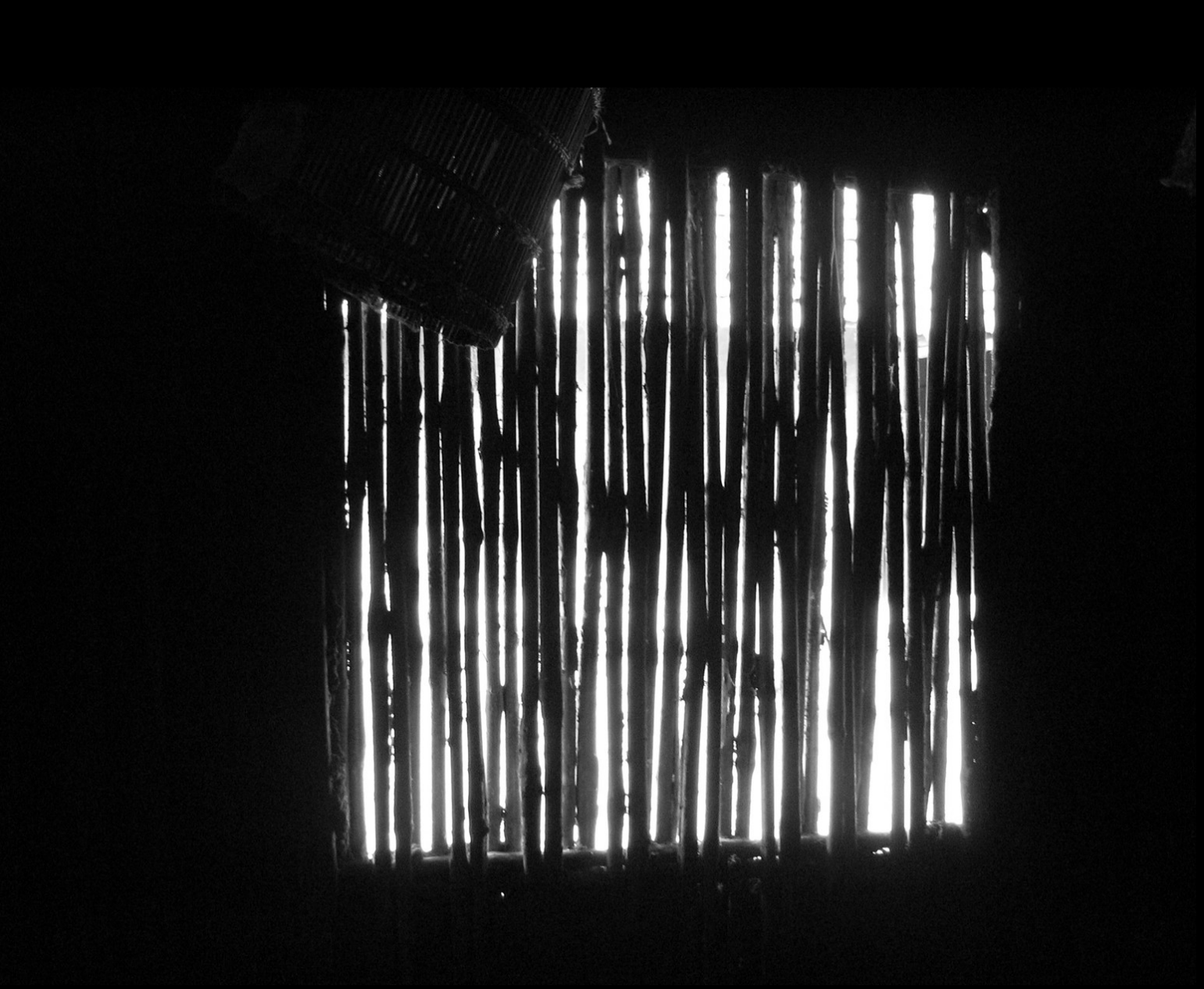
IN BETWEEN

Design Studio
2020-21

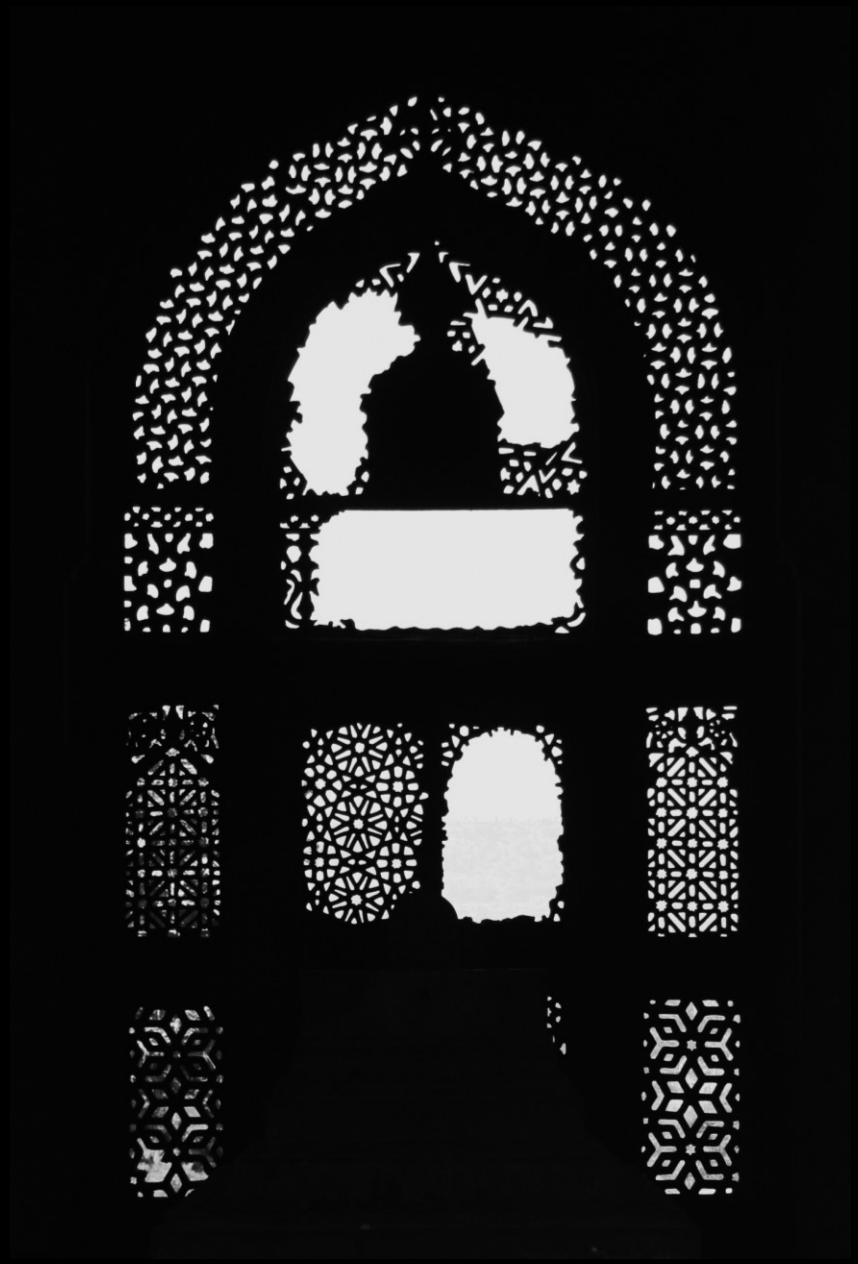
Shubhashish Subandh Chetan Sahasrabudhe Sudhanva Kolhatkar Mohit Jadhav

Where does ‘Inside’ end? Where does ‘Outside’ begin?



Where does the ‘Wall’ end? Where does the ‘Window’ begin?

Is the Inside more inviting or the Outside?



Where is the ‘In Between’?

What spaces does it occupy?

How do you negotiate it?

How do you recognize it?

How do you read it?

IN BETWEEN

The in-between has been a central concern of architecture for ever.

From scale of a city to that of a humble door; the 'in-between' manifests in a range of fascinating forms.

We will explore the idea of the **IN-BETWEEN** through the projects of this semester

Studio Projects

A campus on some site somewhere in India ....

A small building somewhere on the MKSSS campus ....

Studio Learning Outcomes

Program Analysis

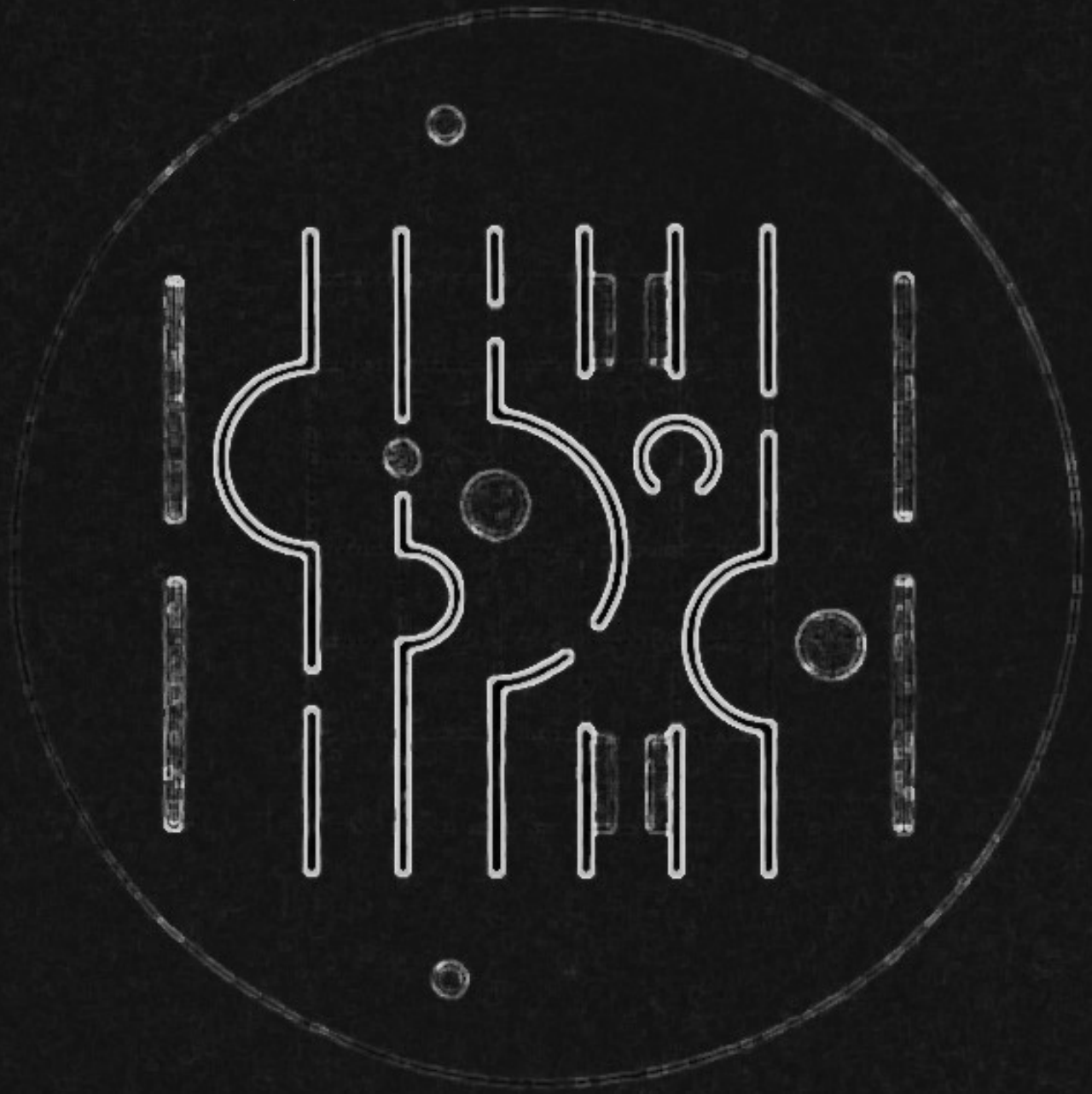
Site analysis

Articulating Architectural response to concerns of Climate

Resolving Structure

Acquiring Design Knowledge

Exhibition Pavilion, Arnheim



A Place where different things
can meet and unite

The common ground where
conflicting polarities can again
become twin phenomenon

ALDO VAN EYCK

Is the IN BETWEEN

Liability? Opportunity? Problem?

Indeterminate? Approximate?

Ignorable? Exciting?

Shubhashish Subandh

Chetan Sahasrabudhe

Sudhanva Kolhatkar

Mohit Jadhav

DK1 - Build Design Knowledge

DK4 - Reflection ON Action

Become your own critic

TC1 - Orientation Strategies

TC2 - Fenestration Design

Audit Your Design

TC3 - Wall and Roof Assemblies

How's the weather today!

TC4 - Define Climate Response Strategies

Dont forget the Climate

GC1 - Graphical Conventions

Change of hat - Become a designer again

DD1 - Minimums of Human Movement

DD3 - Analyse an Activity

DD4 - Universal Accessibility

PD1 - Built Space Program

How do i get the area programme?

Remember the users

Lets work out the design brief

DK2 - Form Design Schemata

PA1 - Draw Bubble Diagram

PA3 - Identify Knowledge Gaps

Study Precedents

PA4 - Understand Vertical Adjacencies

Heads down! Give us a design in 2 Days! (No we are not joking)

SA2 - Site Features

SA1 - Slope Analysis

SA3 - Draw Site Sections

Contours? whats that?

SD1 - Negotiate Site Levels

SD2 - Represent Graded Contours

SD3 - Grading of Site

Managing Contours

DK3 - Reflection IN Action

Review

Tell us about your design

S1- Choose and Apply a Structural System and Material Palette

S2 - Resolve Skin Sections

S3 - Understand Structure as a Systems

Architectural Character and what goes into it

DK6 - Relate Abstract and Concrete

Meet - Interact - Learn – Reflect

Cut the c***, Tell us what we are building..thats it!

SA4 -Respond to larger Context

DK5 - Use Ideation Methods

Shift Gears, lets talk form!

GC3 - Use models as a thinking tool

What have you got for us today?

Heads down! Give us a design in 2 Days! (you are kidding, right?)

SE4 - Outdoor – Indoor Integration

SE5 - Social Interaction

SE6 - Architectural Identity

Heads down!

Submission time

Putting it all together

GC2 - Construct a Narrative

Putting it all together

DD2 - Minimums of vehicular Movement

PD2 - Open Space program

PA2 - Zoning Diagram

TC5 - Use Landscape Elements

Site Planning a Birds Eye View

SE1 - Network and Hierarchy

SD4 - Design Networks

SD5 - Design Spaces for Outdoor Activities

SE2 - Pause, Surprise, Termination, Variety, Focus

SE3 - Sequential Experience, View, Vista, Enclosure

Open spaces - hierarchies, activities.....Oh I forgot the contours

DK4 - Reflection ON Action

How was it?

DK7 - Commit to some Architectural Ethic or values

Assignment 2 – Campus Design

1. Lets work out the design brief

2. How do i get the area program?

3. Study Precedents

4. Contours? whats that?

5. Dont forget the Climate

6. Heads down! Give us a design in 2 Days! (you are kidding, right?)

7. Shift Gears, lets talk form!

8. What have you got for us today?

9. Architectural Character and what goes into it

10. Tell us about your design

11. Site Planning a Birds Eye View

12. Managing Contours

13. Open spaces - hierarchies, activities……Oh I forgot the contours

14. Heads down!

15. Putting it all together

16. How was it?

	Assignment 2 - Campus Design			
	Session	**Date**		**Week**
1	Lets work out the design brief	28th Aug	Fri	**4**
2	How do i get the area programme?	1st Sept	Tue	**5**
3	Study precedents	4th Sept	Fri	
4	Contours? whats that?	8th Sept	Tue	**6**
5	Lets Ideate, but don’t forget the Climate	11th Sept	Fri	
6	**Heads down! Give us a design in 2 Days! (you are kidding, right?)**	**15th Sept**	**Tue**	**7**
7	Shift Gears, lets talk form!	18th Sept	Fri	
8	What have you got for us today?	22nd Sept	Tue	**8**
9	Architectural Character and what goes into it	25th Sept	Fri	
10	**Tell us about your design**	**29th Sept**	**Tue**	**9**
11	Site Planning - A birds eye view	2nd Oct	Fri	
12	Managing Contours	6th Oct	Tue	**10**
13	Open spaces - hierarchies, activities……Oh I forgot the contours	9th Oct	Fri	
14	**Heads down!**	**13th Oct**	**Tue**	**11**
15	Putting it all together	16th Oct	Fri	
16	How was it?	20th Oct.	Tue	**12**

Test of prior knowledge

Dear Student, welcome to the third-year design studio. As you might be aware, the third-year design studios require a sufficient command over skills in various subjects that you have learnt in first and second year of Architecture School. While the pass or fail of the semester end exams is one indicator of your domain knowledge; it has its limitations as a tool for assessing the required skills.

We urge you to take the following test. It will enable us together to identify your strengths and weaknesses. It will help us to recommend additional instruction for you aimed at improving your skills and abilities.

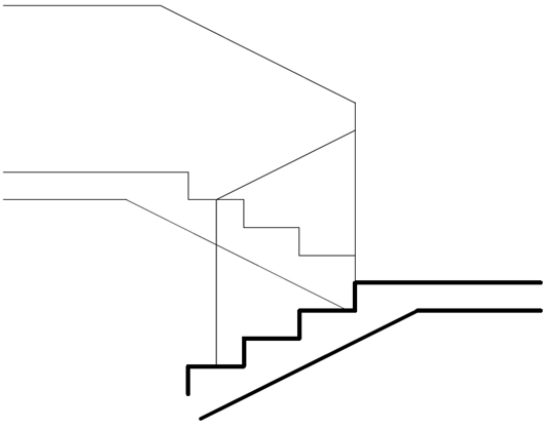
The results of the test will be shared with you individually and we may have class or focused group discussions as the need may be. Please read and follow the instructions diligently to help us assess your submissions faster.

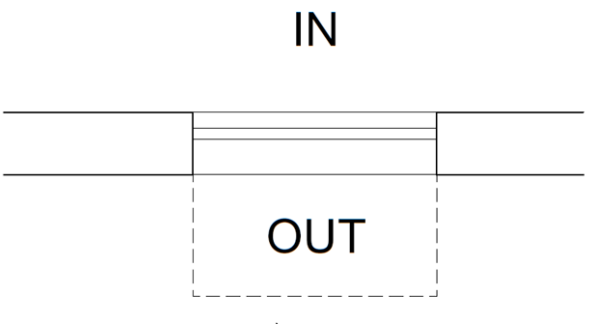
We as your design studio faculty feel that such an insight will help us build a robust community of inquiry as a class.

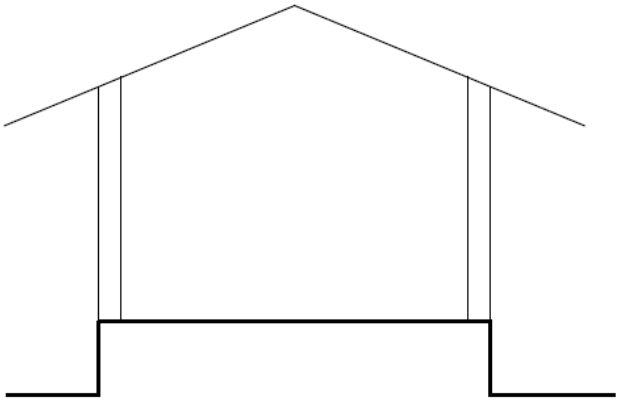
Read the Instructions for completion carefully before beginning the test

1. Print out the test paper on A4 size paper.
2. Write your name and mobile number in the indicated space.
3. Put in the appropriate responses in the space provided.
4. Scan all the pages as pdf. Combine them in a single file using any online /offline pdf tool
5. Make sure the combined file size in less than 5MB and upload the file as a single *.pdf file onto the LMS.
6. File naming – firstname . first letter of surname in capital_PKT.pdf
   For example for ‘Chetan Sahasrabudhe’ the file will be named as – Chetan.S_PKT.pdf
7. Give yourself 45 minutes to complete the test.

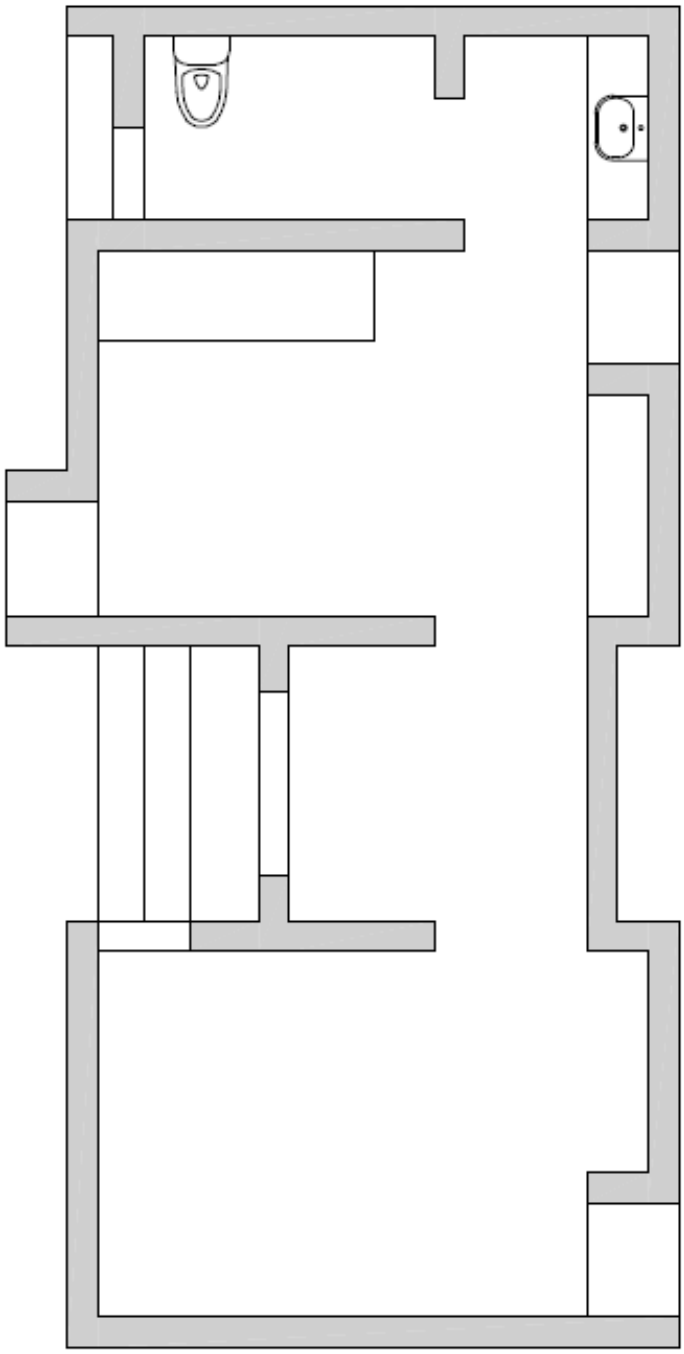
1 Identify by marking on the drawing the graphical mistakes in the drawings given below. Number them and write small notes for each to explain the mistake



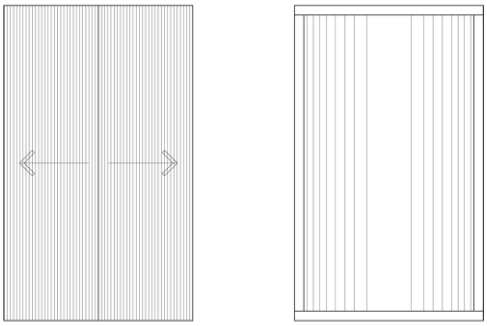




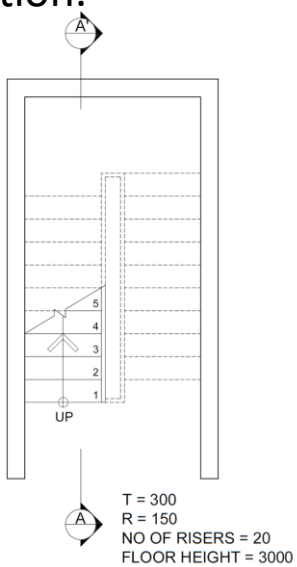
2 Indicate on the drawings below the required annotation, (dimensions, symbols and text)that need to be added to it.



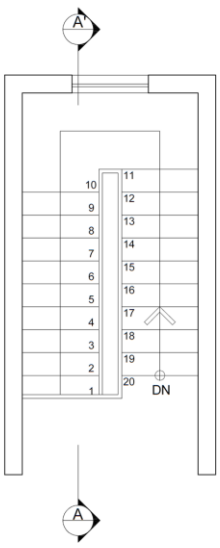
3 A. Below are two roof plans, What type of roofs do they indicate?



B. In the following pair of sketches identify the mistakes with reasons. If you feel both are wrong or right mention that in the explanation.



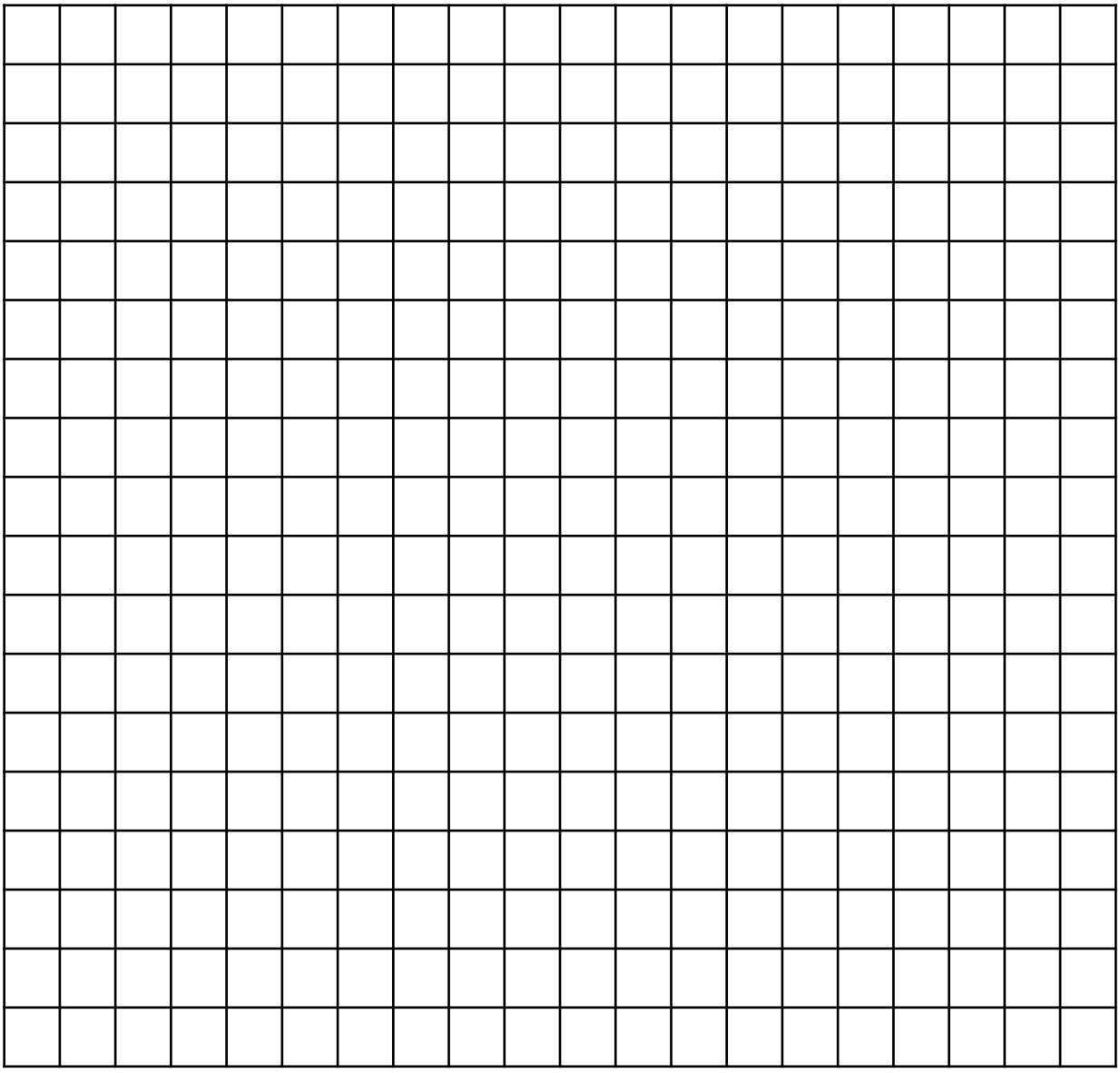
Ground Floor



First Floor

4 You are designing a small residence and have to plan for an optimally sized toilet for the Master bedroom which has a Shower space, Wash Hand Basin and a Water Closet (WC).

a. Design the toilet and communicate by drawing a dotted spatial envelope line representing the toilet boundary and indicate the toilet fixtures and their layout.



4 You are designing a small residence and have to plan for an optimally sized toilet for the Master bedroom which has a Shower space, Wash Hand Basin and a Water Closet (WC).

b. Add adequate dimensions to your sketch and also indicate aa appropriate location for a door.

5 An institute wishes to build a dining hall for its students (100 Students) staying in the hostel.

a. List the various spaces that as per you will be required for such as dining hall

5 An institute wishes to build a dining hall for its students (100 Students) staying in the hostel.

b. Draw a bubble diagram to graphically indicate the relationship (weak, strong or tentative) between these spaces and their relative space requirement.

6 Study the given images and list the i. Roofing, ii. Spanning, iii. Supporting, iv. Opening systems used in that building. In case a system is not clearly visible; you may have to make an educated guess about the system used. List your responses in the same order.

i. Roofing System

ii. Spanning System

iii. Supporting System

iv. Opening Systems

i. Roofing System

ii. Spanning System

iii. Supporting System

iv. Opening Systems

6 Study the given images and list the i. Roofing, ii. Spanning, iii. Supporting, iv. Opening systems used in that building. In case a system is not clearly visible; you may have to make an educated guess about the system used. List your responses in the same order.

i. Roofing System

ii. Spanning System

iii. Supporting System

iv. Opening Systems

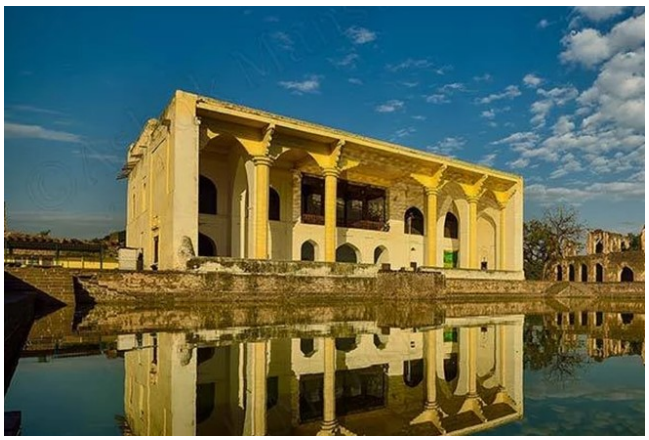
i. Roofing System

ii. Spanning System

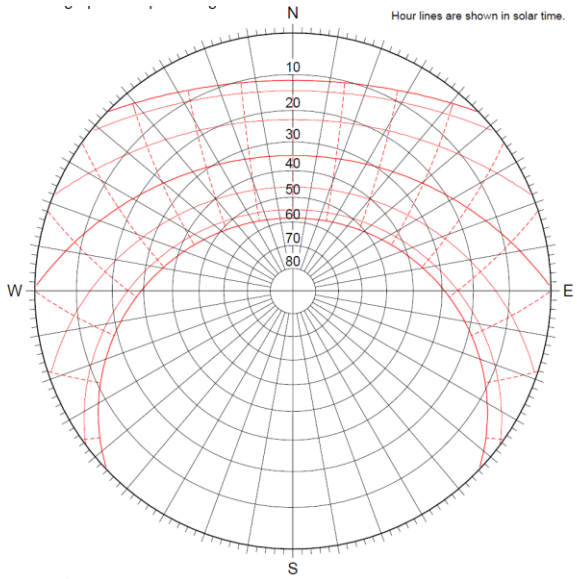
iii. Supporting System

iv. Opening Systems

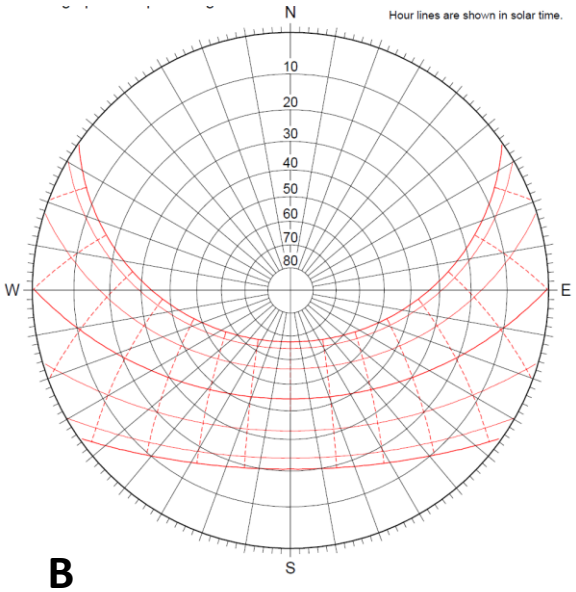
7 Write a note on the following three structures highlighting the similarities and differences in their forms.



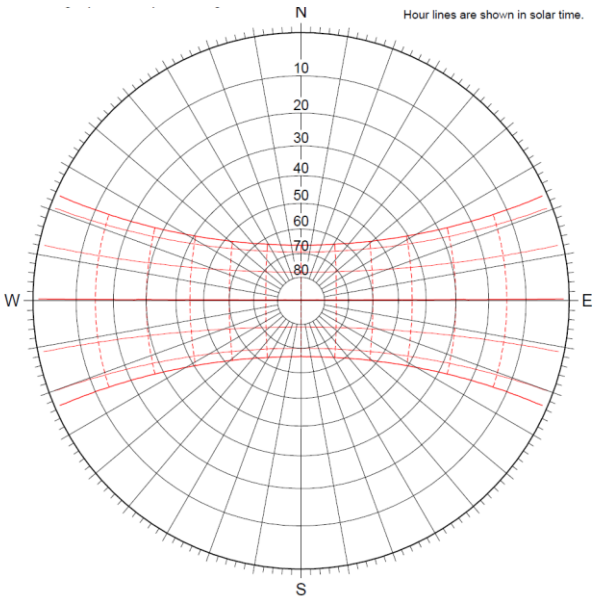
8 Identify the locations of the places based on the sun path diagrams.



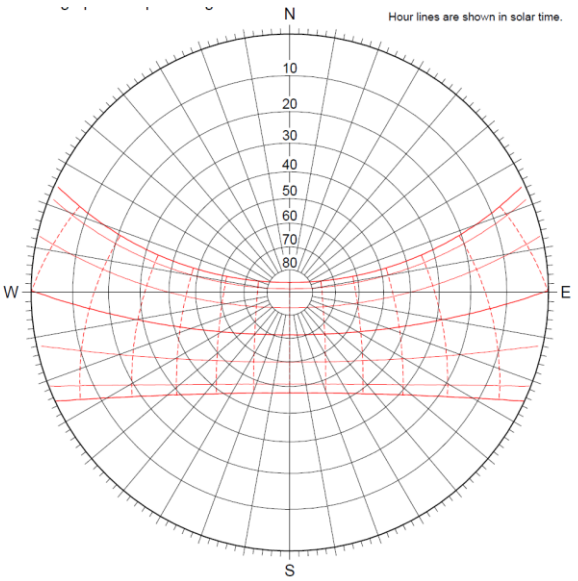
A



B



C



D

9 A family in Ratnagiri (Konkan) plans to by a desert cooler to beat the heat of the summers. Advise them on this decision and also give your recommendations to the family for achieving thermal comfort.

10 Write a note on the plan given below.

11 BNCA wishes to build scale models of some buildings which will be used as an educational tool. The institute does not need ‘realistic’ models but wishes to bring out the architectural ethos of the designer through these models. Suggest modelling materials for making these models. (if you are not aware of these buildings; look them up on the internet)

i. Heydar Aliyev Centre - Zaha Hadid

ii. Salk Laboratories - Louis Kahn

iii. Centre for development Studies – Laurie Baker

12 You have been asked to do a layout of a poster announcing the presentation by an architect at BNCA auditorium. The contents include the following

1. Architects Photograph
2. Two Images of his works
3. Details of venue and timing
4. Name of the Host institute
5. A small writeup about the architect

Prepare a blocking diagram for this poster. Indicating the base grid used and the rectangular blocks representing the content arranged in the rectangle below

Model Centric Learning Architecture

JP

MCA

This is the new way of teaching & learning. It provides the student an opportunity to watch an expert solve problems in real life environment. The expert shows students the systematic approach to solve the problem with a given situation, strategically, e.g;

PLAN – IMPLEMENT – VERIFY cycle

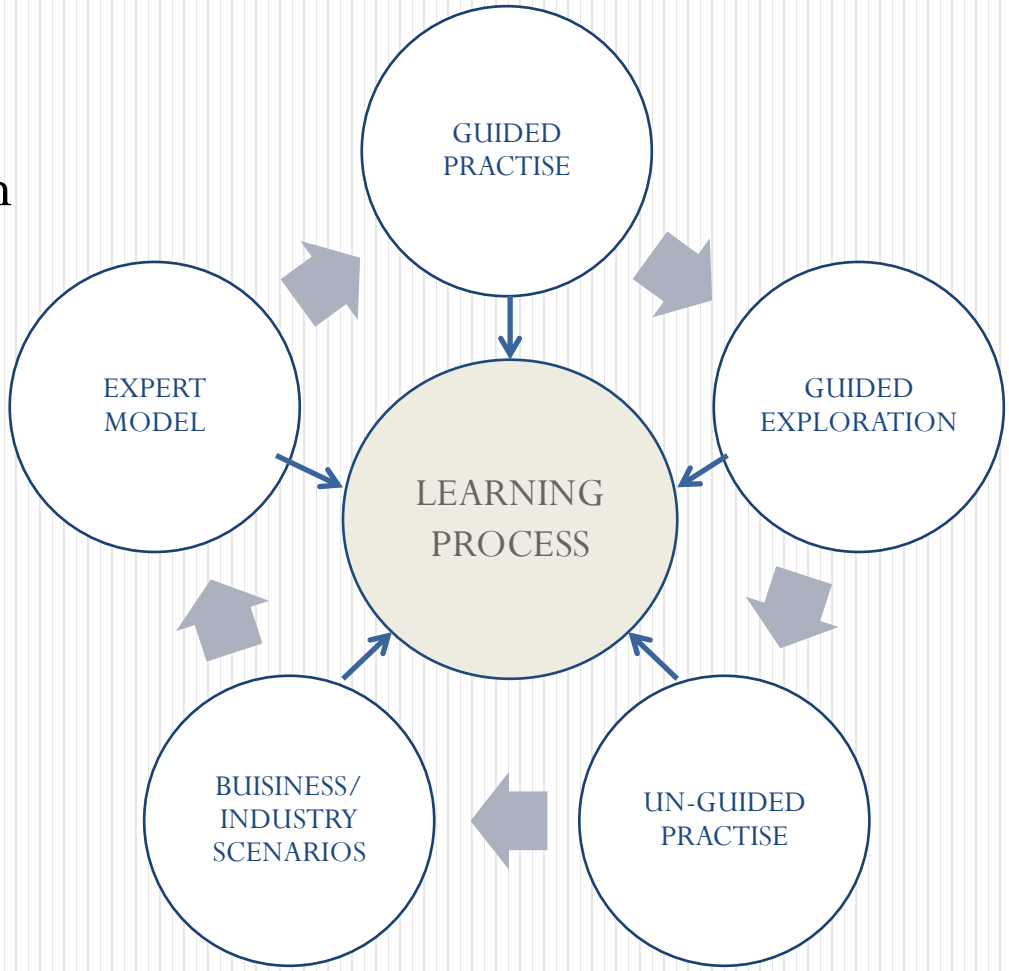
By following this model students will be able to solve problems in real life scenarios with an appropriate level of guidance from the expert. This will gain expertise in solving similar kinds of problems which students are likely to encounter in their fields. This model shall prepare them to successfully meet the challenges of real life environment.

The course will consist of-

- Several problems in increasing order of complexity
- Progress through these problems as per the level of guidance
- The level of this guidance will gradually fade out
- Guidance will be given for first few problems or until they get more comfortable with their knowledge.
- Someone closely monitors the students and grade them for their performance.
- There will be complete un-guided practise at the end.
- Students shall solve problems on their own.

The 5 Pillars of the model

- Business and Industry scenarios
- Expert model
- Guided practise
- Guided exploration
- Unguided practise



Business and Industry scenarios

- The problems set by an expert shall have Industrial requirements of real life scenarios as per Architectural scopes
- It must have the typical organizational set-up or functions by which the problems can be solved
- Students must be confident enough, not just in technical skills but they must have ability to apply their knowledge in different situations as per the real life scenarios
- These scenarios serve as the backdrop for problem discussions and practises during any point in the curriculum.

Expert model

- The faculty involved shall impart technical knowledge, demonstrate techniques for problem solving and exemplify the use of best practises
- In this stage, students observe the expert performing various tasks in systematic manner of How to approach the given problem
- The demonstration shall be designed to make the knowledge of the expert visible to the novice learner
- This will be termed as guided practise.

Guided practise

- Once the faculty demonstrate the approach to the problem, then students shall solve similar or higher complex problem based on the knowledge they have acquired under the guidance of the faculty
- This enables them to immediately apply the concepts they have learned
- The guided practise will be recorded for analysing their periodical performances and will remain with them as a guide of reference in future
- This will still be termed as guided practise.

Guided exploration and case studies

- In this process of learning and applications, students are allowed to consult various information sources like, technical reference, library, internet and help of other experts or consultants
- This helps students to develop their skills in technical exploration and will ingrain it as a habit
- This habit becomes their lifelong ally in the race to stay on the top of the situation in the constantly changing Architectural field
- The ability to explore and get familiar with the outside world is vital to keep them updated, confident, busy and self reliant.

Unguided Practise

- At this stage students are confident and ready to implement and verify solutions on their own
- Solving the Unguided practise problems builds tremendous sense of confidence and they are able to demonstrate independent problem-solving capabilities for themselves and anyone else who matters
- The complexity and intricacies of these problems increases as they go ahead with different set of problems
- Faculties will have their own time for other academic assignments as they are least involved in students at this stage
- Final assessment will be done by the experts to analyse students performance

Implementing MCA

In order to conduct the course in this system, faculties has to make themselves prepared for inputs to be delivered to students. Specific methodology has to be established to make the experts and students comfortable to work in. It has to generate interest amongst them and must develop an energetic environment. The curriculum needs to be designed in a structured manner which must be coordinated by all the team members involved. Hence every individual member must incur their valuable time and effort to structure the syllabus to suit this new way of teaching & learning.

The course can be structured in two parts –

1. Technical reference (Notes, Information, Books, Case studies, Site visits, Market study, Demonstration & Consultancy)
2. Skill base (Problems, Exercises, Assignments, Quizzes & Exams)

Technical reference

- The technical reference will provide exhaustive information on the concepts, techniques related to the subject/ topic
- It must provide variety of information, examples, illustrations aimed at effective learning experience.
- It must be like a teaching manual developed by the expert of the subject which will remain as a handy reference guide during the course or at work place.
- The manual may also have pointers to help students search information on Net, library or any organizations involved.
- To make this guide efficient, faculties must have desire to incur their knowledge, skill and field experience.

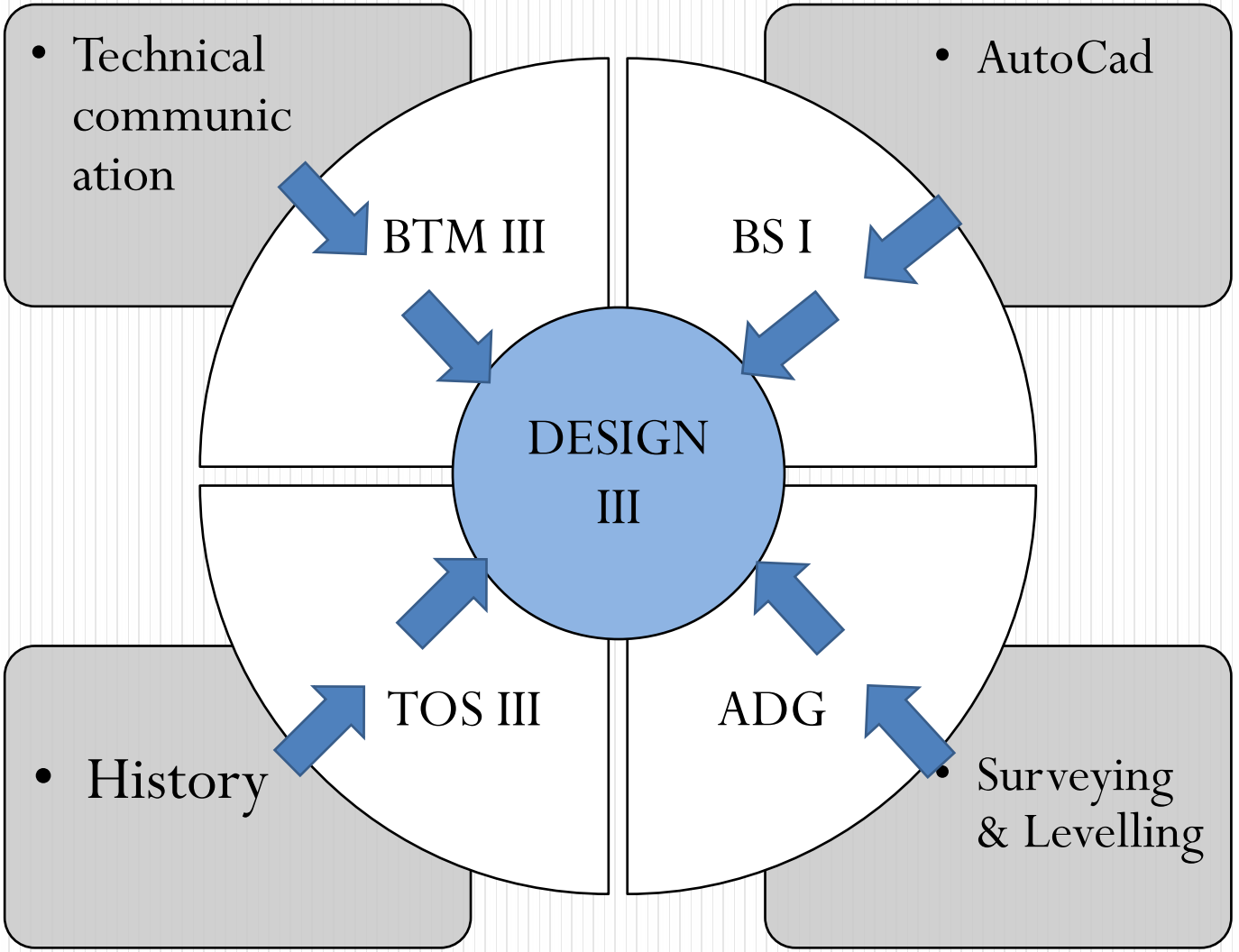
Skill base manual

- The skill base will first have a questionnaire which students will attempt. This questionnaire will test their prerequisites before they start with their practise. (*Testing of existing/ previous knowledge*)
- The skill base is divided into number of topics. Each topic shall contain number of problems and exercises
- The problems will be of three types as mentioned earlier like – **Demonstration, Guided practise and Unguided practise**
- The topics will be divided into number of sections. Each different section shall begin with "Getting started". This section will have basic requirements for understanding the problems that follow
- The problem solving process shall be divided into **PLAN-IMPLEMENT-VERIFY** section.
- The solutions for demonstration problem will be in form of tasks to be done in planning, implementing and verifying.
- The knowledge necessary to perform these tasks is given in technical reference and taught to the students as and when required.
- The same procedure will be followed by students to attempt the guided as well as unguided practise.
- All the problems/ exercises has to be generated well in advance (*start of semester*) with slight modifications at later stage
- This Skill base manual itself becomes the term/ year schedule and students are aware of how much efforts they have to put in, right at the beginning of the semester.

Structure for Skill Base

- Problem Statement: Expert has to formulate the problem statement giving all the required data and expected result. The problem may be designed based on the Design Project/AD studio
- Information sources:
  - Problem statement- the problem itself is the first hand information
  - Expert / Guide- name of the person who will guide for the solution
  - Reference book- Technical reference or Name of the book referred
  - Internet- e.g: Website referred, Google, YouTube, etc…
  - Others – if any other sources are involved (specify)
- **Plan the solution**: identify the tasks to be done in the problem given
  - Task 1
  - Task 2
  - Task 3
- **Implement the solution**: implement the solution for the above tasks
  - Task 1 solution
  - Task 2 solution
  - Task 3 solution
- **Verify or Check the solution**: as per the result expected in the problem statement verify whether the expected answer is correct or wrong. Get it verified from design faculties.

SY. B. Arch SEM III (Core centric approach)



Let's implement

- We will consider here SY. B.Arch. course for the Subject 'BUILDING SERVICES I' as an example to demonstrate an approach to this system
- In Architectural curriculum 'DESIGN' is the core subject, while all other subjects support to make the Design problem a success.
- The students needs to be well versed with what they learn in all the supporting subjects and then apply their knowledge and creative skills to make a good design. Hence solving a design problem indirectly means having an Guided/ Unguided practise in the overall scenario.
- So an expert needs to formulate a Design Problem for both cases, guided as well as unguided practise. One can be a demo problem done in the initial stages of semester and others can be more complex problems done at a later stage once all their skill sets are developed with the help of other subjects
- Faculty must coordinate and make students aware of how to integrate knowledge gained from other subjects and then to apply in their design. This will be the implementation stage in '**Plan-Implement-Verify**' sections.

Building services I

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

Problem can be formulated on the topics highlighted above.

Problem Statement DP1:

An apartment consisting of four floors, each floor has four numbers of tenements. Two of the flats are of 3BRHK and two are 2BRHK. Every flat has a visiting maid servant who utilizes water for washing dishes and cleaning the house. Calculate the daily water demand and total water storage capacity for the entire building and design the UGWT.

Information sources:

Problem statement – Data given in problem

no of floors = 4 **no of 3 BHK flats = 2 X 4 = 8** **no of 2 BHK flats = 2 X 4 = 8**

Expert – Prof. XYZ

Reference – Technical reference, NBC guide, Plumbing code

Plan the solution:

Task 1 - Identify daily demand as per their use

Assuming 2 persons/ bed + 1 maid per flat (*ref: NBC guide)

(8 X 2 X 3) + (8 X 2 X 2) + (4 X 4) = **96 persons are using water**

Task 2 – Calculate the water requirement based on the data given.

Assuming 135 Lts per person as daily water consumption

135 X 96 = **12960 Lts**

Daily water demand is to be divided as – (*ref: Plumbing code)

One day requirement on roof top tank (OHWT) = 12960 Lts ~ 13000 Lts ~ **13 m^3**

Two days to be stored at ground level (UGWT) = 2 X 12960 = 25920 Lts ~ 26000 Lts ~ **26 m^3**

Task 3 – Calculate the size of UGWT. Calculate the size of OHWT.

Assuming 2m as height of water table in the tank = 26/2 = 13 m^2

assuming one of the dimensions of the tank so as to fit in available space is 3m then,

Internal size of the tank will be (4.33L X 3W X 2H) up to FB of water table. Add 300mm as FB to Ht component,

UGWT Internal Tank Size = **4.3L X 3W X 2.3H , OHWT** internal tank size = **3.3L X 3W X 1.6H**

Adding wall thickness (230mm) and (100mm) Thickness of top slab for **RCC water tank**.

UGWT External Tank size = **(4.76m X 3.46m X 2.4m), OHWT** External size = **(3.6m X 3.3m X 1.7m)**

Implement the solution:

Task 1 – Total **96 persons** are using water daily

Task 2 – daily water consumption of the building is 12960 Lts ~ **13000 Lts**

Size of RCC UGWT = **4.76m X 3.46m X 2.4m (Cap – 26000 Lts)**

Size of RCC OHWT = **3.6m X 3.3m X 1.7m (Cap – 13000 Lts)**

Task 3 – Draw the details of UGWT & OHWT showing all the components to the scale

Check the solution:

Problem Statement GP1:

A single family dwelling for a working couple having two children needs water storage facility comfortable for their living standards and also to suffice their large landscape area. Calculate the water tank capacity to store water fulfilling their daily demand. Identify the strategic location of the tank in the plot area, so that it is easily accessible for maintenance.

Information sources:

Problem statement – Data to be obtained from Design project

Expert – Prof. XYZ

Reference – Technical reference, NBC guide, market survey

Plan the solution:

Task 1 - Identify number of people residing, total landscape area and type of plantations. Identify daily demand as per their use

Task 2 – Calculate the water requirement based on the data given. Calculate the size of UGWT. Calculate the size of OHWT. Identify the material to be used for building the tanks.

Task 3 – Identify the location of UGWT and OHWT as per design and the method of installation and construction of same.

Implement the solution:

Task 1 – summarise the results with available data

Task 2 – draw UGWT & OHWT as per the material selected and sizes decided

Task 3 – show on site plan the exact location of tanks (Key plans). Indicate the levels, mounting height of OHWT, foundations required feasible with the structure of the building

Check the solution:

GREEN HABITAT: TOWARDS ECO-FRIENDLY HOUSING

Fourth Year Housing Studio B AD VI Semester VII AY 2024-25

Preamble

The Green Housing studio conducted as part of the fourth-year Architecture course, focused on three key parameters – **Site Considerations**, **Unit and Cluster Design**, and the **Health and Well-Being of Residents** – to create sustainable, livable, and environmentally responsible housing solutions. Through hands-on projects like volumetric explorations, and visit to live projects, this program aimed to cultivate a deeper understanding of green building practices and foster innovation in creating sustainable living environments for the future.

Studio Methodology

The innovative aspect of green studio focussed on using green design parameters as tool to create eco-friendly housing. The inherent motive of this studio was to encourage students to 'think green' in their design approaches.

Analysing green parameters through documented case studies and visiting green housing projects in the city, students were acquainted with these parameters and their influence on design. The objective was to make them realize that green design is not primarily about technology and materials, but it can be used as a design tool too. Time bound studios were scheduled to focus on developing design guidelines based on these parameters. This methodology also made them understand their priorities in design and the compromises they may have to make for their choices.

Studio Evaluation

Towards the end of the studio, students were asked to rate green parameters based on their importance and level of difficulty they encountered. These responses were cross examined through their architectural drawings. Students rating site considerations as significant design tool were examined for their sustainable landscape measures, soft and hard landscape areas identified, and responses to the slopes. Students with higher priority to unit and cluster design were evaluated for their Wall-Window ratio and Window-Floor ratio, use of shading devices, and optimum habitable and circulation areas. Health and Well being aspect was evaluated for design of safe and secure public spaces, interactive spaces to encourage people interaction, and incorporating universally accessible features.

Key takeaways from the Studio

The foremost takeaway of the studio was in-depth knowledge about green design guidelines and parameters. The discourses from experts in the field educated them about awareness of green housing, challenges and opportunities faced by the professionals, and introduced them to various projects on the theme.

IMPROVING LIVABILITY OF SMALL HOUSES

Fourth Year Housing Studio B AD VI Semester VII AY 2022-23

Preamble

The concept of livability in housing design is central to creating environments that not only meet the basic needs of shelter but also foster the well-being, comfort, and quality of life of the inhabitants. In a fourth-year architecture course, students explore how architectural design can enhance livability by addressing various factors such as functionality, aesthetics, health, social interaction, sustainability, and overall user experience.

Studio Methodology

Studio methodology involved diverse tools like research papers, live project studies, and documented project studies to gain knowledge about livability of small houses. An innovative idea of deriving livability parameters through group discussions and debates formed the base of their design program. Various livability factors were identified through the above-mentioned areas which were further scrutinized to arrive at reasonable factors of livability. These were further rationalized based on their strength to be used as design tools.

This method ensured inter-disciplinary knowledge gain, enhancing students' understanding about livability. The livability parameters identified for the study were physical aspects, social aspects, economic aspects, human capital, and environmental aspects. These factors were evaluated through their design output.

Key takeaways from the Studio

The studio methodology helped students on various aspects. Students developed ability to comprehend concepts like small house designs that are not experienced by themselves. Second, they develop ability to process information gathered through diverse sources and use them in their domains. Third, they learned to appreciate difference of opinions through group discussions, and then draft design guidelines for themselves. This ensured a holistic process of design.

BNCA | Events and Activity Reports

Event / Activity title: **Experimental Learning of Forces and force system, Lami's theorem, Various Types of Supports**

Date & Time: 22nd November, 2024

Venue: Respective Classrooms

Faculty In-charge: Prof. (Dr.) Sujata Mehta,

Faculty Co-ordinator: , Dr. Sujata Mehta, Prof. Swapnil Shinde, Prof. Preeti Namjoshi

Students' In-charge: Shreya Kapile

NAAC Criteria (if any): Innovation in teaching

Guest Speakers: -

Chief Guest (if any): -

Objective of this Event: To understand coplanar concurrent force system, its resultant and equilibrant, Lami's theorem, Various types of supports for beams

Summary of the event (150-200 words):

Calculation of resultant and equilibrant by analytical method, Lami's theorem and various types of supports for beams are taught in class in First Year Sem I. The hands-on experiments were designed using simple day-today material and equilibrant force was found.

Objective – Find the equilibrant force in a concurrent force system

Material –

Each group will have a kit with following ingredients

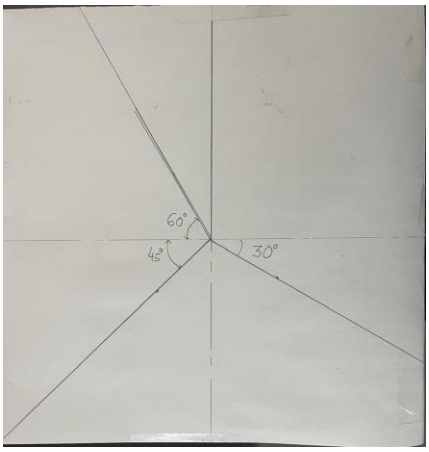
- 4 strings of 1 ft each
- 4 plastic bags
- Marbles – 40
- 4 rubber bands
- 1 used sheet (blank back side)

Cellotape

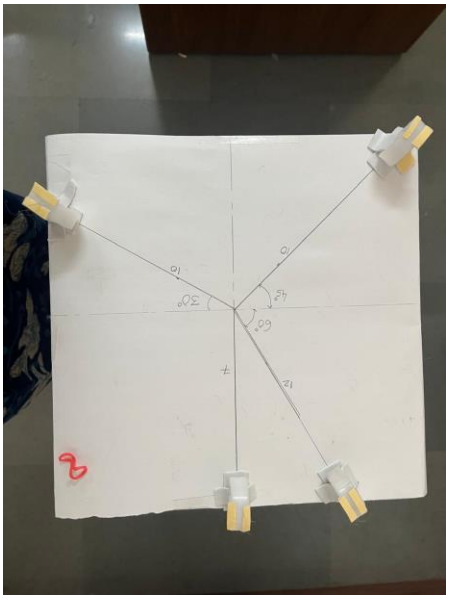
- Two-way tape
- 4 Plastic pulleys
- Pencil, pen, eraser, cutter, protractor
- Two bangles

Procedure –

Step 1. Place a used sheet on the top of the table and draw angles as shown.



Step 2. Stick four pulleyes using two way tape, at the edge of the table/ sheet as shown.



Step 3.

Add marbles as given by the instructor to the plastic ziplock bags at the end of each string as suggested by the instructor. Bring the system in to equilibrium. Verify your answers with analytical method.

Lami's theorem :

Objective – Understanding Lami's theorem

Material –

Each group will have a kit with following ingredients

- 3 strings of 1 ft each
- 3 plastic bags
- Marbles – 40
- 3 rubber bands
- 4 pushpins
- Pen, pencil, protractor

Procedure –

1. Place a used sheet on the soft board and draw angles given by instructor.
2. Fix push pins as shown
3. Tie strings to the bangles and add required number of marbles to the plastic back at the end of each ziplock bag to ensure the system is in equilibrium.
4. Verify the answer with calculations.

Various Types of Supports Using the game of Mechanix

Students created rollers, hinges and fixed support using slotted straight, angle and C members and bolts

Attachments:

Collaboration details (if any):

Event Supported / sponsored by:

Event Category: Academic / Co-curricular / Extra-curricular: Co-curricular

Copy of the attendance is attached as separate document.

B-DIVISION.

	MKSSS's Bhanuben Nanavati College of Architecture for Wo							
Course	TOS							
Date	~~14/10/24~~	14/10/24	21/10/24		11/11/24	~~22~~/11/24		
Faculty								
Student								
AARYA BAGUL	P	P	P	P	P			
ACHAL BHUTE	P	P	P	A	P			
ANUSHKA GADE	P	P	A	A	A			
ARYA NIGADE	P	P	P	P	P			
BHAKTI SALUNKE	P	P	P	P	P			
BHUMIJA PATIL	P	P	P	P	P			
DEVYANI DEULKAR	P	P	P	P	P			
DHANASHREE GADHE	P	P	P	P	P			
DIYA JADHAV	L	P	A	A	A			
DURVAA BARMECHA	P	P	P	P	P			
GARGI GHALSASHI	P	P	A	A	P			
GIRIJA SHIRALKAR	~~P~~ A	A	A	P	A			
IESHANVI BHUTADA	L	P	P	P	P			
KIRAN PATIL	P	P	P	P	P			
KRITIKA AGARWAL	L	P	P	P	A			
LAXMI KULKARNI	P	P	P	P	P			
PARI SETHI	P	P	A	P	A			
PAYAL NETAWATE	P	P	P	P	A			
PRAPTI DHAVALE	P	P	P	P	P			
SAI KAMBLE	P	P	P	P	P			
SAMRUDDHI KESKAR	P	P	P	A	P			
SEJAL KHARAT	P	AL	P	L	A			
SHALMALEE BAGATE	P	P	P	P	A			
SHARVARI GADRE	P	P	P	P	P			
SHARWARI HAJARE	P	P	P	P	P			
SHIVANI VARMA	P	P	P	P	A			
SHRIYA JANNU	P	P	A	P	P			
SIDDHI BANGAD	L	P	PA	P	P			
SNEHA MEHTA	L	P	P	P	P			
SRUSHTI GURAV	P	P	P		P			
TANISHKA DEVNANI	P	P	P	P	A			
TANIYA HIRE	P	P	P		A			
TANUSHRI VAIDYA	P	P	P	A	P			
URVI PATEL	P	P	P	T	P			
VAISHNAVI GHIWARE	P	P	P	P	P			
VEDASHREE SANDHAN	P	P	P	P	P			
VEDIKA CHANDAK	A	P	P	P	P			
VEDIKA KARAD	P	P	P	P	P			
Vidhi Kothari	P	P	A	P	P			
VISHAKHA SHITOLE	P	P	P	P	P			
SAEE GJAGTAP	P	P	P	P	P			
Raajashree Patil		P	P	A	A			

Copy of the poster :

NO POSTER WAS PREPARED

Signatures

Events Co-ordinator HOD IQAC Co-ordinator

Dr. Chetan Sahasrabudhe

Fig.1. Coplanar Concurrent system angle marking

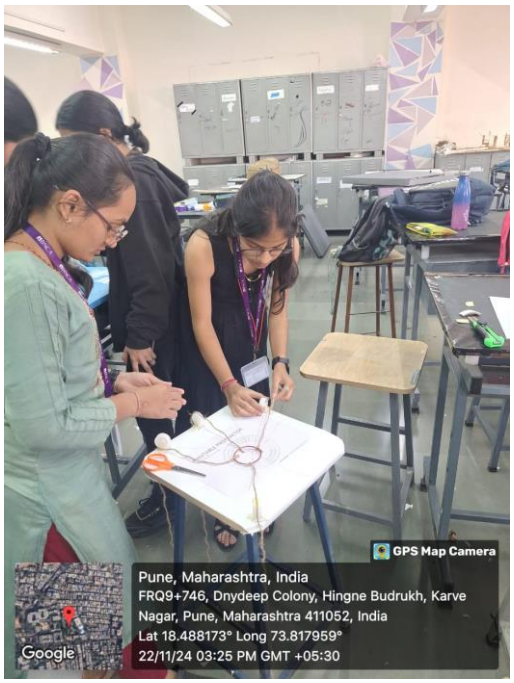


Fig.2. Applying forces using marbles

Fig.3. Adjusting forces to achieve equilibrium

Fig. 4. Lami's theorem

Fig. 5. Creating various types of supports, hinges, rollers and fixed support