive work done by a student through out the semester to be maintained for architectural design course. The weightage of this continuous internal assessment [CIA] shall be 50% of the total marks allocated for the sessional work. The remaining marks to be given by the external examiner referred as External assessment [EA]. CIA and EA will be entered as aggregate at the time of external examination. Break up of marks is mentioned in detailed syllabus at respective subjects.
- IV. Viva voce to be jointly conducted by internal and external examiner at the end of the semester and the weightage for internal and external examiner's assessment will be equal [50:50] and break up of marks is mentioned in detailed syllabus at respective subjects.
- V. For subjects having both sessional assessment and viva voce the marks to be entered as an aggregate of sessional and viva voce.





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### Structure of Theory Subject Assessment

8.1 The theory subject assessment shall be conducted in two phases for the subjects [Except Architectural Design V paper] as indicated in the structure viz.: In Semester assessment and End Semester examination. This structure of assessment/examinations shall be as below: -

	Time	Mode	Syllabus Coverage	Duration	Max. Marks
In semester Assessment	After the End of 6 <sup>th</sup> week but before the end of 8 <sup>th</sup> week	As mentioned in point 8.2 below	Unit I & II	60 minutes	30
End Semester Examination	End of Semester	Written	All Units	150 minutes	70

8.2 The in semester assessment can be in one of the following format- Tutorial / Class test/ Open book test/Time bound assignment/MCQ type Quiz/ and any other innovative time bound assignment to assess the learning of the student. The assessment record to be kept with the college and submitted to the University as and when demanded.

### Rule no. 9: CONDUCT AND ASSESSMENT OF EXAMINATIONS.

#### Theory Assessment

- 9.1 In-Semester Assessment: Shall be carried out at concerned college by the subject faculty as per rule no. 8 above.
- 9.2 End-Semester Examination: Shall be carried out at concerned college as per 8.1 above and schedule of examination program and the question paper for theory exam will be made available by the University.
- 9.3 End-Semester Examination Assessment: Will be done at the CAP centre by the examiners appointed by the University.

#### Sessional Work Assessment.

- 9.4 The sessional and /or viva examinations is to be conducted and assessed by external and internal examiner approved by the University.
- 9.5 In respect of Sessional work at F. Y. B.Arch., S. Y. B.Arch., T. Y. B.Arch. Fourth Yr. B.Arch. and Fifth Year B.Arch. it shall be continuously assessed by the teacher during semester. The progressive work done by a student in architectural design through out the semester to be maintained.
- 9.6 Performance of Sessional / Viva-voce Examination shall be assessed on the basis of understanding of the concepts and principles of the content and not on the basis of mere completeness of results and ornamental or colourful presentation.
- 9.7 Drawings and reports / notes shall be manually prepared. Students may use computers for sessional work under the guidance of the teachers where nature of work is individual and stress is on content rather than skill. The work done by the students has to be authenticated for its originality by the concerned teachers.





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- 9.8 At all the examinations **except** for the SEMESTER X : ARCHITECTURAL DESIGN PROJECT, external assessment shall be carried out by teachers from other college in the University not teaching that subject in the institute where the examination is being conducted.
- 9.9 For tenth semester Architectural Design Project an external examiner means a professional/ academician not teaching in any of the colleges under the University and Internal Examiner is one who is teaching that particular subject in the same/any other college under the University.
- 9.10 Any examiner shall have a minimum of three years teaching/professional experience in a field of study relating to the subject of examination. However an external examiner for 10<sup>th</sup> Semester Architectural Design Project Shall have minimum of 10 years teaching/professional experience.

**Rule no.10: PERFORMANCE INDICES**

- 10.1 The semester end grade sheet will contain grades for the course along with titles and SGPA. Final grade sheet and transcript shall contain CGPA.
- 10.2 SGPA: The performance of a student in a semester is indicated by a number called the semester grade point average (SGPA). The SGPA is the weighted average of grade points obtained in all the courses registered by the student during the semester.

Semester Grade Point Average (SGPA) =

$$SGPA = \frac{\sum_{i=1}^p C_i G_i}{\sum_{i=1}^p C_i}$$

$$= \frac{\sum \text{Grade Points earned } \times \text{ Credits for each course}}{\text{Total Credits}}$$

For example : Suppose in a given semester a student has registered for five courses having credits C1, C2, C3, C4, C5 and his / her grade points in those courses are G1, G2, G3, G4, G5 respectively, Then the SGPA would be

$$SGPA = \frac{C1G1 + C2G2 + C3G3 + C4G4 + C5G5}{C1 + C2 + C3 + C4 + C5}$$

SGPA is calculated up to two decimal places by rounding off.

1. **CGPA** : The CGPA is the weighted average of the grade points obtained in all the courses (theory /sessional / sessional vivavoce) of **all the ten** semesters. It is calculated in the same manner as the SGPA. It is calculated based upon the SGPA of the concerned semesters.





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**Rule no. 11: RESULT**

Based on the performance of the student in the semester examinations, the Savitribai Phule Pune University will declare the results and issue the Semester grade sheets. The class shall be awarded to a student on the CGPA calculated in rule no. 10(3). The award of the class shall be as per the table no. 3 below.

**Table 3**

Sr.No.	CGPA	Class of the degree awarded
1	7.75 or more than 7.75	First class with distinction
2	6.75 or more but less than 7.75	First class
3	6.25 or more but less than 6.75	Higher second class
4	5.5 or more but less than 6.25	Second class

**Rule no. 12: EXEMPTIONS**

In case a candidate fails in an examination but desires to appear again,

- Examinations will be held in Oct./Nov. & Apr./May.
- He/She may be exempted from appearing in the head/s of passing in which he/she has passed.
- The students failing to get minimum passing grade for aggregate in a year can also appear for the examinations (paper and/or sessional and/or sessional-viva-voce) to enhance their marks in maximum four heads.
- The above a, b and c are subject to the provisions of passing, ATKT and pre-requisites rules mentioned in these rules and regulations.

**Rule no. 13: INTRODUCTION OF THIS CURRICULUM.**

The new curriculum for the Degree course in Architecture B.Arch. will be introduced gradually as under:

- First Yr. B. Arch. Course from June 2019
- Second Yr. B. Arch. Course from June 2020
- Third Yr. B. Arch. Course from June 2021
- Fourth Yr. B. Arch. Course from June 2022
- Final Yr. B. Arch. Course from June 2023

**Rule no. 14: OTHER RULES.**

University may frame additional rules and regulations or modify these regulations if needed and once approved by the University they would be binding on the students.





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## COURSE STRUCTURE BACHELOR OF ARCHITECTURE [B.Arch.]

The syllabus structure is based upon 28 clock hours per week for 1<sup>st</sup> to fourth year. Additionally 2 clock hours per week are assigned for utilisation for the lectures / allied activities focussing on the individual philosophy of the institute in form of audit courses / site visits / special lectures / workshops / seminars etc offering choice based activities for the institutes / students. The periods considered for calculating the teaching load are of 60 min duration. The architectural design / architectural design project and building construction studio credits are calculated as 1 hour = 1.5 credits, allied studios/labs/workshops are calculated as 1 hour = 0.5 credits and theory lectures are calculated as 1 hour = 1 credit. The detail structure of the syllabus for the ten semester course is given below.

(Note: SS= Sessional work; In Sem = In Semester exam ; End Sem = End semester exam; SV= Sessional and Viva voce; L= Lecture, S=Studio, T=Total ; Theory Paper -P

### FIRST YEAR B.ARCH. SEMESTER I

Course Code	Course Title	L	S	T	Theory		Sessional and / Viva		Total Marks	Credits
					In Sem	End Sem	SS	SV		
1201901	Basic Design	1	6	7			250		250	10
1201902	Building Construction & Materials I[P]	2		2	30	70			100	2
1201903	Building Construction & Materials I[SV]		3	3				100	100	5
1201904	Theory of Structures I	2		2	30	70			100	2
1201905	Architectural Graphics and Drawing I	1	4	5			100		100	3
1201906	History of Arch & Culture I	1	2	3			50		50	2
1201907	Communication Skills	2	1	3			50		50	2
1201908	Workshop I	1	2	3			100		100	2
		10	18	28					850	28
1201917	Audit Course									

### FIRST YEAR B.ARCH. SEMESTER II

Course Code	Course Title	L	S	T	Theory		Sessional and / Viva		Total Marks	Credits
					In Sem	End Sem	SS	SV		
1201909	Architectural Design I	1	6	7			250		250	10
1201910	Building Construction & Materials II[P]	2		2	30	70			100	2
1201911	Building Construction & Materials II[SV]		3	3				100	100	5
1201912	Theory of Structures II	2		2	30	70			100	2
1201913	Architectural Graphics and Drawing II	1	4	5			100		100	3
1201914	History of Arch & Culture II	1	2	3			50		50	2
1201915	Fundamentals of Architecture	2	1	3			50		50	2
1201916	Workshop II	1	2	3			100		100	2
		10	18	28					850	28
1201918	Audit Course									





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**SECOND YEAR B.ARCH. SEMESTER III**

Course Code	Course Title	L	S	T	Theory		Sessional and / Viva		Total Marks	Credits
					In Sem	End Sem	SS	SV		
2201917	Architectural Design II	1	6	7				250	250	10
2201918	Building Construction & Materials III[P]	2		2	30	70			100	2
2201919	Building Construction & Materials III[SV]		3	3				100	100	5
2201920	Theory of Structures III	2		2	30	70			100	2
2201921	Computer Aided Drawing and Graphics	1	3	4			50		50	2
2201922	History of Arch & Culture III	1	2	3			50		50	2
2201923	Building Services I[P]	2	0	2	30	70			100	2
2201924	Building Services I[SS]	0	2	2			50		50	1
2201925	Climatology	1	2	3			50		50	2
		10	18	28					850	28
2201935	Audit Course									

**SECOND YEAR B.ARCH. SEMESTER IV**

Course Code	Course Title	L	S	T	Theory		Sessional and / Viva		Total Marks	Credits
					In Sem	End Sem	SS	SV		
2201926	Architectural Design III	1	6	7				250	250	10
2201927	Building Construction & Materials IV[P]	2		2	30	70			100	2
2201928	Building Construction & Materials IV[SV]		3	3				100	100	5
2201929	Theory of Structures IV	2		2	30	70			100	2
2201930	Environmental Science	1	2	3			50		50	2
2201931	History of Arch & Culture IV	1	2	3			50		50	2
2201932	Building Services II[P]	2	0	2	30	70			100	2
2201933	Building Services II[SS]	0	2	2			50		50	1
2201934	Site Survey and Analysis	1	3	4			50		50	2
		10	18	28					850	28
2201936	Audit Course									





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**THIRD YEAR B.ARCH. SEMESTER V**

Course Code	Course Title	L	S	T	Theory		Sessional and / Viva		Total Marks	Credits
					In Sem	End Sem	SS	SV		
3201935	Architectural Design IV	1	6	7				250	250	10
3201936	Building Construction & Materials V[P]	2		2	30	70			100	2
3201937	Building Construction & Materials V[SV]		3	3				100	100	4
3201938	Theory of Structures V	2		2	30	70			100	2
3201939	Landscape Architecture	1	3	4			100		100	3
3201940	Elective I [Contemporary Architecture]	1	2	3			100		100	2
3201941	Building Services III[P]	2	0	2	30	70			100	2
3201942	Building Services III[SS]	0	1	1			50		50	1
3201943	Working Drawing I	1	3	4			100		100	2
		10	18	28					1000	28
3201953	Audit Course									

**THIRD YEAR B.ARCH. SEMESTER VI**

Course Code	Course Title	L	S	T	Theory		Sessional and / Viva		Total Marks	Credits
					In Sem	End Sem	SS	SV		
3201944	Architectural Design V[SV]		5	5				250	250	8
3201945	Architectural Design V*[P]	2		2		100			100	2
3201946	Building Construction & Materials VI	2	3	5				150	150	6
3201947	Theory of Structures VI	2		2	30	70			100	2
3201948	Research In Architecture I	1	2	3			50		50	2
3201949	Elective II	1	3	4			100		100	3
3201950	Building Services IV[P]	2		2	30	70			100	2
3201951	Building Services IV[SS]		1	1			50		50	1
3201952	Working Drawing II	1	3	4			100		100	2
		11	17	28					1000	28
3201954	Audit Course									

\*The Architectural Design V [Paper] will be of 12 hours duration spread over two days of 6 hours a day. The first day will be 6 hours without break. The second day will be 6 hours with a break after 3 hours.





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**FIFTH YEAR B.ARCH. SEMESTER IX**

Course Code	Course Title	L	S	T	In Sem	End Sem	Sessional and / Viva		Total Marks	Credits
							ss	sv		
5201967	Practical Training							250	250	14

**FIFTH YEAR B.ARCH. SEMESTER X**

Course Code	Course Title	L	S	T	In Sem	End Sem	Sessional and / Viva		Total Marks	Credits
							ss	sv		
5201968	Architectural Design Project	3	10	13				550	550	18
5201969	Entrepreneurship Development	2	2	4			100		100	3
5201970	Elective VI*	1	3	4			100		100	3
		6	15	21						24

\*Elective VI is preferably offered as an open elective. In case it is not possible to offer open elective colleges should offer any elective from the list of electives which the student has not undertaken earlier.





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## ANNEXURE A : AUDIT COURSES

The student can opt for one audit course in a semester. A student can opt for a particular course from the list below only once and cannot repeat the same course. The courses may be offered based upon the availability of resources in a college. The method of conduct of course could be based on lectures, site visits, small projects, online sources etc. and can be devised by individual colleges. The course outline given is only suggestive and colleges can expand or modify it for enrichment of the course.

FIRST YEAR B.ARCH. [ANY ONE COURSE TO BE OFFERED PER SEMESTER FROM THE FOLLOWING]			
Sr. No.	Code	Title	Brief Course Outline
1	A	Crafts	Introduction to crafts across the world through history. Types of Indian crafts. Study of any one craft of India.
2	B	Creative Writing	Writing as an art. Fictional and non fictional writing. Poetry, short stories, playwriting. Famous Indian writers, poets and play wrights and their works.
3	C	Performing Arts	Introduction to performing arts across the world through history. Types of Indian performing arts. Introduction to Natya-Shastra. Classical, folk, traditional performing arts. Dance, Music, Drama, Cinema.
SECOND YEAR B.ARCH. [ANY ONE COURSE TO BE OFFERED PER SEMESTER FROM THE FOLLOWING]			
4	D	Foreign Language	Basic introduction to German or Japanese language or a language which a college may choose to offer – syllables, pronunciations, words, simple sentences, grammar.
5	E	Cyber security	Introduction to cyber crime. Types of cyber crimes. Do and don'ts while using computers, smart phones, internet. Security measures to protect from crime. Crime detection mechanism and legislation.
6	F	Yoga	Introduction to Yoga. Benefits of Yoga. Types of yogasanas.
THIRD YEAR B.ARCH. [ANY ONE COURSE TO BE OFFERED PER SEMESTER FROM THE FOLLOWING]			
7	G	Basics of Accounting and Book keeping	Introduction to accounting and various terminologies. Maintaining books of account. Debit and credit.
8	H	Electrical Maintenance	Basic electrical gadgets in home and offices. Introduction to problems related to electricity supply in home environments. Precautions while handling electrical gadgets and wiring. Mechanism of protection from electrical hazards.
9	I	Culinary Art and Practices	Introduction to the basic need of food. Geographical and cultural factors affecting food. Various cuisines and culinary arts across the world. Social, health, dietary, aspects of cuisines. Food cultures in modern times. Places of food.
FOURTH YEAR B.ARCH. [ANY ONE COURSE TO BE OFFERED PER SEMESTER FROM THE FOLLOWING]			
10	J	Civics	Constitution of India. Indian democracy. Citizenship and Rights and responsibilities of citizens. Legislative framework.
11	K	Right to Information	Right to Information Act in India. Its need, scope and significance. Use of right to information. Responsibilities of using RTI. Limitations of using RTI. Case studies and legal precedents of using RTI.
12	L	Sign Language	Introduction to need and significance of inclusive social environment. Communication with the persons who have hearing and speech disabilities. Learning sign language.

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**ANNEXURE B : LIST OF ELECTIVE COURSES.**

Following are the broad streams and electives under them which can be offered in a college. A student can select any one elective from any stream for **electives II to V** each. A student may adhere to a particular stream of elective of his/her choice and **nurture his/her area of interest and develop his/her expertise**. However colleges have to ensure that the student does not repeat a particular elective.

**Elective VI** is preferably offered as an **open elective**. In case it is not possible to offer open elective colleges should offer any elective from the list of electives which the student has not undertaken earlier.

Codes for stream A	Stream A Art / Design	Codes for Stream B	Stream B Technology / Management	Codes for stream C	Stream C Social/Humanities/History
A1	Product Design	B1	Architecture using Glass	C1	Gender and Architecture
A2	Furniture Design	B2	Architecture using Steel	C2	Architecture of South Asia
A3	Interior Design	B3	Mud Architecture	C3	Architectural Anthropology
A4	Architectural Conservation	B4	Pre fabricated construction	C4	Vernacular Architecture
A5	Universal Design	B5	Pre stressed construction	C5	Culture and Design
A6	Advanced Landscape Design	B6	Disaster Mitigation and Management	C6	Sociology and Architecture
A7	Graphic Design	B7	Green Buildings and Rating Systems	C7	Colonial Architecture
A8	Architectural Photography	B8	Sustainable Cities and Communities	C8	Regional Architecture
A9	Art in Architecture	B9	Building Performance and Compliance	C9	Cultural Landscapes
A10	Theory of Design	B10	Appropriate Building Technologies	C10	Slum Rehabilitation
A11	Urban design	B11	Earthquake Resistant Architecture	C11	Basics of Archaeology
A12	Architectural	B12	Tensile Structures	C12	Introduction to Anthropology

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Codes for stream A	Stream A Art / Design	Codes for Stream B	Stream B Technology / Management	Codes for stream C	Stream C Social/Humanities/History
	Journalism				
A13	Music and Space	B13	Facility Management	C13	Environmental Psychology
A14	Healthcare Design	B14	Geographic Information System	C14	Ekistics
A15	Hospitality Design	B15	Parametric modelling	C15	Ecology
A16	Industrial Buildings Design	B16	BIM (Building Information Modelling)	C16	Politics and Architecture
A17	Way finding and Navigation	B17	Introduction to Programming and Embedded Design for Architects	C17	Indology
A18	User experience design	B18	Intelligent Building Systems	C18	Affordable Housing

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**SAVITRIBAI PHULE PUNE UNIVERSITY**

[Formerly the University of Pune]



**DETAILED SYLLABUS OF FIRST YEAR B.ARCH**

**SEMESTER I AND II**

**FIVE YEAR DEGREE COURSE IN ARCHITECTURE**

**TO BE IMPLEMENTED FROM 2019-20**

**BOARD OF STUDIES IN ARCHITECTURE  
FACULTY OF SCIENCE AND TECHNOLOGY**





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### SEMESTER I

BASIC DESIGN	
Subject Code 1201901[SS]	
TeachingScheme	ExaminationScheme
TotalContact Hours per week= (lectures=1, Studio=6, Total=7)	Sessional [CIA 125+ EA 250 125]
	Viva NIL
	In-semester exam NIL
	End Semester exam NIL
	TotalMarks 250
	Total Credits 10

#### **COURSE OBJECTIVES:**

- To help students understand the basic elements and principles of design
- To introduce the techniques of creativity, observation skills and to improve sensitivity to surroundings
- To sensitize students to the multi-sensory aspect of space.
- To introduce to various sources of inspiration for creativity

#### **COURSE CONTENT:**

The course should cover the following aspects of basic design

1. Study of visual elements of design [such as points, lines, planes, shapes, forms, space, color and texture] and Study of principles of design [such as balance, contrast, scale, proportion, pattern, rhythm and emphasis].
2. Introduction to multi-sensory aspects of space.
3. Techniques to improve creativity [such as brainstorming, matrix of ideas, random combinations, use of manipulative verbs, abstraction, transformation, list of mental associations and use of the ridiculous]
4. Space making through basic elements of design and principles of composition.
5. Role of experience, memory, fantasy, reality, imagination in design.
6. Sources of inspiration such as nature, history, material, climate, geometry, paradox, etc. for creativity.

#### **SUBMISSION REQUIREMENT FOR SESSIONAL WORK:**

*There should be minimum eight assignments covering all the above course content to include two dimensional as well three dimensional explorations.*

#### **OUTCOME:**

- Creation using elements and principles of design.
- Synthesis of multi-sensory aspects of space.
- Space making.





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**RECOMMENDED READINGS:**

- Poetics in Architecture : Theory of Design by Anthony Antoniadis
- Operative Design: A Catalog of Spatial Verbs Paperback – 1 Jul 2013 by Anthony di Mari
- Pattern Language – Christopher Alexander
- The Design of Everyday Things by Donald Norman
- Architecture : Form Space and Order – Francis D. K. Ching
- Interior Spaces : Francis D K. Ching
- Universal Principles of Design by William Lidwell, Kristina Holden, Jim Butler
- Graphic Thinking for Architects and Planners by Paul Lassau
- Tim Brown – Change By Design
- Elements of Space Making – Yatin Pandya

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<b>BUILDING CONSTRUCTION AND MATERIALS I</b>		
Subject Code 1201902 [THEORY] & 1201903 [SV]		
Teaching Scheme	Examination Scheme	
Total Contact Hours per week= (lectures=2, Studio=3, Total=5)	Sessional [CIA 25+EA 25]	50
	Viva [INT 25+ EXT 25]	50
	In-semester exam	30
	End Semester exam	70
	Total Marks	200
	Total Credits	07

**COURSE OBJECTIVES:**

- To develop a fundamental understanding of basic building elements, their function and behaviour under various conditions with specific reference to load bearing construction.
- To study the principles of designing components of load bearing structures – foundation, plinth, wall, openings etc. with study of materials suitable for load bearing construction.

**COURSE CONTENT:**

**UNIT I** Introduction to various building elements from foundation to roof and concept of load transfer.

**UNIT II** Introduction to building materials with characteristics, common tests, market forms and Applications.

- 1) Suitable for load bearing construction such as stone, bricks, concrete blocks, soil stabilized blocks, rammed earth construction etc.





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2) Lime mortar; cement mortar; various pointing and plastering techniques and their processes

**UNIT III** Strip Foundations suitable for load bearing structures in stone and brick up to plinth level including foundation for steps--Plinth formation, DPC-- Introduction to various tools and equipment commonly used in construction.

**UNIT IV** Load bearing / non load bearing masonry construction using materials such as Stone, bricks, concrete blocks, soil stabilized blocks, rammed earth construction.

**UNIT V** Introduction to openings, spanning of openings by types of arches and lintels, principles and terminology of arch construction spanning of openings using materials mentioned in unit III.

**UNIT VI** Introduction to Bamboo as construction material.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:** Hand drawn drawings/Proportionate sketches on Units 4 and 5; Assignments on units 1, 2, 3 and 6 include sketches, notes, market survey and min one model based on unit 4 or unit 5.

**OUTCOME:** Students will develop a basic understanding of the relationship of materials to construction systems, techniques and methodology with specific reference to load bearing construction

**RECOMMENDED READINGS:**

- Dr. B.C Punmia (2012) *Building Construction* (10th edition) Laxmi Publications.
- Harold B.Olin, John L. Schmidt (1994) *Construction principles, Materials and Methods*, John Wiley & Sons, Inc.
- Narayanamurty, D.; Mohan, D (1972) *The use of Bamboo and reeds in building construction*, UNO Publications
- Roy Chudley, Roger Greeno (2016), *Construction Technology*, 11th Edition Routledge.
- S.C.Rangwala (2013) *Engineering materials* (Fortieth edition), Charotar Publishing pvt.ltd.
- S.K. Duggal (2016) *Building materials* (4th edition) – New age international publishers.
- Willam Morgan (1977) *The elements of structure: An introduction to the principles of building and structural engineering* Distributed by Sportshelf; 2nd edition
- W.B. Mckay (2015) *Building construction Vol. 1* (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition).
- Bureau of Indian standards - Handbook on Masonry Design and Construction (First Revision); National Building Code of India 2016 (Volume 1) and I.S.I. Specifications

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THEORY OF STRUCTURES I		
Subject Code 1201904 (THEORY)		
Teaching Scheme		
Total Contact Hours per week= (lectures=2, Total=2)	Examination Scheme	
	Sessional Viva	NIL
	In-semester exam	30
	End Semester exam	70
	Total Marks	100
Total Credits		02

**COURSE OBJECTIVES:**

- To Introduce Applied Mechanics and Theory of Structures and their significance and application for architects.
- To Understand Different Systems of Forces and their Equilibrium and that a Building is a System of Forces in Equilibrium:

**COURSE OUTLINE:**

**Unit 1: Forces:**

- Applied Mechanics, Statics and Dynamics.** Importance of Study: Force, Definition, Effects of Forces, Different Systems of Forces, Principle of Transmissibility and Superposition of Forces: Resolution and Composition of Forces:
- Equilibrium of Concurrent and Non Concurrent Forces.** Conditions of Equilibrium for a System of Concurrent Forces, Parallelogram, Polygonal & Triangular Law of Forces: Lami's Theorem: Resultant and Equilibrant of a System of Concurrent Forces: Moment as an Effect of a Force. Couple and Properties of Couple, Varignon's Principle, Conditions of Equilibrium for a System of Non-Concurrent Forces
- Introducing Dead Loads and Live Loads:** Live Loads as concept only. Calculating Total Dead Loads of Walls Slabs etc. from densities.

**Unit 2: Simple Stresses and Strains:**

- Linear Stresses and Strains. Hooke's Law. Stress Strain Diagram for Various Materials. Lateral Strain, Poisson's Ratio: Volumetric Strain, and Bulk Modulus. Shear Stress. Modulus of Rigidity. Relationship between various Moduli. Elastic, Plastic Brittle and Ductile Behaviour. Composite Materials, Modular Ratio and Equivalent Area e.g. R.C.C Column with Steel Reinforcement:

**Unit 3: Transfer of Load:**

- Understanding of Transfer of load in a Load bearing Structure and Framed Structure with essential differences. Basic Principles and care to be taken in Load Bearing Structures: Include principles of Earthquake resistant structures with respect to load bearing structures. Introducing Soil Bearing Capacity





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**Unit 4: C.G and M.I:**

1. Concept of C.G and M.I: Formula only of C.G and M.I for rectangular, Triangular, Circular and Semi Circular Shapes. Parallel Axis Theorem and Radius of Gyration: Formula for Radius of Gyration of a Rectangular Shape

**Unit 5: Supports and Loads:**

1. Supports, Definition, Reactions offered by Simple, Fixed, Hinged and Roller Support.
2. Statically Indeterminate and Determinate Structures and Degree of Indeterminacy. Beams classified as Simply Supported, Cantilever, Over Hanging, Propped Cantilever, Fixed and Continuous:
3. Loads Classified as U.D.L, Point Load & Varying Load.
4. Loads Classified as Dead, Live, Wind, Snow, Seismic.
5. **Understanding Reactions for 5 Standard Cases:**
  1. Simple Supported Beam with full U.D.L
  2. Simple Supported Beam with Central Point Load
  3. Simple Supported Beam with Eccentric point Load
  4. Cantilevered Beam with Full U.D.L
  5. Cantilevered Beam with End Point Load

**Unit 6: S.F.D and B.M.D of Simple Supported Beams Only:**

1. Definitions of Shear Force and Bending Moment, Point of Zero Shear, S.F max and B.M max, Relationship Between S.F.D and B.M.D
2. S.F.D and B.M.D of 5 Standard Cases as in Point 6 of Unit 5:

**NUMERICAL PROBLEMS TO BE SET AS PER FOLLOWING**

1. Calculating Resultant, Equilibrant of a system of Concurrent Forces, and of individual force to get a system of forces into equilibrium. Problems to be limited to 4 forces only, Problems on Parallelogram law of Forces and Lami's Theorem. Problems on Resultant of a system of noncurrent forces as a system of forces in a linear horizontal member/beam only (Points of applications are along or perpendicular to the Beam Axis).
2. Calculating Stress, Strain, Change in Length, Young's Modulus, Stress and change in length for members connected along an axis and in equilibrium due to loads at various points on the axis, Calculating Stress and Load taken by individual materials in a composite Material. Bulk Modulus or Shear Modulus problems kept out of the scope of this syllabus.
3. Calculating width of strip Foundations for given load of super structure.
4. Calculating C.G and M.I to be limited to C, L, T and I Sections only: Also of Symmetrical Rectangular Shapes with Symmetrical Circular cut-outs. M.I of Rectangular Shape about Axis passing through base:
5. Support Reactions for Simply Supported Beams and Cantilevered Beams only (No Overhanging Beams or Inclined Roller Support). Loading to be of U.D.L always with one or two point loads. Problem on calculating dead loads and hence reactions on a beam either simple supported or cantilever beam
6. S.F.D and B.M.D of Simple Supported Beam only with full U.D.L and one or two point loads.





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**Course Outcome:** At the end of semester student develops

- The understanding of building/structure as a system of forces and transfer of forces/load from roof to foundation and soil.
- The understanding of various loads acting on a structure
- The understanding of behaviour of elements like walls, beams and columns subjected to tension, compression, shear and bending.

**Reference Books**

1. Mechanics of Structures Volume 1 and 2 by Dr. H.J.Shah and S.B.Junnarkar
2. Strength of Materials by A.P.Dongre
3. Basic Structures by Phillip Garrison
4. Architectural Engineering Design by Robert Brown Butler
5. Vector Mechanics by Beer and Johnston
6. Applied Mechanics by R.S.Khurmi and N.Khurmi

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ARCHITECTURAL GRAPHICS AND DRAWING I			
Subject Code 1201905 [SS]			
Teaching Scheme		Examination Scheme	
Total Contact Hours per week= (lectures=1, Studio=4, Total=5)		Sessional [CIA 50+EA50]	100
		Viva	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	100
		Total Credits	03

**COURSE OBJECTIVES:**

- To introduce students to Architectural Graphics and drawing techniques and aspects of scale, annotations etc.
- To enable students to express simple three dimensional objects and building components Through Technical Drawings, using various graphic projection systems such as orthography, Isometric, Axonometric projections and cut sections.
- To introduce various techniques of sketching for recording, studying and communicating objects, buildings and spaces.

**COURSE CONTENT :**

**Unit 1**

- Introduction to Graphics elements (point , line, plane) and concept of scale.
- Introduction to various drawing instruments and methods of employing them for technical drawing and sketching.





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**Unit 2 -Introduction to technical architectural drawing and its components:**

- Various Line types: meaning and application.
- Architectural Lettering and dimensioning techniques.
- Architectural annotations and conventions including representation of various building materials and building components.
- Various Standard and Graphic scales and their application.

**Unit 3 Plane (two dimensional) and Solid (three dimensional) geometry:**

- Introduction to graphical construction of various plane geometrical shapes and their relevance in Architectural Drawings.
- Introduction to various simple/ Euclidian Three Dimensional Solids 's and their generations

**Unit 4 Projection Systems in Drawings and graphics**

- Introduction to various projection systems used in Architectural drawing; such as Orthographic, Isometric and Axonometric projections to draw and represent various three dimensional Geometrical solid and hollow objects.
- Introduction to importance, meaning and drawing Section/s of various solid and hollow objects including building components

**Unit 5 Scale Drawing**

- Introduction to Architectural drawings such as Plans, Sections and Elevations of Building using techniques and skills learnt so far.

**Unit 6 Sketching:**

- Introduction to architectural sketching using various grades of graphite pencil.
- Principles of free hand sketching such as proportions, with primary thrust on sketching of building elements and built environment (indoor and outdoor).

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK :**

Minimum eight of Manually drafted A1 size drawings covering units 2 to 5. For unit 6 a sketch book has to be maintained with atleast 15 sketches of various types mentioned in unit 6.

**COURSE OUTCOME:**

- Students at the end of the Semester should be able to comprehend and express nuances of graphic language through various methods learnt.
- Students should be able to communicate various ideas through Architectural Graphic representations including building plans and sections (drafting and sketching).





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**RECOMMENDED READINGS :**

1. Ching Francis D.K.: Architectural Graphics
2. Kelsey W. E.: Geometrical & Building Drawing
3. Leslie Martin: Architectural graphics:
4. B. James: Essential of Drafting
5. H. Joseph and Morris: Practical plane and solid geometry
6. Gill Robert: Rendering with pen and ink
7. Burden Ernest: Architectural Delineation

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HISTORY OF ARCHITECTURE AND CULTURE I		
Subject Code 1201906 V[SS]		
Teaching Scheme		Examination Scheme
Total Contact Hours per week= (lectures=1, Studio=2, Total=3)	Sessional [CIA 25+EA 25]	50
	Viva	NIL
	In-semester exam	NIL
	End Semester exam	NIL
	Total Marks	50
Total Credits		02

**Course Objectives:**

1. To introduce students to the developments in architecture through history as a result of the social, political, and geographical contexts.
2. To introduce students to the developments in architecture and its meaning, in the Indian sub-continent until 12<sup>th</sup> century AD with reference to development of typologies, forms, building techniques and features.
3. To gain an integrated understanding of settlements, landscape, and architecture as a manifestation of culture and geography.

**Course Outline:**

Unit 1: Architecture of the ancient River Valley Civilizations: Nile, Tigris and Euphrates, Indus.

Unit 2: Introduction to tribal and nomadic architecture of India.

Unit 3: Architecture of the Buddhist faith including development of stupas, chaityas, and viharas including rock cut architecture.

Unit 4: Architecture of the early Hindu temples, rock cut architecture of the Hindus. Architecture during the Maurya, Gupta, and Chalukya period. Architecture including temples, forts, step-wells, palaces, etc. of Northern India including architecture in Gujarat, Orissa, Madhya Pradesh, and Rajasthan.

Unit 5: Architecture of Southern India including development of temples and temple towns. Architecture under the Pallavas, Cholas, Pandyas, Nayaks, Hoysalas, and the Vijaynagar kingdom.





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Unit 6: Introduction to the traditional Architecture of India with a focus on Maharashtra.

**Sessional Work:**

- A3 size sheets with sketches- preferably plans and sections- of various buildings discussed in the above units. A minimum of two sheets per unit are required. Minimum twenty buildings should be represented in the sheets across the semester.
- One tutorial.

**Course Specific Outcomes:**

1. An understanding of architecture, including settlements, landscapes and buildings as a cultural product shaped by various factors.
2. An understanding of the formal, structural, and stylistic aspects of architectural development.

**Recommended Readings:**

- Brown, P. (n.d.). Indian Architecture: Buddhist and Hindu. Delhi: Kiran Book Agency.  
Ching, F. D., Jarzombek, M., & Prakash, V. (2011). A Global History of Architecture. New Jersey: John Wiley and Sons Inc.  
Dehejia, V. (1997). Indian Art. London: Phaidon.  
Desai, M. (2018). Wooden Architecture of Kerala. Ahmedabad: Mapin.  
Dhonde, S. R., & Ranade, J. (2009). Aurangabad: Culture, Art, Architecture. Aurangabad: INTACH Aurangabad Chapter.  
Fergusson, J. (1891). History of Indian and eastern Architecture. London: John Murray.  
Jain, K., & Jain, M. (2000). Architecture of the Indian Desert. Ahmedabad: AADI Centre.  
Jain, S. (2004). Havelis: A Living Tradition of Rajasthan. Delhi: Shubhi Publications.  
Joshi, O. P. (2010). Tribal Architecture in India. Ahmedabad: Tribal Research and Training Institute.  
Juneja, M. (2008). Architecture in Medieval India. Delhi: Permanent Black.  
Kanhere, G. K. (1989). Temples of Maharashtra. Mumbai: Maharashtra Rajya Sahitya va Sanskriti Mandal.  
Kanhere, G. K. (2013). Temples, Wadas, and Institutions of Pune: A Legacy and Symbolism in Architecture. Pune: BNCA Publication Cell.  
Kolkman, R., & Blackburn S. (2014). Tribal Architecture in Northeast India. Leiden: Brill.  
Mate, M. S. (2008). Maratheshahi Vastushilpa. Pune: Continental Prakashan.  
Pandya, Y. (2013). Concepts of Space in Traditional Indian Architecture. Ahmedabad: Mapin Publishing.  
Pramar, V.S. (2005). A Social History of Indian Architecture. Delhi: Oxford University Press.  
Pramar, V.S. (1989). Haveli: Wooden Houses and Mansions of Gujarat. Ahmedabad: Mapin.  
Tadgell, C. (1994). The History of Architecture in India. London: Phaidon.  
Taschen, A. (Ed.). (2003). Indian Interiors. Berlin: Taschen.  
Taschen, A. (Ed.). (2008). Indian Style. Berlin: Taschen.

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COMMUNICATION SKILLS			
Subject Code 1201907 [SS]			
Teaching Scheme		Examination Scheme	
Total Contact Hours per week= (lectures=2, Studio=1, Total=3)		Sessional [CIA 25+ EA 25]	50
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

#### Communication Skills

**Objectives:** To enhance skills required for effective communication in Architectural education and practice.

#### Course Content

**Unit 1:** Introduction to the various modes of communication and their significance.

**Unit 2:** **Written communication:** Paraphrasing, Grammar and punctuation. Developing vocabulary pertaining to architecture and design through reading. Introduction to technical writing and forms of writing in architecture discipline such as site visit report, letters, tour reports, appraisals, email etc.. Expressing ideas and concepts through words.

**Unit 2:** **Verbal communication:** Presenting an idea/ thought, debate, group discussion. And **Nonverbal aspects of communication** such as body language, posture, stance etc.

**Unit 3:** **Graphical communication:** Analytical diagrams, info graphics, flow charts, mind maps, posters, logo design.

**Unit 4:** Use of **Digital tools for communication:** Basics of Word based, numerical based software, and visual presentation techniques such as photography, videography etc.

**Sessional work:** Minimum 6 assignments to cover the aspects mentioned above. Assignments may be tied up with other subjects in the syllabus, wherever relevant. Assignments to be framed focusing on the profession of architecture.

**OUTCOME :** At the end of the course the student should be able to communicate fluently in English language and also use tools of communication such as written and graphical for effective communication.

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WORKSHOP I		
Subject Code 1201908 [SS]		
Teaching Scheme		
TotalContact Hours per week= (lectures=1, Studio=2, Total=3)	Examination Scheme	
	Sessional [CIA 50+EA50]	100
	Viva	NIL
	In-semester exam	NIL
	End Semester exam	NIL
	TotalMarks	100
Total Credits		02

**COURSE OBJECTIVES:**

- To Introduce students to the Significance of Model making in Architecture in exploring and representing Massing, form of buildings and spaces
- Introduce to various basic model making techniques and materials their relationship.

**COURSE CONTENT :**

- Introduction to Importance of Model making in process and communication of Architectural design.
- Introduction to various materials (such as various paper, boards, foam board, wood, etc.) tools and techniques of architectural model making through construction of simple three dimensional objects and simple building models.

*It is expected that the limitations and advantage of all the materials is explained by demonstration/presentation.*

*Models should preferably be co-ordinated with other subjects in the curriculum.*

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK :**

Minimum six assignments, with thrust on exploring at least three materials and techniques, understanding their appropriateness for the purpose.

**OUTCOME:**

Students at the end of Semester should be able to understand relevance of model making both in the process of design and as a Product

**RECOMMENDED READINGS :**

- John Taylor, Model Building for Architects and Engineers
- Rolf Janke, Architectural Models

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## SEMESTER II

ARCHITECTURAL DESIGN I		
Subject Code 1201909 [SV]		
Teaching Scheme		
Total Contact Hours per week= (lectures=1, Studio=6, Total=7)	Examination Scheme	
	Sessional [CIA100+EA100]	200
	Viva [INT 25+ EXT 25]	50
	In-semester exam	NIL
	End Semester exam	NIL
Total Marks	250	
Total Credits	10	

### COURSE OBJECTIVES:

- To introduce design as a process of decision making.
- To introduce to the aspects of decision making such as anthropometry, climate, form, function, structure and material.
- To understand experiential quality of space.
- To comprehensively understand the role of socio cultural and geographical factors in shaping of rural settlements and architecture.

### COURSE CONTENT:

Unit 1 : Study and analysis of small scale built spaces with respect to its context, comfort, function, anthropometrical data and layout

Unit 2 : Designing of single activity space like a seating area in public space, kiosks, play area, entrance gate etc. demonstrating the application of the design principles and communicated effectively through two and three-dimensional hand drawings, sketches and models.

Unit 3 : Study and analysis of a rural settlement and architecture with respect to lifestyle, climate & social structure etc.

Unit 4 : Designing in the context of the studied settlement.

### SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

- Assignments focusing on each of the four units above and to be presented in various mediums like doodles, sketches, diagrams etc in addition to the architectural drawings and models.

### OUTCOME :

The student would be able to analyze simple spaces, identify factors affecting their design and be able to design a simple space for human use.





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**RECOMMENDED READINGS :**

- A Pattern language by Alexander Christopher
- Structure in Nature -Strategy for Design- Peter Pearce
- Patterns in Nature - Peter Streens
- Visual thinking- Arnheim Rudolf
- Architecture: Form Space and order \_ Francis D.K. Ching
- Rybczynski, Witold. *How the other half builds*
- Jan A. Silva and Leslie Fairweather. *A.J. Metric Handbook*
- Michael Pause & Roger H. Clark. *Precedents in Architecture*
- Gail Greet Hannah (2002). *Elements of Design*
- Bernard Rudofsky (1964). *Architecture without Architects: A Short Introduction to non-pedigreed Architecture*
- Ching Francis D.K.(1979). *Form, Space and Order*
- Ching Francis D.K.(.). *A Visual Dictionary of Architecture*
- Christopher Alexander (.). *A Pattern Language*
- Christopher Alexander(.). *The Timeless Way of Building*
- Robert Summer(.). *Design Awareness*
- YatinPandya (.). *Elements of Space Making*
- Paul Lassau (.). *Graphic Thinking for Architects & Planners*
- Rybczynski, Witold. *How the other half builds*
- Jan A. Silva and Leslie Fairweather. *A.J. Metric Handbook*
- Michael Pause & Roger H. Clark. *Precedents in Architecture*
- *Elements of Design*

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BUILDING CONSTRUCTION AND MATERIALS II		
Subject Code 1201910 [THEORY] & 1201911 [SV]		
Teaching Scheme		Examination Scheme
Total Contact Hours per week= (lectures=2, Studio=3, Total=5)	Sessional [CIA25+EA25]	50
	Viva [INT25+EXT 25]	50
	In-semester exam	30
	End Semester exam	70
	Total Marks	200
	Total Credits	2+5

**COURSE OBJECTIVES:**

- To develop a fundamental understanding of basic building elements, their function and behaviour under various conditions with specific reference to Timber construction.
- To study the principles of designing components of Timber Structure – Floor, Roofs ,Door, Windows





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**COURSE CONTENT:**

**UNIT I** Introduction to earthquake, its magnitude and its effects earthquake resistant measures for load bearing construction. Construction of reinforced masonry walls, pillars and lintels; Masonry vaults and domes.

**UNIT II** Introduction to materials with characteristics, common tests, market forms and Applications.  
1) Timber, timber derivatives and Introduction to various tools and equipment commonly used in carpentry work.  
2) Roofing materials for small span sloping roofs including Mangalore tiles, sheet roof covering.

**UNIT III** Study of Single and double floor construction for G+1 building; Staircases – terminology and construction in timber.

**UNIT IV** Introduction to timber panelled and flush doors; various types of timber casement windows along with necessary joinery details, finishes required.

**UNIT V** Introduction to timber roof truss, forces in truss members; Construction of various types of roofs for spans up to 6m also king post and queen post truss.

**UNIT VI** Introduction to wooden partition and wall paneling used for interior application along with necessary joinery details, finishes required.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:** Hand drawn drawings on Units 4,5 and 6; Assignments on units 1, 2 and 3 include sketches, notes, market survey and min one model based on unit 1,5 or unit 6.

**OUTCOME:** Students will expand a basic knowledge about earth quake, understanding of properties, construction techniques of timber with specific reference to use of timber in superstructure (spanning, framing techniques).

**RECOMMENDED READINGS:**

- Dr. B.C Punmia (2012) *Building construction* (10<sup>th</sup> edition) Laxmi Publications.
- Harold B.Olin, John L. Schmidt (1994) *Construction principles, Materials and Methods*, John Wiley & Sons, Inc.
- Roy Chudley, Roger Greeno (2016), *Construction Technology*, 11<sup>th</sup> Edition Routledge.
- S.C.Rangwala (2013) *Engineering materials* (Fortieth edition), Charotar Publishing pvt.ltd.
- S.K. Duggal (2016) *Building materials* (4th edition) – New age international publishers.
- William Morgan (1977) *The elements of structure: An introduction to the principles of building and structural engineering* Distributed by Sportshelf; 2<sup>nd</sup> edition.
- W.B. Mckay (2015) *Building construction Vol. 1* (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition).





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- Bureau of Indian standards - Handbook on Masonry Design and Construction (First Revision); National Building Code of India 2016 (Volume 1) and I.S.I. Specifications.

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THEORY OF STRUCTURES II		
Subject Code 1201912 [THEORY]		
Teaching Scheme		
Total Contact Hours per week= (lectures=2, Total=2)	Examination Scheme	
	Sessional	NIL
	Viva	
	In-semester exam	30
	End Semester exam	70
	Total Marks	100
	Total Credits	02

**COURSE OBJECTIVES:**

- To Study S.F.D and B.M.D of Overhanging Beams
- To Introduce Lattice Constructions
- To Study the Effect of Forces on a Spanning Members
- To Understand Compression Members

**Unit 1: S.F.D and B.M.D Continued:**

1. Overhanging Beams on Both Side, Point of Contra flexure, Negative B.M, Representative S.F.D and B.M.D for Beam with Full U.D.L

**Unit 2: Frames and Trusses:**

1. Introduction to Plane Lattice Construction. Applications of Frames and Trusses with B.T Terminology of Rafters, Purlins etc.: Different Geometry of Trusses e.g. Howe Truss, Fink Truss, N Girder: Perfect Frames, Imperfect Frames, Redundant and Deficient Frames: Assumptions in the Solution of Frames: Effect of Horizontal and Vertical Forces on Frames.

**Unit 3: Effect of Force on Spanning Members:**

**A. Bending Stresses:**

1. Assumptions in the Theory of Simple Bending: The Theory of Simple Bending to create Moment of Resistance: Flexural Formula: Stress Distribution across a Section and across the span of the Beam: Moment of Resistance: Section Modulus and how M.R is proportional to square of depth. Why Beams should be deeper than Wider

**B. Shear Stresses:**

1. Shear Stress Formula: Stress Distribution across a Rectangular, Circular T, L, I, C Section: Differences between Bending Stress Distribution and Shear Stress Distribution across the Section and across the span: Simplified Formula for Rectangular and Circular Section (Hollow and Solid)

**C. Deflection:**

1. Definition of Deflection and Slope: Maximum and Minimum Slope and Deflection for Cases 1,2,4,5 as defined in semester 1. Double Integration Method of Calculating Deflection and Slope: Derive Formula for Deflection max and Slope max for a Simple Supported Beam with full U.d.l. Formula only for the remaining 3 cases( Omit case of Simple Supported Beam with eccentric point load)





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**Unit 4: Understanding the Failure of Compression Members:**

**a. Eccentric Loaded Columns:**

1. Compression Members Subjected to eccentricity of loading about one and both axis. Derivation of Middle third Rule for eccentricity about one axis. Concept of Core or Kernel of a column for eccentricity about both axes. Applying the Middle Third Rule to Brick Pier Foundation.

**b. Long Columns: and Short Columns:**

1. Euler's Theory, Assumptions, Euler's Formula and its Limitations leading to Rankine's Theory. Long and Short Columns for different Materials: Various End Conditions and their Effective Lengths.

**NUMERICAL PROBLEMS TO BE SET AS PER FOLLOWING**

1. S.F.D and B.M.D of Over Hanging Beams with over-hang only on one side *with one udl per span and one or two point loads only*
2. Solution of Frames for Simple Supported Frames(with Symmetrical Loading) and Cantilever Frames using Method of Joints and Method of Sections only.
3. Problems based on Flexural Formula and Calculating Stresses at Distances away from the Neutral Axis, Given a section Calculating load or Span or load so that Stresses are not Exceeded.
4. Problems of Shear Stress Calculation for a Rectangular or Circular Section Only
5. Calculating Deflection max and slope max for symmetrically loaded simple supported or cantilever beams by substituting values in the formula and not by double integration
6. Calculating stresses and drawing stress diagrams for Eccentric loading on Compression Members about one axis only.
7. Analytical problems for Euler's Theory and Rankine's Theory. Problems on Rankine's Theory to be based on basic formula and not Rankine's constant.
8. *Note for all Problems: All Problems should be based on realistic material properties and section sizes*

**Course Outcome:** At the end of semester student develops

- The understanding of effect of various forces in terms of various stresses and deflection for various structural members like beams and columns.
- The understanding of truss as lattice construction and structural actions in it's members.

**Reference Books**

1. Mechanics of Structures Volume 1 and 2 by Dr. H.J.Shah and S.B.Junnarkar
2. Strength of Materials by A.P.Dongre
3. Basic Structures by Phillip Garrison
4. Architectural Engineering Design by Robert Brown Butler
5. Vector Mechanics by Beer and Johnston
6. Applied Mechanics by R.S.Khurmi and N.Khurmi

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<b>ARCHITECTURAL GRAPHICS AND DRAWING II</b>			
Subject Code 1201913 [SS]		Examination Scheme	
Teaching Scheme		Sessional [CIA50+EA50]	100
Total Contact Hours per week= (lectures=1, Studio=4, Total=5)		Viva	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	100
		Total Credits	03

**COURSE OBJECTIVES:**

- To enable the students to understand and express Composite three-Dimensional objects and buildings formed by additive and interpenetrated solids using various graphical projection systems including sections.
- To enable the students to communicate an architectural idea / proposal in a legible and effective manner through perspective projections, use of shades and shadows, and various architectural presentation and rendering techniques.

**COURSE CONTENT :**

**Unit 1 Solid Geometry:**

- Understanding and drawing of composite and complex three dimensional objects including building components formed by addition and/or interpenetration of various objects. .
- Surface Development of various three dimensional objects.
- Orthographic projections of true shapes of sectional planes.

**Unit 2 Perspective Drawing:**

- Drawing one-point and two-point perspective of objects and buildings/ building components using various methods including grid method.
- Introduction to concept of bird's eye view, worm's eye view etc

**Unit 3 Sciography:** Principles of Sciography (shades and shadows) for 3-Dimensional objects and buildings on plans, elevation, isometric and perspective.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK :**

- Sessional work should be planned to cover all the units mentioned in course outline with thrust on skill development, accuracy and understanding of the topic.
 

Unit -1	4 assignments
Unit 2	3 assignments
Unit 3	3 assignments

**OUTCOME :**

- Students at the end of the Semester should be able to comprehend and express composite solid geometry through sketches and drawings leading to comprehension of building components.



- Students should be able to communicate various ideas through Architectural Graphic representations including building plans and sections (drafting and sketching).

**RECOMMENDED READINGS :**

1. Ching Francis D.K.: Architectural Graphics
2. Kelsey W. E.: Geometrical & Building Drawing
3. Leslie Martin: Architectural graphics:
4. B. James: Essential of Drafting
5. H. Joseph and Morris: Practical plane and solid geometry
6. Gill Robert: Rendering with pen and ink
7. Burden Ernest: Architectural Delineation

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<b>HISTORY OF ARCHITECTURE AND CULTURE II</b>			
Subject Code 1201914 [SS]		Examination Scheme	
Teaching Scheme		Sessional [CIA25+EA25]	50
Total Contact Hours per week= (lectures=1, Studio=2, Total=3)		Viva	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	02

**Course Objectives:**

1. To introduce students to the developments in architecture of the Indian sub-continent after 12th century AD as a result of the social, political, and geographical contexts.
2. To study the development of architecture with specific reference to form, technology, and ornament.
3. To gain an integrated understanding of settlements, landscape, and architecture as a manifestation of culture.

**Course Outline:**

Unit 1: Islamic principles of architectural form, ornament, and meaning. Early Islamic architecture and its evolution and development. Architecture under the Delhi Sultanate-Slave, Khalji, Tughlaq, Sayyid, and Lodhi dynasties.

Unit 2: Islamic architecture in Gujarat, Bengal, Malwa.

Unit 3: Mughal architecture and urbanism.

Unit 4: Post- Mughal architecture of India till 19<sup>th</sup> Cent. AD.

Unit 5: Development of architecture in the Deccan since the 12<sup>th</sup> AD.



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Unit 6: Architecture of the Peshwa region and Western Maharashtra.

**Sessional Work:**

A3 size sheets with sketches- preferably plans and sections- of various buildings discussed in the above units. A minimum of two sheets per unit are required. Minimum twenty buildings should be represented in the sheets across the semester.

One measured drawing of a vernacular / traditional building from the region of the college. This can be undertaken as group work with identifiable individual contribution not less than 1 A2 sized sheet.

**Course Specific Outcomes:**

1. An understanding of architecture as a cultural product shaped by various factors.
2. An understanding of the formal, structural, and stylistic aspects of architectural development.
3. An understanding of Indian architecture of the twentieth century in the context of its historical precedents.

**Recommended Readings:**

- Asher, C. B. (1992). Architecture of Mughal India. Cambridge: Cambridge University Press.  
Brown, P. (n.d.). Indian Architecture: Islamic. Delhi: Kiran Book Agency.  
Dehejia, V. (1997). Indian Art. London: Phaidon.  
Dhongde, S. R., & Ranade, J. (2009). Aurangabad: Culture, Art, Architecture. Aurangabad: INTACH Aurangabad Chapter.  
Fergusson, J. (1891). History of Indian and eastern Architecture. London: John Murray.  
Juneja, M. (2008). Architecture in Medieval India. Delhi: Permanent Black.  
Koch, E. (2014). Mughal Architecture. New York: Midpoint Trade Books.  
Mate, M. S. (1961). Islamic Architecture of the Deccan. Pune: Deccan College Research Institute.  
Michell, G., & Pasricha, A. (2011). Mughal Architecture and Gardens. Suffolk: Antique Collectors Club.  
Michell, G., & Zebrowski, M. (1999). Architecture and Art of the Deccan Sultanates. Cambridge: Cambridge University Press.  
Sohoni, P. (2018). The Architecture of a Deccan Sultanate. London: I.B.Tauris.  
Tadgell, C. (1994). The History of Architecture in India. London: Phaidon.  
Taschen, A. (Ed.). (2003). Indian Interiors. Berlin: Taschen.  
Taschen, A. (Ed.). (2008). Indian Style. Berlin: Taschen.  
Tillotson, G. (1999). The Rajput Palaces. Delhi: Oxford University Press.

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FUNDAMENTALS OF ARCHITECTURE			
Subject Code 1201915 [SS]			
Teaching Scheme		Examination Scheme	
Total Contact Hours per week= (lectures=2, Studio=1, Total=3)		Sessional [CIA25+EA25]	50
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

#### COURSE OBJECTIVES

To introduce the students to the field of architecture ,its scope and fundamentals

#### COURSE OUTLINE :

Unit 1 : Introduction to the profession of Architecture and its distinguishing characteristics with respect to other professions.

Unit 2 : Scope of architecture as a discipline

Unit 3 : Fundamentals of architecture -function , structure ,culture and environment and their integration into the architectural form

Unit 4 : Factors affecting architectural design- site, context , function, circulation, structural system, materials ,sustainability and aesthetics.

Unit 5 : Concept of Shelter and introduction to various building typologies and their design concerns

Unit 6: Scope and significance of subjects in architectural curriculum.

#### SESSIONAL WORK :

A Study journal and tutorial covering all the above mentioned units.  
Appraisal report of any one building typology.

#### RECOMMENDED READINGS :

1. Structure in Architecture – Heller Robert and SalvadoriMario
2. Design Fundamentals in Architecture –Pramar
3. Architecture : Form, Space and order – Francis D. K.Ching

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WORKSHOP II		
Subject Code 1201916 [SS]		
Teaching Scheme	Examination Scheme	
Total Contact Hours per week= (lectures=1, Studio=2, Total=3)	Sessional [CIA 50+ EA 50]	100
	VIVA	NIL
	In-semester exam	NIL
	End Semester exam	NIL
	TotalMarks	100
	Total Credits	02

**COURSE OBJECTIVES:**

- To enable students to make Architectural models with various materials during process of Design and Construction studios and as final presentation to express ideas
- Introduction to Digital modeling with basic softwares

**COURSE CONTENT :**

- Introduction to advanced materials such as balsa wood, polymers/ plastics, cork and the techniques to make Architectural Models
- Introducing computer aided/ Digital 3D Modeling of simple and composite objects as an exploratory tool.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK :**

Minimum six number of assignments with thrust on exploring materials & tools (physical as well as digital), understanding their appropriateness for the purpose. At least one of the assignment should be based on the design project and building technology concepts each.

**OUTCOME :**

Students at the end of Semester should be able demonstrate sufficient skills in making architectural models.

**RECOMMENDED READINGS :**

- John Taylor, Model Building for Architects and Engineers
- Rolf Janke, Architectural Models
- Aidan Chopra, Sketchup-2014 for Dummies

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Architectural Design II		
Course Code	2201917[SV]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=1 Studio=6, Total = 7)	Sessional [CIA 100 + EA 100]	200
	Viva [Int 25 + Ext 25]	50
	In semester exam	NIL
	End Semester exam	NIL
	Total Marks	250
Total Credits	10	

**COURSE OBJECTIVE:**

To understand Architectural Design as a process generating design brief and taking design decisions based on the following aspects:

- **Socio-Cultural Aspects:** To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.
- **Aesthetics:** To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).
- **Anthropometry & Function:** To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)
- **Climate:** To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.
- **Building Material and Construction Technology:** To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.
- **Building Services:** To understand the spatial and structural implications of basic services involved in building design.
- **Site :** To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.
- **Universal Design:** To understand the concept and principles of universal design.
- **Precedent Studies:** To introduce the students to learn from case, referral, live studies - process of observation, analysis, documentation and deriving inferences.





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**COURSE OUTLINE:**

- Project 1 (Major Project) : A dwelling for a single family or clusters of dwellings for multiple families with area 300 sq.m. to 500 sq.m. The project should explicitly address at least 4-5 aspects of the design decision process from those listed above. The project should be designed without the aid of mechanical means for vertical transportation.
- Project 2 (Minor Project): A time bound assignment Short term project focusing specifically on any one of the aspects mentioned in course objectives/ Hands-on Workshop / Exercise based on detailing any one of the components of Project 1 but with separate deliverables in addition to the deliverable of Project 1.

**SESSIONAL WORK:**

- Project 1 (Major Project): The student must represent the identification of core design aspect, formulation of design approach and development, and the final design outcome through architectural drawings along with representative details of construction. Along with the drawings, the student must develop the design through a series of models/ 3D visualizations made at various stages.  
Design deliverable for Project 1:
  - i. Portfolio A - Architectural drawings and model at an appropriate scale
  - ii. Portfolio B - Process drawings / tracings (Recommended)
  - iii. Study models of various stage (Recommended)
- For Project 2 (Minor Project): The deliverable in case of a time bound assignment or a design exercise should be a portfolio of drawings and / or model. In case of Workshops the deliverable should be a report to be presented on the day of viva.

**COURSE OUTCOME:**

- At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design and communicate it in form of 2D and 3D representations.

**REFERENCE BOOKS :**

1. Antonlades, A. (1992). The Epic of Gilgamesh: Utility to Metaphor Through the Dawn of Architecture. *IN Epic Space: Towards the Roots of Western Architecture*, 3-18.
2. Sommer, R. (1972). Design awareness.
3. Deasy, C. M. (1974). *Design for human affairs*. Halsted Press.
4. Alexander, C. (1977). *A pattern language: towns, buildings, construction*. Oxford university press.
5. Sealey, A. (1979). *Introduction to building climatology*. Commonwealth Association of Architects.
6. Franck, K. A., Lepori, R. B., & Franck, K. A. (2007). *Architecture from the inside out: from the body, the senses, the site, and the community* (p. 56). London: Wiley-Academy.
7. Salvadori, M. G., & Heller, R. (1963). *Structure in architecture* (No. 624). Prentice-Hall.
8. Pandya, Y. (2005). *Concepts of space in traditional Indian architecture*. Mapin Publishing Pvt.
9. Koenigsberger, O. H. (1975). *Manual of tropical housing & building*. Orient Blackswan.
10. Neufert, E., & Neufert, P. (2012). *Architects' data*. John Wiley & Sons.





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11. Chiara, J. D., Panero, J., &Zelnik, M. (1991). *Time-saver standards for interior design and space planning*. McGraw-Hill.
12. Ching, F. D. (2014). *Architecture: Form, space, and order*. John Wiley & Sons.
13. Ching, F. D. (2011). *A visual dictionary of architecture*. John Wiley & Sons.
14. NithyaSrinivasan and KiranVenkatesh, *91 Houses*. InCite
15. Publications by Costford
16. 15a. Laurie Baker. *Brickwork*. Costford
17. 15b. Laurie Baker. *A Manual Of Cost Cuts For Strong Acceptable Housing*. Costford
18. 15c. Laurie Baker. *Houses : How to reduce building costs*. Costford
19. 15d. Laurie Baker. *Mud*. Costford
20. 15e. Laurie Baker. *Rubbish by Baker*. Costford
21. 15f. Laurie Baker. *Earthquake*. Costford
22. 15g. Laurie Baker. *Rural Community buildings*. Costford
23. 15h. Laurie Baker. *Chamoli Earthquake Hand Book*. Costford
24. 15h. Laurie Baker. *Rural House plans*. Costford
25. 15h. Laurie Baker. *Are Slums In-avoidable*. Costford
26. 15h. Laurie Baker. *Alleppey : Venice of the East*. Costford
27. 15h. Laurie Baker. *Rainwater Harvesting*. Costford
28. Arvind Krishnan, (2001) *Climate Responsive architecture*.Tata McGraw Hill
29. It is strongly recommended that students are exposed on the books on works of Master architects

<b>Building Construction and Materials III</b>		
Course Code	2201918 [P] & 2201919 [SV]	
TeachingScheme	ExaminationScheme	
TotalContact Hoursperweek (lectures=2 Studio=3, Total = 5)	Sessional [CIA 25 + EA 25]	50
	Viva [Int 25 + Ext 25]	50
	In semester exam	30
	End Semester exam	70
	TotalMarks	200
	Total Credits	07

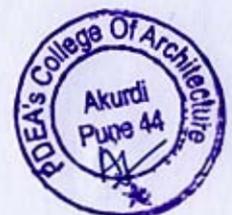
**COURSE OBJECTIVES:**

- To introduce students to soil study, its relevance to foundation.
- To introduce students to different building materials related to RCC construction.
- To understand basic principles of RCC construction w.r.t. smaller spans.

**COURSE CONTENT:**

**UNIT I**

- Introduction to Soil study & Foundation - Study of different types of soils and their bearing capacities; Concept of bulb of pressure and its significance for site investigation, Introduction to methods of site and strata investigation





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- Introduction to different types of shallow foundations and footings and their application in construction

**UNIT II:** Reinforced Cement Concrete

- Cement: Composition of cement, properties, grades of cement & various types of cement and their uses
- Introduction to concrete as a material--Study of its ingredients viz. binding material, fine aggregate, coarse aggregate and water cement ratio, storage of materials on site, understanding good quality material; field & lab tests involved
- Various concrete mixes and their application in construction, and workability of concrete, Various types of cement concrete, the properties and application, additives and admixtures used in concrete
- Concreting: form work for concreting, mixing, transporting and placing, consolidating and curing of concrete.
- Reinforcement ---steel, grades of steel and steel-mesh reinforcement; along with role of reinforcement in RCC.
- Introduction to the concept of Precast Concrete.

**UNIT III** Reinforced Cement Concrete Construction upto plinth

- RCC frame structure for smaller spans generally applicable to residential structures, along with earthquake resistant features, reference of a RCC drawing
- R.C.C structural details up to plinth viz. footings, external and internal plinth beams, with plinth formation, with details for toilet block at plinth level.

**UNIT IV** Reinforced Cement Concrete Construction in superstructure

- Construction of columns, beams for various types of end conditions
- R.C.C floor slab details, viz. one-way, two-way slabs with different end conditions, column-beam-slab junction with details for toilet block, also lintel & weather-shed

**UNIT V** Windows in non-timber materials

- Study of non-timber windows with materials like Steel-framed, aluminum, UPVC and their construction details.

**UNIT VI** Flooring & paving materials

- Different flooring & paving types that are cast-in-situ viz. Mud flooring, Brick flooring, Indian Patent Stone finish, Terrazzo flooring etc. and readymade tiles available in market viz. natural stone tiles / slabs, mosaic cement tiles / blocks, ceramic tiles, vitrified tiles and other modern materials, including the process of providing or laying the flooring and pavement
- Floor finishes of various materials viz. carpet, linoleum, rubber, PVC etc.





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**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:**

Hand drafted drawings on Units 3 and 4 to cover all the aspects of course outline in sufficient detail; Assignments on units 1, 2, 5 and 6 to include sketches, notes, market survey. Site visits for unit 3 and 4 should be conducted and presented in report form.

**OUTCOME:** Students will develop a basic understanding of the relationship of materials to construction systems, techniques and methodology with specific reference to reinforce cement concrete construction; an understanding of the concepts of concrete as a building construction material.

**RECOMMENDED READINGS:**

- Dr. B.C Punmia (2012) Building Construction (10th edition) Laxmi Publications.
- Harold B.Olin, John L. Schmidt (1994) Construction principles, Materials and Methods, John Wiley & Sons, Inc.
- Roy Chudley, Roger Greeno (2016), Construction Technology, 11th Edition Routledge.
- S.C.Rangwala (2013) Engineering materials (Fortieth edition), Charotar Publishing pvt.ltd.
- S.K. Duggal (2016) Building materials (4th edition) - New age international publishers.
- Willam Morgan (1977) The elements of structure: An introduction to the principles of building and structural engineering distributed by Sportshelf; 2nd edition.
- W.B. McKay (2015) Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition).
- National Building Code of India 2016 (Volume 1) and relevant I.S.I. Specifications.

Theory of Structures IV		
Course Code	2201920[P]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=2 Studio=0, Total = 2)	In semester exam	30
	End Semester exam	70
	Total Marks	100
	Total Credits	02

**COURSE OBJECTIVES:**

1. To Understand Fixity and Continuity. To understand the action of Torsion
2. To Understand Loading on Buildings and Different Design Methodologies
3. To Understand Wood as a Material, as a Structural Material and to Design Wooden Beams
4. To Understand Concrete as a Material and To Design small spanned R.C.C Super Structures





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**COURSE OUTLINE:**

**Unit 1: Fixed and Continuous Beams:**

1. Fixed Beam as a statically in-determinate structure. Concept of Negative Bending Moment at supports. Advantages and Disadvantages over Simple Supported Beams. Fixed End Reactions for u.d.l, central and eccentric point load (No derivations). Simple Numerical with full u.d.l and one central point load or one eccentric point Load
2. Theory only of Continuous Beams. Concept of continuity over supports and Typical B.M.D to explain the negative B.M.D over supports using I.S.456 coefficients for 3 or more, more or less equal spans. Enlist methods for computing B.M.D. Advantages and Disadvantages over Simple Supported Beams.
3. Theory only to Introduce Torsion and its applications.

**Unit 2a: Loading on Buildings and Design Methodologies:**

1. Theory only of Listing of all Loads acting on a Structure in single line Definitions. Study of Live Load (as per I.S.875 Part 2), Dead Load, Wind Load and Seismic Load and Snow Load in Detail
2. Theory only of Various Design Methodologies in Brief. Study of **Working Stress Method** in Detail. Understanding the application of Factors of Safety. Advantages and Dis-advantages of W.S.M compared to other methods.

**Unit 2b: Wooden Structures:**

1. Study of Wood as a Material and as a Structural Material, Its Advantages and Dis-advantages. Theory only of Form Factors
2. Numerical on Design of a Primary Wooden Flexural Member (Without Secondary Beams) either as a Simple Supported Beam or a Cantilever, with Simple Loading and depths limited to 300mm. Theory only Framing of Floors using Secondary and Primary Beams

**Unit 3: Concrete Material and I.S.M:**

1. Theory only of use of I.S.456. To Understand Concrete as a material, its Grades, all the individual constituents, their sizing, proportioning, Production of Concrete. Testing of Concrete w.r.t. listing various tests and studying Slump and Compressive Strength Test in Detail. Form work and Stripping as per I.S.456
2. Theory only of Steel Used in R.C.C, Why steel only, its properties, forms and suitability in various R.C.C elements.
3. Theory only of Limit State Method - Philosophy, Various Limit States and their care in R.C.C. Span to Depth Ratios for Various R.C.C Elements. I.S.M Flexural Diagram for **M25 grade and Fe-500 steel**. Derivations of Flexural Formula for Balanced Section. Annotations in a Standard R.C.C Flexural Section like Depth Overall, Depth Effective, Cover and its importance and values as per I.S.456

**Unit 4: Design of R.C.C Slabs for Small Spans (I.S.M for Flexure only):**

1. Concept of One Way - Two-Way Slab, Importance of Distribution Steel and I.S.Provisions.
2. Numerical on Design of One Way Slab and Design of Two Way Slab





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- Numerical on Design of Cantilever Slab resting on a Beam (Beam Torsion in theory only)
- Numerical on Design of Small Slabs like Toilet Sunken Slabs with Inverted Beams, Passage Slabs, Chajjas with Minimum Depth, Minimum Area of Steel with minimum/ maximum standards of Spacing.

**Unit 5: Design of Beams (L.S.M for Flexure and Shear):**

- Numerical on Design of Simple Supported R.C.C Beams including Transfer of Load from Slab to Beam for one way slab only,
- Theory only for Detailing in for a Beam supporting a Cantilever Porch

**Unit 6: Design of Short R.C.C. Columns (L.S.M for Compression):**

- Definition of Short R.C.C. Columns. Various I.S.Provisions for Compression Members.Numerical on Design of Short R.C.C. Columns including Transfer of Load from Beam to Column

**Course Outcome:**At the end of semester student develops

- The understanding of the concepts of Fixity, Continuity and Torque
- The Skills to Design small spanned Wooden Beams
- The Skills to Design Small Spanned R.C.C Structure w.r.t Slabs, Beams and Columns and use it for his B.C.M and W.D. subjects

**Reference Books**

- Design of R.C.C. Structures by H.J.Shah
- Design of R.C.C. Structures by Punmia and A.K.Jain
- Design of Reinforced Concrete Structures by N.Krishnaraju
- R.C.C Theory and Design by Dr. V.L.Shah and Dr.S.R.Karve
- Strength of Materials by A.P.Dongre
- Design and Analysis of Steel Structures by V.N.Vazirani, M.M.Ratwani and Vineet Kumar (For Wooden Structures Unit 2b)

Computer Aided Drawing and Graphics			
Subject Code		2201921[SS]	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=3)	04	Sessional [CIA 25 + EA 25]	50
		In semester exam	
		End Semester exam	
		Total Marks	50
		Total Credits	02

**COURSE OBJECTIVES:**

- To enable the students to communicate an architectural idea / proposal in a legible and effective manner through various architectural presentations and rendering techniques.
- To enable the students to generate simple architectural drawings using **Computer Aided Drawing**
- To enable the students to express their design ideas through various sketching techniques





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**COURSE OUTLINE:**

**Unit 1 Graphics:**

- Introduction to various mediums for architectural presentations in various drawing formats (minimum two mediums)
- It is recommended to work on presentation drawings for any Architectural design project. A set of drawing shall include rendering of Plans, Elevations, Sections with internal and external perspective views.

**Unit 2 Computer Aided Drawing:**

- Introduction to basics of Computer Aided Drawing with basic commands for Drawing, sufficient to construct simple geometrical shapes and 3D objects.
- Advance commands in CAD such as Setting Drawing parameters, Layer controls, Hatching, Model and paper space settings etc.
- Drafting single building from Semester II Design on CAD.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:**

Sessional work should be planned to cover all the units mentioned in course outline with thrust on skill development, accuracy and understanding of the topics.

Unit 1	Demonstration of presentation techniques in various drawing formats (minimum two mediums) to include external perspective and internal perspective of students' own architectural design.	2 assignments [hand drawn]
Unit 2	CAD drawings (Plan, Section/s Elevation/s) with layers, hatch and dimensions from Semester II Design project	2 assignments
	CAD Drawings of orthographic solid objects studied in Semester II	2 assignments

**OUTCOME :**

- Students should be able to comprehend and express nuances of graphic language through various presentation techniques and methods learnt.
- Students should be able to communicate various ideas through architectural graphic representations (drafting and sketching).

**RECOMMENDED READING:**

Burden, E. E. (1971). *Architectural delineation: a photographic approach to presentation*. McGraw-Hill Companies.  
Holmes, J. M. (1954). *Applied perspective: The theory and application of perspective for architects, painters, and draughtsmen*. s.l.:s.n  
Capelle, F. W. (1969). *Professional perspective drawing for architects and engineers*. s.l.:s.n  
Schaarwachter, G. (1967). *Perspective for the Architect*. Thames and Hudson  
Sha Publishing Co. Ltd., *Interior perspective in Architectural Design*. Japan Graphics  
Japan Publishing Co: *Modern Architectural Rendering best 180*  
Japan Publishing Co: *Perspective Drawings of Modern Architecture*  
Japan Publishing Co: *Air brushing in rendering*  
Shankar Mulik: *Perspective and Sciography*

**HISTORY OF ARCHITECTURE AND CULTURE III**





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Course Code	2201922[SS]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week= (lectures=1, Studio=2, Total=3)	Sessional [CIA 25+EA 25] Viva	50 NIL
	In-semester exam	NIL
	End Semester exam	NIL
	Total Marks	50
	Total Credits	02

**Course Objectives:**

1. To understand the development of European architecture through the historical period till 17<sup>th</sup> century AD.
2. To understand the relationship of religion and society with architecture
3. To understand the drivers of change, revival, and evolution of architecture

**Course Outline:**

Unit 1: Greek architecture including Greek temples, domestic architecture, public architecture, city planning, and the Acropolis.

Unit 2: Roman architecture including domestic architecture, public architecture, architecture of the forums, urban planning, structural innovations, forms, materials and techniques of construction.

Unit 3: Early Christian architecture including adaptation of Roman models, early church prototypes, Byzantine architecture

Unit 4: Early medieval manors, monasteries, Romanesque churches

Unit 5: Gothic architecture and developments therein with reference to church plans, structural techniques, and ornamentation, Gothic churches and cathedrals

Unit 6: Renaissance and resultant architecture including works of Andrea Palladio, Michelangelo, Brunelleschi. Works of Sir Christopher Wren and Inigo Jones. Post-Renaissance and Baroque architecture

**Sessional Work:**

- Minimum 25 representative buildings of the periods under study should be represented in Plans, sections and views- of various buildings discussed in the above units.
- One measured drawing and digital documentation of any site/ building / or part/features of the building related to the course content studied. This can be undertaken as group work with identifiable individual contribution.
- One tutorial.





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**Course Specific Outcomes:**

1. An understanding of architecture as a product shaped by various factors like religion and society.
2. An understanding of the formal, structural, and stylistic aspects of architectural development.
3. An understanding of the factors that bring about the processes of change in architectural manifestations and its meanings.

**Recommended Readings:**

Anderson, Christy. Renaissance Architecture. Oxford University Press, 2013.  
Ching, Francis D K, Mark Jarzombek, Vikramaditya Prakash. A Global History of Architecture. John Wiley and Sons, 2011.  
Fletcher, Sir Banister and Dan Cruickshank. Sir Banister Fletcher's A History of Architecture On The Comparative Method. Architectural Press, 1996.  
Frankl, Paul. Gothic Architecture. Yale University Press, 2001.  
Lawrence, A W. Greek Architecture. Yale University Press, 1957.  
Summerson, John. The Classical Language of Architecture. Thames and Hudson, 1980.  
Ward-Perkins, J B. Roman Imperial Architecture. Yale University Press, 1992.

<b>Building Services I</b>		
Course Code	2201923 [P] & 2201924 [SS]	
Teaching Scheme	Examination Scheme	
	Sessional (CIA 25 + EA 25)	50
Total Contact Hours per week (lectures=2 Studio=2, Total =4)	In semester exam	30
	End Semester exam	70
	Total Marks	150
	Total Credit	03

**COURSE OBJECTIVES:**

To make students understand the Plumbing scope in the MEP services integration. To introduce students to following Plumbing Services in low, medium and high rise buildings and inculcate them the integration of services required in architectural design.

This term aims at following services:

- Systems for hot and cold water supply in a building premises
- Systems for Sewage, Sullage, Storm water & and its disposal within or from building premises.

**COURSE OUTLINE:**

Introduction to sourcing, storage, and distribution of hot and cold water in building premises including the study of all necessary components involved and their installation.





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To introduce students to drainage systems viz. collection, conveyance & disposal of sewage, sullage and Effluents from building premises, including methods, components and apparatus involved.

**UNIT I Water supply - I**

1.1 Principles and techniques of supplying water

- Treatment of water
- Concept of Pressure head
- Flow through pipes

1.2 Tapping of water mains on street by means of Ferrule

1.3 Requirement, Storage and distribution of water in building premises

- Sizing of Water tanks
- Static water storage requirements (Fire Tank)
- Collection and Storage systems
- Types of Pumps and applications
- Storage and Distribution in High rise buildings

1.4 Pipes and piping network

- Materials of Pipes
- Joinery
- Installation techniques

1.5 Various control valves and their applications

**UNIT II Water supply - II**

2.1 Types of Taps, Faucets, Fittings and advanced proprietary systems used in baths, kitchen and WC units.

2.2 Provisions, Installations and applications of above.

**UNIT III Hot Water Supply.**

3.1 Systems of hot water supply using conventional and non-conventional energy sources.

- Instantaneous and Centralized
- Direct system and In-Direct system
- Components and Equipment used for the same.

3.2 Piping Insulation, safety and special considerations in piping network.

3.3 Failures, precautions, and safety measures

3.4 Information on other Circulation systems i.e. ring system, up-feed/ down-feed systems, etc. and its application.

**UNIT IV Drainage-I (Vertical Drainage systems)**

4.1 Introduction to various sanitary fittings with necessary knowledge of provisions to be made and their Installations.

- Sanitary fittings like Wash basins, Sinks, Bathing units, Water Closets (Indian and European), Urinals
- Selection criteria and variations in installing and provisions to be made for same.
- Assembling, combining and coordinating them in washing, bathing and WC units

4.2 Study of various Traps, with their working and applications.

- All types of traps and their installation.





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4.3 Pipes and piping network. Techniques of Vertical drainage system in shafts, ducts and external face of **low, medium and high rise buildings.**

- Study of service Shafts, Ducts, Floors
- Single and double stack systems with part and full ventilation.
- Pipe materials, their classification and methods of Installation
- Special fittings used for - Jointing and installations.
- Special fittings for High rise buildings (vent system, Expansion chambers, Pressure relief lines, Bypass Socket etc)
- Anti-Syphonic system of ventilation in drainage system

**UNIT V Drainage-II (Horizontal Drainage system)**

5.1 Techniques of underground drainage systems for waste water, effluents and sewage. Principle and concept of self-cleansing velocity in flow through pipes. Techniques in laying, leveling, planning, aligning, testing, inspection and maintenance

- Invert levels, Gradients, Access point planning
- Types of Chambers, Sumps, Channels, Shafts, service corridors, catch basins
- Ventilation of drainage system.
- Connection to Main Sewer Drain on Road side

5.2 Rainwater drainage system and surface runoff methods

- Storm water drainage systems.
- Invert levels, Gradients
- Sedimentation tanks and catch basins
- Rainwater harvesting methods

**UNIT VI Sewage Treatment and Disposal**

6.1 Disposal within the Premises.

- Septic tanks, its function, types and design (Sizing).
- Maintenance of Septic tank.

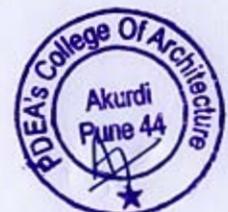
6.2 Waste Water and Sewage treatment plant (Large and Compact)

- Introduction to Waste water treatment plant
- Introduction to sewage treatment plant
- Decentralized waste water treatment

6.3 Bio-Gas plant and its functioning

**SESSIONAL WORK**

1. Illustrative Sketches of Installations of Bathroom accessories and Sanitary ware showing water inlet connection and Drain provisions
  2. Preparing internal Water supply and Drainage layouts for Residential toilets, Kitchen and Public Toilets
  3. Preparing external water supply and drainage layouts for individual Bungalow with septic tank
  4. Preparing external water supply and drainage of a building site having more than one building on the site and connectivity to City Municipal Supply and Drain
- The drawing assignments to be based upon the theory learnt and supported with necessary drawings and calculations (70% weightage).
  - Visits to construction sites and preparing site visit reports, market survey and finding out latest trends and new materials (30% weightage).





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**RECOMMENDED READING**

- NBC 2016 Vol 2, Part 9, Sections (1, 2, 3)
- Handbook on Water supply and Drainage - BIS SP 35 1987
- Building Services Handbook - Fred Hall & Roger Greeno
- Sanitation, Drainage and Water Supply - Mitchell.
- IPC 2018 (International Plumbing Code)
- Plumbing - Design & Practise - S G Deolalikar
- Environment and Services - Peter Burberry.

<b>Climatology</b>		
Course Code	2201925 [SS]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=1 Studio=2, Total = 3)	Sessional (CIA 25 + EA 25)	50
	In semester exam	
	End Semester exam	
	Total Marks	50
	Total Credits	02

**COURSE OBJECTIVES:**

To understand climate as a determinant of architectural design and to enable the students to evolve climate responsive design.

**COURSE OUTLINE**

**Unit I:**

1. Understanding the Earth-Sun relation and context of what shapes climate.
2. Elements of climate and understanding climate at different scales ie, global, regional, macro and micro.

**Unit II:**

1. Global Climate classification
2. Climatic zones of India and its classifications

**Unit III:**

1. Introduction to passive design strategies at various scales ie urban, building and building component scale.

**Unit IV:**

1. Introduction to concept of Thermal Comfort in buildings.

**Unit V:**

1. Introduction to various tools like sun path, bioclimatic chart, site analysis matrix etc that are used to study sun movement, wind and comfort in buildings.





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**SESSIONAL WORK**

- Individual Assignment to apply the various tools like sun path and bioclimatic chart in building element design etc.
  - Group work to study contemporary and vernacular architectural case studies in India with climate responsive architecture and passive design strategies.
  - Minimum two tutorials on all the units.
- .....

DRAFT





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Architectural Design III		
Course Code	2201926 [SV]	
TeachingScheme	ExaminationScheme	
TotalContact Hoursperweek (lectures=1 Studio=6, Total = 7)	Sessional [CIA 100 + EA 100]	200
	Viva [Int 25 + Ext 25]	50
	In semester exam	NIL
	End Semester exam	NIL
	TotalMarks	250
Total Credits	10	

**COURSE OBJECTIVE:**

To understand Architectural Design as a process of generating design brief and taking design decisions based on the following aspects:

- **Socio-Cultural Aspects:** To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.
- **Aesthetics:** To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).
- **Anthropometry & Function:** To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)
- **Climate:** To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.
- **Building Material and Construction Technology:** To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.
- **Building Services:** To understand the spatial and structural implications of basic services involved in building design.
- **Site :** To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.
- **Universal Design:** To understand the concept and principles of universal design.
- **Precedent Studies:** To introduce the students to learn from case, referral, live studies - process of observation, analysis, documentation and deriving inferences.





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**COURSE OUTLINE:**

- **Project 1 (Major Project):** A design project that introduces the concept of site planning with multiple built spaces with an area 1000 sq.m. to 1500 sq.m.. This project should house a variety of core and allied activities requiring built, open, and transition spaces. The project should explicitly address at least four aspects of the design decision variables from those listed in course objectives.
- **Project 2 (Minor Project):** The students must undergo a Settlement study / study tour in a region with which is different in terms of socio geographic characteristics than the place where the institute is located. A short term project or eskee based in the settlement the students have studied.

**SESSIONAL WORK:**

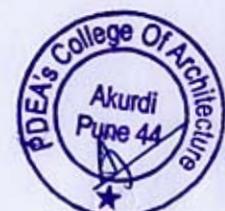
- **Project 1 (Major Project):** The student must represent the identification of core design aspect, formulation of design approach and development, and the final design outcome through architectural drawings along with a narrative and representative details of construction. Along with the drawings, the student must develop the design through a series of models/ 3D visualizations made at various stages.  
Design deliverables -
  - i. Portfolio A - Architectural drawings and model at an appropriate scale
  - ii. Portfolio B - Process drawings / tracings (Recommended)
  - iii. Study models of various stage (Recommended)
- **Project 2 (Minor Project):** The Study Tour documentation covering details from whole to part and must include narratives, sketches, scale drawings, photographs. It may additionally have information presented in any other formats in addition to the ones mentioned above. The short term project or eskeeto be presented in form of drawings to explain the scheme.

**COURSE OUTCOME :**

- At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design where two or more buildings are to be planned on a site and communicate it in form of 2D and 3D representations.

**REFERENCE BOOKS**

2. Lynch, K., Lynch, K. R., & Hack, G. (1984). *Site planning*. MIT press.
3. Rybczynski W. (1984). *How the Other half builds, Volume 1 : Space*. Centre for Minimum Cost Housing, McGill University, Montreal Canada
4. Carlos Barquin (1986). *How the Other half builds, Volume 2 : Plots*. Centre for Minimum Cost Housing, McGill University, Montreal Canada
5. Vikram Bhatt. (1990). *How the Other half build, Volume 3 : Self selection Process*. Centre for Minimum Cost Housing, McGill University, Montreal Canada
6. RABINDRANATH TAGORE (1964) *House form and Culture*. Bhabha Hall of India Private Ltd., New Delhi, India.
7. Correa, C. (2010). *A place in the shade: the new landscape & other essays*. Penguin Books India.





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8. Dave, B., Thakkar, J., Shah, M., & Hãndã, O. (2013). *Prathaa: Kath-khuni Architecture of Himachal Pradesh*. SID Research Cell, School of Interior Design, CEPT University.
9. Kanvinde, A., & Miller, H. J. (1969). *Campus design in India: experience of a developing nation*. Jostens/American Yearbook Company.
10. Adler, D. (2007). *Metric handbook*. Routledge
11. Neufert, E., & Neufert, P. (2012). *Architects' data*. John Wiley & Sons.
12. Gropius, W. (1956). *Scope of total architecture*. London: G. Allen & Unwin.
13. Giedion, S. (1967). *Space, time and architecture: the growth of a new tradition*. Harvard University Press.
14. Gibbered, Fredrick: *Town Design*.
15. David Gosling, Gordon Cullen - *Visions of Urban Design*.
16. Bawa, G., & Robson, D. (2002). *Geoffrey Bawa: the complete works*. Thames & Hudson..
17. Scheer, B. C. (2017). *The evolution of urban form: Typology for planners and architects*. Routledge.
18. It is strongly recommended that students are exposed on the books on works of Master architects

<b>Building Construction and Materials IV</b>		
Course Code	2201927 [P] & 2201928 [SV]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=2 Studio=3, Total = 5)	Sessional [CIA 25 + EA 25]	50
	Viva [Int 25 + Ext 25]	50
	In semester exam	30
	End Semester exam	70
	Total Marks	200
Total Credits	07	

**COURSE OBJECTIVES:**

- To understand basic principles of RCC construction w.r.t. Cantilever slabs, Staircase.
- To introduce students to vertical transportation systems.

**COURSE CONTENT:**

**UNIT I Cement Concrete types**

- Types of special concretes, to include lightweight concrete, ready-mixed concrete, ferro-cement etc; study of its ingredients viz. along with storage of materials on site, understanding good quality material and field & lab tests involved.

**UNIT II Damp- & Water-Proofing**

- Causes of dampness and reasons for damp- & water-proofing. Different methods or treatments of damp- & water-proofing brick on edge, rough Shahabad stone, bitumen sheets,





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plastic sheets, epoxy resins and metallic water proofing materials and other proprietary materials application of the above in construction for terraces, chhajja, toilet slabs etc.

**UNIT III Reinforced Cement Concrete Construction**

- R.C.C structural details for balcony slabs, canopies and Construction of various types of pre-cast and in-situ RCC stairs, along with earthquake resistant features, reference of a RCC drawing

**UNIT IV Vertical Transportation: Lifts, Escalators & Conveyors**

- Study of elevators, escalators, conveyors – types, size, capacity, speed and Mechanical safety methods, provisions in civil work for installation of elevators and escalators

**UNIT V Sliding & Sliding folding doors, Bay window**

- Study of Various types of sliding and folding doors and
- Construction of Bay Window

**UNIT VI Glass, Plastics**

- Glass as a building material, brief history of its use through examples. Manufacture, properties and uses of glass. Various types of glass and its application in building construction
- Plastic as a building material; its properties, types, uses and application of plastics in building industry.
- Different types of adhesives and sealants used in building construction

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:**

- Hand drafted drawings on Units 3 and 5 to cover all the aspects of course outline in sufficient detail;; Assignments on units 1, 2, 4 and 6 include sketches, notes, market survey and site visits.

**OUTCOME:**

- Students will develop an understanding about concrete and its variants and artificial materials such as glass and plastic and their application in construction. Students will be developing knowledge about the vertical transportation systems and their design and construction requirement.

**RECOMMENDED READINGS:**

- Dr. B.C Punmia (2012) Building construction (10th edition) Laxmi Publications,
- Harold B.Olin, John L. Schmit (1994) Construction principles, Materials and Methods, John Wiley & Sons, Inc.
- Roy Chudley, Roger Greeno (2016), Construction Technology, 11th Edition Routledge.
- S.C.Rangwala (2013) Engineering materials (Fortieth edition),Charotar Publishing pvt.ltd.
- S.K. Duggal (2016) Building materials (4th edition) - New age international publishers.





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- Willam Morgan (1977) The elements of structure: An introduction to the principles of building and structural engineering Distributed by Sportsshelf; 2nd edition.
- W.B. Mckay (2015) Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition).
- Central Public works Department CPWD), IBC, CEAI & CCPS. Guidelines on use of Glass in Buildings - Human Safety.
- National Building Code of India 2016 (Volume 1) and relevant I.S.I. Specifications.

<b>Theory of Structures IV</b>		
Course Code	2201929 [P]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=2 Studio=0, Total = 2)	In semester exam	30
	End Semester exam	70
	Total Marks	100
	Total Credits	02

**COURSE OBJECTIVES:**

1. To continue the study of Design of Various Elements of a R.C.C Super Structure.
2. To Study Steel as a Material and get Introduced to various Steel Sections and their appropriate Use
3. To Design Girders and Stanchions in L.S.M as per I.S.800-2007

**Unit 1: Design of R.C.C Slabs Continued:**

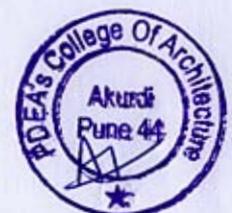
1. Theory only of Different ways of supporting a Balcony
2. Numerical of Design of a Cantilever Slab as an Overhanging Slab

**Unit 2: R.C.C Beams Continued:**

1. Numerical of Design of Cantilever Beams to support Balcony Slabs
2. Concept of Under Reinforced, Balanced and Over Reinforced Sections. Numerical on Analysis of a Given Beam with Strain Diagrams
3. Audit of a Load Bearing Structure for various Structural and Non-Structural Elements

**Unit 3: Design of R.C.C Slabs Continued:**

1. Numerical of Design of Dog Legged Staircase with Beams at Various Positions:
2. Theory only on Support Systems and Reinforcement Detailing in the following Cases
  - Stringer Beams - End Stringer Beams with S.S Slabs Treads.
  - Stringer Beams - Central Stringer Beams with cantilever Slab Treads.
  - Folded Plate Staircases.





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- Open Well Staircases.
- Dog-legged Staircase with Various Beam Positions.
- Numerical of Design of One Way Continuous Slabs - 3 equal spans using I.S.456 Coefficients.

**Unit 4: Introduction to Steel Structures:**

1. Theory only of Elements of Steel Structures - Steel Framed Multiple Floors and Buildings with Trusses.
2. Standard Lay Out of Factory or Trussed Buildings in Plan and Section. Plan to include Store Areas, Loading Platforms. Section to include Cladding.
3. Study of Steel as a Material and Use E250 Steel as Structural Steel. Reading of Steel Tables. Different Structural Steel Sections. Identifying the Sections to be used for Girders, Stanchions, Compound Stanchions, and Struts etc.

**Unit 5: Design of Steel Structures:**

1. Theory only L.S.M or Plastic Design in steel - Various Limit States, Prevention of Dis-Proportionate Collapse, Development of Plastic Hinges, Plastic Moment, Section Modulus Plastic, Plastic Neutral Axis and Shape Factor, Various Partial Factors of Safety, All as per I.S.800 2007
2. Numerical of Design of Small Span Girders for Lofts and Balconies and Large Spans for creating Floors in Industrial Buildings, including Classification of Sections into Plastic, Compact and Semi Compact.
3. Numerical of Design of Stanchions. Theory only of connections to Girders to Stanchions and Stanchions to Base Pads.

**Course Outcome:** At the end of course student develops

1. The understanding of supporting Balconies and Staircases
2. The Understanding of Dividing Larger Rooms in Smaller One Way or Two Way Slab Units
3. The Understanding of Steel as a Material and Various Steel Sections and their use.
4. The understanding of using Steel Girders and Stanchions

**Reference Books**

1. Design of R.C.C. Structures by H.J.Shah
2. Design of R.C.C. Structures by Punmia and A.K.Jain
3. Design of Reinforced Concrete Structures by N.Krishnaraju
4. R.C.C Theory and Design by Dr. V.L.Shah and Dr.S.R.Karve
5. L.S.Design of Steel Structures by S.K.Duggal
6. Design of Steel Structures By Limit State Method as per I.S.800- 2007 By S.S.Bhavikatti





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- **Unit 3. Levelling** Dumpy level, auto and tilting level, principle lines of levelling instrument, axis of telescope, axis of bubble tube, line of collimation, vertical axis recording by collimation plane, method and rise-fall method, B.S./I.S./F.S, change point, level surface, horizontal surface, datum, Reduced Level/ elevation of a point, Bench Marks, GTS, PBM/ABM/TBM. Temporary Adjustments.
- **Unit 4. Plane Table Surveys** Accessories used in plane tabling, methods of locating objects, methods of table orientation, Advantages and disadvantages. Use of Planimeter: Area of zero circle, calculating area of irregular shape figures.
- **Unit 5. Contours** Plotting the contours and profiles, interpolation of contours, contour interval, Characteristics of contours, Profile levelling: Understanding gradient, cut and fill for desired ground level, direct and indirect methods of contouring, block contour surveys
- **Unit 6. Site Analysis and Synthesis** Understanding of Natural and Manmade aspects (such as microclimate, topography, hydrology and vegetation), physical and socio-cultural context of the site. Site Analysis of the above parameters, Site Synthesis and Site Suitability

**SESSIONAL WORK:**

- 1) Calculation of area of field (Chain and cross staff survey)
- 2) Compass Survey.
- 3) Plane Table Survey.
- 4) Block Contour Survey.
- 6) Slope Analysis and Profile Levelling.
- 7) Site Analysis and Synthesis (Associated with Design Project)

**COURSE OUTCOME**

- At the end of the course students would be able to comprehend the site characteristics, reading and interpreting survey drawings, understanding equipment and methods of surveying leveling.

**REFERENCE BOOKS:**

- 1) Basak, N.N, *Surveying and Levelling*, McGraw Hill Education (India) New Delhi, 1994
- 2) Kanetkar, T.P, Kulkarni, S.V, *Surveying and Levelling, Pune Vidyarthi Griha Prakashan, 2014*
- 3) Lynch, K, *Site Planning*, Cambridge: The MIT Press, 1962

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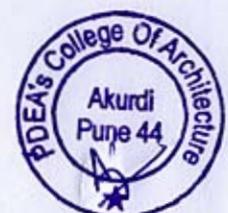
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Architectural Design IV		
Course Code	3201935 [SV]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=1 Studio=6, Total = 7)	Sessional [CIA 100 + EA 100]	200
	Viva [Int 25 + Ext 25]	50
	In semester exam	NIL
	End Semester exam	NIL
	Total Marks	250
Total Credits	10	

**COURSE OBJECTIVE:**

To understand Architectural Design as a process of generating design brief and taking design decisions based on the following aspects:

- **Socio-Cultural Aspects:** To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.
- **Aesthetics:** To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).
- **Anthropometry & Function:** To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)
- **Climate:** To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.
- **Building Material and Construction Technology:** To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.
- **Building Services:** To understand the spatial and structural implications of basic services involved in building design.
- **Site :** To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.
- **Universal Design:** To understand the concept and principles of universal design.
- **Precedent Studies:** To introduce the students to learn from case, referral, live studies - process of observation, analysis, documentation and deriving inferences.





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**COURSE OUTLINE:**

1. Designing of progressively complex spaces and buildings in terms of area, a specific community, typology, function etc, with emphasis on either scale or complexity of the project, or both.
2. Project could be evolved based on the current needs of the city and / or context responding to aspects like heritage and conservation, landscape and ecology, image and identity, etc.
3. Development of building design program from not only client or user's requirements but also in response to context specific factors like socio-economic, socio-cultural, environmental etc.
4. Introduction to develop a design philosophy/narrative as a thought process in design.
5. Analysing activities around the buildings within a campus and understand the same in context to relation of built form and open spaces, elements of landscape, pedestrian and vehicular movement, their segregation, managing sloping sites, contours, etc.
6. Introduction to Campus design with reference to design of campuses developed in the past.
7. In case of multiple buildings (existing and/or proposed) to be accommodated within a campus, analyse and understand their relationship with each other in context to establish continuity of form, construction, materials, design theme, climate, etc. and the same should reflect in the drawings and models.
8. Integrating functions, structure and services in a building with relevant structural system and its resultant effect on visual form / character of building
9. To understand various issues and aspects of sustainability, earthquake resistance, construction, universal accessibility, etc. and study how these could be integrated in the architectural design process.  
To study a location in urban context preferably in a different socio-geographic setting other than the Institute (not mandatory), and document the study done in the form of a report with emphasis on relevant aspects like climate, social structure, culture, architectural typology, construction technology, urban fabric, economy, etc or any other issues which need to be considered for envisaging a design project in totality.

**SESSIONAL WORK**

**Assessment Criteria:** Major project should have 80% weightage and 20% weightage should be given to the minor project.

**A] Major project:**

**Project based on Campus Design** with emphasis on site planning & relationship of built and open spaces, circulation and movement pattern, activity pattern, architectural character, image, identity, philosophy etc.

**Deliverables:**

- i. Portfolio A - Architectural drawings at an appropriate scale preferably 1:200/1:100. And model to appropriate scale.
- ii. Portfolio B - Process drawings / tracings (Recommended)
- iii. Study models of various stage (Recommended)

**B] Minor project:**

**A Time Bound Project** of 12 hours as a means to gauge students' ability to apply the learning of the design studio and in the process acclimatizing them to work under time constraint and meet deadlines. This project of 12 hrs may be based on the parameters of the Design VI paper such as :





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1. The suggested nature of project can be in the form of a social amenity in an urban context. However individual colleges do have freedom to choose a topic.
  2. Size of the site given for the design should be such that it fits imperial size sheet.
  3. Preferred scale of the drawing would be 1:200.
- Deliverables: Architectural drawings in appropriate scale preferably 1:200/1:100. (Model optional).

**COURSE OUTCOME:**

- 1] Build competency and ability to make communicative architectural drawings that are of readable scales, preferably in:  
1:200 (Site level drawings & Model)  
1:100 (Cluster level drawings)  
Appropriate details to be explored at 1:50/20/10 etc.
- 2] Be able to negotiate various scales in drawings and models.
- 3] Be equipped to resolve structural systems of various construction techniques and services.
- 4]

**REFERENCE BOOKS**

1. Lynch, K., Lynch, K. R., & Hack, G. (1984). *Site planning*. MIT press.
2. Rybczynski W. (1984). *How the Other half builds, Volume 1 : Space*. Centre for Minimum Cost Housing, McGill University, Montreal Canada
3. Carlos Barquin (1986). *How the Other half builds, Volume 2 : Plots*. Centre for Minimum Cost Housing, McGill University, Montreal Canada
4. Vikram Bhatt. (1990). *How the Other half build, Volume 3 : Self selection Process*. Centre for Minimum Cost Housing, McGill University, Montreal Canada
5. Rapoport, A. (1969). *House form and Cultua*. Prentice-Hall of India Private Ltd.: New Delhi, India.
6. Correa, C. (2010). *A place in the shade: the new landscape & other essays*. Penguin Books India.
7. Dave, B., Thakkar, J., Shah, M., & Hãrdã, O. (2013). *Prathaa: Kath-khuni Architecture of Himachal Pradesh*. SID Research Cell, School of Interior Design, CEPT University.
8. Kanvinde, A., & Miller, H. J. (1969). *Campus design in India: experience of a developing nation*. Jostens/American Yearbook Company.
9. Adler, D. (2007). *Metric handbook*. Routledge
10. Neufert, E., & Neufert, P. (2012). *Architects' data*. John Wiley & Sons.
11. Gropius, W. (1956). *Scope of total architecture*. London: G. Allen & Unwin.
12. Giedion, S. (1967). *Space, time and architecture: the growth of a new tradition*. Harvard University Press.
13. Gibbered, Fredrick: *Town Design*.
14. David Gosling, Gordon Cullen - *Visions of Urban Design*.
15. Bawa, G., & Robson, D. (2002). *Geoffrey Bawa: the complete works*. Thames & Hudson..
16. Scheer, B. C. (2017). *The evolution of urban form: Typology for planners and architects*. Routledge.
17. It is strongly recommended that students are exposed on the books on works of Master architects





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<b>Building Construction and Materials V</b>		
Course Code	3201936[P]&3201937 [SV]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=2 Studio=3, Total = 5)	Sessional [CIA 25 + EA 25]	50
	Viva [Int 25 + Ext 25]	50
	In semester exam	30
	End Semester exam	70
	Total Marks	200
Total Credits	06	

**COURSE OBJECTIVES:**

- To understand the variations in frame structure with options of different types of slab like flat slab, ribbed and waffle slabs etc. along with pre-stressed RCC technology.
- To understand the construction of single basement along with its waterproofing, provision for access and ventilation details. To understand the construction of different types of retaining walls and the detailing of the same
- To introduce materials and technology of assembling interior elements like partitions, suspended ceiling, furniture units etc.

**COURSE CONTENT:**

**UNIT I Materials for Interior Essentials**

Characteristics, Properties and types of following materials and their application for interior essentials.

- Wood, wood derivatives and other panel materials used for interior application.
- Finishing materials like laminates, veneers, plastics and metal sheets.
- Paints and varnishes
- Hardware required for application to interior and furniture elements

**UNIT II Foundations, Retaining Wall & single basement construction**

- Concept of shallow and deep foundations with respect to basement construction, high rise buildings and different soil conditions
- Study of Single basement construction along with waterproofing details, also study of cast-in-situ and precast Retaining wall and its terminology, proportions and construction details.

**UNIT III Reinforced Cement Concrete construction**

- Reinforced cement concrete floor construction systems like flat plate, flat slab, ribbed slab, waffle slab, band beam and slab, pre-stressed slabs along with earthquake resistant features, reference of a RCC drawing





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**UNIT IV Partitions and Paneling**

- Study of demountable partition construction using proprietary and non-proprietary systems using non-timber materials
- Proprietary and non-proprietary systems of paneling in various materials

**UNIT V Suspended Ceiling**

- Study of Suspended ceiling construction using proprietary and non-proprietary systems using various materials

**UNIT VI Furniture Design and assembly**

- Study of furniture for residential, commercial, office buildings and assembly details using timber and other material along with finishing and upholstery.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:** Hand drafted drawings on Units 4, 5 and 6 to cover all the aspects of course outline in sufficient detail; Assignments on units 1, 2, and 3 including sketches, notes, market survey.

**OUTCOME:** Students will understand of the principle, methods, advantages and disadvantages of concrete floor construction systems and single basement construction. Students will get to know the proprietary construction techniques for partition ceilings with latest available materials.

**RECOMMENDED READINGS:**

- Dr. B.C Punmia (2012) *Building Construction* (10th edition) Laxmi Publications.
- Harold B.Olin, John L. Schmidt (1994) *Construction principles, Materials and Methods*, John Wiley & Sons, Inc.
- Narayanamurty, D.; Mohan, D (1972) *The use of Bamboo and reeds in building construction*, UNO Publications
- Roy Chudley, Roger Greeno (2016), *Construction Technology*, 11th Edition Routledge.
- S.C.Rangwala (2013) *Engineering materials* (Fortieth edition), Charotar Publishing pvt.ltd.
- S.K. Duggal (2016) *Building materials* (4th edition) – New age International publishers.
- Willam Morgan (1977) *The elements of structure: An introduction to the principles of building and structural engineering* Distributed by Sportshef; 2nd edition
- W.B. Mckay (2015) *Building construction Vol. 1* (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition).
- National Building Code of India 2016 (Volume 1) and relevant L.S.I. Specifications.

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<b>Theory of Structures V</b>		
Course Code	3201938 [P]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (Lectures=2 Studio=0, Total = 2)	In semester exam	30
	End Semester exam	70
	Total Marks	100
	Total Credits	02

**COURSE OBJECTIVES:**

- To Understand Doubly Reinforced Beams, T and L Beams and to adopt span to depth ratios for them
- To Understand Design of columns across multiple floors changing grade and percentage of steel and grade of concrete
- To understand how to increase M.R of girders and Load carrying capacity of Stanchions. To study alternative methods of spanning vis-à-vis Portal Frames
- To introduce lateral pressure and understand the proportioning and stability of a gravity retaining wall

**COURSE OUTLINE:**

**Unit 1: Design of Beams Continued:**

- **Doubly Reinforced Beams:** Concept, Need, Applications. Numerical on Design of Doubly Reinforced Beams including calculation of Load and Shear Design
- **T Beams and L Beams:** Theory of Dividing a Large Hall Slab into Smaller one way or Two Way Slab units by using T Beams and L Beams. Concept, Applications and Advantages and Disadvantages. Numerical on Design of T Beams and L Beams including calculation of Load and Shear Design.
- Theory only on Design of **Coffered Slab** and **Flat Slab Construction**. Concept of Large Beam less Spaces, Column Capitals, Header Beams. I.S.456 Provisions for Various R.C.C Elements

**Unit 2: Design of Columns Continued:** Reasons for eccentricity of Load on a Column and I.S. Provision for eccentricity. Numerical on Calculation of load from floor to floor (From Slab to Beam to Column, Also load calculations from a given floor plate to be divided equally over columns). Numerical on Design of columns changing concrete grade and / or steel percentage and / or size of column.

**Unit 3: Foundations:** Theory of Shallow and Deep Foundations. Theory of foundations in Soil of Low S.B.C. Study of Isolated Footing, Combined Footing, Strip Foundations, Raft Foundations, Piles and Pile Caps. Numerical on Design of Isolated Footing including Single Shear and Double Shear, Numerical on design of combined footing in Plan Only.

**Unit 4: Design of Girders and Stanchions Continued:**





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- Theory of Girders with flange plates to increase M.R of Section. **Numerical** on Design and Analysis of Steel Girders with flange plates.
- Extending the above Theory to Study Castellated Beams and Plate Girders. Theory only of Gantry Girders, Functions and Loads acting on each element of a Gantry Girder
- Theory of Stanchions with Flange Plates to increase Load Carrying Capacity. **Numerical** on Design and Analysis of Stanchions with Flange Plates, Finding thickness and size of Connecting Plate to Pad Foundation and Design of Pad.
- Theory only of Portal Frames, Basic Concept - Rigid, Two Hinged and Three Hinged Portal Frames with B.M.D. Advantages and Disadvantages of R.C.C Portal Frame - Detailing of Hinged and Pinned Column to Footing Junction. Advantages and Disadvantages of Steel Portal Frame - Detailing of Hinged and Pinned Column to Footing Junction, Rigidity at Beam to Column Junctions.

**Unit 5: Retaining Walls: Retaining Walls** - Need, Angle of Repose, Rankine's Theory, Different types of Retaining walls and their Applications, Study of Proportioning and Stability of Gravity Retaining Walls, Weep Holes and Effect of Surcharge. **Numerical** on Stability of Gravity Retaining Walls.

**Unit 6: Advanced Structures: Pre-stressed Constructions:** Concept and Process of Pre-tensioning and Post-Tensioning. Advantages and Disadvantages over Conventional R.C.C Construction. Use of High Strength Concrete and Steel in Pre-Stressed Elements. Methods of Pre-stressing - Freyssinet System. Numerical on Extreme Fibre Stresses at Mid Span and End Span.

**Reference Books**

1. Design of R.C.C. Structures by H.J.Shah
2. Design of R.C.C. Structures by Punmia and A.K.Jain
3. Design of Reinforced Concrete Structures by N.Krishnaraju
4. R.C.C Theory and Design by Dr. V.L.Shah and Dr.S.R.Karve

**Course Outcome:** At the end of semester student develops

- The understanding of larger space spanning both in R.C.C and Steel
- The understanding of carrying of vertical loads by R.C.C. Columns and Stanchions
- The understanding Lateral pressure and structural principles for overcoming it.





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LANDSCAPE ARCHITECTURE		
Course Code	3201939 [SS]	
TeachingScheme	ExaminationScheme	
TotalContact Hoursperweek (lectures=1 Studio=3, Total =4)	Sessional [CIA 50 + EA 50]	100
	In semester exam	
	End Semester exam	
	TotalMarks	100
	Total Credits	03

**COURSE OBJECTIVES:**

- To introduce the students to Landscape Architecture and its scope.
- To understand the elements and principles of landscape design and role of landscape elements in design of outdoor environments on the site.
- To understand the Intent and content of designed landscapes.
- To develop understanding of site analysis and site planning and integrated design of open and built spaces.
- Creating awareness about using Landscape design as a tool to address environmental concerns in Architecture.

**COURSE OUTLINE:**

- **Unit 1.** Introduction to Landscape Architecture and its scope ,elements( natural and manmade) and their application in achieving functional, aesthetic, environmental and cultural goals.
- **Unit 2.** Principles and approaches in Landscape Design. Illustrations can be from contemporary as well as historic landscapes for understanding various approaches of design.
- **Unit 3.** Study of Hard landscape (civil work) details with respect to materials and construction techniques..
- **Unit 4.** Study of Softscape (plant material), their characteristics and contribution in terms of creating and imparting character to outdoor spaces.
- **Unit 5** Introduction to basics of Site planning and process of site planning.

**SESSIONAL WORK:**

- Minimum two assignments to expose the students to landscape elements, their application, principles of design and approaches of design.
- Short duration projects such as eskees to allow students to explore the palette of landscape elements in open space creation and design. - Minimum 2.





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TeachingScheme	ExaminationScheme	
TotalContact Hoursperweek (lectures-2 Studio-1, Total -3)	Sessional [CIA 25 + EA 25]	50
	In semester exam	30
	End Semester exam	70
	TotalMarks	150
	Total Credits	03

#### COURSE OBJECTIVES

- To comprehend building services as an integral part of architectural design process
- To obtain knowledge of technical and design aspects of natural ventilation, heating, cooling and HVAC

#### COURSE OUTLINE

- Principles of working of natural ventilation, heating, cooling and HVAC systems, components, materials and provisions in architectural design
- Functional and aesthetical aspects of building services coordination in architectural design

#### TEACHING PLAN

##### Unit I: Natural ventilation

- 1.1 Conditions of human thermal comfort
- 1.2 Factors affecting natural ventilation
- 1.3 Strategies to effect natural ventilation

##### Unit II: Mechanical ventilation

- 2.1 Systems of mechanical ventilation
- 2.2 Components of mechanical ventilation systems
- 2.3 Mechanical ventilation - Schematic design
- 2.4 Introduction to Psychometric charts

##### Unit III: Heating and cooling

- 3.1 Passive heating and cooling techniques
- 3.2 Low energy mechanical cooling techniques

##### Unit IV: Air-conditioning - 1

- 4.1 Principles of air-conditioning systems
- 4.2 Components of air-conditioning systems

##### Unit V: Air-conditioning - 2

- 5.1 Types of air-conditioning systems

##### Unit VI: Air-conditioning - 3

- 6.1 Onsite case study of air-conditioning system
- 6.2 Air-conditioning and ducting layout - Schematic calculations and design for a space / part of a building.

#### SESSIONAL WORK

- Tutorials for Units I, II, III, IV and V (50% marks)  
Onsite case study report for 6.1 (25% marks)  
Schematic air-conditioning calculations and ducting layout for 6.2 (25% marks)





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**RECOMMENDED READING**

- National Building Code of India 2016
- Air Conditioning Principles and Systems – Edward G Pita
- Environmental Science - B J Smith, G M Phillips, M Sweeney
- Building Service Handbook – Fred Hall and Roger Greeno
- Refrigeration and Air Conditioning – Arora Ramesh Chandra
- Fundamentals of Air Conditioning Systems – Billy C Langley
- Basic Refrigeration and Air Conditioning – P N Ananthanarayanan

<b>WORKING DRAWING I</b>		
Course Code	3201943 [SS]	
Teaching Scheme	Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=3, total=4)	Sessional [CIA 50 + EA 50]	100
	In-semester exam	nil
	End Semester exam	nil
	Total Marks	100
	Total Credits	2

**COURSE OBJECTIVES**

- To enable the students to prepare working drawings of an architectural project and imbibe the significance of working drawings from the point of view of execution of the work on site and as important component of tender documents.

**COURSE CONTENT**

- Introduction to the concept of working drawings and their importance.
- Graphical presentation of all the components of a building along with dimensioning and annotations.
- Understand and apply IS Codes and internationally accepted norms / conventions / methods of preparing a working drawing along with tabulation of schedules of materials, finishes and hardware.

**SESSIONAL WORK**

- One working drawing of an architectural design project having load bearing structure with minimum 100 sq. m. carpet area. Manually drafted drawings (minimum 6) sufficiently explaining the building from the execution point of view.
- At least two details related to the design such as doors / windows / railings / kitchen otah etc. to suitable scale. (1 drawing)

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Architectural DesignV		
Course Code	3201944[SV]+3201945[P]	
TeachingScheme	ExaminationScheme	
TotalContact Hoursperweek (lectures=2 Studio=5, Total = 7)	Sessional [CIA 100 + EA 100]	200
	Viva [Int 25 + Ext 25]	50
	In semester exam	NIL
	End Semester exam	100
	TotalMarks	350
Total Credits	10	

**COURSE OBJECTIVE:**

To understand Architectural Design as a process of generating design brief and taking design decisions based on the following aspects:

- **Socio-Cultural Aspects:** To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.
- **Aesthetics:** To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).
- **Anthropometry & Function:** To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)
- **Climate:** To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.
- **Building Material and Construction Technology:** To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.
- **Building Services:** To understand the spatial and structural implications of basic services involved in building design.
- **Site :** To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.
- **Universal Design:** To understand the concept and principles of universal design.
- **Precedent Studies:** To introduce the students to learn from case, referral, live studies - process of observation, analysis, documentation and deriving inferences.





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Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

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**COURSE OUTLINE:**

10. Designing of progressively complex spaces and buildings in terms of area, a specific community, typology, function etc, with emphasis on either scale or complexity of the project, or both.
11. Project could be evolved based on the current needs of the city and / or context responding to aspects like heritage and conservation, landscape and ecology, image and identity, etc.
12. Development of building design program from not only client or user's requirements but also in response to context specific factors like socio-economic, socio-cultural, environmental etc.
13. Introduction to develop a design philosophy/narrative as a thought process in design.
14. Analysing activities around the buildings within a campus and understand the same in context to relation of built form and open spaces, elements of landscape, pedestrian and vehicular movement, their segregation, managing sloping sites, contours, etc.
15. In case of multiple buildings (existing and/or proposed) to be accommodated within a site, analyse and understand their relationship with each other in context to establish continuity of form, construction, materials, design theme, climate, etc. and the same should reflect in the drawings and models.
16. Integrating functions, structure and services in a building with relevant structural system and its resultant effect on visual form / character of building
17. To understand various issues and aspects of sustainability, earthquake resistance, construction, universal accessibility, etc. and study how these could be integrated in the architectural design process.
18. To study a location in urban context preferably in a different socio-geographic setting other than the Institute (not mandatory), and document the study done in the tour in the form of a report with emphasis on relevant aspects like climate, social structure, culture, architectural typology, construction technology, urban fabric, economy, etc or any other issues which need to be considered for envisaging a design project in totality.

**SESSIONAL WORK**

**Assessment Criteria:** Major project should have 80% weightage and 20% weightage should be given to the minor project.

**A] Major project:**

**System oriented project** with emphasis on structural system, vertical and horizontal circulation, services like HVAC, electrical, fire-fighting systems, parking, rules & regulations etc. The project could also be evolved based on the need of the city with socio-economic context, historical context, ecological concerns, etc.

**Deliverables:**

- i. Portfolio A - Architectural drawings at an appropriate scale preferably 1:200/1:100. And model to suitable scale.
- ii. Portfolio B - Process drawings / tracings (Recommended)
- iii. Study models of various stage (Recommended)

**B] Minor project:**





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31. David Gosling, Gordon Cullen - Visions of Urban Design.
32. Bawa, G., & Robson, D. (2002). *Geoffrey Bawa: the complete works*. Thames & Hudson..
33. Scheer, B. C. (2017). *The evolution of urban form: Typology for planners and architects*. Routledge.
34. It is strongly recommended that students are exposed on the books on works of Master architects

<b>Building Construction and Materials VI</b>		
Course Code	3201946 [SV]	
TeachingScheme	ExaminationScheme	
TotalContact Hoursperweek (lectures=2 Studio=3, Total = 5)	Sessional [CIA 50 + EA 50] Viva [Int 25 + Ext 25]	100 50
	In semester exam	NIL
	End Semester exam	NIL
	TotalMarks	150
	Total Credits	06

**COURSE OBJECTIVES:**

- To introduce the design potential of steel as a material in building construction and it's inherent structural benefits.
- To create awareness with the best practices of steel as a construction material.
- To understand the concept of modular co-ordination and industrialized building construction along with precast technology.
- To understand issues and construction of earthquake resistant frame structures.

**COURSE CONTENT:**

**UNIT I Metal and Metal alloys, Sheet roof covering**

- Types of steel used in building construction- Use of Structural and non-structural steel for low and medium span building , their properties and advantages of steel in construction.
- Market forms of structural and non-structural steel.
- Use of lightweight steel for building construction.
- Built-up sections for structural purpose.
- Sheet roof coverings --Characteristics, Properties, market forms of sheet roof covering for medium and long spans and their application.

**UNIT II Fencing and Gates**

- Fencing using different materials like steel, barbed wire, chain-link, weld-mesh and other available materials in market.
- Construction details of fencing and suitable gate with due consideration to design parameters.

Option 1: A Time Bound Project of 12 hours as a means to gauge students' ability to apply the





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**UNIT III Steel Trusses**

- Understanding concepts of trusses, basic connections for trusses along with earthquake resistant features.
- Construction of trusses for low rise medium span buildings.

**UNIT IV Steel structure construction**

- Understanding methods of construction of various components of steel structures; steel frame construction for multi-storey steel building.
- Construction details of assembly with stanchion, beams and metal deck flooring along with earthquake resistant features.
- Moisture and fire protections in steel framed buildings

**UNIT V Modular co-ordination**

- Concept of modular coordination for Industrialized building construction, planning and construction details
- Precast floor and roof construction along with the following systems developed by CBRI:
  - Floor and roof construction using partially precast planks and joist.
  - Floor and roof construction using precast Waffle unit.
  - Introduction to locally available proprietary precast systems

**UNIT VI Earthquake resistant frame structures.**

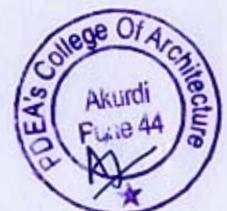
- Overview of earthquake resisting structural systems.
- Application of Moment resisting frames, crossed braced frames and shear wall for Earthquake resistance structures.

**SUBMISSION REQUIREMENT FOR SESSIONAL WORK:** Hand drawn drawings on Units 3,4 and 5 to cover all the aspects of course outline in sufficient detail;; Assignments on units 1, 2,6 include sketches, notes, market survey and case-studies.

**OUTCOME:** Students will develop an understanding of possibilities of steel as an important building construction material. Understanding of properties of ferrous and non ferrous metals as materials for buildings will able students to use Steel innovatively in building projects.

**RECOMMENDED READINGS:**

- Central Public Work Department, Indian Building Congress. Handbook on Seismic Retrofit of Buildings. Narosa Publishing House. 2008
- Andrew Charleson. Seismic Design for Architects: Outwitting the Quake. Elsevier Ltd 2008
- Terri Meyer Boake. Understanding Steel Design: An Architectural Design Manual. Birkhauser Basel 2012.
- Stephen Emmitt. Barry's Advanced construction of buildings. Wiley, 2006





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- Mackay J.K. Building Construction vol.-1-4. Longman Scientific & Technical, 1988.
- IS 7921 : Recommendations for modular coordination in building industry Horizontal coordination
- IS 7922 : Recommendations for modular coordination in building industry Vertical coordination
- M. M. Mistry. Modular coordination & prefabrication, Principles of Modular Coordination in building.
- BMTPC. Standards & Specifications for Cost-Effective Innovative Building Materials and Techniques. BMTPC 1996

Theory of Structures VI		
Course Code	3201947 [P]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=2 Studio=0, Total = 2)	In semester exam	30
	End Semester exam	70
	Total Marks	100
	Total Credits	02

### COURSE OBJECTIVES:

- To the study of effect of Lateral Pressure of Soil and Water for increasing heights.
- To Develop in Students the Feel for Structural Principles and their Relates to Building Design
- To Develop in Students the Concept that "Every Structure is a System that Forms the Space" and the fact that Architecture and Structure cannot be conceived independently.
- To Develop in Students the fact that Structural Engineering is a Specialist Discipline and that the Architect has to appreciate the consultant's concern and make an informed choice about the most appropriate Structural System for his Building with Reasonable Understanding of its Economic and Operational Implications.
- To Develop in Students the Mathematical logic that would enable him to Design the Structural System for Ground +2 Storey R.C.C Structure and a medium span Factory Building in steel.
- To in-still in the Students a Confidence that they could develop and explore a Structural System of their own design and execute the same.

### Unit 1: Lateral Pressure and Retaining Walls Continued:





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- Theory of **Cantilever Retaining walls**, their Proportioning, Stability, Reinforcement Detailing of Stem and Base, Shear Key. **Numerical** on Stability of Cantilever Retaining Wall, Design of Stem Reinforcement.
- Theory of **Counter Fort Retaining Wall**, Its Parts, Structural Action on Each Part and Reinforcement Detailing
- **Water Tanks in R.C.C:** Joints in Water Tanks, Limit State of Cracking, Minimum Percentage of Steel and Other Standards.
  - R. C.C. Circular Water Tank with Flexible and Rigid Joint between Wall and Base -Concept of Hoop Tension – Reinforcement Detailing.
  - R. C.C. Square and Rectangular Water Tanks -Reinforcement Detailing.
  - R.C.C. Under-Ground Water Tanks - Pressure Conditions -Reinforcement Detailing.
  - Over Head Water Tank - An Intze Tank - Parts and General Detailing

**Unit 2: Design of R.C.C Framed Structure:**

- **Total review** of design of ground + two storied RCC building. Defining Structural system, different loads, Design sequence, transfer of load, Actual design procedure. Framing of a Given Plan as per constraints on Beam and Slab Depths
- **Understanding Structural Schedules and drawings**, Sketching Based on Given Schedule.

**Unit 3: Design of Steel Structures Continued:**

- **Compound Stanchions:**Theory of Compound Stanchions. **Numerical** on Design and Analysis of Compound Stanchion. Lateral System Design of Lacing and Battening and other Lateral Systems in Theory Only
- **Trusses:** Truss types, **Numerical** on Design of Purlins and Transfer of Load to Trusses. **Numerical** on Design of Compression and Tension Members with Design of Bolted and Welded Joints. Connections in Structural Steel.

**Unit 4: Design of Steel Framed Factory Buildings:**

- Total review of design of medium span factory building in steel. Structural systems, different loads, Design sequence, transfer of load, actual design, procedure, Understanding structural drawings.

**Unit 5: Understanding Wind Load:**

- Factors Affecting Wind Load. Analysis of Win Load for Ground + 9 Storeyed Building.
- Resulting Stresses in Foundations due to Effect of Wind load on Tall Structures
- Effect of Wind Load on Roof.

**Unit 6: Advanced Structures:**

- **Long span structural systems** in Steel and R.C.C like Domes. Vaults, Folded Plates, and Tensile Structures using Fabric. Advantages and disadvantages of different systems.





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- **High Rise Buildings Structural System** like Rigid frame, Moment Resisting Frames, Braced Frames, Shear Walls, Out Rigger Systems, Tube Systems, Tube in Tube, Dia-Grid, Exo- Skeleton. Space Trusses etc. Appropriate System as per height.

**Course Outcome:** At the end of semester student develops

1. The understanding Effects of Lateral Pressure of Soil and Water
2. The sense to frame R.C.C and Steel Buildings
3. The Understanding of different Structural Systems for Larger Spans and Tall Buildings with an understanding of Wind Load

**Reference Books**

1. Design of R.C.C. Structures by H.J.Shah
2. Design of R.C.C. Structures by Punmia and A.K.Jain
3. Design of Reinforced Concrete Structures by N.Krishnaraju
4. R.C.C Theory and Design by Dr. V.L.Shah and Dr.S.R.Karve
5. L.S.Design of Steel Structures by S.K.Duggal
6. Design of Steel Structures By Limit State Method as per I.S.800- 2007 By S.S.Bhavikatti

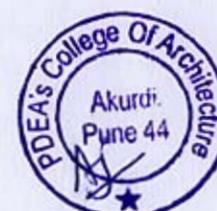
RESEARCH IN ARCHITECTURE I		
Course Code	3201948 [SS]	
Teaching Scheme	Examination Scheme	
Total Contact Hours per week (lectures=1 Studio=2, Total =3)	Sessional [CIA 25 + EA 25]	50
	In semester exam	NIL
	End Semester exam	NIL
	Total Marks	50
	Total Credits	02

**COURSE OBJECTIVES:**

- To introduce students to Research in Architecture and its value in design
- To enable the students to prepare a research proposal.

**COURSE OUTLINE:**

- Unit I -- Introduction to the meaning and need of research in architecture. Introduction to various concepts such as types of variables, measurement of variables, sample selection, ethics in research.
- Unit II - Process of research - Methodology





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- Unit III - Literature study
- Unit IV - Methods of research in architecture. Use of surveys, observations, experiments, secondary sources.

**SESSIONAL WORK:**

- Tutorial based on all of the above units
- Literature Review of at least 5 papers related to the topic of their choice.
- Research proposal giving details of aims, objectives, scope, limitations, methods, samples selected on the topic approved by the head of the institution.

**NOTE:**

- The guide must have minimum 5 years of teaching experience. Preferably a guide should not guide more than 8 students.
- It is desirable that the research proposal is presented in front of experts.
- It is beneficial to the students if the topic is related to the architectural design project of semester X.

**REFERENCE BOOKS**

- Babbie, E. *The Practice of Social Research*. third edition. Belmont: Wadsworth Publishing Co., 1983. book.
- Cresswell, J.W. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks: Sage, 1994. Book.
- De Vaus, D.A. *Surveys in Social Research*. Jaipur: Rawat Publications, 2003. Book.
- Dey, I. *Qualitative Data Analysis: A User Friendly Guide for Social Scientists*. London: Routledge, 1993. Book.
- Groat, L. & Wang, D. *Architectural Research Methods*. New York: John Wiley and Sons Inc., 2002. Book.
- Kothari, C.R. *Research Methodology: Methods and Techniques*. New Delhi: WishwaPrakashan, 2005. Book.
- Michelson, William. *Behavioural Methods in Environmental Design*. Stroudsburg, Pennsylvania: Dowden, Hutchinson and Ross, Inc., 1982.
- Nachmias, C.F. & Nachmias, D. *Research Methods in Social Sciences*. Great Britain: St. Martin's Press Inc., 1996. Book.
- Patton, M.Q. *Qualitative Evaluation Methods*. Newbury Park: Sage Publications, 1980. Book.
- Sanoff, H. *Methods of Architectural Programming*. Vol. 29. Dowden Hutchinson and Ross, Inc., 1977. document.





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—, *Visual Research Methods in Design*. USA: Van Nostrand Reinhold, 1991.

<b>ELECTIVE II</b>			
Course Code	3201949 [SS]		
Teaching Scheme	Examination Scheme		
Total Contact Hours per week= (lectures=1, Studio=3, Total=4)	Sessional [CIA 50+EA 50]	100	
	In-semester exam	NIL	
	End Semester exam	NIL	
	Total Marks	100	
	Total Credits	03	

**Course Objectives:**

To allow the students to study a subject of their interest and develop theoretical as well as practical understanding of the same. As mentioned in the course structure of 2019 pattern syllabus [Appendix B] a student may adhere to a particular stream of elective of his/her choice and nurture his/her area of interest and develop his/her expertise. However colleges have to ensure that the student does not repeat a particular elective.

**Course Outline:**

Colleges have to develop course outline for the elective they wish to offer such that theoretical as well practical aspects are covered linking them to the field of architecture. Apart from lectures delivered by the subject resource persons, self study in form of hands on workshop / field work / review of literature / seminar or any suitable format of learning may be adopted.

**Sessional Work:**

The submission to be devised by the colleges in form suitable to the elective offered. The format could be [but not limited to] as following.

- Field study reports
- Mapping / documentation / photographic / videographic documentation
- Measured drawings
- Computer based assignments
- Tutorials

**Course Specific Outcomes:**

<b>Building Services IV</b>	
Course Code	3201950[P] & 3201951 [SS]
Teaching Scheme	Examination Scheme





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TotalContact Hoursperweek (lectures=2 Studio=1, Total =3)	Sessional [CIA 25 + EA 25]	50
	In semester exam	30
	End Semester exam	70
	TotalMarks	150
	Total Credits	03

**COURSE OBJECTIVES**

- To comprehend building services as an integral part of architectural design process
- To obtain knowledge of fire safety provisions and aspects of good acoustics in architectural design

**COURSE OUTLINE**

- Properties of sound, strategies for reducing noise, aspects of treatments for good acoustical conditions
- Provisions for fire prevention, life safety and fire protection as per NBC 2016-Part 4

**TEACHING PLAN**

**Unit I: Acoustics- 1**

- 1.4 Generation and propagation of sound, properties of sound, human hearing ranges
- 1.5 Planning and design to control outdoor noise and indoor noise
- 1.6 Materials and construction for acoustical treatment, NRC and STC ratings

**Unit II: Acoustics -2**

- 2.1 Parameters for good acoustical conditions
- 2.2 Air and structure borne noise control

**Unit III: Acoustics - 3**

- 2.5 Reverberation time calculation and recommendation for acoustical treatment
- 2.6 Sound amplification systems

**Unit IV: Fire prevention**

- 4.1 The fire triangle, causes, impacts, basic terminology
- 4.2 Occupancy based classification of buildings, fire zones, construction types, fire rating requirements
- 4.3 Provisions for emergency power, escape lighting and exit signage, fire/smoke dampers
- 4.4 Provisions related to air conditioning, glazing, interior finishes, fire command centre

**Unit V: Life safety**

- 5.1 Exit requirements, egress components
- 5.2 Compartmentalisation, provision for basements, gas supply, fire detection and alarm

**Unit VI: Fire protection**

- 6.1 Fire extinguishers/ fixed firefighting installations, static water storage tanks, pump house, automatic sprinkler installations, automatic high velocity and medium velocity water spray systems, fixed foam installation, gas-based suppression system, automatic water mist systems





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**SESSIONAL WORK**

- Tutorials for Units I to VI (50% marks)
- Reverberation time calculations and recommendations for acoustical treatment(25% marks)
- Design for provisions for fire prevention, life safety and fire protection (25% marks)

**RECOMMENDED READING**

- National Building Code of India 2016
- Architectural Acoustics - M. David Egan
- Architectural Acoustics: Principles and Design - Madan Mehta, James Allison Johnson, Jorge Rocafort
- Auditorium Acoustics and Architectural Design - Michael Barron
- Building Services Handbook- Fred Hall, Roger Greeno.

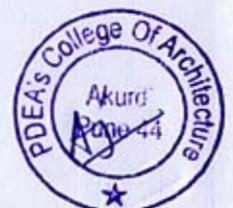
<b>WORKING DRAWING II</b>		
Course Code	3201952 [SS]	
Teaching Scheme	Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=3, total=4)	Sessional [CIA 50 + EA 50]	100
	In-semester exam	nil
	End Semester exam	nil
	Total Marks	100
	Total Credits	2

**COURSE OBJECTIVES:**

- To introduce idea of Design Development and detailing and its relevance in converting 'concept design' to working drawing and hence the realization of design on site.
- To imbibe further the importance of working drawings as an essential tool for effective site execution and execution of a building contract.
- To expose to the standard methods, conventions, drawing annotations including International standards, IS codes, its application in working drawing set with material and component and schedules.

**COURSE OUTLINE:**

- Lecture demonstration/s to elaborate on standard practices, conventions, graphic annotations, sequencing and cross reference systems of a good working drawing set.





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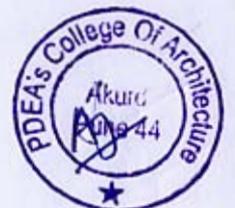
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- Design development and detailing of own **design** to resolve the design idea to one which can be executed/ constructed, exposing students to construction parameters, limitation and sequencing.
- Generating a working drawing set for the **chosen design/ building** with framed/composite construction including schedules of material, finishes, components and accessories
- Developing and drafting details of Civil work and furniture/ interior design including schedule of finishes

**SESSIONAL WORK:**

- Preparing a manually drafted/ CAD generated working drawing set of 'own design project' with carpet area not less than 250 Sq. M. and at least Ground plus one storied building having framed/composite construction. The set to also include at least two civil details out of following.
  - i. Façade / skin of the building with fenestration and weather protection.
  - ii. Stairway/ staircase
  - iii. Public Washroom
- Interior layout of any one space of about 25sq.m. Area showing furniture layout, fittings, lighting, partitions, reflected ceiling plan to a suitably large scale. And any one construction detail related interior finishes/ custom made furniture of following.
  - i. Suspended ceiling
  - ii. Paneling or partitions
- A rough folio comprising of design development drawings, sketches supporting the final working drawing set shall be retained by the candidate.

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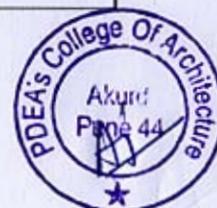
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Equivalence of Subjects for 2015 Pattern and 2019 Pattern			
1. Both 2015 and 2019 Syllabi of B. Arch are semester patterns			
2. Some subjects are newly introduced in 2019 pattern ,hence the candidate has to take the courses in these subjects			
* indicates new subjects introduced in 2019 syllabus			
FIRST YEAR SEMESTER I and II			
2015 Pattern	Subject	2019 Pattern	Subject
1201501	Design I (SV)	1201901	Basic Design (SS)
1201502	Building Technology & Materials I (SV)	1201903	Building Construction & Materials I (SV)
1201503	Building Technology & Materials I (PP)	1201902	Building Construction & Materials I (PP)
1201504	Theory of Structures I (PP)	1201904	Theory of Structures I (PP)
1201505	Arch Drawing & Graphics I (SS)	1201905	Architectural Graphics and Drawing I (SS)
1201506	Humanities (SS)	1201906	History of Arch. & Culture I (SS)
1201507	Introduction to Architecture (SS)	1201915	Fundamentals of Architecture (SS)
1201508	Workshop I (SS)	1201908	Workshop I (SS)
1201509	Design II (SV)	1201909	Architectural Design I (SV)
1201510	Building Technology & Materials II (SV)	1201911	Building Construction & Materials II (SV)
1201511	Building Technology & Materials II (PP)	1201910	Building Construction & Materials II (PP)
1201512	Theory of Structures II (PP)	1201912	Theory of Structures II (PP)
1201513	Arch Drawing & Graphics II (SS)	1201913	Arch Drawing & Graphics II (SS)
1201514	History of Architecture I (SS)	1201914	History of Arch. & Culture II (SS)
1201515	Climatology (SS)		to appear
1201516	Workshop II (SS)	1201916	Workshop II (SS)
		1201907	Communication Skills**

SECOND YEAR SEMESTER III and IV			
2015 Pattern	Subject	2019 Pattern	Subject
2201517	Design III (SV)	2201917	Architectural Design II (SV)
2201518	Building Technology & Materials III(SV)	2201919	Building Construction & Materials III (SV)
2201519	Building Technology & Materials III(PP)	2201918	Building Construction & Materials III (PP)
2201520	Theory of Structures III	2201920	Theory of Structures III
2201521	Building Services I (SS)	2201924	Building Services I (SS)
2201522	Building Services I (PP)	2201923	Building Services I (PP)
2201523	History of Architecture II (SS)	2201922	History of Arch & Culture III (SS)
2201524	Arch Drawing & Graphics III (SS)	2201921	Computers Aided Drawing and Graphics
2201525	Surveying & Levelling (SS)		to appear
		2201925	Climatology (SS) **
2201526	Design IV (SV)	2201926	Architectural Design III(SV)
2201527	Building Technology & Materials IV(SV)	2201928	Building Construction & Materials IV (SV)
2201528	Building Technology & Materials IV (PP)	2201927	Building Construction & Materials IV (PP)
2201529	Theory of Structures IV (PP)	2201929	Theory of Structures IV (PP)
2201530	Building Services II (SS)	2201933	Building Services II (SS)
2201531	Building Services II (PP)	2201932	Building Services II (PP)
2201532	History of Architecture III (SS)	2201931	History of Arch. & Culture IV (SS)
2201533	Technical Communication(SS)		to appear
2201534	Working Drawing I (SS)		to appear
		2201900	Environmental Science**
		2201934	Site Survey and Analysis**

THIRD YEAR SEMESTER V and VI			
2015 Pattern	Subject	2019 Pattern	Subject
3201535	Design V (SV)	3201935	Architectural Design IV (SS)
3201536	Building Technology & Materials V(SV)	3201937	Building Construction & Materials V (SV)
3201537	Building Technology & Materials V (PP)	3201936	Building Construction & Materials V (PP)
3201538	Theory of Structures V	3201938	Theory of Structures V (PP)
3201539	Landscape Architecture I	3201939	Landscape Architecture (SS)
3201540	Building Services III (SS)	3201942	Building Services III (SS)
3201541	Building Services III (PP)	3201941	Building Services III (PP)
3201542	History of Architecture IV (SS)	3201940	Contemporary Architecture Elective I





# Pune District Education Association's COLLEGE OF ARCHITECTURE

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

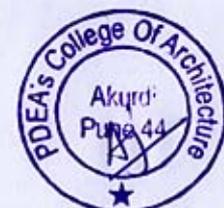
3201543	Working Drawing II (SS)	3201952	Working Drawing II (SS)
		3201943	Working Drawing I**
3201544	Design VI (SV)	3201944	Architectural Design V (SV)
3201545	Design VI (PP)	3201945	Architectural Design V (PP)
3201546	Building Technology & Materials VI(SV)	3201946	Building Construction & Materials VI (SV)
3201547	Building Technology & Materials VI(PP)		to appear
3201548	Theory of Structures VI (SS)	3201947	Theory of Structures VI (SS)
3201549	Landscape Architecture II (SS)		to appear
3201550	Building Services IV(SS)	3201951	Building Services IV(SS)
3201551	Building Services IV (PP)	3201950	Building Services IV(PP)
3201552	Contemporary Arch Seminar (SS)		to appear
3201553	Elective I (SS)	3201949	Elective II
		3201948	Research in Architecture I**

FOURTH YEAR SEMESTER VII and VIII			
2015 Pattern		2019 Pattern	
Subject Code	Subject	Subject Code	Subject
4201554	Design VII (SV)	4201953	Architectural Design VI (SV)
4201555	Advanced Building Technology and Services I (SV)	4201954	Advanced Building Construction and Services I (SV)
4201556	Professional Practice I (PP)	4201959	Professional Practice (PP)
4201557	Urban Studies I (SS)	4201955	Urban Studies I (SS)
4201558	Research in Architecture I (SS)		to appear
4201559	Quantity Surveying and Estimation I (PP)	4201958	Quantity Surveying & Specification Writing I (PP)
4201560	Specification Writing I (PP)	4201965	Quantity Surveying & Specification Writing II(PP)
4201561	Elective II (SS)	4201957	Elective III
		4201956	Research in Architecture II**
4201562	Design VIII (SV)	4201960	Architectural Design VII (SV)
4201563	Advanced Building Technology and Services II (SV)	4201961	Advanced Building Construction and Services II (SV)
4201564	Professional Practice II (PP)		to appear
4201565	Urban Studies II (SS)	4201962	Urban Studies II (SS)
4201566	Research in Architecture II (SS)	4201966	Project Management**
4201567	Quantity Surveying and Estimation II (PP)		to appear
4201568	Specification Writing II (PP)		to appear
4201569	Elective III (SS)	4201963	Elective IV
		4201964	Elective V**

FIFTH YEAR SEMESTER IX			
2015 Pattern		2019 Pattern	
Subject Code	Subject	Subject Code	Subject
5201570	Practical Training (SV)	5201967	Practical Training (SV)

FIFTH YEAR SEMESTER X			
2015 Pattern		2019 Pattern	
Subject Code	Subject	Subject Code	Subject
5201571	Architectural Design Project (SV)	5201968	Architectural Design Project (SV)
5201572	Elective IV (SS)	5201970	ElectiveVI (SS)
		5201969	Entrepreunership Development**





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सावित्रीबाई फुले पुणे विद्यापीठ

दुरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : www.unipune.ac.in  
ई-मेल : boards@pun.unipune.ac.in  
दिनांक : ०४/०२/२०१५

संदर्भ क्र. : सी.बी./इंजि /१९६३

परिपत्रक क्र. १५/२०१५

विषय:- अभियांत्रिकी विद्याशाखेअंतर्गत B. Arch. and M. Arch. (Credit System) च्या नवीन अभ्यासक्रमांस व आराखडयास शैक्षणिक वर्ष २०१५-१६ पासून मान्यता देण्याबाबत.....

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, अभियांत्रिकी विद्याशाखेअंतर्गत B. Arch. and M. Arch. (Credit System) च्या खालील नवीन अभ्यासक्रमांस व आराखडयास शैक्षणिक वर्ष २०१५-१६ पासून मान्यता देण्यात येत आहे.

1. B. Arch. (2015 Course)
  - First and Second Year B. Arch.
2. M. Arch. (2015 Course):
  - M. Arch. (Landscape); M. Arch. (Environmental Architecture); M. Arch. (Digital Architecture); M. Arch. (Architectural Conservation) and M. Arch. (Computer Applications)

पुणे विद्यापीठाच्या सर्व संलग्न वास्तुशास्त्र महाविद्यालयांने मा. प्राचार्य यांना बिनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

  
संचालकाकरिता  
(म.वि.वि.मं)

म.प.प.





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ज्ञत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:-

१. मा. अधिष्ठाता, अभियांत्रिकी विद्याशाखा
२. मा. संचालक, बी.सी.यु.डी.
३. मा. प्राचार्य, सर्व वास्तुशास्त्र महाविद्यालये
४. मा. संचालक, सर्व मान्यताप्राप्त संस्था
५. मा. परीक्षा नियंत्रक, पुणे विद्यापीठ
६. मा. संचालक, स्पर्धा परीक्षा केंद्र
७. मा. उपकुलसचिव, परीक्षा (१,२)
८. मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
९. मा. उपकुलसचिव, प्रवेश
१०. मा. उपकुलसचिव, विकास
११. मा. उपकुलसचिव, पात्रता
१२. सहाय्यक कुलसचिव (परीक्षा समन्वय)
१३. सहाय्यक कुलसचिव (परीक्षा-एस.अॅण्ड टी. विभाग)
१४. सहाय्यक कुलसचिव (गोपनीय कक्ष)
१५. सहाय्यक कुलसचिव (परदेशी विद्यार्थी केंद्र)
१६. सहाय्यक कुलसचिव (सभा दफ्तर)
१७. कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. कक्षाधिकारी (पात्रता विभाग)
२१. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब ४० पीए/४० /१४, दि. ३० डिसेंबर, २०१४





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सावित्रीबाई फुले पुणे विद्यापीठ  
(पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : www.unipune.ac.in  
ई-मेल : boards@pun.unipune.ac.in  
दिनांक : 10/01/2017

संदर्भ क्र. : सी.बी./इंजि. 134

परिपत्रक क्रमांक. 90 / 2017

विषय :- तृतीय, चतुर्थ व पंचम वर्ष बी.आर्च २०१५ पॅटर्न अभ्यासक्रम  
शैक्षणिक वर्ष २०१७-१८ पासून लागू करण्यासंदर्भात.

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या  
परिपत्रकाद्वारे कळविण्यात येते की, तृतीय, चतुर्थ व पंचम वर्ष बी.आर्च २०१५  
पॅटर्न अभ्यासक्रमास शैक्षणिक वर्ष २०१७-१८ पासून मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या www.unipune.ac.in  
या वेबसाईटवर Syllabi- Engineering या शीर्षकाखाली उपलब्ध आहे.

सावित्रीबाई फुले पुणे विद्यापीठाच्या सर्व संलग्न वास्तुशास्त्र महाविद्यालयांचे  
मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व  
विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

संचालकांकरिता  
(म.वि.वि.मं)

श. पा. द.





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प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:—

१. मा. समन्वयक, अभियांत्रिकी विद्याशाखा
२. मा. संचालक, म.वि.वि.गं
३. मा. प्राचार्य, सर्व वास्तुशास्त्र महाविद्यालये
४. मा. संचालक, सर्व मान्यताप्राप्त संस्था
५. मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
६. मा. संचालक, स्पर्धा परीक्षा केंद्र
७. मा. उपकुलसचिव, परीक्षा (१,२)
८. मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
९. मा. उपकुलसचिव, नियोजन व विकास
१०. मा. उपकुलसचिव, (पात्रता विभाग)
११. मा. उपकुलसचिव (सभा दफ्तर)
१२. मा. संचालक (परदेशी विद्यार्थी केंद्र)
१३. सहायक कुलसचिव, शैक्षणिक प्रवेश विभाग
१४. सहायक कुलसचिव (गोपनीय कक्ष)
१५. सहायक कुलसचिव (परीक्षा—एस.अॅण्ड टी. विभाग)
१६. सहायक कुलसचिव (परीक्षा समन्वय)
१७. वरिष्ठ कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब ०३ पीए/०३/२०१६, दि. २९ नोव्हेंबर, २०१६





Pune District Education Association's  
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## SAVITRIBAI PHULE PUNE UNIVERSITY

### COURSE STRUCTURE

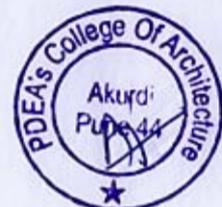
### FIVE YEAR DEGREE COURSE IN ARCHITECTURE

[B.ARCH.]

TO BE IMPLEMENTED FROM 2015-16

BOARD OF STUDIES IN ARCHITECTURE

FACULTY OF ENGINEERING





Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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## SAVITRIBAI PHULE PUNE UNIVERSITY

### BACHELOR OF ARCHITECTURE

### COURSE STRUCTURE AND RULES

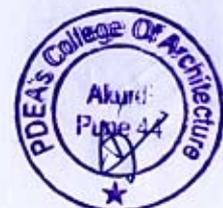
#### Preamble

The New Syllabus of the B.Arch course hence forth to be referred as the 2015 Pattern, to be implemented from the year 2015-16, is designed to address and update the knowledge about the field. The course focuses to develop the design ability, impart knowledge about various aspects of architecture and develop various skill sets. Considering this certain subjects are reduced in scope while certain new subjects are added.

As per the University guidelines, the course is structured upon the Credit System Based Assessment. In semester and End semester assessment is introduced for theory paper subjects and at end of the semester sessional assessment for studio based subjects.

Following are the salient features of the course content.

- To bridge the gap between learning Basic Design and its application in Architectural Design, a comprehensive subject titled as "Design" is introduced where in there is simultaneous and synchronized learning of basic design and architectural design fundamentals in the first two years of the course.
- "Introduction to Architecture" a one semester (first semester) course would give an overview of the discipline of architecture as well as the structure of five-year course.
- "Humanities" as a separate subject is introduced to enable the understanding of human culture, society and civilisations and prepare a base for learning the history of architecture in the later semesters. The subject should be taught from the perspective of architecture.
- "Urban Studio" in the fourth year (both the semesters) is a comprehensive subject integrating urban planning, urban design, architectural conservation & byelaws. An introduction to building economics is also included in the course content.
- "Research in Architecture I" would introduce the students to the research methodology and research methods while in "Research in Architecture II" the students would undertake a research project to employ the knowledge they gained in the first leg of this subject.
- "Electives" are introduced from sixth semester onwards. The subjects / topics of the elective are thematically grouped: Sixth semester Elective I (Interior design elective), Seventh semester Elective II (Design and Technology





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**For admission to Stage II of the course:**

1. Candidates admitted to the course shall complete the first stage within five years of admission to the course.
2. The aggregate marks of F.Y, S.Y., and T.Y. at the end of Stage I should not be less than 50%.

**Rule no. 5 : Rules of Passing**

- 5.1 To pass sessional and /or oral, the student has to earn minimum 45% marks in each head.
- 5.2 To pass the theory subject head the student has to earn minimum of 45% marks in the End semester exam and minimum 45% average marks (In semester + End semester).
- 5.3 The failing student can repeat the end semester exam to pass the head in any semester and the In semester exam marks will be retained as it is. Or the failing student can repeat for end semester exam as well as in semester exam for the head of even semester in the even semester only and for the head of odd semester in the odd semester only for the theory head.
- 5.4 To earn credits of a course (paper/sessional/oral) student must pass the course with minimum passing marks / grade.
- 5.5 Student can apply only for the revaluation / photocopying / verification of answer sheets of End semester exam only.

**Rule no. 6: RULES OF A.T.K.T.**

1. A student can be admitted for the third semester if he/she earns minimum 50% credits of the total of first and second semester.
2. A student can be admitted for the fifth semester if he/she earns minimum 50% credits of the total of third and fourth semester and all the credits (100%) of the first and second semester and passing grade of aggregate for first year.
3. A student can be admitted for the seventh semester if he/she earns minimum 50% credits of the total of the fifth and sixth semesters and all the credits (100%) of the third and fourth semesters and passing grade of aggregate for second year.
4. Fourth Year and Final Year are considered as integrated Stage II of the course and hence students will be allowed to take admission to Fifth year irrespective of the credits earned by the student in seventh and eighth semesters.
5. A student would be awarded B.Arch. only if he/she earns 214 (100%) credits and clears all the courses specified in the syllabus and gets passing grade of aggregate.





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**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH./476/2016)  
Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

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**Rule no. 7: ASSESSMENT AND GRADE POINT AVERAGE**

7.1 A grade assigned to each head based upon marks obtained by the student in examination of the course.

**Table 1**

**GRADING SYSTEM FOR PASSING HEADS (theory / sessional / sessional-viva)**

Grade	Grade Points	% of Marks Obtained	Remarks
O	10	90-100	Outstanding
A	9	80-89	Very good
B	8	70-79	Good
C	7	60-69	Fair
D	6	50-59	Average
E	5	45-49	Below average
F	0	Below 45	Fail

**Table 2**

**GRADING SYSTEM FOR AGGREGATE**

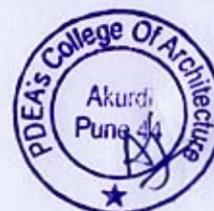
Grade	Grade Points	% of Marks Obtained	Remarks
O	10	90-100	Outstanding
A	9	80-89	Very good
B	8	70-79	Good
C	7	60-69	Fair
D	6	50-59	Average
F	0	Below 50	Fail

7.2 **Passing grades for various heads:** The grades O,A,B,C,D & E are passing grades for various heads (paper / sessional / sessional viva voce). A candidate acquiring any one of these grades in a course shall be declared as pass only in that particular subject head. And student shall earn the credits for a course only if the student gets passing grade in that course (which includes paper and/or sessional and/ or sessional viva voce).

7.3 **Passing grades for Aggregate :** The grades O,A,B,C & D are passing grades in the aggregate.

7.4 **F grade for various heads:** The grade F is a failure grade. The student with F grade will have to pass the concerned course by reappearing for the examination.

7.5 **F grade for aggregate:** The grade F is a failure grade for aggregate. The student with F grade will have to appear for paper &/ or sessional & /or session viva voce for improvement of aggregate.





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**Rule no. 8: EXAMINATIONS.**

i. Paper **and/ or**

ii. Sessional / Sessional and Viva-voce based on sessional work,  
as prescribed in the subjects will be treated as **separate heads of passing.**

**8.1 Structure of Theory Paper Examinations**

The theory Examination shall be conducted in two phases for the subjects as indicated in the structure viz.: In Semester Examination and End Semester examination. The structure detailing the time, mode of syllabus coverage, maximum marks etc is given below. This structure of examinations shall be followed by the regular candidates :-

Phase of examination	Time	Mode	Syllabus Coverage	Duration	Max. Marks
In semester	End of 6 <sup>th</sup> week	Written	Unit I & II	60 minutes	30
End Semester	End of Semester	Written	All Units	150 minutes	70

The detail examination schedule shall be decalred at the beginning of the semester by the Savitribai Phule Pune University.

**Rule no. 9: CONDUCT OF EXAMINATIONS.**

9.1 All the examinations will be conducted at University level.

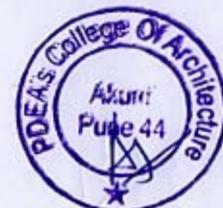
9.2 In-Semester Examination : Shall be carried out at concerned college by appointing examiners from the panel given by the 32/5 committee of the University and the result to be conveyed to the University.

9.3 End-Semester Examination : Shall be carried out at concerned college as per the University schedule of examination program and the question paper will be made available by the University.

**Rule no. 10: Assesment**

10.1 **In-semester Examination Assessment** will be done at the College by the expert who is appointed as the examiner for the subject as per 32/5 Panel of the In-semester exam.

10.2 **End-Semester Examination Assessment** will be done at the CAP center by the Expert(s) appointed as the examiner for the subject as per 32/5 Panel of the End-semester exam for Third to Fifth Yr.





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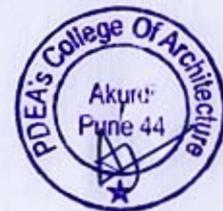
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### 10.3 SESSIONAL WORK ASSESSMENT.

- a. The sessional and /or oral examinations is to be conducted and assessed jointly by external and internal examiner approved by the University.
- b. In respect of Sessional work at F. Y. B.Arch., S. Y. B.Arch., T. Y. B.Arch. Fourth Yr. B.Arch and Fifth Year B.Arch. target date shall be fixed for the completion of each assignment and the same shall be completed and collected on the fixed target date. All assignments shall be continuously assessed by the teacher during semester.
- c. At the end of each semester sessional work shall be assessed jointly by the internal and external examiners from amongst the panel approved by the University.
- d. Performance of Sessional / Viva-voce Examination shall be assessed on the basis of understanding of the principles involved and not on the basis of mere correctness or results and ornamental or colourful presentation.
- e. Drawings and reports / notes shall be manually prepared. Students may use computers for sessional work under the guidance of the teachers where nature of work is individual and stress is on content rather than skill. The work done by the students has to be authenticated for its originality by the concerned teachers.
- f. At all the examinations **except** for the SEMESTER X : ARCHITECTURAL PROJECT, external assessment shall be carried out by Internal teachers from other college in the University not teaching that or any other subject in the institute where the examination is being conducted.
- g. For tenth semester Architectural Project an external examiner means a professional not teaching in any of the colleges under University of Pune.
- h. Internal Examiner : Internal Examiner is one who is teaching that particular subject in the same/any other college under University.
- i. An Examiner for any of the subjects of examination from 1st year to 3rd. Year Architecture, shall have a minimum of 3 years teaching / professional experience in his/her field of study.
- j. An Examiner for any of the subjects of examination for 4th year and Final Year Architecture, shall have a minimum of 5 years teaching / professional experience in his/her field of study.
- k. To qualify for the External Examiner at the tenth semester Architectural Project, the professional shall have a minimum of five years professional experience.

#### Rule no.11 : PERFORMANCE INDICES





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1. The semester end grade sheet will contain grades for the course along with titles and SGPA. Final grade sheet and transcript shall contain CGPA.
2. **SGPA** : The performance of a student in a semester is indicated by a number called the semester grade point average (SGPA). The SGPA is the weighted average of grade points obtained in all the courses registered by the student during the semester.

Semester Grade Point Average (SGPA) =

$$\begin{aligned} \text{SGPA} &= \frac{\sum_{i=1}^p C_i G_i}{\sum_{i=1}^p C_i} \\ &= \frac{\sum \text{Grade Points earned } \times \text{Credits for each course}}{\text{Total Credits}} \end{aligned}$$

For example : Suppose in a given semester a student has registered for five courses having credits C1, C2, C3, C4, C5 and his / her grade points in those courses are G1, G2, G3, G4, G5 respectively,

Then the SGPA would be

$$\text{SGPA} = \frac{C_1 G_1 + C_2 G_2 + C_3 G_3 + C_4 G_4 + C_5 G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

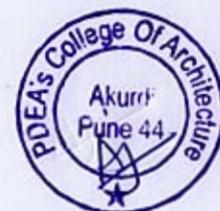
**SGPA** is calculated up to two decimal places by rounding off.

3. **CGPA** : The CGPA is the weighted average of the grade points obtained in all the courses (theory /sessional /vivavoce) of **seventh, eighth, ninth and tenth** semesters. It is calculated in the same manner as the SGPA. It is calculated based upon the SGPA of the concerned semesters.

**Rule no. 12: RESULT**

Based on the performance of the student in the semester examinations, the Savitribai Phule Pune University will declare the results and issue the Semester grade sheets.

The class shall be awarded to a student on the CGPA calculated in rule no. 11(3). The award of the class shall be as per the table no. 3 below.





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**Table 3**

Sr.No.	CGPA	Class of the degree awarded
1	7.75 or more than 7.75	First class with distinction
2	6.75 or more but less than 7.75	First class
3	6.25 or more but less than 6.75	Higher second class
4	5.5 or more but less than 6.25	Second class

**Rule no. 13: EXEMPTIONS**

In case a candidate fails in an examination but desires to appear again,

- Examinations will be held in Oct. / Nov. & Apr / May.
- He/ She may be exempted from appearing in the head/s of passing in which he/she has passed.
- The students failing to get minimum passing grade for aggregate in a year can also appear for the examinations (paper and/or sessional and/or sessional-vivavoce) to enhance their marks in maximum four heads.

**Rule no. 14: INTRODUCTION OF THIS CURRICULUM.**

The new curriculum for the Degree course in Architecture B.Arch will be introduced gradually as under:

- First Yr. B. Arch. course from June 2015
- Second Yr. B. Arch. course from June 2016
- Third Yr. B. Arch. course from June 2017
- Fourth Yr. B. Arch. course from June 2018
- Final Yr. B. Arch. course from June 2019

**Note :** The B.Arch. course introduced in June 2015 would be conducted by the University for 10 consecutive years since inception for the Students admitted between June 2015 to June 2019. However the student has to pass the first stage of this course in maximum five years since admission.

**Rule no. 15: OTHER RULES.**

University may frame additional rules and regulations or modify these regulations if needed and once approved by the University they would be binding on the students.





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**COURSE STRUCTURE  
FIVE YEARS DEGREE COURSE  
BACHELOR OF ARCHITECTURE**

As per the Council of Architecture guidelines approx. 75% course curriculum is prescribed. While remaining may be as per the individual philosophy of the institute. A total of 40 periods (45 min duration) per week per term shall be conducted for the course. Out of these 36 periods are specified below. 4 periods per week are given to the institutions to orient the course as per their own philosophy. Intensive study as per the institution's philosophy may also be done in addition to the detail syllabus in each subject.

The periods considered for calculating the teaching load are of 45 min duration. The credit calculation is based upon 60 minutes amounting to one credit.

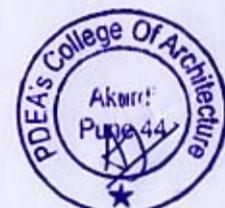
Considering the peculiarity of Architecture Education, the studio load is considered equal to the lecture load as one to one contact with the students is desirable and hence credits are calculated by considering full load of lecture and studio periods.

The detail structure of the syllabus for the ten semesters course is given below.

(Note : SS= Sessional work ; PP=theory Paper ; SV = Sessional + Viva voce)

**FIRST YEAR B.ARCH. SEM. I**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
1201501	Design I	3	7	--	200	50	--	250	7
1201502	Building Technology & Materials I (SV)	3	4	30	50	50	70	200	5
1201503	Building Technology & Materials I (PP)								
1201504	Theory of Structures I (PP)	1	2	30	--	--	70	100	2
1201505	Arch Drawing & Graphics I	2	5	--	100	--	--	100	4
1201506	Humanities	2	1	--	50	--	--	50	2
1201507	Introduction to Architecture	2	1	--	50	--	--	50	2
1201508	Workshop I	1	2	--	50	--	--	50	2
		14	22					800	24





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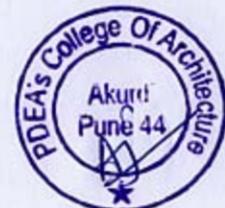
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**FIRST YEAR B.ARCH. SEM. II**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
1201509	Design II	3	7	--	200	50	--	250	7
12015010	Building Technology & Materials II(SV)	3	4	30			70	200	5
12015011	Building Technology & Materials II (PP)				50	50			
1201512	Theory of Structures II	1	2	30			70	100	2
1201513	Arch Drawing & Graphics II	2	5	--	100	--	--	100	4
1201514	History of Architecture I	2	1	--	50	--	--	50	2
1201515	Climatology	2	1	--	50	--	--	50	2
1201516	Workshop II	1	2	--	50	--	--	50	2
		14	22					800	24

**SECOND YEAR B.ARCH. SEM. III**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
2201517	Design III	3	8	--	200	50	--	250	7
2201518	Building Technology & Materials III(SV)	3	4	30			70	200	5
2201519	Building Technology & Materials III(PP)				50	50			
2201520	Theory of Structures III	1	2	30			70	100	2
2201521	Building Services I (SS)	2	2		50			150	3
2201522	Building Services I (PP)			30			70		
2201523	History of Architecture II	2	1	--	50	--	--	50	2
2201524	Arch Drawing & Graphics III	2	3	--	100	--	--	100	3
2201525	Surveying & Levelling	1	2	--	50	--	--	50	2
		14	22					900	24





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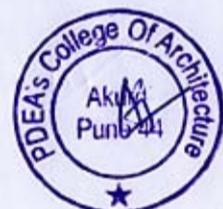
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**SECOND YEAR B.ARCH. SEM. IV**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
2201526	Design IV	3	8	--	200	50	--	250	7
2201527	Building Technology & Materials IV(SV)	3	4	30			70	200	5
2201528	Building Technology & Materials IV (PP)				50	50			
2201529	Theory of Structures IV	1	2	30			70	100	2
2201530	Building Services II (SS)	2	2		50			150	3
2201531	Building Services II (PP)			30			70		
2201532	History of Architecture III	2	1	--	50	--	--	50	2
2201533	Technical Communication	1	2		50			50	2
2201534	Working Drawing I	2	3		100			100	3
		<b>14</b>	<b>22</b>					<b>900</b>	<b>24</b>

**THIRD YEAR B.ARCH. SEM. V**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
3201535	Design V	3	8	--	200	50	--	250	7
3201536	Building Technology & Materials V(SV)	3	4	30			70	200	5
3201537	Building Technology & Materials V (PP)				50	50			
3201538	Theory of Structures V	1	2	30			70	100	2
3201539	Landscape Architecture I	1	3		50			50	2
3201540	Building Services III (SS)	2	2		50			150	3
3201541	Building Services III (PP)			30			70		
3201542	History of Architecture IV	2	1	--	50	--	--	50	2
3201543	Working Drawing II	2	2		100			100	3
		<b>14</b>	<b>22</b>					<b>900</b>	<b>24</b>





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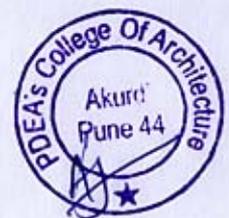
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**THIRD YEAR B.ARCH. SEM. VI**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
3201544	Design VI (SV)	3	8	--	200	50	--	350	7
3201545	Design VI (PP)			--	--	--	100		
3201546	Building Technology & Materials VI(SV)	3	4	30	--	--	70	200	5
3201547	Building Technology & Materials VI (PP)			--	50	50	--		
3201548	Theory of Structures VI	1	2	30	--	--	70	100	2
3201549	Landscape Architecture II	1	3	--	50	--	--	50	2
3201550	Building Services IV(SS)	2	2	--	50	--	--	150	3
3201551	Building Services IV (PP)			30	--	70	--		
3201552	Contemporary Arch Seminar	1	3	--	50	--	--	50	3
3201553	Elective I	1	2	--	50	--	--	50	2
		12	24					950	24

**FOURTH YEAR B.ARCH. SEM. VII**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
4201554	Design VII	3	9	--	200	50	--	250	8
4201555	Advanced Building Technology and Services I	3	4	--	150	50	--	200	5
4201556	Professional Practice I	1	2	30	--	--	70	100	2
4201557	Urban Studies I	1	2	--	50	--	--	50	2
4201558	Research in Architecture I	1	2	--	50	--	--	50	2
4201559	Quantity Surveying and Estimation I	1	2	30	--	--	70	100	2
4201560	Specification Writing I	1	2	30	--	--	70	100	2
4201561	Elective II	1	1	--	50	--	--	50	1
		12	24					900	24





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**THIRD YEAR B.ARCH. SEM. VI**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
3201544	Design VI (SV)	3	8	--	200	50	--	350	7
3201545	Design VI (PP)			--	--	--	100		
3201546	Building Technology & Materials VI(SV)	3	4	30	--	--	70	200	5
3201547	Building Technology & Materials VI (PP)			--	50	50	--		
3201548	Theory of Structures VI	1	2	30	--	--	70	100	2
3201549	Landscape Architecture II	1	3	--	50	--	--	50	2
3201550	Building Services IV(SS)	2	2	--	50	--	--	150	3
3201551	Building Services IV (PP)			30	--	70	--		
3201552	Contemporary Arch Seminar	1	3	--	50	--	--	50	3
3201553	Elective I	1	2	--	50	--	--	50	2
		12	24					950	24

**FOURTH YEAR B.ARCH. SEM. VII**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
4201554	Design VII	3	9	--	200	50	--	250	8
4201555	Advanced Building Technology and Services I	3	4	--	150	50	--	200	5
4201556	Professional Practice I	1	2	30	--	--	70	100	2
4201557	Urban Studies I	1	2	--	50	--	--	50	2
4201558	Research in Architecture I	1	2	--	50	--	--	50	2
4201559	Quantity Surveying and Estimation I	1	2	30	--	--	70	100	2
4201560	Specification Writing I	1	2	30	--	--	70	100	2
4201561	Elective II	1	1	--	50	--	--	50	1
		12	24					900	24





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**FOURTH YEAR B.ARCH. SEM. VIII**

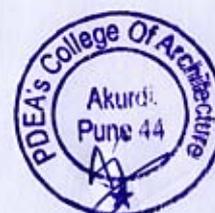
Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
4201562	Design VIII	3	9		200	50		250	8
4201563	Advanced Building Technology and Services II	3	4		150	50		200	5
4201564	Professional Practice II	1	2	30			70	100	2
4201565	Urban Studies II	1	2		50			50	2
4201566	Research in Architecture II	1	2		50			50	2
4201567	Quantity Surveying and Estimation II	1	2	30			70	100	2
4201568	Specification Writing II	1	2	30			70	100	2
4201569	Elective III	1	1		50			50	1
		12	24					900	24

**FIFTH YEAR B.ARCH. SEM. IX**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
5201570	Practical Training	--	--	--	150	50	--	200	8
		--						200	8

**FIFTH YEAR B.ARCH. SEM. X**

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
5201571	Architectural Design Project	4	16	--	350	100	--	450	12
5201572	Elective IV	1	2		50			50	2
		5	18					500	14





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**Fourth year 2015 Pattern**

**Semester VII**

DRAFT SYLLABUS FOR APPROVAL OF FACULTY





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DESIGN VII			
Subject Code		4201554 (SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 12 (lectures=3, Studio=9)	12	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
Total Marks		250	
Total Credits		8	

#### Course Objective

Subject aims at preparing the students to handle complex architectural issues at this stage addressing various challenges in terms of scale, complexity of functions, social economic context, traffic and vehicular movement and so on. Along with the challenges of physical issues, students are also now expected to address spatial and visual language of their project with reference to the urban context and setting of their site.

#### Course Outline

- Multifamily Residential Development with Focus on : Mixed Use Development, Development of Communities, Addressing Issues of Social Stratification v/s Inclusiveness, Identification of target Group/ End User's requirement, Relation of Location/ Land values on Defining the Housing Product, Project being part of the City, Context, Green Initiatives, Efficient Planning of Services, Minimum Area 100 to 200 depending on Context and Complexity, Designed within parameters as laid out by Local Authority and NBC.
- One Esquee / Charette be undertaken in each of the Terms ( One week Duration) exploring design solution for a project / component , ideas for which would help the Main Design project.

#### Submissions

The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

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ADVANCED BUILDING TECHNOLOGY AND SERVICES I			
Subject Code		4201555 (SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 07 (lectures=3, Studio=4)	07	Sessional (Internal)	75
		Sessional (External)	75
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
Total Marks		200	
Total Credits		5	





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**COURSE OBJECTIVES:**

- To introduce advanced structural systems, materials and services required in buildings with complex and special requirements and enable the students to integrate the same in design.

**COURSE OUTLINE:**

Unit 1. Multi-basements. Design and construction of multi-basements giving constructional details required for natural Lighting, ventilation and surface water disposal. Study of various methods of access to parking areas other than ramps. Drawings to include application of all required services. [Minimum four A1 drawings]

- Unit 2. Industrial Buildings. : Types of roofing systems, PEB systems, Proprietary systems, Industrial flooring.  
Assignments. Drawings showing structural system, construction details and services in plan, section and elevation [minimum two A1 drawings]
- Unit 3. Swimming pools.  
Design and construction of swimming pools ( Olympic size, semi Olympic, leisure pools) and study of situations such as – at ground level , podium level and upper / roof level with reference to all constructional and services details. [Minimum two A1 drawings]
- Unit 4 Study of long span structures [indoor stadia, railway / metro stations, shopping malls, sky walks etc] in RCC and Steel to understand structural behavior. Introduction of lighting and ventilation of spaces in such large buildings.  
Assignment would comprise of Case study report and construction details in sketch form.

**SESSIONAL WORK:**

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- Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.

**REFERENCE BOOKS**

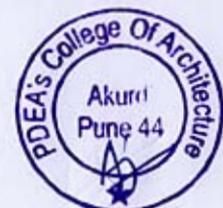
PEB manufacturer's details  
Advanced Building Construction By MACKEY  
Stadia by John Geraint

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PROFESSIONAL PRACTICE I			
Subject Code :		4201556(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week = 3 ( Theory Lectures – 1 + studio -2)	03	Sessional ( Internal )	Nil
		Sessional ( External )	Nil
		In-semester exam	30
		End Semester exam	70
		<b>Total Marks</b>	100
		<b>Total Credits</b>	2

**COURSE OBJECTIVES:**

- To acquaint the Student with the Role and Stature of an Architect in Society, and understand the duties, responsibilities, liabilities and ethics as a professional.





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- To acquaint the Student with the Scope and Avenues of professional Architectural services, and the demands and Mode of professional practice, and to prepare the Student for the professional field.
- To familiarize and prepare the Student with adequate knowledge of an Architect's office administration, documentation and procedures of office and site management to enhance his comprehension and utility during his professional training in the field in Semester IX.

**COURSE OUTLINE :**

- Unit 1 Introduction to the nature, scope and avenues of service and professional practice as an Architect. Define the Role of an Architect as a technical professional - who is not a Trader or a Businessman. Illustrate the changing nature of the Architects profession- Local & Global competition in the field.
- UNIT 2 The Architects Act 1972 - The Council of Architecture, its composition, legal status and mandate for to Registration of Architects and for monitoring the Academics and Profession of Architecture, Rules and Regulations of the Council regarding Professional Liabilities & Code of Conduct.
- Unit 3 Avenues of Professional service and mode and nature of professional Practice - Types of Organisations - Scope of comprehensive Services, Scale of Fees, and Office Management, Project management, Site supervision, Documentation, Taxation, Banking and Insurance.
- Unit 4 Architectural Competitions - Pros and Cons - with Rules and Regulations of the Council.
- Unit 5 Introduction to IIA, IIID, IUDI, ITPI, ISOLA and such professional organisations and the need for Architects to be aware, sensitive and active in Social and Civic issues in Urban context.

**REFERENCE BOOKS :**

- |   |                                       |
|---|---------------------------------------|
| 1) Handbook of Professional Documents   | - Council of Architecture publication |
| 2) The Architects Act, 1972             | - Govt. of India publication          |
| 3) Professional Practice                | By Roshan H. Nanjaval                 |
| 4) Professional Practice in India       | By Mahav G. Deshpakta                 |
| 5) Architectural Practice and Procedure | By Vasant S. Apte                     |

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URBAN STUDIES-I			
Subject Code		4201557 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	03	Sessional (Internal)	25
		Sessional (External) Viva	nil
		(Internal)	nil
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	02

**COURSE OBJECTIVES:**

- To enable students to understand the urban context of an Architectural Project beyond the site and understand the implications of various factors (such as traffic-transportation, socio economics, urban landscape, spatial and visual aspects etc) influencing the development of an urban area.
- To introduce the students to urban planning and design theories and concepts and enable them to undertake planning and design of large scale land development.





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### COURSE OUTLINE:

- Introduction to urban studies and relevance of its learning in Architecture profession. Principles and theories of Urban Planning and Urban Design.
- Various aspects of urban land.
- Urban residential developments such as neighborhood planning, high-rise housing, slum rehabilitation, public housing, town planning schemes etc
- Affordable housing: introduction and concepts.

### SESSIONAL WORK:

- **Handwritten journal** based upon the theory syllabus as above.
- **Assignments:**
  1. Subdivision of land for residential development (approx area 4Ha) –Individual submission (20 marks)
  2. Study of housing typologies as mentioned in course outline- Case study in a group of maximum 5 students (20 Marks)
  3. One Tutorial based upon course outline (10 marks)

### REFERENCE BOOKS

1. Gallion, Arthur. *The Urban Pattern*. New Delhi: CBS Publishers and Distributors, 2003
2. Bacon, Edmund. *Design of Cities* London: Thames and Hudson, 1974
3. Paddison, Ronan. *Handbook of Urban Studies*. London: sage Publications, 2001
4. Correa, Charles. *Housing and Urbanisation*. London: Thames and Hudson, 2000.
5. Mohanty, Swati. *Slum in India*. New Delhi: APH Publishing Corp., 2005.
6. Jagdale, Rohit. *Slum Rehabilitation Schemes in Mumbai*. University of Texas 2014

## DRAFT SYLLABUS FOR APPROVAL OF FACULTY

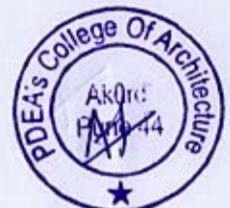
RESEARCH IN ARCHITECTURE I			
Subject Code		4201558 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	-
		Viva (External)	-
		In-semester exam	nil
		End Semester exam	nil
Total Marks		50	
Total Credits		2	

### COURSE OBJECTIVES:

- To introduce students to Research in Architecture and its value in design
- To enable the students to prepare a research proposal.

### COURSE OUTLINE:

- Unit I – Introduction to the meaning and need of research in architecture. Introduction to various concepts such as types of variables, measurement of variables, sample selection, ethics in research.
- Unit II – Process of research – Methodology
- Unit III – Literature study





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- Unit IV – Methods of research in architecture. Use of surveys, observations, experiments, secondary sources.

**SESSIONAL WORK:**

- Tutorial based on all of the above units
- Literature Review of at least 5 papers related to the topic of their choice.
- Research proposal giving details of aims, objectives, scope, limitations, methods, samples selected on the topic approved by the head of the institution.

**NOTE:**

- The guide must have minimum 5 years of teaching experience. Preferably a guide should not guide more than 8 students.
- It is desirable that the research seminar is presented in front of experts.
- It is beneficial to the students if the topic is related to the architectural design project of semester X.

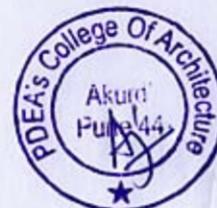
**REFERENCE BOOKS**

1. Babbie, E. *The Practice of Social Research*. third edition. Belmont: Wadsworth Publishing Co., 1983. book.
2. Cresswell, J.W. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks: Sage, 1994. Book.
3. De Vaus, D.A. *Surveys in Social Research*. Jaipur: Rawat Publications, 2003. Book.
4. Day, T. *Qualitative Data Analysis: A User Friendly Guide for Social Scientists*. London: Routledge, 1993. Book.
5. Grbat, L. & Wang, D. *Architectural Research Methods*. New York: John Wiley and Sons Inc., 2002. Book.
6. Kothari, C.R. *Research Methodology: Methods and Techniques*. New Delhi: Wishwa Prakashan, 2005. Book.
7. Michelson, William. *Behavioural Methods in Environmental Design*. Stroudsburg, Pennsylvania: Dowden, Hutchinson and Ross, Inc., 1982.
8. Nachmias, C.F. & Nachmias, D. *Research Methods in Social Sciences*. Great Britain: St. Martin's Press Inc., 1996. Book.
9. Patton, M.Q. *Qualitative Evaluation Methods*. Newbury Park: Sage Publications, 1980. Book.
10. Sanoff, H. *Methods of Architectural Programming*. Vol. 29. Dowden Huthinson and Ross, Inc., 1977. document.
11. —. *Visual Research Methods in Design*. USA: Van Nostrand Reinhold, 1991.

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Quantity Surveying And Estimation - I			
Subject Code	4201559 (PP)		
Teaching Scheme	Examination Scheme		
Total Contact Periods per week (lectures=1, Studio=2)	03	Sessional (Internal)	Nil
		Sessional (External) Viva (Internal)	Nil
		Viva (External)	Nil
		In-semester exam	30
	End Semester exam	70	
	Total Marks	100	
Total Credits	2		

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**COURSE OBJECTIVES:**

- To Introduce Estimation as an important Subject for Architecture.
- To Understand Different methods of Computing Quantities for items of work in a structure.
- To enable students in working out quantities of various items of work for simple load bearing and R.C.C. framed structure and acquaint them with various types of estimates including standard method of measurement on building works and mode of measurements as adopted by I.S 1200.

**COURSE OUTLINE:**

- Unit I.** Introduction to Quantity Surveying and Estimating, Data for Estimate, Purpose of Estimating, Accompaniments of an Estimate, Qualities of an Estimator, Spot Items, Contingencies, Prime Cost & Provisional Sums, Provisional Quantities, Extra Items of work.
- Unit II.** Different types of Estimate their uses & Characteristics, Schedule of Quantities, Schedule of Rates & its uses, Stages of work, Complete Estimate of a Project, Methods of taking out Quantities, Measurement Sheet, Abstract Sheet, Bill of Quantities,
- Unit III.** Study of mode of measurement as stipulated in IS-1200, Classification of strata as per IS-1200, Trial pit data, Lift and Leads, Unit of Measurement.
- Unit IV** Bill certification, Part rate certification, Interim/Running Bill Certification,
- Unit V** Working out quantities for load bearing structure (below plinth only) of approximately 15-30 Sqm by offset and centre-line method illustrating L and T junctions and preparing measurement sheet and abstract for all items of work.
- Unit VI** Working out quantities for R.C.C. G+1 structure of approximately 150-200 sqm and preparing measurement sheet and abstract for all items of work.

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**REFERENCE BOOKS**

1. B.I.S 1200- Part-I 1992, n.d.
2. Prof. B.N.Dutta, *Estimating and Costing in Civil Engineering*.
3. B.S.Patil. *Civil Engineering Contracts and Estimates*.
4. Dr. Roshan Namavati. *Professional Practice*.
5. Rangawala. *Estimating Costing and Valuation*.

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Specification Writing I			
Subject Code		4201560 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (Lectures = 1 Studio = 2)	3	Sessional (Internal)	nil
		Sessional (External)	nil
		Viva (Internal)	nil
		Viva (External)	nil
		In-Semester exam	30
		End-Semester exam	70
Total Marks		100	
Total Credits		2	

**COURSE OBJECTIVES:**

- To acquaint students with methodology of writing specifications with reference to building trades, materials, workmanship & performance of different items of work.
- To know importance of specifications in contract document for any construction project.

**COURSE OUTLINE:**

- Techniques, Importance & methods of writing different types of specifications of different items of works in construction.
- Technical and functional role of specifications in any construction project.

**Unit I: Specifications**

- 1.4. Definition, need & importance of Specification writing
- 1.5. Relation with working drawing, bill of quantities, schedule of rates
- 1.6. Specification as a integral part of contract document

**Unit II: Types of Specifications**

- 2.1. Basic types like open, closed, restricted etc
- 2.2. Use of manufacturers guide
- 2.3. Combination of above types

**Unit III: Specification writing (Workmanship )**

- 3.1. Item-wise detailed specifications including methods
- 3.2. Forms of writing descriptive notes on material and workmanship based on working drawing

**Unit IV: Specifications for construction works**

- 4.2 Demolition work of existing buildings
- 4.2 FORMWORK

**REFERENCE BOOKS**

1. Indian Standard specifications
2. C.P.W.D. Specifications and schedule of rates
3. Specification Writing for Architects & Engineers, By Donald A. Watson
4. Specification Writing for Architects & Surveyors, By Arthur J. Wills
5. Estimating, Costing, Specification & Valuation, By M. Chakraborty

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ELECTIVE II - DESIGN & TECHNOLOGY ELECTIVE			
Subject Code		4201561(SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 2 (lectures=1, Studio=1)	2	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	nil
		End Semester exam	nil
Total Marks		50	
Total Credits		1	

**COURSE OBJECTIVES:**

The subject of Electives has been introduced in syllabus with specific intention of study of a particular subject of student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt, to make their career in future.

The Design and technology elective aims at exploring the recent developments in the field of architecture from point of view of building design, services and construction. Aspects such as disaster resistance, accessibility, retrofitting, conservation, architectural design theory, can be addressed through these electives.

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**COURSE OUTLINE:**

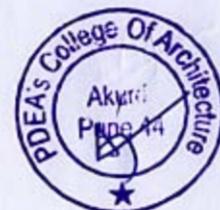
Individual College may offer topics depending upon the availability of experts and resource material. The colleges will have the opportunity to focus on a particular group of topics according to the overall philosophy and mission statement of the College. The probable elective topics are – [the list is only suggestive and individual colleges can frame newer topics which meet the course objectives].

- Universal Design
- Seismic Resistance design
- Services in High rise buildings.
- Design theory
- Architectural Conservation
- Computer & design
- Modular design
- Prefabricated & Precast construction
- Advanced Landscape Design

**Note :** The topics selected in this elective should not focus on any of the aspects of interior design.

**SESSIONAL WORK:**

The faculty is expected to set out the broad contour and sub aspects of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.





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The students are expected to present the work done in an A4 report format of 20 pages, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

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**Fourth year 2015 Pattern**

**Semester VIII**

**DRAFT SYLLABUS FOR APPROVAL OF FACULTY**





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DESIGN VIII		
Subject Code	4201562(SV)	
Teaching Scheme	Examination Scheme	
Total Contact Periods per week= 12 (lectures=3, Studio=9)	Sessional (Internal)	100
	Sessional (External)	100
	Viva (Internal)	25
	Viva (External)	25
	In-semester exam	nil
	End Semester exam	nil
	Total Marks	250
	Total Credits	8

**Course Objective**

Subject aims at preparing the students to handle complex architectural issues at this stage addressing various challenges in terms of scale, complexity of functions, social economic context, traffic and vehicular movement and so on. Along with the challenges of physical issues, students are also now expected to address spatial and visual language of their project with reference to the urban context and setting of their site.

**Course Outline [ Project type 1 – one of the two options & Project type 2]**

1. Study of Urban Areas in terms of Urban level issues like Mobility, movement network, builtform, disposition, character, identity, activities, open space, networks, walkability, inclusiveness, etc.  
Community participation initiatives and analysis.

Identify issues related to above aspects at Neighbourhood level and offer design solutions for improving the status of the neighbourhood with reference to the above aspects. Setting up of Guidelines to achieve the master plan objectives and broad implementation strategy to achieve sustainable neighbourhoods.

The project shall include a Study area and Master Plan area of 2- 3 Ha. with detailed Architectural Resolution of a component/s admeasuring not less than 10000 to 20000 sqm Area of Functional space depending on Context and Complexity.

The Architectural project should evolve of the study of the Area and be an outcome of issue formulation, Development Plan proposals for the area if any and a subset of the overall Master Plan for the Area.

**OR**

1. Multi Functional Complex of Buildings or Speciality Building in an Urban Context with substantial Complexity addressing Issues of Character, Identity, Builtform, Contextuality, Advanced Services, Green Initiatives , landscape integration, traffic management with impact on immediate surroundings, structural resolution in detail. Building Quantum not less than 10000 to 20000 sqm Area of Functional space depending on Context and Complexity and appropriate plot Area. ( eg. Healthcare facility, Educational Institution, 5 Star Hotel, Convention Centre, Multimodal Transport Hub, Shopping Mall and Multiplex, redevelopment project etc.).





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Project should explore the Impact on the Surrounds and from the Surrounds with reference to the Urban Insert being proposed.

2. One Esquee / Charette be undertaken in each of the Terms ( One week Duration) exploring design solution for a project / component , ideas for which would help the Main Design project.

**Submissions**

The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

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ADVANCED BUILDING TECHNOLOGY AND SERVICES II			
Subject Code	4201563 (SV)		
Teaching Scheme	Examination Scheme		
Total Contact Periods per week= 07 (lectures=3, Studio=4)	7	Sessional (Internal)	75
		Sessional (External)	75
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
Total Marks	200		
Total Credits	5		

**COURSE OBJECTIVES:**

- To introduce advanced structural systems, materials and services required in buildings with complex and special requirements and enable the students to integrate the same in design.

**COURSE OUTLINE:**

- Unit 1. Auditoriums - Design and construction of Auditorium of min capacity 500 with provision of a balcony and application of all required services.  
All architectural drawings, framing plans and sections, showing all services and constructional detail for balcony [minimum four A1 drawings]
- Unit 2. Construction details of architectural features in design projects.  
Assignment – Complete details with reference to materials used and details of construction. Minimum five working details to an appropriate scale. [Minimum 3 A1 size drawing].
- Unit 3. Introduction to high rise buildings.  
Behavior of high rise structures under different loading conditions. Understanding of structural systems for high rise structures. Assignment; Notes and sketches.
- Unit 4. Curtain walls-- Framing systems and construction details for a curtain wall.  
Assignment – Students shall study cases of curtain wall and prepare working details for the same. [minimum one A1 size drawing].

**SESSIONAL WORK:**





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- Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.

**REFERENCE BOOKS**

Advance building construction by MACKEY  
High Rise Buildings by JASWANT MEHTA  
Theatres and Auditoriums by Harold Burris- Meyer & Edward Cole.  
Architects Working Details

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PROFESSIONAL PRACTICE II			
Subject Code :		4201564 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week = 3 [Lecture 1, Studio 2]	3	Sessional ( Internal )	Nil
		Sessional ( External )	Nil
		In-semester exam	30
		End Semester exam	70
		<b>Total Marks</b>	<b>100</b>
		<b>Total Credits</b>	<b>2</b>

**COURSE OBJECTIVES:**

- To acquaint the Student with the Role and Stature of an Architect in Society, and understand the duties, responsibilities, liabilities and ethics as a professional.
- To acquaint the Student with the Scope and Avenues of professional Architectural services, and the demands and Mode of professional practice, and to prepare the Student for the professional field.
- To familiarize and prepare the Student with adequate knowledge of an Architect's office administration, documentation and procedures of office and site management to enhance his comprehension and utility during his professional training in the field in Semester IX.

**COURSE OUTLINE:**

- Unit 1 Introduction to Construction Management - Types and Systems of Tendering - Open and Invited Tenders - Pre-Qualification and Empanelment procedures - Selection of Contractors.
- Unit 2 Introduction to Contracts - Articles of Agreement and Conditions of Contract ( IIA document ) Contents of a Tender - Terms of Reference - Specifications - Bill of Quantities - Billing, Measurement of work and Payments - Advances and recovery - Bonus and Penalties, etc ..
- Unit 3 Introduction to National Building Code - ISI Codes and Standards, Limits and Tolerances.
- Unit 4 Role of Architects in Construction / Site management - Supervision and monitoring of Speed, Quality and Economy - Status on project sites - Meetings, Minutes, Instructions & Records.
- Unit 5 General Introduction to the Role and Legal duties of Architects in Arbitration and Valuation.

**SESSIONAL WORK :** Preparation of a JOURNAL with NOTES based upon the syllabus content. Journal to be submitted at the end of Term-II for Internal and External Marking.

**REFERENCE BOOKS :**

- 1) Handbook of Professional Documents - Council of Architecture publication
- 2) The Architects Act, 1972 - Govt. of India publication





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- |   |                          |
|---|--------------------------|
| 3) Professional Practice                | - By Roshan H. Namavati  |
| 4) Professional Practice in India       | - By Madhav G. Deobhakta |
| 5) Architectural Practice and Procedure | - By Vasant S. Apte      |

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Urban Studies-II		4201565 (55)	
SubjectCode		ExaminationScheme	
TeachingScheme			
TotalContact Periodsperweek (lectures=1, Studio=2)	03	Sessional(Internal)	25
		Sessional(External)	25
		) Viva (Internal)	nil
		Viva (External)	nil
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	50
		Total Credits	02

#### COURSE OBJECTIVES:

- To introduce the students to the process of planning and urban development and associated legislation.
- To introduce the students to urban economics.

#### COURSE OUTLINE:

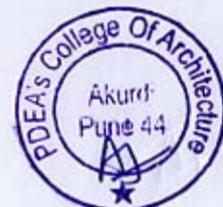
- Study of planning process in detail (Survey, analysis, proposals and development)
- Conservation and related Urban-Design controls
- Planning and Urban Design legislation (introduction and relevance)
- Unified Building bye laws and Development Control rules of local authorities.
- Urban economics: introduction and concepts (demand and supply, housing finance, Government schemes and various bodies etc)

#### SESSIONAL WORK:

- Handwritten Journal based upon the theory syllabus as above.
- Assignments:
  - Reading of Urban fabric: Study of existing town and town planning proposals for municipal council level town-(group work) (20 marks)
  - Identification of urban issues related to various aspects such as environment, society, traffic and transportation, hills and hill slopes, riverfront development, urban heritage conservation through primary surveys( group work in a group of 5 students) (10 marks)
  - One Tutorial based upon course outline (10 marks)

#### REFERENCE BOOKS

Urban Pattern: Arthur Gallion  
 City in History: Lewis Mumford  
 Spreiregen, Paul. Urban Design: *The Architecture of Town and Cities*. Malabar, FL-USA Krieger Publishing Co., 1967  
 Lynch, Kevin. *The Image of The City* London: The MIT Press, 1960  
 Book of Development Control Regulations by Local Municipal Corporation (latest edition available)  
 Book of AITP Exam study material: 'Planning Law and Legislation' by ITPI New Delhi  
 Guide to Planning Surveys including Landuse Classification: TCPO, Govt of India: 2004





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Housing and Urbanization: Charles Correa  
Garden Cities of Tomorrow: Sir Ebenezer Howard  
Maharashtra Regional and Town Planning Act, 1966  
Traffic and Transportation Planning by L.R. Kadiali

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Research in Architecture II			
Subject Code		4201566 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	-
		Viva (External)	-
		In-semester exam	nil
		End Semester exam	nil
Total Marks		50	
Total Credits		2	

**COURSE OBJECTIVES:**

- To enable students to undertake research focussed on an issue related to the built environment.
- To report research in a technical manner.

**COURSE OUTLINE:**

- Unit I Data collection and Analysis preferably with use of statistics
- Unit II Presentation of data using various techniques (verbal, visual, graphical, numerical)
- Unit III Technical writing
- Unit IV Presentation of a research paper in form of a seminar

**SESSIONAL WORK:**

- Tutorial based on units I to III.
- To undertake original research work on the research proposal prepared in Semester VII and report the research in form of a technical paper of 4000 words minimum.

**NOTE:**

- The guide must have minimum 5 years of teaching experience. Preferably a guide should not guide more than 8 students.
- It is desirable that the research seminar is presented in front of experts.
- It is beneficial to the students if the topic of research is related to the architectural design project of semester X.

**REFERENCE BOOKS**

- Babbie, E. *The Practice of Social Research*. third edition. Belmont: Wadsworth Publishing Co., 1983. book.
- Cresswell, J.W. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks: Sage, 1994. Book.





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De Vaus, D.A. *Surveys in Social Research*. Jaipur: Rawat Publications, 2003. Book.  
 Dey, I. *Qualitative Data Analysis: A User Friendly Guide for Social Scientists*. London: Routledge, 1993. Book.  
 Groat, L. & Wang, D. *Architectural Research Methods*. New York: John Wiley and Sons Inc., 2002. Book.  
 Kothari, C.R. *Research Methodology: Methods and Techniques*. New Delhi: Wishwa Prakashan, 2005. Book.  
 Michelson, William. *Behavioural Methods in Environmental Design*. Stroudsburg, Pennsylvania: Dowden, Hutchinson and Ross, Inc., 1982.  
 Nachmias, C.F. & Nachmias, D. *Research Methods in Social Sciences*. Great Britain: St. Martin's Press Inc., 1996. Book.  
 Patton, M.Q. *Qualitative Evaluation Methods*. Newbury Park: Sage Publications, 1980. Book.  
 Sanoff, H. *Methods of Architectural Programming*. Vol. 29. Dowden Hutchinson and Ross, Inc., 1977. document.  
 —. *Visual Research Methods in Design*. USA: Van Nostrand Reinhold, 1991.

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Quantity Surveying And Estimation - II			
Subject Code		4201567 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	03	Sessional (Internal)	Nil
		Sessional (External) Viva (Internal)	Nil
		Viva (External)	Nil
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

### COURSE OBJECTIVES:

- To enable students in working out quantities for items of plumbing and sanitation work in a structure.
- To enable students in working out quantities of various items of work for an Industrial structure and acquaint them for preparing rate analysis and indent of material.

### COURSE OUTLINE:

- Unit I.** Introduction to Analysis of Rate, Factors affecting Rate of any Item of work, Importance of Rate Analysis, Essentials of Rate Analysis.
- Unit II.** Unit Rate, Direct Cost, Indirect Cost, Overhead Charges, Day Work, Truck Work, Piece work, Indent of Material,
- Unit III.** Studying and Working out rate Analysis of minimum 20 numbers of standard items of work based on prevailing market rates.
- Unit IV** Studying and preparing Indent of Material of minimum 20 numbers of standard items of work.
- Unit V** Working out quantities for plumbing and sanitation items of work and preparing measurement sheet and abstract for all items of work.





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**Unit VI** Working out quantities for Industrial structure of approximately 200-300 sqm with steel Truss and sheet roofing and preparing measurement sheet and abstract for all items of work.

**REFERENCE BOOKS**

- B.I.S 1200- Part-I 1992. n.d.
- Prof. B.N.Dutta, *Estimating and Costing in Civil Engineering.*
- B.S.Patil. *Civil Engineering Contracts and Estimates.*
- Dr. Roshan Namavati. *Professional Practice.*
- Rangawala. *Estimating Costing and Valuation.*

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Specification Writing II			
Subject Code		4201568 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (Lectures = 1 Studio = 2)	3	Sessional (Internal)	nil
		Sessional (External)	nil
		Viva (Internal)	nil
		Viva (External)	nil
		In-Semester exam	30
		End-Semester exam	70
		Total Marks	100
Total Credits	2		

**DRAFT SYLLABUS FOR APPROVAL OF FACULTY**  
**COURSE OBJECTIVES:**

- To acquaint students with methodology of writing specifications with reference to service installations of different items of work in construction.
- To know importance of specifications in contract document for any construction project.

**COURSE OUTLINE:**

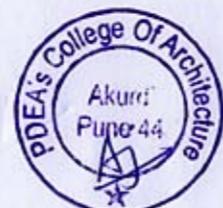
- Techniques, Importance & methods of writing different types of specifications of different items of works in construction.
- Technical and functional role of specifications in any construction project.

**Unit I: Detailed Specifications**

- 1.3. Checklist preparation

**Unit II: Specification for Building Services**

- 2.1. Water Supply & Drainage
- 2.2. Acoustics
- 2.3. Electrification
- 2.4. HVAC installation





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### Unit III: Building Trades

- 3.1. Different Building trades scope & contents

### Unit IV: Broad outline specification for service installations

- 4.4. Communication systems- elevators, escalators
- 4.5. Accessibility- arrangements for disabled persons
- 4.6. Water proofing- cement, bitumen, polymer based
- 4.7. External development- roads, pavements, kerbs, lighting

### REFERENCE BOOKS

- Indian Standard specifications
- C.P.W.D. Specifications and schedule of rates
- Specification Writing for Architects & Engineers, By Donald A. Watson
- Specification Writing for Architects & Surveyors, By Arthur J. Wills
- Estimating, Costing, Specification & Valuation, By M. Chakraborty

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ELECTIVE III – ALLIED ELECTIVE			
Subject Code	4201569 (SS)		
Teaching Scheme	Examination Scheme		
		Sessional (Internal)	25
		Sessional (External)	25
Total Contact Periods per week* 2 (lectures=1, Studio=1)	2	Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	1

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

### COURSE OBJECTIVES:

The subject of Electives has been introduced in syllabus with specific intention of study of a particular subject of student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt to make their career in future.

The allied elective gives opportunity to the students to explore links of design as a faculty with allied fields such as social sciences, visual art, performing arts, psychology, etc.

### COURSE OUTLINE:

Individual College may offer topics depending upon the availability of experts and resource material. The colleges will have the opportunity to focus on a particular group of topics according to the overall philosophy and mission statement of the College. The probable elective topics are – [the list





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is only suggestive and individual colleges can frame newer topics which meet the course objectives].

- Music and Architecture
- Environmental psychology
- Art movements and Architecture
- Sociology and Architecture
- Building Economics
- Biomimicry

**SESSIONAL WORK:**

The faculty is expected to set out the broad contour and sub aspects of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

The students are expected to present the work done in an **A4 report format of 20 pages**, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

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## DRAFT SYLLABUS FOR APPROVAL OF FACULTY





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**Fifth year 2015 Pattern**

**Semester IX**

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Practical Training		
Subject Code	5201570 (SV)	
Teaching Scheme	Examination Scheme	
Student should work for Total 120 working days in organization where architecture or its allied disciplines are practiced under supervision of a professional who is registered with COA India.	Sessional (Internal)	75
	Sessional (External)	75
	Viva (Internal)	25
	Viva (External)	25
	In-semester exam	NIL
	End Semester exam	NIL
	Total Marks	200
Total Credits	8	

**Objectives:**

- To undertake practical training under the guidance of experts / professionals.
- To learn about architect's office management and learn about the process of design, execution and management of a project.

**Course outline:**

- Students should work in organization where architecture or its allied disciplines are carried under professional who is registered architect with COA
- In case a student undergoes Training at a firm outside India, the professional should be registered with the professional body governing practice in that country in addition to the registration with COA India.
- Total duration of Professional Training will be 120 working days in IX sem

**Submissions :**

- Prepare a separate report along with formal log book & work diary.
- Student should maintain week wise work record in a diary to summarize the work done in the office, site visits, meetings with clients, agencies, interaction with principal architect. This diary should be authenticated by the architect every week.
- Professionals should issue a certificate of performance to the student with respect to the work quality, overall approach, attitude towards office work.
- Students should produce report, log book, work diary & some drawings with permission from the employer (to indicate the kind of work s/he has carried out) at the time of sessional -viva voce examination.

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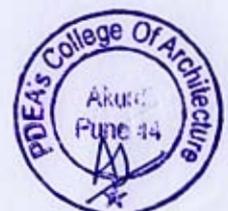
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## Fifth year 2015 Pattern

### Semester X

DRAFT SYLLABUS FOR APPROVAL OF FACULTY





Elective IV			
SubjectCode		5201572 (SS)	
TeachingScheme		ExaminationScheme	
TotalContact Periodsperweek (lectures=1, Studio=2)	3	Sessional(Internal)	25
		Sessional(External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	nil
		End Semester exam	nil
TotalMarks		50	
Total Credits		2	

#### COURSE OBJECTIVES:

The subject of Electives has been introduced in syllabus with specific intention of study of a particular subject of student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt, to make their career in future.

Architecture professionals will have to deal with more and more complex buildings as well as organizational structures to realize a project. Architects need to be introduced to "Management Concepts" if they are to manage projects right from design stage through the documentation and construction stage. Acknowledging the fact that the Architectural Practice is a team effort and understanding the necessity of management in this field, the following elective topics have been suggested.

**Note:** This elective will not focus on design and technology aspects of the topics offered.

#### COURSE OUTLINE:

Individual College may offer topics depending upon the availability of experts and resource material. The colleges will have the opportunity to focus on a particular group of topics according to the overall philosophy and mission statement of the College. The probable management elective topics are as follows:

- Project Management
- Construction Management
- Environment and Energy management
- Architectural Design Management

#### SESSIONAL WORK:

The faculty is expected to set out the broad contour and sub aspects (including basic principles, case studies, application in building projects etc.) of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

The students are expected to present the work done in an A4 report format of 20 pages, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned



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Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

#### Guidelines for content for the electives

##### Construction Management

Human Resource Management in Construction  
Contracts and Claims Management  
Construction Materials, Stores and Inventory Control and Technology Management  
Construction Equipment Management  
Construction Quality and Safety Management  
Construction Site Administration and Control  
Introduction to Computer applications for construction management

##### Project Management

Soft Skills in Project Management  
Project Risk Management  
Project Cost Estimation and Cost Control  
Contracts and Claims Management  
Project Procurement and Materials Management  
Project Quality and Safety Management  
Introduction to Computer Application in Contract Management

## DRAFT SYLLABUS FOR APPROVAL OF FACULTY

##### Environment and Energy Management

Environment and Energy Policies and Management in Indian Context  
Environment Technology Management-Water and Waste Management Technologies  
Energy Management in Buildings (Demand and Supply Management)  
Building Management Systems

##### Architectural Design Management

Design Management  
Drawing and Documentation Management  
Computer Applications for Design Management

Architectural Design Project			
SubjectCode	5201571 (SV)		
TeachingScheme	ExaminationScheme		
TotalContact Periodsperweek=20 (lectures=4, Studio=16)	20	Sessional(Internal)	175
		Sessional(External)	175
		Viva (Internal)	50
		Viva (External)	50
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	450
		Total Credits	12





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**OBJECTIVE:** To provide an opportunity to the students to apply the knowledge gained in earlier years to full-fledged Architectural Design project of student's choice with a holistic approach including background research, programme formulation, site selection investigations and design demonstration.

**COURSE OUTLINE:** The Architectural Design Project shall consist of Design Demonstration i.e. formulation of design programme, site investigation and selection, and culmination in architectural design proposal.

**TOPIC FOR ARCHITECTURAL PROJECT:** The topic for the project shall be approved by the Institute and guided by the Faculty. The student may consult external resource persons specializing in the chosen topic but the assessment shall be done by the faculty. A guide may guide upto EIGHT students during the session. In order to qualify to work as a Guide, the faculty must possess minimum of ten YEARS of teaching / professional experience.

**SESSIONAL WORK:**

The portfolio of the work submitted by the student shall contain MANUALLY LABOURED / COMPUTER GENERATED drawings of sheet sizes as per international standards and a PHYSICAL MODEL explaining the architectural proposal. Alongwith the drawings A4/A3 size report consisting of the background and rationale of the project, the methodology and the prints of the final proposal shall be submitted after the oral examination, to be kept in the library of the college. The choice of the size of the report is left to the institute, however, within one institute report size should be constant.

In addition the student may show other presentations like 3D views, walkthroughs etc. if permitted by the examiners.

## DRAFT SYLLABUS FOR APPROVAL OF FACULTY

**SESSIONAL ASSESSMENT:**  
The Internal assessment of architectural project shall be carried out STAGE WISE as decided by the college. The final assessment in the examination shall be done by both Internal and External examiner in which the student shall display the work on the space allotted to him/her and explain his work and answer all the queries raised by the examiner.

The examiners shall assess the work done and presented by the student, duly approved by the Faculty. The drawings and models, duly stamped and signed by the Faculty shall be treated as authentic work done by the student under the guidance of the Faculty. The student may submit sufficient number of drawings required to satisfactorily explain the project. The student shall also present a separate portfolio of study & process sheets, study models etc.

**ORAL EXAMINATION :** The oral shall be held in the physical presence of the student in examination centre of the candidate jointly by the internal and external examiners. The student shall be allowed to present his project for minimum 10 minutes without any interruption. The student shall be judged for the depth of understanding of the subject and clarity of graphical presentation of the project.

**RECOMMENDED READING:**

All books relevant to the topic of the architectural project.

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**1.3.2.1. In the Academic Year 2021-22, Students of 5<sup>th</sup> Year  
Work-Dairy**





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**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

FIFTH YEAR B. ARCH  
**PRACTICAL TRAINING PROGRAMME**

Subject Code: 5201570 (SV) (2015 Pattern)

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE  
ACADEMIC YEAR 20 - 20

**LOG - BOOK**

FULL NAME OF TRANIEE: AHIR TEJAS SHIVRAM  
(In block letters beginning with surname)

EXAMINATION NO: \_\_\_\_\_



**Pune District Education Association's  
College of Architecture, Akurdi**

Pune



Sector No:28, Pradhikaran, Akurdi

Tel. no.: 202-27650897/02027650897

Mail id: pdeacoa@gmail.com

Website: <http://www.pdeacoa.edu.in>

PDEA's  
College of Architecture  
Akurdi, Pune - 411 044.  
MH 96  
SESSIONAL WORK  
B. ARCH.

*[Handwritten Signature]*





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**FORTNIGHT TRAINING REPORT**

Year     Month

Name of Trainee: Tejas Shivram Ahir.

Employee ID / PF-No. TA2021

Date	Activity/work done	Remark
21/06/21	Worked On area Statement for Divine Art Ashram, UP.	Good.
22/06/21	Worked on Study room Furniture layout	Good
23/06/21	Made Furniture Layout options	Good.
24/06/21	Revised Study room Layouts and drafted 3 sections	u
25/06/20	Revised Sections. Made Sketchup Model	u
26/06/21	Rendered Plan, Sections	u
28/06/21	Sketchup Model rendered it for views in Lumion.	u
29/06/21	Final presentation sheet for Study room	u
30/06/21	Final presentation sheet for Study room	u

Any New Topics came across/ Any New Articles ✓

Learned V-ray for rendering. ✓

Lectures / Training Programme ✓





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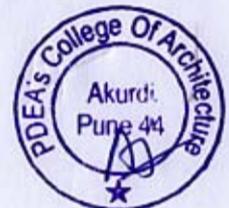
**FORTNIGHT TRAINING REPORT**

Year     Month

Name of Trainee: Tejas Shivram Ahir.

Employee ID / PF-No: TA2021

Date	Activity/work done	Remark
01/07/21	Identified Nashik -native trees	Good.
02/07/21	Identified flowering plants for vertical gardening and planter boxes -Srima Garden	u
03/07/21	Santoshi Baba Ashram model	u
04/07/21	Cross Section Srima Garden	u
05/07/21	Cross Section Srima Garden	u
06/07/21	Cross-sections- Srima Garden Revised Softscape Plan & Schedule- Srima Garden	u
07/07/21	Pergola Section Details Green Wall Srima Garden	u
08/07/21	Pergola Section Details	u
09/07/21	Green Wall Srima Garden	u
12/07/21	Green Wall Srima Garden	u
13/07/21	Green Wall Srima Garden	u
14/07/21	Srima garden Plan	u
15/07/21	Srima garden Plan	u
16/07/21	Ganesh Co-housing Municipal Drawing	u
17/07/21	Ganesh Co-housing Municipal Drawing	u
19/07/21	Ganesh Co-housing Municipal Drawing	u
20/07/21	Ganesh Co-housing Municipal Drawing	u
22/07/21	Santoshi Baba Ashram model	u
23/07/21	Santoshi Baba Ashram model	u
24/07/21	Santoshi Baba Ashram model	u
26/07/21	Ambika Apt municipal drawing	u
27/07/21	Ambika Apt municipal drawing	u
28/07/21	Ambika Apt municipal drawing	u





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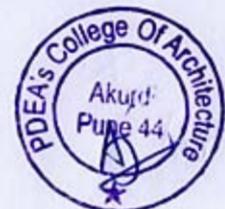
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29/07/21	Ambika Apt municipal drawing	Good
30/07/21	Ambika Apt municipal drawing	u.
Any New Topics came across/ Any New Articles read		

Site Visit

Lectures / Training Programme





# Pune District Education Association's COLLEGE OF ARCHITECTURE

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## FORTNIGHT TRAINING REPORT

Year     Month

Name of Trainee: Tejas Shivram Ahir

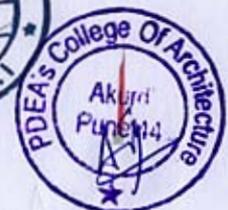
Employee ID / PF No. TA2021

Date	Activity/work done	Remark
02/08/21	Revised Ambika Bhavan area statement	Good
03/08/21	Changes in area statement and drawing	u
09/08/21	Worked on company profile presentation	u
10/08/21	Worked on company profile presentation	u
11/08/21	Worked on company profile presentation	u
12/08/21	Revised architects' certificate for Ambika Bhavan	u
13/08/21	Searched parametric furniture options for Dayyar builder's bungalow	u
14/08/21	Identified landscape areas for Dayyar builder's bungalow	u
16/08/21	landscape reference images for Dayyar builder's bungalow.	u
17/08/21	Created conceptual images for client's reference	u
18/08/21	Discussed interior styles and landscape for Dayyar builder's bungalow	u
19/08/21	Landscape concept presentation Dayyar builder's bungalow	u
20/08/21	Landscape concept presentation Dayyar builder's bungalow	u
21/08/21	Landscape concept presentation Dayyar builder's bungalow	u
23/08/21	Dayyar Bungalow Sketchup Model	u

Any New Topics came across/ Any New Articles read

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**FORTNIGHT TRAINING REPORT**

Year  Month

Name of Trainee: Tejas Shivram Ahir

Employee ID / PF No: TA2001

Date	Activity/work done	Remark
01/09/21	Interior views Dayyar Builders	Good
02/09/21	Dayyar Landscape Render Ps	h
03/09/21	Dayyar Bungalow Landscape Views	h
04/09/21	Changes In Renders Dayyar Bungalows	h
06/09/21	Unit Plans -Kashinath Group	h
07/09/21	Unit Plans -Kashinath Group	h
08/09/21	Pitch Roof Plan Type A Bungalow	h
09/09/21	Pitch Roof Plan Single Bungalow	h
13/09/21	Type A Bungalow Changes in Roof Plan	h
14/09/21	Type B Bungalow Changes in Roof Plan	h
15/09/21	Clubhouse Line Plan	h
16/09/21	Clubhouse Pitch Roof Plan	h
17/09/21	Clubhouse Pitch Roof Plan render	h
18/09/21	Plot Plan Render-Kashinath Group	h
20/09/21	Moulangi Eco- Park Site Identification	h
21/09/21	Moulangi Eco- Park Site Identification & marking	h
22/09/21	Changed roof from pitch to Flat Roof Unit Plan	h
23/09/21	Flat Roof Unit Plan	h
24/09/21	Unit Plan Render PS Kashinath Group	h
25/09/21	Single Bungalow Line Plan	h





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27/09/21	Single Bungalow Plan Render	Good
28/09/21	Terrace Plan Single Bungalow -Kashinath Group	u
29/09/21	Plot Plan Render Ps	u
30/09/21	Plot Plan Render Ps Clubhouse Plan Render Ps	u

Any New Topics came across/ Any New Articles read ✓

Parametric Furniture Design

Site Visit ✓

Lectures / Training Programme ✓





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**FORTNIGHT TRAINING REPORT**

Year: 2021

Month: 10

Name of Trainee: Tejas Shivram Ahir

Employee ID /-PF No. TA 2021.

Date	Activity/work done	Remark
01/10/21	Ground Floor Plan changes Ground Floor plan Render-Kashinath Group	Good
02/10/21	Ground Floor Plan Sheet Composition- Kashinath Group	✓
04/10/21	First Floor plan Render-Kashinath Group	✓
05/10/21	First Floor Plan Render Clubhouse G. Floor Plan Render-Kashinath Group	✓
6/10/21	Type A Bungalow First Floor Plan Render Changes in plans-Kashinath Group	✓
07/10/21	Changes In clubhouse plan-Kashinath Group	✓
08/10/21	Clubhouse Plan Render-Kashinath Group	✓
09/10/21	Clubhouse 1st Floor Plan Render-Kashinath Group	✓
11/10/21	Gazebo Plan Clubhouse Plan Changes-Kashinath Group	✓
12/10/21	Clubhouse Plan Render-Kashinath Group	✓
13/10/21	Clubhouse Model -Kashinath Group	✓
14/10/21	Clubhouse Model -Kashinath Group	✓
18/10/21	Clubhouse Model Render Views	✓
19/10/21	Plot Plan Moulangi Park	✓
20/10/21	Requirement Identification- Moulangi	✓
21/10/21	Concept Design for Moulangi Eco Park	✓
22/10/21	Concept Design for Moulangi Eco Park	✓
25/10/21	Terrace Plan Changes- Kashinath Group	✓
26/10/21	Changes In Master Layout- Kashinath Group	✓





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27/10/21	Master Layout render -Kashinath Group	Good
28/10/21	Concept Design for Moulangi Eco Park	Good
29/10/21	Concept Design for Moulangi Eco Park	u
30/10/21	Concept Design for Moulangi Eco Park	u

Any New Topics came across/ Any New Articles read

Site Visit

Lectures / Training Programme

## FORTNIGHT TRAINING REPORT

Year: 2021 Month: 11

Name of Trainee: Tejas Shivram Ahir

Employee ID / PF No. TA2021

Date	Activity/work done	Remark
01/11/21	Badlapur Resort Plan	Very Good
08/11/21	Badlapur Resort Plan	u
09/11/21	Badlapur Resort Plan	u
10/11/21	Badlapur Resort PPT	u
11/11/21	Badlapur Resort PPT	u

Any New Topics came across/ Any New Articles read

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**Dear Architect-Friend,**

This is to inform you that, a student of fifth year B. Arch is needed to complete practical training in a professional organization in the ninth semester. We are hereby entrusting our student to take training in your organization, so that you can guide in application of academic instructions received by him/ her so far.

The students is acquired academic session lessons in core subjects such as Architectural Design, Building Technology & Materials, Theory of structure, Building Services, Working Drawing & Graphics, 2D & 3D CAD, He/She was also exposed to complementary subjects such as History of Architecture, Basic Design, Climatology, Surveying & levelling, Landscape Design, Quantity Surveying & Estimation, Specification Writing, Professional Practice of any other advanced level of the aforesaid core subjects.

This trainee is required to be engaged to full time basis. He/She is to work diligently within the disciplinary framework and comply with all the rules and regulations of your organisation. Any lapse in his/her part I this regard may please be reported to the faculty-in-charge of our college.

For better description of the overall requirement under the circumstances of practical training, relevant portion of the concerned syllabus is enclosed for your perusal and ready references. You can always contact the faculty-in-charge for any additional clarification.

We thus solicit your help in guiding the trainee with your practical experience.

**Thank You and due regards,**

Sincerely Yours

**Ar. Nishant Gawande**

Vice-Principal, PDEA'S COA, Akurdi





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## INDEX

1. Syllabus
2. Submission Criteria at the time of viva-voce examination
3. Indoor/outdoor Activity
4. Notes
5. CANDIDATURE Form
6. CERTIFICATE OF PERFORMANCE
7. SUGGESTIONS BY CERTIFYING REGISTERED ARCHITECT
8. SUGGESTIONS BY CERTIFYING REGISTERED ARCHITECT
9. FORTNIGHT TRAINING REPORT





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**Fifth Year B. Arch.**

**Subject Practical Training**

**Subject Code: 5201570 (Sessional & Viva)**

**(2015 Pattern)**

<b>Duration of Professional Training :</b> Maximum 120 Working days in 9 <sup>th</sup> Semester	<b>Marking Scheme:</b> Sessional (Internal):75 Sessional (External):75 Viva (Internal): 75 Viva (External):75 <b>Total Marks:200</b> <b>Total Creadits:8</b>
--	--

**Objectives:**

- To expose students to the world of Professional Practice & get hands on training under the guidance of a professional who is actively engaged in Architectural practice.
- To get experience of dealing with live projects of various nature and also the site experience to see how the projects get built on the site.
- To learn about the Office management, project Management, Contract management, Human Resource Management, New techniques of Construction, Advance building services, landscape and environmental designing etc.
- To enhance the students ability to think comprehensively for undertaking the Architectural Project work in the final semester.

**Criteria of Organisation where Practical training to be carried out:**

- Students should work in organization where architecture or its allied disciplines are carried under Professional who is registered architect with COA.
- In case a student's undergoes Training at a firm outside India, the professional should be registered with the professional body governing practice in that country in addition to the registration with COA India.

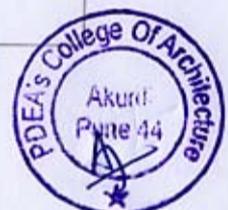
**Duration Of Training:**

- Total duration of Professional Training will be 120 working days in IX sem.

**Sessional Assessment and Viva-Voce:**

- The sessional and viva assessment shall be done jointly by the Internal and External Examiners and the allocation of marks shall be as stipulated in the syllabus.

**Submission Criteria at the time of viva-voce examination**





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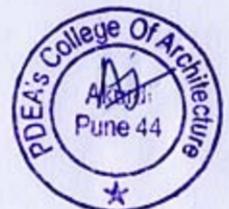
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- 1. Log Book:** Duty filled in and authenticated by the said responsible architect of the employer organization (One and the same signatory throughout the logbook) signed by the professional, under whose the guidance the student worked, and his remark on overall approach and attitude of the students toward the office work with seal of the organization
- 2. Drawings:** The students need to produce drawings at the time of vice-voce to indicate the kind of work carried out during training in the office. The drawings to be obtained with the permission of his/her employer, and each drawing copy to be certified by the said responsible registered architect of the employer-organization (one and the same member signatory who certifies the Log-Book)
- 3. Report:** The student need to produce a Report summarizing his/her work during the training period at the office.
- 4. Certification of Performance:** The Principal-Architect should issue a certificate to the students with respect to work quality, overall approach, and his/her attitude toward office work.
- 5. Certificate of the Principal:** On successful completion of training, he/she need to submit above mentioned requirements (1 to 5) to the college for certification by the Principal for "Sessional marking".





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### **Indoor Activity and Administration:**

- I. Routine correspondence with clients, local authorities, contractors & other agencies dealing in building industry.
- II. Systematic filling and registering office correspondence for easy references.
- III. Regular maintenance logbook with note on Principal Architect's instructions, interviews with various agencies, indoor and outdoor work and time spent.
- IV. Systematic ordering and use of office library.

### **Drawing And Designing:**

- I. Marking of preliminary design and drawings accountably by requisite prior study, research and case studies.
- II. Preparing presentations, statutory approval and detailed drawing of customer contents and format by understanding their propriety and logic.
- III. Reading and making of "contour plans" while working on design.
- IV. Dependably efficient handling of routine operations like taking off and codified rendering the prints and electronic and /or computerized communication. Drafting coping etc.
- V. Briefing with various technical consultants and co-ordinating their drawings.
- VI. Preparations of "study" and presentation models of buildings and /or developments layout in different level and chromatic material-textures.

### **Outdoor Activities:**

- I. Attending routine meetings with clients, local authorities, contractors and other trade representatives for checking of lining of building on site.
- II. Systematic surveying of sisters and / or existing building of moderate size and complexity in conventionally complex format.
- III. Architecturally monitoring the work progress on sites through periodic supervisions, instruction and report thereon.





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**Notes:**

The students will enrol himself/herself at the college by paying due fees for fifth year before going to practical training.

A faculty for 40 students shall be nominated by the college as faculty-in-charge for Practical Training Program, for concerned academic year, who would be held as counsellors, coordinators, And co-signatories to the Principal for certification of sessional marking. The term certification list, jointly authenticated should be displayed to the students by each college at least 48 hrs in advance of viva-voce scheduled for that college on "Sessional Work" of the "Practical Training" with the copy of duly forwarded to the university. The organisation once preferred, as a foresaid, cannot be changed more than once and that too unless force majeure or other defeating circumstances, would be allowed for and authenticated in writing by the nominated faculty-in-charge.

To facilitate apropos collaboration from the employer-organizations towards the wholesome yield envisioned of the training programme, common terms of reference and feedback are preferred in the appended "Mandatory" format for logbook with specified size and layout for handiness, outfit of documentary dignity and ease at re-referencing.

(An Architect Registered with the Indian Council of Architecture)





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**CANDIDATURE**

Full Name of the Trainee AHIR TEJAS SHIVRAM  
(In BLOCK letters beginning with Surname)

Address of the Trainee Karjat, Raigad 410201  
(For Contact during Training)

Tel/Fax/E-Mail No. (If any) ahirtejas18@gmail.com

Examination No. \_\_\_\_\_

Fourth Year B.Arch Exam Oct/April 20 April 2021-2022

Name of the college PDEA's COA, Akurdi, Pune

Postal address of the college Akurdi, Pune

Tel No. 020-27650897 Fax No. \_\_\_\_\_

Email Id. pdeacoa@gmail.com

Faculty-In-Charge for practical Training Programme for Academic Year 20 to 20

- 1) Prof. Prashant Gadre
- 2) Prof. Deepali Randhe

**TRAINING CENTRE**

Title of the Employer-Organization Studio White

Name of the organization Studio White, Mumbai

Name of the Certifying Registered Architect of the Employer-Organization  
Ar. Mayur Naik

COA Registration No: CA/2007/39401

(\*Professional Registration with Indian Council of Architecture)





# Pune District Education Association's COLLEGE OF ARCHITECTURE

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## CERTIFICATE OF PERFORMANCE

Full Name of the Trainee AHIR TEJAS SHIVRAM  
(In BLOCK letters beginning with Surname)

Examination No. \_\_\_\_\_

Fourth Year B.Arch Exam Oct/April 20 2021 - 2022

Name of the college PDEA'S COA, AKURDI, PUNE

Duration of employment: 15/11/2020 to 11/11/2021

Full attendance put in the Trainee: 148 Days

Maintenance of Work - Report submitted/not submitted

(Prepared under the guidance of certifying authority)

Certified copies of drawing: 50 Nos.

(Personally executed by the Trainee and issued to produce at the time of vice-voce (A2 to max A0 size)

Above certification made only after due perusal of the Principal's letter and the relevant protection of the syllabus enclosed in the LOG-BOOK of the Practical Training Programme, Fifth Year B.Arch., SPPU.

Date:

Signature

Registered Architect: Mr./ Mrs./ Miss AR. MAYUR NAIK



STAMP/SEAL OF THE EMPLOYER-ORGANISATION

(N.B. All entries to be necessarily in Blue Ink)





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**SUGGESTIONS BY CERTIFYING REGISTERED ARCHITECT**

Suggestions are earnestly solicited as regards the purview and procedure enframed in the syllabus of THE PRACTICAL TRAINING PROGRAMME of Final year B.Arch of Savitribai Phule Pune University (Accompanying this Log-Book) to be summarized by the faculty in-charge nominated by the college for the concerned academic year.

Respected Sir/Madam,  
Requesting you to kindly keep the  
Theory-Practice ratio to 50:50. This  
will make the architecture students  
market ready soon.

Thanks & Best wishes!!

Ar. Mayur Naik

Signature

Registered Architect: Mr./Mrs./Miss

AR. MAYUR NAIK



STAMP/SEAL OF THE EMPLOYER-ORGANISATION

(N.B. All entries to be necessarily in Blue Ink)





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**CERTIFICATION BY COLLEGE**

All certification found "In Order" and the entries there of faithfully and carefully transferred to the relevant statements of marks or certification as concern the candidate.

Date: 17/12/2021

Signature

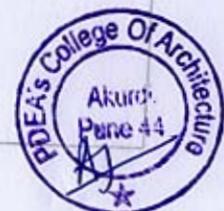
Prof. AR. DEEPAI RANDHE

Faculty-In-Charge for practical Training Programme for Academic Year 20 to 20

PDEA  
College of Architecture  
Akurdi, Pune - 411044  
Mumbai  
SESSION WORK  
B. Arch. II

**STAMP/SEAL OF THE COLLEGE**

(N.B. All entries to be necessarily in Blue Ink)





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**1.3.2.1. In the Academic Year 2021-2022, Pass-out Students of 5<sup>th</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
5201570 (SV) [2015 Pattern]	Practical Training
5201571 (SV) [2015 Pattern]	Architectural Design Project
5201572 (SS) [2015 Pattern]	Elective IV

List Of Passout 2017-18 ( Pass-Out Batch)	
Sr. No.	Name
1	AHIR TEJAS SHIVRAM
2	BAGADE MAYURI SHARAD
3	DASARI YUGA RAMESH
4	GARIBE OMKAR KAILAS
5	GELOT NUTAN BHARAT
6	JAGTAP LEENA VIKAS
7	KAMTHE SIDDHI SANJAY
8	KANADE ANKITA SANDIP
9	KHAIRNAR SAYALI KESHAVRAO
10	LIMKAR ADITYA SUBHASH
11	MUNGSE RUTUJA RAMESH
12	NIGHOJKAR PRAJWAL AVINASH
13	PAKHALE POOJA RAJENDRA
14	PARMAR SHUBHAM HARSHAD
15	PATIL NEHA NETAJI
16	PATIL SHWETA SANJAY
17	POTE SAURABH BHAGWAT
18	SHELAR BHUSHAN PRAKASH
19	SHIRVANDKAR GAYATRI MANGESH
20	TANKSALE VAIDEHI SHRIDHAR
21	THOTANGARE KIMAYA ASHOK
22	UBALE VAISHNAVI VINOD
23	WAGHERE VISHWAJEET DNYANESHWAR





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**1.3.2.1. In the Academic Year 2021-22, Pass-out Students of 5<sup>th</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
5201570 (SV) [2015 Pattern]	Practical Training
5201571 (SV) [2015 Pattern]	Architectural Design Project
5201572 (SS) [2015 Pattern]	Elective IV





# Pune District Education Association's COLLEGE OF ARCHITECTURE

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Sr. No.	Name	Firm Name	Principal Architect Name	COA Registration no.	Address of Firm
1	AHIR, TEJAS SHIVRAM	Studio White	Ar. Mayur Naik	CA/2007/39401	CF/08, 1st Floor, Metro Plaza, Nelivali, Kalyan East, Maharashtra 421306
2	BAGADE MAYURI SHARAD	Isha associates	Ar Ram Bhosale	CA/2005/37154	office no 37, second floor sukhmani chambers, Pimpri, Pune.
3	DASARI YUGA RAMESH	Amruta nikhil architects	Ar. Nikhil Sakhare	CA/2011/51346	19, harshal heights, link road, gawade nagar, chinchwad, pune-411033
4	GARIBE OMKAR KAILAS	Brahme & Ghodekar Associates	Ar. Sachin Ghodekar	CA/87/10945	Diamond Plaza, Pune-Nashik Road, Narayanganj, Pin-410504
5	GELOT NUTAN BHARAT	Isha associates	Ar Ram Bhosale	CA/2005/37154	office no 37, second floor sukhmani chambers, Pimpri, Pune.
6	JAGTAP LEENA VIKAS	NS Design studio	Ar. Namita shah	CA/2001/28096	flat no A1 sayli sughandh apartment, vidyanagar, Bhigwan road, Baranali
7	KANTHE SIDDHI SANJAY	Landmark Design group	Ar. Usha Rangarajan	CA/90/13423	plot no 32, sect no 29, near PCMC water tank, Ravet, Pune
8	KANADE ANKITA SANDIP	Brahme and ghodekar associates	Ar. Sachin ghodekar	CA/87/10945	Diamond plaza pune nashik road, narayanganj, dist Pune, pin 410515
9	KHARWAR SAYALI KESHAVRAO	Vismay space planner	AR. Smrita Wani	CA/99/24806	15 Indus apartment mico circle, Irimbak road, nashik
10	LIMKAR ADITYA SUBHASH	Sankalpna Associates	Ar. Prakash Patil	CA/2012/55813	Office no-3, 993-B Anand app, Rajaram mandal chowk, Sadastiv peth pune
11	MUNGSE RUTUJA RAMESH	Sketch art architecture	Ar. Shashank Revanwar	CA/2006/38870	pimpri-chinchwad, kalewadi
12	NIGHOUKAR PRAJWAL AVINASH	Pencil design architects and interiors	Ar. Makrand Itam	CA/2011/54198	D-101, parmar park, sec-26, PCNTDA, Pune 411044
13	PAKHALE POOJA RAJENDRA	Vismay space planner	AR. Smrita Wani	CA/99/24806	15 Indus apartment mico circle, Irimbak road, nashik
14	PARMAR SHUBHAM HARSHAD	Vivek Bhole Architects Private Limited	Ar. Vivek Bhole	CA/95/18735	Pinnacle Business Park, Andheri (E), Mumbai
15	PATIL NEHA NETAJI	Brahma Associates & Architects	Ar. Aajay Bawale	CA/94/17699	Bramha square ofc no. 201, Talegaon Dabhiade
16	PATIL SHWETA SANJAY	Isha associates	Ar Ram Bhosale	CA/2005/37154	office no 37, second floor sukhmani chambers, Pimpri, Pune.
17	POTE SAURABH BHAGWAT	Pencil design architects and interiors	Ar. Makrand Itam	CA/2011/54198	D-101, parmar park, sec-26, PCNTDA, Pune 411044
18	SHELAR BHUSHAN PRAKASH	Pencil design architects and interiors	Ar. Makrand Itam	CA/2011/54198	D-101, parmar park, sec-26, PCNTDA, Pune 411044
19	SHIRVANDKAR GAYATRI MANGESH	Architect's Atelier	Ar. Dhruv Bhumkar	CA/2019/108489	V-18 Balewadi Highstreet Baner, Pune 411045
20	TANKSALE VAIDEHI SHRIDHAR	Anuradha Gowardan	Ar. Anuradha Gowardhan	CA/92/4812	Agarwal chambers, Njgd, Pune
21	THOTANGARE KIMAYA ASHOK	Sankalpna Associates	Ar. Prakash Patil	CA/2012/55813	Office no-3, 993-B Anand app, Rajaram mandal chowk, Sadastiv peth pune
22	UBALE VAISHNAVI VINOD	kimaya associates	Ar. Manik Buchade	CA/03/325/18	yashopuram society, near Gawade petrol pump
23	WAGHERE VISHWAJEET DNYANESHWI	Lunkad Realty	Ar. Pooja mote	CA/2017/81532	SKY ONE TOWER, Lunkad Skyounge, Lane Number 7, Prathamesh Society, Kalyani Nagar, Pune, Maharashtra 411006





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[www.studiowhite.in](http://www.studiowhite.in)  
(+91) 88052 40811



Date: 26.11.2021

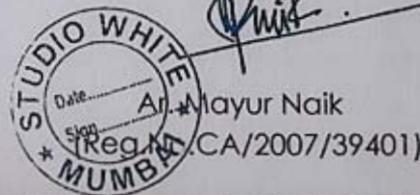
To,  
The H.O.D.  
Architecture Dept,  
Pune District Education Association's  
College of Architecture, Akurdi.  
Pune 411033.

**PROFESSIONAL PRACTICE CERTIFICATE**

This is to certify that **Mr. Tejas Shivram Ahir**, Student of Pune District Education Association's College of Architecture, Akurdi Pune, has completed the 120 Days Professional Practice started from 16th June 2021 to 11th Nov 2021, under the supervision of Ar. Mayur Naik. He has been a quick learner and has worked efficiently in both online and offline modes.

Best Wishes to him for a Bright Future.

Regards,



C-1 Jayraj, Opp Ganesh Temple, Om Nagar, Vasai (W), Mumbai.  
Mumbai | Belagavi | Surat





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**isha**  
associates

Date: - 13 nov 2021

To,  
The H.O.D  
Architecture Dept,  
Pune District Education Association's  
College of Architecture, Akurdi  
Pune 411033

**PROFESSIONAL PRACTICE CERTIFICATE**

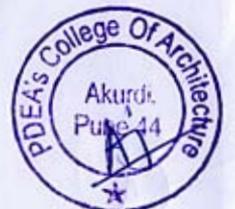
This is to certify that Ms. Mayuri Sharad Bagade, Student of, Pune district education association's College of Architecture, Akurdi Pune, has completed the 120 days Professional Practice started from 1<sup>st</sup> July to 12 Nov 2021, under the supervision of Ar. Ram Rhosale (Of Isha Associates, Pimpri, Pune)



Thanks and Regards

*Ram Rhosale*

Ar. Ram Rhosale. (CA/2005/37154)  
(Isha associates)





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AMRUTA NIKHIL ARCHITECTS  
ARCHITECTURE | INTERIOR | LANDSCAPE  
19, HARSHAL HEIGHTS, LINK ROAD,  
CHINCHWAD, PUNE - 411033

GST NO :27GGJPSI632H1Z4  
M: +91 9403981739, +91 7387791682  
EMAIL: amruta.nikhil13@gmail.com

AR. NIKHIL SAKHARE B.ARCH. | AR. AMRUTA SAKHARE B.ARCH.

Date: 15/11/2021

EXPERIENCE LETTER

TO WHOMSOEVER IT MAY CONCERN

On behalf of AMRUTA NIKHIL ARCHITECTS we hereby state that Miss. Yuga Dasari

has worked with us as an intern Architect from 15/06/2021 to 30/10/2021.

She has been very understanding and quick learner throughout the tenure. Understands the concepts

and has worked efficiently. She has definitely contributed towards the company within her short tenure.

We congratulate her wish a long and successful journey ahead.

Regards,

  
AMRUTA NIKHIL ARCHITECT  
PCMC, PUNE-411033

Ar. Nikhil  
Amruta Nikhil Architects

Page 1 of 1





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**isha**  
associates

Date: - 13 nov 2021

To,  
The H.O.D  
Architecture Dept,  
Pune District Education Association's  
College of Architecture, Akurdi  
Pune 411033

**PROFESSIONAL PRACTICE CERTIFICATE**

This is to certify that Ms. Nutan Bharat Gelot, Student of, Pune district education association's College of Architecture, Akurdi Pune, has completed the 120 days Professional Practice started from 1<sup>st</sup> July to 29 Oct 2021, under the supervision of Ar. Ram Bhosale (Of Isha Associates, Pimpri, Pune)



Thanks and Regards

*Ram Bhosale*

Ar. Ram Bhosale. (CA/2005/37154)  
(Isha associates)





Pune District Education Association's  
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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**Brahme & Ghodekar Associate**

Shop 02, Diamond Plaza, Pune Nasik

Road, Narayangaon - 410504

E-mail id: sachinghodekar@rediffmail.com

Mob. : +917588942969, +919975599106

Date: 30th October 2020

**CERTIFICATE**

To whom so ever it may concern.

This is to Certify that **Mr. Omkar Kailas Garibe**, Final Year B.Arch. student of Pune District Education Association College of Architecture. Was working with us as a 'Professional Practice Trainee' from **18th June 2021 to 30th October 2021.**

During his tenure he has worked on several projects in residential and commercial sector, he approach towards design is remarkable, he is sincere and punctual, he was always concentrated towards his goal to study .the Professional Approach in the industry.

I rate he above average, and hope he will stand up with the title 'Architect soon'

We wish him good luck for the future.

**Brahme & Ghodekar Associates**

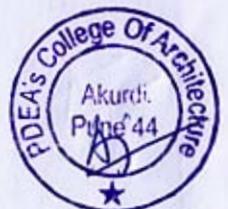
**Brahme & Ghodekar Associates**  
**ARCHITECTS**

Diamond Plaza, Narayangaon  
Dist. Pune. Pin-410504

Ar. Sachin Ghodekar

CA/2002/29371

Principal Architect





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**NANDITA S. SHAH (B. Arch.)**

FLAT NO. A1, SAYALI SUGANDH APT  
VIDYANAGAR, BHIGWAN ROAD,  
BARAMATI-413102  
MOB NO : 9850056860/ 9850697522  
EMAIL ID shahnandita96@gmail.com, siddharth\_shah2006@rediffmail.com

Reg. No. CA/2001/28096

DATE-, 24/11/2021

**EXPERIENCE LETTER**

**TO WHOMSOEVER IT MAY CONCERN**

This letter is to certify that Miss. Leena Vikas Jagtap has successfully completed her Professional Training in our Architecture firm from 15<sup>th</sup> June 2021 to 02<sup>nd</sup> November 2021 in Baramati. The mode of working was in office and work from home due to the Pandemic situation. She was actively involved in the projects and jobs assigned to her.

She has worked on the Interior Designing, Working Drawings, Interior Drawing Details and also 3D Visualization.

During her Internship Program, we came to know about her Designing and Software skills. She can improve on Punctuality and the Hardworking.

We wish her all the very best for the Bright Future!

Kind Regards,

*Nandita*  
24<sup>th</sup> Nov 2021  
**NANDITA S. SHAH**

Architect

Reg.No.CA/2001/28096

Ar. Nandita Shah

Note: All the work in the Portfolio she is presenting is done by her.





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**CERTIFICATE COURSE COMPLETION**

To,  
The Principal,  
PDEA COA Akurdi,  
Pune

Respected Sir,

Sub: - Certificate of internship completion...

This is to certify Siddhi Sanjay Kamthe bonafide 5<sup>th</sup> year student from PDEA COA Akurdi, PUNE, has successfully completed internship period commencing from 02<sup>nd</sup> JUNE 2021 to 12<sup>th</sup> NOV 2021(120 DAYS) The drawings produced for viva are done by the student herself in our office.

Thanking You,

Yours faithfully,



Ar.Usha Rangarajan





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**Brahme & Ghodekar  
Associates**

Shop 02, Diamond Plaza, Pune Nasik Road,  
Narayangaon - 410504  
E-mail id: info@brahmeandghodekar.com  
Mob. : +917588942969

Date: 18<sup>th</sup> June 2021

**Appointment letter**

Dear,

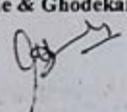
Ms. Ankita Sandip Kanade

It is our pleasure to inform you that upon assessment we found your skills and competencies matching our requirements. Accordingly, we offer you this opportunity to team with our company for a period of **120 days** starting from **18<sup>th</sup> JUNE 2021**. During this period, you will be designated as "trainee architect".

The company reserves the right to terminate services of trainees on grounds of misconduct or breach of terms and conditions.

Whilst welcoming you to **Brahme & Ghodekar Associates**, we wish you good luck.

**Brahme & Ghodekar Associates**

  
Ar. Sachin Ghodekar

CA/2002/29371

Principal Architect





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

Ar. Smita K. Wani

15, Indus Apt., MICO Circle, Trimbak Road, Nashik - 422 002.  
Tel.: 2319222, 98230 12842 www.vismay.com email : smita@vismay.com



Date:-02 Oct 2021

### Internship Completion Certificate

Whom it may concern

This is to certify that **Ms. Pooja Rajendra Pakhale** student of PDEA College of Architecture, Pune has completed her 16 weeks from 07.06.2021 to 02.10.2021 of Internship Experience in our Firm.

We further say that, during the period of internship program with us, she was sincere, hardworking & did satisfactory work within time. To the best of our knowledge and belief she bears good moral character.

We wish her success in her future endeavor.

VISMAY Space Planner, Nashik

Ar. Smita Wani

**VISMAY SPACE PLANNERS**  
15, Indus Apt., MICO Circle,  
Near Ved Mandir,  
Trimbak Road, Nashik-422 005





Pune District Education Association's  
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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org



Architect & Interiors

D - 101, Parmar Park, Sec - 26, PCNTDA, Pune-411044 Email | makarandarc@gmail.com

Date: 27/11/2021

**CERTIFICATE OF COMPLETION**

This is to certify that, Mr. Prajwal Nighojkar is a student of 9<sup>th</sup> semester B. Arch. Program from PDEA College of Architecture, Akurdi, Pune affiliated Pune University, joined our organization as Architectural Trainee on 14<sup>th</sup> June 2021. He successfully completed his training for a period of one semester. He worked towards satisfactory completion of this training. Copies of drawings and details of project, in which he was involved on the daily basis are enclosed with this letter.

For,  
PENCIL DESIGNS  
Architects and Interiors,



Ar. Makarand Ittam.





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**BA**

BRAMHA  
ASSOCIATES

"Crafting for the people"

**BRAMHA ASSOCIATES**

AJJAY D BAAWALE

+91 9766441479

bramhaassociate@gmail.com

Ref No:

Date : 04/12/2021

**EXPERIENCE CERTIFICATE**

TO WHOMSOEVER IT MAY CONCERN

This letter is to certify that Neha Patil from PDEA College of Architecture, Akurdi has successfully completed her internship program of 120 days with BRAMHA ASSOCIATES. Her internship tenure was from 15<sup>th</sup> JUNE 2021 to 15<sup>th</sup> NOV 2021. She was actively & diligently involved in the projects and tasks assigned to her. During the span, she has been sincere, reliable, trustworthy, sociable, pleasant, punctual, hardworking and open to challenges.

Her learning powers are good and picks up swiftly. Her feedback and evaluation proved that she learned keenly. Moreover, her interpersonal and communication skills are brilliant.

We wish her a bright future.

Ar. Ajjay Baawale  
CA/94/17699

BRAMHA ASSOCIATES  
Ajjay Baawale  
Architect, Interior &  
Approved Valuer-A9722  
Regd.No.-CA/94/17699

Bramha Associates

Bramha Square Plot No 13 Laxmi Baugh Colony  
above Reliance Trends, 2nd Floor Ofc No. 201, Talegaon Dabhode





Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**VIVEK BHOLE ARCHITECTS PVT. LTD.**

1ST FLOOR, PINNACLE BUSINESS PARK, MAHAKALI CAVES ROAD, MIDC, ANDHARI (EAST), MUMBAI - 400 093. PH. 91-22-66130100.  
www.vivekbhole.com, E-mail : info@neomodernarch.com / excoemodernarch@gmail.com



Date: 14.12.2021

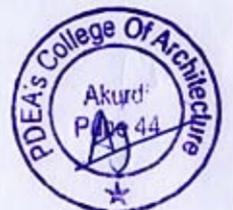
To,  
The Principal,  
Pune District Education Association  
College Of Architecture  
PUNE (Maharashtra)

Mr. Shubham Parmar has undergone practical training in our organization from 05.08.2021 to 14.12.2021 with 100 days. His training has been supervised by Ar. Ketan Sonawadekar who is registered with Council of Architecture.

The performance of Mr. Shubham Parmar during his training period was good.

Name of the Architect: Ar. Vivek Bhole  
Name of Organization: Vivek Bhole Architects Pvt. Ltd.  
COA Registration No.: CA/95/18735

Signature: \_\_\_\_\_





Pune District Education Association's  
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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

**isha**  
associates

Date: - 13 nov 2021

To,  
The H.O.D  
Architecture Dept,  
Pune District Education Association's  
College of Architecture, Akurdi  
Pune 411033

**PROFESSIONAL PRACTICE CERTIFICATE**

This is to certify that Ms. Shweta Sanjay Patil, Student of, Pune district education association's College of Architecture, Akurdi Pune, has completed the 120 days Professional Practice started from 1<sup>st</sup> July to 28 Oct 2021, under the supervision of Ar. Ram Bhosale (Of Isha Associates, Pimpri, Pune)



Thanks and Regards

*Ram Bhosale*

Ar. Ram Bhosale. (CA/2005/37154)  
(Isha associates)





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Architect & Interiors

D - 101, Parmar Park, Sec - 26, PCNTDA, Pune-411044

Email | makarandarc@gmail.com

Date: 27/11/2021

**CERTIFICATE OF COMPLETION**

This is to certify that, Mr. Bhushan Shelar is a student of 9<sup>th</sup> semester B. Arch. Program from PDEA College of Architecture, Akurdi, Pune affiliated Pune University, joined our organization as Architectural Trainee on 14<sup>th</sup> June 2021. He successfully completed his training for a period of one semester. He worked towards satisfactory completion of this training. Copies of drawings and details of project, in which he was involved on the daily basis are enclosed with this letter.

For,  
PENCIL DESIGNS  
Architects and Interiors.



Ar. Makarand Ittam.





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**Anuradha Govardhan**

ARCHITECT - INTERIOR DESIGNER

203-204, Agarwal Chambers, Second Floor,

Mumbai Pune Road, Opp. Main Bus Stop, Nigdi, Pune 44

Phone : (020) 27657456 Mobile : 9850689058

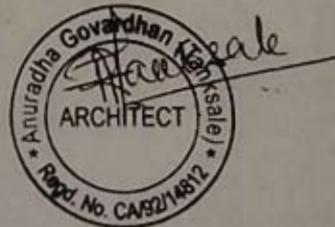
E-mail : anuradha.arch@gmail.com

Date :- 07/12/2018

**WORK EXPERIENCE CERTIFICATE**

This is to certify that Miss. Vaidehi Tanksale, Chinchwad, Dist, Pune, was working in my office since 6 months for professional practice training. She has worked on residential, commercial buildings and their respective elevation, working drawings etc. She has also worked on landscape design of open space in a residential complex.

Her performance is excellent and a good knowledgeable student.



Ar. Anuradha Govardhan





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**ARCHITECT'S ATELIER**  
Ar. DHIRAJ BHUMKAR

Architect's atelier

*Architectural Design. Interiors. Landscape*

*Experience Certificate*

Date-10/12/2021

To, Whom so ever may Concern.

This is to certify that **Ms. Gayatri Shirvankar** was employed with us as Trainee Architect in the Design department, from 1<sup>st</sup> July 2021 to 30<sup>th</sup> October 2021.

She has successfully completed 120 days of Internship program according to the Savitribai Phule Pune University norms with us.

During the period of her assignment, we found her sincere, hardworking and a keen learner.

We wish her all the best for future endeavors.

Ar. DHIRAJ BHUMKAR

Architect's Atelier.



OFFICE ADDRESS:

Office 204, V-10, Opp-Cummins Innis Office Campus, Balowadi High Street, Baramba, Pune, Maharashtra-411045

Website: [www.atelieroffice.com](http://www.atelieroffice.com) Email id: [dbaj@atelieroffice.com](mailto:dbaj@atelieroffice.com) +91-9527 33 1665





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**SANKALPANA ASSOCIATES**

INTERIOR DESIGNER  
MOB 9613120002 9167109649



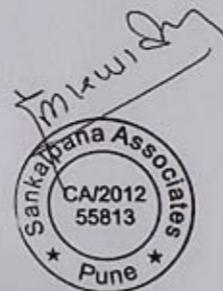
date-06/11/2021

**EXPERIENCE CERTIFICATE**

This letter is to certify that Kimaya A. Thotangare from PDEA college of architecture akurdi has successfully completed her internship program of 120 days with Sankalpana Associates .

Her internship tenure was form 15<sup>th</sup> JUNE 2021 to 6<sup>th</sup> NOV 2021. She was actively and diligently involved the projects and tasks assigned to she during the span she has been sincere, reliable, trustworthy, sociable, pleasant, punctual, hardworking and open to challenges.

Her learning powers are good and picks up swiftly. Her feedback and evaluation proved that she learned keenly. Moreover her interpersonal and communication skills are brilliant.



OFFICE NO. 30/30/30/30 ANAND APPT. RAJARAM MANDAL CHOUK SADASHIV PETH AKURDI PUNE-30  
sankalpana\_office@gmail.com sankalpana\_pna@gmail.com





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Off. No. 1, Yashpuram Soc., Near Hotel Eagle Executive, Link Road, Chinchwad, Pune 411019

**KIMAYA**  
ASSOCIATES  
architects & planners

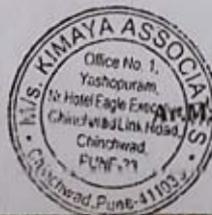
Date: 22.11.2021

To,  
The H.O.D  
Architecture Dept,  
Pune District Education Association's  
College of Architecture, Akurdi  
Pune. 411033

**PROFESSIONAL PRACTICE CERTIFICATE**

This is to certify that Ms. Vaishnavi Vinod Ubale, Student of, Pune District Education Association's College of Architecture, Akurdi Pune, has completed the 120 Days Professional Practice started from 29<sup>th</sup> June 2021 to 30<sup>th</sup> Oct 2021, under the supervision of Ar. Manik Buchade [of Kimaya Associates, Chinchwad Pune.]

Thanks & Regards,



Ar. Manik Buchade (Reg. No. CA/03/32518)  
(For Kimaya Associates)





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org



To Whomsoever It May Concern

This is to certify that Vishwajeet Waghere, has successfully completed his internship program of 120 days with us. His internship tenure was from 6th Aug 2021 to 4th Dec 2021.

He was actively and diligently involved in the project "Sky One Corporate Park", Viman Nagar, under the guidance of Project Head Mr. Sunil Kumbhar.

During his span he has been sincere, punctual and hardworking.

Wishing him the very best for his future endeavors.

for Lunkad Realty



Ar.Pooja Mote  
CA/2017/81532

Sky One, Kalyani Nagar, Pune - 411006, INDIA  
T: +91 20 2651 2100 | W: www.lunkadrealty.com | E: info@lunkadrealty.com





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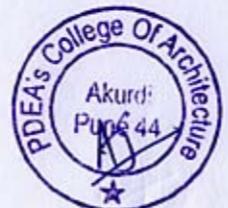
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**1.3.2.1. In the Academic Year 2021-2022, Pass-out Students of 5<sup>th</sup> Year**

**Architecture participated in following courses.**

Course code	Course Title
5201570 (SV) [2015 Pattern]	Practical Training
5201571 (SV) [2015 Pattern]	Architectural Design Project
5201572 (SS) [2015 Pattern]	Elective IV





**1.3.2.1. In the Academic Year 2021-22, Students of 5<sup>th</sup> Year**

**List Passout Architectural Design Project of Students**

5th Year Thesis topic & Guide Allotment List				
Sr. No.	Name	Name of Thesis Topic	Guide	Asst. Guide
1	AH R TEJAS SHIVRAM	Para-olympic training & cultural centre, Gahunje, Pune.	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
2	BA-GADE MAYURI SHARAD	Adhar Kendra at Shiur, Pune.	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
3	DASARI YUGA RAMESH	meditation center	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
4	GARIBE OMKAR KAILAS	Drug Rehabilitation Center,Badlapur	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
5	GELOT NUTAN BHARAT	Art and design school, pashan, pune	Ar.Abhijit Bhagat	Ar.Deeptali Randhe , Ar.Vishnu Suresh
6	JASTAP LEENA VIKAS	VEDIC GURUKUL- The skills nd development institute at Pandharpur	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
7	KAMTHE SIDDHI SANJAY	Cancer Hospice at pune	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
8	KANADE ANKITA SANDIP	..... park -developed by morden Cadbury factory at manchar	Ar.Abhijit Bhagat	Ar.Deeptali Randhe , Ar.Vishnu Suresh
9	KI-AIRNAR SAYALI KESHAVRAO	School and Hostel Facilities For Migrant children At Nashik	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
10	LIMKAR ADITYA SUBHASH	FOREST TOURIST CENTRE AT RADHANAGARI	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
11	MLNGSE RUTUJA RAMESH	Architect against domestic violence at mafkal	Ar.Abhijit Bhagat	Ar.Deeptali Randhe , Ar.Vishnu Suresh
12	NIGHOJKAR PRAJWAL AVINASH	TRAUMA CARE CENTRE	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
13	PA-KHALE POOJA RAJENDRA	Eco Tourism Center With Cultural Background, at Jawhar, palghar	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
14	PA-RMAR SHUBHAM HARSHAD	Busness and education incubation centre at navimumbai	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
15	PATIL NEHA NETAJI	Cancer hospital at Pune	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
16	PATIL SHWETA SANJAY	Residential school cum's skill development centre at buldhana	Ar.Abhijit Bhagat	Ar.Deeptali Randhe, Ar.Vishnu Suresh
17	POTE SAURABH BHAGWAT	ARCHITECTURAL MUSEUM	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Laibige
18	SHELAR BHUSHAN PRAKASH	Institute of cinematic arts	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
19	SHIRVANDKAR GAYATRI MANGESH	Urban Haat	Ar.Abhijit Bhagat	Ar.Deeptali Randhe , Ar.Vishnu Suresh
20	TANKSALE VAIDEHI SHRIDHAR	Tribal Residential school, Pune	Ar.Abhijit Bhagat	Ar.Deeptali Randhe , Ar.Vishnu Suresh
21	THOTANGARE KIMAYA ASHOK	CULTURAL AND TOURIST HUB AT CHIKHALDARA	Ar.Abhijit Bhagat	Ar.Deeptali Randhe , Ar.Vishnu Suresh
22	UBALE VAISHNAVI VINOD	bird sanctuary at bhigwan	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare
23	WAGHERE VISHWAJEET DNYANESHWAR	COMMERCIAL COMPLEX (IT PARK)	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pensare



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**COLLEGE OF ARCHITECTURE**

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**1.3.2.1. In the Academic Year 2021-22, Students of 5<sup>th</sup> Year ( Passout Batch)**

**Architectural Design Project- Dessertation Cetificate**





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VEDIC GURUKUL AT PANDHARPUR



PUNE DISTRICT EDUCATION ASSOCIATION'S  
**COLLEGE OF ARCHITECTURE**  
AKURDI

CERTIFICATE

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled VEDIC GURUKUL AT PANDHARPUR in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Prashant Gadre & Ar. Pooja Kudale (PDEA's College of Architecture, Akurdi).

Date:24.05.2022

**Leena Jagtap**

Place:

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

**INTERNAL GUIDE**  
PDEA's COA, Akurdi

**EXTERNAL GUIDE**

**EXTERNAL EXAMINER**

**PRINCIPAL**  
PDEA's COA, Akurdi





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**PUNE DISTRICT EDUCATION ASSOCIATION'S  
COLLEGE OF ARCHITECTURE  
AKURDI**

**CERTIFICATE**

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Paralympic Training Centre at Gahunje, Pune** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of **Ar. Nishant Gawande (PDEA's College of Architecture, Akurdi)**.

Date: 24/05/2022

Place: Akurdi, Pune.

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

Ar. Nishant Gawande  
**INTERNAL GUIDE**  
PDEA's COA, Akurdi



Tejas Shivram Ahir

Ar. Swati Rode

**CO-GUIDE**  
PDEA's COA, Akurdi

**EXTERNAL EXAMINER**

**PRINCIPAL**  
PDEA's COA, Akurdi





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

FACILITATION CENTER AT BHIGWAN

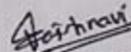


PUNE DISTRICT EDUCATION ASSOCIATION'S  
**COLLEGE OF ARCHITECTURE**  
AKURDI

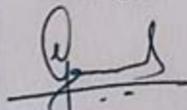
**CERTIFICATE**

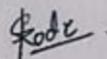
I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Facilitation Centre at Kumbhargaoon** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of **Ar. Nishant Gawande/ Ar. Swati Rode (PDEA's College of Architecture, Akurdi)**.

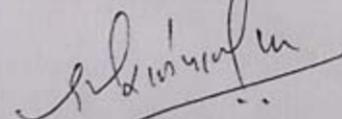
Date: 24/05/2022  
Place: Akurdi, Pune

  
Vaishnavi Ubale  
Student's name

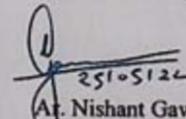
This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

  
Ar. Nishant Gawande  
INTERNAL GUIDE  
PDEA's COA, Akurdi

  
Ar. Swati Rode  
CO-GUIDE  
PDEA's COA, Akurdi

  
EXTERNAL EXAMINER

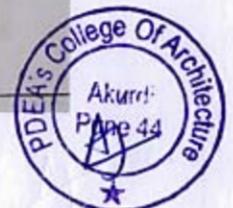


  
Ar. Nishant Gawande  
PRINCIPAL  
PDEA's COA, Akurdi

B.arch 2021- 22

2

En. No. - 1151731677





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Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

SKILL DEVELOPMENT CENTRE



PUNE DISTRICT EDUCATION ASSOCIATION'S  
**COLLEGE OF ARCHITECTURE**  
AKURDI

**CERTIFICATE**

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **SKILL DEVELOPMENT CENTRE** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Abhijeet bhagat (PDEA's College of Architecture, Akurdi).

  
Shweta .S.Patil

Date: 24/05/2022

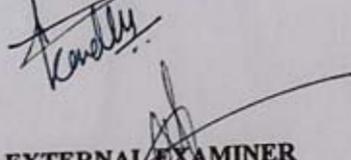
Place: Pune

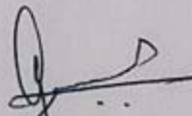
This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

  
INTERNAL GUIDE  
PDEA's COA, Akurdi



EXTERNAL GUIDE

  
EXTERNAL EXAMINER

  
PRINCIPAL  
PDEA 's COA Akurdi





Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web. : www.coa-pdea.org

School and hostel facilities for migrants



PUNE DISTRICT EDUCATION ASSOCIATION'S  
**COLLEGE OF ARCHITECTURE**  
AKURDI

CERTIFICATE

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **School and hostel facilities for migrants at Nashik** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar.Prashant Gadre and Ar. Pooja Kudale(PDEA's College of Architecture, Akurdi).

Date: 24/05/2022

Place: Akurdi, Pune

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

*Sayali*

Sayali Khairnar

*[Signature]*

INTERNAL GUIDE  
PDEA's COA, Akurdi

*[Signature]*

EXTERNAL EXAMINER



*[Signature]*

EXTERNAL GUIDE

*[Signature]*

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Tribal Residential School at Khed, Pune.



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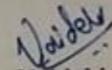
**CERTIFICATE**

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Tribal Residential School** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Abhijit Bhagat/ Co-Guide Ar. Deepali Randhe (PDEA's College of Architecture, Akurdi).

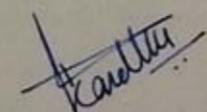
Date: 24/05/2022

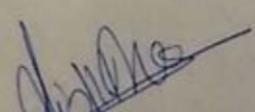
Place: Akurdi

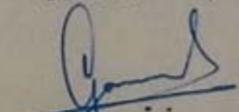
This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

  
Vaidehi Tanksale

  
Ar. Abhijit Bhagat  
INTERNAL GUIDE  
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Ar. Deepali Randhe  
CO-GUIDE  
PDEA's COA, Akurdi

  
EXTERNAL EXAMINER

  
Ar. Nishant Gawande  
PRINCIPAL  
PDEA's COA, Akurdi





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MEDITATION CENTER

5<sup>TH</sup> YR. B.ARCH.

## PUNE DISTRICT EDUCATION ASSOCIATION'S COLLEGE OF ARCHITECTURE AKURDI

### CERTIFICATE

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Meditation center** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Prashant Gadre/ Ar. Pooja Kudale (PDEA's College of Architecture, Akurdi).

Date: 24.05.2022

**Yuga Dasari**

Place: Pune

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

Ar, Prashant Gadre  
**INTERNAL GUIDE**  
PDEA's COA, Akurdi

Ar, Pooja Kudale  
**CO-GUIDE**  
PDEA's COA, Akurdi

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Ar. Nishant Gawande  
**PRINCIPAL**  
PDEA's COA, Akurdi



ARCHITECTURAL DESIGN PROJECT

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PRN NO - 1454731628

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1

En. No. -





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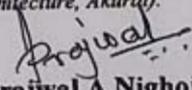
Trauma Care Centre



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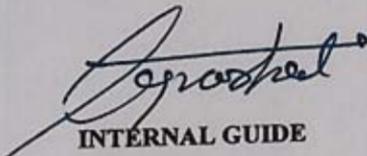
I hereby certify that the work which is being presented in this Architectural Project Part I report entitled 'Trauma Care Centre' in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar.Prashant Gadre and Ar. Pooja Kudale (PDEA's College of Architecture, Akurdi).

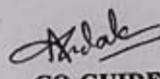
  
**Prajwal A. Nighojkar**

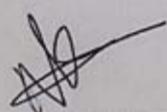
Date:

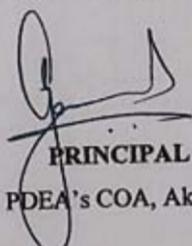
Place: Akurdi, Pune

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I hereby certify that the work which is being presented in this Architectural Project Part I report entitled Naturopathy Center in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Prashant Gadre and Ar. Pooja Kudale (*PDEA's College of Architecture, Akurdi*).

Siddhi kamthe

Date: 25/05/2022

Place: Akurdi, Pune

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Jawhar Eco-Tourism Centre with cultural background



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I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Jawhar eco-tourism with cultural background** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar.Nishant Gawande and Ar. Swati Rode (*PDEA's College of Architecture, Akurdi*).

Pooja Pakhale

**Student's name**

Date: 24/05/2022

Place: Akurdi,pune

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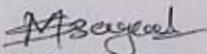


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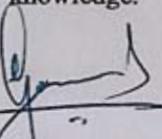
I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Sneh sawali – Combined shelter for orphan, homeless and old ag people at Pune** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of **Ar. Nishant Gawande/ Ar. Swati Rode (PDEA's College of Architecture, Akurdi).**

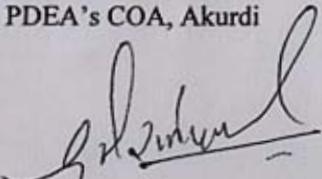
Date:

  
**Mayuri Sharad Bagade.**

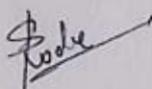
Place: Akurdi, Pune

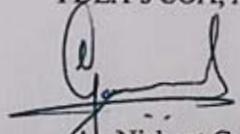
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Ar. Nishant Gawande  
**INTERNAL GUIDE**  
PDEA's COA, Akurdi

  
**EXTERNAL EXAMINER**



  
Ar. Swati Rode  
**CO-GUIDE**  
PDEA's COA, Akurdi

  
Ar. Nishant Gawande  
**PRINCIPAL**  
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Drug De-Addiction and Rehabilitation Center



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I hereby certify that the work which is being presented in this Architectural Project Part I report entitled Drug De-Addiction and Rehabilitation Center in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Prashant Gadre / Ar. Pooja Kudale (PDEA's College of Architecture, Akurdi).

Date: 24/05/2022

**Omkar Kailas Garibe**

Place: Akurdi,,Pune

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

Ar. Prashant Gadre

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Ar. Pooja Kudale

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I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Korku Tribe Experience Hub at Chikhaldara** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of **Ar. Abhijit Bhagat and Ar. Deepali Randhe** (PDEA's College of Architecture, Akurdi).

Date: 24 / 05 / 2022

Place: Akurdi, pune

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

*Kimaya A. Thotangare*

Kimaya A. Thotangare

**STUDENT NAME**

*Ar. Abhijit Bhagat*  
Ar. Abhijit Bhagat

Ar. Deepali Randhe  
**INTERNAL GUIDE**  
PDEA's COA, Akurdi



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*Ar. Nishant Gawande*

Ar. Nishant Gawande  
**PRINCIPAL**

*Ar. Deepali Randhe*  
**EXTERNAL EXAMINER**

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En. No. - 1151731684





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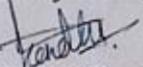
I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Women's Empowerment center** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of **Ar. Abhijeet Bhagat and Ar. Deepali mam** (PDEA's College of Architecture, Akurdi).

Date: 25 / 05 / 2022

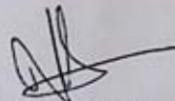
Place: Akurdi, pune

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

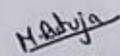
  
Ar. Abhijeet Bhagat

  
Ar. Deepali Randhe

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**EXTERNAL EXAMINER**



  
Rutuja Mungse

**STUDENT NAME**

**EXTERNAL GUIDE**

Ar. Nishant Gawande

**PRINCIPAL**  
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Project title



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### CERTIFICATE

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled 'Indian Museum of Architecture at Delhi' in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar.Prashant Gadre and Ar. Pooja Kudale (PDEA's College of Architecture, Akurdi).

Date:

**Saurabh Pote**

Place: Akurdi, Pune

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### CERTIFICATE

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled Collaborative working space Space in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar. Nishant Gawande (PDEA's College of Architecture, Akurdi).

Shubham Harshad Parmar

Date: 24/05/2022

Place: Akurdi, pune.

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

Ar. Nishant Gawande

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Ar. Swati Rode

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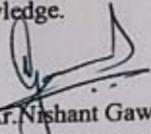
**CERTIFICATE**

I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **Tourist information centre at Radhanagari** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of **Ar. Nishant Gawande and Ar. Swati Rode** (PDEA's College of Architecture, Akurdi).

Date: 24 / 05 / 2022

Place: Akurdi, pune

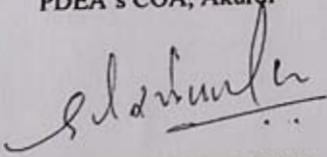
This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

  
Ar. Nishant Gawande

Ar. Swati Rode 

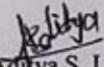
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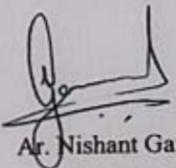
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Aditya S. Limkar

**STUDENT NAME**

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Ar. Nishant Gawande

**PRINCIPAL**

PDEA's COA, Akurdi

En. No. - 1151731698





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I hereby certify that the work which is being presented in this Architectural Project Part I report entitled **The corporate park** in partial fulfilment of the requirements for the award of the degree of Bachelor of Architecture is the bonafide work carried out by me under the supervision of Ar.Nishant Gawande and Ar. Swati Rode(PDEA's College of Architecture, Akurdi).

Date:

Place: Akurdi, Pune

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**Vishwajeet Waghere**

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PDEA's COA, Akurdi





### 1.3.3

## Percentage of students undertaking work/field work/internship (data for completed academic year)

**AY 2020-2021**

**First Year B. Arch Courses**

**Project work/field work/internship**

<b>REPORTS OF COURSES</b>	
<b>COURSE TITLE</b>	<b>COURSE CODE</b>
BASIC DESIGN	1201901[SS]
BUILDING CONSTRUCTION AND MATERIALS I	1201903 [SV]
COMMUNICATION SKILLS	1201907 [SS]
WORKSHOP I	1201908 [SS]
ARCHITECTURAL DESIGN I	1201909 [SV]
BUILDING CONSTRUCTION AND MATERIALS III	1201911 [SV]
WORKSHOP II	1201916 [SS]





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**Name of Program:** Bachelor of Architecture

**Name of Course:** Basic Design

**Title of Assignment:** Abstraction

**Teaching Methodology Adopted:** Experiential Learning

**Name of Faculty:** Ar. Aniket shendge, Ar. Shivali Lalbhige

**Academic Year:** 2021-2022

**Semester - 1**

<b>Objective</b>	<ul style="list-style-type: none"><li>• To understand Abstraction as a technique to improve creativity in students.</li><li>• To understand how abstraction is used as a tool for transformation and creativity by many of professionals</li><li>• Identify various structures and work on it using Abstraction and Transformation Technique.</li></ul>
<b>Date</b>	09 <sup>th</sup> February 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The faculty presented the work after which the students were assigned the problem. The students were asked to work on transformation of a shape to a structure, abstract of a structure and space making in which the made small models.
<b>Students Outcome or Work Example</b>	Students were able to understand the method to improve creativity. This will help them to think out of the box on various ideas with is association in surroundings.

*Shivali Lalbhige*

**Faculty In-charge**





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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web : www.coa-pdea.org

**TRANSFORMATION**

DATE	PDEA COLLEGE OF ARCHITECTURE	STAMP
NAME - MINU SHIVAJI JADHAV		PDEA's College of Architecture Akurdi, Pune - 411044. REG. NO. NATIONAL BOARD OF ARCH.
DOB - 08-11		
CLASS - FY BARCH	ROLL NO - 03	
ACADEMIC YEAR - 2021-22	TERM - I	

**ABSTRACT**

DATE	STG	PDEA COLLEGE OF ARCHITECTURE	STAMP
			PDEA's College of Architecture Akurdi, Pune - 411044. REG. NO. NATIONAL BOARD OF ARCH.
		NAME - MINU SHIVAJI	
		DOB - 08-11	
		CLASS - FY BARCH	
		ACADEMIC YEAR - 2021-22	TERM - I



# Pune District Education Association's COLLEGE OF ARCHITECTURE

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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**SPACE MAKING**

DATE	SIGN	PDEA COLLEGE OF ARCHITECTURE, AKURDI	STAMP
		NAME - SHAMU SHIVAJI JAYRAM	
		ROLL NO - 01	
		CLASS - F.Y.B.Arch	
		ACADEMIC YEAR - 2020-22	
			<p><b>PDEA</b> College of Architecture Sector 28, Pune - 411044. Govt. of Maharashtra P. &amp; ARCH.</p>

**MULTI SENSORY ASPECT**

**MEMORIES**

MY MEMORIES IN THIS FARM WAS VERY SPECIAL AND UNFORGETTABLE FOR ME. I GROW UP LOOKING AT THIS FIELD AS A KID. MY FRIENDS AND I ALL PLAYED IN THIS FIELD THERE IS A FLOOD NEAR OUR FARM. WE ALL SWIM THERE WE GROW SUGARCANE AND RICE IN THE FIELD EVERY YEAR IS ALSO LOVE TO PLANT SUGARCANE. THIS IS MY RECOLLECTION OF THIS FIELD.

TOUCH				
SMELL	HEAR	TOUCH	TASTE	HEAVY
SMELL	FRUIT	SOIL	STAYE	FRUIT
HEAR	VEGETABLE	SOIL	SOIL	SOIL
		WOOD	FRUIT	LEAF'S
		LEAF'S		

WHILE DOING THIS COMPOSITION I HAVE SHOWN THE FIELD LINE DARK AND I HAVE GIVEN A LITTLE HEIGHT TO THE WHEEL I HAVE ALSO SHOWN TREE AND WATER THERE I USE STICK TO SHOW SUGARCANE.

DATE	SIGN	PDEA COLLEGE OF ARCHITECTURE	STAMP
		NAME - SHAMU SHIVAJI JAYRAM	
		ROLL NO - 01	
		CLASS - F.Y.B.Arch	
		ACADEMIC YEAR - 2020-22	
			<p><b>PDEA</b> College of Architecture Sector 28, Pune - 411044. Govt. of Maharashtra P. &amp; ARCH.</p>





Pune District Education Association's  
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**Name of Program:** Bachelor of Architecture

**Name of Course:** Building Construction and Material 1

**Title of Assignment:** Brick Masonry

**Name of Faculty:** Ar. Shivali Lalbhige

**Academic Year:** 2021-2022

**Semester - 1**

<b>Objective</b>	<ul style="list-style-type: none"><li>To understand various brick bonds, its thickness and different piers.</li><li>Various junctions in brick masonry.</li></ul>
<b>Date</b>	17 <sup>th</sup> January 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The faculty presented the work after which the students were assigned the problem. The students were asked to work on sheets of Brick Masonry which included English, Flemish Bonds with various thickness. Brick piers in bonds the attached one and the isolated one. The junctions in brick masonry.
<b>Students Outcome or Work Example</b>	Students were able to understand the method and technique used for brick masonry. This will help them in their future project work and also understand a construction material in detail.

*Shivali Lalbhige*

**Faculty In-charge**





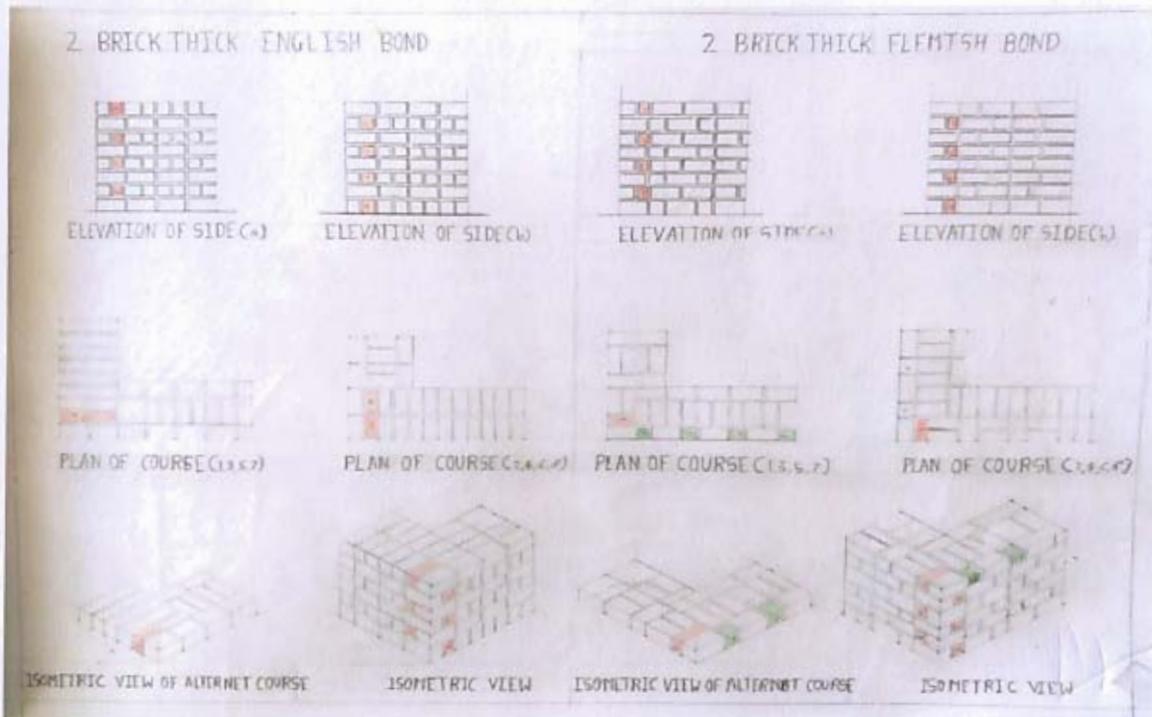
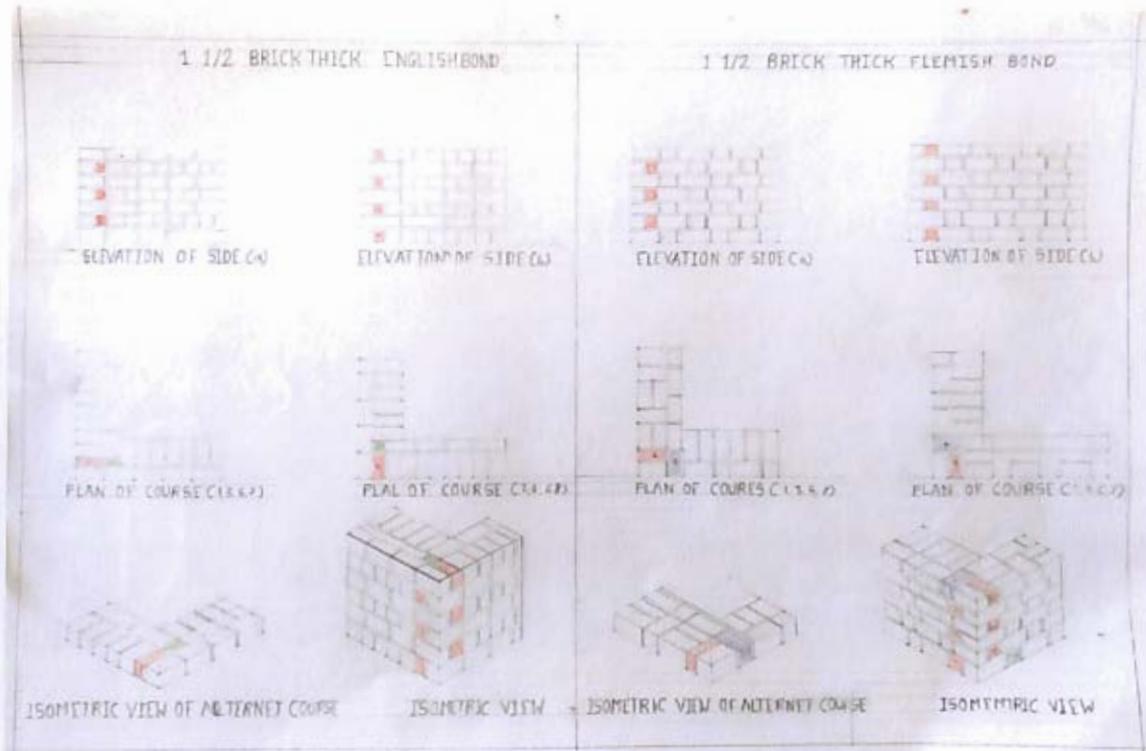
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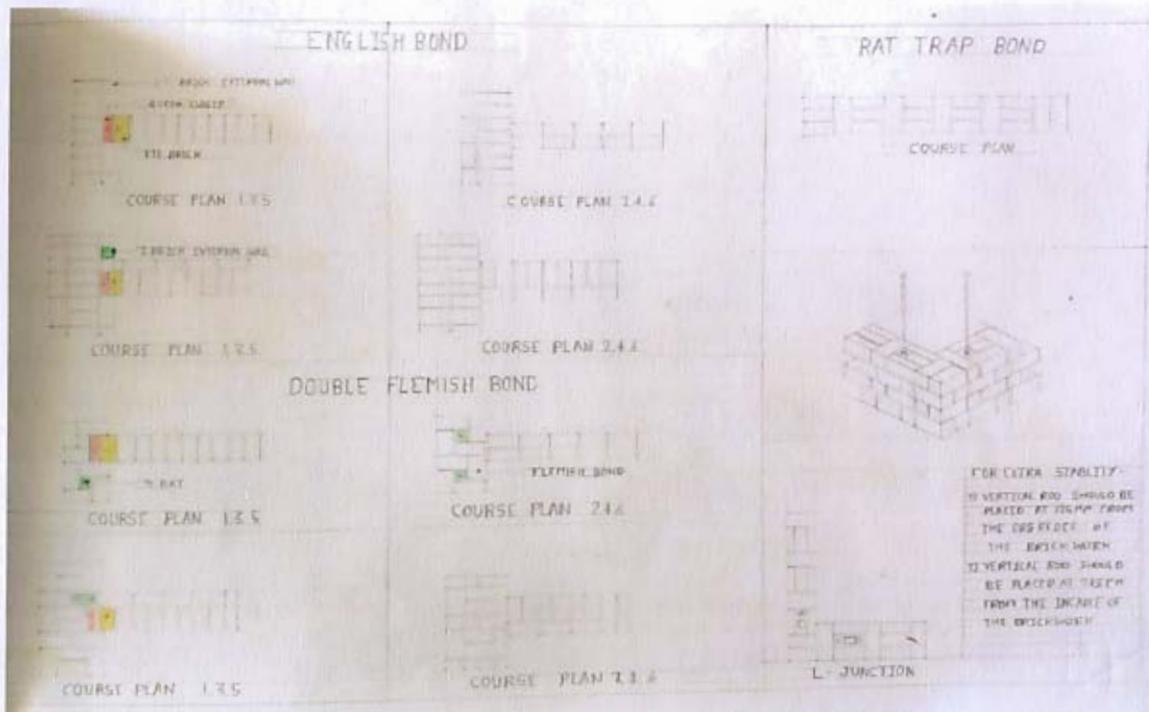
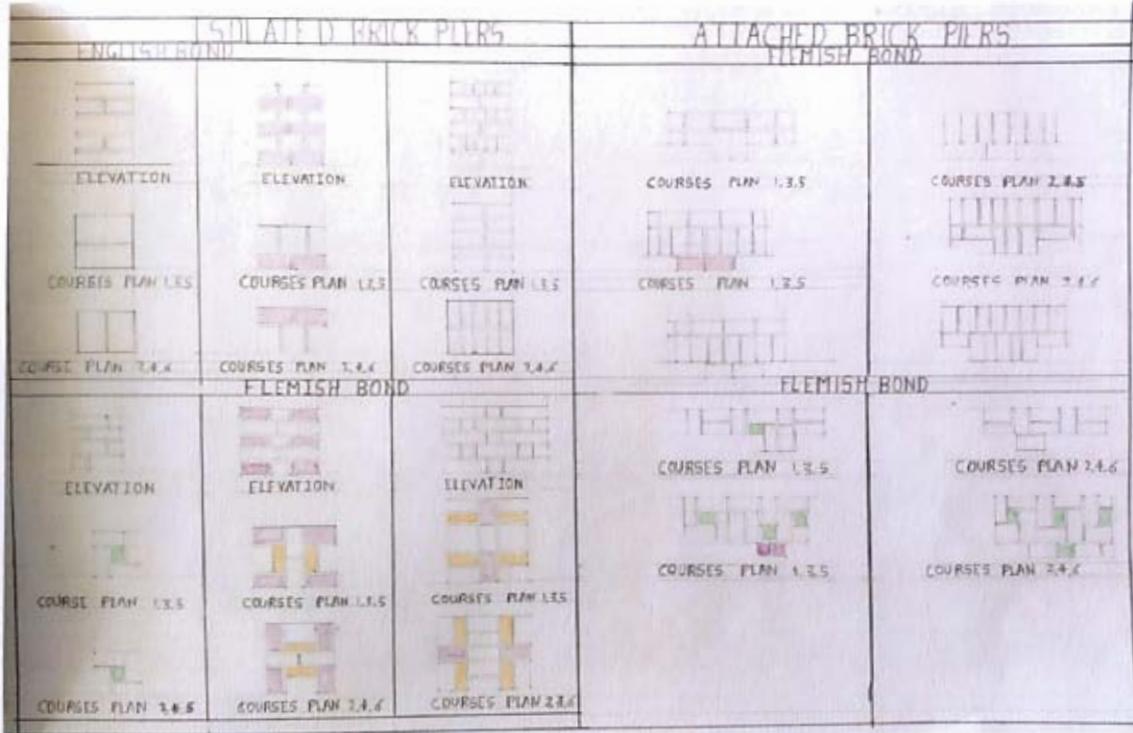
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**Name of Program:** Bachelor of Architecture

**Name of Course:** Communication Skills

**Title of Assignment:** Resume and Visiting Card

**Name of Faculty:** Ar. Aditya Malkar

**Academic Year:** 2021-2022

**Semester - 1**

<b>Objective</b>	<ul style="list-style-type: none"><li>To understand various aspects and framework to design resume.</li><li>To understand attributes of digital tools used for communication.</li></ul>
<b>Date</b>	1 <sup>st</sup> March 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The students were assigned the problem as a time problem. The students were asked to work on their resume and business card.
<b>Students Outcome or Work Example</b>	Students were able to understand the method and digital tools used to design the resume and card. This would develop a great communication skill within them for their future work.

**Faculty In-charge**





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ROHAN SHIVAJI JATHAR  
rohanjathar7272@gmail.com  
AT-Alandi Devachi, Tal - KHED, Dist - Pune, pin cod - 412205  
Mobile : 9325024094  
Gender : Male  
Marital Status : Unmarried  
DOB : 29/9/2002  
City : Pune  
State : Maharashtra  
Country : Indian  
Pincode : 412105



#### ACADEMIC DETAILS

- Diploma in Architecture Assistantship [2021] with aggregate of 55.00% from Smt. Premlatai chavan Poly, Karad

#### WORK EXPERIENCE

- Worked as Talwade, pune, pin cod 412205 in Shri Samarth Assicoat from Aug 2020 to Feb 2021  
Role : Assistant

#### PROJECT DETAILS

- **Working drawing**  
**Description :** Designing, 3D drawing, Palning  
**Duration :** 6 month's  
**Role :** Assistant  
**Team Size :** 1

#### FIELD OF INTERESTS

- Autocad 2019

#### INDUSTRIAL EXPOSURE

**Industrial Visit at:**

- Shri Samarth Assicoat

**Inplant Training at:**

- 6 month's

#### ACHIEVEMENTS

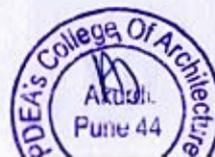
- Good in working Drawing

#### CURRICULAR ACTIVITIES

- Participate in model making program
- Cad Master program

*Rohan*

(ROHAN SHIVAJI JATHAR)





Pune District Education Association's  
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**ROHAN SHIVAJI JATHAR**

rohanjathar7272@gmail.com  
Gender : Male  
DOB : 29/9/2002  
State : Maharashtra

AT-Alandi Devachi, Tal - KHED, Dist - Pune, pin cod - 412205.

Mobile : 9325024094  
Marital Status : Unmarried  
City : Pune  
Country : Indian

**ACADEMIC DETAILS**

Degree/Course	Institution	Year of Passing	Percentage / Grade
Diploma in Architecture Assistantship	Smt. Premalatai chavan Poly. Karad	2021	55.00%

**WORK EXPERIENCE**

Organization	Designation	Duration
Shri Samarth Assicoat	Talwade, pune, pin cod 412205	Aug 2020 - Feb 2021

**Role**

- Assistant

**PROJECT DETAILS**

**Title** : Working drawing  
**Description** : Designing, 3D drawing, Palning  
**Duration** : 6 month's  
**Role** : Assistant  
**Team Size** : 1

**INDUSTRIAL EXPOSURE**

**Industrial Visit at:**

- Shri Samarth Assicoat

**Inplant Training at:**

- 6 month's

**ACHIEVEMENTS**

- Good in working Drawing

**CO-CURRICULAR ACTIVITIES**

- Participate in model making program

**EXTRA CURRICULAR ACTIVITIES**

- Cad Master program

**STRENGTH**

- Hardworking, good licensure, passionate

**HOBBIES**

- Sketching, playing sports (kabbdi, khokho, cricket)

*Rohanjathar*

(ROHAN SHIVAJI JATHAR)





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**JATHAR ASSOCIATE  
ARCHITECT & INTERIOR DESIGN**

📞 9325024094 / 8605579662

✉️ rohanjathar5510@gmail.com

📍 Samrudhi residency  
A/T Alandi Devachi, Tal - Khed,  
Dist - Pune, Pin code - 412105.

**ROHAN SHIVAJI JATHAR  
ARCHITECT**





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**Name of Program:** Bachelor of Architecture

**Name of Course:** Workshop I

**Title of Assignment:** Massing of Structure, Bamboo Carving

**Name of Faculty:**

**Academic Year:** 2021-2022

**Semester - 1**

<b>Objective</b>	<ul style="list-style-type: none"><li>To understand massing of structure with the help of different sizes of cubes.</li><li>To understand various material and engrave pictures on it.</li></ul>
<b>Date</b>	20 <sup>th</sup> January 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The students were assigned the problem to prepare a 3D model of various sizes of cubes and prepare a massing structure out of it.
<b>Students Outcome or Work Example</b>	Students were able to understand the massing and 3 Dimensions of a structures.

*Shindabnig*

**Faculty In-charge**





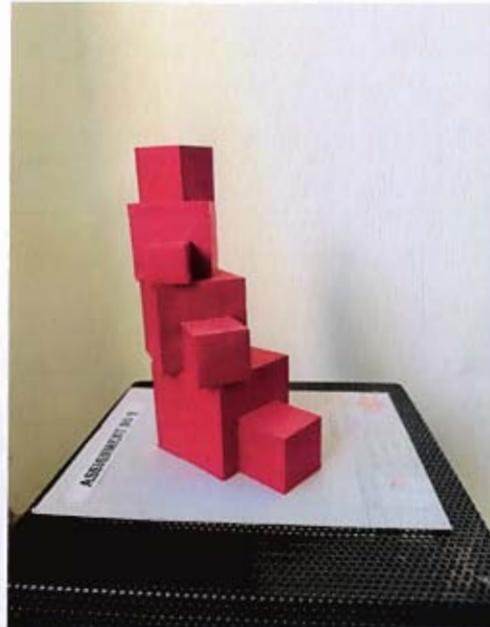
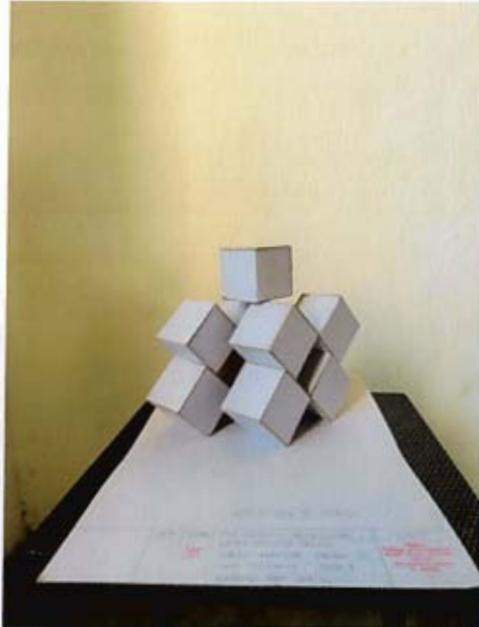
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**Name of Program:** Bachelor of Architecture

**Name of Course:** Architectural Design I

**Title of Assignment:** Dhom Settlement Study and Design

**Name of Faculty:**

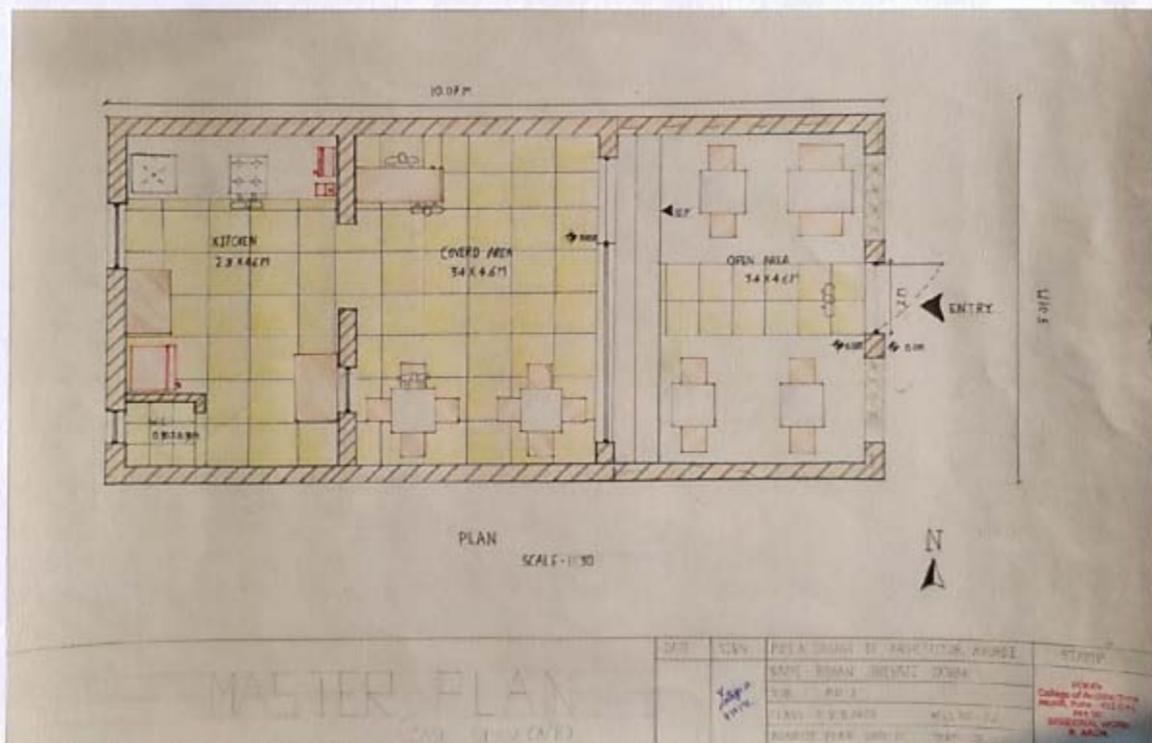
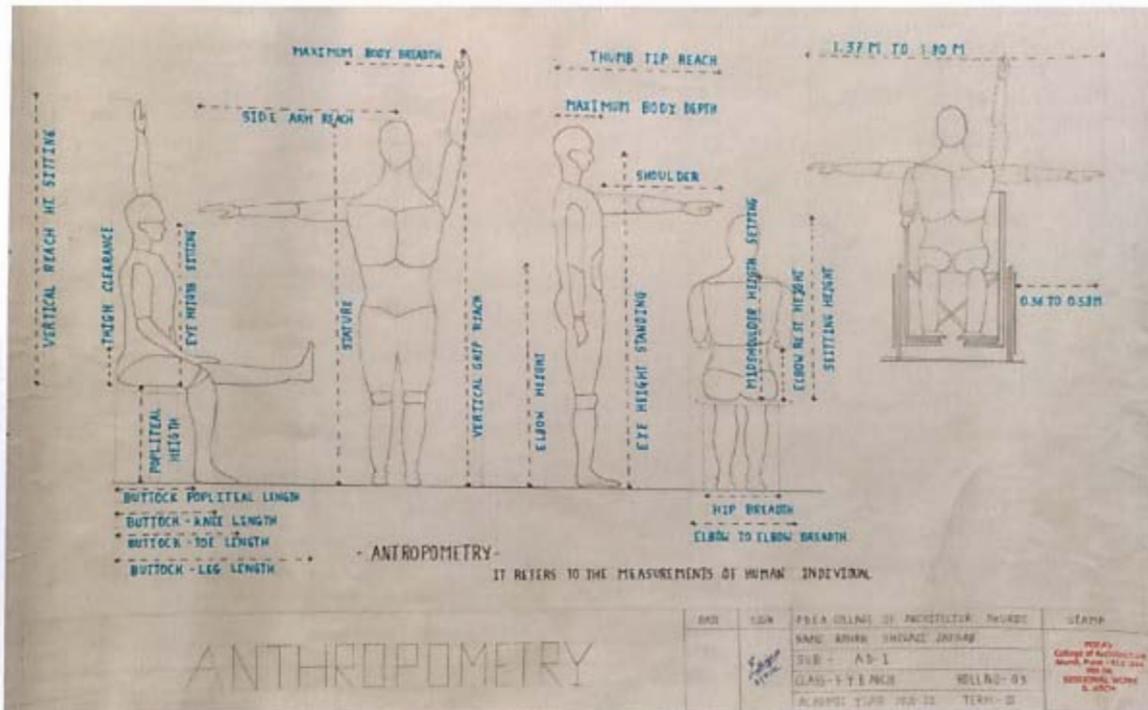
**Academic Year:** 2021-2022

**Semester - 2**

<b>Objective</b>	<ul style="list-style-type: none"><li>To understand Anthropometric measurements with reference of Neuferts.</li><li>To understand various aspects of development in the settlement of Dhom.</li><li>Proposal of a Recreational Space.</li></ul>
<b>Date</b>	10 <sup>th</sup> May 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The students were assigned to work on the anthropometric details, settlement sheets of portfolio and new proposal.
<b>Students Outcome or Work Example</b>	Students were able to understand & work on the settlement of Dhom, which will shift their perspective of study area and understand various aspects.

*S. S. S. S.*  
**Faculty In-charge**







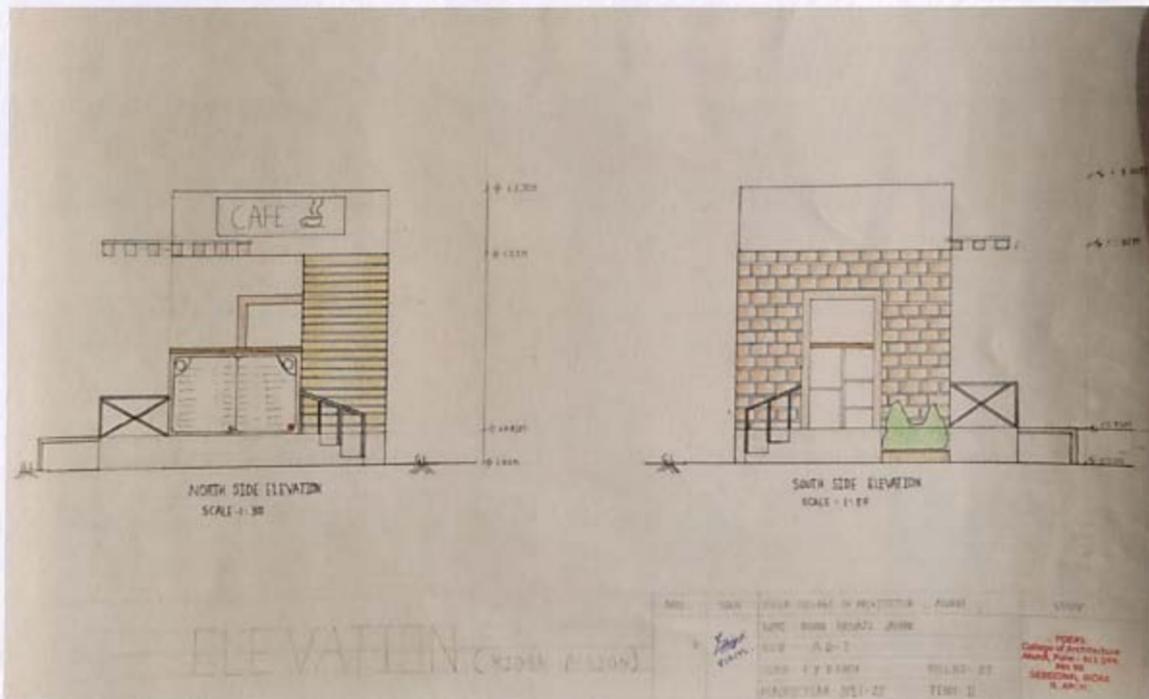
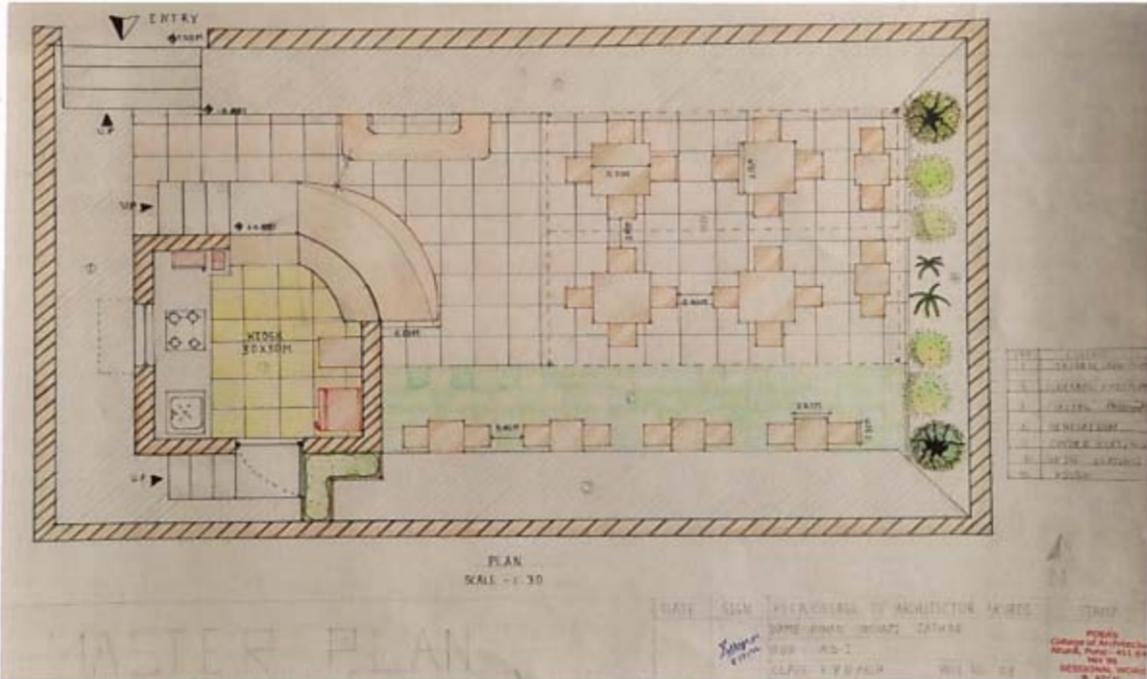
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## SATARA

COUNTRY	INDIA
STATE	MAHARASHTRA
DIVISION	PUNE
AREA	20.474 KM <sup>2</sup> (7.901 SQ MI)
POPULATION	8,303 (2011)

SATARA IS THE CAPITAL OF THE DISTRICT AND OTHER MAJOR TOWN INCLUDE MEDHA, WAI, HANAR, KHEERAN, BHINWARI, ETC.

SATARA IS FAMOUS FOR -  
PRATAPGARH FORT, THOSEGHAR WATERFALLS, VIEW OF SATARA FROM AJANTRYKAR FORT, TILWANG AT KAS PROTHAR, BHAIRAVNATH TEMPLE IN KINALI.

## WAI

COUNTRY	INDIA
STATE	MAHARASHTRA
DISTRICT	SATARA
LOCATION	ON THE BANK OF KRISHNA RIVER
AREA	1877 HECTARE
POPULATION	124,344

IS 401 NORTH OF THE CITY OF SATARA BUILT GENERAL ARCHITECTURELY SIGNIFICANT TEMPLE IN WAI 400 YEAR OLD. SHANBHARADVAI KALUBAI TEMPLE IS ABOUT 10 KM FROM WAI ON WALK. WAI DISTANCE FROM SEA LEVEL.

WAI IS FAMOUS FOR -  
WAI CAVES, SHALWA DAMPAZI MANDIR, MAHA VISHWESHVAR MANDIR.

### INTRODUCTION

**WINTER**

- NOVEMBER: SHIV JANNANTI, RATHSAPTMI
- DECEMBER: WOI, ANANDJANANTI, REPUBLIC DAY
- JANUARY: BAHU JANNANTI, CHRISTMAS

**MONSOON**

- FEBRUARY: TILSI VIVAH, SHRI GURUPURABH JANNANTI
- MARCH: DUSSEhra, EID, KADAGIKI PURNIMA, DEEPAWALI
- APRIL: MONSOON KARHI, SHULI MANDAN, SHYU, BANG FANCHI
- MAY: SHRI PRADA, RAM NACHI, APPODHAR JANNANTI, KARJAMAN JANNANTI, KARJAMANJANNANTI

**SUMMER**

- JUNE: EID, ANANDJANNANTI, BUDEN PURNIMA
- JULY: VAI PURNIMA, KARJANNI BENDUR
- AUGUST: BAIKI, EID, MAHARAJKISHNA BENDUR, GURUPURNIMA, MOH RAM
- SEPTEMBER: NAU PURNIMA, MONSOON, ENDRU BENDUR, ENDRUKEKI BAI, JANNANTI, PRA, SAHAY CHATURTHI
- OCTOBER: NAU PURNIMA, SHRI GURUPURABH JANNANTI
- NOVEMBER: NAU PURNIMA, SHRI GURUPURABH JANNANTI

**INDIA**

### FESTIVAL CALENDER





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**Name of Program:** Bachelor of Architecture

**Name of Course:** Building Construction and Technology II

**Title of Assignment:** Types of Door and Window, Paneling and Partition.

**Name of Faculty:**

**Academic Year:** 2021-2022

**Semester - 2**

<b>Objective</b>	<ul style="list-style-type: none"><li>To understand different types of door and windows and its detail.</li><li>To understand partition and paneling in detail.</li></ul>
<b>Date</b>	08 <sup>th</sup> June 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The students were assigned to work on sheets with different types of door and window, partition and paneling.
<b>Students Outcome or Work Example</b>	Students would now understand & work on the sheets of door, window and paneling and now they would have an eye on the detail part.

**Faculty In-charge**





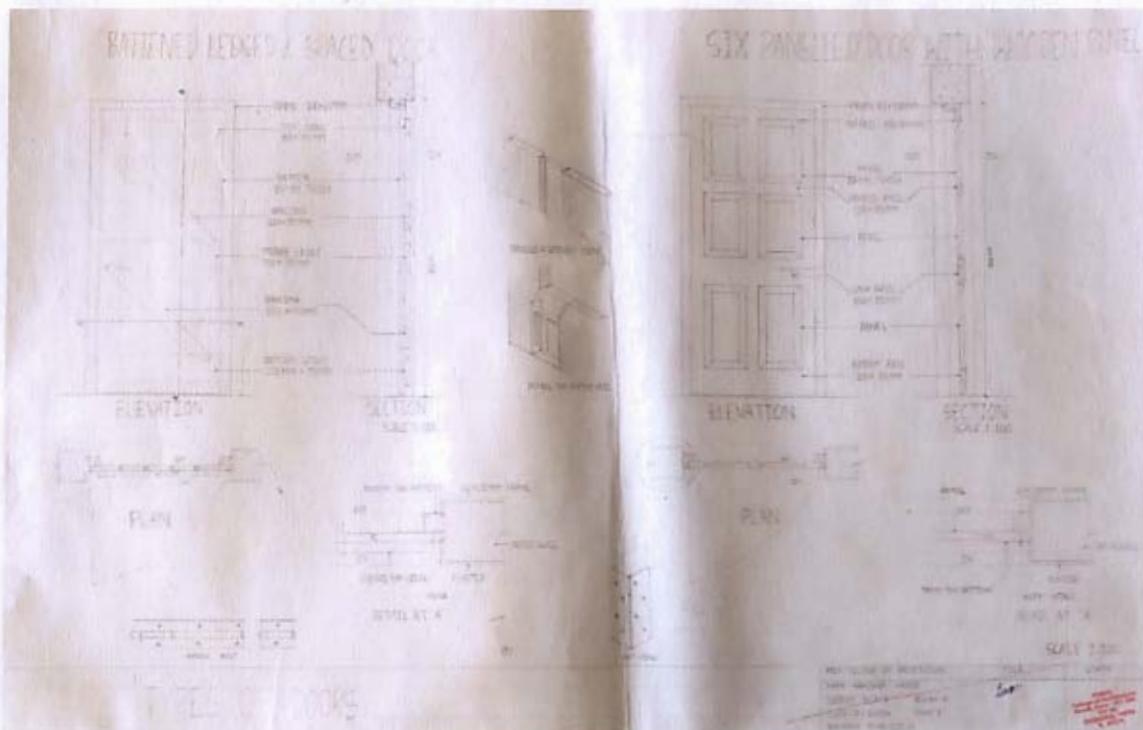
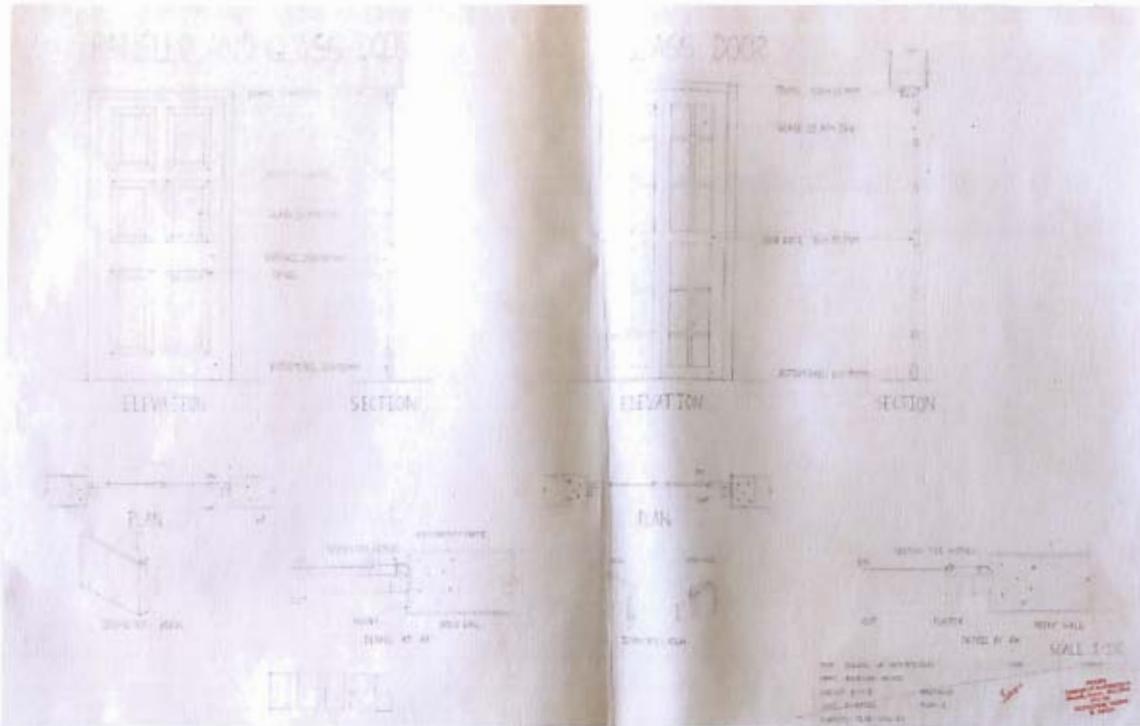
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**Name of Program:** Bachelor of Architecture

**Name of Course:** Workshop II

**Title of Assignment:** Joinery Model, Clay Model and Maze

**Name of Faculty:**

**Academic Year:** 2021-2022

**Semester - 2**

<b>Objective</b>	<ul style="list-style-type: none"><li>• To understand different material and create joinery details from it.</li><li>• Clay models to enhance creativity from students.</li><li>• A Puzzle/Maze to think over the complexity.</li></ul>
<b>Date</b>	12 <sup>th</sup> May 2022
<b>Venue</b>	PDEA College of Architecture
<b>Students Attended</b>	First Year B.Arch.
<b>No of Students Present</b>	05
<b>Photographs Available</b>	Photographs Available
<b>Brief about the Program</b>	The students were assigned a wooden joinery model, a clay model of their choice and Maze or puzzle to create abstract.
<b>Students Outcome or Work Example</b>	Students would now understand & work on the model of joinery, clay models and Puzzles.

*Shilpa Kulkarni*

**Faculty In-charge**





# Pune District Education Association's COLLEGE OF ARCHITECTURE

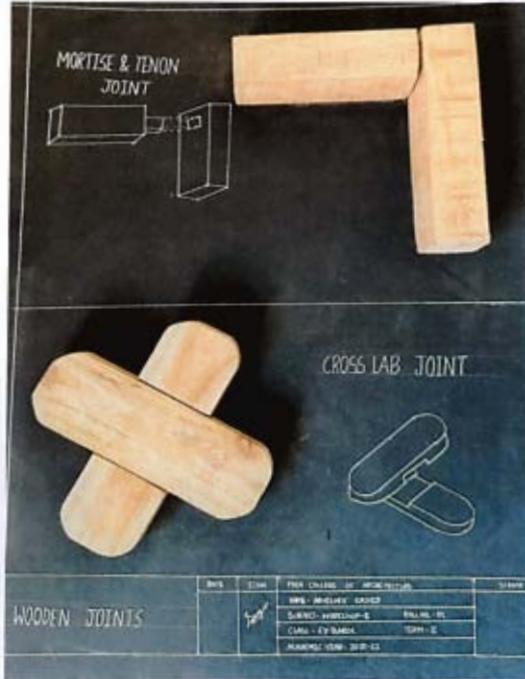
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Ph. : 020-27650788, 25438705 | E-mail : principal@coa-pdea.org | Web : www.coa-pdea.org





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**Percentage of students undertaking projects work/ field work/ Internship (data for latest completed academic year)**

**AY: 2021-2022**

**Second year B. Arch. Courses**

**Project work/ field work/ Internship work**

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<b>Title of assignment</b>	<b>: Bungalow Design</b>
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<b>Name of Faculty</b>	<b>: Ar. Swati Rode and Ar. Vishnu Suresh</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester III)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand residence a design typology.</li><li>• To understand Architectural Design as a process generating design brief and taking design decisions</li></ul>
<b>Date /duration of activities</b>	09/09/21 to 01/10/21
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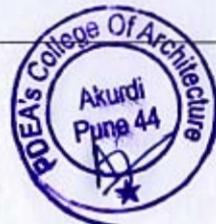


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Student Outcome /Works Examples	<ul style="list-style-type: none"><li>• At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design and communicate it in form of 2D and 3D representations.</li></ul>



**A REPORT ON BUNGLOW DESIGN CASE STUDIES**



**Bungalow**

- A bungalow is a small cottage-type home, usually built as a one-story dwelling without stairs.
- Bungalows typically feature sloped roofs, open floor plans, large front windows, and broad front porches
- Depending on the style, bungalows can feature more than one story

**History**

Occupying English officers hired laborers from the region to build small, economical single-story houses in the *Bangla* (or *Bangala*) style, a Hindustani word that means "belonging to Bengal."

**Benefits of Living in a Bungalow**

- > They can offer more privacy
- > They're suitable for mobility.
- > Easier routine maintenance

**INTRODUCTION**

**Characteristics of Bungalows**

**1] Small size**

- A bungalow home is usually a small single-story house.

**2] Balance**

- The front of a bungalow doesn't have to be symmetrical, but it often presents balanced proportions.

**3] Open floor plans**

- Bungalows typically feature small square footage and minimal storage space

**4] Large front porch with eaves**

- One of the most distinctive features of the bungalow is the **veranda**, which is typically covered by a steeply-pitched roof

**5] Plenty of windows.**

- Traditional bungalows will usually feature double-hung or single-hung windows. However, modern Craftsman-style bungalows may include casement windows or a large bay window

**Name : Sanket Sunil Sawant**

**Sub : AD**

**Class : S. Y. B. ARCH. (2021 - 2022)**

**VILLA IN CHENNAI**

**PROJECT INFORMATION**

- **Located** - Chennai
- **Architects** - Invent architects firm
- **Year** - 2017
- **Area** - 455 m<sup>2</sup>
- **Direct supervision** - D. Vivek Kumar and R. Nanda Devi.

**CLIENT'S REQUIREMENTS**

- > The client had a number of different requirements by which the villa had to abide.
- > These included items such as being able to enjoy both semi-private and private spaces.
- > as well as employing the sea's breeze without necessarily having direct access to the beaches



**DESIGN CONCEPT**

The concept behind this design relies on the spatial segmentation of semi-public areas which maximizes the virtual connectivity within the house through light which we call the exponent.

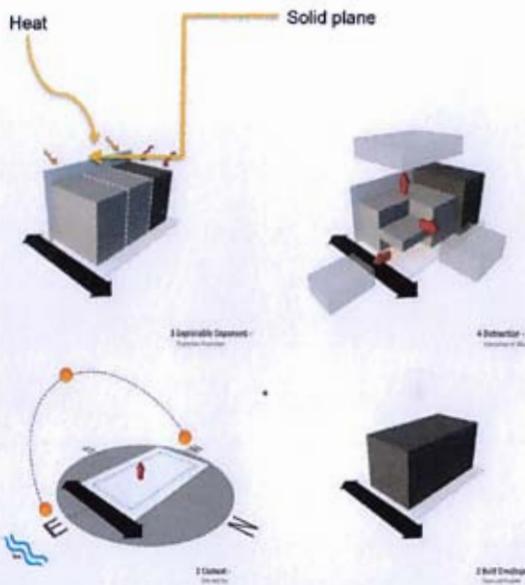
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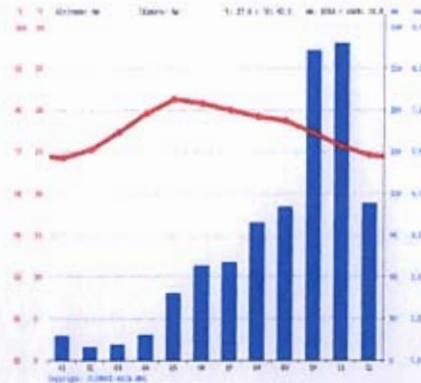
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**HOW CONCEPT OF DESIGN ACHIEVED ?**

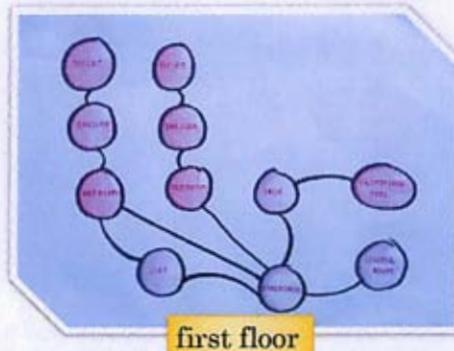
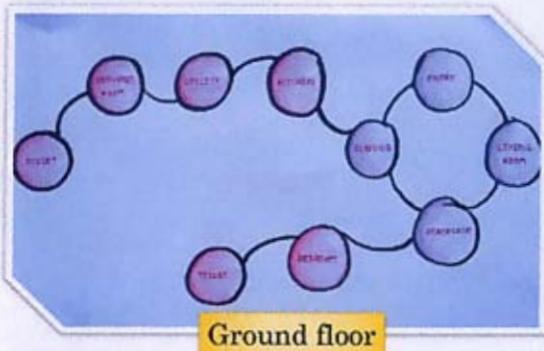
To achieve this experience, the design consists of a solid plane which protects the residence from the secondary southern heat, and the west consists of a solid volume which contains the private spaces - bedrooms. The rest forms the exponent which holds the semi-private space.



**CLIMATIC CONDITION**

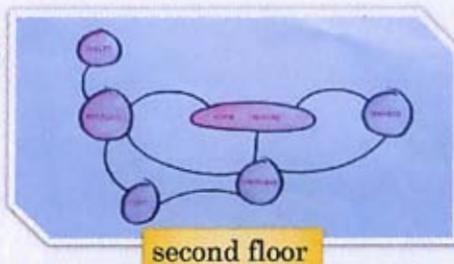


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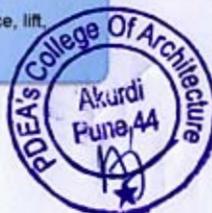


**FUNCTIONAL AREAS**

- > This is a G+2 structure
- > On Ground Floor  
Car parking, living room with attached dining, kitchen with utility and servant room and toilet, bedroom, lift, staircase
- > First floor  
living room, 2 bedrooms, dresser attached with toilet, deck and pool joint, lift, staircase
- > Second floor  
Bedroom attached with toilet, home theatre, terrace, lift, staircase.



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**GROUND FLOOR PLAN**



- LEGEND**
- |               |             |                 |                 |                 |
|---------------|-------------|-----------------|-----------------|-----------------|
| 1 Car Parking | 5 Staircase | 9 Bed Room      | 13 Sit Out Area | 17 Home Theatre |
| 2 Water Pond  | 6 Dining    | 10 Toilet       | 14 Dresser      | 18 Terrace      |
| 3 Foyer       | 7 Kitchen   | 11 Utility      | 15 Deck         |                 |
| 4 Living Room | 8 Lift      | 12 Servant Room | 16 Pool         |                 |



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**SECOND FLOOR PLAN**



The design and location of the swimming pool area is an important integral to this residence as it provides an exhilarating experience for the user who can appreciate the view of the beach being in the water or from the appending deck area.



- LEGEND**
- |               |             |                 |                 |                 |
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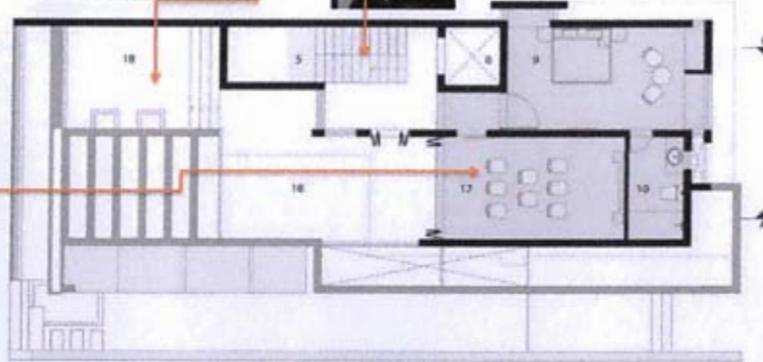
The Terrace has views of the beach area which can be seen from the adjacent roofed area.



The staircase as a structure enhances the aesthetic quality of the living space and promotes visual interaction within the house.



The home-theater becomes the remnant volume in this process of detracting which in turn opens out to the terrace formed. It extends as a gathering space after an evening movie.



THIRD FLOOR PLAN

LEGEND

- |               |             |                 |                 |                 |
|---------------|-------------|-----------------|-----------------|-----------------|
| 1 Car Parking | 5 Staircase | 9 Bed Room      | 13 Sit Out Area | 17 Home Theatre |
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THIRD FLOOR PLAN

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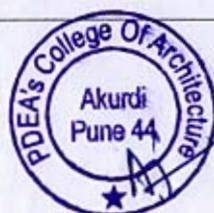


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## A REPORT ON BUNGLOW DESIGN CASE STUDIES



### Bungalow

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- Bungalows typically feature small square footage and minimal storage space

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- One of the most distinctive features of the bungalow is the veranda, which is typically covered by a steeply-pitched roof

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Sub : AD

Class : S. Y. B. ARCH. (2021 - 2022)

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- Architects - Invent architects firm
- Year - 2017
- Area - 455 m<sup>2</sup>
- direct supervision - D. Vivek Kumar and R. Nanda Devi.

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The concept behind this design relies on the spatial segmentation of semi-public areas which maximizes the virtual connectivity within the house through light which we call the exponent.

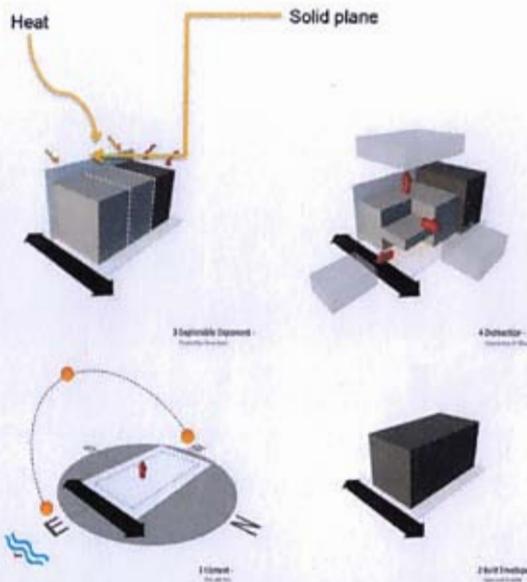
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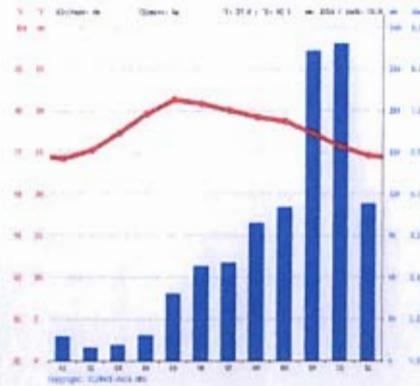
Class : S. Y. B. ARCH. (2021 - 2022)

**HOW CONCEPT OF DESIGN ACHIEVED ?**

To achieve this experience, the design consists of a solid plane which protects the residence from the secondary southern heat, and the west consists of a solid volume which contains the private spaces - bedrooms. The rest forms the exponent which holds the semi-private space.



**CLIMATIC CONDITION**

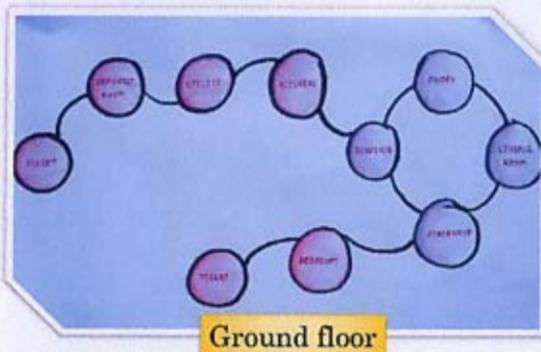


Chennai has a tropical wet and dry climate

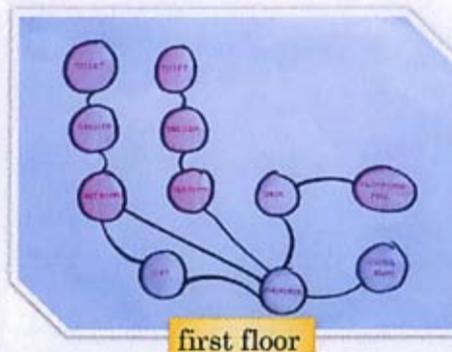
Name : Sanket Sunil Sawant

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Ground floor



first floor

**FUNCTIONAL AREAS**

> This is a G+2 structure

> On Ground Floor

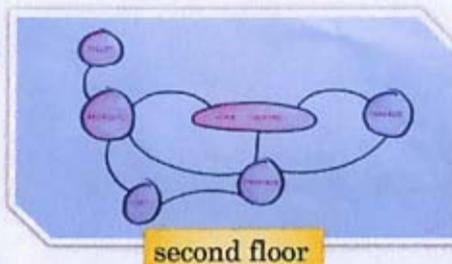
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> First floor

living room, 2 bedrooms, dresser attached with toilet, deck and pool joint, lift, staircase

> Second floor

Bedroom attached with toilet, home theatre, terrace, lift, staircase.



second floor

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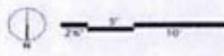
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**GROUND FLOOR PLAN**



- LEGEND
- 1 Car Parking
  - 2 Water Pond
  - 3 Foyer
  - 4 Living Room
  - 5 Staircase
  - 6 Dining
  - 7 Kitchen
  - 8 Lift
  - 9 Bed Room
  - 10 Toilet
  - 11 Utility
  - 12 Servant Room
  - 13 Sit Out Area
  - 14 Dresser
  - 15 Deck
  - 16 Pool
  - 17 Home Theatre
  - 18 Terrace

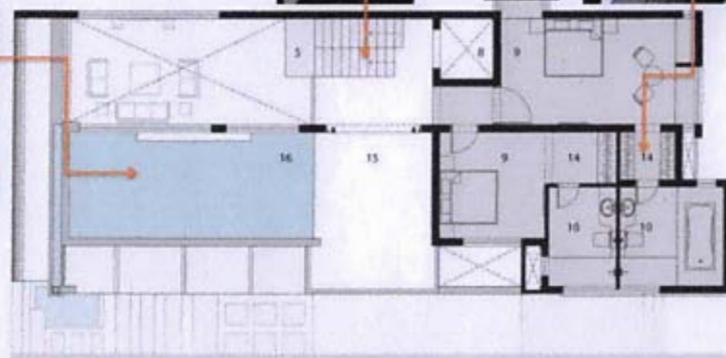


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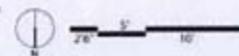
**SECOND FLOOR PLAN**



The design and location of the swimming pool area is an important integral to this residence as it provides an exhilarating experience for the user who can appreciate the view of the beach being in the water or from the appending deck area.



- LEGEND
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  - 13 Sit Out Area
  - 17 Home Theatre
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  - 15 Deck
  - 4 Living Room
  - 8 Lift
  - 12 Servant Room
  - 16 Pool



**Name : Sanket Sunil Sawant**  
**Sub : AD**  
**Class : S. Y. B. ARCH. (2021 - 2022)**



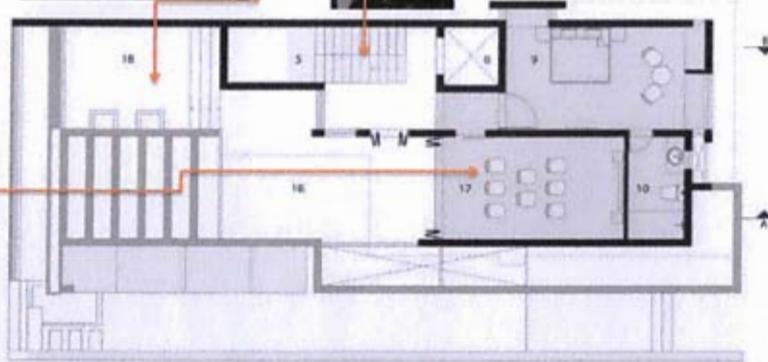
The Terrace has views of the beach area which can be seen from the adjacent roofed area.



The staircase as a structure enhances the aesthetic quality of the living space and promotes visual interaction within the house.



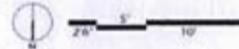
The home-theater becomes the remnant volume in this process of detracting which in turn opens out to the terrace formed. It extends as a gathering space after an evening movie.



THIRD FLOOR PLAN

LEGEND

- |               |             |                 |                 |                 |
|---------------|-------------|-----------------|-----------------|-----------------|
| 1 Car Parking | 5 Staircase | 9 Bed Room      | 13 Sit Out Area | 17 Home Theatre |
| 2 Water Pond  | 6 Dining    | 10 Toilet       | 14 Dressing     | 18 Terrace      |
| 3 Foyer       | 7 Kitchen   | 11 Utility      | 15 Deck         |                 |
| 4 Living Room | 8 Lift      | 12 Servant Room | 16 Pool         |                 |

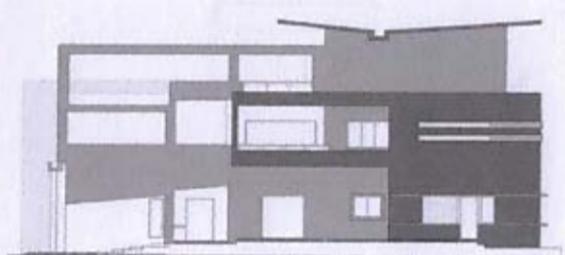


THIRD FLOOR PLAN

Name : Sanket Sunil Sawant

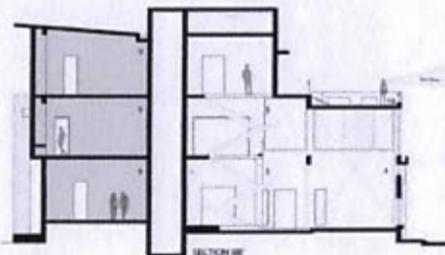
Sub : AD

Class : S. Y. B. ARCH. (2021 - 2022)



NORTH ELEVATION

NORTH ELEVATION



SECTION B-B

SECTION B-B

- |               |             |                 |                 |                 |
|---------------|-------------|-----------------|-----------------|-----------------|
| 1 Car Parking | 5 Staircase | 9 Bed Room      | 13 Sit Out Area | 17 Home Theatre |
| 2 Water Pond  | 6 Dining    | 10 Toilet       | 14 Dressing     | 18 Terrace      |
| 3 Foyer       | 7 Kitchen   | 11 Utility      | 15 Deck         |                 |
| 4 Living Room | 8 Lift      | 12 Servant Room | 16 Pool         |                 |



SECTION A-A

SECTION A-A

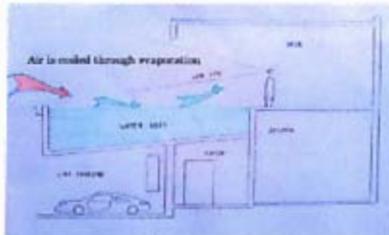
□ Apart from the requirement of having private and semi-private spaces.

□ we wanted the user to experience the coastal breeze along with the water, within his zone of proximity without having to access the beachfront.

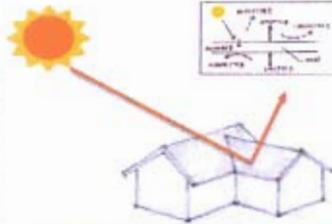
Name : Sanket Sunil Sawant

Sub : AD

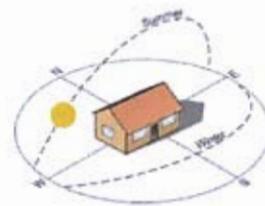
Class : S. Y. B. ARCH. (2021 - 2022)



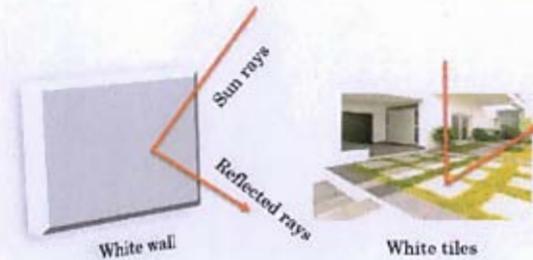
Water bodies in house are ideal for evaporative cooling in hot and dry climates.



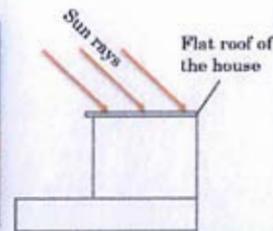
They used light color building materials and cool roofs to minimize conducted heat gain



The large building dimensions faced north and south direction.



They use white colour for walls and tiles because white reflects sunlight and reduces its temperature, which in turn means less heat is transferred inside the building.



Solar radiation on surfaces normal (taper) to sun rays is higher than horizontal surface.

**Name : Sanket Sunil Sawant**

**Sub : AD**

**Class : S. Y. B. ARCH. (2021 - 2022)**

### PROS

- > The concept behind this design relies on the spatial segmentation of semi-public areas which maximizes the virtual connectivity within the house through light which we call the exponent.
- > The staircase as a structure enhances the aesthetic quality of the living space and promotes visual interaction within the house
- > The user to experience the coastal beach along with the water, within his zone of proximity without having to access the beachfront.
- > Bungalow have flat roof that means reduce heat.

### CONS

- > The detractor of volume from the exponent felicitate the formation of open spaces which comprises of the swimming pool and the parking below.
- > Absence of contrast
- > I think they should have planted trees to the south side rather than solid plane.
- > Poor ventilation.
- > courtyards are especially popular in warmer climates but here they didn't provide courtyard.

### REFERENCE AND LINKS

<https://www.pdca.org.in/>

<https://www.pdca.org.in/>



**Name : Sanket Sunil Sawant**

**Sub : AD**

**Class : S. Y. B. ARCH. (2021 - 2022)**

**A REPORT ON BUNGLOW DESIGN CASE STUDIES**

**CASE STUDY OF BUNGALOW**

**The Brick House**

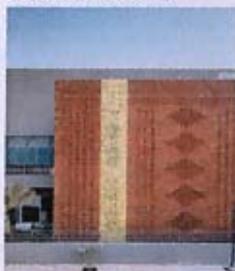
**PROJECT DETAILS :**

LOCATION: HARNI, VADODARA,  
 GUJARAT  
 ARCHITECT : MANAV PATEL  
 THEME: UNIQUE FACADES  
 PLOT AREA: 3400 SQ. FT.  
 FACING: NORTH  
 VASTU: YES  
 NO. OF ROOMS: 5  
 BUILT-UP AREA: 5500 SQ. FT.  
 START YEAR: 2018  
 COMPLETION YEAR: 2020



NAME : SHUBHAM POPAT DHUS  
 SUBJECT: AD II SEM : III  
 CLASS : SY BARCH ROLL NO : 06  
 YEAR : 2021-22

**BRICK WALL DESIGN**



PARKING SPACE IS PROVIDED AT THE  
 ENTERENCE OF THE PLOT.

THE FRONT ELEVATION WAS PLANNED AS AN  
 EXPOSED BRICK FACADE, WITH VARIOUS PATTERNS  
 CREATED BY THE BRICKS TO HIGHLIGHT THE BRICK  
 POTTEMS AND TO ADD A POP OF COLOUR



BIG KITCHEN WITH DINING AREA IS  
 PROVIDED.



A GOOD SIZE OF GARDEN OVER LOOKING  
 THE MAIN AREAS KITCHEN AND LIVING  
 ROOM



THE SEPARATE HOME THEATER,  
 ENTERTAINMENT ROOM IS PROVIDED ON  
 SECOND FLOOR

NAME : SHUBHAM POPAT DHUS  
 SUBJECT: AD II SEM : III  
 CLASS : SY BARCH ROLL NO : 06  
 YEAR : 2021-22



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### CLIENT PROFILE :

CLIENT IS A BUSINESSMAN, HAS A FAMILY 5 PARENTS, SON AND DAUGHTER, GRANDMOTHER

THE CLIENT WANTS INDIVIDUAL BEDROOMS AND A GOOD SIZE OF GARDEN OVER LOOKING THE MAIN AREAS. ONE HOME THEATER

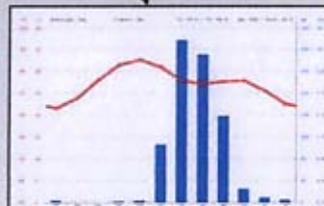
### CONCEPT :

THE HOUSE IS CALLED BRICK HOUSE. FRONT WALL HAS BEEN DONE BRICK BEAUTIFUL DESIGN IN BRICK THE FORM OF BONDS WITH DIAGONAL PLACEMENT VERTICAL PLACEMENT HORIZONTAL PLACEMENT. BLUE WINDOW ARE A DONE TRADITIONAL COLONIAL STYLE TOUCH ARE INDIAN ARCHITECTURE.

NAME : SHUBHAM POPAT DHUS  
SUBJECT : AD II SEM : III  
CLASS : 5Y BARCH ROLL NO : 06  
YEAR : 2021-22



### SITE ANALYSIS



### CLIMATE:

TEMPERATURE: 42 DEGREE CELSIUS MAX. IN MAY AND 25 DEGREE CELSIUS MIN. IN JAN

-HUMIDITY:54%

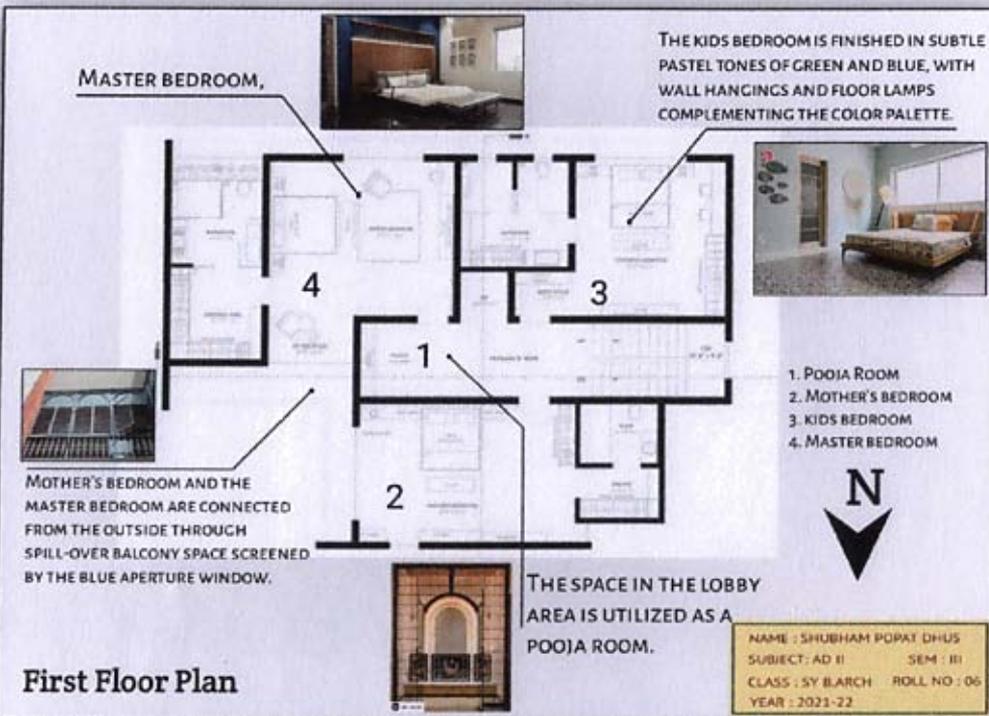
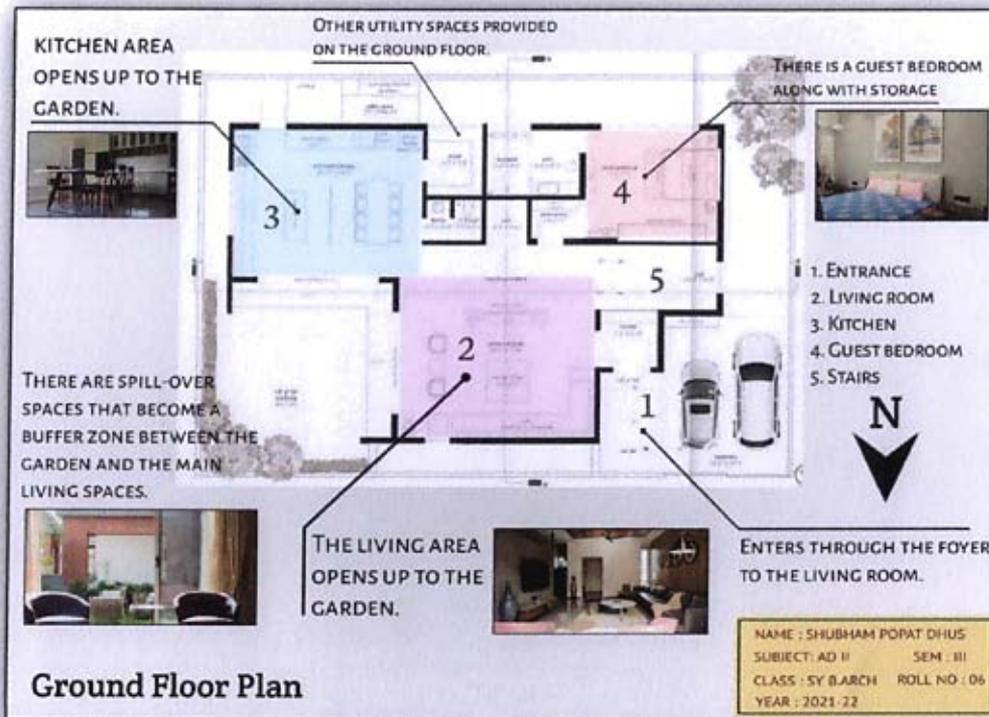
WIND:10KM/H

WIND DIRECTION:SOUTH-EAST TO NORTH WEST

\*PRECIPITATION:44.2MM/YR

NAME : SHUBHAM POPAT DHUS  
SUBJECT : AD II SEM : III  
CLASS : 5Y BARCH ROLL NO : 06  
YEAR : 2021-22







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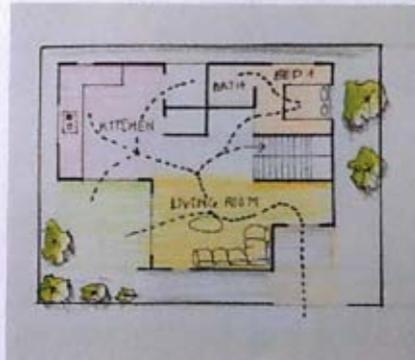
Sector 28, Pradhikaran, Akurdi, Pune - 411044.



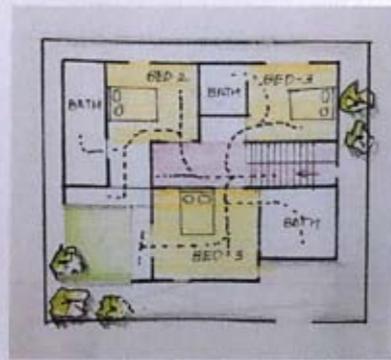
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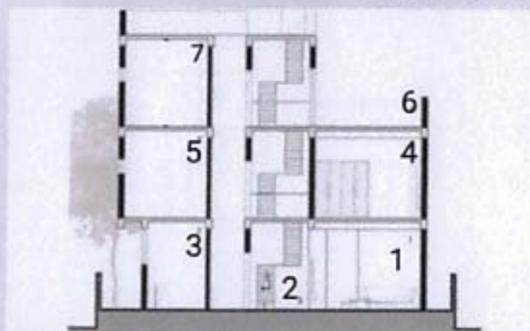
GROUND FLOOR CIRCULATION



FIRST FLOOR CIRCULATION

NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : 5Y BARCH ROLL NO : 06  
YEAR - 2021-22

### Section A A'



- 1 LIVING
- 2 PASSAGE
- 3 ATT:TOILET (GUEST BEDROOM)
- 4. MOTHER'S BEDROOM
- 5. ATT. TOILET (KIDS BEDROOM)
- 6. TERRACE
- 7. HOME THEATER

SECTION A A'  
SECTION THROUGH THE LIFT SHOWING THE LIVING ROOM AND THE GUEST BEDROOM ON THE GROUND FLOOR, THE MOTHER'S AND KIDS BEDROOM ON THE FIRST FLOOR, AND THE TERRACE AND THE HOME THEATRE ON THE SECOND FLOOR.

NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : 5Y BARCH ROLL NO : 06  
YEAR - 2021-22



### FACADE MATERIALS

1. EXPOSED BRICK
2. YELLOW JAALI
3. CEMENT FINISHED WALL
4. BLUE MS WINDOWS

### PARTITION MATERIAL

1. CEMENT FINISH
2. METAL SCREEN

### FLOORING MATERIALS

1. GALICHA TILES
2. TERRAZO FLOORING
3. DARK ITALIAN MARBLE
4. GREY ITALIAN MARBLE

NAME : SHUBHAM POPAT DHUS  
 SUBJECT: AD II SEM : II  
 CLASS : SY BARCH ROLL NO : 06  
 YEAR : 2021-22

## INFERENCES

### THE BLUE SCREEN

THE FIRST-FLOOR BEDROOMS GET A LITTLE COLONIAL MAKE-OVER WITH THE BLUE APERTURE SCREEN THE SCREEN ACTS AS A SEMI-PERMEABLE APERTURE ALLOWING IN THE PRE-CIOUS LIGHT AND AIR AND KEEPING OUT THE PRYING EYES OF THE PEOPLE.

### STAIRCASE ARTWORK

THE MASTER ART PIECE IN THE HOUSE WOULD BE THE ARTWORK ON THE STAIRCASE CREATED BY A LOCAL ARTIST.

THE DAYLIGHT FILTERING IN THE LIGHT WELL THROUGH THE SKYLIGHT ABOVE.

NAME : SHUBHAM POPAT DHUS  
 SUBJECT: AD II SEM : III  
 CLASS : SY BARCH ROLL NO : 06  
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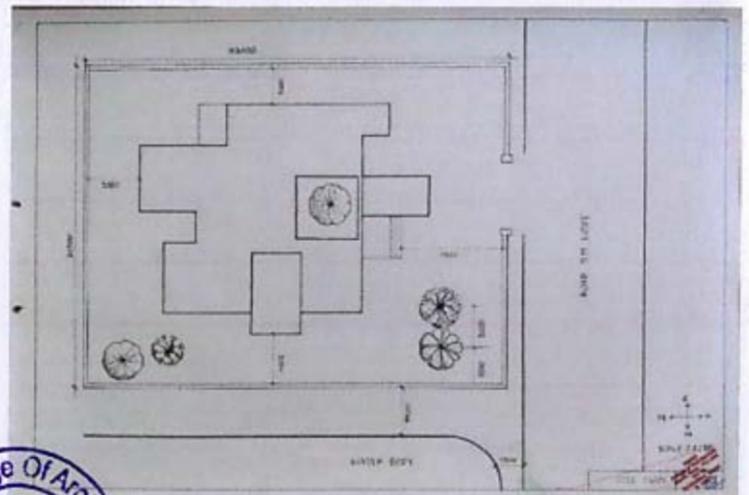
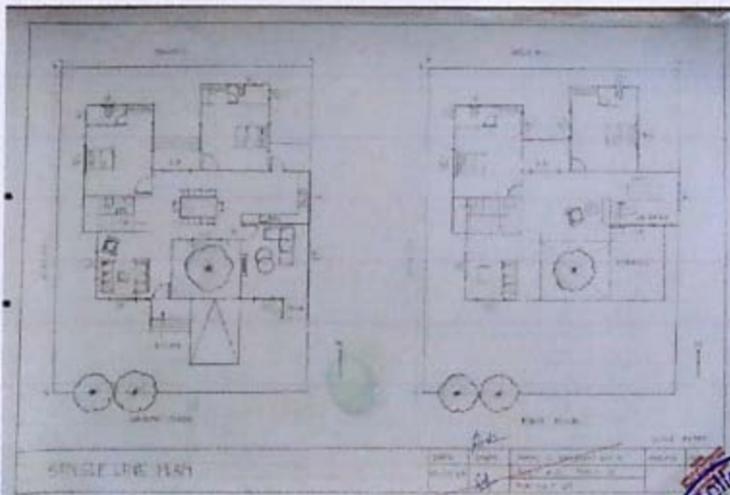
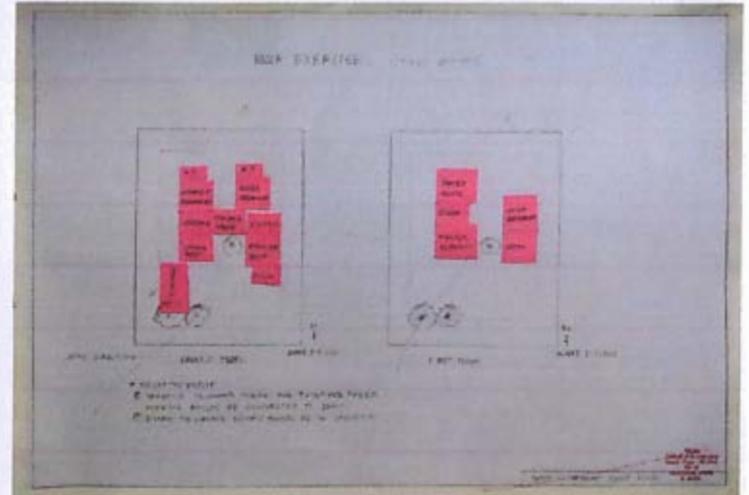
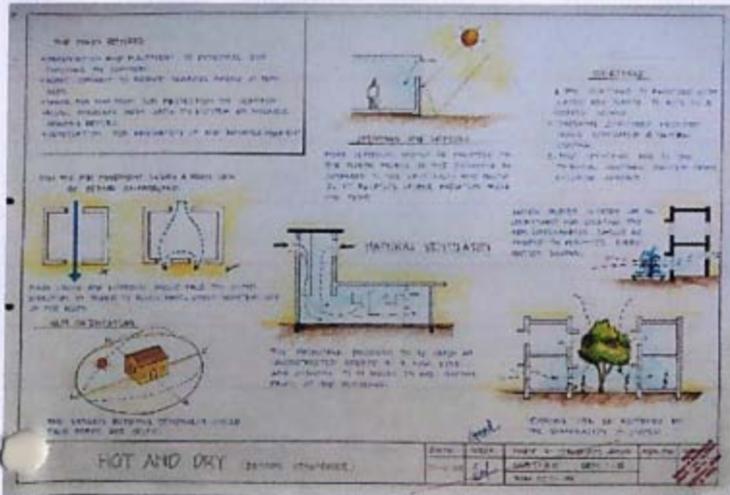
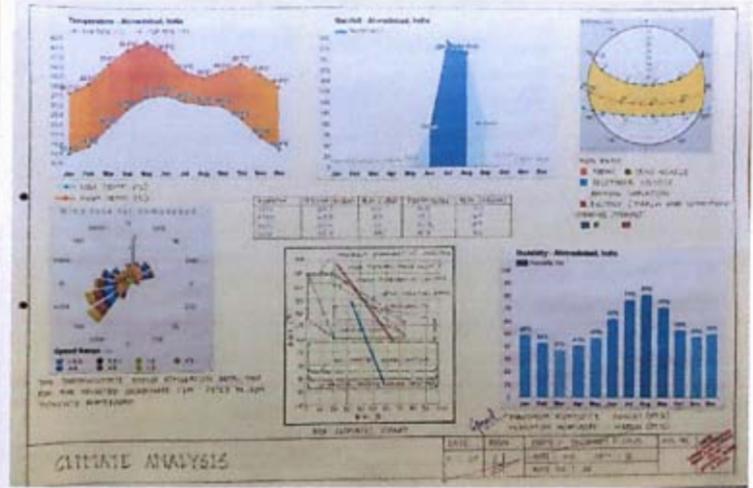
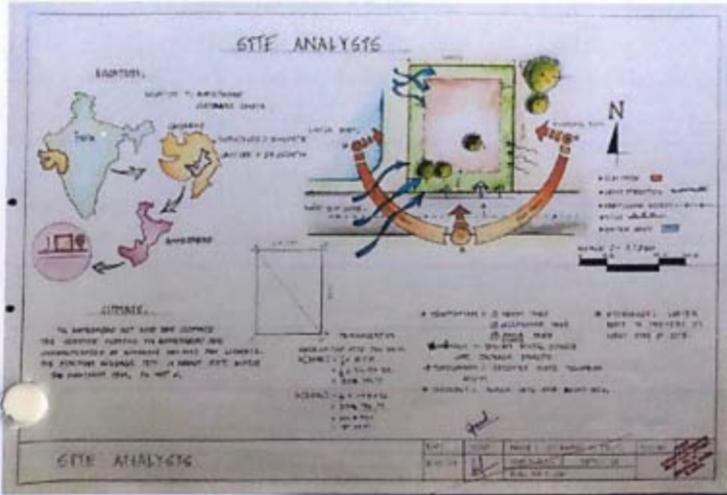
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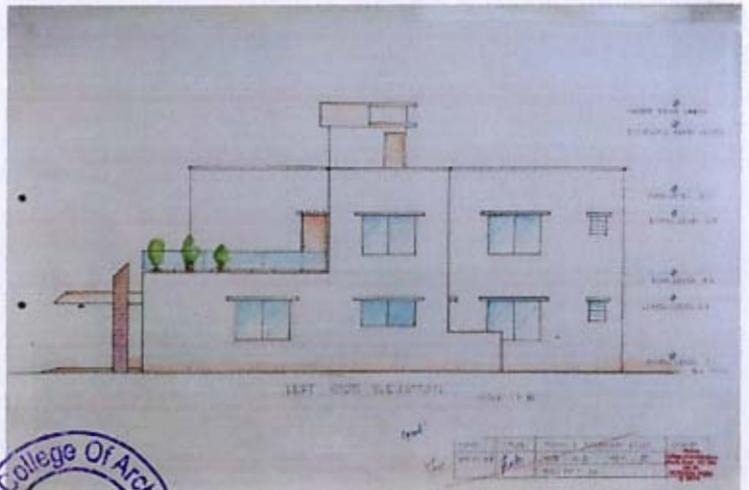
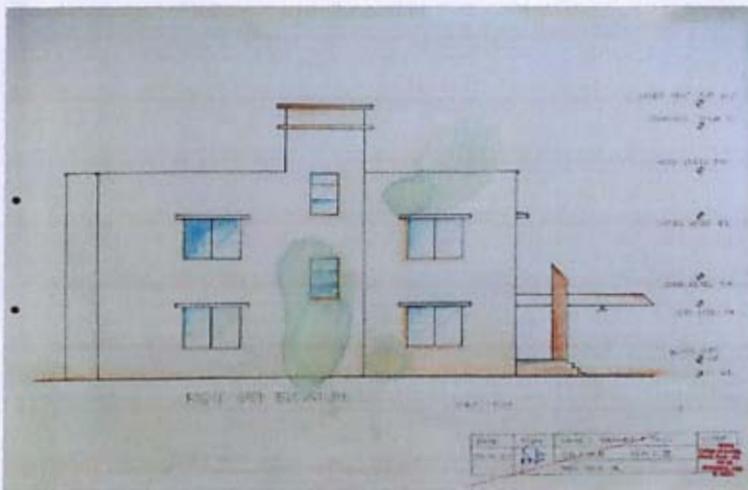
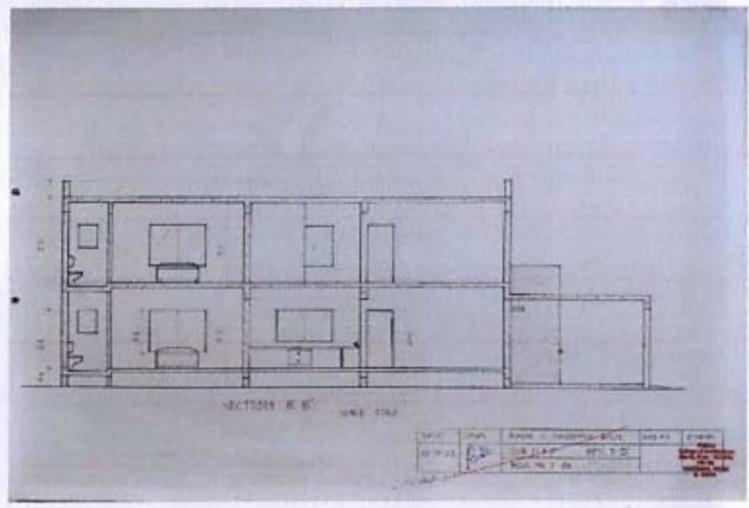
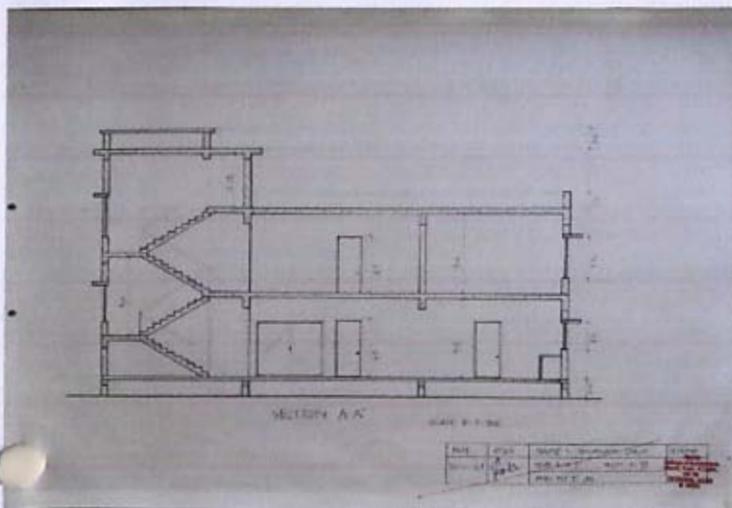
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**Percentage of students undertaking projects work/ field work/ Internship (data for latest completed academic year)**

**AY: 2021-2022**

**Second year B. Arch. Courses**

**Project work/ field work/ Internship work**

<b>COURSE TITLE</b>	<b>COURSE CODE</b>
Architectural Design II	2201917 [2019 pattern]
Building Construction & Materials III[SV]	2201919 [2019 pattern]
Computer Aided Drawing and Graphics	2201921 [2019 pattern]
History of Arch & Culture III	2201922 [2019 pattern]
Building Services I[SS]	2201924 [2019 pattern]
Architectural Design III	2201926 [2019 pattern]
Building Construction & Materials IV[SV]	2201928 [2019 pattern]
Building Services II[SS]	2201933 [2019 pattern]
Site Survey and Analysis	2201934 [2019 pattern]





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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Architectural Design II</b>
<b>Title of assignment</b>	<b>: Bungalow Design</b>
<b>Teaching methodology Adopted</b>	<b>: experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar. Swati Rode and Ar. Vishnu Suresh</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester III)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand residence a design typology.</li><li>• To understand Architectural Design as a process generating design brief and taking design decisions</li></ul>
<b>Date /duration of activities</b>	09/09/21 to 01/10/21
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	NA





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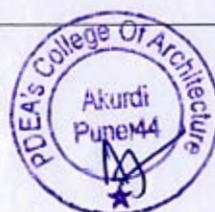


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<p>Brief about the Programme (Activity/Event)</p>	<p><b>PROJECT 1: Bungalow Design</b></p> <p>In this activity student are expected to work in a group of 3 and analyse the activity throughly a residence based on its design parameter and response. (Case study)</p> <p>A bungalow is a residential building for family that is either designed to be single storied, or double-storied in its articulation.</p> <p><b>To understand Architectural Design as a process generating design brief and taking design decisions based on the following aspects:</b></p> <ul style="list-style-type: none"><li>• <b>Socio-Cultural Aspects:</b> To introduce students to socio-cultural aspects like <u>lifestyle, culture, traditions, and their effect on architectural design</u> etc.</li><li>• <b>Aesthetics:</b> To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).</li><li>• <b>Anthropometry &amp; Function:</b> To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)</li><li>• <b>Climate:</b> To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.</li><li>• <b>Building Material and Construction Technology:</b> To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.</li><li>• <b>Building Services:</b> To understand the spatial and structural implications of basic services involved in building design.</li><li>• <b>Site :</b> To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.</li><li>• <b>Universal Design:</b> To understand the concept and principles of universal design.</li><li>• <b>Precedent Studies:</b> To introduce the students to learn from case, referral, live studies - process of observation, analysis, documentation and deriving inferences.</li></ul>
<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"><li>• At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design and communicate it in form of 2D and 3D representations.</li></ul>



**A REPORT ON BUNGLOW DESIGN CASE STUDIES**



**Bungalow**

- A bungalow is a small cottage-type home, usually built as a one-story dwelling without stairs.
- Bungalows typically feature sloped roofs, open floor plans, large front windows, and broad front porches
- Depending on the style, bungalows can feature more than one story

**History**

Occupying English officers hired laborers from the region to build small, economical single-story houses in the *Bangla* (or *Bangala*) style, a Hindustani word that means "belonging to Bengal."

**Benefits of Living in a Bungalow**

- > They can offer more privacy
- > They're suitable for mobility.
- > Easier routine maintenance

**INTRODUCTION**

**Characteristics of Bungalows**

**1] Small size**

- A bungalow home is usually a small single-story house.

**2] Balance**

- The front of a bungalow doesn't have to be symmetrical, but it often presents balanced proportions.

**3] Open floor plans**

- Bungalows typically feature small square footage and minimal storage space

**4] Large front porch with eaves**

- One of the most distinctive features of the bungalow is the **veranda**, which is typically covered by a steeply-pitched roof

**5] Plenty of windows**

- Traditional bungalows will usually feature double-hung or single-hung windows. However, modern Craftsman-style bungalows may include casement windows or a large bay window

**Name : Sanket Sunil Sawant**

**Sub : AD**

**Class : S. Y. B. ARCH. (2021 - 2022)**

**VILLA IN CHENNAI**

**PROJECT INFORMATION**

- **Located** - Chennai
- **Architects** - Invent architects firm
- **Year** - 2017
- **Area** - 455 m<sup>2</sup>
- **direct supervision** - D. Vivek Kumar and R. Nanda Devi.

**CLIENT'S REQUIREMENTS**

- > The client had a number of different requirements by which the villa had to abide.
- > These included items such as being able to enjoy both semi-private and private spaces.
- > as well as employing the sea's breeze without necessarily having direct access to the beaches



**DESIGN CONCEPT**

The concept behind this design relies on the spatial segmentation of semi-public areas which maximizes the virtual connectivity within the house through light which we call the exponent.

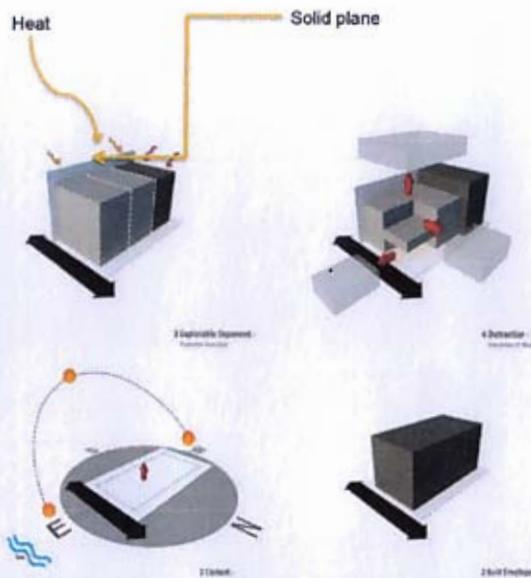
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**Sub : AD**

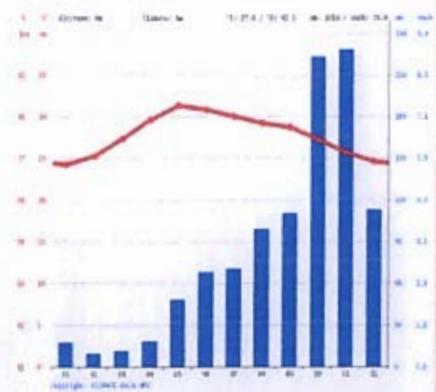
**Class : S. Y. B. ARCH. (2021 - 2022)**

**HOW CONCEPT OF DESIGN ACHIEVED ?**

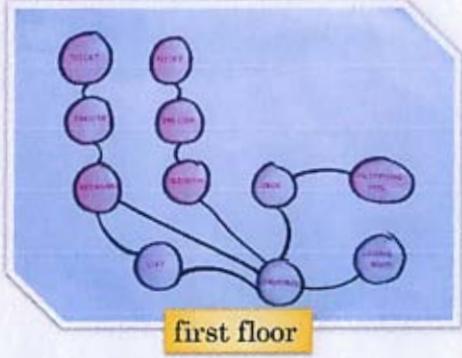
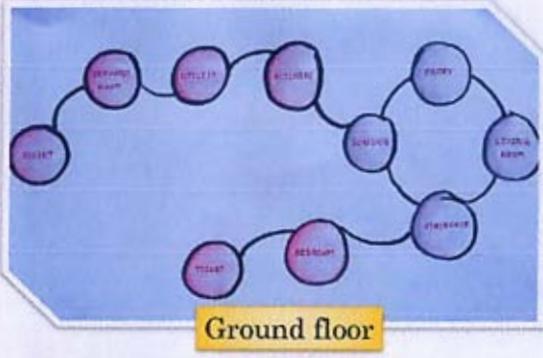
To achieve this experience, the design consists of a solid plane which protects the residence from the secondary southern heat, and the west consists of a solid volume which contains the private spaces - bedrooms. The rest forms the exponent which holds the semi-private space.



**CLIMATIC CONDITION**

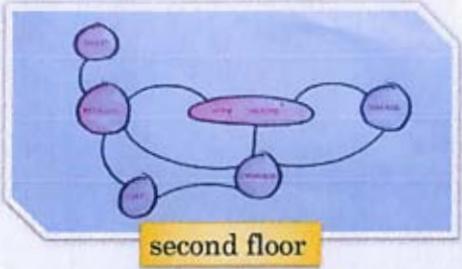


Name : Sanket Sunil Sawant  
Sub : AD  
Class : S. Y. B. ARCH. (2021 - 2022)



**FUNCTIONAL AREAS**

- > This is a G+2 structure
- > On Ground Floor  
Car parking, living room with attached dining, kitchen with utility and servant room and toilet, bedroom, lift, staircase
- > First floor  
living room, 2 bedrooms, dresser attached with toilet, deck and pool joint, lift, staircase
- > Second floor  
Bedroom attached with toilet, home theatre, terrace, lift, staircase.



Name : Sanket Sunil Sawant  
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Class : S. Y. B. ARCH. (2021 - 2022)

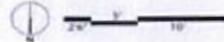
## GROUND FLOOR PLAN



GROUND FLOOR PLAN

LEGEND

- |               |             |                 |                 |                 |
|---------------|-------------|-----------------|-----------------|-----------------|
| 1 Car Parking | 3 Staircase | 9 Bed Room      | 13 Sit Out Area | 17 Home Theatre |
| 2 Water Pond  | 6 Dining    | 10 Toilet       | 14 Dresser      | 18 Terrace      |
| 3 Foyer       | 7 Kitchen   | 11 Utility      | 15 Deck         |                 |
| 4 Living Room | 8 LIFT      | 12 Servant Room | 16 Pool         |                 |



Name : Sanket Sunil Sawant

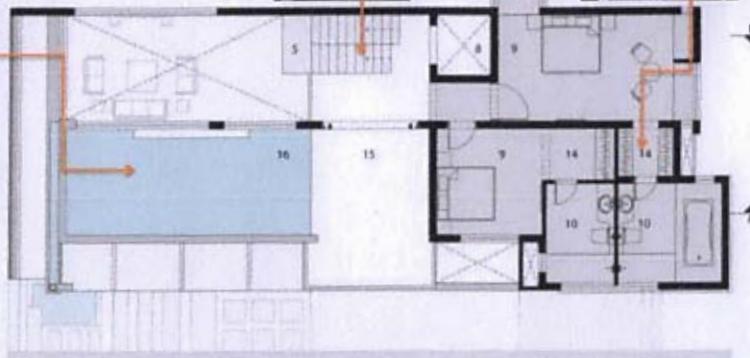
Sub : AD

Class : S. Y. B. ARCH. (2021 - 2022)

## SECOND FLOOR PLAN



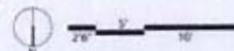
The design and location of the swimming pool area is an important integral to this residence as it provides an exhilarating experience for the user who can appreciate the view of the beach being in the water or from the appending deck area.



SECOND FLOOR PLAN

LEGEND

- |               |             |                 |                 |                 |
|---------------|-------------|-----------------|-----------------|-----------------|
| 1 Car Parking | 5 Staircase | 9 Bed Room      | 13 Sit Out Area | 17 Home Theatre |
| 2 Water Pond  | 6 Dining    | 10 Toilet       | 14 Dresser      | 18 Terrace      |
| 3 Foyer       | 7 Kitchen   | 11 Utility      | 15 Deck         |                 |
| 4 Living Room | 8 LIFT      | 12 Servant Room | 16 Pool         |                 |



Name : Sanket Sunil Sawant

Sub : AD

Class : S. Y. B. ARCH. (2021 - 2022)

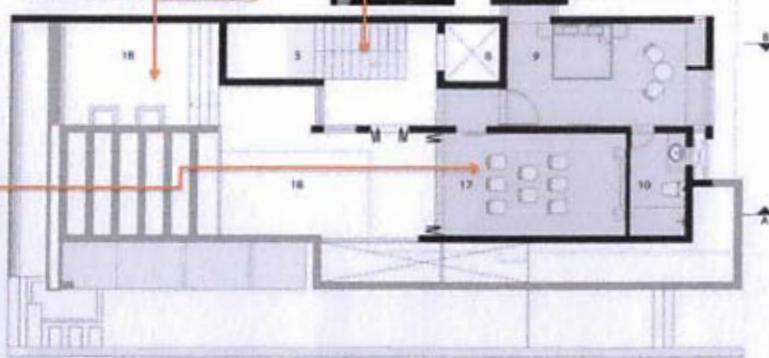
The Terrace has views of the beach area which can be seen from the adjacent roofed area.



The staircase as a structure enhances the aesthetic quality of the living space and promotes visual interaction within the house.



The home-theater becomes the remnant volume in this process of detracting which in turn opens out to the terrace formed. It extends as a gathering space after an evening movie.



THIRD FLOOR PLAN

LEGEND

- |                |              |                  |                  |                  |
|----------------|--------------|------------------|------------------|------------------|
| 1. Car Parking | 5. Staircase | 9. Bed Room      | 13. Sit Out Area | 17. Home Theatre |
| 2. Water Pond  | 6. Dining    | 10. Toilet       | 14. Dresser      | 18. Terrace      |
| 3. Foyer       | 7. Kitchen   | 11. Utility      | 15. Deck         |                  |
| 4. Living Room | 8. Lift      | 12. Servant Room | 16. Pool         |                  |

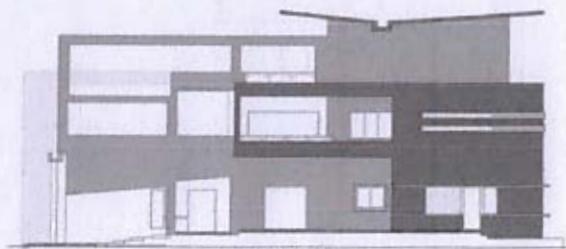


THIRD FLOOR PLAN

Name : Sanket Sunil Sawant

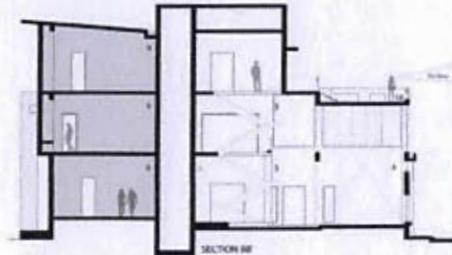
Sub : AD

Class : S. Y. B. ARCH. (2021 - 2022)



NORTH ELEVATION

NORTH ELEVATION



SECTION B-B'

SECTION B-B'



SECTION A-A'

SECTION A-A'

□ Apart from the requirement of having private and semi-private spaces,

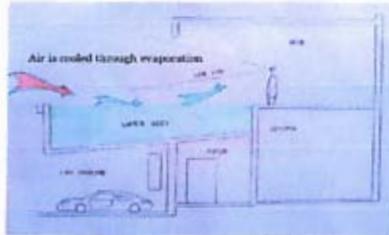
□ we wanted the user to experience the coastal breeze along with the water, within his zone of proximity without having to access the beachfront.

Name : Sanket Sunil Sawant

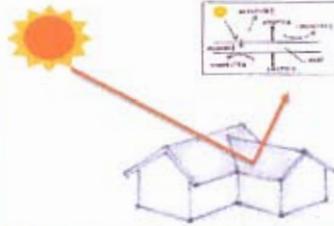
Sub : AD

Class : S. Y. B. ARCH. (2021 - 2022)

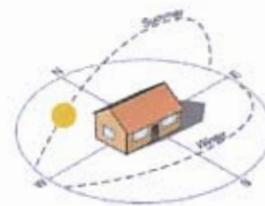




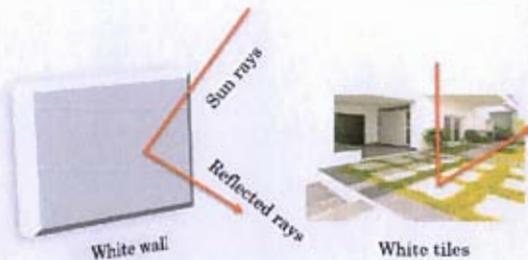
Water bodies in house are ideal for evaporative cooling in hot and dry climates.



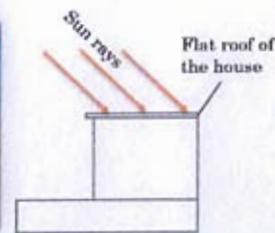
They used light color building materials and cool roofs to minimize conducted heat gain



The large building dimensions faced north and south direction.



They use white colour for walls and tiles because white reflects sunlight and reduces its temperature, which in turn means less heat is transferred inside the building.



Solar radiation on surfaces normal (taper) to sun rays is higher than horizontal surface.

**Name : Sanket Sunil Sawant**

**Sub : AD**

**Class : S. Y. B. ARCH. (2021 - 2022)**

**PROS**

- > The concept behind this design relies on the spatial segmentation of semi-public areas which maximizes the virtual connectivity within the house through light which we call the exponent.
- > The staircase as a structure enhances the aesthetic quality of the living space and promotes visual interaction within the house
- > The user to experience the coastal beach along with the water, within his zone of proximity without having to access the beachfront.
- > Bungalow have flat roof that means reduce heat.

**CONS**

- > The detractor of volume from the exponent facilitate the formation of open spaces which comprises of the swimming pool and the parking below.
- > Absence of contrast
- > I think they should have planted trees to the south side rather than solid plane.
- > Poor ventilation.
- > courtyards are especially popular in warmer climates but here they didn't provide courtyard.

**REFERENCE AND LINKS**

<https://www.studiocity.com/2021/07/13/10-ideas-to-change-your-living-space/>

<https://www.homedesign.com/2021/07/13/10-ideas-to-change-your-living-space/>



**Name : Sanket Sunil Sawant**

**Sub : AD**

**Class : S. Y. B. ARCH. (2021 - 2022)**



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## A REPORT ON BUNGLOW DESIGN CASE STUDIES

### CASE STUDY OF BUNGALOW

# The Brick House

#### PROJECT DETAILS :

LOCATION: HARNI, VADODARA,  
GUJARAT  
ARCHITECT : MANAV PATEL  
THEME: UNIQUE FACADES  
PLOT AREA: 3400 SQ. FT.  
FACING: NORTH  
VASTU: YES  
NO. OF ROOMS: 5  
BUILT-UP AREA: 5500 SQ. FT.  
START YEAR: 2018  
COMPLETION YEAR: 2020



NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : SY BARCH ROLL NO : 06  
YEAR : 2021-22

#### BRICK WALL DESIGN



THE FRONT ELEVATION WAS PLANNED AS AN EXPOSED BRICK FACADE, WITH VARIOUS PATTERNS CREATED BY THE BRICKS TO HIGHLIGHT THE BRICK POTTEMS AND TO ADD A POP OF COLOUR.



PARKING SPACE IS PROVIDED AT THE ENTERENCE OF THE PLOT.



BIG KITCHEN WITH DINING AREA IS PROVIDED.



A GOOD SIZE OF GARDEN OVER LOOKING THE MAIN AREAS KITCHEN AND LIVING ROOM



THE SEPARATE HOME THEATER, ENTERTAINMENT ROOM IS PROVIDED ON SECOND FLOOR

NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : SY BARCH ROLL NO : 06  
YEAR : 2021-22





**CLIENT PROFILE :**

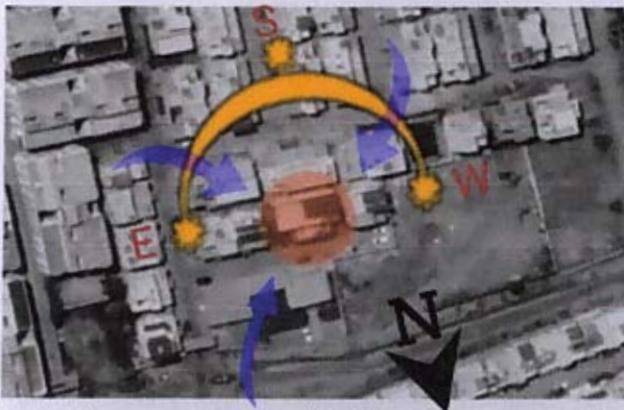
CLIENT IS A BUSINESSMAN, HAS A FAMILY 5 PARENTS, SON AND DAUGHTER, GRANDMOTHER

THE CLIENT WANTS INDIVIDUAL BEDROOMS AND A GOOD SIZE OF GARDEN OVER LOOKING THE MAIN AREAS. ONE HOME THEATER

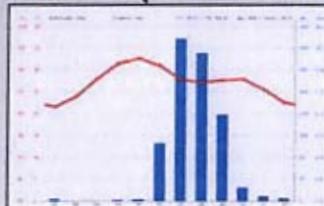
**CONCEPT :**

THE HOUSE IS CALLED BRICK HOUSE. FRONT WALL HAS BEEN DONE BRICK BEAUTIFUL DESIGN IN BRICK THE FORM OF BONDS WITH DIAGONAL PLACEMENT VERTICAL PLACEMENT HORIZONTAL PLACEMENT. BLUE WINDOW ARE A DONE TRADITIONAL COLONIAL STYLE TOUCH ARE INDIAN ARCHITECTURE.

NAME : SHUBHAM POPAT DHUS  
 SUBJECT : AD II SEM : III  
 CLASS : 5Y BARCH ROLL NO : 06  
 YEAR : 2021-22



**SITE ANALYSIS**



**CLIMATE:**

TEMPERATURE: 42 DEGREE CELSIUS MAX. IN MAY AND 25 DEGREE CELSIUS MIN. IN JAN.

-HUMIDITY: 54%

WIND: 10KM/H

WIND DIRECTION: SOUTH-EAST TO NORTH WEST

\*PRECIPITATION: 44.2MM/YR

NAME : SHUBHAM POPAT DHUS  
 SUBJECT : AD II SEM : III  
 CLASS : 5Y BARCH ROLL NO : 06  
 YEAR : 2021-22



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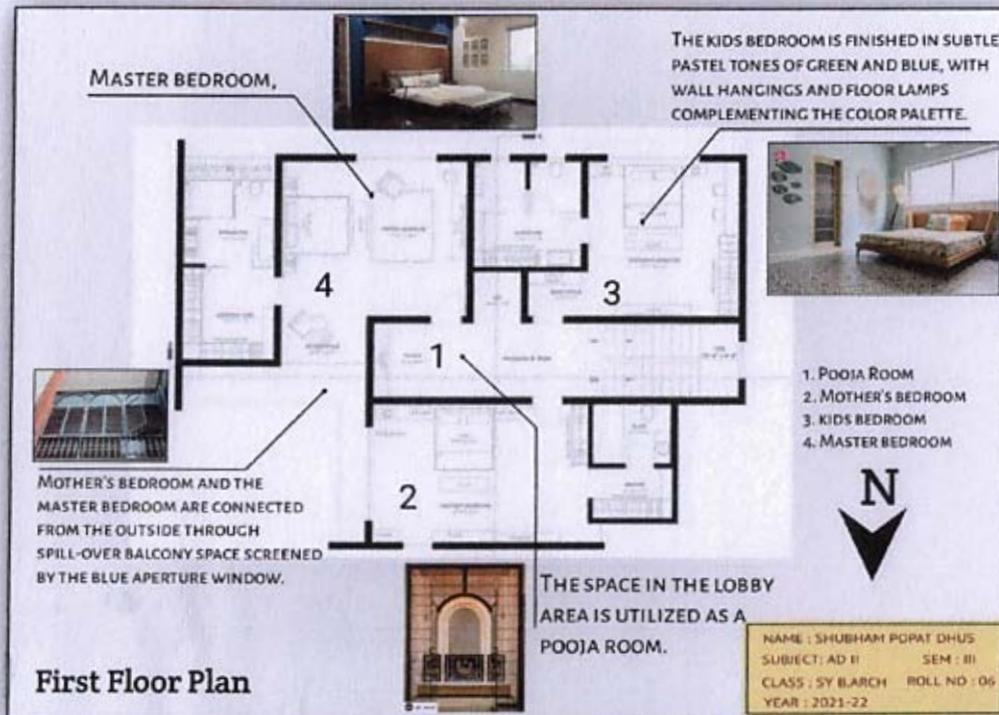
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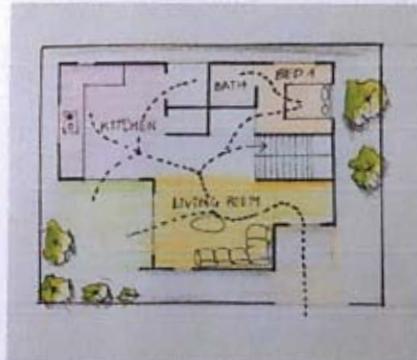


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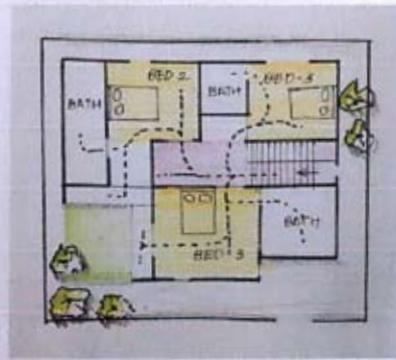
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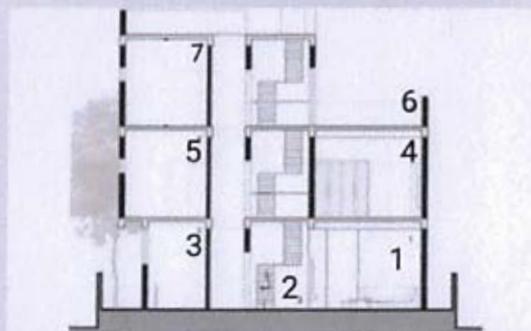
GROUND FLOOR CIRCULATION



FIRST FLOOR CIRCULATION

NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : SY BARCH ROLL NO : 06  
YEAR : 2021-22

Section A A'

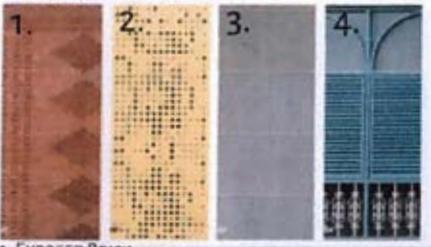


- 1 LIVING
- 2 PASSAGE
- 3 ATT TOILET (GUEST BEDROOM)
- 4. MOTHER'S BEDROOM
- 5. ATT TOILET (KIDS BEDROOM)
- 6. TERRACE
- 7. HOME THEATER

SECTION A A'  
SECTION THROUGH THE LIFT SHOWING THE LIVING ROOM AND THE GUEST BEDROOM ON THE GROUND FLOOR, THE MOTHER'S AND KIDS BEDROOM ON THE FIRST FLOOR, AND THE TERRACE AND THE HOME THEATRE ON THE SECOND FLOOR

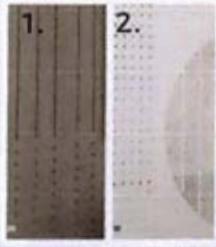
NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : SY BARCH ROLL NO : 06  
YEAR : 2021-22

### FACADE MATERIALS



1. EXPOSED BRICK
2. YELLOW JAALI
3. CEMENT FINISHED WALL
4. BLUE MS WINDOWS

### PARTITION MATERIAL



1. CEMENT FINISH
2. METAL SCREEN

### FLOORING MATERIALS



1. CALICHA TILES
2. TERRAZO FLOORING
3. DARK ITALIAN MARBLE
4. GREY ITALIAN MARBLE

NAME : SHUBHAM POPAT DHUS  
SUBJECT: AD II SEM : III  
CLASS : 5Y BARCH ROLL NO : 06  
YEAR : 2021-22

## INFERENCES

### THE BLUE SCREEN



THE FIRST-FLOOR BEDROOMS GET A LITTLE COLONIAL MAKE-OVER WITH THE BLUE APERTURE SCREEN THE SCREEN ACTS AS A SEMI-PERMEABLE APERTURE ALLOWING IN THE PRE-CIOUS LIGHT AND AIR AND KEEPING OUT THE PRYING EYES OF THE PEOPLE.

### STAIRCASE ARTWORK



THE MASTER ART PIECE IN THE HOUSE WOULD BE THE ARTWORK ON THE STAIRCASE CREATED BY A LOCAL ARTIST.



THE DAYLIGHT FILTERING IN THE LIGHT WELL THROUGH THE SKYLIGHT ABOVE.

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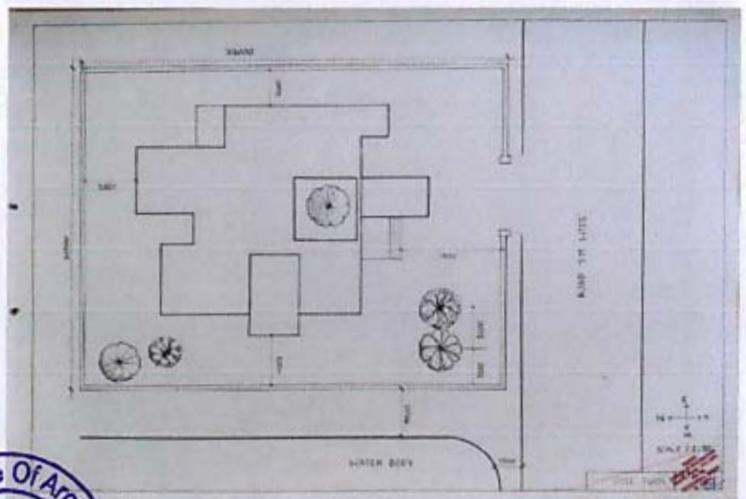
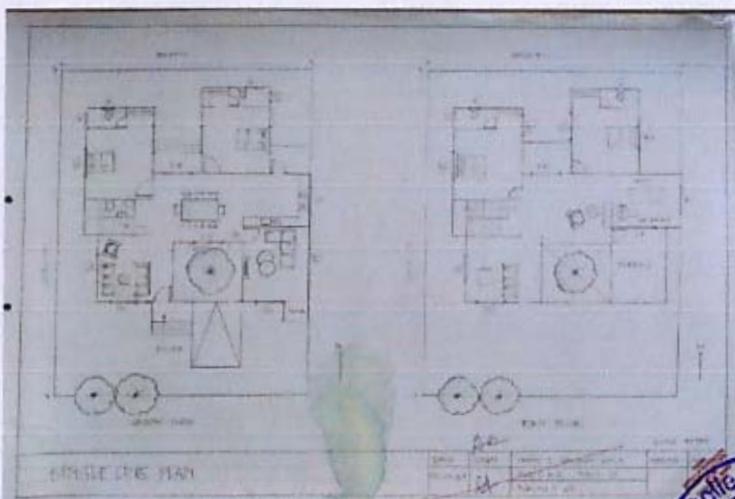
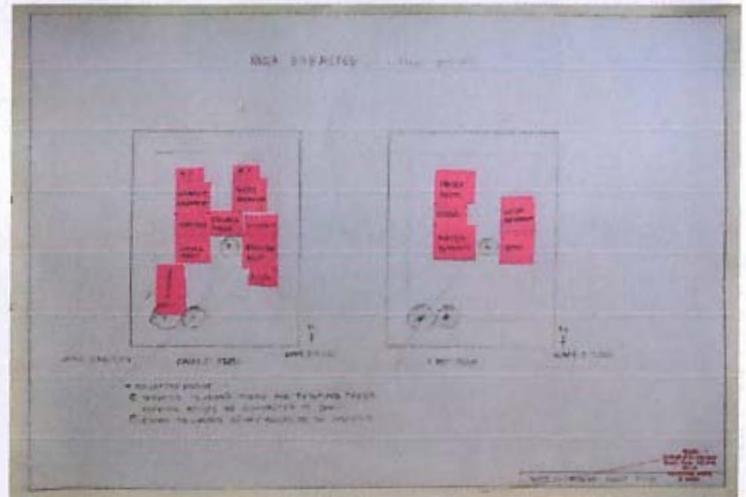
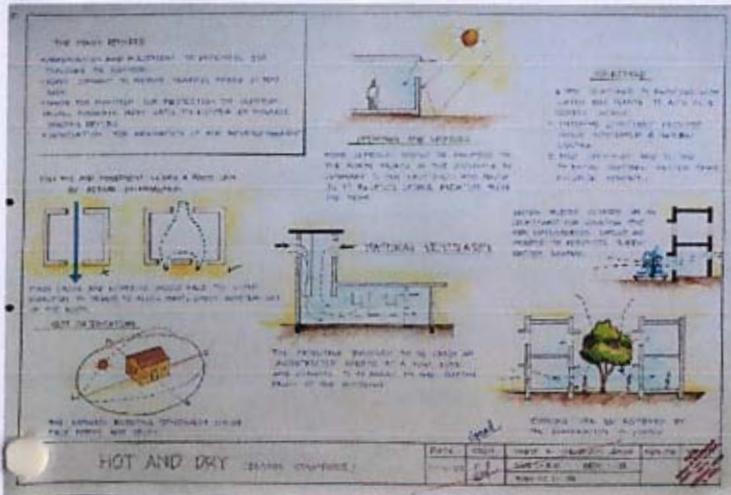
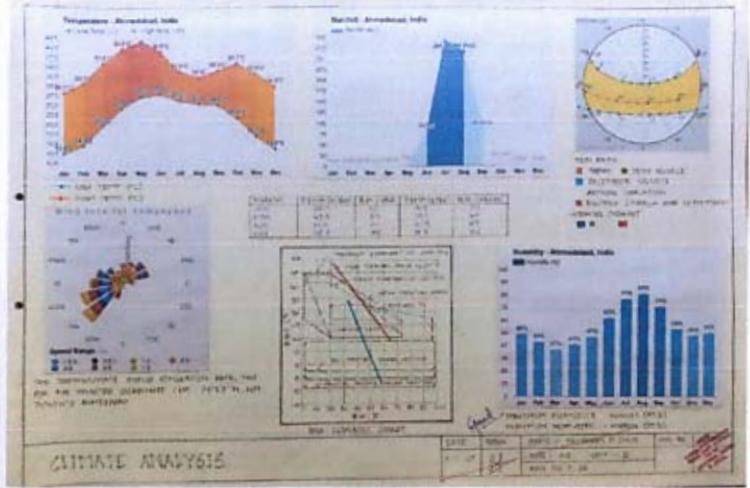
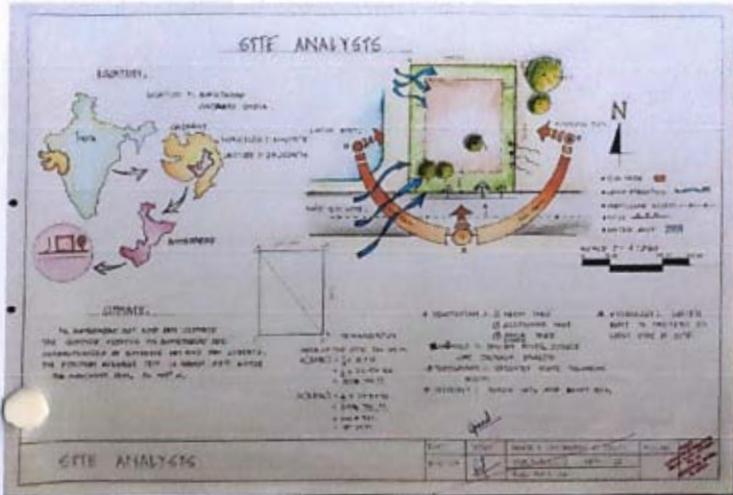
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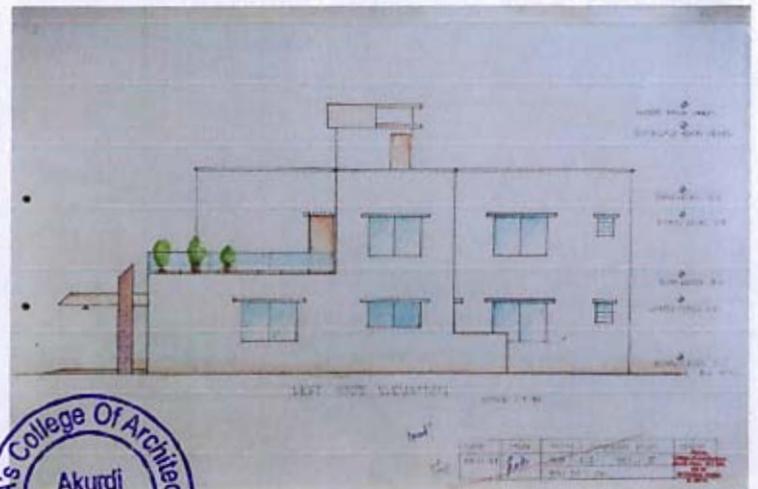
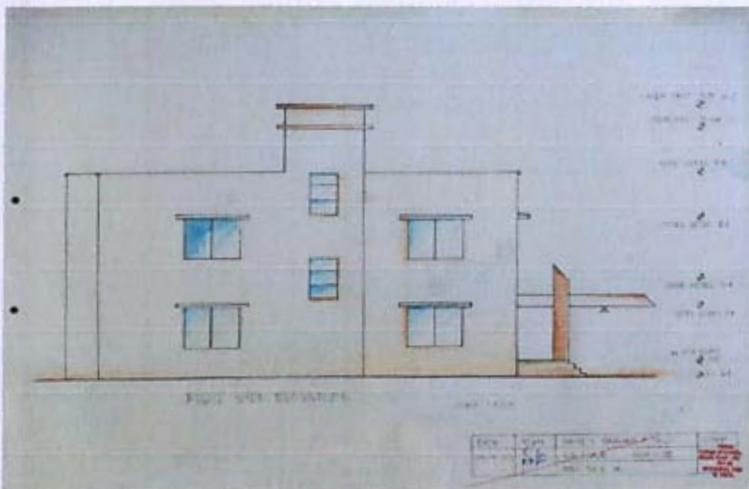
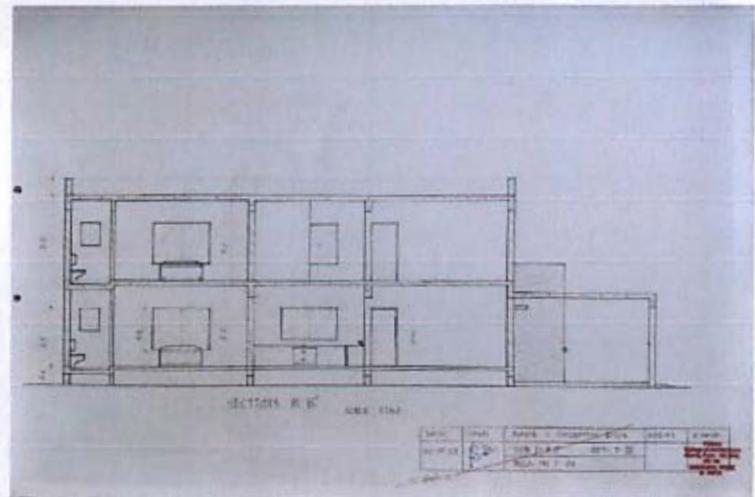
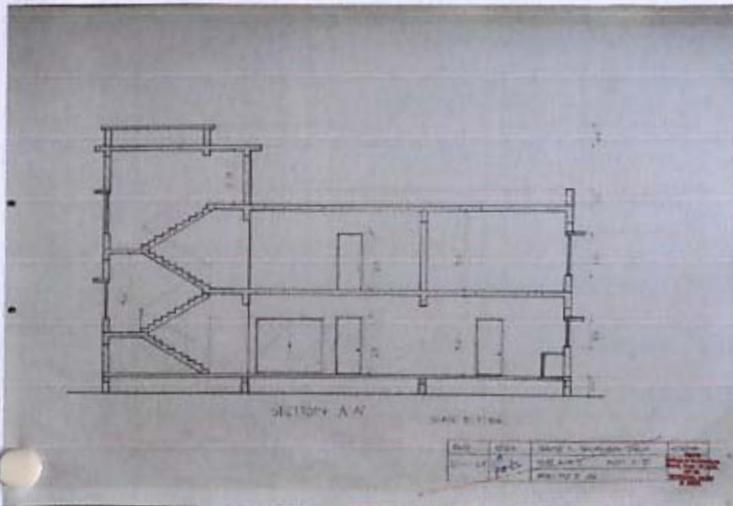
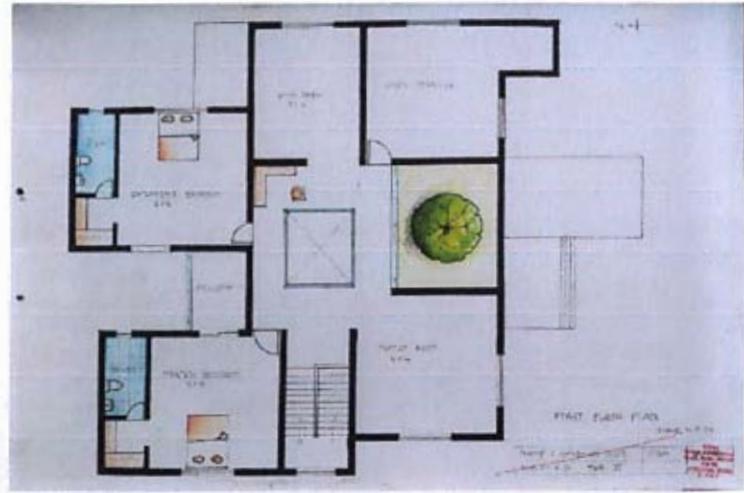
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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Building Construction &amp; Materials III</b>
<b>Title of assignment</b>	<b>: Concepts of concrete as a building construction material.</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar. Vishnu Suresh and Ar. Rakesh Mutha</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester III)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To introduce students to soil study, its relevance to foundation.</li><li>• To introduce students to different building materials related to RCC construction.</li><li>• To understand basic principles of RCC construction w.r.t. smaller spans.</li></ul>
<b>Date /duration of activities</b>	12/10/21 to 3/11/21 (1 week)
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	NA





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<p>Brief about the Programme (Activity/Event)</p>	<ul style="list-style-type: none"><li>• Introduction to Soil study &amp; Foundation - Study of different types of soils and their bearing capacities; Concept of bulb of pressure and its significance for site investigation, Introduction to methods of site and strata investigation</li><li>• Introduction to different types of shallow foundations and footings and their application in construction</li><li>• Introduction to concrete as a material--Study of its ingredients viz. binding material, fine aggregate, coarse aggregate and water cement ratio, storage of materials on site, understanding good quality material; field &amp; lab tests involved</li><li>• Various concrete mixes and their application in construction, and workability of concrete, Various types of cement concrete, the properties and application, additives and admixtures used in concrete</li><li>• Concreting: form work for concreting, mixing, transporting and placing, consolidating and curing of concrete. • Reinforcement ---steel, grades of steel and steel-mesh reinforcement; along with role of reinforcement in RCC.</li><li>• Introduction to the concept of Precast Concrete.</li><li>• RCC frame structure for smaller spans generally applicable to residential structures, along with earthquake resistant features, reference of a RCC drawing</li><li>• R.C.C structural details up to plinth viz. footings, external and internal plinth beams, with plinth formation, with details for toilet block at plinth level.</li><li>• Construction of columns, beams for various types of end conditions</li><li>• R.C.C floor slab details, viz. one-way, two-way slabs with different end conditions, column-beam-slab junction with details for toilet block, also lintel &amp; weather-shed</li><li>• Windows in non-timber materials</li><li>• Study of non-timber windows with materials like Steel-framed, aluminum, UPVC and their construction details.</li><li>• Flooring &amp; paving materials</li><li>• Different flooring &amp; paving types that are cast-in-situ viz. Mud flooring, Brick flooring, Indian Patent Stone finish, Terrazzo flooring etc. and readymade tiles available in market viz. natural stone tiles / slabs, mosaic cement tiles / blocks, ceramic tiles, vitrified tiles and other modern materials, including the process of providing or laying the flooring and pavement</li><li>• Floor finishes of various materials viz. carpet, linoleum, rubber, PVC etc</li></ul>
<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"><li>• Students will develop a basic understanding of the relationship of materials to construction systems, techniques and methodology with specific reference to reinforced cement concrete construction; an understanding of the concepts of concrete as a building construction material</li></ul>

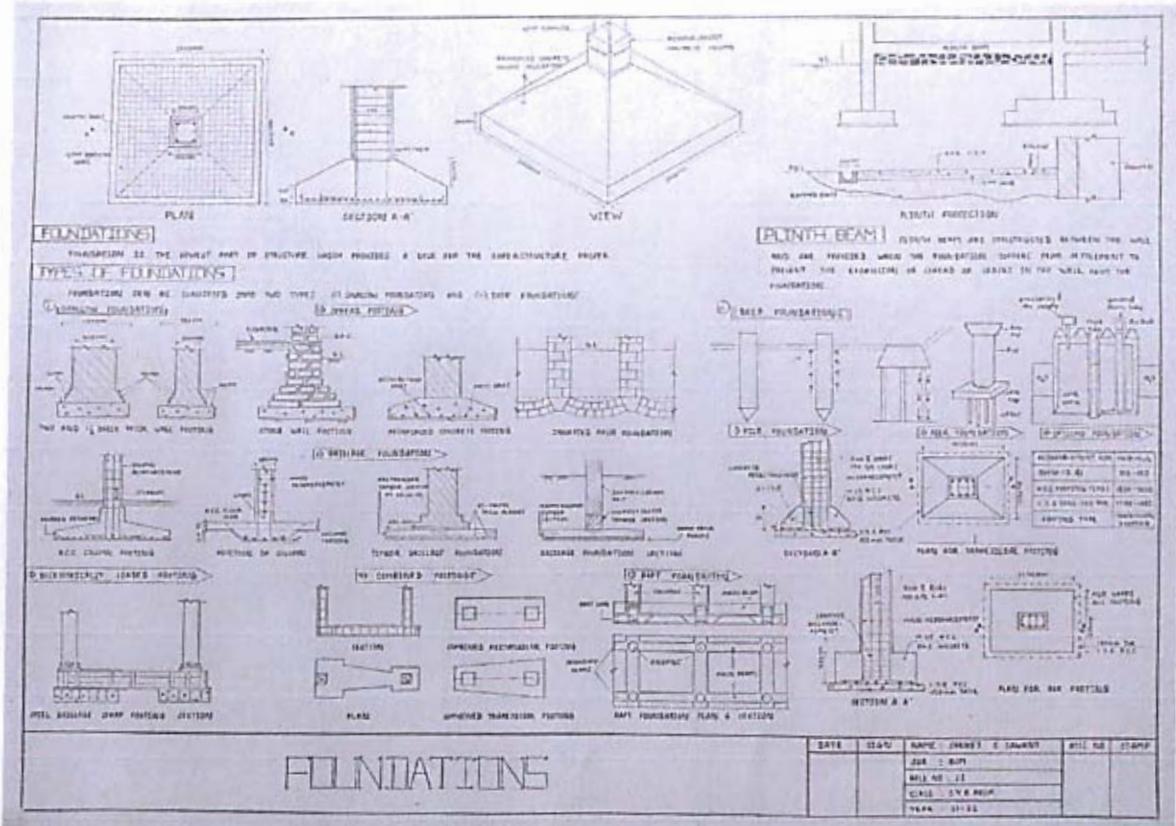




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**FOUNDATIONS**  
FOUNDATION IS THE PART OF STRUCTURE WHICH PROVIDES A BASE FOR THE SUPERSTRUCTURE PORTION.

**TYPES OF FOUNDATIONS**  
FOUNDATIONS CAN BE CLASSIFIED INTO TWO TYPES: (1) SHALLOW FOUNDATIONS AND (2) DEEP FOUNDATIONS.

**(1) SHALLOW FOUNDATIONS**

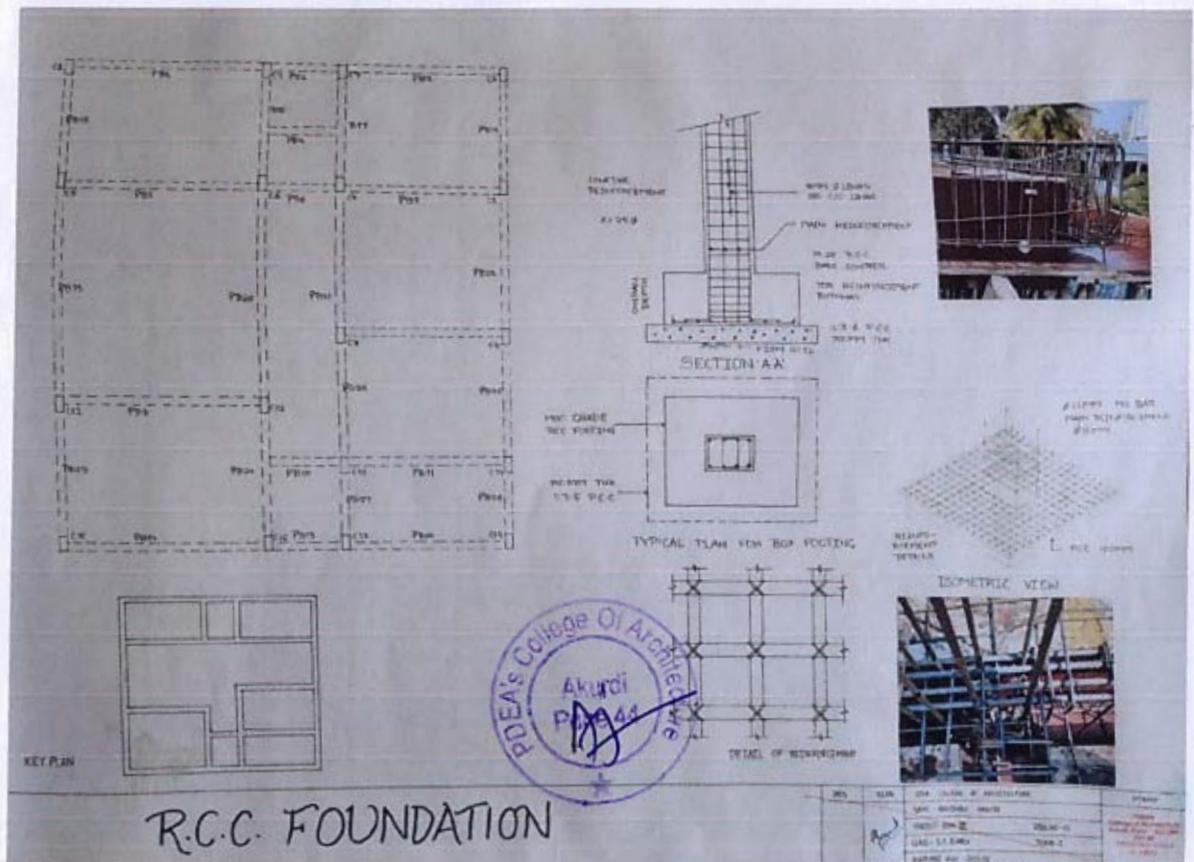
- (a) ISOLATED FOOTING**: This type of footing is used for a single column. It is a rectangular or square concrete slab resting on the ground.
- (b) STRIP FOOTING**: This type of footing is used for a row of columns. It is a long, narrow concrete slab resting on the ground.
- (c) GRAVEL FOOTING**: This type of footing is used for a single column. It is a concrete slab resting on a layer of gravel.
- (d) RAISED GRAVEL FOOTING**: This type of footing is used for a single column. It is a concrete slab resting on a layer of gravel, which is raised above the ground level.
- (e) MAT FOUNDATION**: This type of footing is used for a group of columns. It is a large, flat concrete slab resting on the ground, which supports all the columns in the group.
- (f) PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile driven into the ground, which supports the column.
- (g) RAISED PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile driven into the ground, which is raised above the ground level.
- (h) GROUP PILE FOUNDATION**: This type of footing is used for a group of columns. It is a group of long, narrow concrete piles driven into the ground, which support all the columns in the group.

**(2) DEEP FOUNDATIONS**

- (a) BORED PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile bored into the ground, which supports the column.
- (b) DRIVEN PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile driven into the ground, which supports the column.
- (c) CAST-IN-PLACE PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile cast in place into the ground, which supports the column.
- (d) PRECAST PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile precast in a factory, which is driven into the ground, and supports the column.
- (e) TAPERED PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile with a tapered shape, driven into the ground, which supports the column.
- (f) BELL SHAPE PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile with a bell-shaped top, driven into the ground, which supports the column.
- (g) SAND PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile filled with sand, driven into the ground, which supports the column.
- (h) GRAVEL PILE FOUNDATION**: This type of footing is used for a single column. It is a long, narrow concrete pile filled with gravel, driven into the ground, which supports the column.
- (i) COMBINED FOOTING**: This type of footing is used for a group of columns. It is a long, narrow concrete slab resting on the ground, which supports all the columns in the group.
- (j) RAISED COMBINED FOOTING**: This type of footing is used for a group of columns. It is a long, narrow concrete slab resting on a layer of gravel, which is raised above the ground level, and supports all the columns in the group.
- (k) MAT FOUNDATION**: This type of footing is used for a group of columns. It is a large, flat concrete slab resting on the ground, which supports all the columns in the group.
- (l) RAISED MAT FOUNDATION**: This type of footing is used for a group of columns. It is a large, flat concrete slab resting on a layer of gravel, which is raised above the ground level, and supports all the columns in the group.

**FOUNDATIONS**

DATE	CLASS	NAME	MARKS	REMARKS	ROLL NO.	STAMP



**R.C.C. FOUNDATION**

**KEY PLAN**

**SECTION AX**

**TYPICAL PLAN FOR R.C.C. FOOTING**

**DETAIL OF REINFORCEMENT**

**ISOMETRIC VIEW**

**REINFORCEMENT DETAILS**

**REMARKS**

**DATE**

**CLASS**

**NAME**

**MARKS**

**REMARKS**

**ROLL NO.**

**STAMP**

**PDEA's College of Architecture**  
Akurdi  
Pune-411044



# Pune District Education Association's COLLEGE OF ARCHITECTURE

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web : www.pdeacoa.edu.in

**ONE-WAY SLAB :-** SLAB WHICH IS SUPPORTED BY BEAMS ON TWO OPPOSITE SIDES. THE LOAD FLOWS IN ONE DIRECTION. IN ONE WAY SLAB THE RATIO OF LONGER SPAN TO SHORTER SPAN IS LESS THAN OR EQUAL TO 2.

**SECTION-AA**  
SCALE: 1/20

**KEY PLAN**

**SCHEDULE FOR BEAM**

SLAB NUMBER	TYPE	THICKNESS	SPACING	REINFORCEMENT	REMARKS
B1	ONE WAY SLAB	125 MM	110 MM	110 MM	AT BEAM TOP
B2	ONE WAY SLAB	125 MM	110 MM	110 MM	AT BEAM BOT

**SCHEDULE FOR SLAB**

SLAB NUMBER	TYPE	THICKNESS	SPACING	REINFORCEMENT	REMARKS
S1	ONE WAY SLAB	125 MM	110 MM	110 MM	AT BEAM TOP
S2	ONE WAY SLAB	125 MM	110 MM	110 MM	AT BEAM BOT

**ONE-WAY SLAB**

**TWO-WAY SLAB :-** SLAB SUPPORTED BEAM ON ALL FOUR SIDES AND THE LOADS ARE CARRIED TO THE SUPPORTS ALONG THE TWO DIRECTIONS. IN THE TWO-WAY SLAB RATIO OF LONGER SPAN TO SHORTER SPAN IS LESS THAN OR EQUAL TO 2. IN TWO-WAY SLAB REINFORCEMENT IS PROVIDED IN BOTH DIRECTIONS. I.e. L/B < 2.

**SECTION-AA**  
SCALE: 1/20

**DETAIL**  
SCALE: 1/5

**SCHEDULE FOR BEAM**

SLAB NUMBER	TYPE	THICKNESS	SPACING	REINFORCEMENT	REMARKS
B1	ONE WAY SLAB	125 MM	110 MM	110 MM	AT BEAM TOP
B2	ONE WAY SLAB	125 MM	110 MM	110 MM	AT BEAM BOT

**SCHEDULE FOR SLAB**

SLAB NUMBER	TYPE	THICKNESS	SPACING	REINFORCEMENT	REMARKS
S1	TWO WAY SLAB	125 MM	110 MM	110 MM	AT BEAM TOP
S2	TWO WAY SLAB	125 MM	110 MM	110 MM	AT BEAM BOT

**TWO-WAY SLAB**





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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Computer Aided Drawing and Graphics</b>
<b>Title of assignment</b>	<b>: Demonstration of presentation techniques in various Drawing Formats</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar. Swati Rode and Ar. Vishnu Suresh</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester III)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To enable the students to generate simple architectural drawings using Computer Aided Drawing</li><li>• To enable the students to express their design ideas through various sketching techniques</li></ul>
<b>Date /duration of activities</b>	15/09/21 to 13/10/21
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	NA





# Pune District Education Association's COLLEGE OF ARCHITECTURE

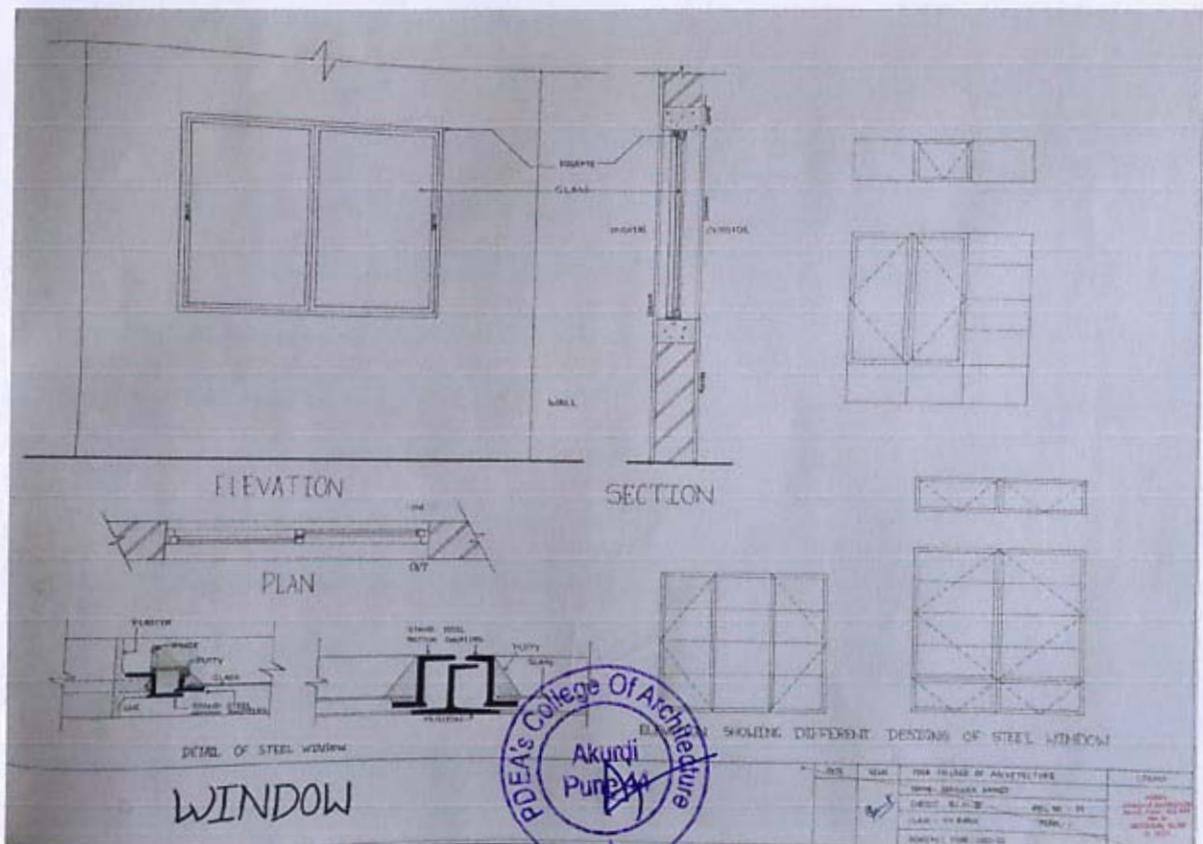
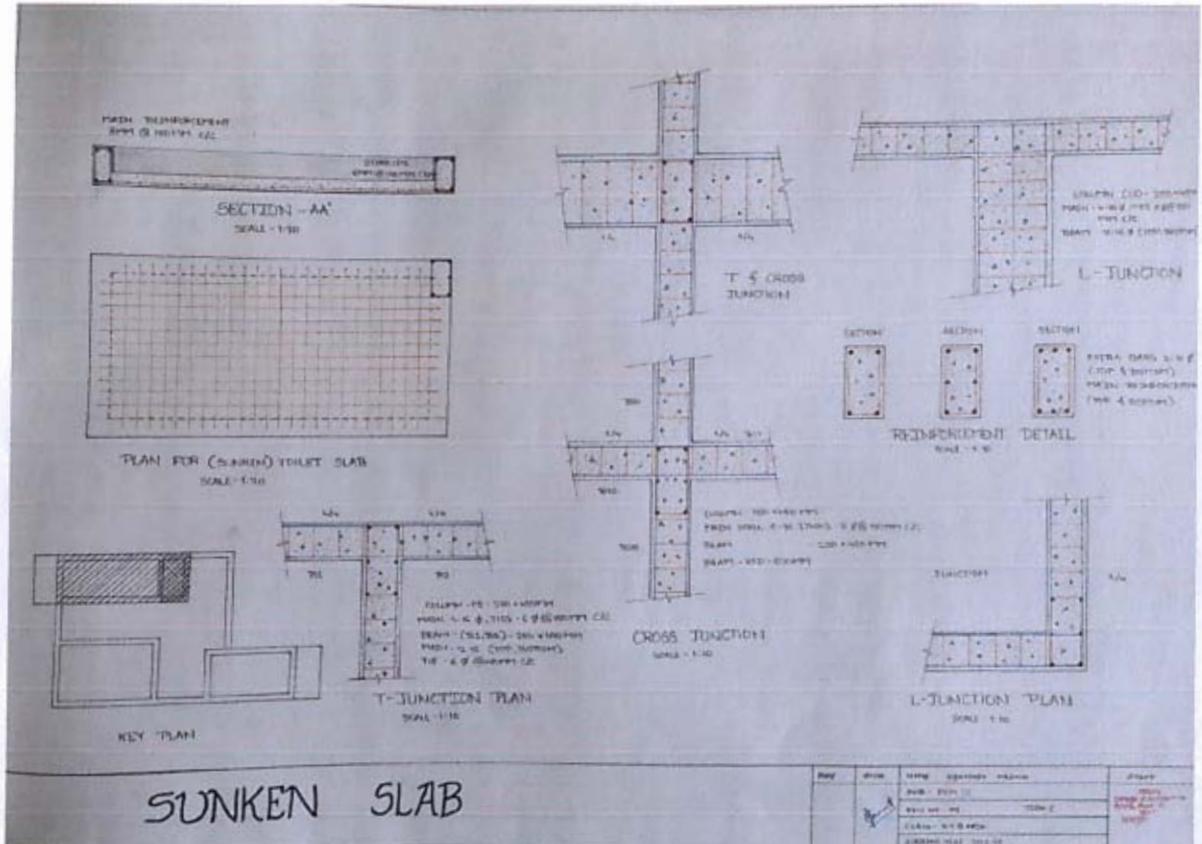
Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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<p>Brief about the Programme (Activity/Event)</p>	<ul style="list-style-type: none"><li>To enable the students to communicate an architectural idea / proposal in a legible and effective manner through various architectural presentations and rendering techniques</li></ul> <p><b><u>STAGE 1: GRAPHICS:</u></b></p> <ul style="list-style-type: none"><li>Introduction to various mediums for architectural presentations in various drawing formats (minimum two mediums) • It is recommended to work on presentation drawings for any Architectural design project A set of drawing shall include rendering of Plans, Elevations, Sections with internal and external perspective views.</li></ul> <p><b><u>STAGE 2: COMPUTER AIDED DRAWING:</u></b></p> <ul style="list-style-type: none"><li>Introduction to basics of Computer Aided Drawing with basic commands for Drawing, sufficient to construct simple geometrical shapes and 3D objects.</li><li>Advance commands in CAD such as Setting Drawing parameters, Layer controls, Hatching, Model and paper space settings etc.</li><li>Drafting single building from Semester II Design on CAD.</li></ul>
<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"><li>Students should be able to comprehend and express nuances of graphic language through various presentation techniques and methods learnt.</li><li>Students should be able to communicate various ideas through architectural graphic representations (drafting and sketching).</li></ul>





# Pune District Education Association's COLLEGE OF ARCHITECTURE

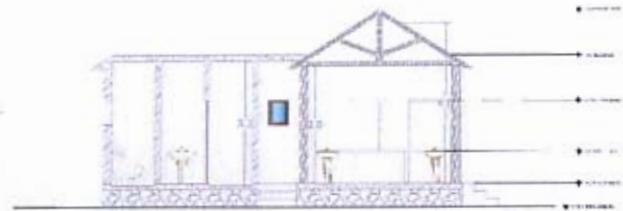
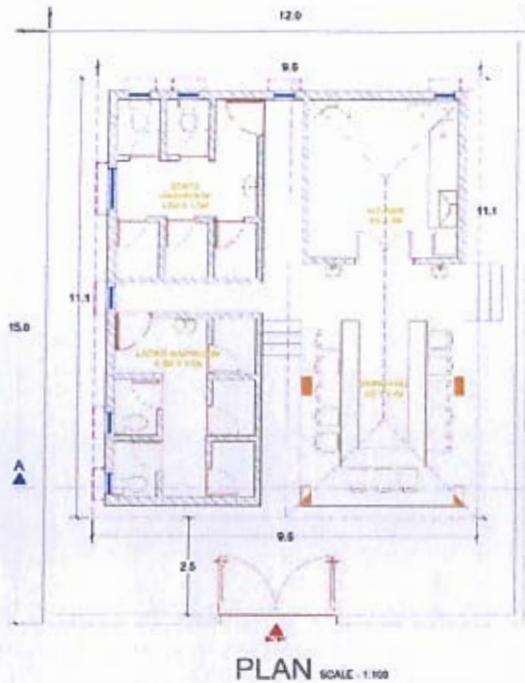
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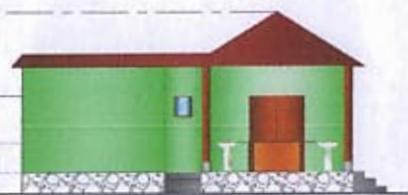
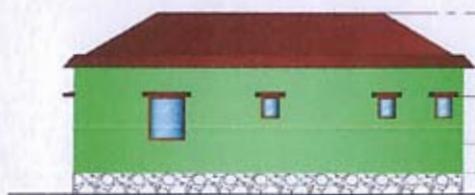
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CAD DRAFTING

DATE	SIGN	NAME - SANJEET SUNIL SAWANT	ASSIGN NO.	STAMP
		SUB - CAD DRAFTING ROLL NO. - 22		
		CLASS - S.Y.B.A.RCH SEM - IV		
		YEAR - 2021-2022		
		PDEA COLLEGE OF ARCHITECTURE, AKURDI		



CAD DRAFTING



DATE	SIGN	NAME - SANJEET SUNIL SAWANT	ASSIGN NO.	STAMP
		SUB - CAD DRAFTING ROLL NO. - 22		
		CLASS - S.Y.B.A.RCH SEM - IV		
		YEAR - 2021-2022		
		PDEA COLLEGE OF ARCHITECTURE, AKURDI		

ASSIGNMENT: Demonstration of presentation techniques in various drawing formats



**PLAN**

THE PLAN HAS BEEN MADE MORE INFORMATIVE BY THE INCLUSION OF FURNITURE AND FITTINGS, A NEW FEW SHEDS AND WARD "TEXTURE".

KITCHEN AREA 9 FT X 8 FT  
SPACE FOR BEDROOMS 12 FT X 8 FT  
BASIC WASHROOM 6 FT X 3 FT  
LADDER WASHROOM 4 FT X 3 FT

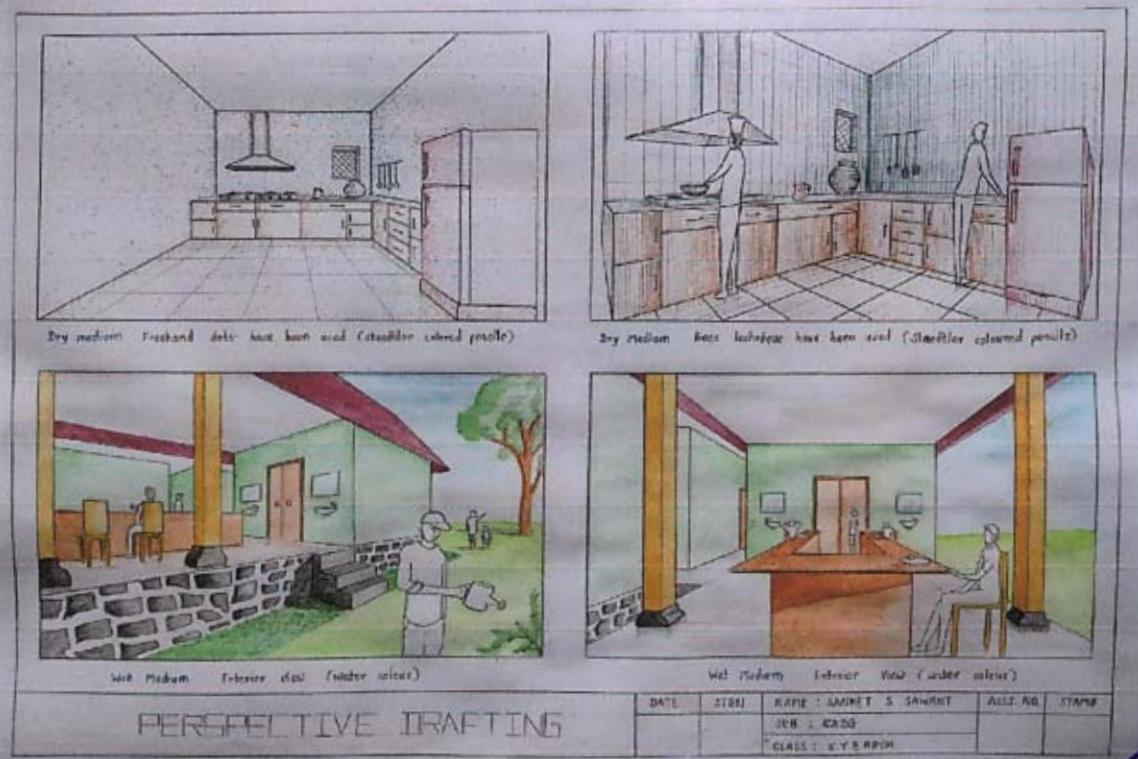
**EAST SIDE ELEVATION**

100' FINISH LEVEL 5.17 M  
G.F. LEVEL 4.17 M  
L.O. LEVEL 3.17 M  
FINISH HEIGHT 4.5 M  
FOUNDATION LEVEL 0.17 M

**NORTH SIDE ELEVATION**

**PLAN, ELEVATION DRAFTING**

DATE	SIGN	NAME : SAMMET S. SHINAY	ROLL NO.	STAMP
		SUB : AD II		
		YEAR : 21-22		



**Dry medium Freshness dots have been used (cavalier colored pencil)**

**Dry medium less texture has been used (darker colored pencil)**

**Wet Medium Texture dots (water color)**

**Wet Medium Interior View (water color)**

**PERSPECTIVE DRAFTING**

DATE	STBA	NAME : SAMMET S. SHINAY	ROLL NO.	STAMP
		SEM : 2ND		
		CLASS : C.V.R.PDH		



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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: History of Arch &amp; Culture III</b>
<b>Title of assignment</b>	<b>: The relationship of religion and society with Arch.</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar. Pooja Kudale and Ar. Aniket Shendge</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester III)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand the development of European architecture through the historical period till 17th century AD.</li><li>• To understand the relationship of religion and society with architecture</li><li>• To understand the drivers of change, revival, and evolution of architecture</li></ul>
<b>Date /duration of activities</b>	16/09/21 to 24/11/21
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	NA





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<p>Brief about the Programme (Activity/Event)</p>	<ul style="list-style-type: none"><li>• STAGE 1: Greek architecture including Greek temples, domestic architecture, public architecture, city planning, and the Acropolis.</li><li>• STAGE 2: Roman architecture including domestic architecture, public architecture, architecture of the forums, urban planning, structural innovations, forms, materials and techniques of construction.</li><li>• STAGE 3: Early Christian architecture including adaptation of Roman models, early church prototypes, Byzantine architecture</li><li>• STAGE 4: Early medieval manors, monasteries, Romanesque churches</li><li>• STAGE 5: Gothic architecture and developments therein with reference to church plans, structural techniques, and ornamentation, Gothic churches and cathedrales</li><li>• STAGE 6: Renaissance and resultant architecture including works of Andrea Palladio, Michelangelo, Brunelleschi. Works of Sir Christopher Wren and Inigo Jones. Post-Renaissance and Baroque architecture</li></ul>
<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"><li>• An understanding of architecture as a product shaped by various factors like religion and society.</li><li>• An understanding of the formal, structural, and stylistic aspects of architectural development.</li><li>• An understanding of the factors that bring about the processes of change in architectural manifestations and its meanings.</li></ul>



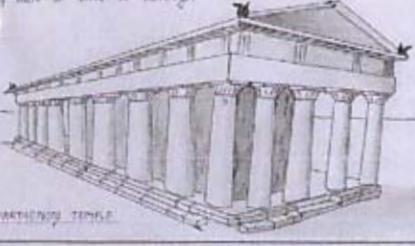
ASSIGNMENT: Drawing sheet on Greek Architecture 1

## GREEK ARCHITECTURE

### INTRODUCTION

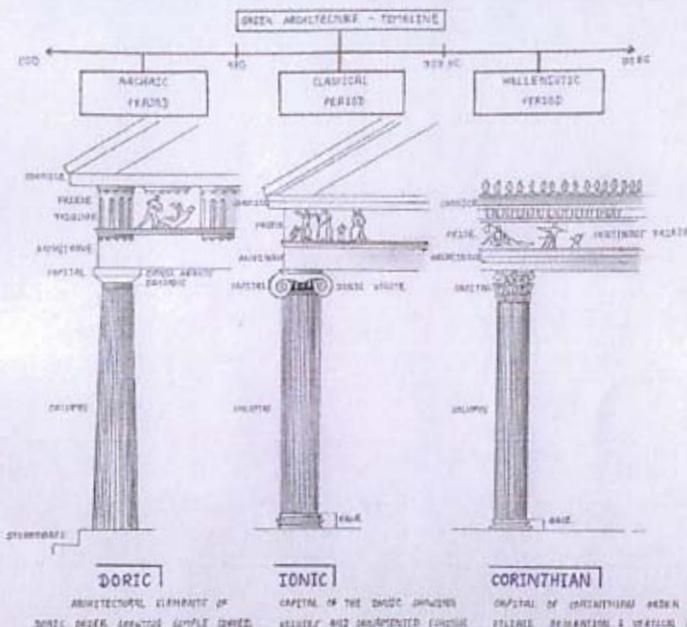


- Ancient greek architecture came from the greek speaking people.
- Ancient greek architecture is distinguished by its highly idealized characteristics, both of structure and decoration.
- The division of architectural style into three defined orders - the Doric order, the Ionic order, Corinthian order.
- Ancient greek architecture is best known from its temples.
- Greek architecture is known for tall columns, intricate detail, symmetry, harmony and balance.
- They built all sorts of buildings.



PARTHENON TEMPLE

### GREEK ARCHITECTURE - TIMELINE



**DORIC**  
ARCHITECTURAL ELEMENTS OF DORIC ORDER: CAPITAL: SIMPLE SQUARE.

**IONIC**  
CAPITAL OF THE IONIC ORDER: VOLUTE AND INCURVED FRONTS.

**CORINTHIAN**  
CAPITAL OF CORINTHIAN ORDER: PALM, BACCHARIS & VEGETAL VEINING.



Black Figure Amphora, Attic (ca. 530-480 BC)



The Apollo Boy (ca. 460 BC) Standing Figure



Architectural Ornament of fired & painted clay. The Apollo gorgon's head has been cast in a mold.

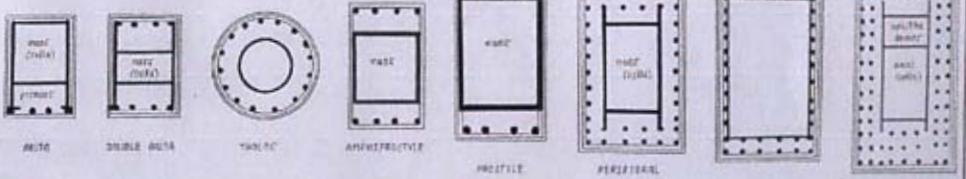


The Apollo gorgon's head has been cast in a mold.



The growth of the nautilus corresponds to the golden mean. The Parthenon, the temple to the goddess Athena in Athens, is referred to by many as the pinnacle of ancient greek architecture.

### TEMPLE TYPOLOGY



NAOS    DOUBLE NAOS    THOLOS    AMPHIPROSTYLE    PRISTYLE    PERIPTERAL    PSEUDOPERIPTERAL    STYPYLAE

## GREEK ARCHITECTURE

DATE	SEMAN	NAME : SAKSHI S. CHAVHAN	AGE: 18	GRADE
		SUB: HCA		
		CLASS: 2 Y 1 SEM		
		PAGE: 05		
		YEAR: 2022		

ASSIGNMENT: Drawing sheet on Roman Architecture 1

**TUSCAN ORDER**

**COMPOSITE ORDER**

HYOCAUST IN SAINT-REMY-DE-PROVENCE, FRANCE.

Hyocaust  
chips in brick used to transfer into wall

divided  
flues, larger bank and release

chimney, to pull draught out

insulated gap floor

NO. STONE-TO  
flue, for fire, also used  
IT warm for cooking

flues  
bank of heat flow

designer  
loop channels, to slow heat flow down

**LIGHT HOUSES (Pharos of Alexandria)**

THE LIGHT HOUSES WERE BUILT BY A STAR AT THE TOP OF THE STRUCTURE.

**THE ARCH OF AUGUSTUS**

MOST ROMAN TRIUMPHAL ARCHES WERE BUILT DURING THE IMPERIAL PERIOD, AT THE FOURTH CENTURY AD THERE WERE 36 SUCH ARCHES IN ROME.

**ROME**

**COLOSSEUM ROME**

**SPIRAL STAIRS**

SPIRAL STAIRS OF SPACE SAVING NEW TYPE PERMANENTLY CANNOT HOLD OF ROMAN ARCHITECTURE.

**MATERIALS**

ROMAN BUILDERS UTILIZED NATURALLY OCCURRING MATERIALS, ESPECIALLY STONE, TIMBER AND MARBLE. ROMAN ARCHITECTS CREATED ROMAN CONCRETE AND USED IT IN BUILDINGS.

THE ROMANS BUILT WATER CITIES AND TOWNS IN AREAS PART OF WHICH WILL REMAIN INCORPORATED SUPERLATIVE PARTICIPATIONS.

- ANCIENT ROMAN ARCHITECTURE ADAPTED THE LANGUAGE OF CLASSICAL GREEK ARCHITECTURE, BUT WAS DIFFERENT FROM GREEK BUILDINGS, RECOMMENDING NEW ARCHITECTURAL STYLE.
- THEY USED NEW MATERIALS, PARTICULARLY ROMAN CONCRETE AND NEWER TECHNOLOGIES SUCH AS THE ARCH AND DOME BUILDINGS THAT WERE STRONG & WELL ENGINEERED.
- ROMAN ARCHITECTURE OPENED THE ROAD FROM 800 BC TO ABOUT 4<sup>th</sup> CENTURY AD.
- THE ROMANS PRODUCED MASSIVE PUBLIC BUILDINGS & WORK OF CIVIL ENGINEERING.

**ROMAN AQUEDUCTS**

THE ROMANS CONSTRUCTED NUMEROUS AQUEDUCTS IN ORDER TO BRING WATER FROM Distant SOURCES INTO THEIR CITIES AND TOWNS.

**HORREUM**

A HORREUM WAS A TYPE OF PUBLIC WAREHOUSE USED DURING THE ANCIENT ROMAN PERIOD. IN ROME THEY WERE USED TO STORE GRAIN, OLIVE OIL, WINE, FOOD, CLOTHING AND EVEN MARBLE.

A WAREHOUSE IN ROME (ROME)

Reference - [https://en.m.wikipedia.org/wiki/Ancient\\_Roman\\_architecture](https://en.m.wikipedia.org/wiki/Ancient_Roman_architecture)

**ROMAN ARCHITECTURE**

DATE	SIGN	NAME : SANKET S SAWANT	RES ID	STAMP
		SUB : MCA		
		ROLL NO. : 22		
		CLASS : S.Y. B. ARCH		
		YEAR : 21-22		



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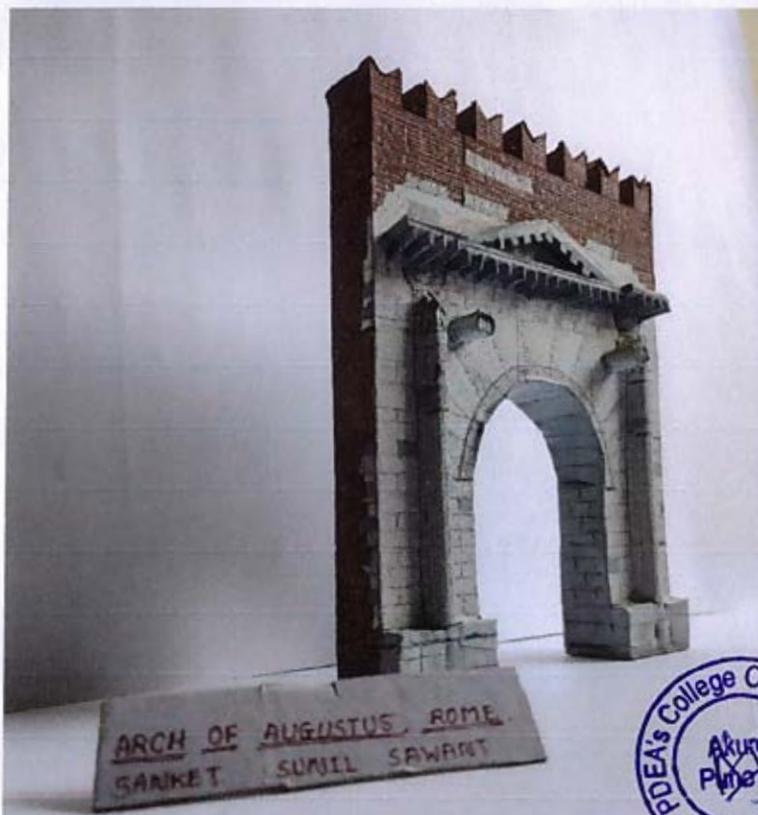
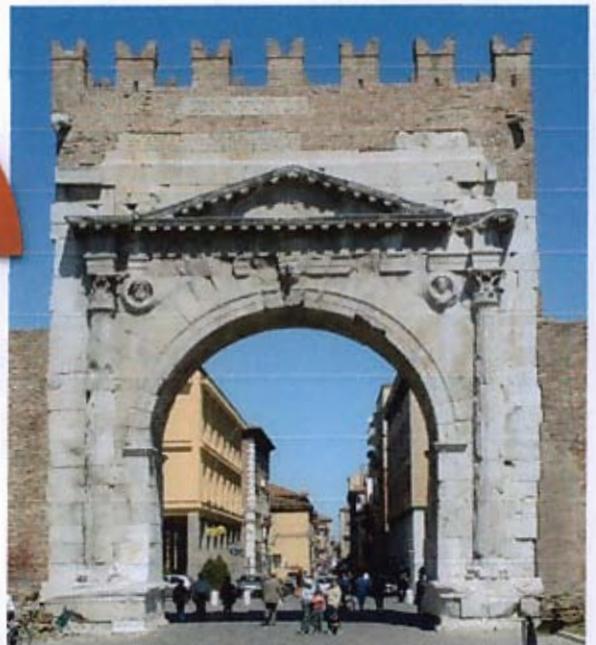


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## ASSIGNMENT: Historical Monument model (Roman and Greek A





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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Building Services I</b>
<b>Title of assignment</b>	<b>: Understanding Plumbing Fixtures and Fittings</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar. Deepali Randhe</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester III)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	This term aims at following services: <ul style="list-style-type: none"><li>• Systems for hot and cold water supply in a building premises</li><li>• Systems for Sewage, Sullage, Storm water &amp; and its disposal within or from building premises.</li></ul>
<b>Date /duration of activities</b>	23/09/21 to 09/12/21
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	Photographs Available





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<p>Brief about the Programme (Activity/Event)</p>	<ul style="list-style-type: none"><li>• To make students understand the Plumbing scope in the MEP services integration. To introduce students to following Plumbing Services in low, medium and high rise buildings and inculcate them the integration of services required in architectural design.</li><li>• Introduction to sourcing, storage, and distribution of hot and cold water in building premises including the study of all necessary components involved and their installation. To introduce students to drainage systems viz. collection, conveyance &amp; disposal of sewage, sullage and Effluents from building premises, including methods, components and apparatus involved.</li></ul>
<p>Student Outcome /Works Examples</p>	<p>UNDERSTANDING THE FOLLOWING SERVICES:</p> <ul style="list-style-type: none"><li>• Systems for hot and cold water supply in a building premises</li><li>• Systems for Sewage, Sullage, Storm water &amp; and its disposal within or from building premises.</li></ul>





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## GRID IRON SYSTEM

**FOR BUNGALOW:**  
 TOTAL NO. OF BUNGALOW = 38  
 POPULATION OF EACH OF THE BUNGALOW = 6 PEOPLE  
 NO. OF PEOPLE IN 38 BUNGALOWS =  $38 \times 6 = 168$

**FOR BUILDINGS:**  
 FOR G+5 - NO. OF BUILDINGS = 3  
 EACH FLOOR CONSISTS OF TWO FLATS WITH 4 PEOPLE IN EACH  
 5 FLOORS  $\times$  2 FLATS =  $10 \times 4$  PEOPLE = 40 PEOPLE  
 40  $\times$  3 BUILDINGS = 120 PEOPLE

**FOR G+3 BUILDINGS:** TOTAL NO. = 3  
 EACH FLOOR CONSISTS OF TWO FLATS WITH 3 PEOPLE IN EACH  
 3  $\times$  2 FLATS = 6  $\times$  3 PEOPLE = 18 PEOPLE  
 18  $\times$  3 BUILDINGS = 54 PEOPLE

**THE TOTAL NO. OF POPULATION IN GRID IRON SYSTEM IS**  
 = 168 + 120 + 54  
 = 342 PEOPLE

**LEGENDS**

- MAINS
- SUB-MAINS
- BRANCHES
- BUNGALOWS
- BUILDINGS
- VALVE

<b>GRID IRON SYSTEM</b>			
DATE	SEAN	NAME: AMAAN AZIZ NULLA	SHEET NO. / STAMP
10/11/21	10/11/21	SUB: B.S.I	01
		ROLL NO: 15	
		CLASS: SY B ARCH [21-22]	

## RADIAL WATER SUPPLY SYSTEM

**CALCULATION**

RADIAL METHOD IS SUITABLE IN THOSE CITIES WHICH HAVE RADIAL ROADS EMERGING FROM DIFFERENT CITIES

TOTAL NO. OF POPULATION IN BUILDING = 275  
 TOTAL NO. OF POPULATION IN BUNGALOW = 70  
 TO CONSTRUCT THE TANK FOR = 345 PEOPLE

TOTAL DOMESTIC WATER USED =  $345 \times 50$   
 = 17,250 LIT / DAY - [A]

TOTAL FLUSHING WATER USED =  $345 \times 85$   
 = 29,325 LIT / DAY - [B]

DAILY DEMAND OF WATER REQUIRED = A + B  
 = 17,250 + 29,325  
 = 46,575 LIT / DAY

FOR 46,575 LIT OF WATER, TANK CAPACITY IS 46,575  
 BY FORMULA: VOLUME (V) =  $\pi R^2 H$  IF H = 1.6M

$46.5 = 3.14 \times R^2 \times 2.5$   
 $46.5 = 7.85 R^2$   
 $R = 5.43 \text{ M}$   
**R = 2.43 M**

**TYPES OF WATER TANK (BASED ON SHAPES)**

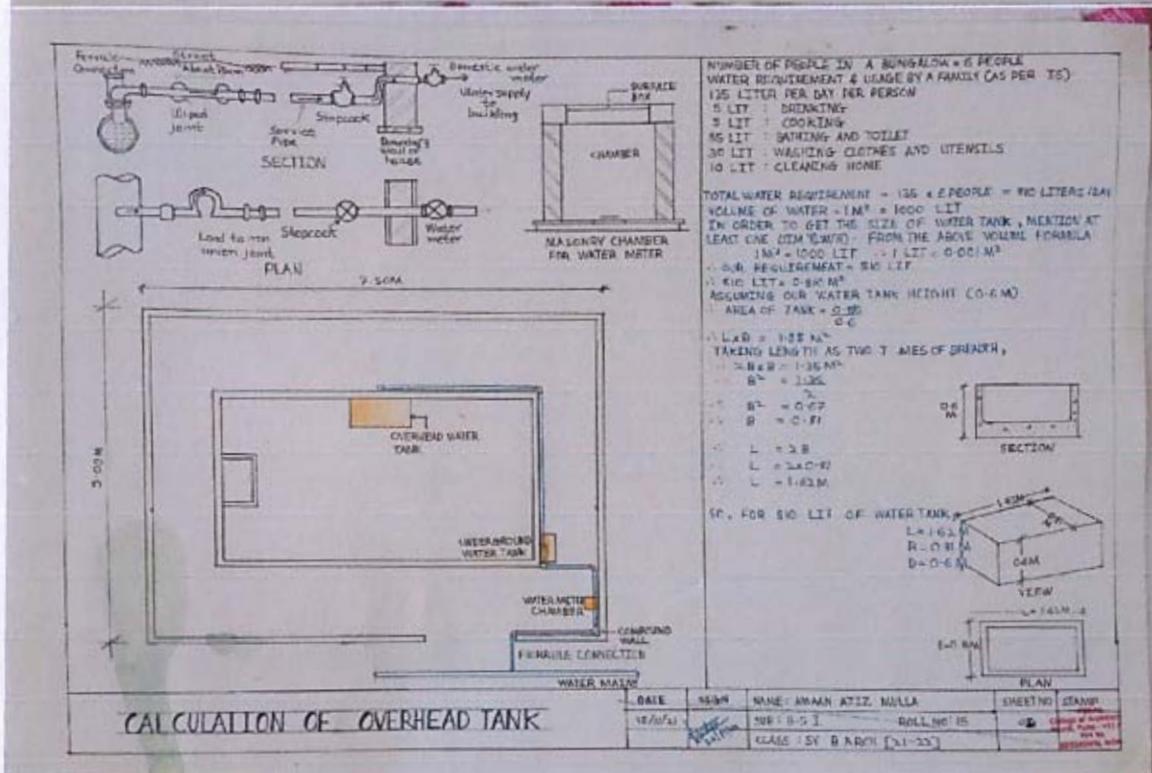
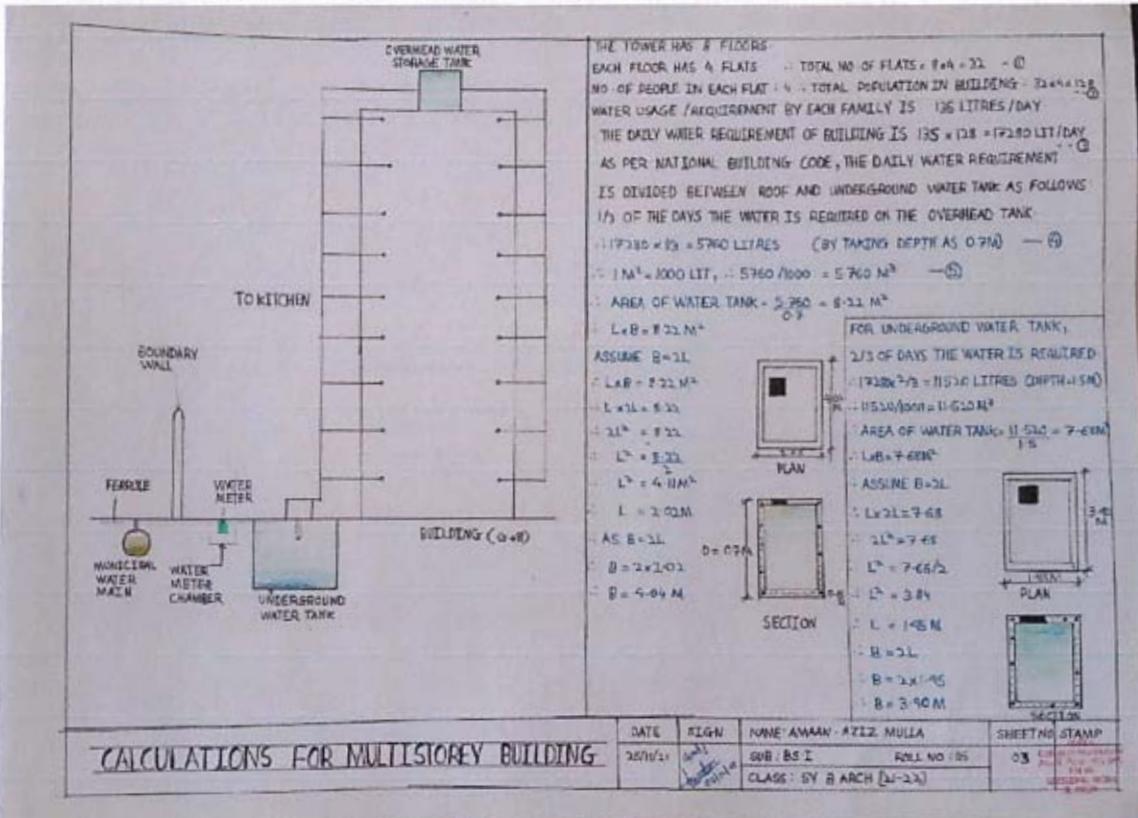
SPHERICAL BOTTOM

CONICAL BOTTOM

FLAT BOTTOM

<b>RADIAL WATER SUPPLY SYSTEM</b>			
DATE	SEAN	NAME: AMAAN AZIZ NULLA	SHEET NO. / STAMP
10/11/21	10/11/21	SUB: B.S.I	01
		ROLL NO: 15	
		CLASS: SY B ARCH [21-22]	





**BEFORE DETERMINING THE SIZE OF SEPTIC TANK IT IS NECESSARY TO ASCERTAIN THE NUMBER OF USERS, SINCE VOLUME IS GOVERNED BY NUMBER OF USERS.**

AS A STANDARD, VOLUME IS CALCULATED AT 20 TO 40 LITRES OR 0.020 TO 0.040 CUBIC METRES PER PERSON.

TO ENSURE PROPER DISINTEGRATION AND TREATMENT OF THE SEWAGE IT IS ESSENTIAL THAT IT MUST REMAIN IN THE SEPTIC TANK FOR 18 TO 24 HRS. BASED ON THESE CONSIDERATIONS FOR 20 USERS

AT THE RATE OF 30 LITRES PER PERSON.  
 $30 \text{ LITRES} \times 20 \text{ USERS} = 1800 \text{ LITRES}$

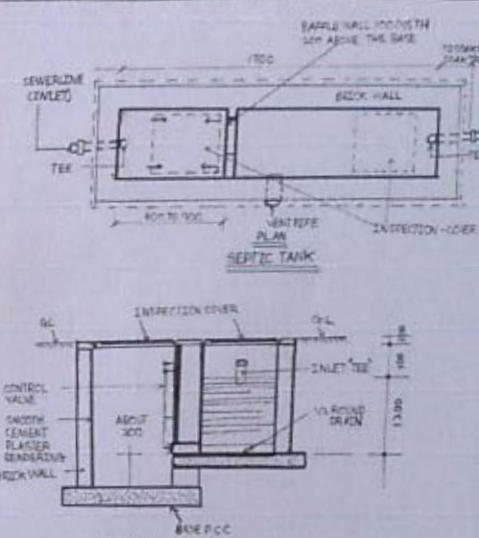
BY CONVERTING LITRES INTO CUBIC METRES  
 $1 \text{ M}^3 = 1000 \text{ LITRES}$   
 $1800 \text{ LITRES} = \frac{1800}{1000} = 1.8 \text{ M}^3$

BY ASSUMING THE DEPTH FOR THE SEPTIC TANK AS 1.20 M  
 $\text{AREA OF THE TANK} = \frac{1.8 \text{ M}^3}{1.20 \text{ M}} = 1.50 \text{ M}^2$

BY ADOPTING THE RECOMMENDED RATIO OF 2:1, THE INSIDE DIMENSIONS REQUIRED WILL BE ABOUT 2.5 M X 0.70 M

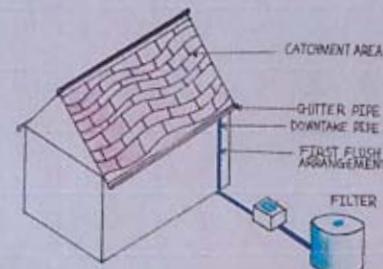
THE ACTUAL DEPTH REQUIRED =  
 DEPTH OF INFLUENT + FREE BOARD = 1.00 M + 0.20 M = 1.20 M

THE SIZE CAN ALSO BE CALCULATED BRIEFLY AS FOLLOWS:  
 AT THE RATE OF 0.020 CU-M PER USER = 20 USER X 0.020 M<sup>3</sup> = 0.40 M<sup>3</sup>  
 HENCE THE SIZE OF THE TANK =  $\frac{0.40 \times 100}{0.70} = 57.14 \text{ M}^2$  (LENGTH OF INFLUENT)



DATE	SEM	NAME	ROLL NO.	SHEET NO.	STAMP
1/12/21	SEM I	ANAM AZIZ MULLA	15	09	
		CLASS: SY BARCH (21-22)			

**RAINWATER HARVESTING:** IT IS A TECHNIQUE FOR DIRECTLY AND COLLECTING RAINWATER IN UNDERGROUND WATER TANKS. THE STORED WATER IS USED FOR GARDENING AND SANITARY USES.



**CATCHMENT AREA**  
**GUTTER PIPE**  
**DOWNTAKE PIPE**  
**FIRST FLUSH ARRANGEMENT**  
**FILTER**  
**STORAGE TANK**

**CALCULATIONS:**

AMOUNT OF WATER REQUIRED BY PER PERSON PER DAY = 135 LITRES

NO. OF PERSONS IN THE BUNGALOW = 5

TOTAL AMOUNT OF WATER REQUIRED =  $5 \times 135 = 675 \text{ LITRES}$

TO FIND THE SIZE OF THE TANK WE HAVE TO FIND ITS VOLUME IN M<sup>3</sup>

$1 \text{ M}^3 = 1000 \text{ LITRE}$

$675 \text{ LITRES} = \frac{675}{1000} = 0.675 \text{ M}^3$

CONSIDERING 15 TIMES OF WATER REQUIRED IN A DAY

$0.675 \text{ M}^3 \times 15 = 10.125 \text{ M}^3 \times 1.2 = 12.15 \text{ M}^3$

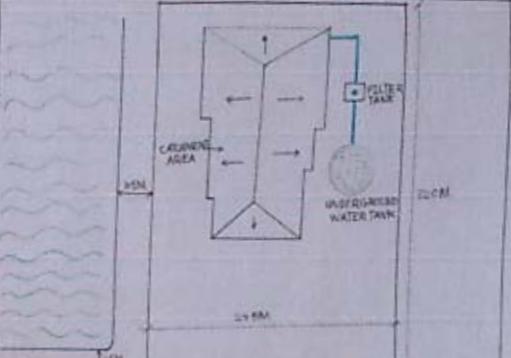
THE AREA OF THE ROOF IS AS FOLLOWS:

NO.	LENGTH	BREADTH	AREA
1A	12	10	120
1B	12	10	120
1C	12	10	120
1D	12	10	120
1E	12	10	120
1F	12	10	120
1G	12	10	120
1H	12	10	120
1I	12	10	120
1J	12	10	120
1K	12	10	120
1L	12	10	120
1M	12	10	120
1N	12	10	120
1O	12	10	120
1P	12	10	120
1Q	12	10	120
1R	12	10	120
1S	12	10	120
1T	12	10	120
1U	12	10	120
1V	12	10	120
1W	12	10	120
1X	12	10	120
1Y	12	10	120
1Z	12	10	120

RAINWATER AVAILABLE =  
 CATCHMENT AREA X RAIN FALLING X EFFICIENCY FACTOR  
 $= 124.72 \times 0.075 \times 0.8$   
 $= 7.47 \text{ M}^3$

10% OF THE RAINWATER WILL BE USED FOR THE LANDSCAPE (GARDENING) AND VARIOUS USES -

THE AVAILABLE WATER =  
 $= 10.34 \text{ M}^3 - 0.8 \text{ M}^3$   
 $= 9.54 \text{ M}^3$



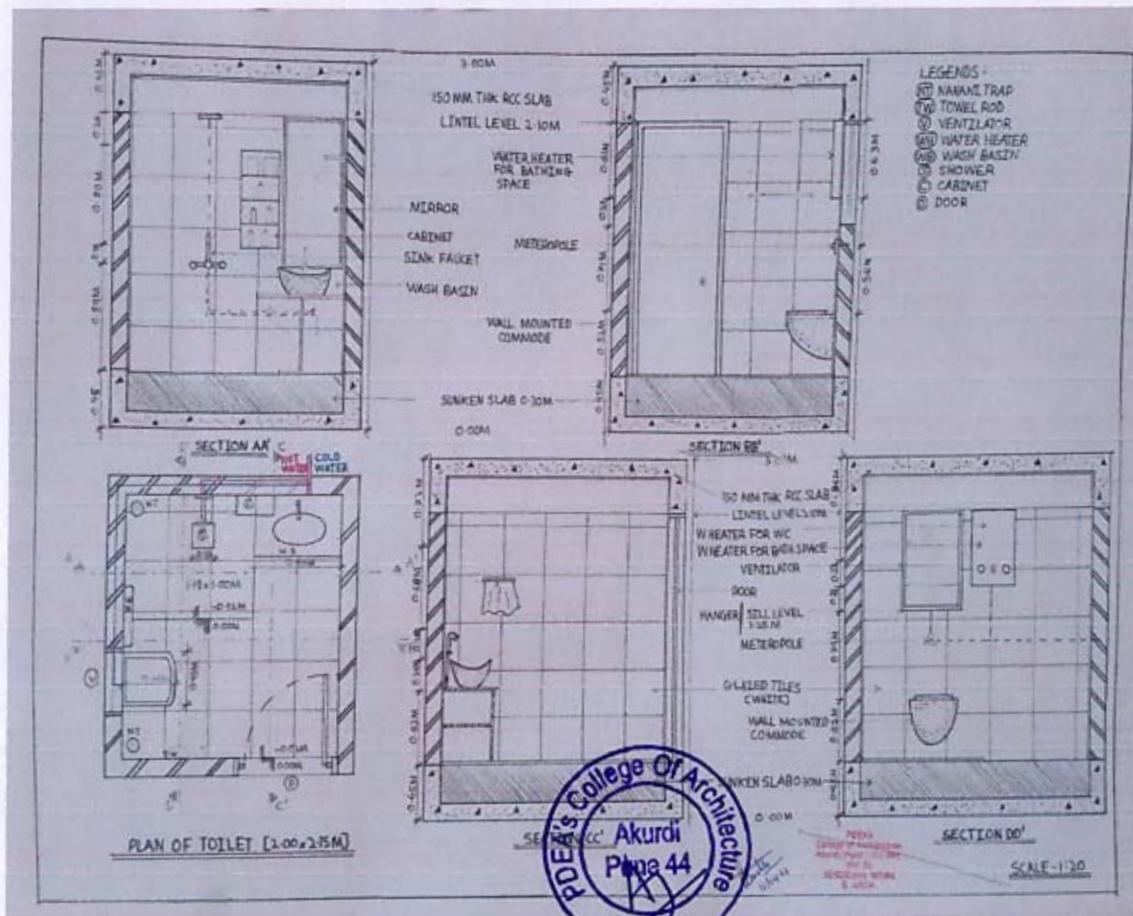
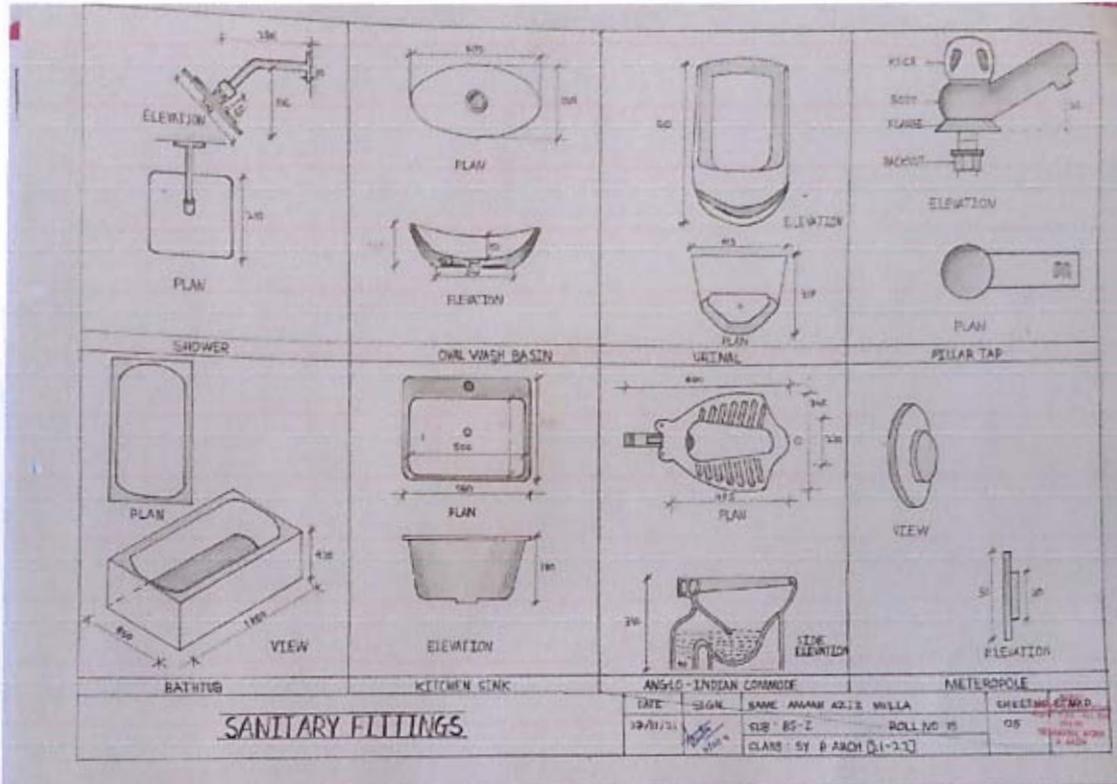
SEM	NAME	ROLL NO.	SHEET NO.	STAMP
SEM I	ANAM AZIZ MULLA	15	09	
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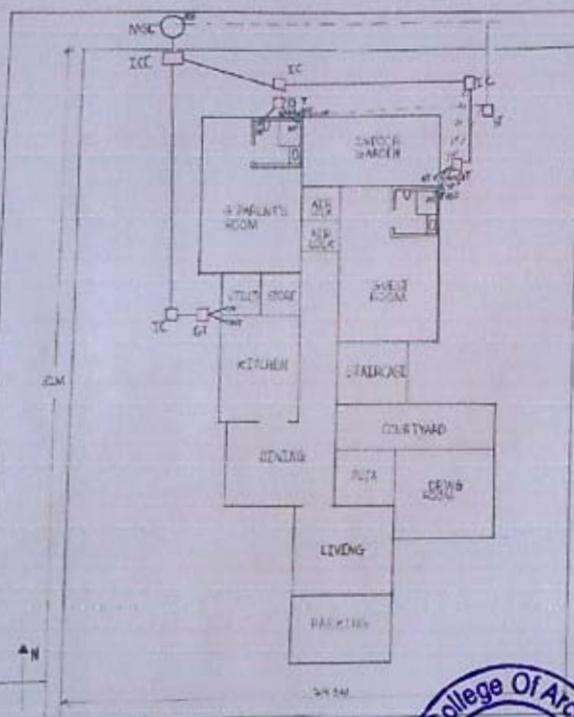
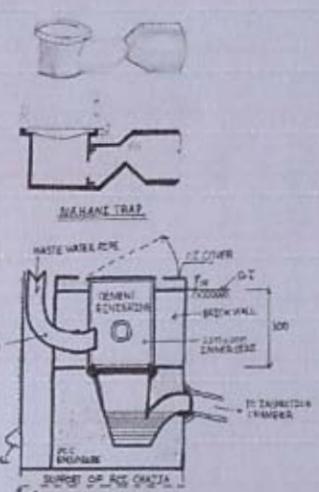
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 ELECTROMECHANICAL Bidet Floor Mounted Bidet Bidet Bidet Bidet	 ELECTRONIC Bidet Floor Mounted Bidet Bidet Bidet Bidet	 VIBRA Bidet Bidet Bidet Bidet	 Ceramic Bidet Bidet Bidet Bidet Bidet
 Low Bidet Bidet Bidet Bidet Bidet	 Bidet Bidet Bidet Bidet Bidet	 Bidet Bidet Bidet Bidet Bidet	 Bidet Bidet Bidet Bidet Bidet

**SANITARY LEGENDS (PICTURES)**

DATE	SIGN	NAME - ANAM AZIZ MULLA	SHEET NO	STAND
4/1/23		SHE - BSE	ROLL NO 15	
CLASS : EV BARCH (21-23)				

**LEGENDS**

- WASTE TRAP (WT)
- SOIL PIPE (SP)
- WASTE WATER PIPE (WWP)
- GULLY TRAP (GT)
- INTERCEPTING CHAMBER (IC)
- INTERCEPTING CHAMBER (IC)
- WASTE WATER TRAP (WWT)
- WASTE WATER PIPE (WWP)
- WASTE WATER PIPE (WWP)
- WASTE WATER PIPE (WWP)

**GULLY TRAP CHAMBER**

SIGN	NAME - ANAM AZIZ MULLA	SHEET NO	STAND
SHE - BSE	ROLL NO 15	08	
CLASS : EV BARCH (21-23)			





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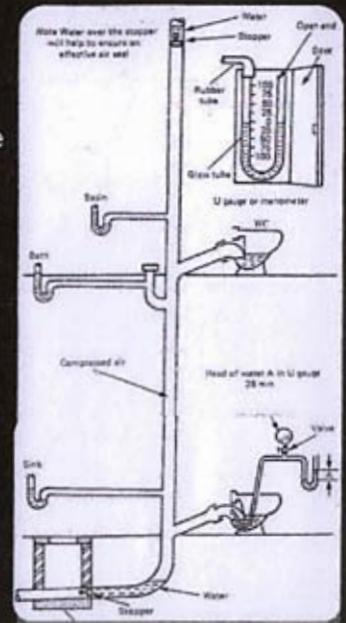
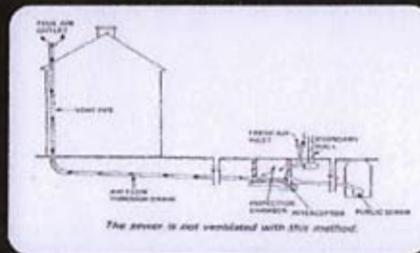
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ASSIGNMENT: Drainage System study of your houses

## DRAINAGE SYSTEM



- ❑ One of the drainage system's functions is to collect surface water and/or ground water and direct it away, thereby keeping the ballast bed drained.
- ❑ The drainage system must also protect the substructure from erosion, from becoming sodden, and from losing its load-bearing capacity and stability.





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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Architectural Design III</b>
<b>Title of assignment</b>	<b>: Resort Design</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar.Swati Rode and Ar.Vishnu Suresh</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester IV)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand resort design typology.</li><li>• To understand Architectural Design as a process generating design brief and taking design decisions</li></ul>
<b>Date /duration of activities</b>	15/01/22 to 12/02/22
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	Photographs Available





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<p>Brief about the Programme (Activity/Event)</p>	<p><b>PROJECT 1: Resort Design</b></p> <p>In this activity student are expected to work in a group of 2 and analyse the activity throughly a residence based on its design parameter and response. (Case study)</p> <p><b>To understand Architectural Design as a process generating design brief and taking design decisions based on the following aspects:</b></p> <ul style="list-style-type: none"> <li>• <b>Socio-Cultural Aspects:</b> To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.</li> <li>• <b>Aesthetics:</b> To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).</li> <li>• <b>Anthropometry &amp; Function:</b> To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)</li> <li>• <b>Climate:</b> To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.</li> <li>• <b>Building Material and Construction Technology:</b> To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.</li> <li>• <b>Building Services:</b> To understand the spatial and structural implications of basic services involved in building design.</li> <li>• <b>Site :</b> To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.</li> <li>• <b>Universal Design:</b> To understand the concept and principles of universal design.</li> <li>• <b>Precedent Studies:</b> To introduce the students to learn from case, referral, live studies - process of observation, analysis, documentation and deriving inferences.</li> </ul>
<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"> <li>• At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design and communicate it in form of 2D and 3D representations.</li> </ul>

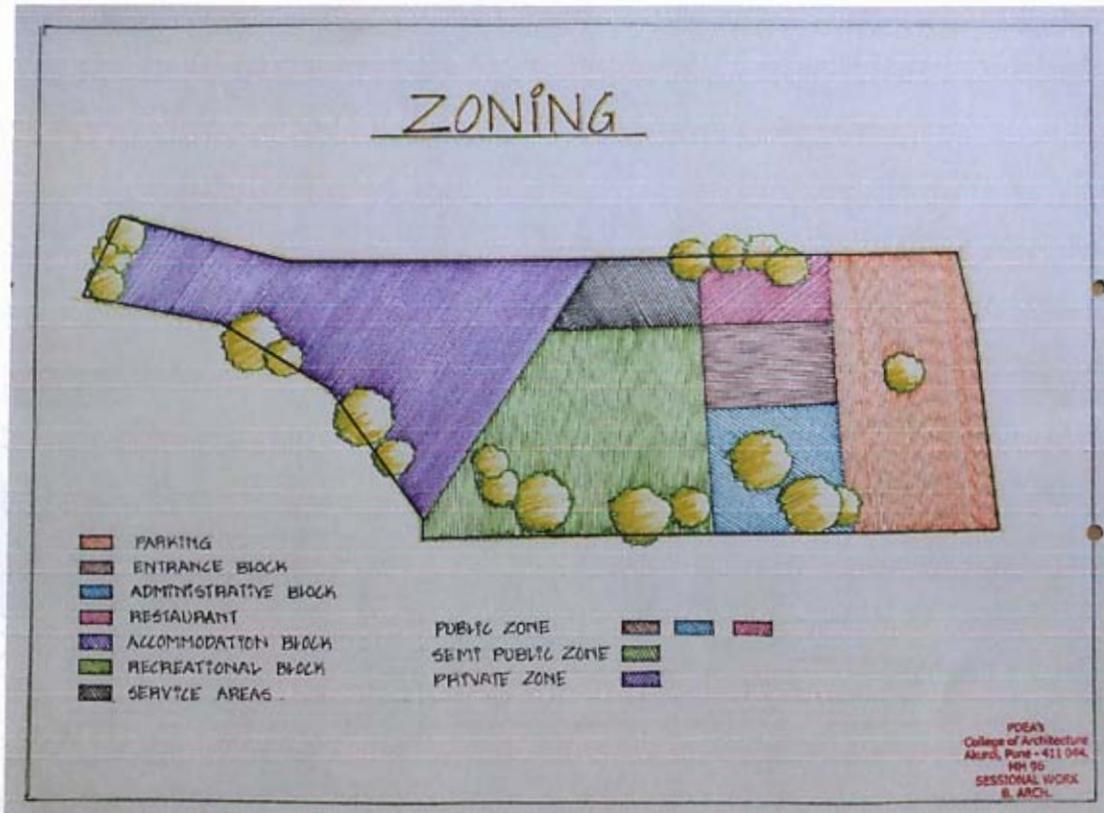




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COTTAGES PLANS.

LIVING AREA PORCH  
 BEDROOM COURTYARD  
 BEDROOM  
 PLAN

EXTERIOR VIEW

ROOF PLAN

KEY PLAN

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 SESSIONAL WORK  
 B. ARCH.

ADMIN OFFICE  
 RECEPTION  
 RESTAURANT  
 ADMIN AND RESTAURANT PLAN

EXTERIOR VIEW

KEY PLAN

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 College of Architecture  
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 MH 96  
 SESSIONAL WORK  
 B. ARCH.

OBSERVATIONS

- THE CENTRAL COURTYARD IS INTRODUCED. COURTYARD IS CREATED FOR GATHERING PLACE FOR COMMUNITY LIFE IN HARMONIOUS TIME.
- SITTING OUT WITH GOOD FOR RELAXATION THE GARDEN IS ALSO DESIGN AROUND THE SEAT OUT.
- SWIMMING POOL IS ALSO INTRODUCED AT THE MIDDLE OF THE SITE WITH THE POOL DECK.
- COTTAGES IS AT THE END POINT OF THE SITE FOR BEST BEACH VIEW. VIEW.
- ALL THE ZONE HAS BEEN SEPARATED BY MEANS OF PEDESTAL PATHWAY.
- THE SPA AND TOILET ARE ALSO THE DESIGN JAVISHI IN MODERN STYLE.



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SESSIONAL WORK  
B. ARCH.

MATERIALS :-



COTA TILED PATHWAY



INTERLOCKS PAVING.



MANGROVE TILES



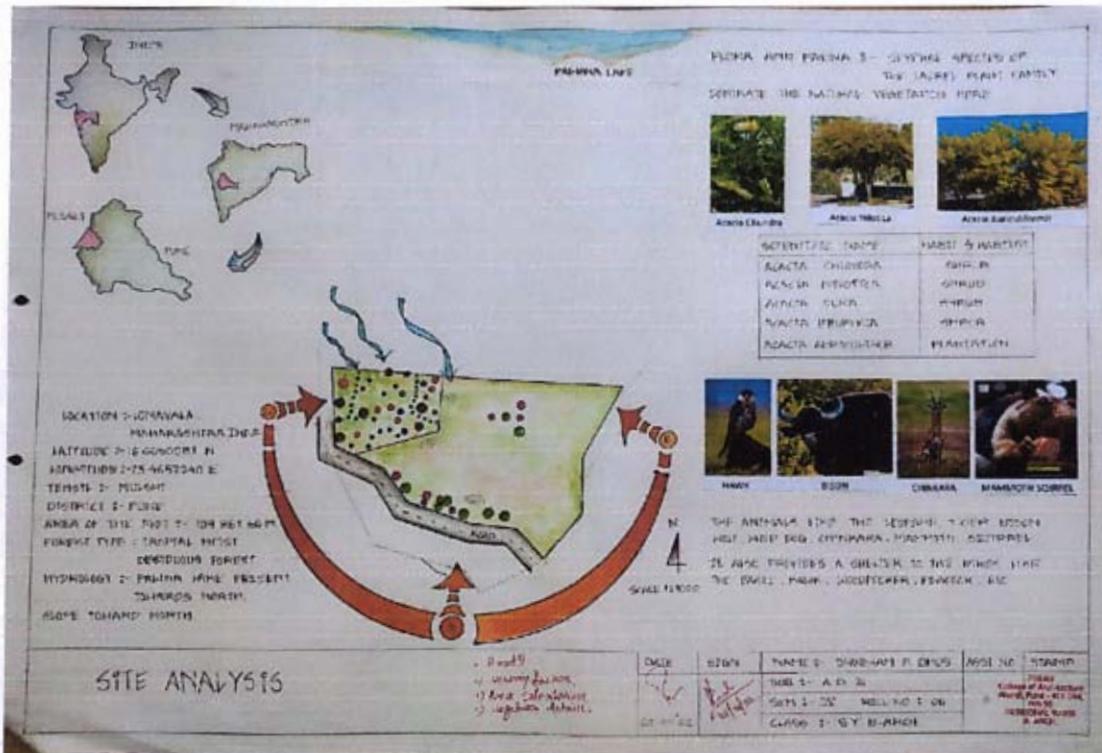
STONE CLADDING & TILES IN BATHROOM.



RAW CLADDING BRICK TILES

PDEA  
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MH 96  
SESSIONAL WORK  
B. ARCH.

ASSIGNMENT 2: Design resort with provided requirements



**SITE ANALYSIS**

LOCATION: JHANNALA, MAHARASHTRA, INDIA  
 LATITUDE: 18° 46' 00" N  
 LONGITUDE: 75° 49' 00" E  
 TERRACE: PLAIN  
 DISTRICT: PUNE  
 AREA OF SITE: 100 x 100 METERS  
 FOREST TYPE: TROPICAL FOREST  
 DEPENDENT FOREST  
 HYDROLOGY: PERENNIAL RIVER PRESENT  
 TOWARDS NORTH  
 SLOPE TOWARDS NORTH

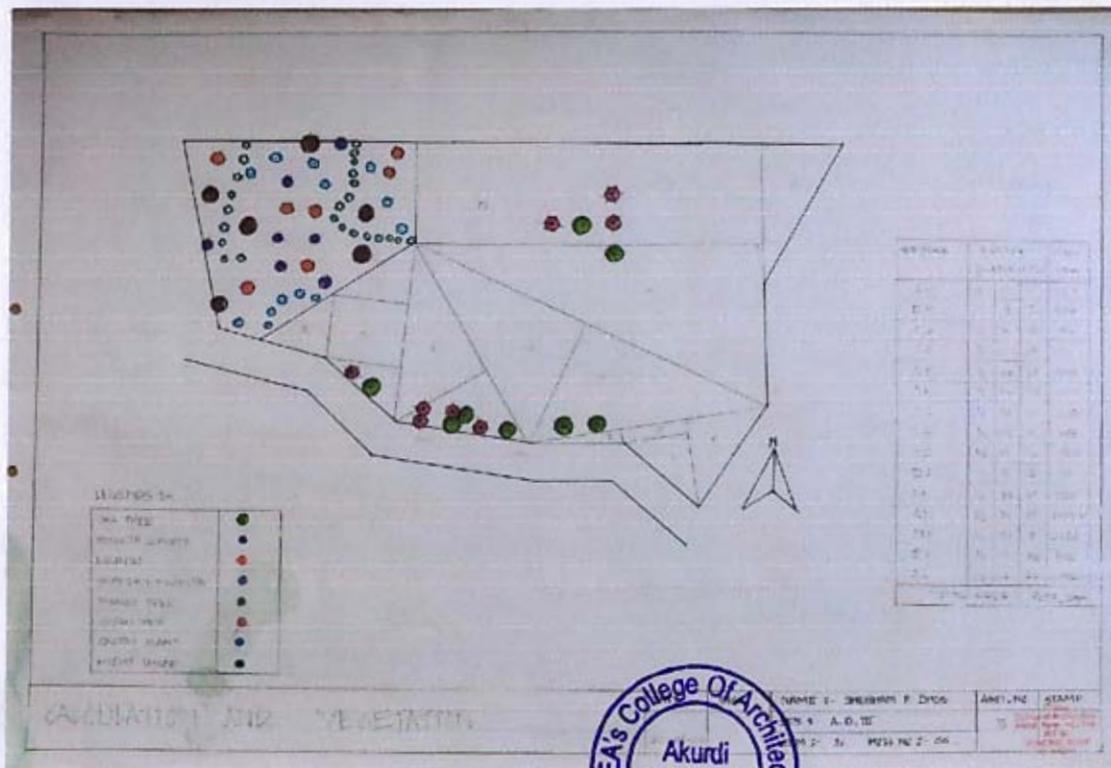
PLANT AND ANIMALS :- SEVERAL SPECIES OF THE LAUREL PLANT FAMILY  
 IDENTIFY THE NATURAL VEGETATION HERE

SCIENTIFIC NAME	HABIT & HABITAT
AGAVE CHILOIDES	SAGE
ACACIA FENESTRA	SHRUB
ACACIA CURVA	SHRUB
ACACIA BRUNNEA	SHRUB
ACACIA ARBORESCENS	PLANTATION

ANIMALS: HONEY BEE, BIRD, CIVILIAN, MAMMOTH SQUIRREL

THE ANIMALS AND THE SEVERAL TREE SPECIES NOT IDENTIFIED BY NAME, BUT IDENTIFIED BY THEIR APPEARANCE. IT ALSO PROVIDES A GREAT TO THE BIRD LIFE THE BUILT: HONEY, ACACIA, BEECH, ETC.

DATE: / /  
 SIGN: [Signature]  
 NAME: SHREYAS P. DING  
 ROLL NO: A.E. 20  
 SITE: 25, WELINGTON  
 CLASS: 1<sup>ST</sup> SEMESTER



**VEGETATION AND ANIMALS**

LEGEND:

- LAUREL TREE
- ACACIA
- AGAVE
- ACACIA CURVA
- ACACIA BRUNNEA
- ACACIA ARBORESCENS
- ACACIA FENESTRA
- ACACIA CHILOIDES

ANIMALS:

- HONEY BEE
- BIRD
- CIVILIAN
- MAMMOTH SQUIRREL

DATE: / /  
 SIGN: [Signature]  
 NAME: SHREYAS P. DING  
 ROLL NO: A.E. 20  
 SITE: 25, WELINGTON  
 CLASS: 1<sup>ST</sup> SEMESTER

FLORAL LEGENDS.

Sl. No.	Common Name	Botanical Name	Height - Width	Image
1	OAK TREE	QUERCUS	HEIGHT - 20 M WIDTH - 9 M	
2	BURDETTIA	BURDETTIA	HEIGHT - 2-20 M WIDTH - 2 M	
3	SHIRAZI	ERYTHRAEA SANDWICENSIS	HEIGHT - 4-5 M WIDTH - 5 M	
4	SOUTHERN	FRAXINUS GRANDIFLORA	HEIGHT - 18-24 M WIDTH - 3 M	
5	MANGO TREE	MANGIFERA INDICA	HEIGHT - 15-30 M WIDTH - 2.5-5 M	
6	COMMON TREE	SYZYGIUM COMIT	HEIGHT - 8.5-10.5 M WIDTH - 5 M	
7	CACTUS PLANT	CACTACEAE	HEIGHT - 1.5-18 M WIDTH - 2 M	
8	SOLANUM	SOLANUM	HEIGHT - 0.7-1.5 M WIDTH - 2 M	

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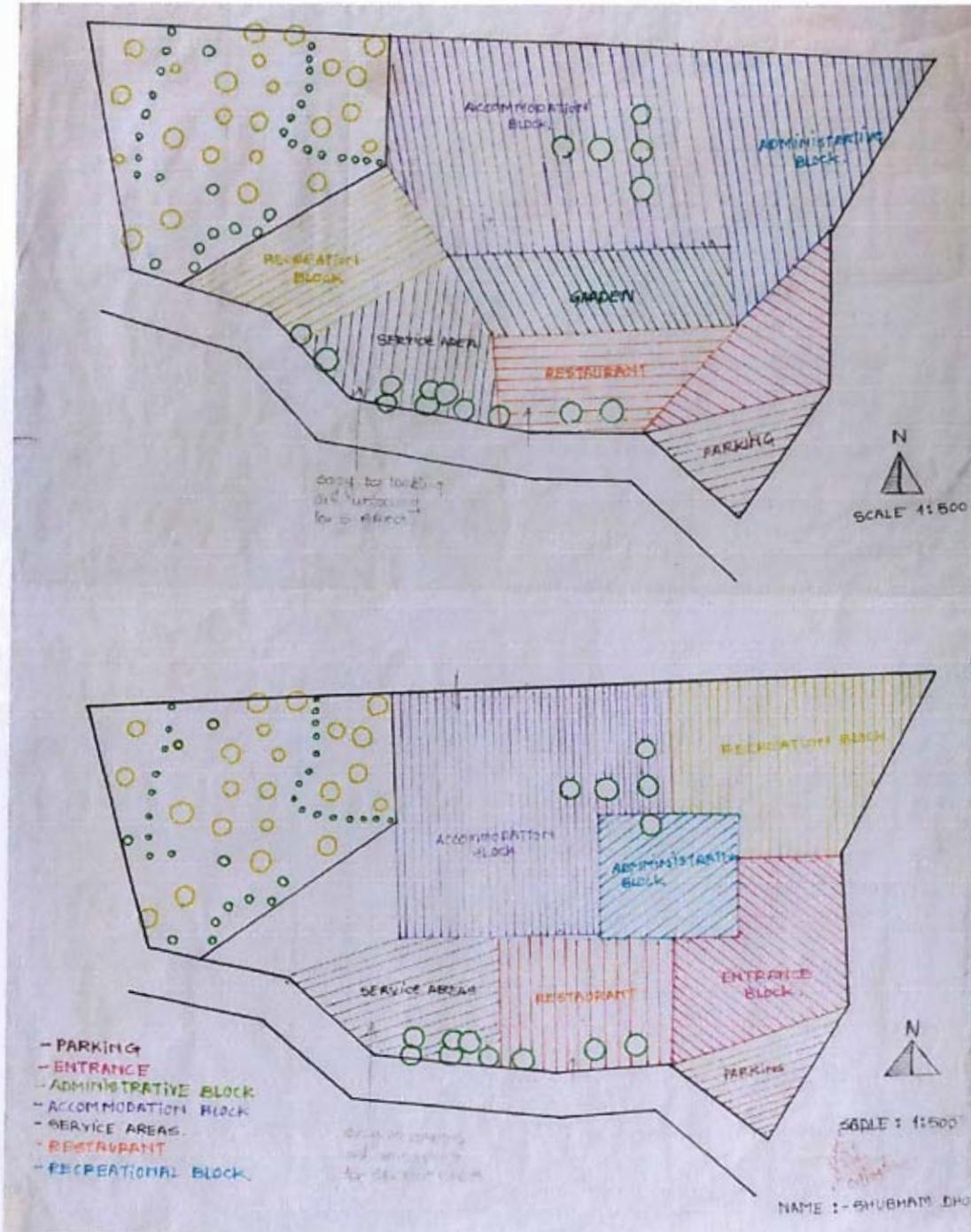
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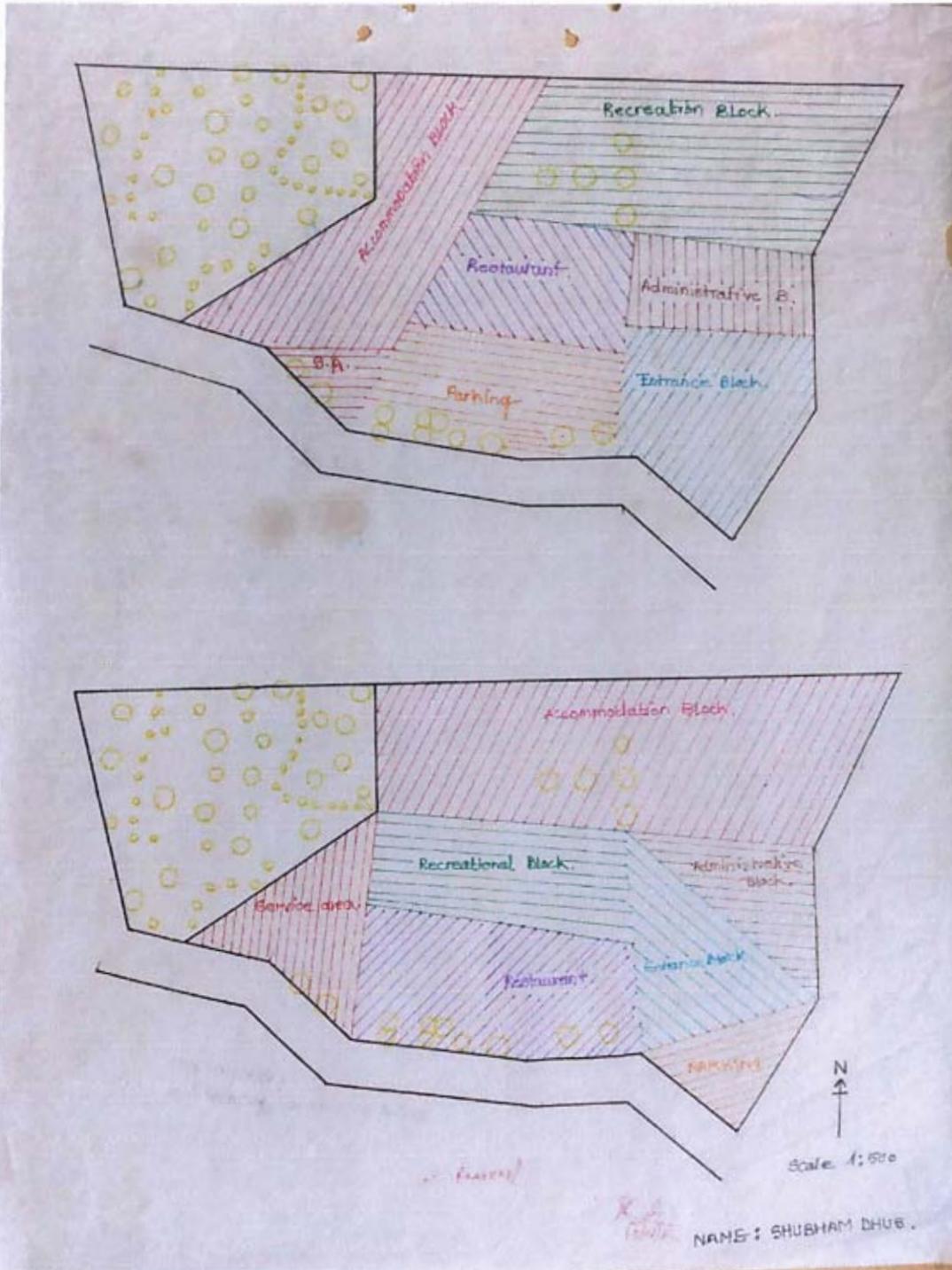
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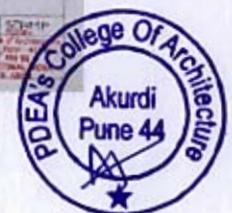
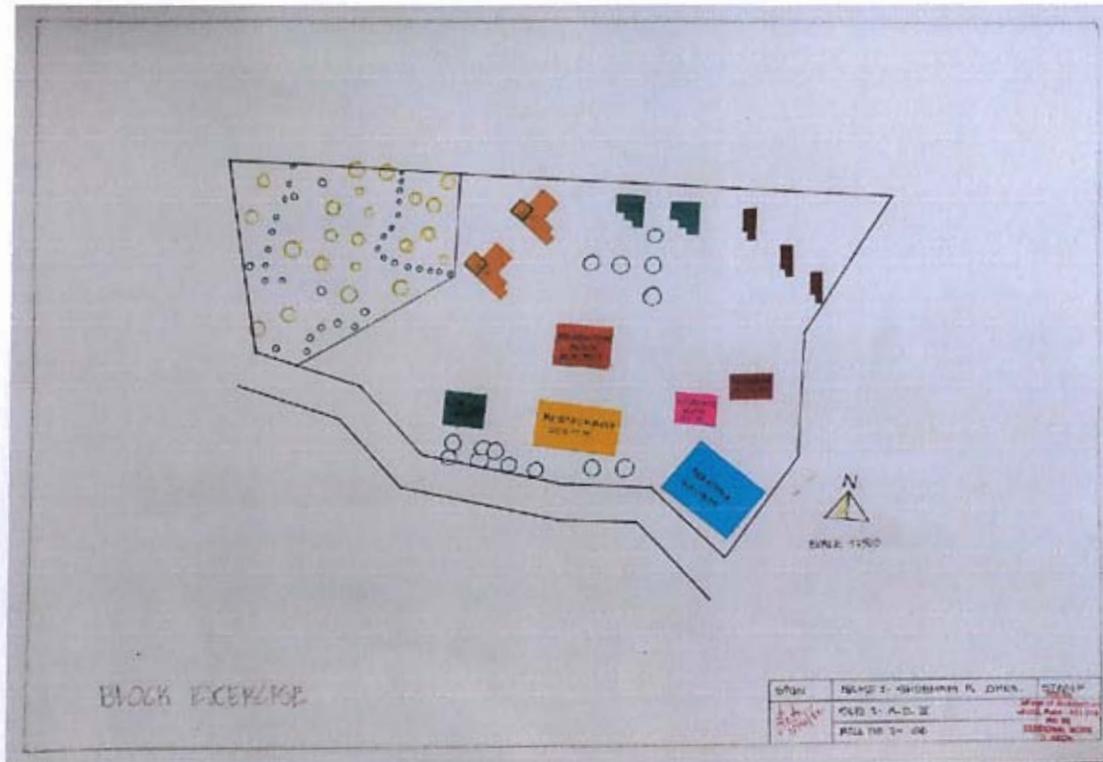
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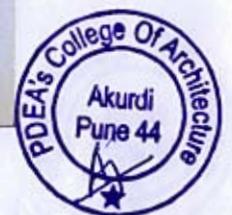
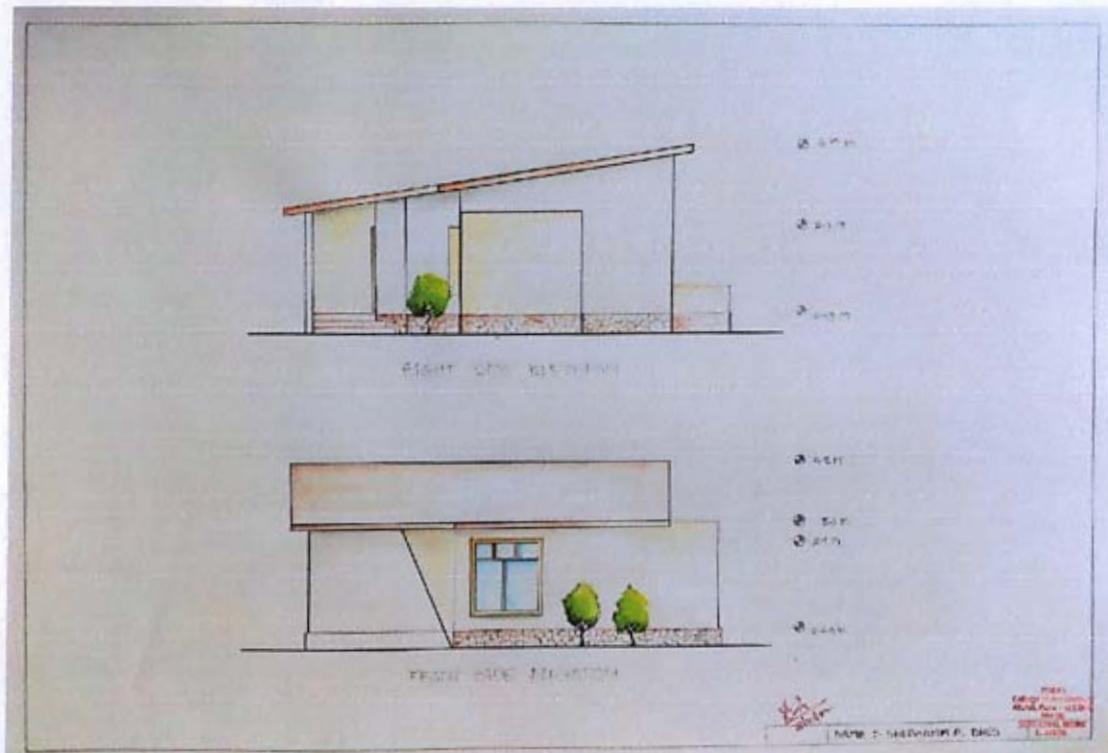
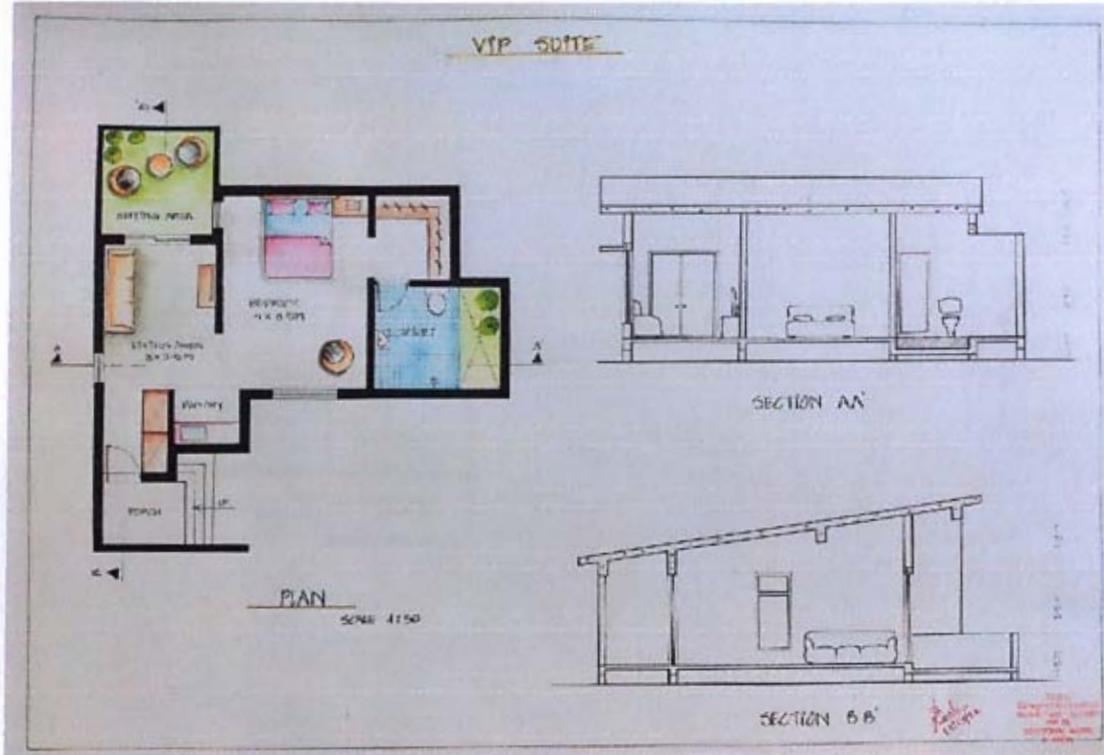
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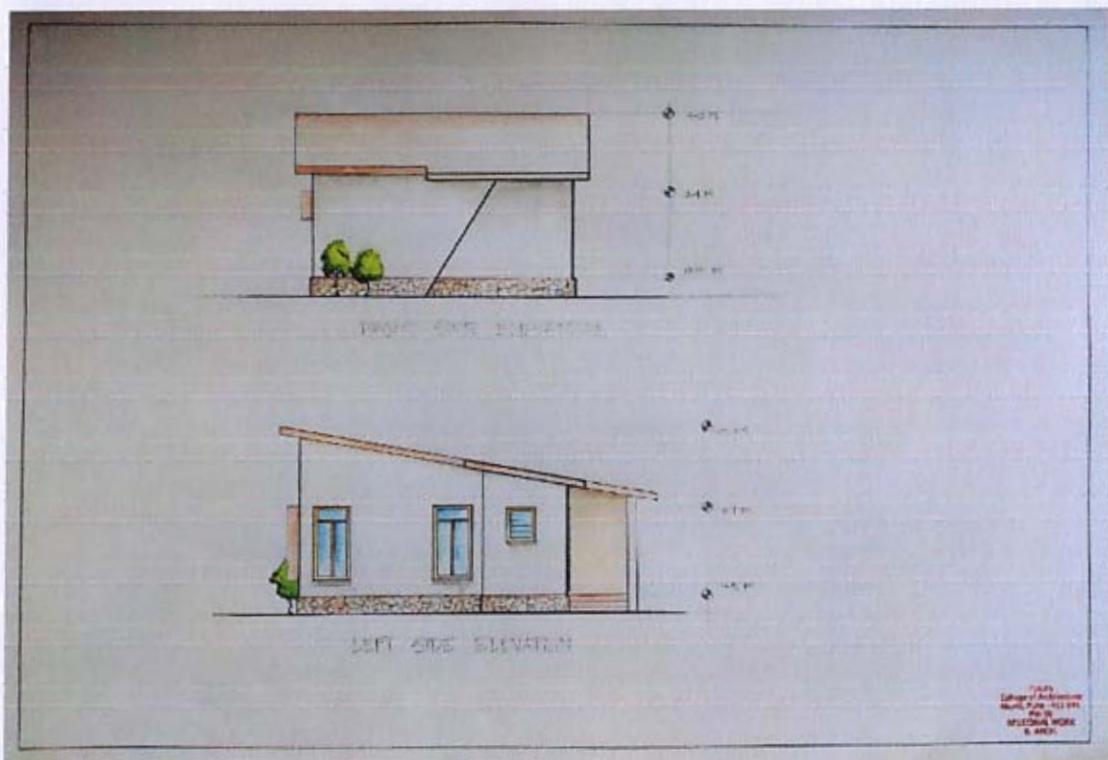
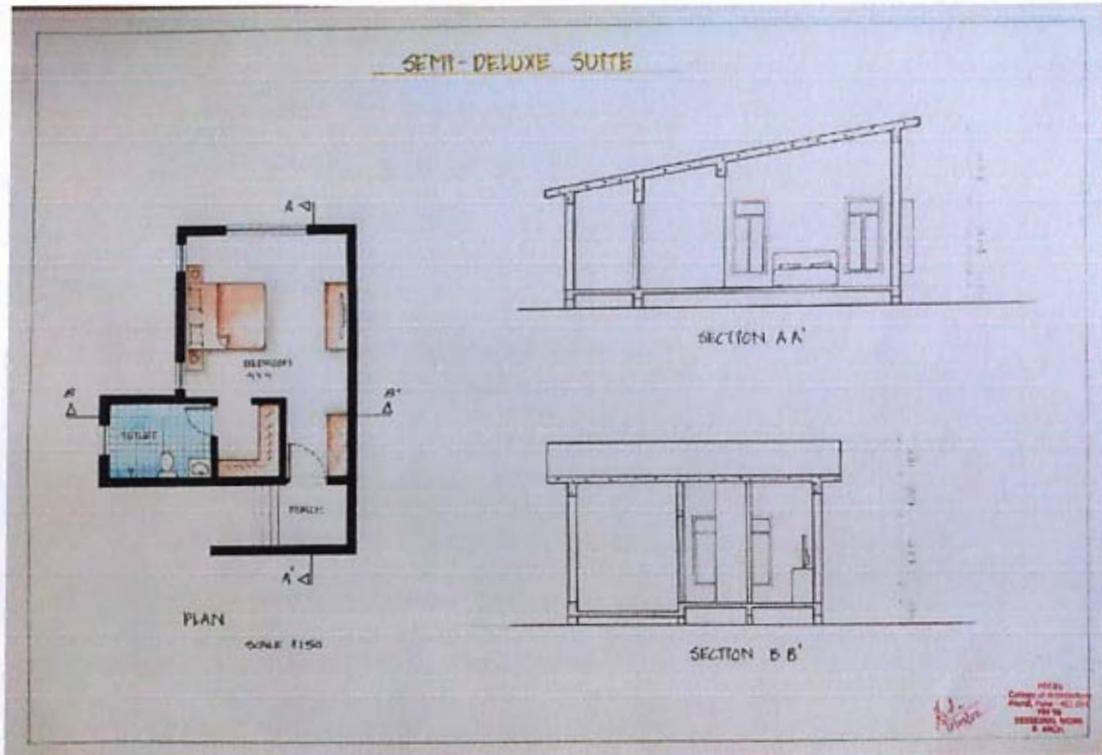
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## ASSIGNMENT 3: Time Problem on Tourist information Centre

**DESIGN OBJECTIVES:**

- 1. TO PROVIDE A COMFORTABLE AND ATTRACTIVE ENVIRONMENT FOR VISITORS.
- 2. TO INTEGRATE WITH THE SURROUNDING ENVIRONMENT AND PRESERVE THE LOCAL CULTURE AND TRADITION.
- 3. TO PROVIDE A SPACE FOR VISITORS TO GET INFORMATION AND ENJOY THE VIEW.
- 4. TO PROVIDE A SPACE FOR VISITORS TO GET INFORMATION AND ENJOY THE VIEW.

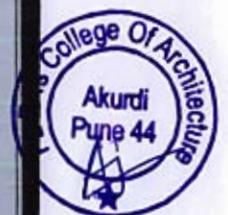
**CLIMATE DATA TABLE:**

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MAX TEMP	28.5	31.5	34.5	37.5	40.5	43.5	46.5	49.5	46.5	43.5	40.5	37.5
MIN TEMP	15.5	18.5	21.5	24.5	27.5	30.5	33.5	36.5	33.5	30.5	27.5	24.5
RAINFALL (mm)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180
RELATIVE HUMIDITY (%)	75	75	75	75	75	75	75	75	75	75	75	75

**STRATEGY:**

- 1. TO PROVIDE A COMFORTABLE AND ATTRACTIVE ENVIRONMENT FOR VISITORS.
- 2. TO INTEGRATE WITH THE SURROUNDING ENVIRONMENT AND PRESERVE THE LOCAL CULTURE AND TRADITION.
- 3. TO PROVIDE A SPACE FOR VISITORS TO GET INFORMATION AND ENJOY THE VIEW.
- 4. TO PROVIDE A SPACE FOR VISITORS TO GET INFORMATION AND ENJOY THE VIEW.

**SITE PLAN**





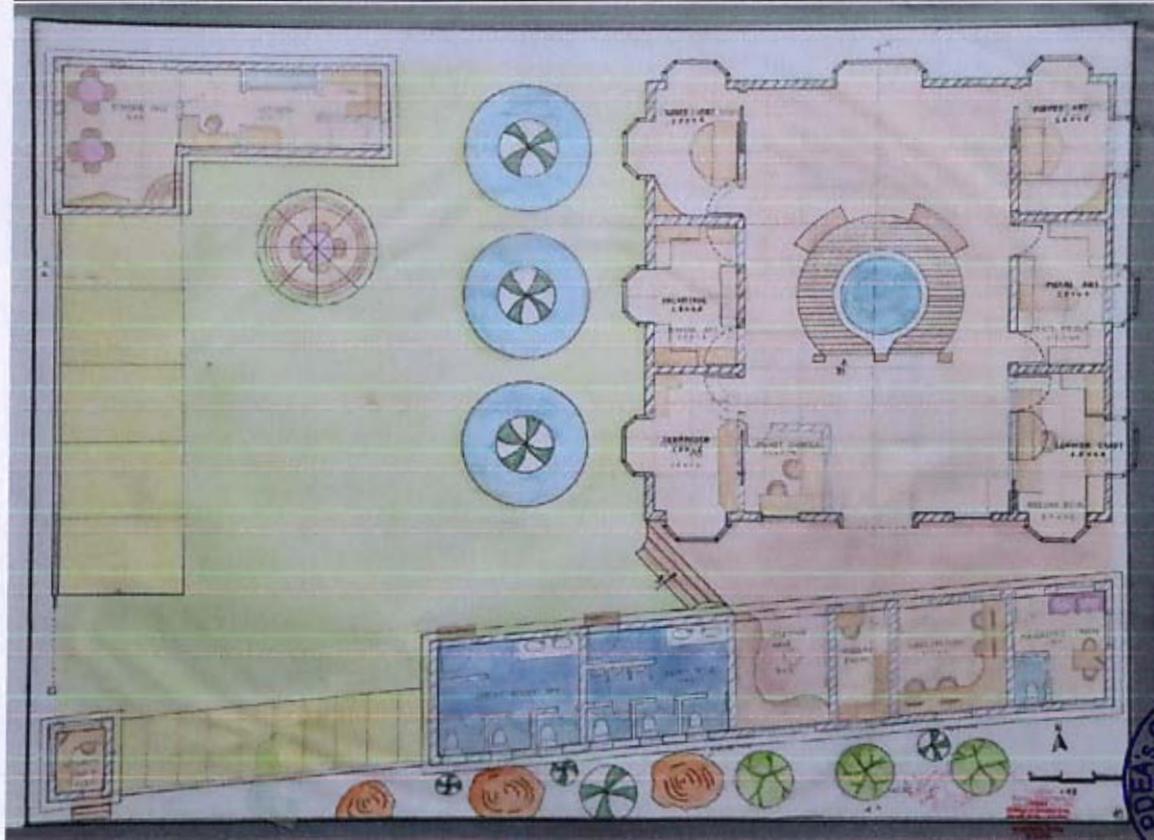
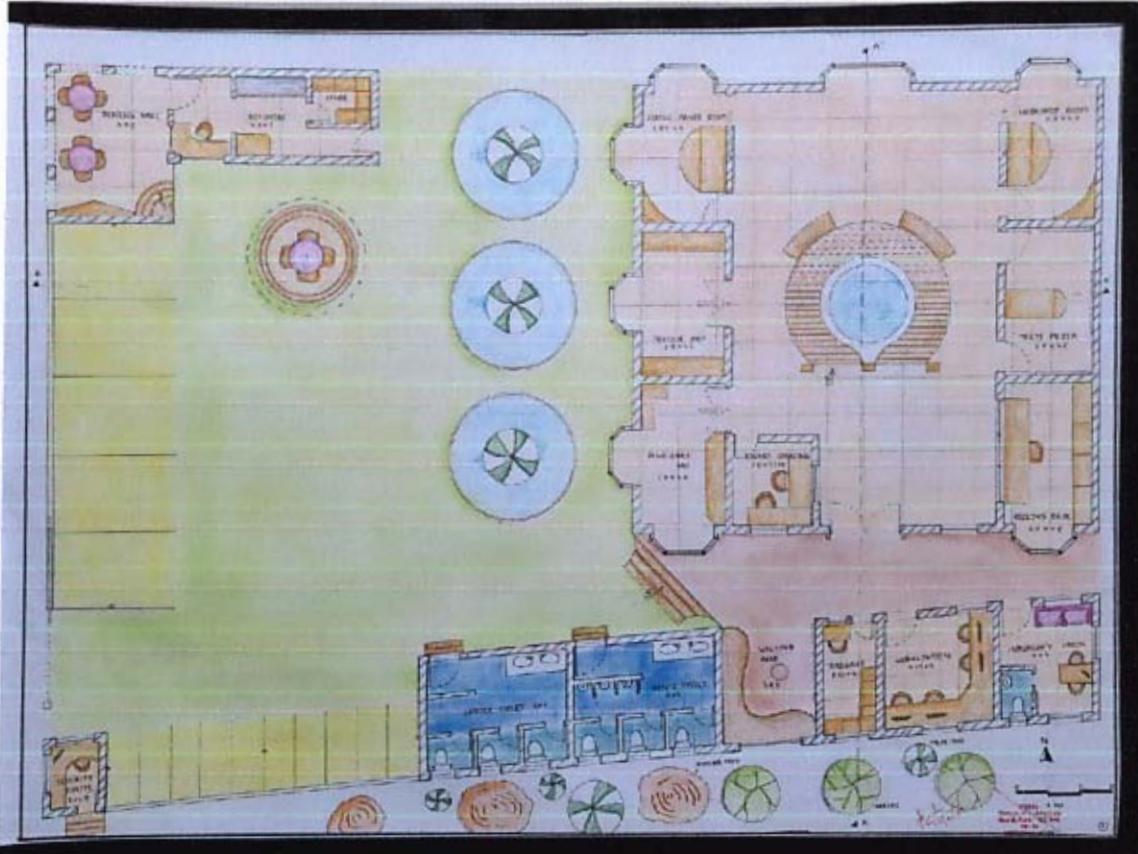
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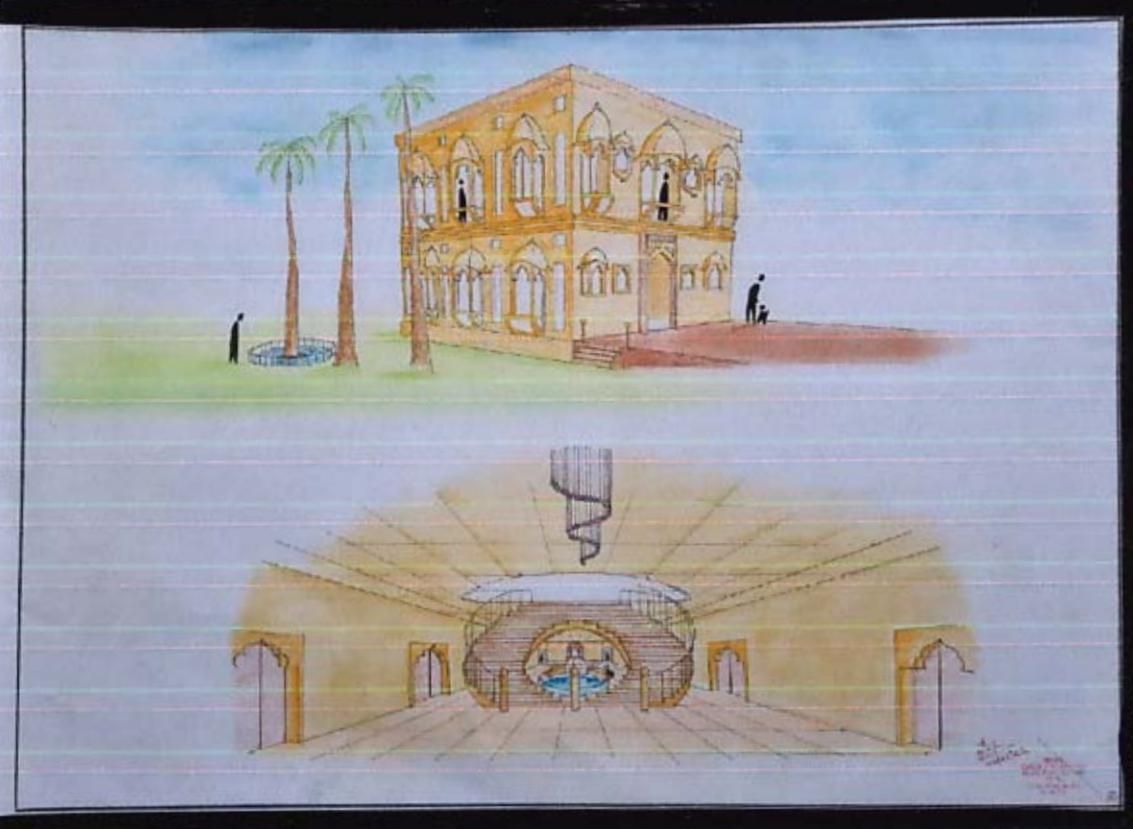
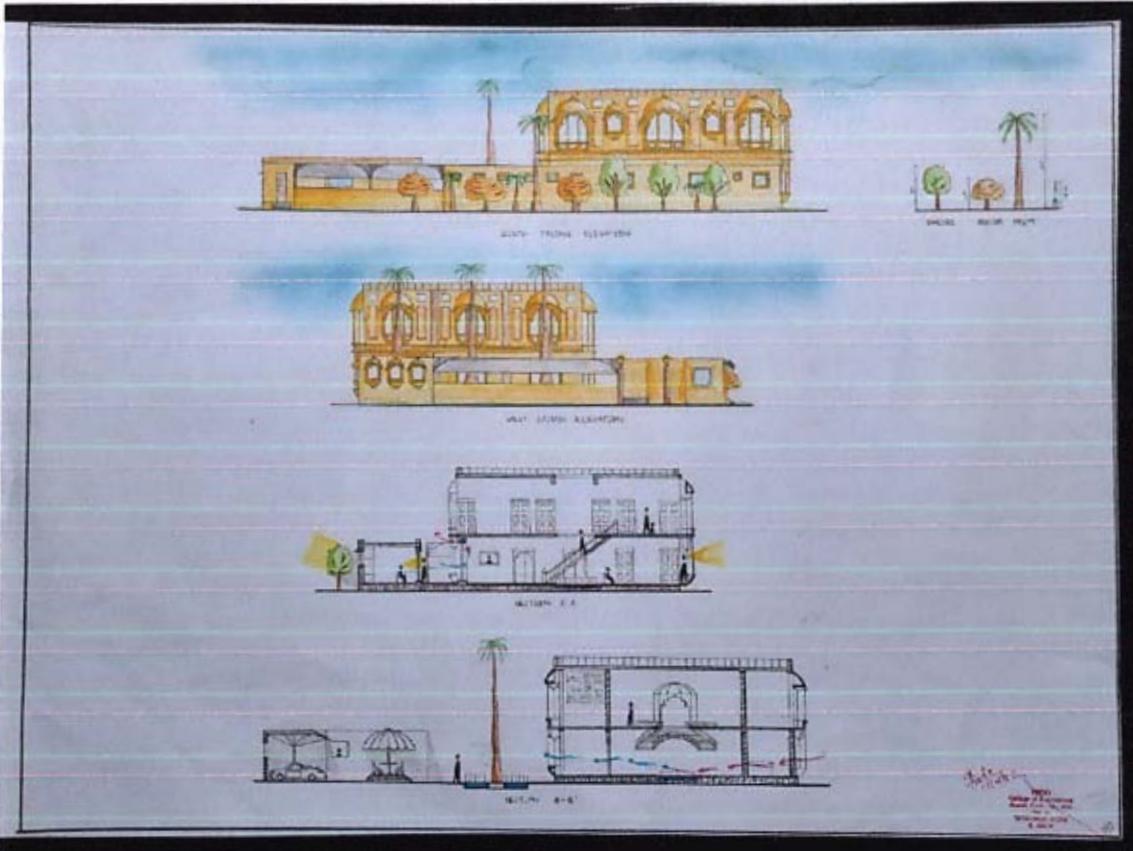
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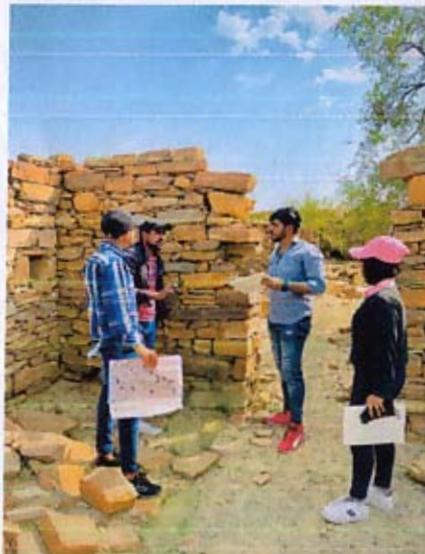
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## SETTLEMENT STUDY: RAJASTHAN KHABA



2<sup>ND</sup> year students with Class Teacher





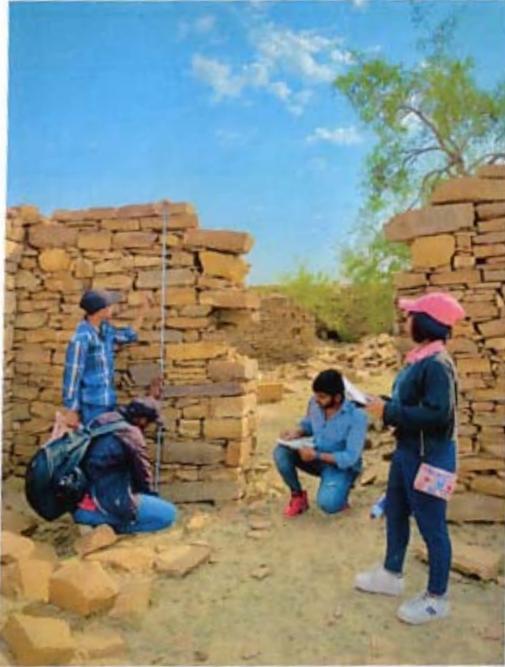
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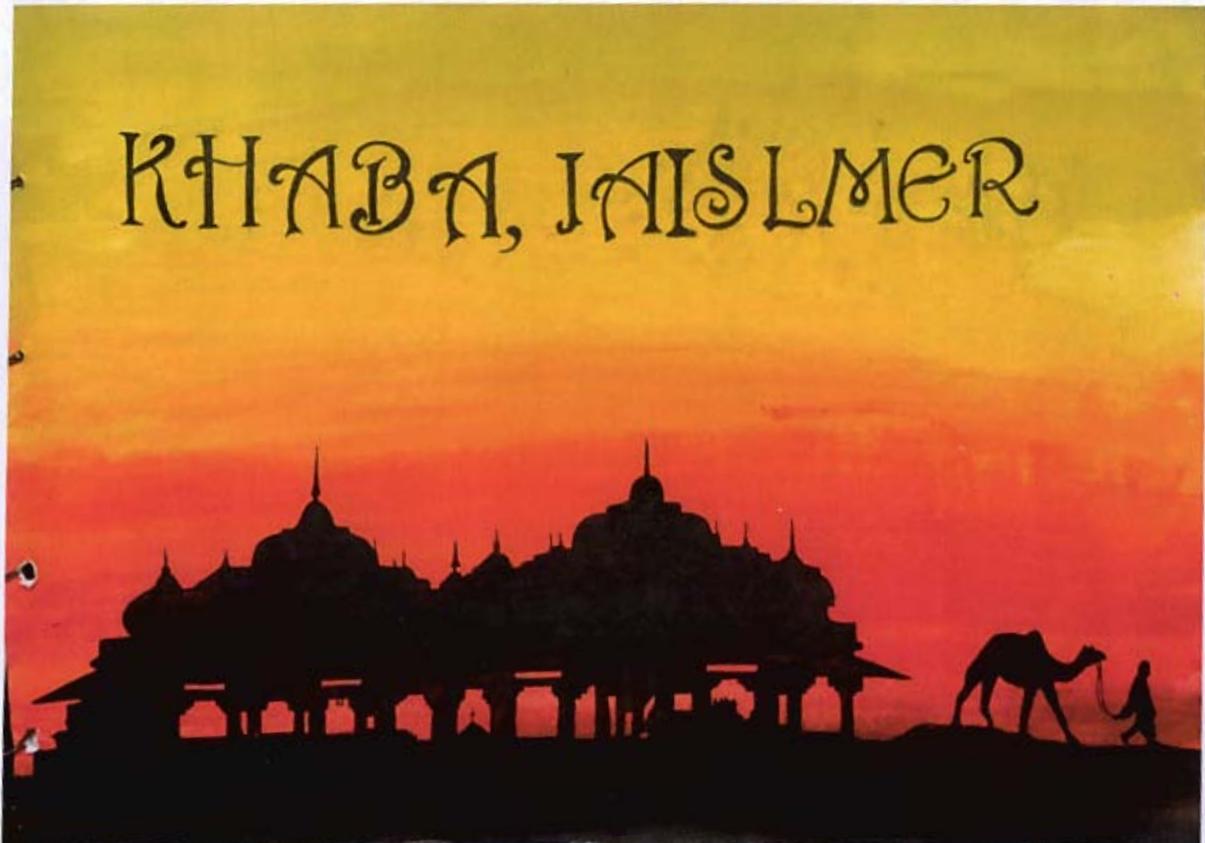
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A group of Students Engaged in Measuring the road

PORTFOLIO:



**AIM**

- TO STUDY ORIGINATIONS AND ANALYSE THE SETTLEMENT IN RAJASTHAN AND THE FACTORS AFFECTING THE SETTLEMENT.

**OBJECTIVE**

- TO STUDY THE TYPE OF LOAD BEARING STRUCTURES.
- TO STUDY THE SPECIFIC CULTURE.
- TO MAKE A SUITABLE PLAN AND STRATEGY FOR SUSTAINABLE DEVELOPMENT IN SETTLEMENT OF STUDY VILLAGE.
- TO UNDERSTAND THE VARIOUS TYPES OF HOMES AND TO UNDERSTAND THE VILLAGE AND THE SERVICES PROVIDED TO THEM.

**METHODOLOGY**

- LOCATION IS DEFINED.
- MAPPING OF LOCATION.
- HISTORY OF SITE.
- CLIMATE, CULTURE, POPULATION ETC.
- STUDY AREA IS DEFINED FORMED BY NATURAL BOUNDARIES, SERVICES, TOPOGRAPHY AND VEGETATION.
- STUDY OF MATERIALS AND VEGETATION.
- REFERENCES.

**MAP**



**HISTORY**



- WARA FORT IS A CHIEF VILLAGE OF PRITHVI RAMESHWAR, WHO ARRIVED THIS PLACE 200 YEARS AGO DUE TO UNKNOWN REASONS.
- THE CHIEF VILLAGE STRUCTURE IN THE FORT STILL HAS THE FLAVOUR OF THE VILLAGES OF 20TH CENTURY FAMILIAR THAT USED TO LIVE HERE.
- WARA FORT DATES BACK TO THE 16TH CENTURY AD AND WAS ONCE AN IMPORTANT PART OF MULSHARA, A VILLAGE INHABITED BY PRITHVI RAMESHWAR.
- THE REMAINS IN THE VILLAGE LOOKS LIKE A WELL PLANNED SETTLEMENT WITH A TEMPLE SURROUNDED BY SEVERAL HOUSES.
- STRANGELY NONE OF THE HOUSES IN THE FORT HAVE ROOF.

---

**CLIMATE**

- IN THE DESERT AREAS, IT IS USUALLY HOT & DRY CLIMATE. JAISALMER, BEING AN ARID DESERT REGION, IS PRONE TO EXTREMES IN TERMS OF TEMPERATURE.
- THE MAXIMUM SUMMER TEMPERATURE IS AROUND 43°C (109°F) AND MINIMUM IS 26°C (79°F).
- THE MAXIMUM WINTER TEMPERATURE IS AROUND 22°C (74.5°F) AND MINIMUM IS 5°C (41°F).
- THE AVERAGE RAINFALL IS 109.5 MILLIMETERS.

**\* CULTURE**

- MOST OF THE NATIVE POPULATION OF JAISALMER FOLLOWS HINDU RELIGIOUS CUSTOMS AND RITUALS.
- THE TRADITIONAL FOLK MUSIC AND DANCE IS AN INTEGRAL PART OF THE SOCIAL AND CULTURAL LIFE OF THE INDIGENOUS INHABITANTS OF JAISALMER. KHANDELA DANCE OF THE COMMUNITY OF SHAKH CHAMBERS PORTRAYS THE RICH FANTASTIC CALIBER AND CREATIVE IMAGINATION OF THE DANCERS.

**\* FLORA - FAUNA**

**FLORA** - BOMT-KHARIR, RAHIR, SHOK, KHEZRI, PALM TREES, BEER, BAK SHRUB, SEWAN GRASS, ETC.

**FAUNA** - BIRDS - GREAT INDIAN BUSTARD, FALCONS, EAGLES, VULTURES, BEE-EATERS, SHIKES, LARKS, DEMISELLE CRANE, MARQUEE'S BUSTARD, SANDHOUSE, LONG-LEGGED, HONEY BUZZARDS, CHATS, BABBLERS, KITES, ETC.

- KEJRI OR PROSOPIS CINERARIA ARE THE MOST HIGHLY FOUND TREES IN THE RAJASTHAN.

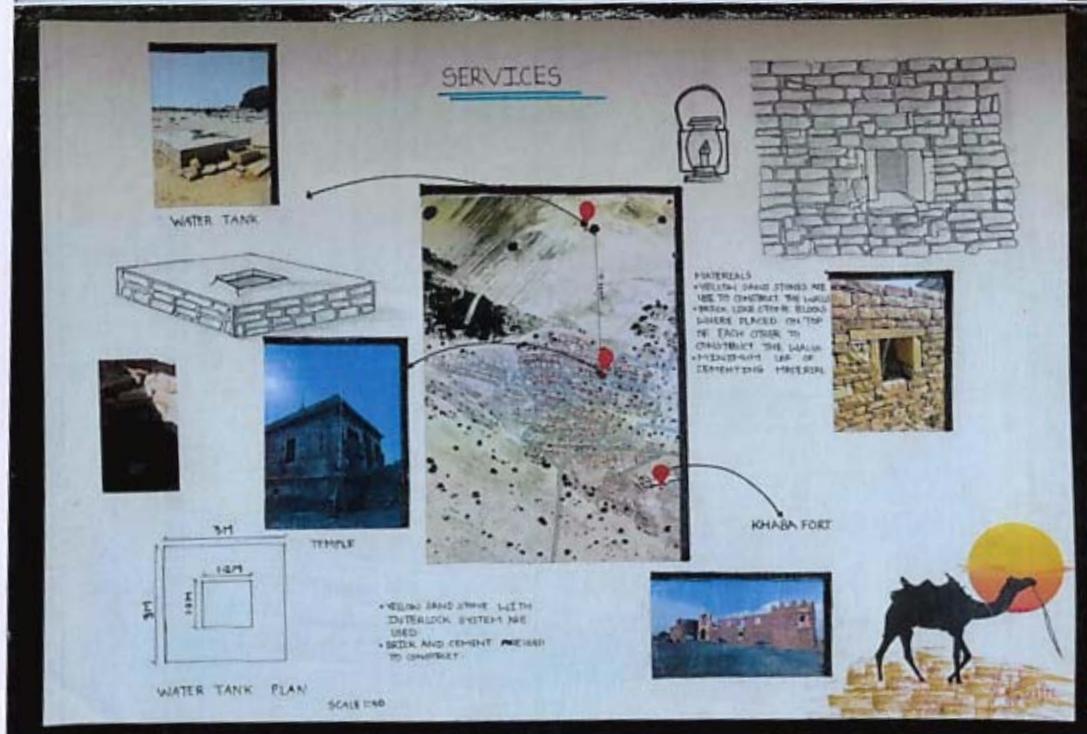
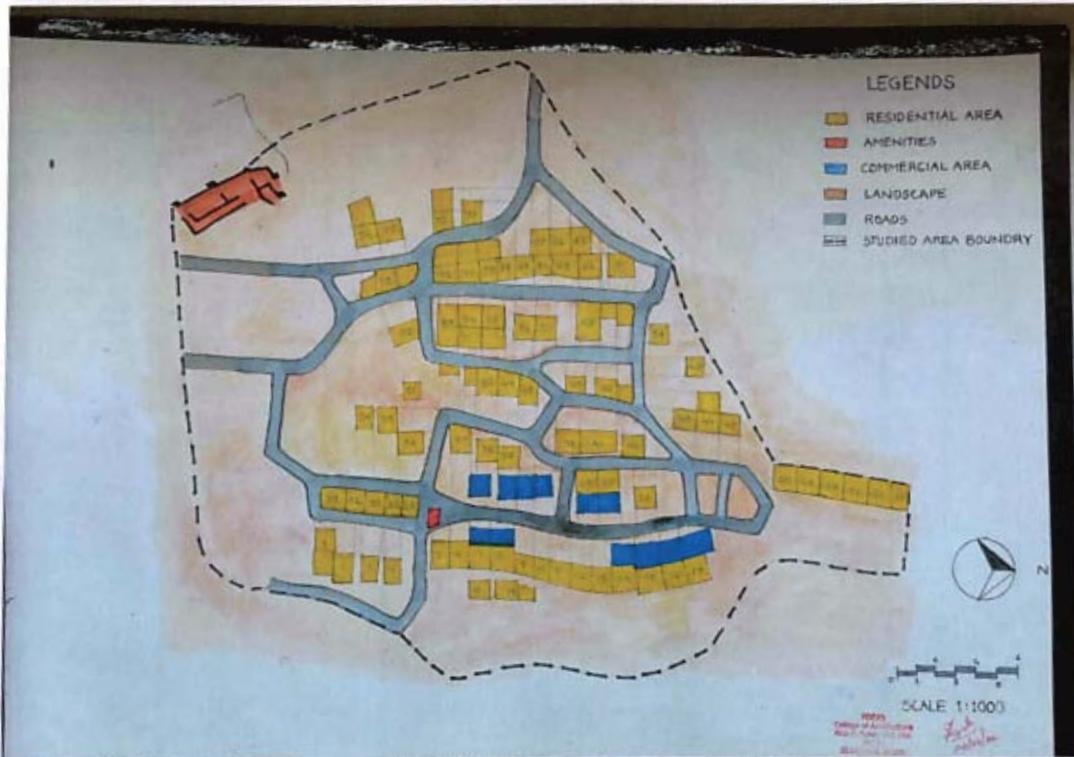
**\* MATERIAL**

BUILDING CONSTRUCTION THE COMMON BUILDING MATERIAL USED IN JAISALMER IS STONE OF WHICH THERE ARE TWO TYPES. LIGHT YELLOWISH SANDSTONE IS USED FOR WALLS WHICH ARE 0.45M OR MORE IN THICKNESS. IN BETTER QUALITY CONSTRUCTION THE STONE IS DRESSED AND JOINTS MADE ACCURATELY WITHOUT ANY MORTAR.

**\* SOIL CONDITION**

HAVE ALKALINE AND SALINE SOILS WITH A CALCAREOUS CRUST. THERE IS SOME NITRATE CONCENTRATION IN THE SOIL OF THESE REGIONS. THE JAISALMER REGION HAS ALOLIAN SAND THAT VARIES FROM SANDY TO SANDY LOAM.







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### FAUNA



PEACOCK  
Pavo cristatus



GOAT  
Capra hircus



COW  
Bos taurus



DOG  
Canis familiaris



CAMEL  
Camelus camelidae

### FLORA



NEEM  
Azadirachta indica



KHER  
Acacia catechu



KANSAR  
Bauhinia variegata



TAAL  
Salvadora persica



BAJAL  
Mollella leucica



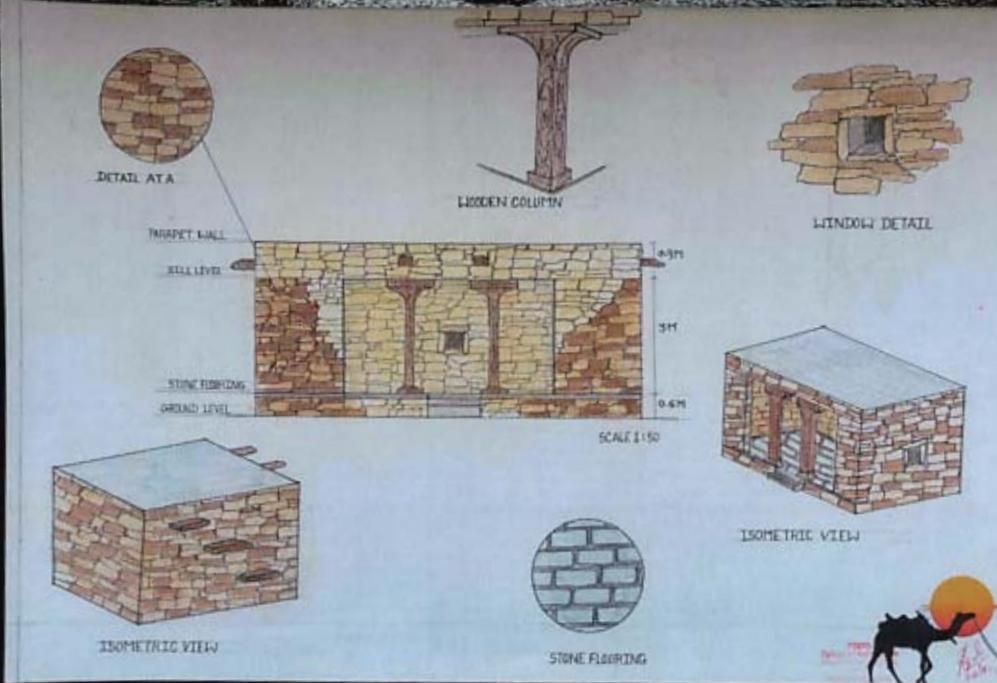
BARDOI  
Ziziphus nummularia



TISANI  
Coccinia grandis



VISHACHI  
Prosopis cineraria

**DETAIL AT A**

**TRAPPE WALL**

**WALL LEVEL**

**STONE FLOORING**

**GROUND LEVEL**

**WOODEN COLUMN**

**WINDOW DETAIL**

**ISOMETRIC VIEW**

**SCALE 1:50**

**ISOMETRIC VIEW**

**STONE FLOORING**





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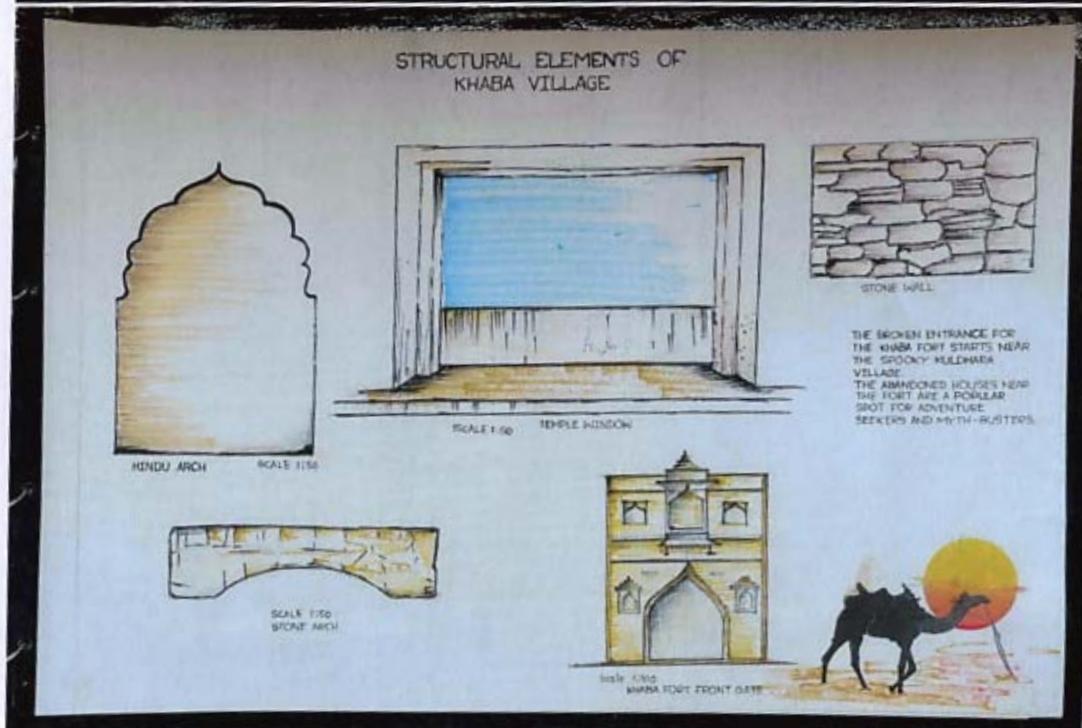
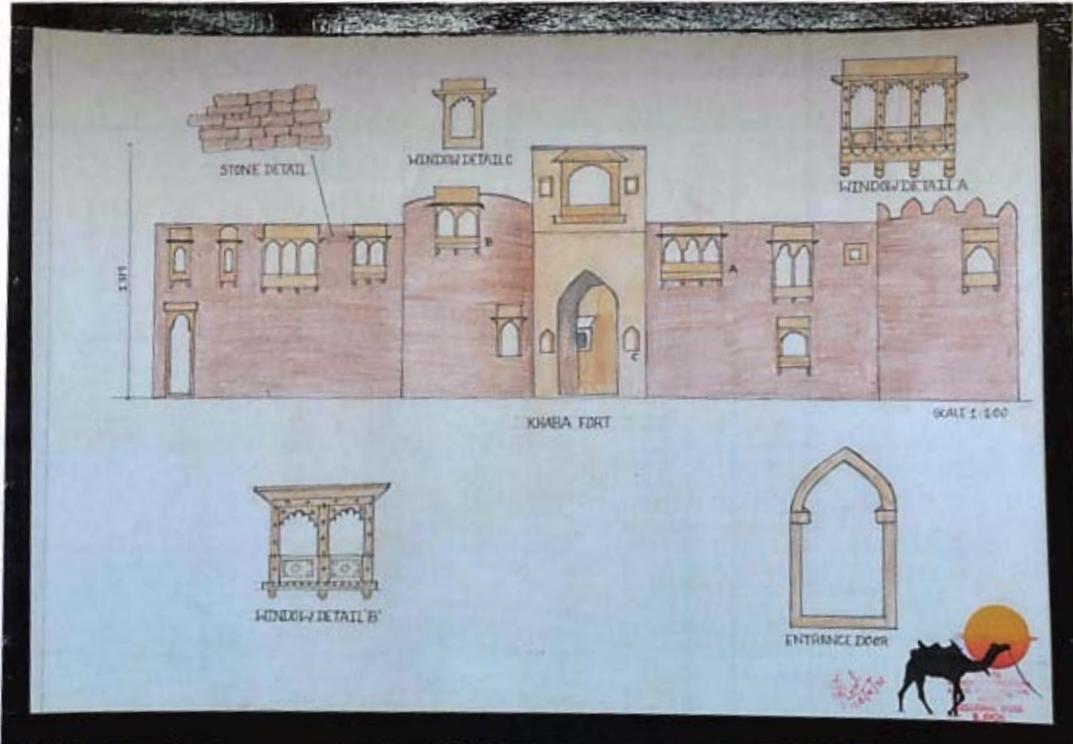
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### KHABA FORT

THE DISTRICT STATE OF BHARHANI IS WIDELY KNOWN FOR ITS ARCH FORTS AND PALACES AMONG THESE UNCOUNTABLE NUMBERS OF FORTS, ONE KHABA FORT IS VERY POPULAR FOR BEING ONE OF A KIND. LOCATED NEAR THE TOWN OF KESARPUR, KHABA FORT IS VERY POPULAR FOR BEING ONE OF A KIND.

**ELEVATION**

**KHABA FORT**

INSIDE THE FORT, THERE IS A STAIRCASE THAT LEADS TO AN UNDERGROUND MUSEUM THAT IS OPEN AROUND 10 TO 12 STANDARD HOURS.

**PLAN**

KHABA FORT HAS A MUSEUM IN IT THAT IS LOADED WITH ANCIENT VESTIGES AND A FEW AGE-OLD ROCKS.

ONE CAN SEE THE ENTIRE VILLAGE AND THE NEARBY AREAS FROM THE TOP OF THE FORT. THOUGH THE KHABA FORT IS MAJORLY RUINED, ONE CAN STILL FIND SOME BEAUTIFUL WALLS AND A FEW WINDOWS.

KHABA FORT HAS A MUSEUM IN IT THAT IS LOADED WITH ANCIENT VESTIGES AND A FEW AGE-OLD ROCKS.

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**PLAN**

**ELEVATION**

SCALE: 1:100

### KHABA TYPICAL HOUSE PLAN

**SECTION**

THE VILLAGE OF KHABA HAS HOME TO THE PRINCELY BRANCHES FROM THE LATE 18TH CENTURY AROUND 40-50 FAMILIES WHOSE RESIDING IN VARIOUS HILLS AND SMALL HOUSES SCATTERED AROUND THE VILLAGE.

THE MYSTERIOUS STORY OF KHABA STARTS IN 1885 WHEN IN ONE NIGHT, ALL THE VILLAGERS DESERTED THE VILLAGE AND THIS REMAINS AN UNSOLVED STORY.

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VARHA FORT IS A BUILT UP COMPOUND WITH ROUGH & RAUGH BRICK WALLS. IT IS AN ARCHITECTURALLY IMPRESSIVE STRUCTURE FULL OF COURTYARDS, KITCHENS AND STORES. THROUGH THE CITY STREETS LEAVED WITH DEPOSITED RUBBISH AND RUBBISH DEPOSITED OF HUMAN ACTIVITY. VARHA FORT WAS BUILT TO THE ISRAELI ARCHITECTS AND WAS ONCE AN IMPORTANT PART OF BULDHARA.

THE FORTIFIED ENTRANCE FOR THE VARHA FORT STREETS NEAR THE SANDY BULDHARA VILLAGE ONE CAN SEE THE STREETS VILLAGE AND THE NEARBY FORTS FROM THE TOP OF THE FORT.

VARHA FORT WAS A PRINCIPLE IN IT THAT IS SHOWN WITH RUSTIC WALLS AND A FEW OLD DOORS.

VARHA FORT WAS A PRINCIPLE IN IT THAT IS SHOWN WITH RUSTIC WALLS AND A FEW OLD DOORS.

VARHA FORT WAS A PRINCIPLE IN IT THAT IS SHOWN WITH RUSTIC WALLS AND A FEW OLD DOORS.

SOIL TYPE IS OF SANDY SOIL.

MOST OF THE HOUSES ARE CONSTRUCTED WITH RED BRICKS OR MUD.

A HOLY TEMPLE THE WHICH ONE OF THE BUILDINGS COME FROM THE TEMPLE OF THE LOCAL PEASANT AND OTHERS.

LITHESTONE ARTIFACTS

THE YELLOW COLOURED LITHESTONE OR SANDSTONE WAS USED FOR THE ROOFING OF HOUSES.

THE HOUSES WERE BUILT ON THE SANDY SOIL AND THE HOUSES WERE BUILT ON THE SANDY SOIL AND THE HOUSES WERE BUILT ON THE SANDY SOIL.

THE HOUSES WERE BUILT ON THE SANDY SOIL AND THE HOUSES WERE BUILT ON THE SANDY SOIL.

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**TEMPLE**

FOR THE TEMPLE, YELLOW SAND STONE WAS USED FOR THE CONSTRUCTION THROUGHOUT. THERE WAS NO DOOR KEPT INSIDE.

SCALE - 1:100

SCALE - 1:100

SCALE - 1:100





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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Building Construction &amp; Materials IV</b>
<b>Title of assignment</b>	<b>: Concepts of concrete as a building construction material.</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Ar. Rakesh Mutha and Ar. Shivali Lalbige</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester IV)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand basic principles of RCC construction w.r.t. Cantilever slabs, Staircase.</li><li>• To introduce students to vertical transportation systems.</li></ul>
<b>Date /duration of activities</b>	27/01/22 to 24/02/22
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	Photographs Available





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<p>Brief about the Programme (Activity/Event)</p>	<ul style="list-style-type: none"><li>• Types of special concretes, to include lightweight concrete, ready-mixed concrete, ferrocement etc; study of its ingredients viz. along with storage of materials on site, understanding good quality material and field &amp; lab tests involved.</li><li>• Causes of dampness and reasons for damp- &amp; water-proofing, Different methods or treatments of damp- &amp; water-proofing brick on edge, rough Shahabad stone, bitumen sheets, plastic sheets, epoxy resins and metallic water proofing materials and other proprietary materials application of the above in construction for terraces, chhajja, toilet slabs etc.</li><li>• R.C.C structural details for balcony slabs, canopies and Construction of various types of precast and in-situ RCC stairs, along with earthquake resistant features, reference of a RCC drawing</li><li>• Study of elevators, escalators, conveyors – types, size, capacity, speed and Mechanical safety methods, provisions in civil work for installation of elevators and escalators</li><li>• Study of Various types of sliding and folding doors and</li><li>• Construction of Bay Window</li><li>• Glass as a building material, brief history of its use through examples. Manufacture, properties and uses of glass. Various types of glass and its application in building construction • Plastic as a building material; its properties, types, uses and application of plastics in building industry.</li><li>• Different types of adhesives and sealants used in building construction</li></ul>
<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"><li>• Students will develop an understanding about concrete and its variants and artificial materials such as glass and plastic and their application in construction. Students will be developing knowledge about the vertical transportation systems and their design and construction requirement.</li></ul>





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## SITE VISIT REPORT

- **NAME OF SITE**

Ramnagar beside HP petrol pump, Tathawade, Pimpri-Chinchwad,Pune.

- **DATE OF VISIT**

27 January 2022

- **NAME OF CLIENT**

M/S Legacy Eden

- **ORGANIZED BY**

Pune District Education Association's College Of Architecture,Akurdi

- **FACULTY IN CHARGE**

Ar. Rakesh M.

- **ARCHITECT**

Ar. Mehul Shah

- **NO. OF STUDENTS: 13**





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## INTRODUCTION

The visit to the construction site at tathawade was conducted by Pune District Education Association's College of Architecture, Akurdi. On Thursday, 27 January 2022. Students from second year were taken to the construction site for observing and understanding the construction processes. The visit has scheduled between 11 a.m. to 2 p.m. students were allowed to observe the functioning of each construction activity and their queries were also answered by the site engineer during the visit.

## AIM

To study RCC structural details for balcony slabs

## OBJECTIVE

- To understand basic principles of RCC construction with respect to cantilever slabs. Understanding how things practically work
- To observe the construction and its process more closely

## BRIEF REPORT ON CONSTRUCTION SITE

During the site visit we have been observed the construction process,

electrical and plumbing work, double car parking lift system, column and beam framework, slab formwork, slab reinforcement, levelling, one way slab, two way slab, beam and its type (cantilever beam, simply supported beam, etc..)

During the site visit the site engineer has been explained about What kind of safety is required, How long does it take to get a floor, Where different types of tests take place, How many days the site is verified, The thickness of the column depends on what, Who decides the material and how the quality is looked at.





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**FORMWORKS TO SLABS ARE COMPLETED FOR INSTALLATION AT UPPER**





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**SUPPORTING TIMBER FRAMING TO SIDES OF FORMWORK IN BEAM TO PREVENT FROM BULKING DURING CONCRETE CASTING**



**BEAM STIRRUPS SPACING EQUALLY AND PROPERLY TIED WITH WIRES**





A plumb bob suspended from a string and used as a vertical reference line, or plumb-line.



INSTALLATION OF STEEL BARS AND FORMWORKS IN A BEAM READY FOR CONCRETECASTING



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### ACKNOWLEDGEMENT

Site Engineer had given very valuable guidance for the professional career growth of the Architecture students. On behalf of entire architecture department, student appreciates Ar. rakesh M. sir for providing such a great opportunity to the students by allowing them to visit this construction site which will help the students in understanding various concepts of architectural branch at present and in future.



SECOND YEAR STUDENTS WITH AR. RAKESH M. AND







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**EXAMPLE 1:** A SINGLE STAND SHADE CONSISTS OF A RCC SLAB WHICH CANTILEVERS 3 METRES ON EACH SIDE OF CENTRAL BEAM AND IS MONOLITHIC WITH IT. THE RCC BEAM IS SIMPLY SUPPORTED ON COLUMNS 400MM WIDE AT THE ENDS, OVER A CLEAR SPAN OF 6 METRES. DESIGN THE SHADE FOR SUPERIMPOSED LOAD OF 2000 N/m<sup>2</sup>. USE M15 CONCRETE AND  $\phi 10$  AND  $\phi 16$  REINFORCEMENT. TAKE UNIT WEIGHT OF CONCRETE AS 24 KN/m<sup>3</sup>.

**EXAMPLE 2:** DESIGN A RCC CANTILEVER CANOPY HAVING EFFECTIVE OVERHANG AND 6 METRES WIDE. THE CANOPY SLAB IS SUPPORTED ON TWO BEAMS CANTILEVERED OUT FROM WALLS AND PLACED AT 3.5 M C/C AND OVERHANGS EACH BEAM BY 1.5 M ON EACH SIDE. THE BEAMS AND SLABS ARE CAST MONOLITHIC TO GIVE A PLAIN SOFFIT.

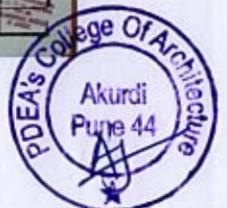
**EXAMPLE 3:** FIG 11 SHOWS PLAN AND SECTION OF A CANOPY TO BE PROVIDED OVER AN ENTRANCE OPENING OF A BUILDING. DESIGN THE BEAM AND A SLAB. USE M15 CONCRETE. THE SUPERIMPOSED LOAD ON THE SLAB MAY BE TAKEN AS 200 N/m<sup>2</sup>. TAKE UNIT WEIGHT OF CONCRETE AS 24 KN/m<sup>3</sup>.

**CANOPY**

DATE	SEM	NAME	ANAM	ASTZ	MULLA	SHEET	STAMP
1/1	III	SUB	SCHEER	ROLL	NO. 15	4	

**ESCALATOR**

DATE	SEM	NAME	ANAM	ASTZ	MULLA	SHEET	STAMP
1/1	III	SUB	SCHEER	ROLL	NO. 15	5	







## ASSIGNMENT: Plastic Market Survey

### PLASTIC

"Plastic" is a general name given to a wide range of synthetic materials that are based on polymers. The construction industry uses plastic for a wide range of applications because of its versatility, strength-to-weight ratio, durability, corrosion resistance, and so on.

Plastic can be manufactured into forms such as pipes, cables, coverings, panels, films, sheets and so on, and can be formed or expanded to create low-density materials, and be dissolved in solvents or dispersed as emulsions.



ELECTRIC SWITCHES



PVC PIPES



ROOFING



PVC-U is the most common PVC type for pipes and fittings

**PVC-U**  
PVC-U stands for unplasticized PVC, which means no plasticizer (US plasticizer) has been added to the PVC compound. Unplasticized PVC is also known as rigid PVC

C-PVC is typically used for pipes and fittings for hot and cold water



**C-PVC**  
C-PVC stands for chlorinated PVC. Pipes and fittings made of C-PVC share many of PVC-U's advantages. Both are safe for use with drinking water, have high resistance to corrosion, high durability and excellent impact resistance.



PVC-O is typically used for pressure pipes for drinking water

**PVC-O**  
Molecularly oriented PVC (PVC-O) is the result of a production process that turns the amorphous structure of unplasticized PVC (PVC-U) into a layered structure.

### PVC FLOORING



₹ 68/ Square Feet



₹ 55/ Square Meter

Thickness (Millimeter)	2.5 mm
Brand	VTC
Material	PVC
Width	1.83 mtr
Length	20 mtr
Finish	Matt
Type Of Flooring	Vinyl flooring
Material	PVC
Brand	Marvel Vinyl
Color	Blue, Grey, Green, Beige
Usage/Application	Flooring
Thickness	1.5/2.0 mm



### PVC ROOFING

Color	Blue and White
Brand	VTC
Material	PVC
Pattern	Printed
Surface Treatment	Coated
Size	1220 x 2440 x 2.5 mm
Material	PVC
Thickness Of Sheet	2 mm
Surface Treatment	Galvanized
Technique	Cold Rolled
Material	PVC
Color	Blue
Thickness Of Sheet	1.5/2.5/3.5 MM
Surface Treatment	Color Coated
Width	1.23 M

### PVC PIPES



Size/ Diameter	15 mm (1/2 inch)
Size/Diameter	15 mm (1/2 inch)
Length of Pipe	3 m
Usage/Application	Pumbing
Color	White
Pipe Class	Schedule 80
Nominal Size (inch)	>2.5 inch
Length of one pipe	6m
Type	Hard Tube
Color	Grey
Material	PVC
Minimum Order	500 Piece
Quantity	



Frame Material	PVC
Opening Pattern	Hinged
Shape	Rectangular
Grill Material	Iron
Height	3.5 feet
Usage/Application	Home, Office, etc
Open Style	Hinged
Type	Window
Window Height	2 to 3 feet
Material	PVC
Open Style	Swing
Color	White
Glass Thickness	4 - 6 mm
Frame Material	PVC
Window Height	3 - 4 feet

### PVC DOORS



HSRFF/AMR/WH	None
Color	Brown
Design/Pattern	Standard
Brand	Polystyrene
Design	Standard
Surface Finishing	Glossy
Door Location	Interior
Door Open Style	Slide & Fold
Type	Entry Doors
Door Material	PVC
Usage/Application	Finished

### SWITCHES

#### ONE WAY SWITCH



₹ 55/ Piece/Get Latest Price  
Current rating: 15A  
No. of Modules: 1M  
Brand: Winless  
Voltage: 240V  
Finish Type: Glossy  
Color: White

#### TWO WAY SWITCHES

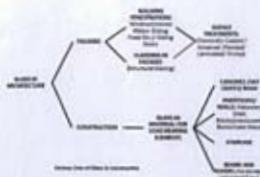


•Two Way Switch  
•Number of Switches: 2  
•Made of PP (Polypropylene)  
•Maximum Current: 6 A  
•Pack of: 2

## ASSIGNMENT: Glass market survey

### GLASS

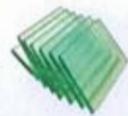
Glass is a hard substance which may be transparent or translucent and brittle. The fusion process used to manufacture glasses. In this process, sand is fused with lime, soda, and some other admixtures and then cooled rapidly. Glasses used in construction purposes and architectural purposes in engineering.



### FLOAT GLASS

Float glass is essentially a super smooth, distortion-free glass which is used for designing other glass items such as laminated glass, heat-toughened glass, and so on.

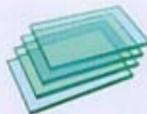
TYPE	Float Glass
Color	Clear, green, grey, blue, etc.
Material	Auto Grade Float Glass
Shape	Curve, Flat
Function	Acid Fetched Glass, Heatproof Glass, Decorative Glass, Heat Absorbing Glass, Heat Reflective Glass, Insulated Glass, Low-E Glass
Price	₹ 650/ Square Feet



### ANNEALED GLASS

Annealed glass is the most common glass used in windows and is also known as a standard sheet of float glass. Annealed glass is slowly cooled to relieve internal stresses after it is formed, thus making it strong.

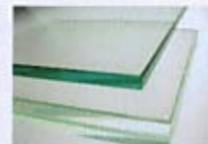
Price	₹ 180/ Square Feet
Color	Natural
Shape	Square
Design	Plain
Type	Plain Glass
Thickness(mm)	8-12 mm



### TEMPERED GLASS

Toughened glass is typically four to six times the strength of annealed glass. When broken, tempered glass fragments are usually relatively small and less likely to cause serious injury.

Brand	Samat
Thickness	6-16 mm
Usage/Application	Partition, Wall, Window And Door
Color	Transparent
Material	Glass
Transparency	95%
Price	₹ 150/ per sq ft



### TINTED GLASS

Tinted glass is made by adding small amounts of metal oxide to the glass composition. This alters the transmission of solar energy and modifies the colour without changing the basic properties of the glass.

Brand	Samat Galena
Color	Optional
Shape	Rectangular
Thickness	2 to 5 mm
Usage	Decoration
Price	₹. 60-140/Sq Ft



### LAMINATED GLASS

Laminated glass is a fantastic alternative to normal glass, offering a tough, robust structure that is hard to break. Laminated glass is suitable for use in many ways, and is a material that is growing in popularity. Laminated glass is constructed of two plies of glass which are bonded together with interlayers to form a permanent bond.

Price	₹ 300/ Square Feet
Brand	Samat Galena
Color	Transparent
Thickness	11.52mm
Material	Laminated toughened glass
Shape	Flat





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**Name of Programme** : Bachelor of architecture  
**Name of Course** : Building Services II  
**Title of assignment** : Visits to construction sites and preparing site visit reports, market survey  
**Teaching methodology Adopted** : Experimental learning  
**Name of Faculty** : Ar. Deepali Randhe  
**Academic Year** : 2021-2022 (Semester III)

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	To introduce students to Building Services in low, medium and high rise buildings and inculcate in them the understanding of integration of services in architectural design. The Building Services will include <ul style="list-style-type: none"><li>• Solid Waste Management</li><li>• Lighting –Natural and Artificial</li><li>• Electrification</li></ul>
<b>Date /duration of activities</b>	08/03/22 to 19/04/22
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	Photographs Available





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<p>Brief about the Programme (Activity/Event)</p>	<ul style="list-style-type: none"><li>• <b>STAGE 1 –Solid Waste Management-</b> This unit covers the collection, treatment and disposal of organic and in-organic waste • Collection- Garbage chutes and space requirement for manual mechanism • Treatment and Disposal -Introduction to vermicomposting, organic waste composters, incinerators etc. and space requirements on site and in building</li><li>• <b>STAGE 2 -Lighting-Natural-</b> Introduction to integrated design approach for daylighting to cover • Passive design strategies of siting, form, fenestration design, • Choice of glazing material • Methods for predicting daylight i.e. daylight factor. • New technologies to access (light pipes) and control daylight (Lighting Controls)</li><li>• <b>STAGE 3 -Lighting-Artificial •</b> Introduction to different sources of light, their characteristics (CRI, Color temperature and lamp life, energy consumption) lighting systems (Direct &amp; Indirect) and their applications in building projects • Lumen Method for designing appropriate lighting as per NBC 2016</li><li>• <b>STAGE 4 - Electrification •</b> Electrical installations in a building from the supply company mains to individual outlet points including meter board, distribution board, layout of points with load calculations. • Electrical wiring systems for small and large installations including different materials involved • Electrical control and safety devices – switches, fuse, circuit breakers, earthing, lightning conductors etc. • Introduction to alternative sources of energy such as Solar PV, Wind turbines etc. and integration in building design</li><li>• <b>STAGE 5-Low Voltage network systems-</b>Introduction to Low Voltage electrical systems and its integration in BMS – • Wi-Fi and LAN network EPABX &amp; Telecommunication system • CCTV (Closed circuit TV and camera system) • FA PA (Fire Alarm and Public address system) • Access systems (Access control, Tracking, planning and provisions made)</li></ul>
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<p>Student Outcome /Works Examples</p>	<ul style="list-style-type: none"><li>• Students should be able to understand basic principles of daylight and artificial lighting and should be able to design a lighting plan for a space. They should be able to calculate the energy requirement of building electrical systems. Students should be able to identify space requirements and integration of these systems in architectural design.</li></ul>
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### ASSIGNMENT 1: SITE VISIT AT MAILHEM BIOGAS PLANT KATRAJ (REPORT)

#### INTRODUCTION

Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen.

Microbially controlled production of biogas is an important part of the global carbon cycle.

It is a renewable energy source.

The main source of raw material for production of biogas is organic waste.

#### AIM

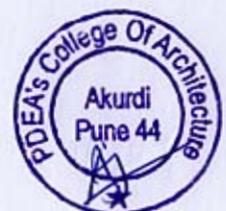
To study about the process of biogas treatment plant

#### OBJECTIVE

Production of biogas from manure is a way to prevent these emissions and produce energy that can be used as a biofuel for transport or for replacing natural gas.

#### SCOPE

There is a vast scope to convert these energy sources into biogas. Biogas production is a clean low carbon technology for efficient management and conversion of fermentable organic wastes into clean cheap & versatile fuel and bio/organic manure.





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2<sup>nd</sup> year students with the

**DESCRIPTION CHART**

Establishment year of biogas plant	<b><u>2013</u></b>
Daily capacity of organic waste	<b><u>5000 KG x 2</u></b>
Monthly capacity of organic waste	<b><u>150000 x 2</u></b>
Waste received by which place	Dhanakawadi, Narhe, Kondhwa, Sasewadi, Warje, Swargate, Yewalewadi, Undri.
Handled By	Sameer Rege





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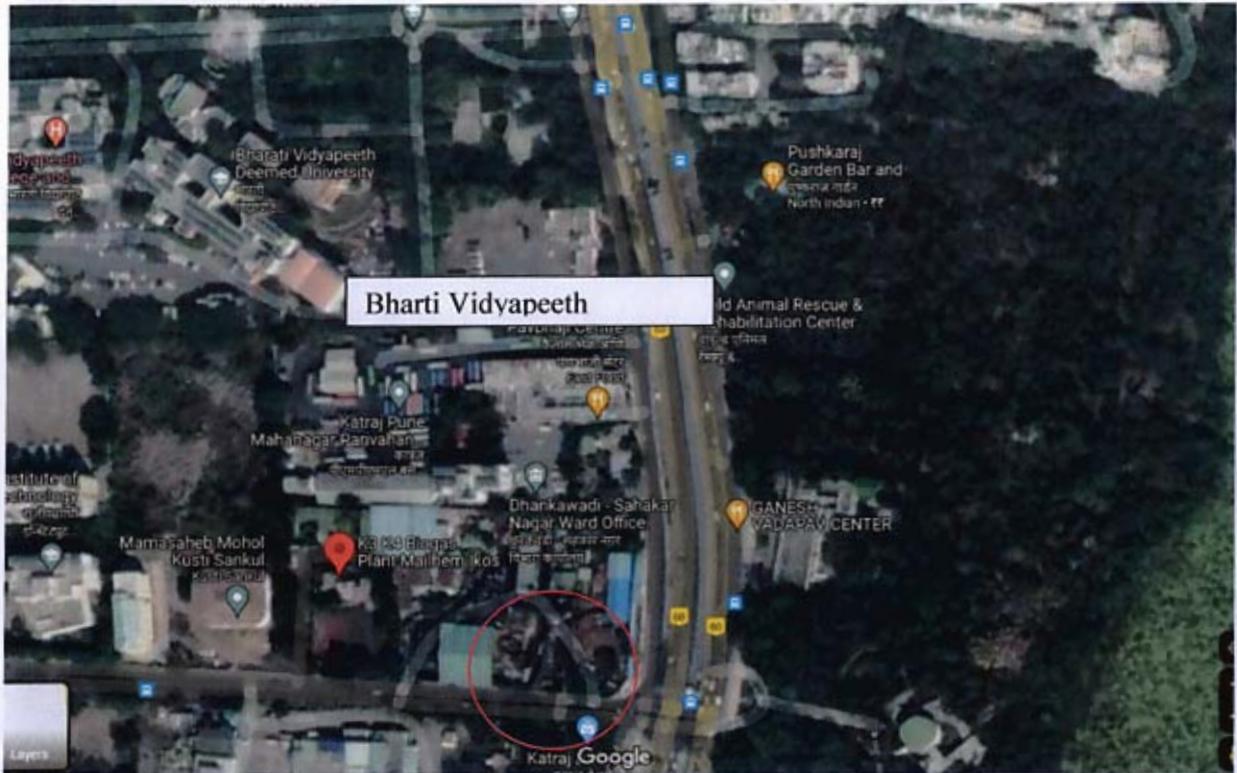
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Satellite view of the site





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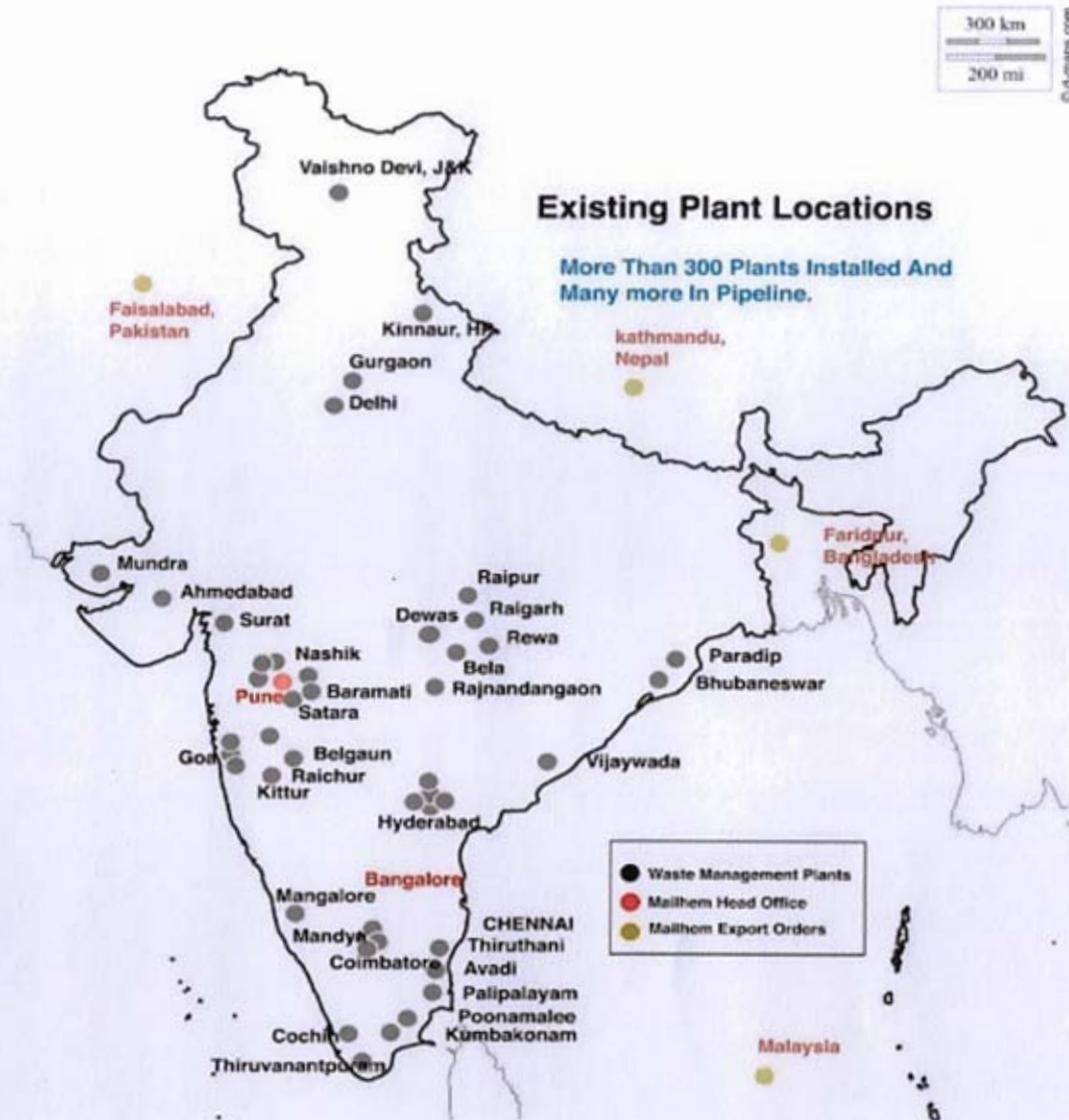
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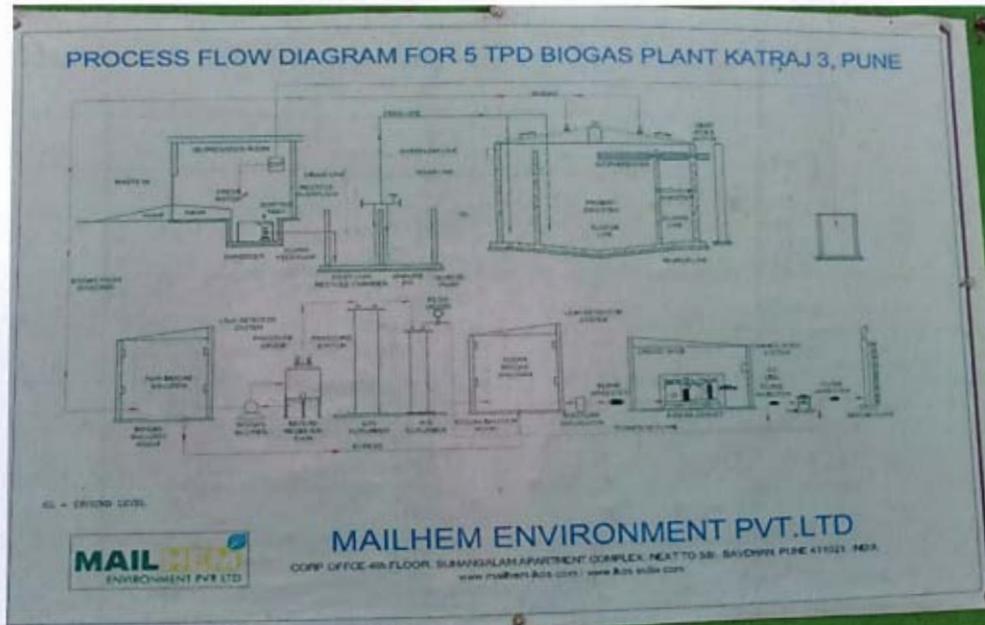
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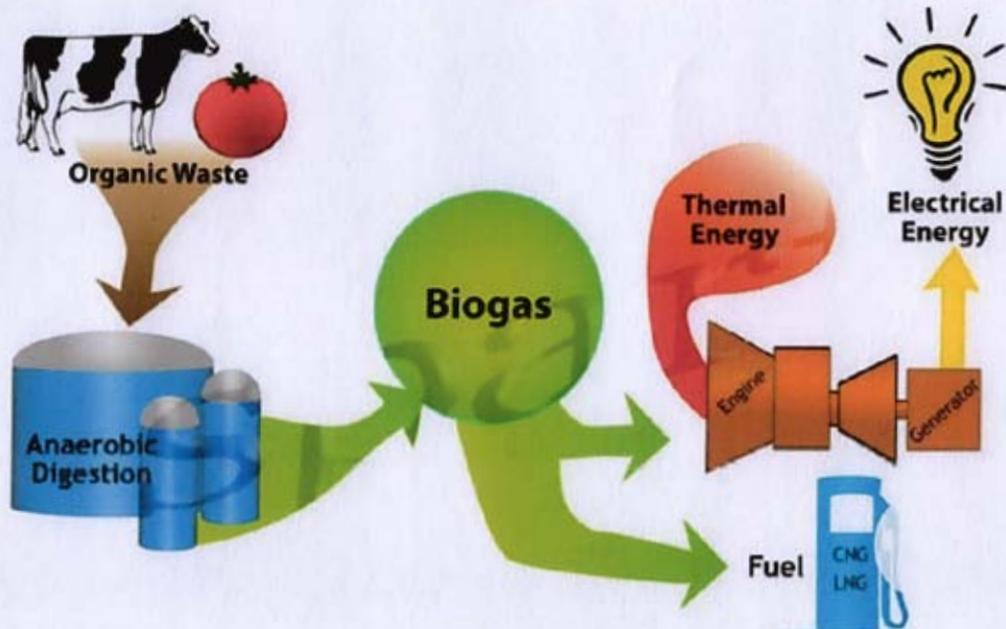
MAILHEM

Mailhem Ikos environment private limited have experience of setting up more than **300 biogas plants** and with our in-house research and development. they have developed a unique compact portable organic waste treatment plant.





**Flow diagram**



**Bio gas cycle**



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Top View Of Biogas Plant



Paper Plastic Metal And Other Non-Biodegradable Waste Is Removed



slurry gets collected



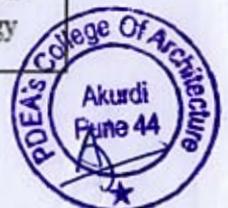
Crushed using shredder table



Inlet Feed Line



Modified upflow anaerobic sludge blanket technology





Raw bio gas balloon



Inlet/recycle chamber



Gas receiving tank



Hydrogen sulphide scrubbers



Clean biogas balloon



Biogas generator



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**ASSIGNMENT 1: MARKET SURVEY of Artificial Lighting (Report format)**

**INTRODUCTION**

The visit to the light shop at Pune was a part of our syllabus to understand basic principles of artificial lighting. The lighting shop we chose for visiting was a **S.M. LIGHTS PUNE**. We went there to observe the lighting fixtures and asked them some questions there. On **Sunday, 10 April 2022**. A group of 5 us went to the light shop and tried to find out the types of lighting fixtures and their uses. The visit has scheduled between 10:30 a.m. to 12 p.m. we were allowed to observe the details and working of lighting fixtures and our queries were also answered by the shop owner during the visit.

**AIM**

To understand basic principles of artificial lighting

**OBJECTIVE**

Should be able to design a lighting plan for a space

Should be able to calculate the energy requirement of building electrical system

Finding out latest trends and new materials for all the units

**BRIEF REPORT**

During the visit we have been observed the types of lighting in detail, types of lighting fittings used for inside of building, different types of ambient, task and accent lighting

, latest trends and new material for all the units .

During the shop visit the shop owner has been explained about his shop, " S. M. lights is a house of world class chandeliers. Chandeliers are used to uplift the look of a particular space by adding elegance and light. Along with this we have a variety of

lights from ceiling lights, floor lights, outdoor lights, zoomer, hanging lights, etc". They only had products from two companies 1] Wipro 2] Orient. They told us that there is no special company for chandeliers.





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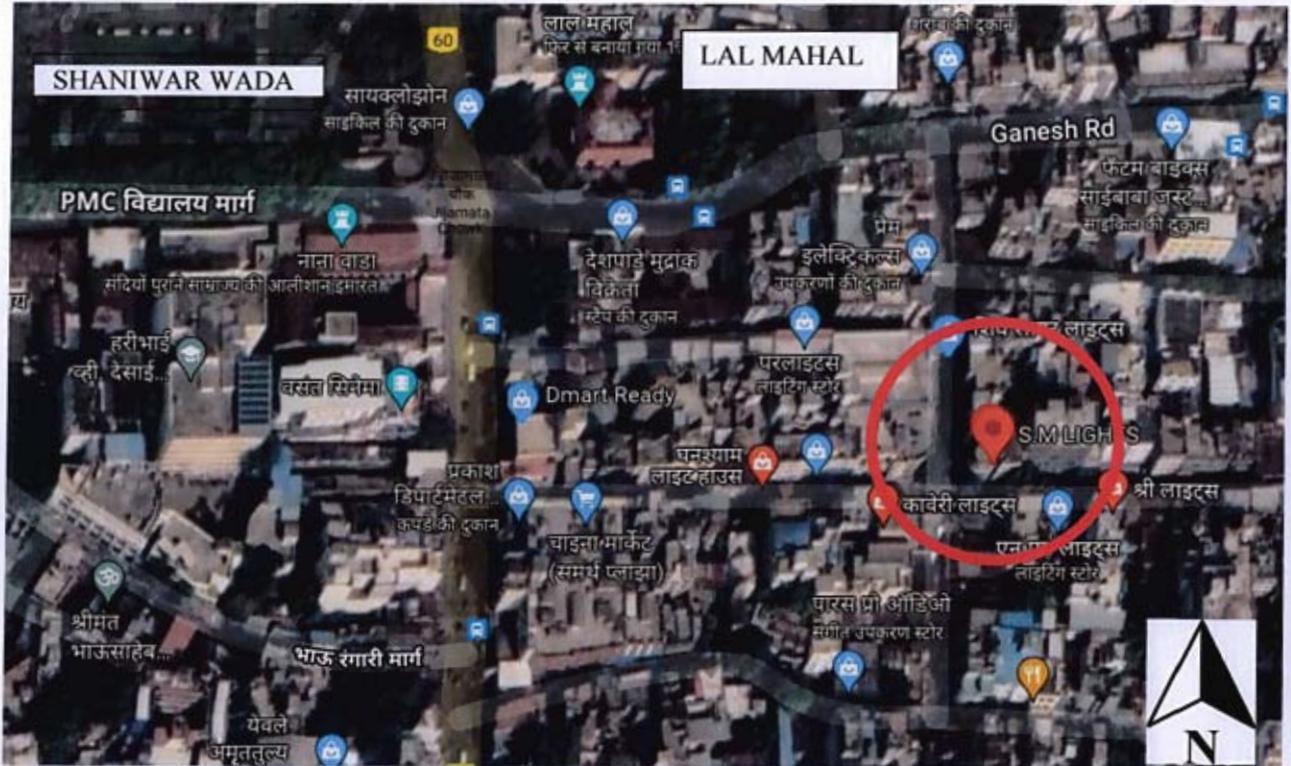


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**LOCATION:**



**OUTSIDE VIEW OF S.M.LIGHT SHOP**





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**TYPES OF WALL LIGHTING**



**TYPES OF SWITCH MODULE**



**DIFFERENT SHADES OF FAN AND HANGING LIGHTS**

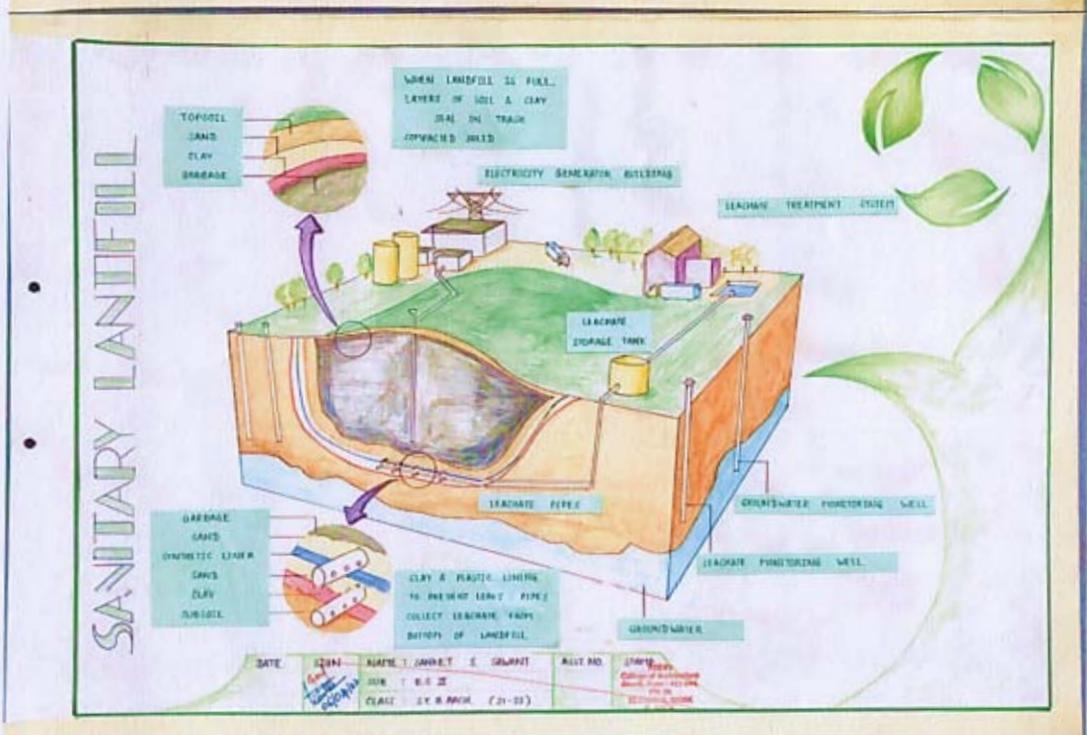




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ASSIGNMENT: Hand drafted sheets





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## REFUSE CHUTE

THE OVERALL CAPACITY OF THE COLLECTION NUMBER IS DESIGNED, IT IS GENERALLY RECOMMENDED TO PROVIDE A MINIMUM CAPACITY OF 0.05M<sup>3</sup> GROSS PER FAMILY PER DAY.

**PLAN**

**SECTION XX'**

CHUTE IS A VERTICAL DUCT SYSTEM RUNNING FROM GROUND LEVEL TO THE TOP FLOOR, PARTLY CONSTRUCTED BY USING PAPER OR IMPERMEABLE MATERIAL OF SPINNY FIBRE, WHICH FALLS FROM FLOOR TO FLOOR FOR COLLECTION OF WASTE FROM EVERY FLAT AT EACH FLOOR AND ENDING AT THE GROUND LEVEL ON THE TOP OF THE CONTAINER OR COLLECTION NUMBER.

DATE	22/01/2016	NAME	SHANUET S. SHANUET	ROLL NO.	150101010101
		JOB	A.C.E. II		
		CLASS	A.Y. R. AKURDI (CP-16)		

## CLASSIFICATION OF LIGHTING SYSTEM

LIGHTING SYSTEM

**DIRECT**

THE LIGHT FROM THE LAMP DIRECT REACHES THE WORKING PLANE. WHEN LIGHTING FLUORESCENT 90-180° OF THEIR OUTPUT DOWNWARDS USED IN OFFICES, LABORATORY, COMMERCIAL, RESIDENTIAL.

**INDIRECT**

LIGHTING SYSTEM WHICH DIRECT 90-180° OF THE LIGHT UPWARD (STRAWLED IN WELL DESIGN) INSTALLATIONS ILLUMINATION & SHADING WILL BE A VIRTUALLY ESTIMATED REQUIRED LIGHT LEVELS.

**SUSPENDED PARALLEL**

**SUSPENDED INDIRECT**

**REFLECTED INDIRECT**

**SEMI-DIRECT**

SEMI DIRECT LIGHTING SYSTEM EMITS 80% - 90% OF THEIR LIGHTS DOWNWARD. ENTIRELY OUTPUT UPWARD DOWNWARD COMPONENT ATTACHED COMPENSATE WHICH FLORES CEILING.

**SEMI-INDIRECT**

LIGHTING SYSTEM THAT EMITS 60-80% OF THEIR OUTPUT UPWARD, EXCEPT THAT THE DOWNWARD COMPONENT EQUALLY TO PRODUCE ILLUMINANCE THAT CLEARLY PROVIDED THAT OF WORKING.

**DIFFUSED**

WHEN DOWNWARD AND UPWARD COMPONENT OF LIGHT FROM LUMINAIRE ARE ABOUT EQUAL (50-50%) IN THIS LUMINAIRE OUTPUT.

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		JOB	A.C.E. II		
		CLASS	A.Y. R. AKURDI		



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### LUMEN METHOD

THE LUMEN METHOD IS A SIMPLIFIED METHOD TO CALCULATE LIGHT LEVELS IN A ROOM. THE LUMEN METHOD IS BASED ON THE TOTAL NUMBER LUMENS AVAILABLE IN A ROOM DIVIDED BY THE AREA OF THE ROOM.

#### METHOD OF LIGHTING FOR PROVIDING ILLUMINATION PLAN

$W = \frac{L \times A}{E \times UF \times MF}$

WHERE,  $L$  = LUX ON WORKING PLANE  
 $N$  = NUMBER OF LAMPS  
 $A$  = FLOOR AREA (SQ. FT)  
 $E$  = LUMEN PER LAMP  
 $UF$  = UTILIZATION FACTOR  
 $MF$  = MAINTENANCE FACTOR

$M = 57$  FOR RESIDENTIAL AND COMMERCIAL GRADE MAINTENANCE FACTOR.  
 $M = 70$  FOR RESIDENTIAL GRADE - 0.6  
 $M = 80$  FOR COMMERCIAL GRADE - 0.6



WATTAGE : 42 W  
 LUMEN : 3030 lm  
 SUPERVISION : 600 X 600 mm  
 PRODUCT CODE : PALMSEIKLE  
 AVERAGE LIFE : 40000 HRS  
 INPUT VOLTAGE : 240 V

SPINDLE - CIRCULAR SURFACE LED

### CALCULATION OF LIGHTING FIXTURE

AN OFFICE AREA IS 17M X 12M X 3M. THE CEILING TO DECK IS 2M. THE AREA IS TO BE ILLUMINATED TO A GENERAL LEVEL OF 300 LUX AND USING LAMP 42W SPINDLE LED WHERE A SMP OF 120 EACH LAMP HAS AN INITIAL OUTPUT OF 3030 LM.

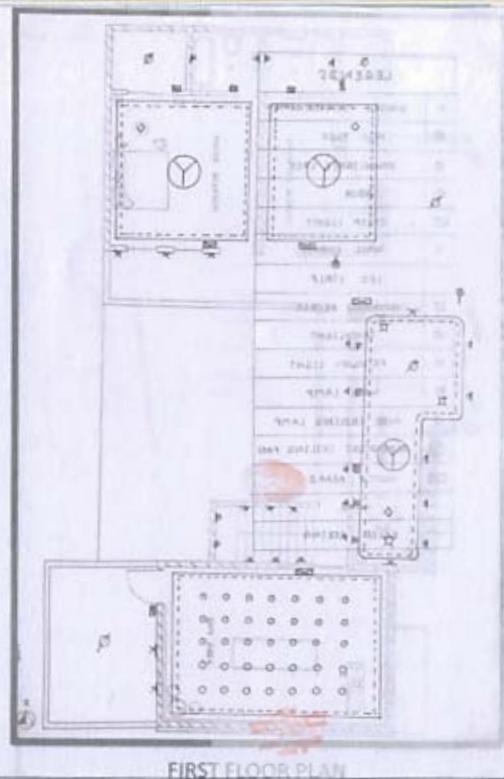
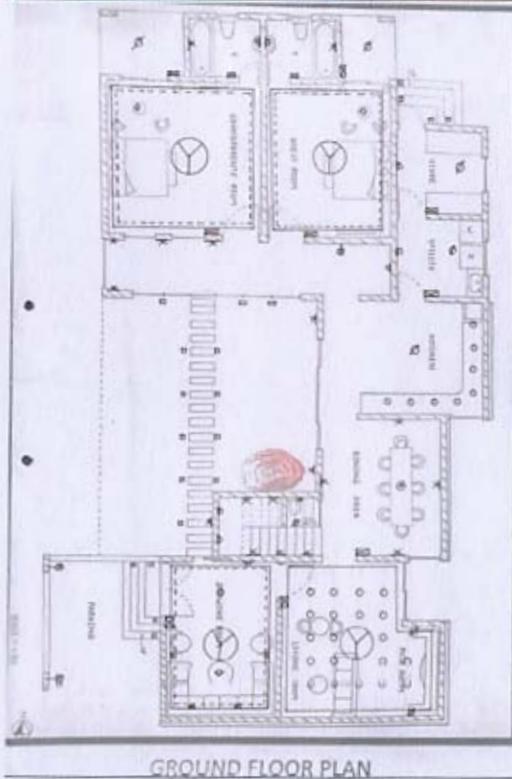
#### CALCULATION :

- TOTAL WATTAGE OF FIXTURE = NO. OF LAMPS X EACH LAMP WATT = 12 WATT
- LUMEN PER FIXTURE = LUMEN EFFICIENCY PER WATT X 42W = 12726 lm
- REQUIRED NO. OF FIXTURE = REQUIRED LUX X ROOM AREA / LMP X LUX X LM =  $300 \times 204 / 12726 \times 42 = 42$  NO. OF
- CALCULATING SPACING BETWEEN EACH FIXTURE : MINIMUM SPACING BETWEEN FIXTURES  $L \times 1.25 = 2.125$
- CALCULATING NO. OF FIXTURES ROW REQUIRED ALONG WITH WIDTH NO. OF ROW REQUIRED IN EACH ROW =  $L \times W \text{ ROOM} / \text{NO. OF FIXTURES} \times 1.25 = 2.125$   
 NO. OF ROW REQUIRED = 2
- CALCULATE NO. OF FIXTURE REQUIRED EACH ROW = TOTAL NO. OF FIXTURES / NO. OF ROW = 21
- CALCULATE AXIAL SPACING BETWEEN EACH FIXTURE = L OF ROOM / NO. OF FIX IN ROW =  $17 / 21 = 0.81$
- CALCULATE TRANSVERSE SPACING BETWEEN EACH FIXTURE = W OF ROOM / NO. OF FIX IN ROW =  $12 / 2 = 6$



SCALE 1:100

DATE	SCALE	BY	CHECKED	DATE	SCALE	BY	CHECKED
12/12/2016	1:100	AKURDI	AKURDI	12/12/2016	1:100	AKURDI	AKURDI



TYPE	SL. NO.	COMPANY NAME	PRODUCT NAME	PRODUCT CODE	SUPPLYING	QTY	DATE	SPACE	FINISH	COLOR
LIGHT	1	WIPRO	SHARDEE HUNGLED LUMINAIRE	SL34	20x18x18cm	20	06/07	KITCHEN, LIVING ROOM	6000	WHITE
LIGHT	2	WIPRO	WALL FLUSH	LS55 - 101		10	15/07	DINING, LIVING ROOM	17.5 X 17	WHITE
LIGHT	3	WIPRO	DOWNLIGHT 2023	LS50 - 041	175mm	25	05/08	CHARKIDA, KITCHEN	152 X 152	WHITE
LIGHT	4	WIPRO	ADVA	LM50		95	22/07	SHAWING ROOM	200	100% W/L
LIGHT	5	WIPRO	TRIP LIGHTS	SM 22	2m	19	14/07	STAIRCASE	1800	WARM W
LIGHT	6	WIPRO	WALL LIGHTS	SL 041		10	12/07	GYM, RECREATIONAL	2400	WARM W
LIGHT	7	ORIENT	LED STRIP	SPF02	5m	24	20/07	HALL, CEILING	200	BLUE W
LIGHT	8	ORIENT	RAINBOW DOWNLIGHTER	SL 01		10	18/07	RECREATIONAL AREA	200	WARM W/SH
LIGHT	9	ORIENT	TRACK LIGHT	LTL 24		80	24/07	TRAINING HALL	220 X 200	NEUTRAL W
LIGHT	10	RANDOM LIGHT	PATHWAY LIGHT	LPL 01		75	15/07	PATH, OUTSIDE GARDEN	60 X 60	WARM W
LIGHT	11	RANDOM LIGHT	WALL LAMP	LWL 102		18	16/07	GARDEN, STUDY AREA	120 X 100	WARM W
LIGHT	12	RANDOM LIGHT	SOFFIT CEILING LAMP	FLCELR01A		30	20/07	BEDROOM, STUDY AREA	70 X 50	WHITE
LIGHT	13	WIPRO	RELAZ	LM70		82	15/07	TRAINING ROOM	1800	WHITE
FAN	14	ORIENT	REARCELET FAN	RELECTRA 2	720mm	07	22/07	CEILING	60 X 60	100%
SWITCH	15	KAPPA	1 MODULE	NS00 2WL						100%
SWITCH	16	KAPPA	2 MODULE	NS00 2WL						100%
SWITCH	17	KAPPA	3 MODULE	NS00 2WL						100%
SWITCH	18	KAPPA	4 MODULE	NS00 2WL						100%



**SPECIFICATION OF LIGHTS**

DATE	22/07	PAGE	ORIENT S. SHAWANT	ALL NO.	STAMP

**TYPES OF WIRING**

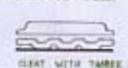
**CLEAT WIRING**



THAT WIRING USE INSULATED CABLE



CLEAT WITH TWO GROOVES



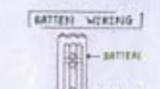
CLEAT WITH THREE GROOVES

SR. NO.	PARTICULARY	CLEAT WIRING	CANING WIRING	BATTERY WIRING	CONDUIT WIRING
1	TYPE	DIRTY	FINE	LONG	VERY LONG
2	COST	LOW	MEDIUM	MEDIUM	HIGHER
3	MECHANICAL PROTECTION	POOR	FINE	FINE	VERY GOOD
4	PROTECTION OF FIRE	NIL	GOOD	GOOD	NIL
5	PROTECTING FROM DAMPNESS	POOR	LITTLE	NIL	GOOD
6	TYPE OF LABOR REQUIRED	SKILLED	SKILLED	SKILLED	SKILLED
7	INSTALLATION	VERY EASY	DIFFICULT	EASY	DIFFICULT
8	INSPECTION	EASY	EASY	EASY	DIFFICULT
9	REPAIR	EASY	L. DIFFICULT	EASY	DIFFICULT
10	POPULARITY	NIL	FINE	NIL	VERY GOOD

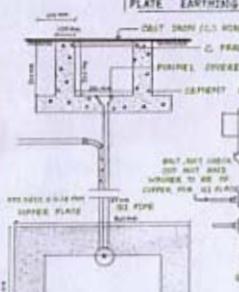
**CONDUIT WIRING**



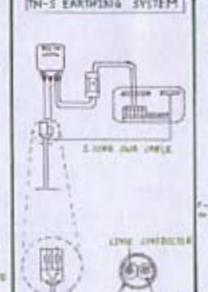
**BATTERY WIRING**



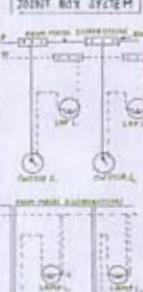
**PLATE EARTHING**



**M-S EARTHING SYSTEM**



**JOINT BOX SYSTEM**



DATE	22/07	PAGE	ORIENT S. SHAWANT	ALL NO.



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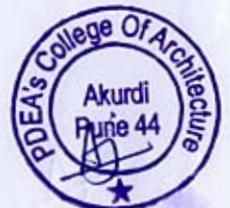


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<b>Name of Programme</b>	<b>: Bachelor of architecture</b>
<b>Name of Course</b>	<b>: Site Survey and Analysis</b>
<b>Title of assignment</b>	<b>: Ground Survey</b>
<b>Teaching methodology Adopted</b>	<b>: Experimental learning</b>
<b>Name of Faculty</b>	<b>: Er. Shouryashil Saste</b>
<b>Academic Year</b>	<b>: 2021-2022 (Semester IV)</b>

<b>Organised by</b>	Bachelor of architecture
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To introduce students to the various factors related to Site Survey and Analysis relevant to Architectural Site Planning</li><li>• To enable the students to get conversant with locating the object positions in horizontal and vertical plane</li><li>• To prepare and interpret survey drawings.</li><li>• To develop understanding of contours and grading for Site development</li><li>• To analyze physical, socio-cultural and contextual parameters of the site enabling Site planning</li></ul>
<b>Date /duration of activities</b>	08/01/22 to 30/04/22
<b>Venue</b>	P.D.E.A.s College of architecture
<b>Student Attended</b>	Second year of B. Arch.
<b>No. of students present</b>	27
<b>Photograph/ Video available</b>	Photographs Available





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Brief about the Programme (Activity/Event)	<ul style="list-style-type: none"><li>• <b>Unit 1. Linear Measurements</b> Measurements in horizontal plane, survey stations, survey lines open and closed traverse, locating objects by chaining and offsetting, direct and indirect ranging, locating field boundaries and working out area of field, measuring distances with chain, tapes, ODM's ,EDM's, introduction to Total Station, survey accessories, measurements along sloping ground. Chain Surveying: Base line, tie lines, check lines, Understanding of land demarcation drawings.</li><li>• <b>Unit 2. Directional and Angular Measurements</b> Magnetic and true meridian, Magnetic and true bearings, use of bearings, use of prismatic compass, calculation of included angles, Fore and back Bearings, declination plotting and adjustment of closed traverse, Uses of Transit Theodolite. Measuring horizontal and vertical angles, calculation height of buildings, use of Theodolite as tachometer, tacheometric tables</li><li>• <b>Unit 3. Levelling</b> Dumpy level, auto and tilting level, principle lines of levelling instrument, axis of telescope, axis of bubble tube, line of collimation, vertical axis recording by collimation plane, method and rise-fall method, B.S/J.S/F.S, change point, level surface, horizontal surface, datum, Reduced Level/ elevation of a point, Bench Marks, GTS, PBM/ABM/TBM. Temporary Adjustments.</li><li>• <b>Unit 4. Plane Table Surveys</b> Accessories used in plane tabling, methods of locating objects, methods of table orientation, Advantages and disadvantages. Use of Planimeter: Area of zero circle, calculating area of irregular shape figures.</li><li>• <b>Unit 5. Contours</b> Plotting the contours and profiles, interpolation of contours, contour interval, Characteristics of contours, Profile levelling: Understanding gradient, cut and fill for desired ground level, direct and indirect methods of contouring, block contour surveys</li><li>• <b>Unit 6. Site Analysis and Synthesis</b> Understanding of Natural and Manmade aspects (such as microclimate, topography, hydrology and vegetation), physical and socio-cultural context of the site. Site Analysis of the above parameters, Site Synthesis and Site Suitability</li></ul>
Student Outcome /Works Examples	<ul style="list-style-type: none"><li>• At the end of the course students would be able to comprehend the site characteristics, reading and interpreting survey drawings, understanding equipment and methods of surveying leveling.</li></ul>





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**ASSIGNMENT:**

1. Calculation of area of field(Chain and cross staff survey)
2. Compass Survey.
3. Plane Table Survey.
4. Block Contour Survey.
5. Slope Analysis and Profile Levelling.
6. Site Analysis and Synthesis (Associated with Design Project)





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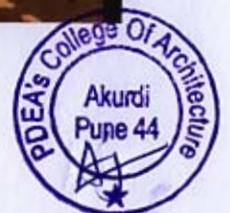
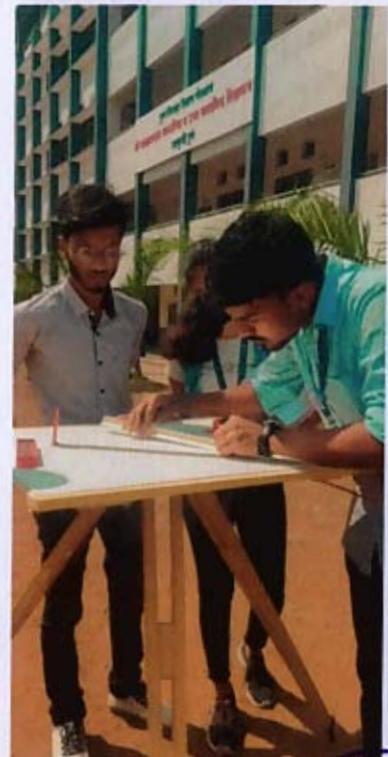
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**2<sup>nd</sup> year student**

- Plotting the contours and profiles.
- Chain Surveying: Base line, tie lines, check lines, Understanding of land demarcation drawings.
- Measuring horizontal and vertical angles, calculation height of buildings,





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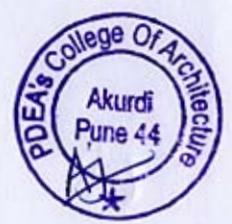
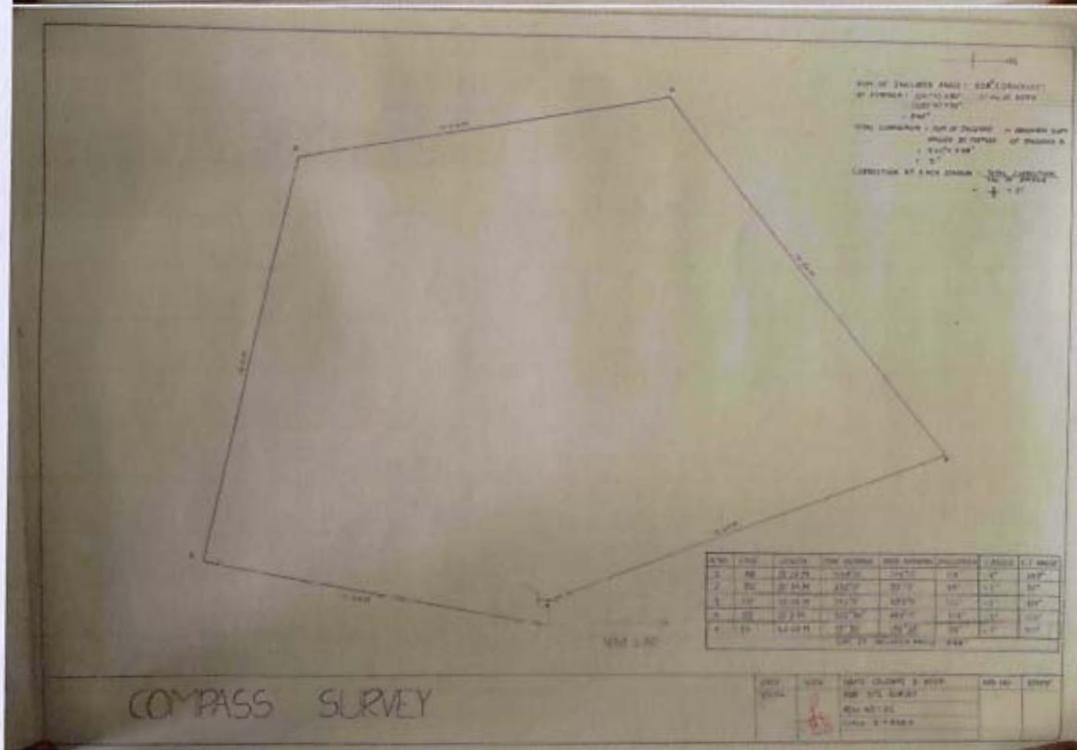
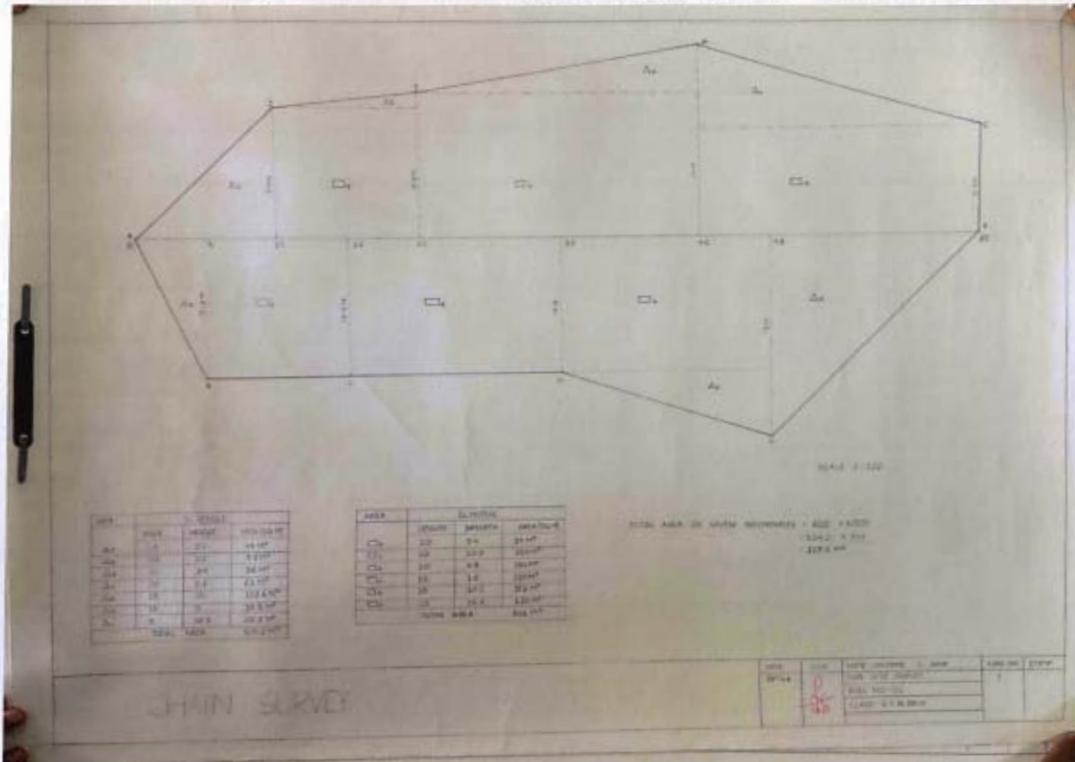
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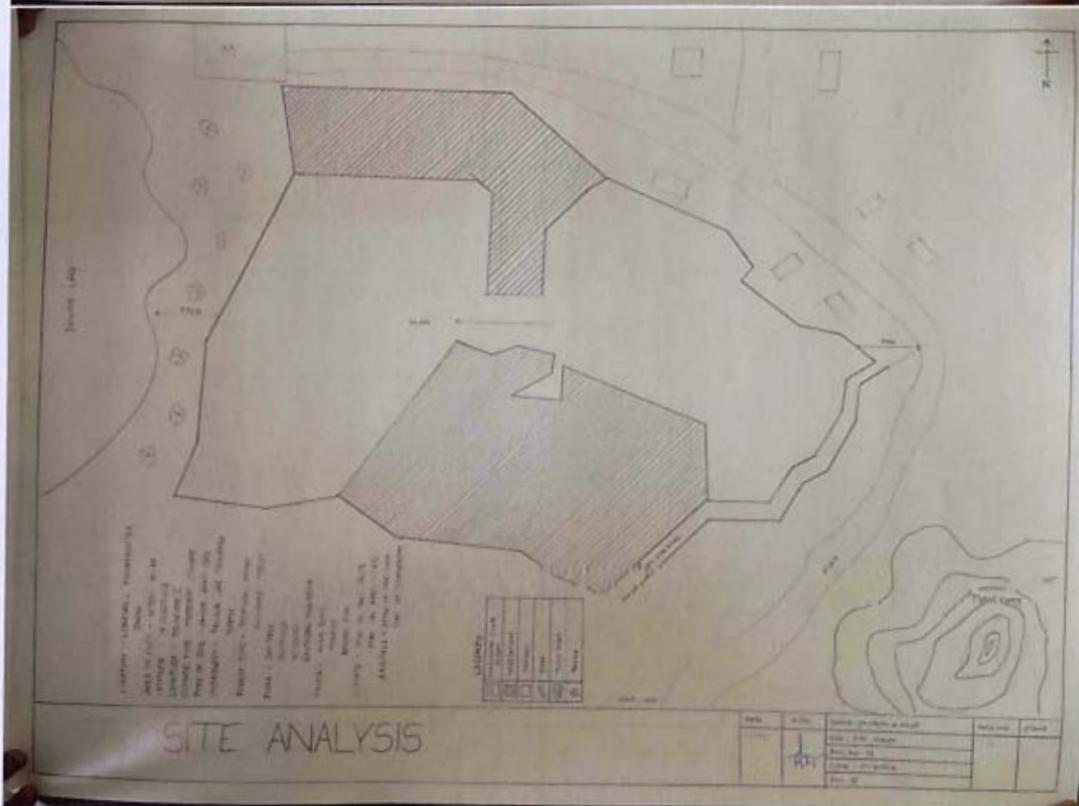
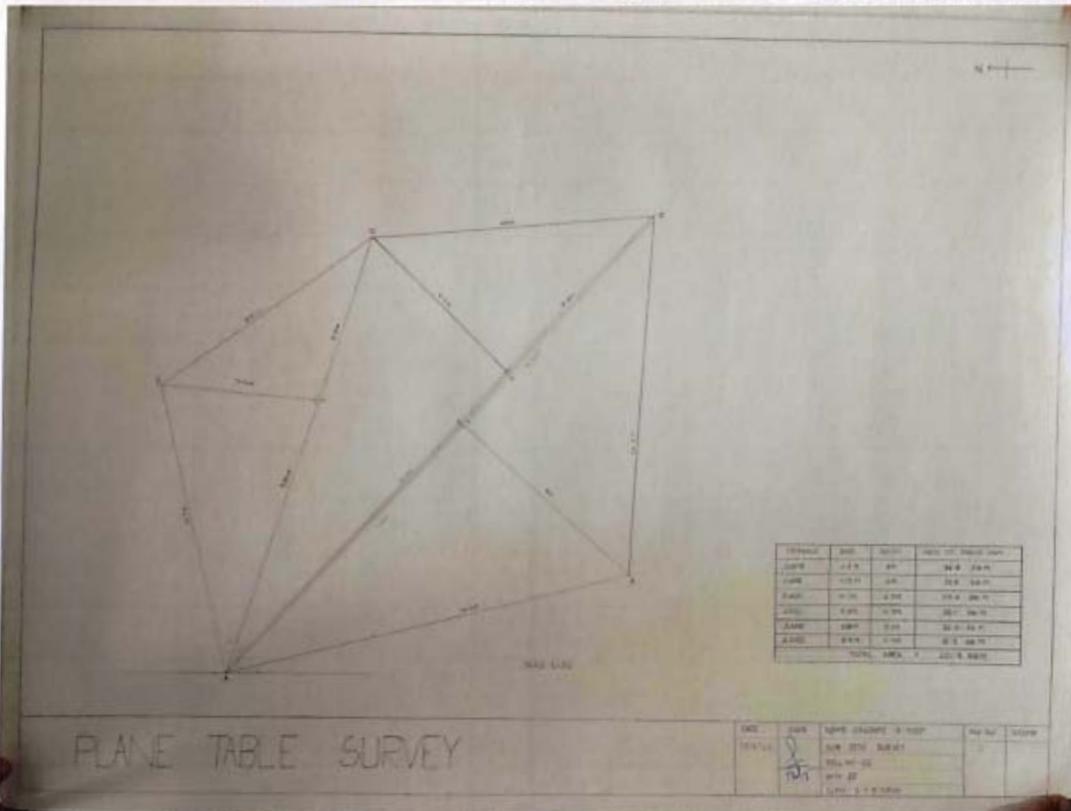
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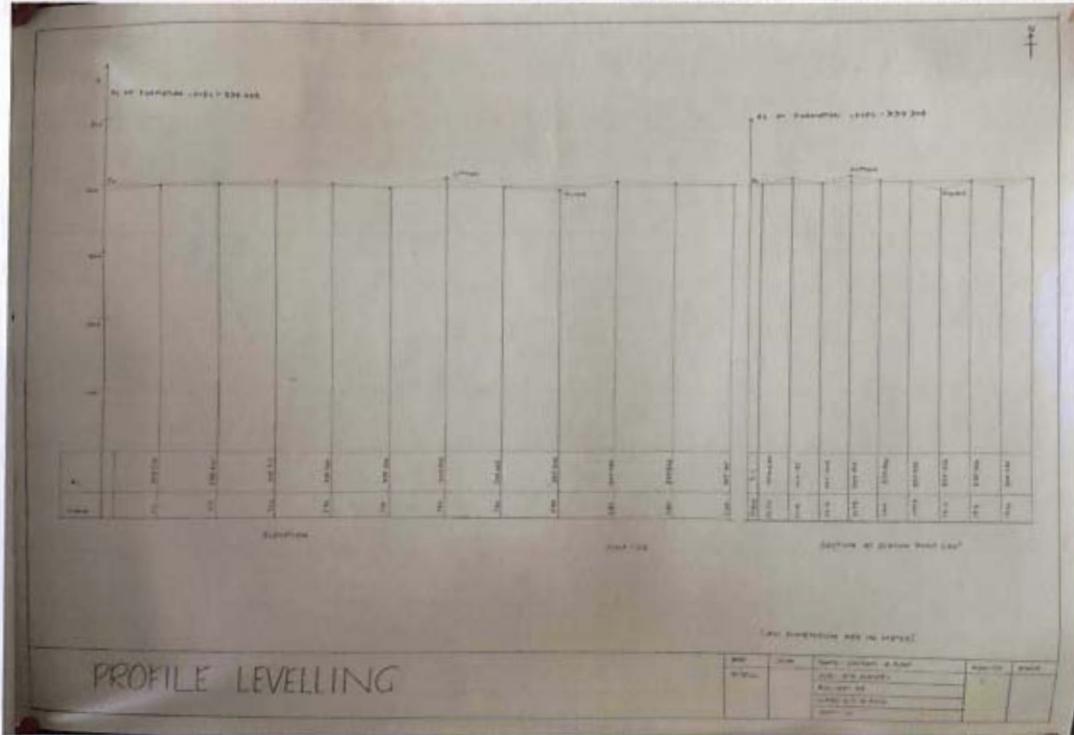
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### 1.3.3

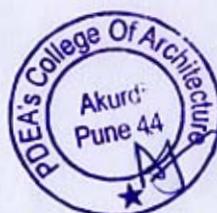
**Percentage of students undertaking project work/field work (data for latest completed academic year)**

**AY 2021-2022**

**Third Year B. Arch Courses**

**Project work/ Field work**

<b>REPORTS OF COURSES</b>	
<b>COURSE TTITLE</b>	<b>COURSE CODE</b>
Building Construction and Materials V	3201937 [SV] [2019 Pattern]
Building Services III	3201942 [SS] [2019 Pattern]
Landscape Architecture I	3201939 [SS] [2019 Pattern]
Architectural Design IV	3201935 [SV] [2019 Pattern]
Building Construction and Materials VI	3201946 [SV] [2019 Pattern]
Building Services IV	3201951 [SS] [2019 Pattern]
Architectural Design V	3201944[SV] [2019 Pattern]





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**Name of Program:** Bachelor of Architecture

**Name of Course:** Building Construction and Materials V

**Title of Assignment:** Design & detailing of suspended ceiling, partition, basement, furniture.

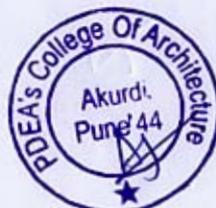
**Name of Faculty:** Ar. Deepali Randhe

**Academic year:** 2021-2022

**Semester:** V

<b>Objectives</b>	To introduce materials and technology of assembling interior elements like partitions, suspended ceiling, furniture units etc
<b>Date/ Duration of Activity</b>	15/06/2021 to 04/12/2021
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Samples Available
<b>Brief about the Program</b>	<b>Partitions and Paneling</b> <ul style="list-style-type: none"><li>• Study of demountable partition construction using proprietary and non-proprietary systems using non-timber materials</li><li>• Proprietary and non-proprietary systems of paneling in various materials</li></ul> <b>Suspended Ceiling</b> <ul style="list-style-type: none"><li>• Study of Suspended ceiling construction using proprietary and non-proprietary systems using various materials</li></ul> <b>Furniture Design and assembly</b> <ul style="list-style-type: none"><li>• Study of furniture for residential, commercial, office buildings and assembly details using timber and other material along with finishing and upholster</li></ul>
<b>Students Outcome/Work Sample</b>	Students will get to know the proprietary construction techniques for partition ceilings with latest available materials.

  
Faculty Incharge





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### TIMBER PARTITION

**ELEVATION**  
SECTION-AA'

**PLAN**  
KEY PLAN

### JOINERY DETAILS

**DETAIL-AA'**  
**DETAIL-AA''**  
**DETAIL-AA'''**  
**DETAIL-AA''''**

PARTITION - [NON-PROPRIETARY]

DATE	SIGN	NAME	FUNCTION	ASSISTANT

### NON-PROPRIETARY

**DETAIL-AA'**  
**DETAIL-AA''**  
**DETAIL-AA'''**

**SECTION-AA'**  
**SECTION-AA''**

**PLAN**  
**WALK-IN WARDROBE**

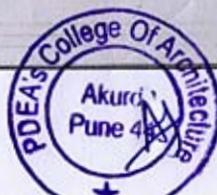
### PROPRIETARY

**GLASS FIXING DETAIL**  
**DOOR / FRAME HINGE DETAIL**

**ELEVATION**  
**PLAN**  
**WORKING DESK**

FURNITURE DESIGN

DATE	SIGN	NAME	FUNCTION	ASSISTANT





# Pune District Education Association's COLLEGE OF ARCHITECTURE

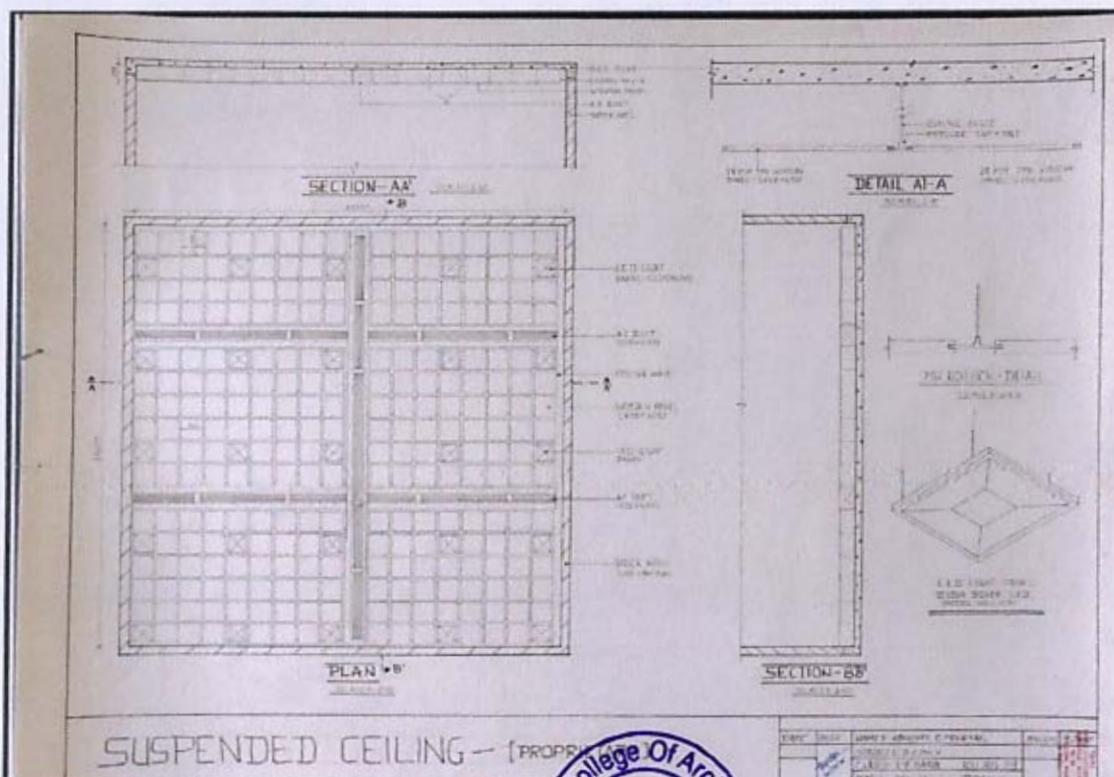
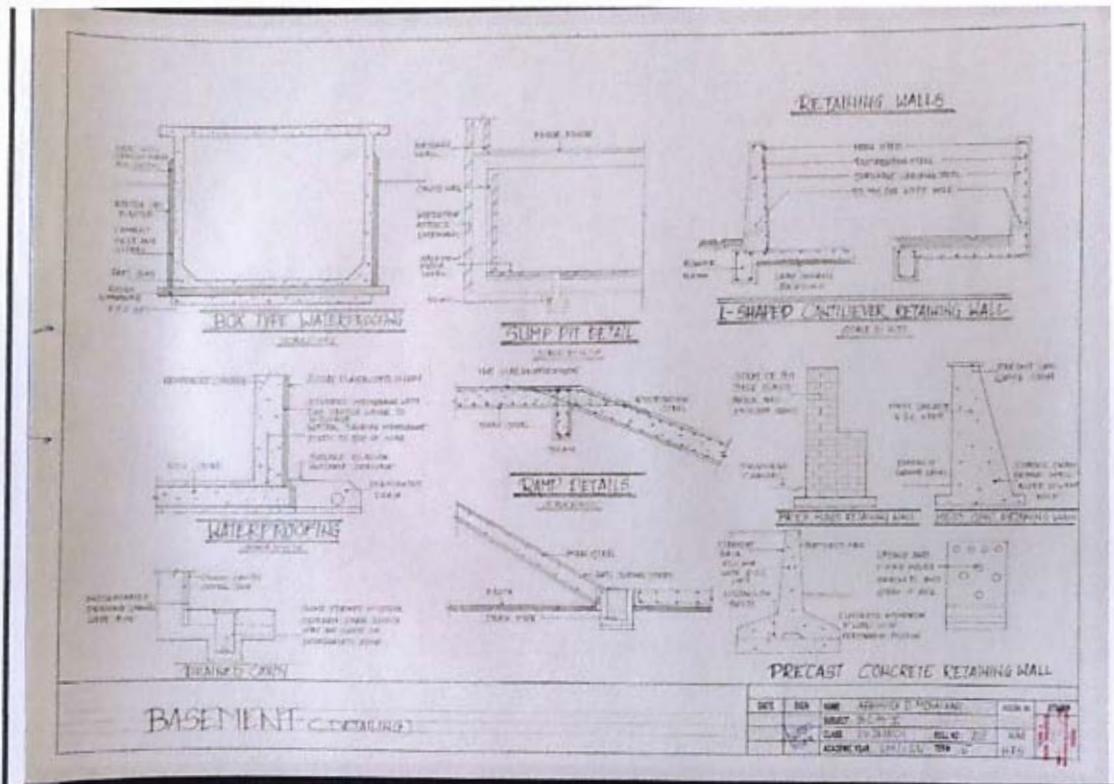
Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web : www.pdeacoa.edu.in





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**COLLEGE OF ARCHITECTURE**

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**Name of Program:** Bachelor of Architecture

**Name of Course:** Building Services III

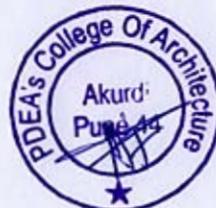
**Title of Assignment:** Types of Air conditioning systems

**Name of Faculty:** Prof. Prashant Gadre

**Academic year:** 2021-2022

**semester:** V

<b>Objectives</b>	<ul style="list-style-type: none"><li>• To comprehend building services as an integral part of architectural design process</li><li>• To obtain knowledge of technical and design aspects of natural ventilation, heating, cooling and HVAC</li></ul>
<b>Date/ Duration of Activity</b>	15/06/2021 to 04/12/2021
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Samples Available
<b>Brief about the Program</b>	<p><b>Natural ventilation</b></p> <ul style="list-style-type: none"><li>• Conditions of human thermal comfort</li><li>• Factors affecting natural ventilation</li><li>• Strategies to effect natural ventilation</li></ul> <p><b>Mechanical ventilation</b></p> <ul style="list-style-type: none"><li>• Systems of mechanical ventilation</li><li>• Components of mechanical ventilation systems</li><li>• Mechanical ventilation - Schematic design</li><li>• Introduction to Psychometric charts</li></ul>
<b>Students Outcome/Work Sample</b>	Students Work Sheets



**AIR CONDITIONING SYSTEM:-**

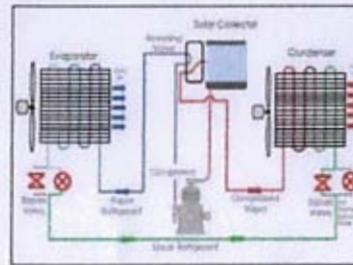
- AN AIR CONDITIONING SYSTEM IS AN ELECTRICAL DEVICE THAT IS PURPOSELY INSTALLED FOR THE REMOVAL OF HEAT AND MOISTURE FROM THE INTERIOR OF AN OCCUPIED SPACE. IT IS A PROCESS THAT IS COMMONLY USED TO ACHIEVE A MORE COMFORTABLE ENVIRONMENT. BASICALLY FOR HUMAN AND OTHER ANIMALS.
- AIR CONDITIONING SYSTEM IS ALSO USED TO COOL AND DEHUMIDIFY ROOMS THAT CONTAIN HEAT-PRODUCING ELECTRONIC DEVICES, SUCH AS COMPUTER SERVER, POWER AMPLIFIERS. IT ALSO USED IN SPACE THAT CONTAINS DELICATE PRODUCTS LIKE ARTWORK.
- COOLING IS GENERALLY ACHIEVED IN THE AIR CONDITIONING SYSTEM THROUGH A REFRIGERATION CYCLE. BUT SOMETIMES EVAPORATION OR FREE COOLING IS EMPLOYED. THE SYSTEM CAN ALSO BE MADE BASED ON DESICCANTS (CHEMICALS THAT ELIMINATE MOISTURE FROM THE AIR). MOST AC SYSTEM STORES AND REJECTS HEAT IN PIPES CALLED SUBTERRANEAN.

**PRINCIPLES OF AIR CONDITIONING:-**

- **PRINCIPLE OF COOLING:-**  
HEAT IS A FORM OF ENERGY. EVERY OBJECT ON EARTH HAS SOME HEAT ENERGY. THE LESS HEAT AN OBJECT HAS, THE COLDER WE SAY IT IS. COOLING IS THE PROCESS OF TRANSFERRING HEAT FROM ONE OBJECT TO ANOTHER. WHEN AN AIR-CONDITIONING SYSTEM COOLS, IT IS ACTUALLY REMOVING HEAT AND TRANSFERRING IT SOMEWHERE ELSE.
- **SENSIBLE HEAT:-**  
IT IS THE FORM OF HEAT ENERGY WHICH IS MOST COMMONLY UNDERSTOOD BECAUSE IT IS SENSED BY TOUCH OR MEASURED DIRECTLY WITH A THERMOMETER. WHEN WEATHER REPORTERS SAY IT WILL BE 90 DEGREES, THEY ARE REFERRING TO SENSIBLE HEAT.
- **LATENT HEAT:-**  
LATENT HEAT CAN NOT BE SENSED BY TOUCH OR MEASURED WITH A THERMOMETER. LATENT HEAT CAUSES AN OBJECT TO CHANGE ITS PROPERTIES. FOR EXAMPLE, WHEN ENOUGH LATENT HEAT IS REMOVED FROM WATER VAPOUR (STEAM OR HUMIDITY), IT CONDENSES INTO WATER (LIQUID).
- **CHANGE OF STATE:-**  
AN OBJECT THAT CHANGES FROM A SOLID TO A LIQUID OR LIQUID TO VAPOUR IS REFERRED TO AS A CHANGE OF STATE. WHEN AN OBJECT, IT TRANSFER HEAT RAPIDLY.
- **HUMIDITY:-**  
MOISTURE IN THE AIR IS CALLED HUMIDITY. THE ABILITY OF AIR TO HOLD MOISTURE DIRECTLY RELATES TO ITS TEMPERATURE. THE WARMER AIR IS, THE MORE MOISTURE IT IS CAPABLE OF HOLDING. WHEN THE HUMIDITY IS LOW, SWEAT EVAPORATES FROM OUR BODY MORE QUICKLY. THIS ALLOWS YOU TO COOL OFF FASTER. HIGH HUMIDITY CONDITIONS DO NOT ALLOW SWEAT TO EVAPORATE AS WELL BECAUSE THE AIR IS AT ITS MAXIMUM CAPACITY. HUMIDITY IS ALSO A FORM OF LATENT HEAT. WHEN AIR CONTAINS MORE HUMIDITY, IT HAS MORE LATENT HEAT.

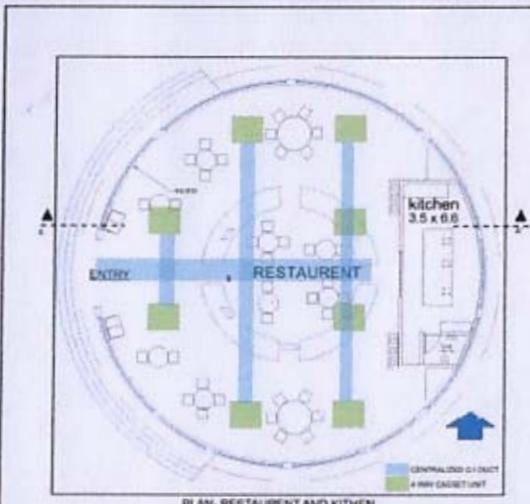
**COMPONENTS OF AIR CONDITIONING:-**

- **COMPRESSOR:-**  
THE COMPRESSOR IS THE ENGINE OF THE SYSTEM AS IT WORKS WITH A FLUID THAT EASILY TRANSFORMS THE GAS INTO A LIQUID. ITS PRIMARY FUNCTION IS TO CONVERT LOW-PRESSURE GAS INTO A HIGH-PRESSURE GAS, WHICH HAS A HIGH TEMPERATURE. IN ITS WORKING, THE GAP BETWEEN MOLECULES GET NARROWED DOWN WITH A PRODUCED ENERGIZED GAS. THIS ENERGIZED GAS WHICH ALSO KNOWN AS A REFRIGERANT IS RELEASED FROM THE COMPRESSOR AND ENTERS THE CONDENSER.
- **CONDENSER COIL:-**  
THE CONDENSER COIL CONTAINS A FAN THAT COOLS THE HIGH-PRESSURE GAS AND CONVERTS IT INTO A LIQUID. THE PRODUCT OBTAINED USED BY THE EVAPORATOR TO DO THE WORK. THE COMPRESSOR AND CONDENSER ARE ONES PLACED OUTSIDE OF THE HOUSE.
- **THERMOSTAT:-**  
THE THERMOSTAT MAINTAINS THE TEMPERATURE OF AN AIR CONDITIONING SYSTEM AS IT REGULATES THE HEAT ENERGY INSIDE AND OUTSIDE OF IT. DEPENDING ON THE DESIGN, A THERMOSTAT CAN SET MANUALLY OR AUTOMATICALLY.
- **EVAPORATOR:-**  
EVAPORATORS ARE AIR CONDITIONING COMPONENTS FOUND INSIDE THE HOUSE NEAR THE FURNACE. IT'S CONNECTED TO THE CONDENSER WITH AN EXTREME THIN PIPE. THE HIGH-PRESSURE GAS IS TRANSFORMED INTO A LOW-PRESSURE LIQUID OF THE AIR CONDITIONER. THE LIQUID IS THEN CONVERTED TO GAS DUE TO THE DECREASING PRESSURE. THE FLUID OR REFRIGERANT IS WHAT TAKES AWAY THE HEAT FROM THE AND COOLS IT OFF. THE EVAPORATOR RELEASES THE FLUID IN FORM OF A GAS IN ORDER TO GET COMPRESSED AGAIN BY THE COMPRESSOR. ALL OF THESE HAPPENS IN A CYCLIC FASHION.
- **AIR HANDLER AND BLOWING UNIT:-**  
THIS AIR CONDITIONER COMPONENTS WORK TOGETHER TO DRAW THE AIR TO THE EVAPORATOR AND DISTRIBUTE COOL AIR OVER THE ROOM. A DUCT SYSTEM FACILITATES THE PASSAGE OF AIRFLOW IN THE ROOM.



**AIR CONDITIONING-1**

DATE	NAME - ABHISHEK D MOHALKAR	STAMP
22-SEP-22	SUBJECT - BS-III CLASS - TY B ARCH	
SIGN	YEAR-2021-22 ROLL NO - 2019100	



**HEAT LOAD CALCULATION FOR RESTAURANT**

S/NO	HEAT SOURCE	AREA IN SQFT	'R' MULTIPLYING FACTOR	'C' HNTS COOLING LOAD * A * R
11	AREA OF WINDOW	W * H * X NUMBERS	CONSIDERING ARRANGING CURTAINS AND SHADING AS WELL	
	NORTH SIDE	6.6 * 2.1 * 2 = 28.38	85	2412.3
	SOUTH SIDE	6.6 * 2.1 * 2 = 28.38	85	2412.4
	WEST SIDE	6.6 * 2.1 * 2 = 28.38	85	2412.4
12	WALL AREA	L * W - AREA WINDOW	CONSIDERING BRICK WALL	
	NORTH SIDE	11.7666 - 24.78 = 22.29	85	1911.2
	SOUTH SIDE	11.7666 - 24.78 = 22.29	85	1911.4
	WEST SIDE	11.7666 - 24.78 = 22.29	85	1911.4
	EAST SIDE	11.7666 - 24.78 = 22.29	85	1911.4
	DOOR AREA	2.1 * 1.8 = 3.78	100	630
13	MULTIPLY WALL AREA	6.6 * 1.7666	8	211.2
	KITCHEN WALL 1	6.6 * 2.1 = 13.86	8	324
	KITCHEN WALL 2	6.6 * 2.1 = 13.86	8	324
14	FLOOR AREA	6.6 * 11.7666	12 (LARGEST FLOOR)	2133.6
	BY INDICATING KITCHEN AREA AND WALL			
	TOTAL FLOOR AREA OF RESTAURANT	117.6		1421.4
15	CEILING AREA	WALL AREA FLOOR * 1.176	8 (SMALLEST)	5000
16	NUMBER OF PEOPLE	25	120 (EATING)	3000
17	LIGHTS AND APPLICATIONS	0	300	440
18	LED LIGHTING	0	35	25
19	PLANTS	0	7	14
20	LIGHTS	25	50	1250
21	WARRANTY	1	100	100
22	INSULATION	0	500	1000
	SENSIBLE COOLING			17711.2
	SENSIBLE HEATING			17711.2
	TOTAL COOLING CAPACITY			22.42

FOR RESTAURANT WE CAN PROVIDE CENTRALIZED DUCTABLE A/C SYSTEM

WE PROVIDE VOLTA 4 WAY SUSPENDED CEILING CASSET AC OF 1 TON MODEL NO - 182 C2AA

BY ASSUMING COOLING CAPACITY OF EACH CASSET 1 TON=3.51KW SO WE REQUIRED 8 UNITS OF 1 TON FOR THE RESTAURANT.

THEREFORE, TOTAL NO OF 8 CASSET UNITS OF 1 TON ARE REQUIRED FOR COOLING RESTAURANT.

**AIR CONDITIONING-3** (SCHEMATIC CALCULATION)

DATE	NAME - ABHISHEK D MOHALKAR	STAMP
22-SEP-22	SUBJECT - BS-III CLASS - TY B ARCH	
SIGN	YEAR-2021-22 ROLL NO - 2019100	



### SPLIT AIR CONDITIONING

**GENERAL INFORMATION**

**TYPE:-** RESIDENTIAL BUILDING

**LOCATION:-** FLAT NO- 307, SHUBHSHREE RESIDENCE, PHASE-2, NEAR JAY GANESH INDX, AKURDI.

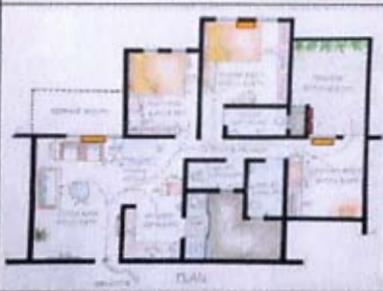
**OWNER:-** MRS. ANURADHA SALUNKHE

**DATE VISITED:-** 16 OCT 2021

**NO. OF UNITS >** 3 HIGH WALL AC UNITS

**COMPANY:-**  
1) HITACHI  
2) PANASONIC  
3) BLUE STAR

**SUPPLIER >** GANESH WALHEKAR



**PLAN SHOWING PLACEMENT OF INDOOR AND OUTDOOR UNITS**

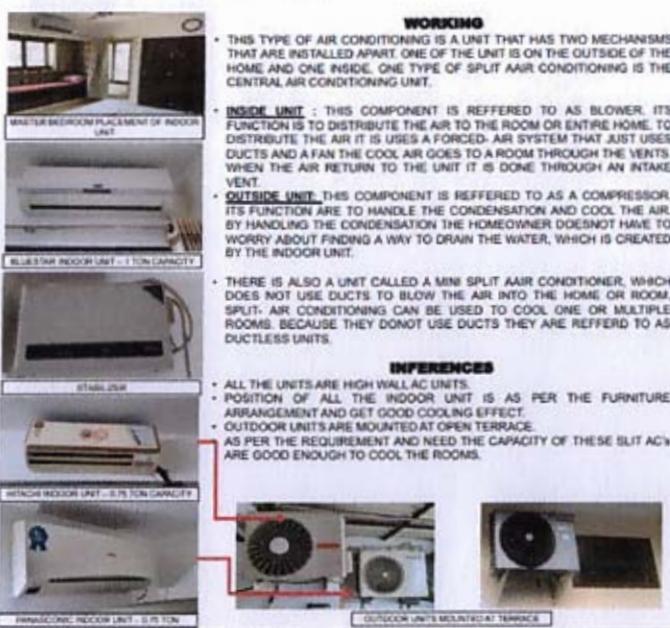
INDOOR AC UNITS  
OUTDOOR UNITS

**WORKING**

- THIS TYPE OF AIR CONDITIONING IS A UNIT THAT HAS TWO MECHANISMS THAT ARE INSTALLED APART. ONE OF THE UNIT IS ON THE OUTSIDE OF THE HOME AND ONE INSIDE. ONE TYPE OF SPLIT AIR CONDITIONING IS THE CENTRAL AIR CONDITIONING UNIT.
- INSIDE UNIT :** THIS COMPONENT IS REFERRED TO AS BLOWER. ITS FUNCTION IS TO DISTRIBUTE THE AIR TO THE ROOM OR ENTIRE HOME. TO DISTRIBUTE THE AIR IT USES A FORCED- AIR SYSTEM THAT JUST USES DUCTS AND A FAN THE COOL AIR GOES TO A ROOM THROUGH THE VENTS. WHEN THE AIR RETURN TO THE UNIT IT IS DONE THROUGH AN INTAKE VENT.
- OUTSIDE UNIT:** THIS COMPONENT IS REFERRED TO AS A COMPRESSOR. ITS FUNCTION ARE TO HANDLE THE CONDENSATION AND COOL THE AIR. BY HANDLING THE CONDENSATION THE HOMEOWNER DOESNOT HAVE TO WORRY ABOUT FINDING A WAY TO DRAIN THE WATER, WHICH IS CREATED BY THE INDOOR UNIT.
- THERE IS ALSO A UNIT CALLED A MINI SPLIT AIR AIR CONDITIONER, WHICH DOES NOT USE DUCTS TO BLOW THE AIR INTO THE HOME OR ROOM. SPLIT- AIR CONDITIONING CAN BE USED TO COOL ONE OR MULTIPLE ROOMS. BECAUSE THEY DONOT USE DUCTS THEY ARE REFERRED TO AS DUCTLESS UNITS.

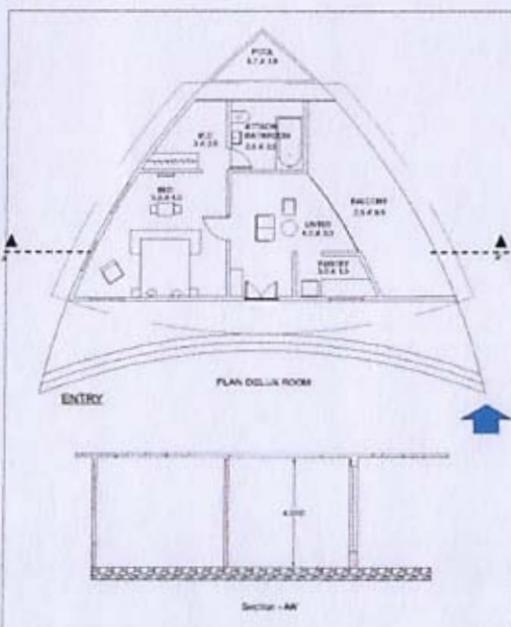
**INFERENCE**

- ALL THE UNITS ARE HIGH WALL AC UNITS.
- POSITION OF ALL THE INDOOR UNIT IS AS PER THE FURNITURE ARRANGEMENT AND GET GOOD COOLING EFFECT.
- OUTDOOR UNITS ARE MOUNTED AT OPEN TERRACE.
- AS PER THE REQUIREMENT AND NEED THE CAPACITY OF THESE SPLIT AC'S ARE GOOD ENOUGH TO COOL THE ROOMS.



<b>AIR CONDITIONING-3 (ON SITE CASE STUDY)</b>	DATE	NAME- ABHISHEK D MOHALKAR	STAMP
	22-SEP-22	SUBJECT- BS-III CLASS- TY BARCH	
	SIGN	YEAR-2021-22 ROLL NO- 2019109	

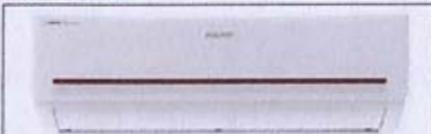
### HEAT LOAD CALCULATION FOR COTTAGES ROOM



Section - AA

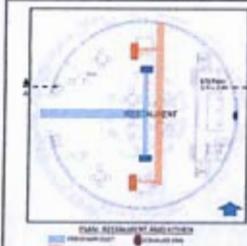
STEP	HEAT SOURCE	W AREA IN SQMT	U FACTOR	W MULTPLYING FACTOR	WATTS COOLING LOAD = A x B
1)	AREA OF WINDOW	W X H X NUMBERS		CONSIDERING AIRWAYS, CURTAINS AND BLINDS AS WELL	
	NORTH SIDE		05		
	SOUTH SIDE	1.2 X 1.2 X 1 = 1.44	05		50.8
2)	WALL AREA	L X H X 2 X 2 = 2.88	05	CONSIDERING BRICK WALL	167.2
	DEDUCTING WINDOW AREA				
	NORTH SIDE	3.6 X 1.8 = 6.48	05		251.04
3)	FLOOR AREA	16.5	12 (CONCRETE)		254
	NORTH SIDE	5.16 X 4 = 20.76	05		104.04
	SOUTH SIDE	5.16 X 4 = 20.76	05		104.04
4)	CEILING AREA	SHAB AS FLOOR = 16.5	8 (INSULATED)		156
	NUMBER OF PEOPLE	2	120 (SEATING)		240
	LED TELEVISION	1	200		200
5)	ALSO SYSTEM	1	30		30
	ROUTER	1	7		7
	LIGHTS	4	50		200
					<b>TOTAL</b>
					SENSIBLE COOLING LOAD
					1693.2
					RECALCULATED TONNAGE = 1.5 TON

FOR SEMI DELUX ROOM WE PROVIDE THE SPLIT AIR CONDITIONING FOR ONLY BEDROOM  
TOTAL COTTAGES IN RESORT PLANNING 10 COTTAGES.  
THEREFORE FOR BEDROOM WE PROVIDE 1.5 TON AC OF FOR EVERY COTTAGES WE PROVIDE VOLTAS AC OF 1.5 TON  
MODEL NO- [www.voltas.com](http://www.voltas.com)



<b>AIR CONDITIONING-3 (SCHEMATIC CALCULATION)</b>	DATE	NAME- ABHISHEK D MOHALKAR	STAMP
	22-SEP-22	SUBJECT- BS-III CLASS- TY BARCH	
	SIGN	YEAR-2021-22 ROLL NO- 2019109	

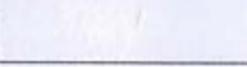




PLAN RESTAURANT DIMENSIONS  
3000 X 16 X 4 M



PLAN KITCHEN  
4M X 23.1 X 4



PLAN TOILET  
2.6 X 2.5

**RESTAURANT**  
VOLUME OF THE RESTAURANT =  $V = \frac{4}{3} \pi R^2 \times H$   
=  $3.14 \times 16 \times 16 \times 4 \text{ M}$   
= 803.84 CUM

AIR CHANGES PER HOUR REQUIREMENT FOR RESTAURANT = 10/HR  
TOTAL VOLUME OF AIR TO BE CHANGED IN HOUR =  $803.84 \times 10$   
= 8038.4 CUM/H

- CONSIDERING THE VOLUME OF AIR CHANGES REQUIRED AND SIZE OF RESTAURANTS WE SHALL PROVIDE TWO SEPARATE SUPPLY AND RETURN DUCT VENTILATION SYSTEM AS SHOWN IN DIAGRAM.
- ASSUMPTION MAIN DUCT VELOCITY = 7M/S
- BRANCH DUCT = 3M/S AS THERE ARE TWO OUTLETS AND INLETS AIR VOLUME PER VENT =  $4019.2 \text{ CUM/HR} = 1.11 \text{ m}^3 \times 1.5 \text{ CUM/SEC}$
- ENTRY POINT VOLUME IN MAIN DUCT = 3 CUM
- BRANCH DUCT AREA REQUIRED =  $A = \frac{\text{VOLUME}}{\text{VELOCITY}} = 1.5/3$   
= 0.5 SQMT
- FOR RECTANGULAR DUCT ASSUMING 1:2 ASPECT RATION DUCT SIZE WILL BE 0.5 X 1M
- MAIN DUCT AREA REQUIRED =  $A = 3/7 = 0.42 \text{ SQMT}$
- FOR RECTANGULAR DUCT ASSUMING 1:2 ASPECT RATION DUCT SIZE WILL BE 0.5 X 1 M
- NOTE- VELOCITY DAMPERS WILL BE PROVIDED AT THE ENTRY POINT OF BRANCH DUCT TO REDUCE VELOCITY

**KITCHEN**

- KITCHEN AREA OF THE KITCHEN =  $(8.6 \times 3.5) = 23.1 \text{ SQMT}$
- VOLUME OF KITCHEN CONSIDERING CEILING HEIGHT =  $4M \times 23.1 \times 4$   
= 92.4 CUM
- AIRCHANGES PER HOUR REQUIREMENT FOR KITCHEN = 20/HR
- TOTAL VOLUME OF AIR TO BE CHANGED IN HOUR =  $92.4 \times 20$   
= 1848 CUM/HR
- CONSIDERING KITCHEN SIZE AND TOTAL VOLUME OF AIR EXCHANGE PER HOUR LETS PROVIDE EXHAUST FAN.

**TOILET**

- AREA OF THE TOILET =  $(2.6 \times 2.5) = 6.5 \text{ SQMT}$
- VOLUME OF KITCHEN CONSIDERING CEILING HEIGHT =  $3M$   
=  $6.5 \times 3$   
= 19.5 CUM
- AIR CHANGE REQUIRED FOR TOILET PER HR =  $19.5 \times 5$   
= 97.5 CUM/HR
- WILL PROVIDE WALL MOUNTED EXHAUST FOR TOILET.

**DUCT FOR RESTAURANT**



CENTRIFUGAL BLOWER BY HICOOL - MODEL NO **CFBZE-120E**  
<http://www.hicool.com/Products/CFBZE-120E>



EMMENT SUCTION FANS BELT DRIVE - STANDARD 'EMMENT SYSTEM' CENTRIFUGAL INDUCED DRAFT FAN FOR RETURN OF AIR MODEL NO 2035 WITH VOLUME FLOW OF 25000 CUM/HR

**EXHAUST FOR KITCHEN**

SPECIFICATIONS			
SWEEP SIZE (MM)	POWER INPUT (WATT)	SPEED (RPM)	AIR DELIVERY
300 MM	70 W	1400 PER MIN	1850 CUM / HR

<http://www.havells.com/Products/ventilator>

HAVELLS - VENTILAIR D6

**EXHAUST FOR TOILET**

SPECIFICATIONS			
SWEEP SIZE (MM)	POWER INPUT (WATT)	SPEED (RPM)	AIR DELIVERY
150 MM	48 W	2700 PER MIN	400 CUM / HR

<http://www.havells.com/Products/ventilator>

HAVELLS - VENTILAIR D5

<b>MECHANICAL VENTILATION (SCHEMATIC DESIGN)</b>	DATE	NAME:- ABHISHEK D MOHALKAR		STAMP
	22-SEP-22	SUBJECT:- 85-III	CLASS:- TY B.A.RCH	
	SGN	YEAR:2021-22	ROLL NO:- 2019109	





Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web. : www.pdeacoa.edu.in

**Name of Program:** Bachelor of Architecture

**Name of Course:** Landscape Architecture I

**Title of Assignment:** Mughal Landscape Architecture

**Name of Faculty:** Ar. Shivali Lalbhige

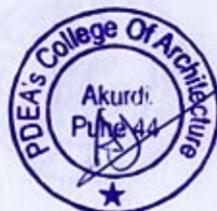
**Academic year:** 2021-2022

**semester:** V

<b>Objectives</b>	<ul style="list-style-type: none"><li>To understand the elements and principles of landscape design and role of landscape elements in design of outdoor environments on the site</li><li>To develop understanding of site analysis and site planning and integrated design of open and built spaces.</li></ul>
<b>Date/ Duration of Activity</b>	15/06/2021 to 04/12/2021
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Samples Available
<b>Brief about the Program</b>	<ul style="list-style-type: none"><li>Study of Hard landscape (civil work) details with respect to materials and construction techniques.</li><li>Study of Softscape (plant material), their characteristics and contribution in terms of creating and imparting character to outdoor spaces.</li></ul>
<b>Students Outcome/Work Sample</b>	Experiential learning of above mentioned characteristics helps students to make appropriate landscape design decisions in their design proposals.

*Shivali Lalbhige*

**Faculty Incharge**



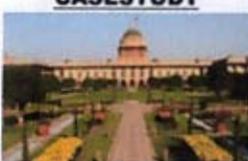
**CASE STUDY**

**RASHTRAPATI BHAVAN**

- Location:- Delhi, India
- Type :-Mughal Garden
- Architect-Edwin Lutyens
- Landscape Designer-William Mumton
- Plantings Done:- 1928-1929
- Area:- 15 Acres

**INTRODUCTION**

- Mughal gardens has often been portrayed, and deservedly so, as the soul of the presidential palace.
- The Mughal gardens draw its inspiration from the Mughal gardens of Jamuna and Kashmir, the gardens around the Taj mahal and even miniature paintings of India and Persia.
- Sir Lutyens brought together two different horticulture traditions together for the first time, the Mughal style and the English flower garden.
- Main canals, terraces and flowering shrubs are beautifully blended with European flowerbeds, lawns and private hedges.
- Rose remains a key feature of the Mughal gardens even today.
- The gardens boasts of growing 159 celebrated varieties of roses which blossom primarily in the month of February and march.
- There are more than seventy varieties of seasonal flowers including exotic bulbous and winter flowering plants.
- The gardens has almost 50 varieties of trees, shrubs and vines including mesquite tree, golden rain tree, flower bearing torch tree and many more.
- It is said that the large geometrical designs of the garden can only be appreciated from the first story of the building.
- First being the **Rectangular garden**, followed by **Long garden** and finally the **Circular garden**.



Rectangular garden



Long garden

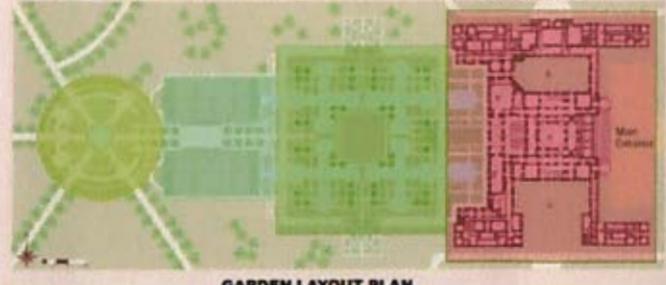


Circular garden.

**MUGHAL GARDENS**

- Main Building Block
- Rectangular Garden
- 1 Central Lawn
- 2 Water Fountains With Charbagh Layout
- 3 Long Garden
- 4 Rose Beds
- 4 Red Sandstone Pergolas
- 5 Circular Garden
- 5 Central Fountain
- 6 Central Pathways

- Durrat Hall
- North Court
- South Court
- Shikhar Chhatra
- Ball Room



**GARDEN LAYOUT PLAN**

**MUGHAL GARDENS**

**RECTANGULAR GARDEN**

- The rectangular garden is closest to the rashtrapati bhavan main building.
- Two parallel channels run north and south, intersecting with two others running from east to west.
- These water canals divide the garden into a grid of squares. At the intersection of these channels, sandstone fountains whose shape has been inspired by the victoria regia lily, has water jets up 12 feet. Moulairi trees are neatly planted around the garden.
- The two main gardens of this area are the east lawn and the central lawn.
- While the east lawn is adjacent to the building and is in oblong shape, the central lawn is square in shape and its side measures 45 metres.
- The central lawn of the rectangular garden is the main venue for the annual ceremonies hosted by the president of India on republic day and independence day.
- There are terrace gardens on two sides of the rectangular garden.
- In the centre of both these gardens is a fountain which falls inwards, making a well.
- At the end of these gardens stand two tall sand stone gazebos designed by lutyens.
- Gazebo, a structure often built to provide shelter and shade in large open areas, has been given a natural shelter at the Mughal gardens by the four **putranjiva rosburghii trees** that are planted at its four corners.
- There are narrow water chutes running through this garden and joining the main canals, bearing peculiar resemblance to the Mughal architecture where water plays a key role.
- Creatively designed, these water chutes flow through several levels of steps and have fish-like motifs carved on them, giving an impression of fishes in water.



Sandstone fountain



Central lawn



Putranjiva rosburghii trees

**MUGHAL GARDENS**



**SITE PLAN**

**MUGHAL GARDENS**





# Pune District Education Association's COLLEGE OF ARCHITECTURE

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



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## LONG GARDEN

- Long garden is predominantly a rose garden containing 16 rose beds.
- This garden is 430 feet in length and is enclosed by walls that are about 12 feet high and hence it is often known as the purdha garden.
- Besides popular and heritage varieties of roses like rose ice berg, rose summer snow, rose olda homa, rose louisiana and more, the beds are margined with dahlia, marigold, salvia, gazania, oxalis, ranunculus and iris.
- The central pavement has a red sandstone pergola that is covered with rose creepers, patra, bougainvilleas and grape vines.
- On both sides of the pergola, rows of sandstone elephant trunks can be seen.
- This seems to be yet another way of huyens for introducing an Indian feature in his architecture.
- The 17 feet high walls are covered with creepers like flame vine, trumpet creeper, can bel and jasmine that add fragrance to the garden.
- At intervals on the walls, one can see the china orange trees or kumquats that have been planted. Long garden leads to the circular garden.



Rose garden



Red sandstone pergola



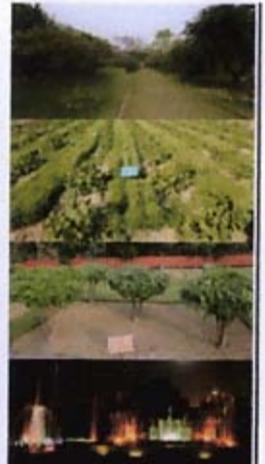
Circular garden with bubble fountain at centre

## CIRCULAR GARDEN

- The circular garden is also known as the sunken garden or pearl garden because of its shape. Originally called the butterfly garden, huyens said, "I am making a butterfly garden - of all the plants butterflies like."
- Its amphitheater like structure is contained by rings of flower beds that are planted with fragrant varieties of stock, phlox and pansies of different colors, marigold, viola, alyssum and many more.
- The garden contains more than 30 varieties of seasonal flowers including dahlias that are upto eight feet in height and are grown around the circular wall of the garden.
- A bubble fountain concealed in a circular pond forms the centre of this garden.
- The pond has lotus flowers and is edged with calendula and marigold.

## THE BOTANICAL SPECIES AND GARDEN

- The gardens boasts of growing 159 celebrated varieties of roses which blossom primarily in the month of February and march.
- They include, adora, miralind, Taj mahal, Eitel tower, modern art, secretmental, Oklaboma (also called black rose), botani, black lady, paradise, blue moon and lady s.
- The Mughal gardens also include roses named after people of national and international fame such as mother Teresa, raja ram Mohan Roy, Mr. Lincoln, john F. Kennedy, jawahar, queen Elizabeth, Christian Dior amongst others. Arjan and thim, from the Mahabharata, also find place in the presidential palace.
- Apart from roses, tulips, Asiatic lilies, daffodils, hyacinth and other seasonal flowers beautify the gardens of rashtrapati bhavan.
- There are more than 70 varieties of seasonal flowers including exotic bulbous and winter flowering plants.
- The garden also grows 60 of the 101 known types of bougainvillea's, edging and flowering of flower beds is done with alyssum, daisy, pansy etc.
- The grass that covers the garden is the doh grass, which was originally brought from Calcutta (now Kolkata) when the Mughal gardens was being planted.
- The gardens has almost 50 varieties of trees, shrubs and vines including moabiri tree, golden rain tree, flower bearing torch tree and many more.
- During the time of c. Rajagopalachari, a portion of the grounds was used to cultivate wheat, as a gesture to address the problem of shortage of food in the country.
- President Kalam had contributed by making herbal gardens, tactile gardens for the visually handicapped, musical gardens, bio-fuel park, spiritual and nutrition garden and more.
- The bonsai garden and nature trails in rashtrapati bhavan were president pratibha patil's contribution.



Botanical species and garden at Rashtrapati bhavan

## MUGHAL GARDENS

## FLORA AND FAUNA

- The 330 acres of land at the president's estate harbours a rich biodiversity.
- Open spaces, forest cover, parks, gardens, patches of wilderness, numerous fruit bearing trees and water bodies, have all contributed in supporting rich flora and fauna of the rashtrapati bhavan.
- A nature trail spread over 75 acres has been developed in the estate for its residents to raise awareness about nature conservation.
- The main features of the nature trail are the pond ecosystem, butterfly corner, ber groove, mango orchard, peacock point, orangery, the forest ecosystem, the mica point amongst others.
- Hundred and thirty six wild and cultivated plant species and eighty four animal species comprising forty two invertebrates and an equal number of vertebrates like frogs, garden lizards, snakes etc. Have been sighted along the trail.
- A total of thirty two bird species have also been sighted along the trail includes myna, red vented bulbul, indian grey heronbill and more. However, dr. Thomas mathew, in his book winged wonders of rashtrapati bhavan has captured one hundred and eleven species of birds in their habitats at the rashtrapati bhavan. They included species like egyptian vulture, red-rumped ibis, Spanish sparrow, Asian brown flycatcher, rufous troopie, common wood-shrike, indian grey heronbill and many more.
- Noted trees of the estate include, vitta ashok, bishendu, shisham, gah, guard trees, wild almond, lemon-scented gum, dachs sirs and more.
- Around 5000 trees of 160 species are a part of the estate.
- Around 2000 different varieties of trees were planted in the rashtrapati bhavan estate, including 1000 fruit bearing trees like indian gooseberry, guava, pomegranate, custard apples, mango, jaman etc.



Flora and fauna at Rashtrapati bhavan

## MUGHAL GARDENS

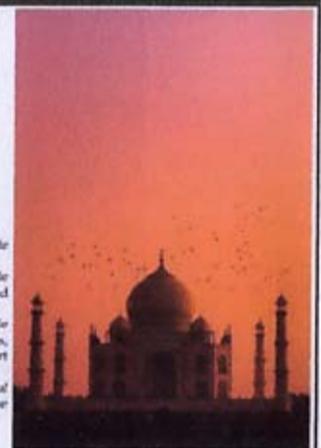
## MUGHAL GARDENS

## TAJ MAHAL

- Location:- Agra, India
- Type :-Mughal Garden
- Architect:-Ustad Ahmad Lahauri, and Mir Abd-ul Karim.
- Built - 1632-1653
- Area - 300 sq. m

## INTRODUCTION

- Built by emperer Shah Jahan in 1631 in memory of his third wife who died during child birth.
- The Taj Mahal is a magnificent and well kept white marble mausoleum located in the town of Agra in India, and is considered a world heritage site.
- Stunning example of Mughal architecture that utilizes a style combining elements of Persian, Turkish and Indian architectures, and is recognized world wide as a crowning symbol of Muslim art in India.
- To compliment this architectural wonder, the Taj Mahal garden spans the entire distance from the gate to the front of the mausoleum and is a favorite of many visitors.



View Of Taj Mahal

## MUGHAL GARDENS







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**Name of Program:** Bachelor of Architecture

**Name of Course:** Architectural Design IV

**Title of Assignment:** Hotel Virtual Case Study

**Name of Faculty:** Ar. Abhijit Bhagat, Ar. Deepali Randhe

**Academic year:** 2021-2022

**Semester:** V

<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand Hotel a design typology.</li><li>• To study various design approaches of renowned architects by analyzing their published works.</li></ul>
<b>Date/ Duration of Activity</b>	15/06/2021 to 04/12/2021
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Samples Available





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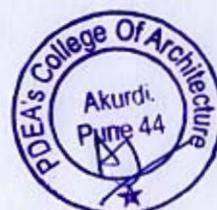
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<b>Brief about the Program</b>	<p>To understand Architectural Design as a process of generating design brief and taking design decisions based on the following aspects:</p> <p><b>Socio-Cultural Aspects:</b> To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.</p> <p><b>Aesthetics:</b> To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).</p> <p><b>Anthropometry &amp; Function:</b> To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)</p> <p><b>Climate:</b> To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.</p> <p><b>Building Material and Construction Technology:</b> To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.</p> <p><b>Building Services:</b> To understand the spatial and structural implications of basic services involved in building design.</p> <p><b>Site :</b> To understand the site and its context, both immediate and wider, in order to enable students to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.</p>
<b>Students Outcome/Work Sample</b>	Students understood planning principals and design process through analyzing drawings and photos of executed projects

Faculty Incharge





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**CASE STUDY**

**SANGAM ELEMENTARY SCHOOL,  
BHILWARA-RAJASTHAN**

NAME- ABHISHEK D MOHALKAR    SUBJECT- DESIGN-IV    CLASS- T.V B.ARCH    ROLL NO- 201909

**CASE STUDY**      SANGAM ELEMENTARY SCHOOL

**STRUCTURE**

- AS THE RAJASTHAN IS IN HOT AND DRY CLIMATIC REGION SO NEED TO FRESH AND COOL AIR THROUGH THE YEAR.
- THE PLANNING IS DONE WITH THE CONSIDERATION OF CLIMATIC CONDITIONS.
- THE BUILDING IS A THREE STORIED STRUCTURE. THE BUILT FORM IS HIGHLY PERFORATED AND HAS TWO COURTYARDS WHICH PERMIT FILTERED DAYLIGHT TO SEEP INTO THE CORRIDORS. THE COURTYARDS HELP REDUCE THE HEAT GAIN AND PROVIDE EFFICIENT AIR CIRCULATION IN THE ENTIRE BUILDING, WHICH IS ESSENTIAL FOR THE HARSH CLIMATIC CONDITIONS OF THE REGION. WITH THE AIR AND DIFFUSED LIGHT THAT ENTER FROM THE TOP, THE INNER PORTION OF THE BUILDING REMAINING COOL AND WELL-LIT.
- ALL THE CLASSROOMS AND OTHER AREAS ARE COMPLETELY AIR-CONDITIONED BY CENTERLIZED AIR-CONDITIONING SYSTEM

**COURTYARD**

NAME- ABHISHEK D MOHALKAR    SUBJECT- DESIGN-IV    CLASS- T.V B.ARCH    ROLL NO- 201909



**CASE STUDY**

**SANGAM ELEMENTARY SCHOOL**



**STRUCTURE**

➤ FROM A DISTANCE, THE BUILDING LOOKS LIKE A SLOPING GARDEN. NEAR THE MAIN ENTRANCE IS AN OPEN AMPHITHEATER WHICH IS USED FOR ACTIVITIES SUCH AS MORNING PRAYERS, DRAMAS AND PERFORMANCES. THE SIZE OF THE PLOT AND SPACE NEEDED FOR THE PROJECT LEFT LIMITED PERIPHERAL SPACE FOR ESSENTIAL OUTDOOR ACTIVITIES THIS MADE US REPURPOSE THE ROOF OF THE ENTIRE BUILDING INTO A SLOPING GARDEN INTERCONNECTING EACH FLOOR. THE FLAT AREA OF THE ROOF IS USED AS A CYCLING TRACK.



VIEW FOR SLOPING ROOF

NAME- ABHISHEK D MOHALKAR SUBJECT- DESIGN-IV CLASS- T.Y B.ARCH ROLL NO- 301909

**CASE STUDY**

**SANGAM ELEMENTARY SCHOOL**



**FORM**

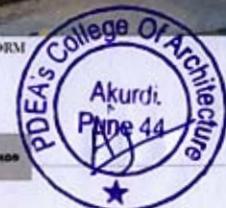
➤ THE FORM OF THE BUILDING WAS INSPIRED BY A TRIANGULAR CHEESE SLIVER WITH TINY HOLES ON ITS SIDES AS SEEN IN CARTOONS. LIKEWISE, THE EXTERNAL SURFACE OF THE BUILDING HAS MULTIPLE PUNCTURES.

➤ THE EXTERIOR FACADE HAS MANY TINY WINDOW PANELS TO MAINTAIN VISUAL CONNECTIVITY WITH NATURE AND THE SURROUNDINGS. THE SIZE OF THE WINDOWS IS SMALL TO ENSURE SAFETY AND POSITIONING IS DRIVEN BY THE HEIGHT OF THE STUDENTS. THE STUDENTS GET A VIEW OF THE OUTSIDE WHILE SITTING AT THEIR DESKS. EACH FLOOR IS STAGGERED WHICH CREATES SMALL PLANTERS AND GENERATES AN ORGANIC FORM OF THE STRUCTURE.



ARRANGEMENT OF THE TRIANGULAR FORM

NAME- ABHISHEK D MOHALKAR SUBJECT- DESIGN-IV CLASS- T.Y B.ARCH ROLL NO- 301909



**CASE STUDY**

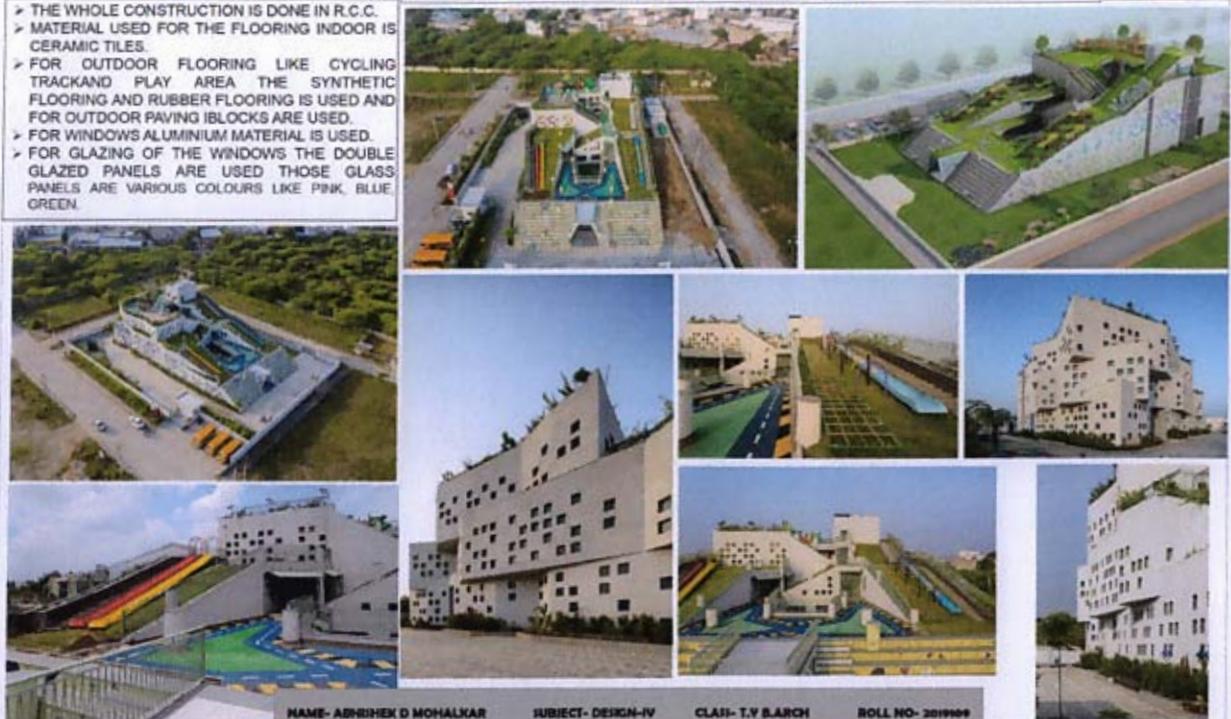
**SANGAM ELEMENTARY SCHOOL**



**MATERIALS**

- THE WHOLE CONSTRUCTION IS DONE IN R.C.C.
- MATERIAL USED FOR THE FLOORING INDOOR IS CERAMIC TILES.
- FOR OUTDOOR FLOORING LIKE CYCLING TRACK AND PLAY AREA THE SYNTHETIC FLOORING AND RUBBER FLOORING IS USED AND FOR OUTDOOR PAVING BLOCKS ARE USED.
- FOR WINDOWS ALUMINIUM MATERIAL IS USED.
- FOR GLAZING OF THE WINDOWS THE DOUBLE GLAZED PANELS ARE USED THOSE GLASS PANELS ARE VARIOUS COLOURS LIKE PINK, BLUE, GREEN.

**VIEWS/PHOTOGRAPHS**



NAME- ABHINAV D MOHALKAR SUBJECT- DESIGN-IV CLASS- T.V B.ARCH ROLL NO- 2019409

**CASE STUDY**

**SANGAM ELEMENTARY SCHOOL**



**PLANNING**



CLASSROOM



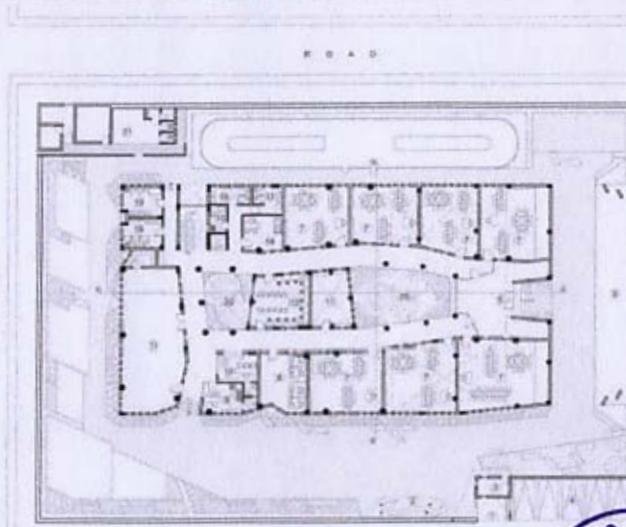
VEGETABLE GARDEN COURTYARD



ENTRANCE FOYER

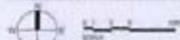


MULTIPURPOSE HALL



**LEGEND**

1. MAIN ENTRY
2. PICKPOINT
3. SECURITY CABIN
4. PARKING
5. STAGE
6. ENTRANCE FOYER
7. CLASSROOM
8. ADMINISTRATION
9. PRINCIPAL'S CABIN
10. VICE PRINCIPAL'S CABIN
11. MULTIPURPOSE HALL
12. STAFF LOUNGE
13. MEETING ROOM
14. INFIRMARY
15. PANTRY
16. STAFF TOILET-GENTS
17. STAFF TOILET-LADIES
18. CHILDRENS TOILET-BOYS
19. CHILDRENS TOILET-GIRLS
20. COURTYARD OPEN TO SKY
21. SUPPORT STAFF TOILET-SEATING



GROUND FLOOR PLAN



NAME- ABHINAV D MOHALKAR SUBJECT- DESIGN-IV CLASS- T.V B.ARCH ROLL NO- 2019409

CASE STUDY

SANGAM ELEMENTARY SCHOOL



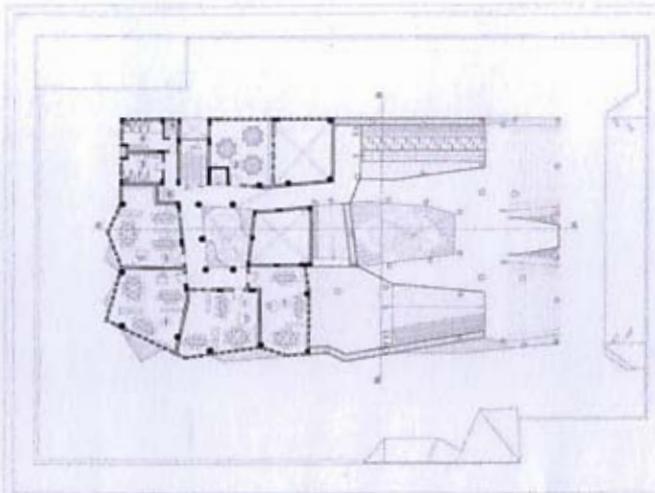
PLANNING



CLASSROOM



ACTIVITY ROOM



SECOND FLOOR PLAN

LEGEND

1. CLASSROOM
2. ACTIVITY ROOM
3. CHILDRENS TOILET-BOYS
4. CHILDRENS TOILET-GIRLS
5. STORE
6. WATER SPOUT

NAME- ABHIRHEK D MOHALKAR

SUBJECT- DESIGN-IV

CLASS- T.Y B.A.RCH

ROLL NO- 2019109

CASE STUDY

SANGAM ELEMENTARY SCHOOL



PLANNING



CLASSROOM



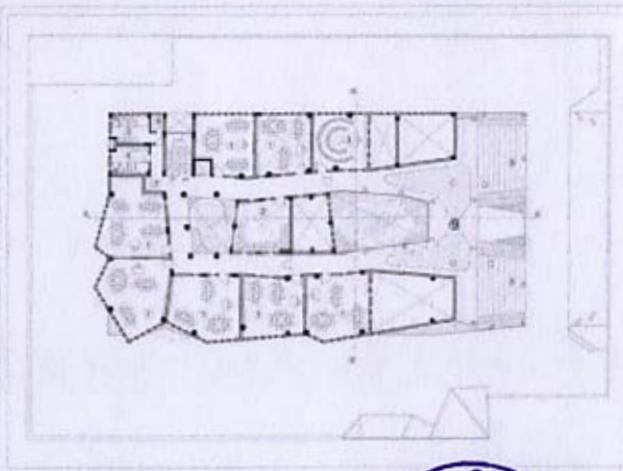
ART AND CRAFT ROOM



OPEN AIR THEATER



CYCLE TRACK



FIRST FLOOR PLAN

LEGEND

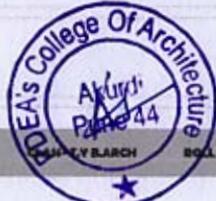
1. CLASSROOM
2. ART AND CRAFT ROOM
3. MUSIC ROOM
4. CHILDRENS TOILET-BOYS
5. CHILDRENS TOILET-GIRLS
6. STORE
7. WATER SPOUT
8. OPEN AIR THEATER
9. CYCLE TRACK

NAME- ABHIRHEK D MOHALKAR

SUBJECT- DESIGN-IV

CLASS- T.Y B.A.RCH

ROLL NO- 2019109





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**Name of Program:** Bachelor of Architecture

**Name of Course:** Building Construction and Materials VI

**Title of Assignment:** Study of Steel Structures

**Name of Faculty:** Prof. Prashant Gadre

**Academic year:** 2021-2022

**Semester:** V

<b>Objectives</b>	<ul style="list-style-type: none"><li>To introduce the design potential of steel as a material in building construction and it's inherent structural benefits.</li><li>To create awareness with the best practices of steel as a construction material.</li></ul>
<b>Date/ Duration of Activity</b>	
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Samples Available
<b>Brief about the Program</b>	<p><b>Fencing and Gates</b></p> <ul style="list-style-type: none"><li>Fencing using different materials like steel, barbed wire, chain-link, weld-mesh and other available materials in market.</li><li>Construction details of fencing and suitable gate with due consideration to design parameters.</li></ul> <p><b>Steel Trusses</b></p> <ul style="list-style-type: none"><li>Understanding concepts of trusses, basic connections for trusses along with earthquake resistant features.</li><li>Construction of trusses for low rise medium span buildings.</li></ul> <p><b>Steel structure construction</b></p> <ul style="list-style-type: none"><li>Understanding methods of construction of various components of steel structures: stage 4 construction for multi-storey steel building</li></ul>





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	<ul style="list-style-type: none"><li>• Construction details of assembly with stanchion, beams and metal deck flooring along with earthquake resistant features.</li><li>• Moisture and fire protections in steel framed buildings</li></ul>
<b>Students Outcome/Work Sample</b>	Understanding of possibilities of steel as an important building construction material. Understanding of properties of ferrous and non-ferrous metals as materials for buildings will able students to use Steel innovatively in building projects

*Code*

**Faculty Incharge**







**MARKET FORMS OF STRUCTURAL AND NON-STRUCTURAL STEEL**

**MAJOR PRODUCT PRODUCED BY TATA STEEL CO.**

- HOT AND COLD ROLLED COIL SHEETS
- GALVANIZED SHEETS
- TUBES
- WIRE RODS
- CONSTRUCTION REBAR, RINGS, AND BEARINGS

**SEVERAL BRANDS OF TATA STEEL PRODUCTS**

- TATA STEELUM WORLD'S FIRST BRANDED COLD ROLLED STEEL
- TATA SHAKTIE GALVANIZED CORRUGATED SHEET
- TATA TISCON (REBAR)
- TATA PIPES
- TATA BEARINGS
- TATA STRUCTURA
- TATA AGRIWOOD (HAND TOOLS AND IMPLEMENTS)
- TATA WIRON (GALVANIZED WIRE PRODUCTS)

**1) TATA SHAKTIE-**  
**TATA SHAKTIE WIDE GC SHEETS:** WITH 13 CORRUGATIONS AND A WIDTH OF 910 MM, TATA SHAKTIE GC SHEETS ARE 13% WIDER THAN STANDARD 800MM GC SHEETS.  
**TATA SHAKTIE INSIDE GC SHEETS:** ECONOMICAL GC SHEETS IN THE INDIAN MARKET WITH 13 CORRUGATIONS AND A WIDTH OF 1220MM THIS IS THE ONLY BRAND THAT PRODUCES 4 FT WIDE GC SHEETS.  
**TATA SHAKTIE ROOF JUNCTION:** A ROOFING SOLUTION SERVICE THAT OFFERS BRANDED ROOFING ACCESSORIES FOR INDIVIDUAL HOUSE-BUILDERS.

**2) TATA TISCON-**  
**TATA TISCON SD:** TATA TISCON SD IS A HIGH-STRENGTH REBARS THAT REINFORCEMENT BAR THAT GIVES CONSISTENT STRENGTH.  
**TATA TISCON SD:** WITH HIGH TENSILE STRENGTH AND SUPERIOR DUCTILITY TATA TISCON SD (SUPER DUCTILE) HIGH-STRENGTH REBARS THAT REBARS ARE SAID TO BETTER PREPARED FOR EARTHQUAKES IN SEISMIC-PRONE ZONES.  
**TATA TISCON FOOTING:** A PREFABRICATED REBAR KIT THAT MINIMISES CONSTRUCTION MISTAKES AND SPEEDS UP CONSTRUCTION TO AVOID UNNECESSARY HASSLES.  
**TATA TISCON SUPERLINKS:** HIGH-STRENGTH REBARS THAT PROVIDE LATERAL SUPPORT TO MAIN BARS AGAINST BUCKLING. THEY ARE MADE WITH SOPHISTICATED MACHINES ENSURING STRICTEST QUALITY CONTROL TO ENSURE CONSISTENCY.

**3) TATA STRUCTURA-2:**  
 TATA STRUCTURA-2 IS A BRAND OF HIGH QUALITY GALVANIZED STEEL TUBES FOR STRUCTURAL APPLICATIONS FROM TUBES SIZE 25X25 TO 150X150. TATA STRUCTURA-2 STEEL TUBES HAVE A GALVANIZED COATING THICKNESS OF 300 GSM OF PURE ZINC. TATA STRUCTURA-2 IS IDEAL FOR MAKING LONG-LASTING STRUCTURES, ESPECIALLY IN CORROSIVE ENVIRONMENT HAVING HIGH MOISTURE AND SALINITY CONTENT IN THE AIR, SUCH AS COASTAL AND HIGH RAINFALL REGIONS. SOME PROMINENT APPLICATIONS OF TATA STRUCTURA-2 ARE ROOF STRUCTURES AND GABLES.

**4) TATA STRUCTURA-**  
 FOLLOWING HIGH QUALITY WELDING AND STRINGENT QUALITY CONTROL OVER THE FINAL PRODUCT, TATA STRUCTURA STEEL HOLLOW SECTIONS ARE OF FOUR TYPES.

**SQUARE HOLLOW SECTIONS:**  
 TATA STRUCTURA SQUARE HOLLOW SECTIONS ARE MANUFACTURED FROM A MINIMUM SIZE OF 20X20 MM TO THE MAXIMUM SIZE OF 250X250 MM WITH THE MINIMUM THICKNESS OF 1.8 MM TO MAXIMUM OF 13 MM.

**RECTANGULAR HOLLOW SECTIONS:**  
 TATA STRUCTURA RECTANGULAR HOLLOW SECTIONS ARE MANUFACTURED FROM A MINIMUM SIZE OF 40X15 MM TO THE MAXIMUM SIZE OF 300X200 MM WITH THE MINIMUM THICKNESS OF 1.8 MM TO MAXIMUM OF 10 MM.

**CIRCULAR HOLLOW SECTIONS:**  
 TATA STRUCTURA CIRCULAR HOLLOW SECTIONS ARE MANUFACTURED FROM A MINIMUM SIZE OF 15 NB TO THE MAXIMUM SIZE OF 100 NB WITH THE MINIMUM THICKNESS OF 1.0 MM TO MAXIMUM OF 4.5 MM.

**4) TATA PIPE-**  
**SMOOTH BORE**  
 DESIGNED TO PENETRATE DEEP INSIDE THE GROUND DURING TO THEIR HEAVY WEIGHT. THEY ACT AS A SILENT CONTRIBUTING PARTNER TO OUR PARTNERS THROUGH BOREWELL AND IRRIGATION APPLICATIONS.

**HDDE**  
 THIS RANGE PROVIDES CONTINUOUS AND EFFECTIVE THRUST REQUIRED FOR EFFICIENT FUNCTIONING OF ALL HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS THAT REGULATE ROOM TEMPERATURE, HUMIDITY, AND AIR FLOW.

**PIPES FOR FIRE-FIGHTING**  
 TATA PIPES INITIATED THE FIRST OF ITS KIND OFFERING FOR THE FIRE-FIGHTING SECTOR IN THE FORM OF RED OXIDE COATED PIPES. IT IS EXTENSIVELY USED IN REAL ESTATE PROJECT ALL OVER THE COUNTRY - RESIDENTIAL, COMMERCIAL OR MANUFACTURING SECTOR.

**8) TATA WIRON-**  
**BARBED PC STRANDS**  
 PRE-STRESSED STEEL STRAND WHEN STRESSED AND EMBEDDED IN CONCRETE, LOSES THE APPLIED STRESS EXPONENTIAL AS TIME PASSES. THE LOSS OF STRESS IS ONE OF THE IMPORTANT FACTORS IN THE DESIGN OF PRE-STRESSED CONCRETE STRUCTURES. TATA WIRON PC STRANDS ARE TREATED BY THE STABILIZATION PROCESS, WHICH IS THE MOST WIDELY ACCEPTED METHOD THROUGHOUT THE WORLD.

**PE COATED PC STRANDS**  
 WE HAVE ENLIGHTENED A MANUFACTURING FACILITY CAPABLE OF PRODUCING WAX FILLED & EXTRUDED PE COATED PC STRANDS FOR CABLE STAY BRIDGE APPLICATION AND ALSO UNBONDED GREASE FILLED PE COATED PC STRANDS FOR PT SLABS IN THE BUILDING SECTOR. THE USE OF PE COATED LOW RELAXATION PC STRANDS IS WELL ESTABLISHED IN DEVELOPED COUNTRIES. HOWEVER, ITS USE IN INDIA HAS RESTRICTED FULLY TODAY DUE TO UNAVAILABILITY OF STRANDS. THESE PRODUCTS ARE MANUFACTURED TO COMPLY WITH THE REQUIREMENTS OF THE (AMERICAN) POST TENSIONING INSTITUTE - PTI. USING BARE STRAND MANUFACTURED USING HIGH QUALITY STEEL WITH STATE-OF-ART DRAWING & STRANDING FACILITIES.

**2/3 PC WIRE**  
 3 MM X 3 PLY (3X3) PC STRANDS ARE USED IN PRESTRESSING OF CONCRETE RAILWAY SLEEPERS. "SLEEPER" IS AN ESSENTIAL AND VITAL COMPONENT OF RAILWAY TRACK. EVERY YEAR, RAILWAYS NEED ABOUT 8 TO 10 MILLION HIGH SLEEPERS. WIRE ARE STRANDS TO ADHERE PERFECT LENGTH AND MECHANICAL PROPERTIES - TENSILE STRENGTH, PROOF STRESS, ELONGATION AND RELAXATION. THIS REPLACES THE EARLIER PRACTICE OF USING WOODEN SLEEPERS AND THUS SAVES MANY TREES ANNUALLY.

**BINDING WIRES**  
 TATA STEEL-GLOBAL WIRES INDIA'S PRODUCTS CARRY QUALITY ASSURANCE THAT IS SUPERIOR AND ABSOLUTELY RELIABLE. TATA WIRON BINDING WIRES IS ONE FROM OUR RANGE OF HIGHLY DEPENDENT PRODUCTS. BINDING WIRES CATER TO THE VARIOUS NEEDS OF DISCREET CUSTOMERS WHO BELIEVE ONLY IN THE BEST.

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		ABHISHEK D. MOHALKAR		
		SUBJECT: E.C.M.V		
		CLASS: TY SEARCH	ROLL NO:-108	SCALE
		YEAR: 2021-22	TERM:-01	

**METAL, METAL ALLOYS AND SHEET ROOF COVERING**

**TYPES OF FENCES**

AS PER MATERIAL THERE ARE FIVE TYPES OF FENCES.

- BARBED WIRE FENCING
- CHAIN LINK FENCING
- WELDED WIRE MESH
- METAL FENCING
- PREFABRICATED PANEL FENCING

**1) BARBED WIRE FENCING:**  
 ALSO KNOWN AS BOB WIRE, IS MADE OF CARBON STEEL, ALUMINIUM ALLOY STEEL OR STAINLESS STEEL. IT CAN BE USED INDIVIDUALLY TO FORM THE BARBED WIRE FENCE AND IT ALSO CAN BE ATTACHED ONTO VARIOUS TYPES, SUCH AS CHAIN LINK FENCE, WELDED WIRE MESH FENCE OR PALISADE FENCE FOR HIGH LEVEL SECURITY BARRIERS. IT'S WIDELY USED FOR FARM FENCING, RANCH FENCING, AIRPORT FENCING, BUILDING FENCING, LARGE CONSTRUCTION SITE FENCING AND SO ON. COMPARED WITH OTHER FENCES, OUR BARBED WIRE PRODUCT IS STRONGER, MORE DURABLE AND HAS HIGHER LEVEL OF SECURITY. ITS SHARP EDGE CAN FRIGHTEN INTRUDERS AND THIEVES AND IT IS AVAILABLE TO COMBINE WITH OTHER FENCES FOR SECURITY BARRIERS.

**FEATURES:**

- SHARP EDGE FRIGHTENS INTRUDERS AND THIEVES.
- HIGH STABILITY, RIGIDITY AND TENSILE STRENGTH TO PREVENT CUTTING OR DESTROYING.
- ANTI-ACID AND ALKALI.
- HARSH ENVIRONMENT RESISTANCE, CORROSION AND RUST RESISTANCE.
- AVAILABLE TO COMBINE WITH OTHER FENCES FOR HIGH LEVEL SECURITY BARRIER.
- SIMPLE AND CONVENIENT INSTALLATION AND UNINSTALLATION.
- EASY TO MAINTAIN, DURABLE AND LONG SERVICE LIFE.

**APPLICATIONS:**

- AIRPORT FENCING.
- PRISON FENCING.
- MILITARY SITE FENCING.
- CONSTRUCTION SITE FENCING.
- SQUARE FENCING.
- FARM FENCING.
- RANCH FENCING.
- HIGHWAY FENCING.
- RAILWAY FENCING.
- RESIDENCE FENCING.
- BUILDING WALL FENCING.
- DITCHING FENCING.
- GARDEN FENCING.
- PLANT FENCING.

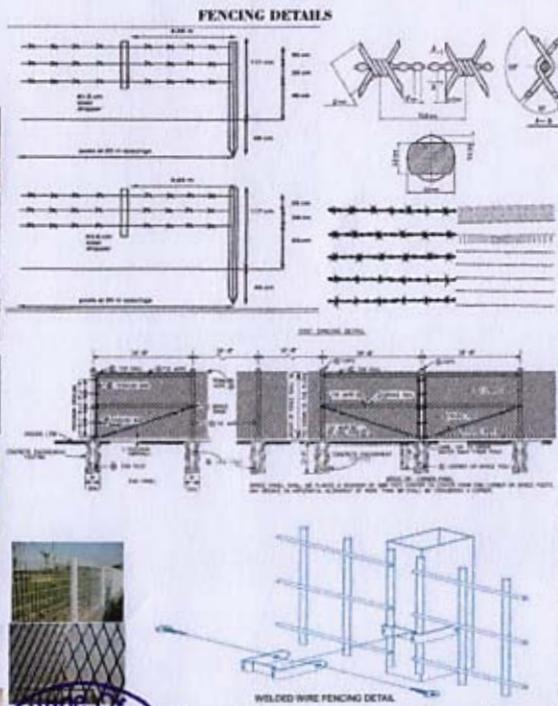
**2) CHAIN LINK FENCING-**  
 CHAIN LINK FENCES TO MAKE SQUARES AND FOR CATTLE. CHAIN LINK FENCES INTENDED TO DISCOURAGE HUMAN INFILTRATION.

**INSTALLATION:**  
**TERMINAL POST:** A POST TO WHICH THE CHAIN LINK FABRIC IS TERMINATED USING SPECIFIC FITTINGS. END POST, CORNER POST, GATE POST, AND PULL POST.

- LINE POST, INTERMEDIATE POSTS SET NO GREATER THAN 15 FEET ON CENTRES BETWEEN THE TERMINAL POSTS.
- DEPTH OF HOLE, 24 INCHES FOR 4 M FENCE AND ADDITIONAL 3 INCHES FOR EVERY ADDITIONAL FEET OF FENCE HEIGHT.
- UNDER NORMAL CONDITIONS THE DIAMETER SHALL BE FOUR TIMES THE LARGEST CROSS SECTION OF THE POST UP TO 4 IN OUTSIDE DIAMETER AND THREE TIMES FOR LARGER OUTSIDE DIAMETER.

**3) WELDED WIRE MESH-**  
 WELDED WIRE MESH IS THE LATEST DEVELOPMENT IN LAND WIRE PRODUCT INDUSTRY. THE WELDED WIRE, GENERALLY CALLED REINFORCING WIRE, IS MOSTLY USED IN CEMENT CONCRETE WORK FOR CONSTRUCTION OF BUILDINGS, NATIONAL HIGHWAY PAVEMENTS, RUNWAYS, DAMS, AIRPORTS ETC. IT IS ALSO USED FOR FENCING PURPOSES AND FOR PARTITION WALLS AND AS A SAFETY GUARD IN ENGINEERING WORKSHOPS.

WELDED WIRE MESH IS USED EXTENSIVELY IN CONSTRUCTIONAL WORK AND FENCING PURPOSES. THE WIRE MESH IS MADE BY AUTOMATIC WELDING PROCESS, THUS SAVING A LOT OF HUMAN LABOUR AND ACHIEVING UNIFORMITY IN DISTANCE AND QUALITY.



**FENCING AND GATES-I**



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		SUBJECT: E.C.M.V		
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Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web : www.pdeacoa.edu.in

**Name of Program:** Bachelor of Architecture

**Name of Course:** Building Services IV

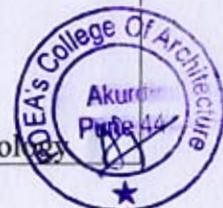
**Title of Assignment:** Acoustics Site Visit

**Name of Faculty:** Prof. Prashant Gadre

**Academic year:** 2021-2022

**Semester:** VI

<b>Objectives</b>	<ul style="list-style-type: none"><li>To comprehend building services as an integral part of architectural design process</li><li>To obtain knowledge of fire safety provisions and aspects of good acoustics in architectural design</li></ul>
<b>Date/ Duration of Activity</b>	15/06/2021 to 04/12/2021
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Samples Available
<b>Brief about the Program</b>	<p><b>Acoustics- 1</b></p> <ul style="list-style-type: none"><li>Generation and propagation of sound, properties of sound, human hearing ranges</li><li>Planning and design to control outdoor noise and indoor noise Materials and construction for acoustical treatment, NRC and STC ratings</li></ul> <p><b>Acoustics -2</b></p> <ul style="list-style-type: none"><li>Parameters for good acoustical conditions</li><li>Air and structure borne noise control</li></ul> <p><b>Acoustics- 3</b></p> <ul style="list-style-type: none"><li>Reverberation time calculation and recommendation for acoustical treatment</li><li>Sound amplification systems</li></ul> <p><b>Fire prevention</b></p> <ul style="list-style-type: none"><li>The fire triangle, causes, impacts, basic terminology</li></ul>





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Ph. 020-27650896, 27650897 Email. : pdeacoa@gmail.com Web. : www.pdeacoa.edu.in

	<ul style="list-style-type: none"><li>• Occupancy based classification of buildings, fire zones, construction types, fire rating requirements</li><li>• Provisions for emergency power, escape lighting and exit signage, fire/smoke dampers</li><li>• Provisions related to air conditioning, glazing, interior finishes, firecommand centre</li></ul> <p><b>Life safety</b></p> <ul style="list-style-type: none"><li>• Exit requirements, egress components</li><li>• Compartmentalisation, provision for basements, gas supply, fire detection and alarm</li></ul>
<b>Students Outcome/Work Sample</b>	<ul style="list-style-type: none"><li>• Properties of sound, strategies for reducing noise, aspects of treatments for good acoustical conditions</li><li>• Provisions for fire prevention, life safety and fire protection as per NBC</li></ul>

**Faculty Incharge**



**Q101 NO-1 WHAT IS GENERATION & PROPAGATION OF SOUND?**  
**GENERATION OF SOUND:**

- SOUND WAVES ARE GENERATED BY VIBRATING BODY FOR EXAMPLE WHEN A VIOLIN STRING VIBRATES UPON BEING BOWED OR PLUCKED, ITS MOVEMENT IS ONE DIRECTON FORWARDS THE MOLECULES OF AIR BEFORE IT, CROWDING THEM TOGETHER IN ITS PATH.
- WHEN IT MOVES BACK AGAIN PAST ITS ORIGINAL POSITION AND ON TO THE OTHER SIDE, IT LEAVES BEHIND IT A NEARLY EMPTY SPACE, I.E. A SPACE WITH RELATIVELY FEW MOLECULES IN IT. IN THE MEAN TIME, HOWEVER THE MOLECULES WHICH WERE AT FIRST CROWDED TOGETHER HAVE TRANSMITTED SOME OF THEIR ENERGY OF MOTION TO OTHER MOLECULES STILL FURTHER ON AND ARE RETURNING TO FILL AGAIN THE SPACE ORIGINALLY OCCUPIED AND NOW LEFT EMPTY BY THE RETRATING VIOLIN STRING.
- IN OTHER WORDS, THE VIBRATORY MOTION SET UP BY THE VIOLIN STRING CAUSES ALTERNATIVELY IN A GIVEN SPACE A CROWDING TOGETHER OF THE MOLECULES OF AIR (CONDENSATION) AND A THINNING OUT OF THE MOLECULES.
- THUS, TOGETHER A CONDENSATION AND A RETRACTION MAKE UP A SOUND WAVE; SUCH A WAVE IS CALLED LONGITUDINAL OR COMPRESSIONAL, BECAUSE THE VIBRATORY MOTION IS FORWARD AND BACKWARD ALONG THE DIRECTION THAT THE WAVE IS FOLLOWING.
- BECAUSE SUCH A WAVE TRAVELS BY DISTURBING THE PARTICLES OF A MEDIUM, MEDIUM SOUND WAVES CANNOT TRAVEL THROUGH A VACUUM.

**PROPAGATION OF SOUND:**

- SOUND IS PROPAGATED IN AIR, MUCH LIKE BLOWING UP A LARGE BALLOON, WHICH EXPANDS EQUALLY IN ALL DIRECTIONS. FOR SOUND TO BE GENERATED AND HEARD IT MUST HAVE A MEDIUM THROUGH WHICH TO TRAVEL AND A RECEIVER.
- PROPAGATION BEING MOVEMENT THROUGH SOUND WILL PROPAGATE THROUGH AIR AND WATER.
- ALL MEDIA HAVE THREE PROPERTIES WHICH AFFECT THE BEHAVIOUR OF SOUND PROPAGATION: 1) A RELATIONSHIP BETWEEN DENSITY AND PRESSURE, THIS RELATIONSHIP, AFFECTED BY TEMPERATURE, DETERMINES THE SPEED OF SOUND WITHIN THE MEDIUM. 2) THE MOTION OF THE MEDIUM ITSELF, E.G. WIND. 3) REFLECTION OF THE MOTION OF SOUND THROUGH THE MEDIUM IF THE MEDIUM IS MOVED, THE SOUND IS FURTHER TRANSPORTED. 3) THE VISCOSITY OF THE MEDIUM, THIS DETERMINES THE RATE AT WHICH SOUND IS ATTENUATED FOR MANY MEDIA, SUCH AS AIR OR WATER, ATTENUATION DUE TO VISCOSITY IS NEGLECTABLE.

**Q102 NO-2 WHAT ARE THE PROPERTIES OF SOUND?**  
FOLLOWING ARE THE PROPERTIES OF THE SOUND:  
1) INTENSITY, LOUDNESS, QUALITY.

- 1) INTENSITY:**
  - THIS REFERS TO THE HIGHNESS OR LOWNESS OF A SOUND.
  - IT IS DEPENDENT ON THE FREQUENCY OF THE SOUND.
- 2) INTENSITY:**
  - THIS REFERS TO THE ENERGY TRANSPORTED BY A WAVE PER UNIT TIME ACROSS A UNIT AREA PERPENDICULAR TO THE ENERGY FLOW (POWER/AREA).
  - IT IS EXPRESSED IN TERMS OF W/M<sup>2</sup>.
  - HUMAN EAR CAN HEAR SOUNDS WITH AN INTENSITY AS LOW AS 10<sup>-12</sup> W/M<sup>2</sup> AND AS HIGH AS 1 W/M<sup>2</sup>.
- 3) LOUDNESS:**
  - THIS IS A SUBJECTIVE INTERPRETATION THAT VARIES FROM PERSON TO PERSON.
  - IT IS COMMONLY MEASURED IN TERMS OF DECIBELS (DB).
  - IT IS RELATED TO FOLLOWING:
    - THE ENERGY OF A VIBRATING OBJECT.
    - THE CHARACTER OF THE AIR THE SOUND WAVE TRAVELS THROUGH.
    - THE DISTANCE BETWEEN THE OBSERVER AND THE SOUND SOURCE.
- 4) QUALITY:**
  - ALSO KNOWN AS TIMBRE OR COLOR.
  - IT IS DISTINGUISHING FEATURE OF SOUND.

**Q103 NO-3 WHAT IS HUMAN HEARING RANGES OF SOUND?**

- PEOPLE GENERALLY HEAR SOURCES IN BETWEEN THE "THRESHOLD OF HEARING" AND THE "THRESHOLD OF PAIN".
- IN TERMS OF PRESSURE, THIS IS 20 μPa - 100 Pa.
- THE DECIBEL SCALE WAS DEVELOPED FROM THIS FACT AND MAKES HUNDREDS MORE MANAGEABLE.
- THE HUMAN EAR CAN HEAR FREQUENCIES FROM APPROXIMATELY 20 TO 20,000 Hz.

**SOUND AND HUMAN HEARING FREQUENCY:**

- HUMANS ARE LESS SENSITIVE TO LOW FREQUENCY SOUND AND MORE SENSITIVE TO HIGH FREQUENCY SOUND. THEREFORE, SOMETIMES THE DB SCALE IS ADJUSTED TO TAKE THIS INTO ACCOUNT.
- A WEIGHTING (DB) ADJUSTS OVERALL SCALE SO IT BETTER MATCHES WHAT THE HUMAN EAR WOULD HEAR.
- C WEIGHTING (DB) ADJUSTS SCALE FOR LOUD OR LOW FREQUENCY SOUNDS.
- B WEIGHTING (DB) ADJUSTS BY FACTORS THAT ARE IN BETWEEN THE A-WEIGHTED FACTORS AND C-WEIGHTED FACTORS (RARELY USED).

**Q104 NO-4 WHAT AIRBORNE AND STRUCTURE BORNE NOISE ARE?**

- THIS TYPE OF NOISE IS TRANSMITTED BY AIR AND ATMOSPHERE SUCH AS THE TRUCKS, THE TRAINS OR DOORS OR PEOPLE CARRYING OR CONVERSATIONS. WHEN SOUND WAVES TRAVELING THROUGH THE AIR REACH A BUILDING ELEMENT THEY HIT IT AND CAUSE IT TO VIBRATE. THESE VIBRATIONS TRAVEL THROUGH THE STRUCTURE OR BUILDING AND ARE RADIATED OUT THE OTHER SIDE. HAVE YOU EVER BEEN ASKED OF YOUR QUIET HOME AS A LOUD PARTY TAKES PLACE NEXT DOOR OR EVEN DOWN THE STREET? IT MAY HAVE FELT AS IF THE MUSIC WAS REVERBERATING LOUDLY WITHIN YOUR HOME. THIS IS DUE TO AIRBORNE NOISE TRAVELING THROUGH WINDOWS AND DOORS WHICH ARE MAJOR SOURCE OF SOUND LEAKAGE.

**STRUCTURE BORNE NOISE:**

STRUCTURE BORNE NOISES ARE TRANSMITTED WHEN SOUND WAVES FROM THE ACTUAL SOURCE OF AN OBJECT OR A BUILDING ELEMENT SUCH AS A WALL, FLOOR OR CEILING, FOR EXAMPLE, SAY YOU LIVE BELOW SOMEONE ELSE IN AN APARTMENT COMPLEX OR YOU LIVE IN A TWO-STORY HOUSE. HOWEVER, YOU HEAR SOMEONE'S FOOTSTEPS ABOVE YOU, YOU'RE HEARING STRUCTURE BORNE NOISE. STRUCTURE-BORNE SOUND OCCURS BECAUSE THE IMPACT CAUSES BOTH SIDES OF THE BUILDING ELEMENT TO VIBRATE, GENERATING SOUND WAVES. THIS CAN OFTEN BE THE HARDEST TO ISOLATE.

**Q105 NO-5 HOW TO PLAN FOR CONTROLLING INDOOR NOISE AND OUTDOOR NOISE?**

- INCREASE THE DISTANCE BETWEEN THE NOISE AND THE LOCATION WHERE IT WILL BE HEARD - FOR EXAMPLE, LOCATE THE BUILDING AS FAR AS POSSIBLE FROM A NOISY STREET OR HIGHWAY.
- USE BARRIERS TO CONTROL NOISE, BY GROUPING NOISY OR QUIET ACTIVITY SPACES TOGETHER.
- DO NOT LOCATE WINDOWS OR DOORS TOWARDS SOURCES OF NOISE.
- USE BARRIERS AND PLANNING SOUND PATHS BY OFF-SETTING DOORS AND WINDOWS FROM NOISE SOURCES.
- USE A BUFFER BETWEEN OBJECTS BETWEEN QUIET AND NOISY SPACES - FOR EXAMPLE, BY LOCATING A WORKROOM BETWEEN BEDROOMS.
- INCORPORATE MASS INTO EXTERNAL WALLS TO BLOCK EXTERNAL NOISE, OR USE FENCING OR EARTH MOUNDING.
- USE SOUND-ATTENUATING EXTERIOR WALLS OR SOUND-ISOLATED INTERIOR PARTITIONS TO CONTROL NOISE.
- NOISE CONTROL SHOULD BE CONSIDERED ALONGSIDE OTHER FACTORS SUCH AS ORIENTATION FOR PASSIVE HEATING AND COOLING, VIEWS, PRIVACY, AND VENTILATION. COMPROMISES MAY BE NECESSARY. FOR EXAMPLE, IF OPENING WINDOWS ARE NEEDED FOR VENTILATION OR SOLAR ACCESS ON A WALL FACING A SOURCE OF NOISE.

**ACOUSTICS-I**

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YEAR: 2021-22					
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**Q106 NO-6 PLANNING AND DESIGN METHODS TO CONTROL OUTDOOR NOISE.**

THE IMPACT OF NOISE CAN BE REDUCED THROUGH BUILDING LAYOUT AND OTHER DESIGN ELEMENTS WHERE NOISE CANNOT BE CONTROLLED AT SOURCE. GOOD DESIGN CAN HELP TO REDUCE ITS IMPACT IT IS IMPORTANT TO CONSIDER NOISE CONTROL FROM THE BEGINNING OF THE DESIGN PROJECT.

CONSIDER ALL POTENTIAL SOURCES OF NOISE FROM BOTH OUTSIDE AND INSIDE THE HOME, AND CONSIDER ALL POTENTIAL SOUND PATHS - INCLUDING DIRECT PATHS (FOR EXAMPLE, THROUGH DOORS AND WINDOWS) AND INDIRECT PATHS (FOR EXAMPLE, WHEN SOUND IS REFLECTED OFF WALLS, OR PASSES THROUGH ARCHWAYS IN WALLS, OR BEHIND ARCHITECTURAL STRUCTURES SUCH AS FINES).

ALSO CONSIDER BOTH AIRBORNE NOISE (SUCH AS NOISE FROM TRAFFIC AND STEREO) AND IMPACT NOISE (SUCH AS SLAMMING DOORS OR FOOTSTEPS IN A FLOOR ABOVE), AND THE IMPACTS OF REVERBERATION FROM HARD SURFACES.

**CONTROLLING NOISE**

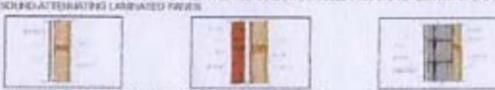
KEY STRATEGIES INCLUDE: CONTROLLING NOISE AT SOURCE, INCREASING DISTANCE FROM THE NOISE SOURCE, CLOSING POTENTIAL SOUND PATHS (SUCH AS OPENINGS IN WALLS FACING SOURCES OF NOISE) AND USING MASS, BARRIERS OR BUFFERS TO BLOCK THE NOISE.

ADDITIONAL SOUND CONTROL FEATURES TO A BUILDING RETROSPECTIVELY CAN BE EXPENSIVE, SO WHERE POSSIBLE, AIM TO CONTROL SOUND AT ITS SOURCE. FOR EXAMPLE:

- USE QUIETER APPLIANCES.
- MINIMIZE VIBRATION NOISE BY PLACING APPLIANCES ON RUBBER PADS OR PROPRIETARY ANTI-VIBRATION MOUNTS.
- INSTALL SOUND-ABSORBENT SURFACES IN ROOMS THAT ARE POTENTIAL SOURCES OF NOISE SUCH AS LIVING AREAS, CHILDREN'S PLAYROOMS, AND ROOMS WHERE LOUD MUSIC OR GAMES MAY BE PLAYED.

**EXTERIOR BUILDING ELEMENTS CAN BE CONSTRUCTED TO LIMIT THE EFFECTS OF OUTDOOR NOISE.**

- THE TWO TYPES OF NOISE THAT THE BUILDING ENVELOPE MUST BE ABLE TO KEEP OUT ARE:
  - AIRBORNE SOUND PASSING THROUGH GAPS AND OPENINGS.
  - STRUCTURE-BORNE SOUND FROM IMPACT OR VIBRATION.
- SOUND-ATTENUATING WALLS, ROOFS, WINDOWS AND DOORS CAN BE USED TO BLOCK EXTERNAL SOURCES OF NOISE. THEY ARE FREQUENTLY DIFFICULT AND COSTLY TO RETROFIT INTO EXISTING HOMES, SO THEY SHOULD BE CONSIDERED DURING THE DESIGN PHASE OF A NEW BUILDING.
- WHEN EXTERNAL WALLS FACE A SOURCE OF OUTDOOR NOISE, THEY SHOULD BE OF HEAVY CONSTRUCTION AND WITHOUT WINDOWS OR DOORS. IF DOORS OR WINDOWS ARE NECESSARY, DOORS SHOULD BE SOLID WITH SEALS AROUND THE OPENING, AND WINDOWS SHOULD PREFERABLY BE NON-OPENING, USING SOUND-ATTENUATING LAMINATED GLASS.



**SOUND-ATTENUATING EXTERNAL WALLS**

ADDITIONAL PERFORMANCE OF FRAMED WALLS MAY ALSO BE ACHIEVED BY:

- USING A STAY-IN-PLACE CONCRETE CAST-IN-PLACE CONSTRUCTION.
- INCORPORATING PROPRIETARY SOUND-ABSORBING MATERIALS INTO THE CEILING CONSTRUCTION.
- USING A PROPRIETARY ACOUSTIC RATED WALL CONSTRUCTION SYSTEM.

**SOUND-ATTENUATING ROOFS**

SOUND-ATTENUATING ROOFS ARE DIFFICULT TO ACHIEVE. ONE OPTION IS A CONCRETE SLAB ROOF BUT THIS WOULD ONLY BE JUSTIFIED IN EXTREME CIRCUMSTANCES SUCH AS UNDER THE PLANT PATH OF PLAINS AT LOW LEVEL.

OTHER OPTIONS THAT INCLUDE THE CEILING CONSTRUCTION AS AN INTEGRAL PART OF THE SOUND ATTENUATION SYSTEM:

- STUCCO-INTEGRATED CONCRETE UNDER LONG-SPAN UNFRAISED METAL ROOFING - A LOW-COST OPTION THAT WILL RESIST BURNING, BUT MOST OTHER NOISE WILL BE TRANSMITTED THROUGH THE FRAMING.
- CONCRETE OR FIBRO ROOFING - THIS WILL REDUCE THE IMPACT NOISE OF RAIN AND HAIL, BUT AIRBORNE NOISE WILL BE ABLE TO PENETRATE THROUGH THE GAPS IN THE ROOFING.
- LONG-SPAN PROFILED METAL ROOFING WITH FIBROWOOD UNDERLAY. THERMAL INSULATION, A SOUND-ATTENUATING CEILING WITH RIGID DOWNSUPPORTS, NO ROOF GUTTERS AND THE ROOF VENTED ON THE SIDE AWAY FROM THE SOURCE OF NOISE - THIS WILL REDUCE EFFECTS OF THE SOUND ON THE ROOF.
- INCORPORATING PROPRIETARY SOUND-ABSORBING MATERIALS INTO THE CEILING CONSTRUCTION.

**SOUND-ATTENUATING EXTERNAL WINDOWS AND DOORS**

**Q WINDOWS**

- WINDOWS IN WALLS THAT MUST BE SOUND-ATTENUATING SHOULD PREFERABLY BE NON-OPENING.
- IF AIR COMPRESSES CARRY SOUND OPTICALLY FOR SOUND-ATTENUATING WINDOWS.
- THICKER GLASS MEANS GREATER MASS, AND HENCE NOISE SOUND REDUCTION. THIS TENDS TO WORK BETTER WITH LOWER-FREQUENCY SOUNDS.
- STRATEGIC LAMINATED GLASS WILL PROVIDE SIGNIFICANT SOUND REDUCTION AS LONG AS THE WINDOW IS PROPERLY INSTALLED. THE REDUCTION IS PROPORTIONAL TO THE TWO TYPES OF GLASS DAMPERS AND VIBRATIONS.
- ACOUSTIC LAMINATED GLASS HAS A COVER LAYER THAT IS SOFTER AND MORE ELASTIC, DESIGNED SPECIFICALLY TO REDUCE NOISE TRANSMISSION.
- INSULATED GLASS UNITS (IGU) ARE AN EFFECTIVE OPTION AS LONG AS THE WINDOW IS NOT OPENED. AIRBORN GLASS CAN BE USED IN IGUs FOR OPTIMAL PERFORMANCE, SPECIFICALLY DOUBLE-GLAZED WINDOWS WITH A NON-METAL SPACER BETWEEN THE SHEETS OF GLASS - THEY TRANSMIT LESS SOUND THAN WINDOWS USING TRADITIONAL METAL SPACERS. TRIPLE-GLAZED WINDOWS ARE VERY EFFECTIVE AT REDUCING SOUND TRANSMISSION, BUT MORE EXPENSIVE THAN DOUBLE-GLAZED.
- FITTING ADDITIONAL GLASS TO THE WINDOW REVEAL - A VERY EFFECTIVE OPTION ALTHOUGH IT MAY PREVENT THE WINDOW BEING OPENED.
- SOUND-CONTROL GLASS WILL ONLY PERFORM PROPERLY IF ALL AIR GAPS AROUND A WINDOW ARE PROPERLY SEALED.
- WHEN WINDOWS ARE OPEN, ANY SOUND RATING IS LOST. IN SOME SITUATIONS, WINDOWS MAY ONLY NEED TO BE CLOSED FOR PART OF THE DAY SUCH AS DURING RUSH HOUR OR DURING SCHOOL BREAK TIMES.
- WHEN WINDOWS MUST REMAIN CLOSED TO REDUCE NOISE, MECHANICAL VENTILATION SYSTEMS MAY BE NEEDED TO REPLACE THE LOST VENTILATION.

**Q DOORS**

- SOUND-ATTENUATING DOORS SHOULD:
  - BE SOLID CORE DOORS.
  - NOT HAVE GLAZED PANELS, OR BE FITTED WITH SOUND-STOPPING LAMINATED GLASS.
  - HAVE BRUSH, FOAM OR RUBBER SEALS ALL AROUND.

**PLANNING AND DESIGN METHODS TO CONTROL INDOOR NOISE.**

INDOOR NOISE CAN BE CONTROLLED BY REALIZING JOISTS AND INCORPORATING SOUND-ABSORBING MATERIALS.

- IN GENERAL, INTERNAL SOUND-REDUCING CONSTRUCTION SHOULD HAVE MASS AND SOUND-ABSORBENT MATERIAL. ALL PARTS SHOULD BE SEALED TO ITS MATE, AND GAPS SHOULD BE SEALED WITH BULK INSULATION. AND - AS MUCH AS POSSIBLE - THE STRUCTURE BETWEEN THE LIVING SPACES IS BE REINFORCED.

**BULK INSULATION HELPS ABSORB NOISE**

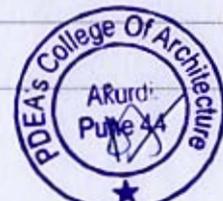
NOISE TRANSMISSION THROUGH WALL OR FLOOR LIMITS IS USUALLY FLOOR OR GIP CAN BE HELD WITH BULK INSULATION - FIBROGLASS, POLYESTER AND WOOD FIBRE INSULATION. INSULATION ALSO HAS THIS EFFECT. MASS HAS SAID FLOOR WITH A MINIMUM DENSITY OF 28 KG/M<sup>3</sup> IS REQUIRED. BULK INSULATION WITH A RATING OF R 1 MEETS THIS REQUIREMENT.

**NOISE CONTROL IN NEW PARTITIONS**

- OPTIONS FOR SOUND-REDUCING CONSTRUCTION FOR NEW INTERNAL PARTITIONS:
  - A STANDARD 90 x 45 MM T-SHAPED PARTITION WITH TWO LAYERS OF 10 MM PLASTERBOARD ONE SIDE, SOUND-ABSORBING INSULATION AND ONE OR TWO LAYERS OF PLASTERBOARD ON THE OTHER SIDE - SOUND NOISE REDUCED.
  - A STAY-IN-PLACE CONCRETE UNDER LONG-SPAN UNFRAISED METAL ROOFING, 90 x 45 MM OFF-CUT STUDS, SOUND-ABSORBING INSULATION WITHIN AROUND THE STUDS AND 10 MM PLASTERBOARD ON BOTH SIDES - REDUCES NOISE SIGNIFICANTLY.
  - DOUBLE WALL CONSTRUCTION WITH TWO 90 x 45 MM PARTITIONS AND A 10 MM GAP. STUDS IN EACH PARTITION OFF-SET FROM THE OTHER PARTITION, SOUND-ABSORBING INSULATION BETWEEN STUDS AND 10 MM PLASTERBOARD BOTH SIDES - EXCELLENT NOISE REDUCTION.
  - SOLID MASONRY CONSTRUCTION PROVIDES AN EXCELLENT ACOUSTIC BARRIER AS WELL AS PROVIDING THERMAL MASS.

**ACOUSTICS-II**

DATE	SIGN	NAME	IDENTIFY & SIGNATURE	ASSESS	STAMP
SUBJECT: 3.1.1					
CLASS: 1 Y B ARCH					
ROLL NO. / 10					
YEAR: 2021-22					
TERM: VI					



**NOISE CONTROL IN EXISTING PARTITIONS**

OPTIONS FOR IMPROVING SOUND TRANSMISSION REDUCTION TO EXISTING PARTITIONS

- ADDING AN ADDITIONAL LAYER OF 10 MM PLASTERBOARD ON BOTH SIDES OF A STANDARD TIMBER PARTITION.
- REMOVING THE LEADING FROM ONE SIDE OF A STANDARD TIMBER PARTITION, ADDING SOUND ABSORBING INSULATION AND TWO LAYERS OF 10 MM PLASTERBOARD ON ONE SIDE AND ANOTHER LAYER OF 10 MM PLASTERBOARD ON THE OTHER SIDE.
- BUILDING AN ADDITIONAL PARTITION BESIDE A STANDARD TIMBER PARTITION THAT HAS HAD THE LEADING REMOVED ON THE FACE ADJACENT TO THE NEW PARTITION, ADDING SOUND ABSORBING INSULATION AND TWO LAYERS OF 10 MM PLASTERBOARD ON THE EXTERNAL FACE OF THE NEW PARTITION AND AN ADDITIONAL LAYER OF 10 MM PLASTERBOARD ON THE EXTERNAL FACE OF THE EXISTING PARTITION.

**NOISE CONTROL IN CEILING**

- FOR BOTH NEW AND EXISTING CEILING, IMPROVE SOUND TRANSMISSION REDUCTION BY
- ADDING AN ADDITIONAL LAYER OF 10 MM OR 13 MM PLASTERBOARD
- REMOVING EXISTING (BATTEN) AND INSTALLING RESILIENT BATTEN FURGER TO EXISTING BATTENS, SOUND ABSORBING INSULATION AND TWO LAYERS OF 10 MM PLASTERBOARD.
- REMOVING OPEN DOWNLIGHTS OR OTHER CEILING PENETRATIONS.

**NOISE CONTROL IN TIMBER FLOORS**

- STANDARD FLOORING CONSTRUCTION WITH PARTICLE BOARD OR PLYWOOD FLOORING AND A 10 MM PLASTERBOARD CEILING BELOW HAS LOW RESISTANCE TO IMPACT NOISE (AC3), OPTIONS FOR IMPROVING THE RESISTANCE TO IMPACT NOISE INCLUDE:
- A STANDARD FLOORING CONSTRUCTION WITH SOUND ABSORBING INSULATION, A CEILING WITH SOUND PROPRIETARY RESILIENT BATTEN FURGER AND STEEL BATTENS AND TWO LAYERS OF 10 MM PLASTERBOARD.
- A STANDARD FLOORING CONSTRUCTION WITH CARPET AND RUBBER UNDERLAY.
- A STANDARD FLOOR CONSTRUCTION WITH CARPET AND RUBBER UNDERLAY, SOUND ABSORBING INSULATION, A CEILING SYSTEM WITH PROPRIETARY RESILIENT BATTEN FURGER AND STEEL BATTENS, TWO LAYERS OF 10 MM PLASTERBOARD AND CARPET AND RUBBER UNDERLAY.

**SQUEAKING TIMBER FLOORS**

TIMBER FLOORS CAN GENERATE NOISE BY SQUEAKING AND TRANSMITTING SOUNDS SUCH AS FOOTSTEPS AND SCRAPING CHAIRS, TO AVOID SQUEAKING:

- THE FLOORING SHOULD BE GLEUED AS WELL AS SCREW-FIXED TO THE JOINTS.
- THE JOINTS MUST BE DRY GLEUED THAT JOINTS WHEN THE FLOORING IS INSTALLED.
- TIMBER FLOOR BOARDS MUST BE SQUEAK-FREELY CONSIDERED.

**CONSTRUCTION TECHNIQUES IN ACOUSTIC PLANNING OF A BUILDING.**

THE STRUCTURAL ELEMENTS AND THEIR CONSTRUCTION FOR CONTROLLING NOISE IN BUILDINGS ARE MENTIONED BELOW.

**CONSTRUCTION OF WALLS FOR NOISE CONTROL IN BUILDINGS**

WALLS ARE AN IMPORTANT STRUCTURAL ELEMENT IN ALL KIND OF BUILDINGS, THAT PROVIDES PROTECTION FROM THE NOISE EXTERNALLY AS WELL AS INTERNALLY THE USAGE OF DIFFERENT WALL MATERIALS OR THE USAGE OF DIFFERENT DESIGN FOR THE WALL WOULD BRING VARIATION IN THE INSULATING PROPERTIES OF THE ELEMENT. THE FIGURE BELOW SHOWS THE DIFFERENCE IN SOUND ATTENUATION WITH VARIATION IN WALL DESIGN. THE METHODS EMPLOYED FOR NOISE CONTROL IN BUILDINGS ARE EXPLAINED IN THE FOLLOWING:

**1. WALL MASS AND THE THICKNESS ARE INCREASED**

THE MASSIVENESS OF A MATERIAL IS AN EFFECTIVE PARAMETER THAT RESISTS NOISE. HEAVY CONCRETE WALLS ARE MORE RESISTANT THAN WOODEN WALLS. ANOTHER WAY OF INCREASING THE INSULATING PROPERTY IS TO ADD MORE THICKNESS FOR THE WALL. THE INCREASED THICKNESS OF WALLS WOULD RESULT IN MORE MASS WHICH IN TURN INCREASES ATTENUATION. A REDUCTION OF 6 DECIBEL SOUND HAPPENS BY THIS METHOD OF CONSTRUCTION BUT THE TECHNIQUE MUST BE CARRIED OUT KEEPING IN MIND THE COST AND ECONOMIC WALL CONSTRUCTION THAT UNDERGOES VARIATION UNDER HIGH FREQUENCIES OF SOUND HAS TO BE AVOIDED.

**2. USE OF CAVITY PARTITION IN BUILDINGS FOR NOISE CONTROL**

THE SOUND TRANSMISSION CAN BE REDUCED BY THE USAGE OF AIRSPACE BETWEEN THE TWO PARTITIONS. WALLS TO INCREASE THE SOUND TRANSMISSION CAPACITY OF THE ROOM SAY AN INCREASE OF 2 TO 5 DECIBEL STC IS DETERMINED FOR A STUD SPACED 24 INCHES THAN THOSE SPACED AT 10 INCHES.

**3. INCREASE AIRSPACE WIDTH OF WALLS**

THE INCREASE IN AIRSPACE WILL OBVIOUSLY INCREASE THE NOISE ISOLATION PROPERTY BUT THE INCREASE IN THE WIDTH OF AIRSPACE IS DIFFICULT TO DESIGN AND CONSIDERS MORE SPACE.

**4. INCREASING THE STUD SPACING**

IT IS FOUND BY A STUDY THAT THE SPACING BETWEEN THE STUDS WOULD INCREASE THE SOUND TRANSMISSION CAPACITY OF THE ROOM SAY AN INCREASE OF 2 TO 5 DECIBEL STC IS DETERMINED FOR A STUD SPACED 24 INCHES THAN THOSE SPACED AT 10 INCHES.

**5. USAGE OF STUDS IN A STAGGERED MANNER**

THE ARRANGEMENT OF STUDS IN A STAGGERED MANNER AS SHOWN IN FIGURE 1, WHERE STUDS ARE PLACED ALTERNATIVELY WOULD HELP IN NOISE ABSORPTION, THIS REDUCES NOISE INTENSITY.

**6. STUDS AND PANELS HELD TOGETHER BY RESILIENT MATERIALS**

MAKING USE OF EIGHTIGHT RESILIENT LAYERS LIKE GLASS OR FIBER BOARD, OR SQUARE RESILIENT ATTACHMENTS WHICH ARE WELT IN SQUARE, WILL HELP IN REDUCING THE STC RATE BY TWO TO FIVE DECIBELS.

**7. PANELS USED ARE DISSIMILAR**

USING DIFFERENT THICKNESS AND MATERIALS FOR PANELS WOULD HELP IN REDUCTION OF NOISE, THIS INCREASES THE SOUND INSULATING QUALITY OF WALLS.

**8. SOUND ABSORBING BLANKETS USED IN THE AIRSPACE**

THE SOUND ABSORBING BLANKETS ARE ALSO CALLED AS ISOLATION BLANKETS WHICH ARE PLACED IN THE AIRSPACE ARRANGEMENT, THAT ARE PROVIDED BETWEEN THE PANELS, THIS BLANKET ENABLES AN INCREASE IN SOUND ATTENUATION. MINERAL OR ROCK WOOL, WOOD FIBER OR FIBERGLASS ARE SOME OF THE MATERIALS USED TO MAKE THESE BLANKETS. THESE BLANKETS HAVE AN ATTENUATION CAPABILITY UP TO 10 DECIBELS. THE METHOD IS MORE EFFECTIVE WHERE LIGHTWEIGHT CONSTRUCTION IS MORE PROMINENT.

**9. THE CRACKS AND EDGES ARE SEALED**

THE FULL ADVANTAGE OF A HIGH PERFORMANCE WALL CAN BE BROUGHT OUT ONLY WHEN IT IS PROPERLY SEALED AND CRACK FREE. THE PRESENCE OF THE CRACKS OR HOLES WOULD AFFECT THE INSULATION PROPERTY OF THE WALL. IT HAS BEEN OBSERVED THAT A HOLE OF THE 1-INCH SQUARE WILL RESULT IN A REDUCTION OF STC OF THE WALL BY 10.

**CONSTRUCTION OF WINDOWS FOR ACOUSTIC CONTROL IN BUILDINGS**

WINDOWS ARE ONE OF THE WEAKEST ELEMENTS OF A BUILDING. THEIR INAPPROPRIATE POSITION OR OPEN CONFIGURATION WOULD AFFECT THE PERFORMANCE OF BUILDINGS WALLS. THEREFORE, IT IS RECOMMENDED TO HAVE ACOUSTICAL COORDINATION IN THE ARRANGEMENT OF WINDOWS. THE GRAPH BELOW SHOWS THE VARIATION OF STC VALUES OF THE WALL, FOR THE CORRESPONDING AREA OCCUPIED BY THE WINDOWS WHICH ARE SHOWN IN PERCENTAGES.

THE FOLLOWING MEASURES CAN BE EMPLOYED TO REDUCE THE NOISE ENTERED THE BUILDING THROUGH THE WINDOWS.

**1. WINDOWS CAN BE CLOSED**

PERMANENT SEALING OR CLOSED OF THE WINDOWS ARE THE BEST MEASURES TO REDUCE THE DIRECT EFFECT OF NOISE. PERMANENT SEALING BECOMES ESSENTIAL WHEN AN AIR CONDITIONING SYSTEM MUST BE TUNNELED. SO, SEALING ACTS AS A CONSTANT SOLUTION FOR NOISE. THE MARKING OF HELP IS AN EFFECT THAT IS FACILITATED BY THE AIR CONDITIONING SYSTEM, WHICH IS DESCRIBED IN THE FOLLOWING TOPICS.

**2. WINDOWS SIZE CAN BE REDUCED**

• THE LOSS OF CONTRIBUTION OF TOTAL PARTITIONS CAN BE REDUCED BY REDUCING THE WINDOW SIZE. TO SMALL SMALL WINDOWS DO HAVE CERTAIN OTHER ADVANTAGES LIKE EXPENSIVE ACOUSTIC WINDOWS CAN BE EXCLUDED.

**ACOUSTICS-II**

DATE	SIGN	NAME	ABHISHEK D. MOHAKAR	ASS. STAMP
		SUBJECT	B.T.V	NO.
		CLASS	T.Y.B ARCH	ROLL NO.
		YEAR	2022	TERM
				SCALE

**REVERBERATION TIME CALCULATION**

**REVERBERATION TIME:**

REVERBERATION TIME (DEFINED BY SABINE) IS INVERSELY PROPORTIONAL TO THE AVERAGE ABSORPTION COEFFICIENT AND IS CALCULATED AS THE ARITHMETIC AVERAGE OF EACH ABSORPTION COEFFICIENT FOR ALL SURFACES IN THE ROOM. THIS EQUATION IS VALID FOR LIVE ROOMS AND DIFFUSE ACOUSTIC FIELD.

$$RT_{60} = \frac{0.163 V}{S \bar{\alpha}}$$

$$\bar{\alpha} = \frac{1}{S} \sum \alpha_i S_i$$

**AREA CALCULATION:**

$RT_{60} = K (V/S \bar{\alpha})$

**WALL AREA - TOTAL AREA DEDUCTING WINDOW DOOR**

WALL A = 9.12 M X 3.4 M = 31.008 M <sup>2</sup>	WALL D = 12.24 M X 3.4 = 41.616 M <sup>2</sup>
WALL B = 12.24 M X 3.4 = 41.616 M <sup>2</sup>	WALL E = 12.24 M X 3.4 = 41.616 M <sup>2</sup>
WALL C = 9.12 M X 3.4 M = 31.008 M <sup>2</sup>	WALL F = 12.24 M X 3.4 = 41.616 M <sup>2</sup>
WALL G = 12.24 M X 3.4 M = 41.616 M <sup>2</sup>	

**CLASSROOM VOLUME - 9.12 X 12.24 X 3.4 = 379.52 M<sup>3</sup>**

SRI NO	OBJECT	SIZE	NO.	AREA
1	DRAFTING TABLE	800 X 600 MM	13	0.24
2	WINDOWS	1500 X 600 MM	30	18.2
3	TABLE	5400 X 900 MM	1	2.16
4	DESK	2800 X 900 MM	1	2.16
5	DOOR	1350 X 2100 MM	1	2.52
6	WINDOWS	3400 X 1800 MM	5	21.6

**ABSORPTION COEFFICIENT OF MATERIAL:**

- 1. SMOOTH PAINTED WALL - 0.01
- 2. PLYWOOD CLADDING - 0.08
- 3. CURTAINS - 0.1
- 4. 4 FT. LORR TABLE - 0.02
- 5. CEILING - 0.14
- 6. FURNITURE - 0.2

**OBJECT AREA A.C. SA R.A.C.**

FLOOR	12.6	0.02	2.25
CEILING	112.6	0.14	15.72
WALLS	123.73	0.01	1.21
FURNITURE	23.52	0.2	4.70
DOOR	2.6	0.14	0.35
WINDOWS	21.6	0.3	6.48
	TOTAL		30.71

**AS PER A.C.R.T. FOR CLASSROOM IS BETWEEN 0.4 - 0.9 SEC.**

**SO WE NEED TO PROVIDE ABSORPTIVE MATERIAL:**

1. 4 MM GLASS - 0.3
2. 12 MM FIBER BOARD OVER AIRSPACE
3. 0.1 NOISE WALL - 0.3
4. CARPET, 2MM OVER RUBBER ON CONCRETE - 0.1
5. WOOD HELD OVER DOORS - 0.3
6. 22 MM GYPSUM TILES FOR CEILING - 0.45

**BY DEDUCTING A.C. OF ABOVE MATERIAL:**

**THEREFORE REVERBERATION TIME OF CLASSROOM AFTER ADDING ABSORPTIVE MATERIAL IS 0.55 SEC.**

**CLASSROOM LAYOUT**

1230 X 1230

**ACOUSTICS-III**

DATE: SIGN: NAME: ABHISHEK D. MOHAKAR ASS. STAMP: NO. CLASS: T.Y.B ARCH ROLL NO. SCALE: YEAR: 2022 TERM: 1-09







Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web : www.pdeacoa.edu.in

**Name of Program:** Bachelor of Architecture

**Name of Course:** Architectural Design V

**Title of Assignment:** Museum Virtual Case Study

**Name of Faculty:** Ar. Abhijit Bhagat, Ar. Deepali Randhe

**Academic year:** 2021-2022

**Semester:** VI

<b>Objectives</b>	<ul style="list-style-type: none"><li>• To understand Museum a design typology.</li><li>• To study various design approaches of renowned architects by analyzing their published works.</li></ul>
<b>Date/ Duration of Activity</b>	15/06/2021 to 04/12/2021
<b>Venue</b>	PDEA College of Architecture
<b>Student Attended</b>	T.Y.B. Arch
<b>No. of Students Present</b>	12
<b>Photography /Videography Available</b>	Work Sampies Availiable





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<b>Brief about the Program</b>	<p>To understand Architectural Design as a process of generating design brief and taking design decisions based on the following aspects: <b>Socio-Cultural Aspects:</b> To introduce students to socio-cultural aspects like lifestyle, culture, traditions, and their effect on architectural design etc.</p> <p><b>Aesthetics:</b> To understand the Aesthetic aspects of Design (visual and experiential) along with spatial attributes (scale and proportions, volume, texture, light and shadows, etc.) and formal characteristics. (profile, base, corner, termination).</p> <p><b>Anthropometry &amp; Function:</b> To address functional aspects of design (activity, use of space, adequacy and efficiency of space for a particular activity, essential adjacencies of spaces, ease and efficiency of circulation, light, ventilation, user-space relationship, vertical connections)</p> <p><b>Climate:</b> To understand the Climatic aspects those have a bearing on architectural design and address climatic concerns like adequate light, ventilation, protection from rain, insulation, shading, heat gain, through passive strategies.</p> <p><b>Building Material and Construction Technology:</b> To study relevance of various building materials to a project, to get introduced to various expressions of a building material, to introduce a student to the construction technologies relevant to the building materials chosen, to understand the scope and limitations of a building technique to achieve the desired form and space.</p> <p><b>Building Services:</b> To understand the spatial and structural implications of basic services involved in building design.</p>
<b>Students Outcome/Work Sample</b>	<ul style="list-style-type: none"><li>• Designing of progressively complex spaces and buildings in terms of area, a specific community, typology, function etc, with emphasis on either scale or complexity of the project, or both.</li><li>• Introduction to develop a design philosophy/narrative as a thought process in design</li></ul>

Faculty Incharge





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CASE STUDY - PRINCE OF WALES MUSEUM, MUMBAI

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### PRINCE OF WALES MUSEUM



**LOCATION:** Mumbai, Maharashtra  
**ADDRESS:** Princes of Wales Museum of Western India, Mahatma Gandhi Road Mumbai.  
**OPENED ON:** 1923  
**NAMED AFTER:** Prince George  
**ARCHITECT:** George Wittet  
**ARCHITECTURAL STYLE:** Indo-Saracenic style

Built in the Indo-Saracenic style, the facing is done in yellow and blue stones quarried from the Mumbai region. The dome is modeled after the Gol Gumbaz in Bijapur, Karnataka. It incorporates a variety of details from different Indian styles, small bulbous cupolas on towers, Saracenic arches with Muslim 'jalils' as fillers, semi-open verandahs and Ajput 'Jharokhas'.

The structure forms a long rectangle of three storeys, raised in the centre to accommodate the entrance porch. Above the central arched entrance rises a huge dome, tiled in white and blue flecks, supported on a lotus-petal base. Around the dome is an array of pinnacles, each topped by a miniature dome. Indian motifs such as brackets and protruding eaves are combined with so-called Islamic arches and tiny domes.

ART CENTRE at BANDRA RECLAMATION

### THE CRESCENT SITE

In the early years of the twentieth century, some prominent citizens of Bombay decided to set up a Museum with the help of the government to commemorate the visit of the Prince of Wales. One of the resolutions of the committee at its meeting on June 22, 1904 was, "The building should have a handsome and noble structure befitting the site selected, and in keeping with the best style of local architecture."

The committee spared no effort to realize this dream. On March 1, 1907, the then government of Bombay handed over to the museum committee a spot of land known as the "Crescent Site", situated at the southern end of the present Mahatma Gandhi Road. After an open competition for the design, George Wittet was commissioned to design the Museum building in 1909. George Wittet had collaborated with John Begg in the construction of the General Post Office building. His other works in Bombay include the Court of Small Causes and the magnificent Gateway of India.

### HISTORY OF THE MUSEUM

Designed by George Wittet, the foundation stone was laid in 1905 by the visiting Prince of Wales. The building was completed in 1914, converted to a military hospital during World War I, and finally opened in 1923 by Lady Lloyd, the wife of Sir George Lloyd, then governor.

Amid the hustle and bustle of Mumbai stand some stately buildings, remnants of the British Raj. Among them is that of the Prince of Wales Museum, named after Prince George (Later George V) who visited India in 1905 and laid the foundation stone of the building.

The Prince of Wales Museum was designed and built to represent to represent the ancient and medieval architectural styles of western India. The basalt stone structure with its large central dome inspired by the Bijapur domes and beautiful gardens are set in a crescent shaped piece of land.

The art section at the museum has a collection of Indian paintings representing its different styles and phases. The collection presents the evolution of painting in India, ranging from the 11th and 12th century



ART CENTRE at BANDRA RECLAMATION





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## CASE STUDY - PRINCE OF WALES MUSEUM, MUMBAI

illustrated palm leaf manuscripts to early 19th century Pahari paintings. Exquisite examples of all the main schools of miniature painting are on view ; Rajput, Mughal, Phari, and Deccani. It is obvious that the fine excellence of the Mughal and Rajasthani schools, from 16th to 19th century, only emerged out of past influences, indigenous Indian as well as Persian, Turkish and central Asian.

### APPROACH:

Approach is not straight, but it follows a gentle curve and turns along the crescent shape site.

### SURROUNDINGS:

Due to the large site and garden in front, the skyline of the museum building can be easily seen. The only high rise buildings are stock exchange and Taj hotel.



### GARDEN:

Formal garden is symmetrical with the statue in the center. Garden is planned with good landscaped features.

### PARKING:

All cars, tourist buses are parked outside, only service vehicles are allowed in.

### ENTRANCE:

Previously two gates were used; one for entry and one for exit. But now only one entry is use for entry and exit. No service entrance is provided.

### SING:

The main building is G+2, security room; children and staff quarters are only on ground floor structures.



### MUSEUM GALLERIES

Pre-history  
Indian miniature paintings

ART CENTRE at BANDRA RECLAMATION

## CASE STUDY - PRINCE OF WALES MUSEUM, MUMBAI

Decorative arts  
Eastern art  
Bronze section  
Sculpture  
Arms and armor  
Nepal/Tibet  
Textiles

### THE MINIATURE PAINTINGS:

An excellent collection of Indian miniature paintings occupies much of the second floor, but they're poorly presented apart from those displayed in helpful thematic groups.

### GALLERIES IN THE MUSEUM:

There's a lot to see in the Prince of Wales Museum and one'll be doing oneself a disservice if one rush to see it all in one go. To walk around the key gallery is like experiencing 5,000 years of Indian art in a capsule.

### A DISPLAY OF NEPALESE & TIBETAN ART:

This floor also has fine examples of Nepalese and Tibetan art, including a beautiful 12th century Maitreya, with his head surrounded by a halo, slightly inclined. The gentle, sensuous curves of the torso are draped in garments and jeweled chains to suggest texture and movement.



For those interested in glass, jade and porcelain, the gallery on the second floor presents an extensive collection of art objects donated by Sir Ratan Tata and Sir Dorab Tata. The collection includes objects carved in rock crystal, metal ware and lacquered woodwork.



There are samples of Indian jewellery and object in silver, enameled jars and 'Hookah' stand

Some jade objects and samples of Bidri work are also on display. One can also find fine examples of elaborate ivory work from Japan, like the Cock on a Tree, with feathers of ivory. There is also a collection of

ART CENTRE at BANDRA RECLAMATION





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## CASE STUDY - PRINCE OF WALES MUSEUM, MUMBAI

weaponry and a section devoted to porcelain and glassware-much of it from China.

It also contains two galleries of largely European oil paintings, including three murky Constables, a Bonnington and a Gainsborough. On entering this area it immediately becomes clear that European art historians dubbed Indian paintings 'miniatures' because they were familiar with.

### SHOWCASING THE INDIAN PRE-HISTORY & PROTO-HISTORY

On the mezzanine level, there's a small gallery devoted to Indian prehistory and protohistory. It consists largely of primitive tools and objects excavated by Sir John Marshall in Mohenjodaro in 1922.

On the first floor central balcony of the museum are displayed objects of decorative art in ivory, silver and wood of the late 18th and the 19th centuries. Some paintings have also been displayed in this area, which leads the visitor into the picture gallery.

The latter is divided by partitions to create enclosed cubical spaces. The paintings, donated by various patrons, from one of India's best public collections of work, representative of many styles and schools. At the entrance of the gallery, to the left, in the first cubicle, is an illustrated manuscript of the 'Kalpasutra' and the 'Kalikacharyakatha' of western India, dated to the end of the 15th century.

### PLANING OF BUILDING

The plan of the Museum is simple, with a central hall from which the staircase leads to the two upper floors with galleries branching out on the right and left. An extension on the right-hand side of the main building (as you stand facing its front entrance) houses the natural history section. The second floor houses the Indian miniature-painting gallery, the pride of the museum, and next to it are the galleries of decorative art and, to the left of the central well of the staircase, the gallery of Tibetan and Nepali art. Above, on the second floor are the European painting, armoury and textile galleries.

### GROUND FLOOR GALLERY:

In the ground floor gallery are impressive local sculptures from Elephanta Island, Parel, Thane and Jogeshwari.



ART CENTRE at BANDRA RECLAMATION

## CASE STUDY - PRINCE OF WALES MUSEUM, MUMBAI

Much of the sculpture collection consists of works from 11th and 12th century Gujarat and Karnataka.



There are terracotta's of the Indus valley Civilization: animal sculptures and figurines including a mother with a child suckling at her breast. The Natural History Section was added to the museum from the collection of the Bombay Natural History Society.



educational exhibit on suspects ranging from



This section on the ground floor has a large selection of Indian birds, a low-tech but stuffed examples of the usual rhinos to monkeys and lions to deer. The highlight is definitely the freakish 20-foot-long Saw Fish that must have shocked fishermen when they hauled it up in their nets in the waters off Government House in 1938. All the exhibits are well labeled.

### FLOOR FINISHES:

Marble floor tiles for lobby. Cobba tiles for galleries and wood flooring added picture gallery.

### LIGHTING:

- > Sky light in atrium by slit inside dome and use of light wells.
- > Artificial tube lights for display.
- > White colour used to facilitate optimum reflection.

### VENTILATION:



ART CENTRE at BANDRA RECLAMATION





CASE STUDY - PRINCE OF WALES MUSEUM, MUMBAI

- > On top floor ventilator designed for ventilation.
- > Ac fan coil is only for the director's cabin.
- > Stone masonry construction keeps the building cool.

**STRUCTURE:**

- > The building is load bearing and is built of basalt stone masonry.
- > Arch and dome system is used to achieve long span covering.



**BASEMENTS**

- Toilets
- Storage

**MEZZANIAN FLOOR**

- Prehistoric Section

**GROUND FLOOR**

- Entrance
- Publication Counter
- Enquiry Desk
- Central Hall
- Main Staircase
- Indian Sculpture
- Canteen
- Karls and Meharabhai Gallery
- Latest Collection of Paintings

- Natural History Section
- Library/ Research

**FIRST FLOOR**

- Administration
- Miniature Painting Gallery
- Nepal and Tibetan Section
- Office
- Decorative Art

**SECOND FLOOR**

- European Painting Gallery
- Far Eastern Art
- Arms and Armour

**POSITIVE POINTS:**

The use of natural gallery as a dominant feature visually and circulation wise. The central gallery the visitors to locate themselves within the museum.

**NEGATIVE POINTS:**

- > There is no segregation between office and actual display area.
- > All electrical conduits, wiring etc stand out on ceiling.
- > No provision for fire escape staircases, service lift, service entry.

ART CENTRE at BANDRA RECLAMATION



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### 1.3.3

**Percentage of students undertaking project work / field work / internship (data for latest completed academic year)**

**AY 2021 -2022**

**Fourth Year B. Arch Courses**

REPORTS OF COURSES	
COURSE CODE	COURSE TITLE
4201554 [SV] [2015 Pattern]	Design VII
4201555 [SV] [2015 Pattern]	ABTS – I
4201557 [SS] [2015 Pattern]	Urban Studies – I
4201562 [SV] [2015 Pattern]	Design VIII
4201563 [SV] [2015 Pattern]	ABTS – II
4201565 [SS] [2015 Pattern]	Urban Studies – II
4201569 [SS] [2015 Pattern]	Elective – III





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**Name of Program :** B. Architecture

**Name Of Course :** Design VII

**Title of Assignment :** Multifamily Residential Housing

**Name of the faculty :** Rashmi Rawat, Prachi Agrawal, Rakesh Mutha, Sushmita Pansare

**Academic Year :** 2021-22

**Semester :** VII

Objectives	<ul style="list-style-type: none"><li>Subject aims at preparing the students to handle complex architectural issues at this stage addressing various challenges in terms of scale, complexity of functions, social economic context, traffic and vehicular movement and so on. Along with the challenges of physical issues, students are also now expected to address spatial and visual language of their project with reference to the urban context and setting of their site.</li></ul>
Date/Duration of Activity	18-07-2021 to 15-12-2021
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
Brief about the Program (Activity/Event)	<ul style="list-style-type: none"><li>Multifamily Residential Development with Focus on : Mixed Use Development, Development of Communities, Addressing Issues of Social Stratification v/s Inclusiveness, Identification of target Group/ End User's requirement, Relation of Location/ Land values on Defining the Housing Product, Project being part of the City, Context, Green Initiatives, Efficient Planning of Services.</li><li>Minimum Area 100 to 200 depending on Context and Complexity. Designed within parameters as laid out by Local Authority and NBC. The Design work should include :<ol style="list-style-type: none"><li><b>Site Analysis</b> : Location Map, Location of the project, latitude, longitude, MSL, Approach to the site, neighbourhood Context</li><li><b>Climatic data</b> : Macro/micro climate, rainfall, temperature, humidity, sun path, wind direction, noise analysis, soil condition, flora and fauna.</li><li><b>Drawings</b> : Site Plan, All floor Plans, Sections, Elevations, 3d views</li></ol></li></ul>
Students Outcome / Works example	The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

*Rashmi*

**Faculty In-charge**





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## SITE ANALYSIS

**LOCATION** BANERKAD GADIN BANER, PUNE, MAHARASHTRA, INDIA  
**COORDINATES** LATITUDE: 18.5274 LONGITUDE: 73.5118  
**MEAN SEA LEVEL OF PUNE** 543 M

**DESCRIPTION** - BANER IS RESIDENTIAL AND COMMERCIAL HUB OF PUNE. LARGE PORTION OF BANER IS OCCUPIED BY VARIOUS FCZ ZONES AND COLLEGES.

BANER GADINAN IS DEVELOPING AREA AND HAS LARGE SCOPE FOR DESIGNING A RESIDENTIAL SOCIETY IN THE AREA.

**ROAD NETWORKS**

**MAIN AND PUBLIC FLOW DIAGRAM**

**GREEN SPACES ANALYSIS**

**CLIMATIC CONDITIONS**

**TOPOGRAPHY**

**FAUNA**

**SOIL AND VOID ANALYSIS**

**NOISE ANALYSIS**

**SOIL CONDITIONS**

**VOID CONDITIONS**



## CONCEPT

**BLOCK TRANSFORMATION**

**SITE FORMING**

**DESIGN PHILOSOPHY**

IN DECEMBER 2019, THE ENTIRE WORLD WITNESSED THE START OF NEXT SWEEPING PANDEMIC OF THE CENTURY AND SOONER THAN THE WHOLE WORLD GOT STUCK AS A POINT EVERY COUNTRY ANNOUNCED NATIONWIDE LOCKDOWNS WHICH IN TURN IMPACTED EACH AND EVERY GLOBAL ECONOMIC VEGETABLE.

THE MAIN REASON BEHIND THE SPREAD OF VIRUS IS LACK OF SOCIAL DISTANCING, LACK OF PUBLIC SANITIZATION FACILITIES AND POOR, CROWDED CITY PLANNING WHICH RESULTED IN A INCREASE IN NUMBER OF COVID CASES AND EVENTUALLY PANDEMIC.

COVID PANDEMIC IS NOT OVER YET AND THERE IS CHANCES OF MORE BAD CONDITIONS LET COVID END FOR THAT WE HAVE TO PREPARE FOR ANY CONDITION, WE HAVE TO REDESIGN OUR INFRASTRUCTURE, OUR CITIES, OUR BUILDINGS.

DURING PANDEMIC, WE NOTICE THAT WHEN COVID CASES ARE ON PEAK THERE IS NO BEDS AVAILABLE IN HOSPITAL AND GOVERNMENT HALL TO CREATE PLACES FOR QUARANTINE.

ALSO IN OUR HOMES WE DON'T HAVE ANY PLACE FOR QUARANTINE USE FAMILY MEMBER AND DUE TO THAT INFECTION TRANSFER 1 PERSON TO ANOTHER.

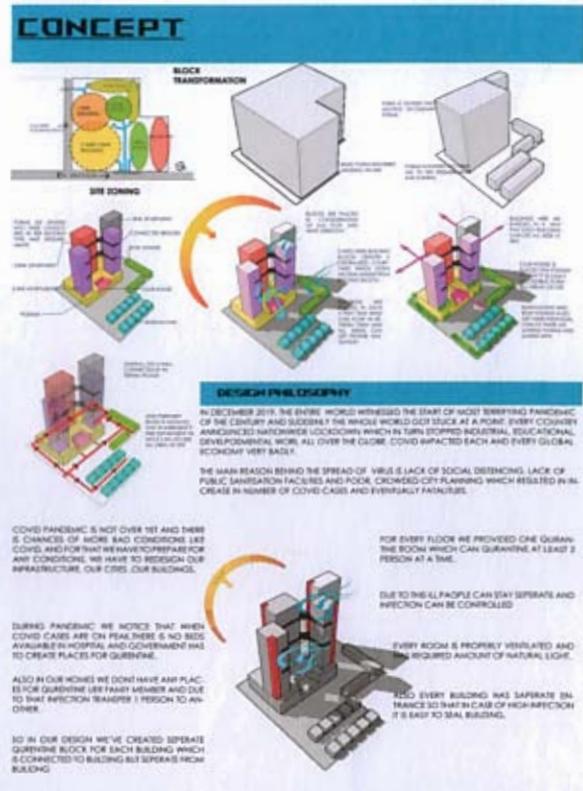
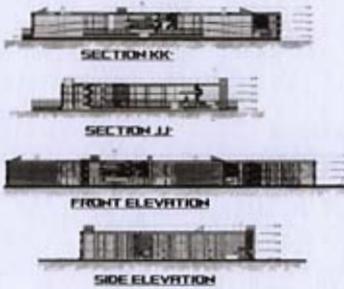
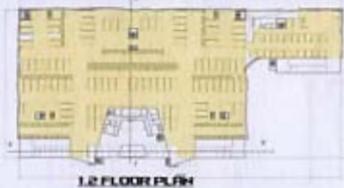
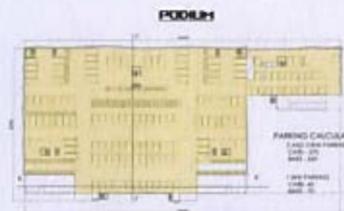
SO IN OUR DESIGN WE'VE CREATED SEPARATE QUARANTINE BLOCK FOR EACH BUILDING WHICH IS CONNECTED TO BUILDING BUT SPREADS FROM BUILDING.

FOR EVERY FLOOR WE PROVIDED ONE QUARANTINE ROOM WHICH CAN QUARANTINE AT LEAST 1 PERSON AT A TIME.

DUE TO IT ALL PEOPLE CAN STAY SEPARATE AND INFECTION CAN BE CONTROLLED.

EVERY ROOM IS PROPERLY VENTILATED AND REQUIRED AMOUNT OF NATURAL LIGHT.

ALSO EVERY BUILDING HAS SEPARATE ENTRANCE SO THAT IN CASE OF HIGH INFECTION IT IS EASY TO SEAL BUILDING.



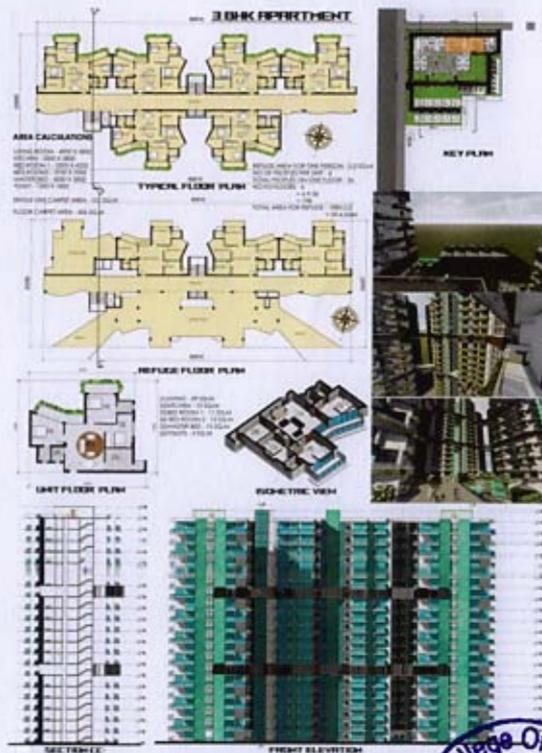
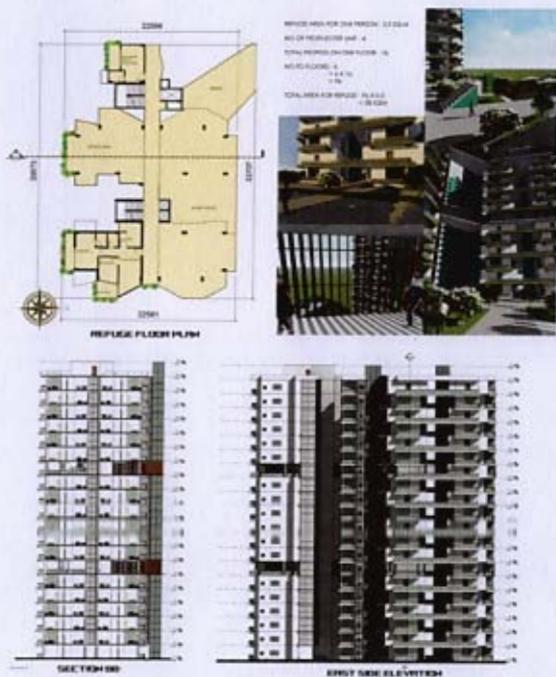
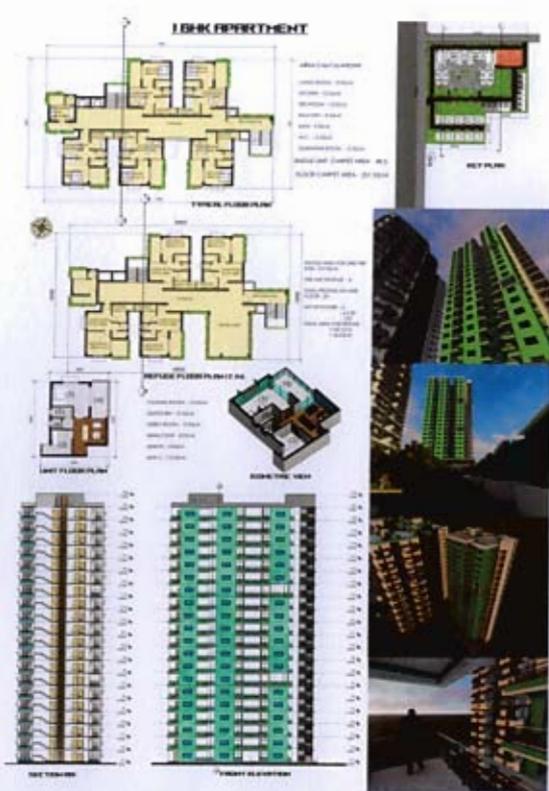
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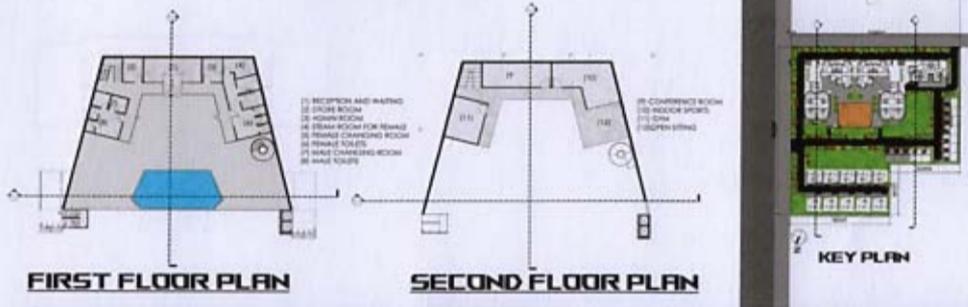
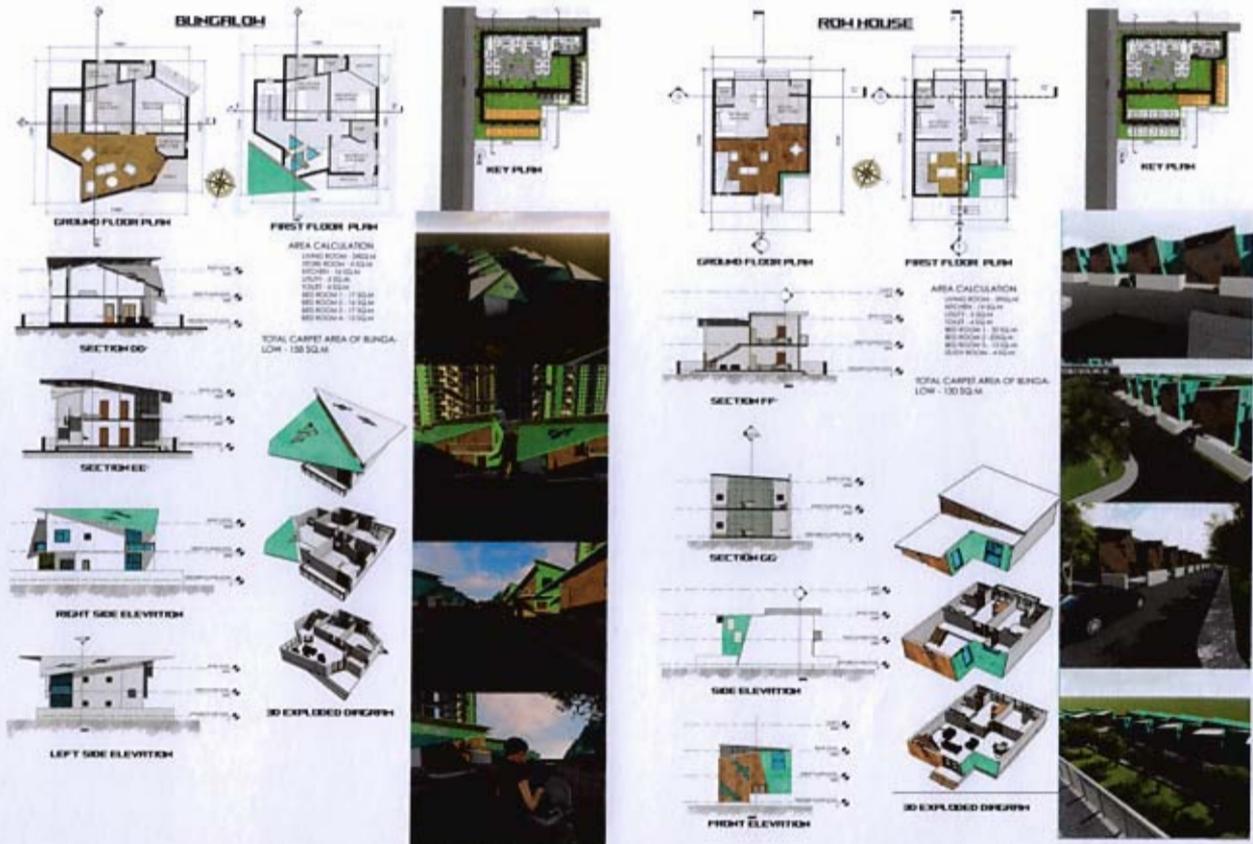
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**Name of Program :** B. Architecture

**Name Of Course :** ABTS-I

**Title of Assignment :** Advance Structural System, Material and services

**Teaching Methodology Adopted :** Experimental Learning

**Name of the faculty :** Prashant Gadre

**Academic Year :** 2021-22

**Semester :** VII

Objectives	<ul style="list-style-type: none"><li>To introduce advanced structural systems, materials and services required in buildings with complex and special requirements and enable the students to integrate the same in design.</li></ul>
Date/Duration of Activity	18-07-2021 to 15-12-2021
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
Brief about the Program (Activity/Event)	<ul style="list-style-type: none"><li><b>Unit 1 :</b> Multi-basements. Design and construction of multi-basements giving constructional details required for natural Lighting, ventilation and surface water disposal. Study of various methods of access to parking areas other than ramps. Drawings to include application of all required services.</li><li><b>Unit 2 :</b> Industrial Buildings. : Types of roofing systems, PEB systems, Proprietary systems, Industrial flooring. Assignments. Drawings showing structural system, construction details and services in plan, section and elevation</li><li><b>Unit 3 :</b> Swimming pools. Design and construction of swimming pools ( Olympic size, semi Olympic, leisure pools) and study of situations such as -- at ground level , podium level and upper / roof level with reference to all constructional and services details.</li><li><b>Unit 4 :</b> Study of long span structures [indoor stadia, railway / metro stations, shopping malls, sky walks etc] in RCC and Steel to understand structural behavior. Introduction of lighting and ventilation of spaces in such large buildings. Assignment would comprise of Case study report and construction details in sketch form.</li></ul>
Students Outcome / Works example	<ul style="list-style-type: none"><li>Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.</li></ul>

*Gadre*

**Faculty In-charge**







## Swimming Pool :

### LITERATURE SHEET

#### SWIMMING POOL

**DEFINITION**  
A swimming pool is a swimming basin in a structure designed to hold water to enable swimming or other leisure activities.

**NO DEFINITION**  
A swimming pool is a swimming basin in a structure designed to hold water to enable swimming or other leisure activities.

**FUNCTIONS**  
Swimming pools are used for recreation, exercise, and sports. They can also be used for therapeutic purposes, such as for people with disabilities or the elderly.

**TYPES OF SWIMMING POOL**

RESIDENTIAL POOL	COMMERCIAL POOL	TRAINING POOL	COMPETITION POOL	LEisure POOL	INDOOR POOL
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**CLASSIFICATION OF SWIMMING POOL**

ON GRADE POOL	BELOW GRADE POOL	UNDER GRADE POOL	INDOOR POOL	ROOF TOP POOL
---------------	------------------	------------------	-------------	---------------

**POOL CLASSIFICATION BY ARCHITECTURAL DESIGN**

DATE	SCALE	PROJECT NO.	DATE	SCALE	PROJECT NO.
15/06/2024	1:100	2024/01	15/06/2024	1:100	2024/01

### LITERATURE SHEET

#### DESIGNING DETAILS OF SWIMMING POOL

**DESIGNING DETAILS OF SWIMMING POOL**

**GENERAL REQUIREMENTS**

- The pool should be designed to meet the requirements of the local authorities and the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.

**POOL CLASSIFICATION BY ARCHITECTURAL DESIGN**

DATE	SCALE	PROJECT NO.	DATE	SCALE	PROJECT NO.
15/06/2024	1:100	2024/01	15/06/2024	1:100	2024/01

### LITERATURE SHEET

#### RESIDENTIAL SWIMMING POOL

**RESIDENTIAL SWIMMING POOL**

**GENERAL REQUIREMENTS**

- The pool should be designed to meet the requirements of the local authorities and the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.

**POOL CLASSIFICATION BY ARCHITECTURAL DESIGN**

DATE	SCALE	PROJECT NO.	DATE	SCALE	PROJECT NO.
15/06/2024	1:100	2024/01	15/06/2024	1:100	2024/01

### LITERATURE SHEET

#### RESIDENTIAL SWIMMING POOL

**RESIDENTIAL SWIMMING POOL**

**GENERAL REQUIREMENTS**

- The pool should be designed to meet the requirements of the local authorities and the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.

**POOL CLASSIFICATION BY ARCHITECTURAL DESIGN**

DATE	SCALE	PROJECT NO.	DATE	SCALE	PROJECT NO.
15/06/2024	1:100	2024/01	15/06/2024	1:100	2024/01

### LITERATURE SHEET

#### OTHER TYPES OF SWIMMING POOLS

**OTHER TYPES OF SWIMMING POOLS**

**GENERAL REQUIREMENTS**

- The pool should be designed to meet the requirements of the local authorities and the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.

**POOL CLASSIFICATION BY ARCHITECTURAL DESIGN**

DATE	SCALE	PROJECT NO.	DATE	SCALE	PROJECT NO.
15/06/2024	1:100	2024/01	15/06/2024	1:100	2024/01

### LITERATURE SHEET

#### SWIMMING POOL DETAIL STUDY

**SWIMMING POOL DETAIL STUDY**

**GENERAL REQUIREMENTS**

- The pool should be designed to meet the requirements of the local authorities and the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.
- The pool should be designed to meet the requirements of the relevant codes of practice.

**POOL CLASSIFICATION BY ARCHITECTURAL DESIGN**

DATE	SCALE	PROJECT NO.	DATE	SCALE	PROJECT NO.
15/06/2024	1:100	2024/01	15/06/2024	1:100	2024/01



**Long Span Structures :**

**LITERATURE SHEET**

**DEFINITION**

**LONG SPAN STRUCTURE**

LONG SPAN STRUCTURES ARE GENERALLY DEFINED AS THOSE THAT EXCEED 100 M IN SPAN. LONG SPAN STRUCTURES CAN BE CLASSIFIED INTO SEVERAL TYPES SUCH AS TRUSS, ARCH, CABLE, AND MEMBRANE. THESE STRUCTURES ARE USED IN A WIDE RANGE OF APPLICATIONS, FROM BRIDGES TO STADIUMS, AIRPORTS, AND INDUSTRIAL BUILDINGS.

**TRADITIONAL STRUCTURE**

TRADITIONAL ARCHITECTURE IS THAT WHICH IS BASED ON MASSIVE WALLS AND ROOFS. THESE STRUCTURES ARE USED IN A WIDE RANGE OF APPLICATIONS, FROM BRIDGES TO STADIUMS, AIRPORTS, AND INDUSTRIAL BUILDINGS.

**LONG SPAN VS TRADITIONAL STRUCTURES**

DATE: NAME: TITANUS & SAKSHI  
PROJECT: LONG SPAN VS TRADITIONAL STRUCTURES  
PAGE: 001 / 001

**LITERATURE SHEET**

**SECTION THROUGH THE MAIN SPAN**

**LONG SPAN STRUCTURE**

LONG SPAN STRUCTURES ARE GENERALLY DEFINED AS THOSE THAT EXCEED 100 M IN SPAN. LONG SPAN STRUCTURES CAN BE CLASSIFIED INTO SEVERAL TYPES SUCH AS TRUSS, ARCH, CABLE, AND MEMBRANE. THESE STRUCTURES ARE USED IN A WIDE RANGE OF APPLICATIONS, FROM BRIDGES TO STADIUMS, AIRPORTS, AND INDUSTRIAL BUILDINGS.

**LONG SPAN VS TRADITIONAL STRUCTURES**

DATE: NAME: TITANUS & SAKSHI  
PROJECT: LONG SPAN VS TRADITIONAL STRUCTURES  
PAGE: 001 / 001

**LITERATURE SHEET**

**INTERNATIONAL AIRPORT**

**TRADITIONAL STRUCTURE**

A LARGE SPAN TRUSS STRUCTURE PLACED OVER THE CORNER OF THE AIRPORT TERMINAL BUILDING. THE TRUSS IS SUPPORTED BY TWO TOWER PILLARS. THE TRUSS IS MADE OF STEEL AND IS COVERED WITH GLASS AND POLYCARBONATE SHEETS. THE TRUSS IS USED TO COVER THE AIRPORT TERMINAL BUILDING AND IS SUPPORTED BY TWO TOWER PILLARS.

**LONG SPAN VS TRADITIONAL STRUCTURES**

DATE: NAME: TITANUS & SAKSHI  
PROJECT: LONG SPAN VS TRADITIONAL STRUCTURES  
PAGE: 001 / 001

**LITERATURE SHEET**

**INTRODUCTION AND LOCATION**

THE LONDON AQUATICS CENTRE IS A SWIMMING AND WATER SPORTS CENTRE. IT IS LOCATED IN LONDON, ENGLAND. THE CENTRE IS A SWIMMING AND WATER SPORTS CENTRE. IT IS LOCATED IN LONDON, ENGLAND.

**LONG SPAN STRUCTURES**

DATE: NAME: TITANUS & SAKSHI  
PROJECT: LONG SPAN STRUCTURES  
PAGE: 001 / 001

**LITERATURE SHEET**

**SITE PLAN**

THE LONDON AQUATICS CENTRE IS A SWIMMING AND WATER SPORTS CENTRE. IT IS LOCATED IN LONDON, ENGLAND. THE CENTRE IS A SWIMMING AND WATER SPORTS CENTRE. IT IS LOCATED IN LONDON, ENGLAND.

**LONG SPAN STRUCTURES**

DATE: NAME: TITANUS & SAKSHI  
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PAGE: 001 / 001

**LITERATURE SHEET**

**LONG SPAN STRUCTURES**

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PROJECT: LONG SPAN STRUCTURES  
PAGE: 001 / 001



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**Name of Program :** B. Architecture  
**Name Of Course :** Urban Studies-1  
**Title of Assignment :** Subdivision of Land  
**Name of the faculty :** Rakesh Mutha, Pooja Kudale

**Academic Year : 2021-22**

**Semester : VII**

<b>Sub Division of Land :</b>  Objectives	<ul style="list-style-type: none"><li>• To enable students to understand the urban context of an Architectural Project beyond the site and understand the implications of various factors (such as traffic-transportation, socio economics, urban landscape, spatial and visual aspects etc) influencing the development of an urban area.</li><li>• To introduce the students to urban planning and design theories and concepts and enable them to undertake planning and design of large scale land development</li></ul>
Date/Duration of Activity	18-07-2021 to 15-12-2021
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
<b>Brief about the Program (Activity/Event)</b>	<ul style="list-style-type: none"><li>• Introduction to urban studies and relevance of its learning in Architecture profession. Principles and theories of Urban Planning and Urban Design.</li><li>• Various aspects of urban land.</li><li>• Urban residential developments such as neighborhood planning, high-rise housing, slum rehabilitation, public housing, town planning schemes etc</li><li>• Affordable housing: introduction and concepts.</li><li>• Subdivision of land for residential development (approx area 4Ha)</li><li>• Study of housing typologies as mentioned.</li></ul>
<b>Students Outcome / Works example</b>	<ul style="list-style-type: none"><li>• Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.</li></ul>

*P. Kudale*

**Faculty In-charge**







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**Name of Program :** B. Architecture

**Name Of Course :** Design VIII

**Title of Assignment :** 5 Star Business Hotel

**Name of the faculty :** Rakesh Mutha, Sushmita Pansare, Pooja Kudale

**Academic Year :** 2021-22

**Semester :** VIII

Objectives	<ul style="list-style-type: none"><li>Subject aims at preparing the students to handle complex architectural issues at this stage addressing various challenges in terms of scale, complexity of functions, social economic context, traffic and vehicular movement and so on. Along with the challenges of physical issues, students are also now expected to address spatial and visual language of their project with reference to the urban context and setting of their site.</li></ul>
Date/Duration of Activity	03-01-2022 to 25-05-2022
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
Brief about the Program (Activity/Event)	Multi Functional Complex of Buildings or Speciality Building in an Urban Context with substantial Complexity addressing Issues of Character, Identity, Builtform, Contextuality, Advanced Services, Green Initiatives , landscape integration, traffic management with impact on immediate surroundings, structural resolution in detail. Building Quantum not less than 10000 to 20000 sqm Area of Functional space depending on Context and Complexity and appropriate plot Area. ( eg. Healthcare facility, Educational Institution, 5 Star Hotel, Convention Centre, Multimodal Transport Hub, Shopping Mall and Multiplex, redevelopment project etc.). Page 37 of 50 Project should explore the Impact on the Surrounds and from the Surrounds with reference to the Urban Insert being proposed. 2. One Esquee / Charette be undertaken in each of the Terms ( One week Duration) exploring design solution for a project / component , ideas for which would help the Main Design project.
Students Outcome / Works example	The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

*P. Kudale*  
**Faculty In-charge**





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## 5 Star Business Hotel :

**SITE ANALYSIS**  
5 STAR BUSINESS HOTEL AT KHARABI

**CONCEPT & ZONING**  
5 STAR BUSINESS HOTEL AT KHARABI

**SITE PLAN**  
SCALE : 1:400

**BASEMENT PLAN**

**FLOOR PLANS**

**EAST SIDE ELEVATION**  
**NORTH SIDE ELEVATION**  
**WEST SIDE ELEVATION**





Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web : www.pdeacoa.edu.in

**Name of Program :** B. Architecture

**Name Of Course :** ABTS-II

**Title of Assignment :** Advance Structural System, Material and services

**Name of the faculty :** Prashant Gadre

**Academic Year :** 2021-22

**Semester :** VIII

Objectives	<ul style="list-style-type: none"><li>To introduce advanced structural systems, materials and services required in buildings with complex and special requirements and enable the students to integrate the same in design.</li></ul>
Date/Duration of Activity	03-01-2022 to 25-05-2022
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
Brief about the Program (Activity/Event)	<ul style="list-style-type: none"><li><b>Unit 1 : Auditoriums</b> - Design and construction of Auditorium of min capacity 500 with provision of a balcony and application of all required services. All architectural drawings, framing plans and sections, showing all services and constructional detail for balcony</li><li><b>Unit 2 : Construction details of architectural features in design projects.</b> Complete details with reference to materials used and details of construction. Minimum five working details to an appropriate scale.</li><li><b>Unit 3 : Introduction to high rise buildings.</b> Behavior of high rise structures under different loading conditions. Understanding of structural systems for high rise structures.</li><li><b>Unit 4 Curtain walls :</b> Framing systems and construction details for a curtain wall. Students shall study cases of curtain wall and prepare working details for the same.</li></ul>
Students Outcome / Works example	<ul style="list-style-type: none"><li>Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.</li></ul>

*Gadre*

**Faculty In-charge**





# Pune District Education Association's COLLEGE OF ARCHITECTURE

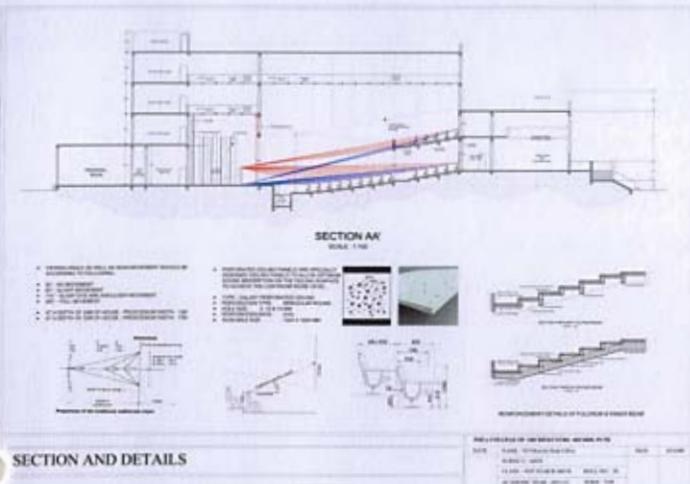
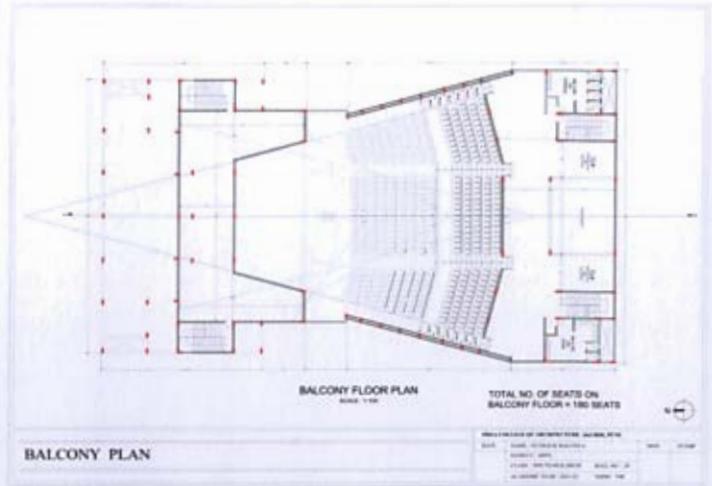
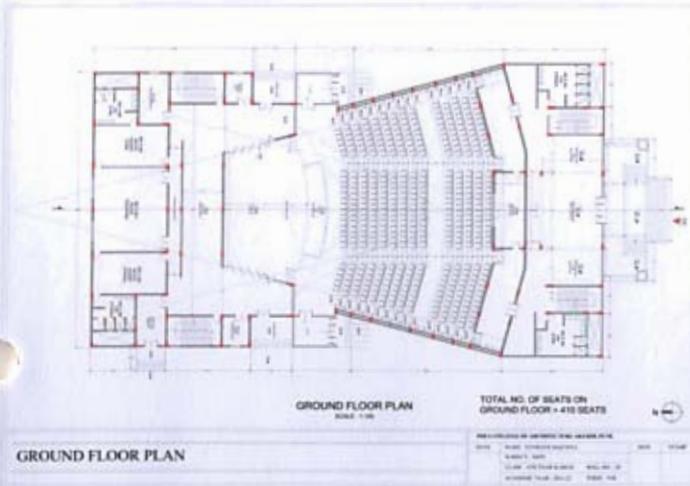
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## Auditorium :



**HVAC CALCULATIONS**

**WATER CALCULATIONS FOR AUDITORIUM HOUSE**

Step 1: ...  
Step 2: ...  
Step 3: ...  
Step 4: ...  
Step 5: ...  
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Step 97: ...  
Step 98: ...  
Step 99: ...  
Step 100: ...

**REVERBERATION CALCULATIONS**

REVISIONS BY ARCHITECT/CLIENT/DATE

NO.	DATE	REVISION
1	10/10/2016	ISSUED FOR PERMIT
2	10/10/2016	ISSUED FOR PERMIT
3	10/10/2016	ISSUED FOR PERMIT

**SANITATION REQUIREMENTS CALCULATIONS**

WATER CLOSET (WC) REQUIREMENTS  
= MALE PUBLIC WC 1 PER 250 PEOPLE  
= FEMALE PUBLIC WC 2 PER 100 PEOPLE

SO. FOR MALE 250 PEOPLE = 1 X 250 / 100 = 2.5  
HENCE NO. OF WC FOR MALE = 2

FOR FEMALE 250 PEOPLE = 2 X 250 / 100 = 5  
HENCE NO. OF WC FOR FEMALE = 5

TOTAL CONSUMPTION PER DAY IN LITRE  
= FOR DOMESTIC = 5L PER SEAT  
= FOR FLUSHING = 10L PER SEAT  
= TOTAL WATER REQUIRED IN 1 DAY (1 SEAT) = 15L  
= TOTAL NO. OF PEOPLES = 300

WATER REQUIRED - 300 X 15 = 4500 LITRES  
AS PER NBC, REQUIREMENT OF WATER FOR  
FIREFIGHTING IS 2200 LIT PER MIN.

WATER REQUIRED FOR FIREFIGHTING FOR 2  
HOURS  
= 100 X 2200  
= 2,20,000 LITRE  
TOTAL WATER REQUIRED = 4500 + 2,20,000  
= 2,24,500 LITRE

AS TOTAL NO. OF PERSONS = 300 WATER REQUIRED  
300 X 15 = 4500L

WE KNOW, 1M CU = 1000 L

REVISIONS BY ARCHITECT/CLIENT/DATE

NO.	DATE	REVISION
1	10/10/2016	ISSUED FOR PERMIT
2	10/10/2016	ISSUED FOR PERMIT
3	10/10/2016	ISSUED FOR PERMIT





**Construction details of Architectural features in Design :**

**GAZEBO**

A GAZEBO IS A SMALL BUILDING WITH OPEN SIDES. GAZEBOS ARE OFTEN PUT UP IN GARDENS SO THAT PEOPLE CAN SIT IN THEM TO ENJOY THE VIEW. GAZEBOS ARE FREESTANDING OR ATTACHED TO A GARDEN WALL, BERRIED, AND OPEN ON ALL SIDES. THEY PROVIDE SHADE, SHELTER FROM RAIN AND A PLACE TO REST, WHILE ACTING AS AN ORNAMENTAL FEATURE. SOME GAZEBOS IN PUBLIC PARKS ARE LARGE ENOUGH TO SERVE AS A BANDESTAND.

- TYPES OF GAZEBO**
  - LEAN-TO GAZEBOS
  - FREESTANDING GAZEBOS
  - POP UP GAZEBOS
  - GAZEBO TENTS
  - RETRACTABLE CANOPY
  - CURTAINS
  - SHELVES
  - TRILLS SEES
- BENEFITS OF GAZEBO**
  - THEY'RE GREAT THROUGHOUT THE YEAR.
  - THEY'RE EASILY GAZEBOS FEATHERS 100% COVER FACTOR FOR THE ULTIMATE PROTECTION FROM BOTH SUN AND RAIN.
  - THEY'RE LOW MAINTENANCE AND EASY TO LOOK AFTER.
  - THEY CAN PROVIDE A GREAT SOCIAL BOOST.
  - THEY LOOK FANTASTIC.
  - THEY'RE STURDY WHEN THEY'RE SET UP.

**TRADITIONAL STYLE GAZEBO**  
 CLASSIC GAZEBO STYLING WILL HAVE AN OCTAGONAL FORM, A TURRETTED ROOF, OR BOTH. THE IDEA OF A GAZEBO IS THAT IT IS FREESTANDING, CREATING A ROOM IN A GARDEN BUT, LEAVE AN OUTRIGINAL REMAINING PART OF THE OUTDOORS.

- ADVANTAGES OF GAZEBO**
  - GAZEBO PROVIDE AMPLE SHADE FROM THE HOT SUMMER SUN, WHICH MEANS YOU'LL BE ABLE TO ENJOY MORE OF THE OUTDOORS EVEN IN THE WARMER WEATHER.
  - GAZEBO PROVIDE SHELTER FROM THE RAIN AND WILL ALLOW YOU TO ENTERTAIN OUTDOORS EVEN WHEN THE WEATHER TURNS POOR.
  - BOTH CREATE PAVING SPACES FOR SEATING AND A WELL-COMING SEATING AREA FOR ENTERTAINING.
  - GAZEBO CAN BE SCREENED IN WHICH IS GREAT FOR PROTECTING FROM MOSQUITOES AND OTHER BUGS, ESPECIALLY IN THE EVENING.
  - WITH BOTH OPTIONS, YOU CAN ADD A LITTLE TOUCH OF OUTDOOR CHARM BY WINDING LIGHTS ALONG THE STRUCTURE MAKING IT THE PERFECT OUTDOOR SPACE FOR THOSE EVENINGS WHEN YOU DON'T WANT TO GO BACK INSIDE.

**CONSTRUCTION DETAIL : GAZEBO**

PDEA COLLEGE OF ARCHITECTURE AKURDI, PUNE			
DATE	NAME : YUNRAJ S. MAGNAYA	SKIN	STAMP
	SUBJECT : ARCH		
	CLASS : 4TH YEAR B.A.RCH	ROLL NO. : 20	
	ACADEMIC YEAR : 2021-22	TERM : VIB	

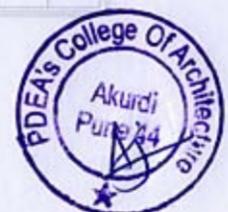
**CANOPY**

A CANOPY IS AN OVERHEAD STRUCTURE TYPICALLY INTENDED TO PROVIDE SHELTER FROM RAIN OR SUN. IT IS USUALLY SEEN AS A COVERING ATTACHED TO THE OUTSIDE OF A BUILDING. IT IS ALSO USED FOR DECORATIVE PURPOSES AND TO EMPHASIZE A ROUTE OR PART OF A BUILDING.

- TYPES OF CANOPIES**
  - ENTRANCE CANOPIES
  - CANTILEVER SHADE CANOPY
  - RETRACTABLE CANOPIES
  - SHADE CANOPIES
  - GARDEN CANOPIES
  - CANOPY TENTS
  - CARPORT CANOPY
  - SHADE SAILS
- BENEFITS OF CANOPY**
  - A CANOPY PROTECTS THE ENTRANCE AND PATRONS OR VISITORS FROM THE WEATHER, WHETHER HOT SUN OR RAIN AND SNOW. MAKING YOUR ENTRANCE MORE PHYSICALLY COMFORTABLE MAKES IT MORE INVITING.
  - CANOPIES OFFER ALL YEAR ROUND WEATHER PROTECTION TO YOUR BUILDING ENTRANCE AND VISITORS, WHILST CREATING A WELCOMING, DEFINED ENTRANCE TO THE BUILDING.
  - ENTRANCE CANOPIES CAN HELP UTILISE THE SPACE YOU HAVE AS MUCH AS POSSIBLE.
  - AN ENTRANCE CANOPY MAKES A USEFUL AND ADDITION TO MOST BUILDINGS, NOT ONLY DOES IT IMPROVE THE AESTHETICS OF THE BUILDING BUT IT EFFECTIVELY HIGHLIGHTS THE LOCATION OF THE ENTRANCE.
  - ENTRANCE CANOPY**
  - THESE CANOPIES ARE INSTALLED AT THE ENTRANCE TO A BUILDING. THEY MIGHT THEREFORE ALLOW SOME LIGHT IN WHILE AT THE SAME TIME OFFERING PROTECTION FROM UV RAYS.
  - AN ENTRANCE CANOPY IS USEFUL TO A BUILDING BY NOT ONLY HIGHLIGHTING THE ENTRANCE LOCATION BUT ALSO IMPROVING THE BUILDING'S AESTHETICS.
  - YOU CAN ALSO USE SIGNAGE TO YOUR ENTRANCE CANOPY TO PROVIDE IMPORTANT INFORMATION, DISPLAY THE STORE NAME, AND WELCOME VISITORS.
  - IF THE ENTRANCE IS LARGE ENOUGH, YOU CAN EVEN TRANSFORM YOUR ENTRANCE CANOPY TO OFFER EXTRA RETAIL SPACE.

**CONSTRUCTION DETAIL : CANOPY**

PDEA COLLEGE OF ARCHITECTURE AKURDI, PUNE			
DATE	NAME : YUNRAJ S. MAGNAYA	SKIN	STAMP
	SUBJECT : ARCH		
	CLASS : 4TH YEAR B.A.RCH	ROLL NO. : 20	
	ACADEMIC YEAR : 2021-22	TERM : VIB	



**Construction details of Architectural features in Design :**

### PARKING SHED

A PARKING LOT SHADE WILL ENHANCE YOUR PARKING AREA BY BLOCKING OUT UV RAYS AND ADDING A STYLISH DESIGN. EACH PARKING LOT SHADE IS BUILT TO COMMERCIAL STANDARDS, MEANING THAT THEY'RE HEAVY DUTY AND LONG-LASTING THESE PARKING LOT SHADE STRUCTURES ARE PERFECT FOR HOTELS, SPORTS COMPLEXES, RESORTS, RETAIL OPERATIONS OR ANY SORT OF ENTITY. BEST OF ALL, EACH SHADE IS CUSTOM MADE ACCORDING TO THE DIMENSIONS OF YOUR PARKING AREA. CHOOSE FROM A VARIETY OF HEIGHTS, SHADE SPANS, AND CANOPY SIZES.

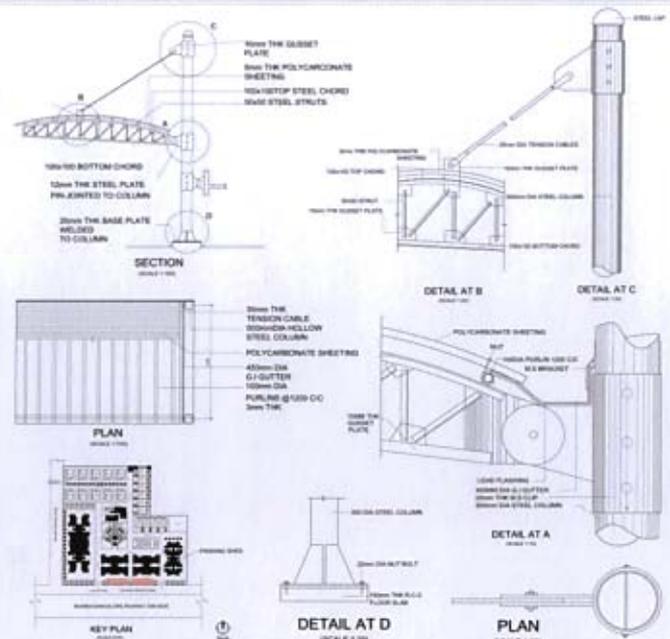
**TYPES OF PARKING SHEDS**

- CANTILEVER TYPE
- PYRAMED TYPE
- UMBRELLA TYPE
- K SPAN TYPE
- GRIP TYPE



**CANTILEVER TYPE PAKING SHED**

- A CANTILEVER TYPE OF CAR PARKING SHADE IS REGULAR DESIGN AND OFTEN DOES NOT REQUIRE ANY COMPLICATED FABRICATION PROCESSES.
- SINGLE BAY CANTILEVER DESIGN IS THE CONTEMPORARY DESIGN IN CAR PARKING SHADE STRUCTURE.
- IT IS GENERALLY USED IN PLACES WHERE HEIGHT IS LIMITED, OWNER WANT SIMPLE EFFECT OR CANTILEVER LENGTH IS RELATIVELY SMALL.
- ESPECIALLY SUITABLE FOR PLACES WHERE HEIGHT IS LIMITED SUCH AS RESIDENTIAL AREAS, PRIVATE VILLAS, ETC.
- THE CAR PARKING SHED CAN BE CREATE A MATCHING LOOK AND COLORS COMBINED WITH THE LOCAL LANDSCAPE. IN ADDITION, CONSTRUCTION PERIOD WILL BE VERY SHORT.



**CONSTRUCTION DETAIL : (FABRICATION) PARKING SHED**

PDEA COLLEGE OF ARCHITECTURE AKURDI, PUNE			
DATE	NAME	SEM	SEMAP
	VYUHA & MALVIYA		
SUBJECT	ARTS		
CLASS	4TH YEAR BARCH	BULL NO.	28
ACADEMIC YEAR	2021-22	TERM	VIII

### ACOUSTIC SLIDING WALL

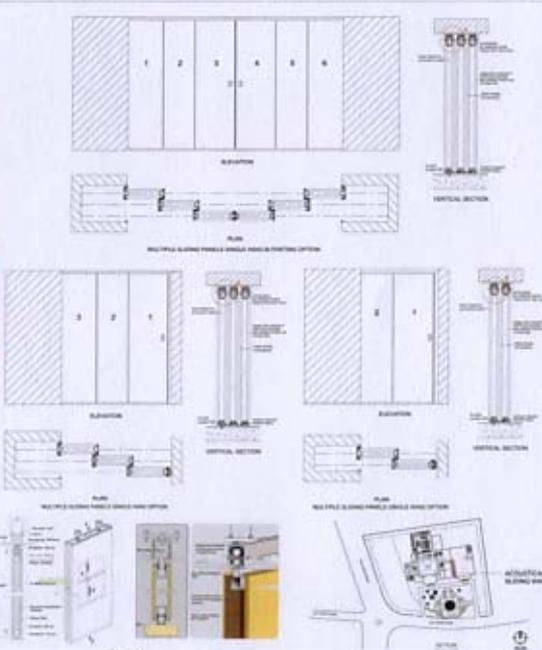
WALLS ARE A SIMPLE PRACTICAL SOUNDING WALLS AND SLIDING PARTITION WALLS SYSTEM, WHICH HAS BEEN DESIGNED TO REPLACE THE TRADITIONAL SOLID-CORE DOOR SYSTEMS THAT TEND TO WARP OVER TIME AND REQUIRE HEAVY LIFTING TECHNIQUES.

THIS SLIDING WALL SYSTEM IS MANUFACTURED WITH A MIX OF STEEL AND ALUMINUM FRAME TO PROVIDE A THICK RESISTANT STRUCTURE AND IS FITTED WITH ACOUSTIC PANEL MATERIAL, RUBBER GASKETS AND SWEEP STRIPS.

TO FORM LARGER OPENINGS THE SLIDING WALL PANELS CAN BE JOINED TOGETHER ON SITE BY WAY OF LIFTING BEAM AND STEEL PLATES (ANGLES) PANELS. THIS SYSTEM IS SUPPLIED WITH A FLOOR GUIDE RAIL, MOUNTED INTO THE UNDERSIDE OF THE PANEL, AND WITH A FLOOR INDICATOR IN THE FLOOR TO ACT AS A GUIDE. THE PARTITION CAN BE SLIDED AS A SINGLE UNIT STACKING AT ONE END OR AS A 50% SLIDING CONFIGURATION.

**MAIN FEATURES**

- CONTEMPORARY SPACE MANAGEMENT
- CAN BE USED WITH A DOOR OR AGAINST A WALL
- COMPREHENSIVE WALL SYSTEM OF SLIDING PARTITION WALL FINISHES - INCLUDING VENEER, LAMINATE AND WHITE BOARD FINISH OR WOOD GRAIN WALLS
- WHEEL OR MULTIPLE TRACKS (LINE) AVAILABLE
- DESIGNED IN CONTEMPORARY SPACE MANAGEMENT THROUGH SLIDING WALLS



**CONSTRUCTION DETAIL : SERVICES - ACOUSTICS**

PDEA COLLEGE OF ARCHITECTURE AKURDI, PUNE			
DATE	NAME	SEM	SEMAP
	VYUHA & MALVIYA		
SUBJECT	ARTS		
CLASS	4TH YEAR BARCH	BULL NO.	28
ACADEMIC YEAR	2021-22	TERM	VIII

**Introduction to High Rise Building :**

**LITERATURE SHEET**

**Types of Urban Formations**

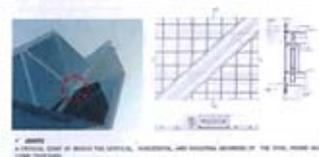
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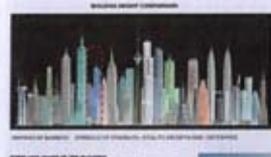
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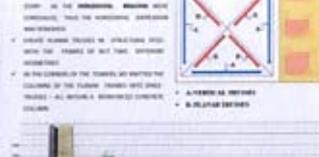
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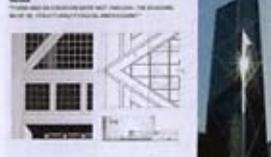
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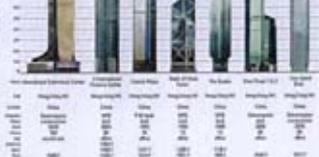
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**HIGH RISE BUILDING : BANK OF CHINA TOWER HONG KONG**

PDEA COLLEGE OF ARCHITECTURE AKURDI, PUNE

DATE: NAME: YUVRAJ K MALVIYA SIGN: STAMP

SUBJECT: APTB

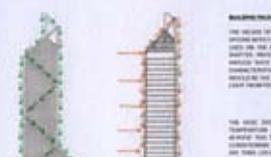
CLASS: 4<sup>TH</sup> YEAR B.ARCH

ACADEMIC YEAR: 2021-22

ROLL NO.: 25

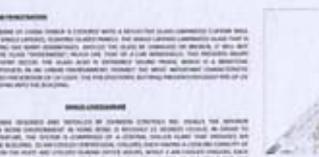
TERM: VIII

**LITERATURE SHEET**



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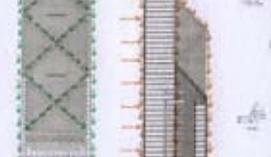
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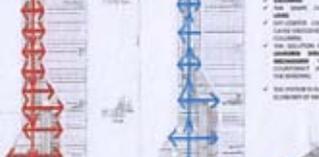
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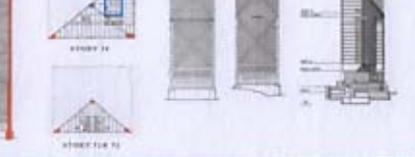
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PDEA COLLEGE OF ARCHITECTURE AKURDI, PUNE

DATE: NAME: YUVRAJ K MALVIYA SIGN: STAMP

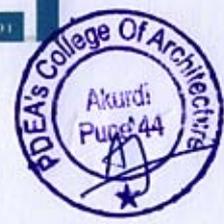
SUBJECT: APTB

CLASS: 4<sup>TH</sup> YEAR B.ARCH

ACADEMIC YEAR: 2021-22

ROLL NO.: 25

TERM: VIII







Pune District Education Association's  
**COLLEGE OF ARCHITECTURE**

Sector 28, Pradhikaran, Akurdi, Pune - 411044.



Affiliated to Savitribai Phule Pune University (PU/PN/ARCH/476/2016)

Approved by Council of Architecture, New Delhi (MH-96) Govt. of Maharashtra, DTE, Mumbai. (DTE Code 6897)

Ph. 020-27650896, 27650897 Email : pdeacoa@gmail.com Web : www.pdeacoa.edu.in

**Name of Program :** B. Architecture

**Name Of Course :** Urban Studies-II

**Title of Assignment :** Subdivision of Land

**Name of the faculty :** Rakesh Mutha, Pooja Kudale, Sushmita Pansare

**Academic Year :** 2021-22

**Semester :** VIII

Objectives	<ul style="list-style-type: none"><li>To introduce the students to the process of planning and urban development and associated legislation.</li><li>To introduce the students to urban economics.</li></ul>
Date/Duration of Activity	03-01-2022 to 25-05-2022
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
Brief about the Program (Activity/Event)	<ul style="list-style-type: none"><li>Study of planning process in detail (Survey, analysis, proposals and development)</li><li>Conservation and related Urban Design controls. Planning and Urban Design legislation- introduction and relevance. Unified Building bye laws and Development Control rules of local authorities.</li><li>Urban economics: introduction and concepts (demand and supply, housing finance, Government schemes and various bodies etc)</li><li>Reading of Urban fabric: Study of existing town and town planning proposals for municipal council level townIdentification of urban issues related to various aspects such as environment, society, traffic and transportation, hills and hill slopes, riverfront development, urban heritage conservation through primary surveys</li></ul>
Students Outcome / Works example	<ul style="list-style-type: none"><li>Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.</li></ul>

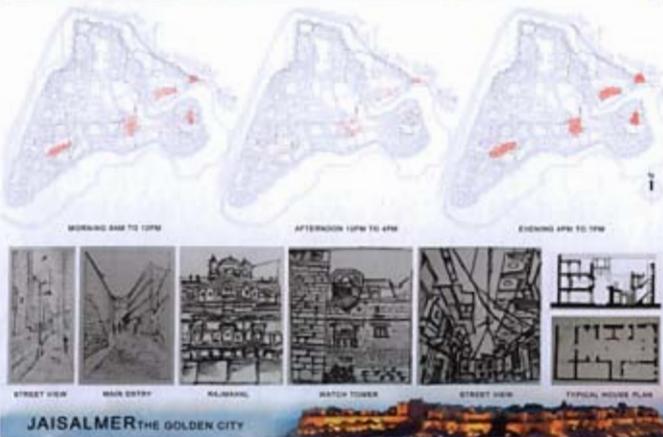
*P. Kudale*

**Faculty In-charge**





ACTIVITY MAPPING AND SKETCHES



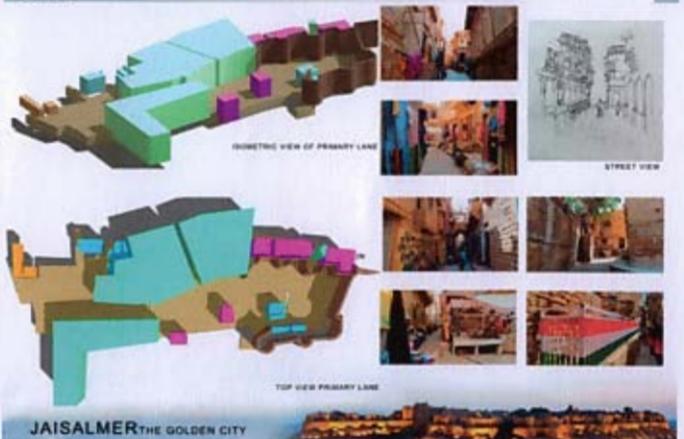
TOPOGRAPHIC MAP



ELEVATION



3D MODEL



STUDY TOUR WORK  
GROUP MEMBERS

- ✓ Abhishek Deshmukh
- ✓ Yuvraj Malviya
- ✓ Saurabh Shinde
- ✓ Krishna Hivre
- ✓ Harshwardhan mane
- ✓ Shantanu sawant
- ✓ Shirish Athawle

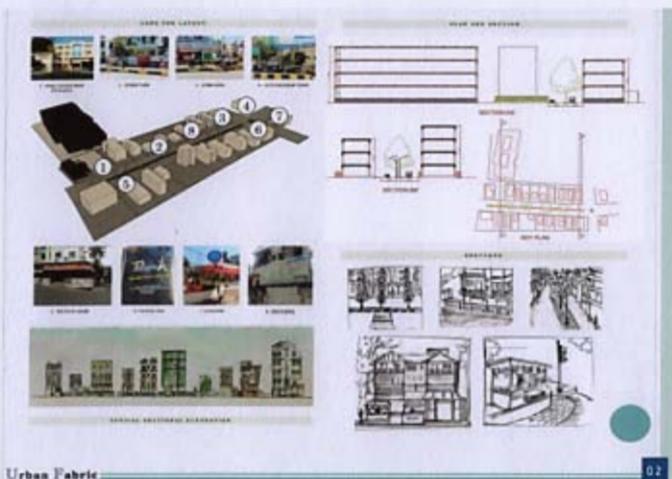
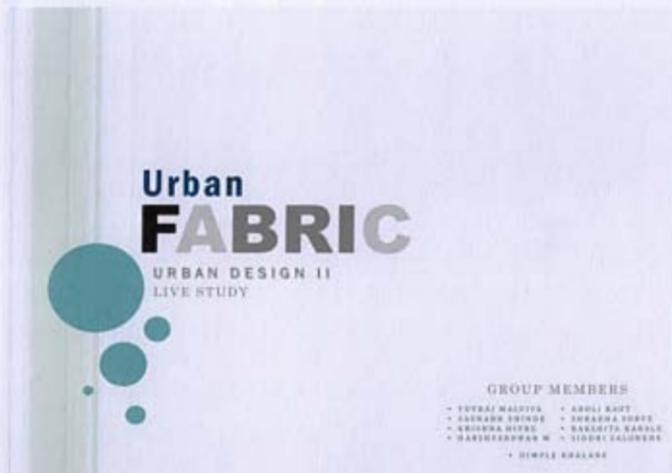
- ✓ Venkatesh Naik
- ✓ Mujahid Shaikh
- ✓ Aditya Chintamani
- ✓ Suraj Wani
- ✓ Isha Karande
- ✓ Sonali Gaikwad
- ✓ Renuka Magare
- ✓ Siddhi Walke

- ✓ Aboli raut
- ✓ Siddhi Salunkhe
- ✓ Shraddha surve
- ✓ Rakshita karale
- ✓ Dimple khalane
- ✓ Srushti Khedkar
- ✓ Shweta Maral

**Study of Urban Fabric Akurdi : Group Work ( Live Study )**

**GROUP MEMBERS**

- ✓ Yuvraj Malviya
- ✓ Saurabh Shinde
- ✓ Krishna Hivre
- ✓ Harshwardhan mane
- ✓ Shantanu sawant
- ✓ Aboli raut
- ✓ Siddhi Salunkhe
- ✓ Shraddha surve
- ✓ Rakshita karale
- ✓ Dimple khalane



## Study of Urban Issues Bhumkar Chowk : Group Work ( Live Study )

### LOCATOR MAP



### WHAT IS BAHAR

In relation to the built environment, the term Bahar refers to the area and development of built environment and infrastructure around urban areas and vicinity from which urban areas are more or less self-sufficient. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### INTERPRETATION

This study highlights the importance of the city and urban areas in the context of the built environment. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### THE STUDY

The study aims to understand the transportation issues in the area. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### ABOUT LOCATION

Bhumkar Chowk, Pradhikaran, Akurdi, Pune. It is a major junction in the city. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### TOPOGRAPHY

The area is located in the urban area of Pune. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### SOIL CHARACTERISTICS AND CLIMATE

The area is located in the urban area of Pune. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### WIND DIRECTION AND WINDSPEED

The wind direction and windspeed in the area are important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### NEIGHBOURHOOD CONTEXT



### ABOUT BUMKAR CHOWK

Bumkar Chowk is a major junction in the city. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### IN EVERY ARE ANALYSIS



- TRAFFIC MANAGEMENT AND CONTROL
- PUBLIC TRANSPORTATION
- LAND USE AND DEVELOPMENT
- ENVIRONMENTAL IMPACT
- ATMOSPHERIC POLLUTION
- WATER MANAGEMENT

### NEIGHBOURHOOD CONTEXT

Pune is a major city. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### ABOUT BUMKAR CHOWK

Bumkar Chowk is a major junction in the city. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### IN EVERY ARE ANALYSIS

The analysis of the area is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.

### ISSUES

- 1. INADEQUATE TRAFFIC SIGNALS AT BUMKAR CHOWK.
- 2. POOR ROAD CONDITION AND ROAD WIDTH.
- 3. INADEQUATE PUBLIC TRANSPORTATION.
- 4. INADEQUATE LAND USE AND DEVELOPMENT.
- 5. INADEQUATE ENVIRONMENTAL IMPACT ASSESSMENT.
- 6. INADEQUATE WATER MANAGEMENT.
- 7. INADEQUATE ATMOSPHERIC POLLUTION CONTROL.
- 8. INADEQUATE WASTE MANAGEMENT.
- 9. INADEQUATE PUBLIC PARTICIPATION.
- 10. INADEQUATE TRANSPARENCY.
- 11. INADEQUATE ACCOUNTABILITY.
- 12. INADEQUATE EFFICIENCY.
- 13. INADEQUATE EFFECTIVENESS.
- 14. INADEQUATE SUSTAINABILITY.
- 15. INADEQUATE RESILIENCE.
- 16. INADEQUATE ADAPTABILITY.
- 17. INADEQUATE FLEXIBILITY.
- 18. INADEQUATE INNOVATION.
- 19. INADEQUATE LEADERSHIP.
- 20. INADEQUATE VISION.

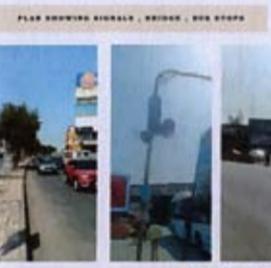
### RECOMMENDATIONS

- 1. IMPROVE TRAFFIC SIGNALS.
- 2. IMPROVE ROAD CONDITION AND ROAD WIDTH.
- 3. IMPROVE PUBLIC TRANSPORTATION.
- 4. IMPROVE LAND USE AND DEVELOPMENT.
- 5. IMPROVE ENVIRONMENTAL IMPACT ASSESSMENT.
- 6. IMPROVE WATER MANAGEMENT.
- 7. IMPROVE ATMOSPHERIC POLLUTION CONTROL.
- 8. IMPROVE WASTE MANAGEMENT.
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- 20. IMPROVE VISION.

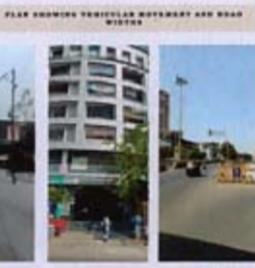
### TYPICAL PLANS



### PLAN SHOWING SIGNALS, BRIDGE, BUS STOPS



### PLAN SHOWING VEHICULAR MOVEMENT AND ROAD WIDTHS



### CONCLUSION

The study highlights the importance of the city and urban areas in the context of the built environment. It is important to understand the urban areas and their development. Urban areas are more or less self-sufficient in terms of infrastructure and services. Land use and population density are high in urban areas.





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**Name of Program :** B. Architecture  
**Name Of Course :** Elective – III ( Allied Elective )  
**Title of Assignment :** Subdivision of Land  
**Name of the faculty :** Pooja Kudale

**Academic Year : 2021-22**

**Semester : VIII**

Objectives	<ul style="list-style-type: none"><li>The subject of Electives has been introduced in syllabus with specific intention of study of a particular subject of student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt, to make their career in future. The allied elective gives opportunity to the students to explore links of design as a faculty with allied fields such as social sciences, visual art, performing arts, psychology, etc.</li></ul>
Date/Duration of Activity	03-01-2022 to 25-05-2022
Venue	Pune
Student attended	Fourth Year B.Arch
No. of Students Present	36
Photograph/Video Available	Photographs of Students Work Available
Brief about the Program (Activity/Event)	<ul style="list-style-type: none"><li>Individual College may offer topics depending upon the availability of experts and resource material. The colleges will have the opportunity to focus on a particular group of topics according to the overall philosophy and mission statement of the College. The probable elective topics are</li><li>• Music and Architecture</li><li>• Environmental psychology</li><li>• Art movements and Architecture</li><li>• Sociology and Architecture</li><li>• Building Economics</li><li>• Biomimicry</li></ul>
Students Outcome / Works example	<ul style="list-style-type: none"><li>Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.</li></ul>

*P. Kudale*

**Faculty In-charge**



## Report on Allied Elective : Biomimicry

### INDEX

1. What is Biomimicry?
2. History
3. Importance of Biomimicry to architecture
4. Types of Biomimicry
5. Principles of Biomimicry
6. Case study - 1 - Jullier Church, Italy
7. Case study - 2 - Art Science Museum, Singapore
8. Abstract
9. Research paper

### 1. Biomimicry :

Design inspired by nature, the design and production of materials, structures, and systems that are modelled on biological entities and processes.

Biomimicry originates from two Greek words: *Bio* - Life *Mimesis* - Imitate. Biomimicry is the idea of using the natural design of nature and the environment to inspire our own design.

Biomimicry can be applied to improve the way the built environment is designed, through site work, construction, and daily operations, and to reduce the impact it has upon the natural environment through numerous strategies of reducing carbon emissions, waste and more.

There are vast amounts of knowledge and ideas available to inspire possible solutions to architectural design that will also allow designs to be more sustainable.

Biomimicry is the science of applying nature inspired designs in human engineering and innovation to solve problems.

It is learning from and then emulating nature's form processes and ecosystems to create more sustainable designs.

### 2.History :

Architecture has long drawn from nature as a source of inspiration.

During the One of the early examples of biomimicry was the study of birds to enable human flight. Although never successful in creating a "flying machine", Leonardo da Vinci (1452-1519) was a keen observer of the anatomy and flight of birds, and made numerous notes and sketches on his observations as well as sketches of "flying machines".

The Wright Brothers, who succeeded in flying the first heavier-than-air aircraft in 1903, allegedly derived inspiration from observations of pigeons in flight.

Leonardo da Vinci's design for a flying machine with wings based closely upon the structure of bat wings. During the 1950s, the American biophysicist and polymath Otto Schmitt developed the concept of "biomimicry".

During his doctoral research he developed the Schmitt trigger by studying the nervous system, attempting to engineer a device that replicated the biological system of nerve propagation.

He continued to focus on devices that mimic natural systems and by 1957 he had produced a conference to the standard view of biophysics at that time, a view he would come to call *Nemotronics*.



### 3. Importance of Biomimicry and its Importance in Architecture :

For centuries, we have drawn inspiration from the world around us to arrive at some of our greatest innovations. The study and delivery of nature as a source of inspiration for design is called "Biomimicry".

Defined by the Biomimicry Institute as "nature inspired innovation that seeks sustainable solutions to human challenges by emulating nature's time-tested patterns and strategies", Biomimicry holds tremendous potential to inspire eco-friendly designs in technology.

In the building industry for example, designers are continually looking for innovative ways to create practical, beautiful spaces that are sensitive to the environment and sustainable.



### 4. Levels in Biomimicry :

Depending on the degree of emulation of the life processes of other organisms, Biomimicry can be classified into three levels of design: product, process and policy.

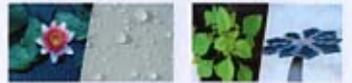
- Organism level
- Behavioral level
- Ecosystem level

### • Organism-level Biomimicry :

This refers to the more replication of the form of an organism to inspire product design. The ubiquitous Velcro adhesive is a classic example of biomimicry at an organism level.

The invention of Velcro, George de Mestral, was inspired by the microscopic structure of burrs that stick to the fur of his dog.

Their outer surface features many projections that have tiny hooks in them. When the dog brushed by a plant, these hooks would cling on to its hairs and be carried away, along with being very difficult to remove.



### • Behavioral-level Biomimicry :

In behavioral biomimicry, designers aim to replicate the behavior of an organism when it comes in contact with other elements.

This is best explained by lotuses that bloom in marshes and remain fresh, despite their surroundings. The petals and leaves of a lotus are ultra-hydrophobic, meaning that they exhibit extreme water and dirt repellence, commonly known as self-cleaning properties.



### • Ecosystem-level Biomimicry :

When systems are modelled to be a part of the natural ecosystem, rather than to derive partially from it, the highest level of biomimicry is attained.

All the elements of a biomimicry ecosystem are interconnected and interdependent. An important example of ecosystem-level biomimicry is the EdgeGate Center in Zurich, which is modelled on terraced meadows.

Terrace meadows are designed to maintain stable temperatures inside, regardless of fluctuations in outside temperatures. Terrace meadows have a series of this "chimney" that absorb heat in the daytime, while keeping the inside reasonably cool.

At night, the hot air, owing to its low density, makes its way out of these chimneys. At the bottom of the meadow are open vents, which allow cool air to enter inside.



### 5. Principles of Biomimicry :

- Nature runs on sunlight.
- Nature uses only the energy it needs.
- Nature does its best to function.
- Nature recycles everything.
- Nature rewards cooperation.
- Nature banks on diversity.
- Nature demands local expertise.
- Nature taps the power of limits.

### ➤ Nature runs on sunlight :

Nature runs on sunlight, but as nature is powered by the renewable energy of the sun, if the use of renewable energy sources and the purchase of green power. If we were to consistently mimic the ways of nature, we would rely solely on renewable power.

### ➤ Nature uses only the energy it needs :

We can all learn a lesson from the Center for Green Schools, one of the key ideas taught to the world's future sustainability leaders is to take only what you need, not as much as you want. In addition to encouraging the use of renewable energy, it also rewards projects for optimizing energy performance both newly constructed buildings.

### ➤ Nature fits form function :

Nature uses shape to determine functionality.

Nature uses shape or form, rather than added material and energy, to meet functional requirements. This allows the organism to accomplish what it needs to do using a minimum of resources.

### ➤ Nature recycles everything :

In nature there is no waste, everything is a nutrient that is recycled and reused infinitely. The practice of Biomimicry encourages innovators to look beyond form and towards nature's inherent sustainability strategies, creating designs that are efficient, adaptable, and multi-functional.

### ➤ Nature rewards cooperation :

Very little in nature exists in isolation. By way of example, plants provide because of pollination, which is best fed on the nectar they collect. Buildings that are designed with input and analysis from experts of diverse backgrounds capitalize on the differences.

### ➤ Nature banks on diversity :

Diversity is one of nature's best insurance policies. We know that species with limited genetic diversity have more difficulty adapting to environmental change, with diversity are more stable. Like a living system, it is more applicable diverse body of building types including schools, healthcare spaces, retail facilities and homes.

### ➤ Nature demands local expertise :

There is a reason the term "native species" has such strong connotations; nature's systems are inherently local. Certain species thrive under specific conditions, local and regional weather patterns matter, so do the types of soil, air particulates and water temperatures. Innovate for them. Products and materials that are extracted, manufactured and purchased within 100 miles of a project are valued at 20% of their cost.

### ➤ Nature starts extreme from within :

Every natural system has a tipping point, a carrying capacity or a state of disequilibrium that triggers a change. Forest fires are a great example of a natural phenomenon that opens and rethinks, cutting down an excessive growth, and allowing for regeneration.

