

1st Semester

IK Gujral Punjab Technical University
Bachelors of Architecture

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	1l, 5 st	Int. : Ext.	Duration of Exam
UC-BARCH101-19	Architectural Design & Theory – 1	Credits - 06	60:40	06 Hours

Course Objective

The main objective of the course is to get the students interested in and to familiarize them with the basic concepts of Design. To enhance and promote visualization, expressional skills and sensitivity to surrounding environment and to develop the ability to translate principle of design into architecture solution.

Course Outcomes: At the end of the course, the students will able to -

1. Understand & will gain a fundamental knowledge of architecture design and its basic principles.
2. To apply visual and formal analysis of architecture in their mind and they will be able to appreciate well-designed buildings.
3. Understand the skill required to interpret a work of architecture and to evaluate, identify and analyse artistic expression of architectural forms.
4. Understand the relationship between human activities of Space.

Detailed Syllabus:-

UNIT-I (Theory)

- Introduction to Basic Design
- Objectives of Design
- Elements of Design
- Principles of Design
- Scale and proportion in Architecture.
- Anthropometrics (including norms for physically challenged persons)
- Human functions and their interactions for space requirements.
- Minimum and optimum areas for various human activities & functions.

UNIT-II (Design Exercise & Application)

- 2D compositions with basic geometric shapes, colour, texture and pattern.
 - Floor tile design, carpet, mural, door paving patterns, Sky line of city/village
 - Experience in 3D Design, compositions with simple forms like cube, cuboids, cylinder, cone, prism etc.
 - Compositions with 3-D Solids.
- Note - Stress is given to 2D, 3D exercise **(Black & white and colours.)**
- Functional furniture layout, circulation as anthropometric/Activity pattern

UNIT-III

- Security check post/ rain shelter/ Bus stop/ Milk booth/ park layout etc...

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner will set five questions from Unit- I and two from Unit-III & students are required to attempt any three question from Unit-I and only one from Unit-III during the six hour examination. No question to be set from Unit- II

Important Note - The evaluation is to be done through Viva - voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the appointed panel list of examiners.

The answer sheet shall be retained at the institute after the exam for the viva voce.

Instructions for the Faculty – Design faculty should encourage and motivate the students for live projects of their immediate surrounding. (Identifying need, Framing requirements and solution for the same and it should be marked as an assignment.)

The stress should be given on making students grasp the concept and do the design assignment as a creative fun activity.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	L - 1, ST - 3	Int. : Ext.	Duration of Exam
UC-BARCH102-19	Architectural Drawing -I	Credits - 04	60:40	03 Hours

Course Objective

The objective is to make the students familiarize with good drafting and lettering techniques use in architecture. To gain the basic knowledge for preparing the architectural drawings by learning about the orthographic projections of simple geometric forms and representation of 3-D & 2-D forms.

Course Outcomes: At the end of the course, the students will able to –

- Gain the comprehensive understanding of the fundamental techniques of technical drawing and its architectural representation.
- Attain the knowledge to visualize the geometrical forms through plans, elevations and sections.

Detailed Syllabus

UNIT- I

- Drafting – Technique & its Principles
- Line - Types of Lines and Dimensioning of line
- Lettering - free hand & block lettering
- Scales – Different types of scale and its uses in the Architectural Drawing.

UNIT- II

- Orthographic Projections - Point, Lines, Plane and Solid in various positions in the First Quadrant.

UNIT- III

- Section of Solids- Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc.

UNIT- IV

- Development of Surfaces - Simple Geometrical Solids (Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc.)
- Interpenetration of Solids

Instructions for the Faculty:

Emphasis should be laid on learning by doing and students have to be encouraged to make proper models to understand the geometry of forms.

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set (two questions from each unit) and the students are required to attempt total four questions (one from each unit).

Core References:

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Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	L - 1, ST - 2	Int. : Ext.	Duration of Exam
UC-BARCH103-19	Architectural Graphics -I	Credits - 03	60:40	03 Hours

Course Objective

The objective is to make the students familiar with visual arts and its basic principles and to explore the potential of Pencil of different grades and Coloured pencils as a powerful tool of Graphic Communication.

Course Outcomes: At the end of the course, the students will able to –

- Gain a fundamental knowledge of architecture Graphics and its principles.
- Achieved a comprehensive understanding of architectural presentation techniques.

Detailed Syllabus

UNIT- I (Pencil as fundamental tool of drawing)

- Free hand line-work with different strokes/grades in pencil.
- Effect of light and shade on simple geometrical solids.
- Textures of different building materials (such as bricks, stones, grass, glass, timber etc.) in pencil through shading and surface finishes of wall and floor.
- B/W Composition by using different geometric forms with charcoal pencil.

UNIT- II (Pencil as presentation medium)

- Freehand (proportionate) sketching of human figures, different types of vegetation, different transport modes and buildings etc.
- Indoor and outdoor furniture/antique items & Staircase-shading/role with light
- Sketches of scenes and activities from memory involving public spaces, markets, festivals, recreational spaces etc.
- Live sketching – indoor and outdoor area

UNIT-III (Rendering with coloured pencils/crayons/dry pastels)

- Colour rendering of human figures, different types of vegetation, different transport modes and buildings etc.
- Colour Rendering of various scenes such as Garden/Park Scene, Street Scene, Lake Scene, Village/Market Scene, etc.
- Live sketching – indoor and outdoor area
- Role of light in rendering co-relation with different shapes of geometry and some building elements.

UNIT-IV (Art & Illusion)

- Different exercises involving Logo Design, Collage making etc.
- Mural and Sculpture design in different materials like PoP, Clay, ceramic/Mosaic etc.

Instructions for the Faculty:

- Workshops related to pencil rendering will also be organised, highlighting its technique and style which can be organised indoor or outdoor. The students must be encouraged to appreciate the natural/man-made landscape and to understand the interrelationship of nature and architecture.

Evaluation Criteria for Exam / Question Paper Setting:-

Total four questions are to be set from all the units and students are required to attempt all the questions.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	L - 2	Int. : Ext.	Duration of Exam
UC-BARCH104-19	History of Architecture– I	Credits – 02	40:60	03 Hours

Course Objective

To appreciate the constraints in the Architectural design of an ancient building with reference to its function, form and structures. To make student understand how different Architectural solutions were evolved (in successive historic periods) within the limitation imposed by prevalent social and religious customs, available building materials, climate of region/topography, complex structural problems and the limited technology available at that time period.

Course Outcomes: At the end of the course, the students will be able to –

- Develop a holistic approach to architecture as an integral component of the built environment.
- Develop an understanding of architecture as an outcome of various social, political and economic influences and as a response to the cultural and climate conditions.
- Understand the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture.

Detailed Syllabus

UNIT-I

- Introduction, Definition and scope & importance of History of Architecture - Man's early/ prehistoric attempts to colonise and personalise space by taking the examples of early shelters, Stonehenge, tumuli etc. As an expression of man's physical and spiritual needs.
- Introduction to the river valley civilizations- the Origin and the Form of the civilization & the architecture characteristics of public buildings.
- Indus-valley civilization – Form/Planning of Harappan City, location and role of public and religious buildings. The architecture of dwelling units, Granary and great Bath.
- The Vedic village, Building typology and its construction details.

UNIT-II

- Egyptian Civilization – Concept of the Royal Necropolis, location context and its architectural characteristics of public buildings like Mastabas, Pyramids and Temples (rock-cut and structural).
- Mesopotamian Civilization – the architecture of Religious & Public Buildings—Palaces, Ziggurats, Hanging Gardens etc. Examples of the city, Ziggurats of Ur and city & palaces of Khorsabad to be considered.

Instructions for the Faculty:

- The Faculty is advised to consider limited examples (not more than 05) of each type of Architecture emphasising on the analysis of architecture style/building typology must include the functional, constructional/structural and ornamentation aspects.
- Educational trip will be organised to impart the practical knowledge of the content.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	L - 1, ST - 4	Int. : Ext.	Duration of Exam
UC-BARCH105-19	Building Construction & Materials - I	Credits - 05	60:40	03 Hours

Course Objective

- The objective is to introduce the elementary building materials and their applications. To familiarize students with construction details of various components of construction.

Course Outcomes: At the end of the course, the students will be able to –

- Understand the properties, types, uses and application of various building materials i.e. brick, lime, cement, mortar, sand, stones etc.
- Gain the fundamental knowledge of building Construction especially in brick and stone.

Detailed Syllabus (This subject consists of two Parts)

Part A: Building Materials

UNIT-I (Brick and Mortar)

- Brief introduction to mud, sand, clay, shurkhi, aggregates, lime and cement etc.
- Different types of mortar like mud mortar, lime mortar, cement mortar etc.- their properties and uses
- Manufacturing process, Classification & types, uses, sizes and properties of bricks
- Cost-effective bricks, AAC blocks, Fly-ash bricks etc. – their properties and uses in construction industry.

UNIT-II (Stone)

- Classification & types, uses, sizes and properties of Stone available in India
- Stone – quarrying process, its dressing, and deterioration and preservation measures.
- Application properties and visual check for different types of stone.
- Properties and uses of artificial stone.

Part B: Building Construction

UNIT-III (Brick masonry)

- Introduction to various components of a building (sub-structure to super-structure), their structural and functional roles.
- Brick masonry –different types of bonds (English, Flemish, Rat trap, etc.) and junctions (L-junctions, T-Junctions, cross junction) of varying wall thickness (not more than 2 brick thick).
- Attached and detached brick Piers of varying thickness (not more than 3'-0")
- Brick jalli-design and construction details

UNIT-IV (Stone masonry)

- Stone masonry of various types
- Lintels and sill level details
- Coping and threshold details.
- Arches-Flat, Segmental and Semi-circular

Core References:

- Building construction - W. B Mackay.
- Construction of Building - Barry
- Relevant BIS codes.

Instructions for the Faculty

- The assigned Faculty is advised to undertake 2-3 site visits for better understanding of Brick/Stone bonds, Brick jalli and different types of exterior finishes

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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Course Code	Course Name	L-1, T-1	Int. : Ext.	Duration of Exam
UC-BARCH106-19	Structure Systems - I	Credits - 02	100	No exam only External viva-voce

Course Objective

The main objective is to get the students interested in and to familiarize them with the Structure Systems in Architecture. To inculcate in the student an awareness of basic structural principles used in cellular & Bulk active structural system.

Course Outcomes: At the end of the course, the students will able to –

- Realize the fundamental principles of Cellular & Bulk Active structure systems

Detailed Syllabus

UNIT-I (CELLULAR SYSTEM)

- Cell as a natural unit of space.
- Cell transformation.
- Polygonal Cellular Systems leading to evolution of Geodesic Domes
- Applications of Cellular System in Building

UNIT-II (BULK ACTIVE STRUCTURE SYSTEM)

- Structure acting mainly through material bulk and continuity i.e.. Bulk active structure system / structure systems in bending involving:
- Slabs (One way & Two way)
- Beams (Simply supported, Cantilever, Continuous, Vierendeel Girders)
- Columns
- Grid (Skew & Square Grid)

Evaluation Criteria for Exam / Question Paper Setting:-

In the end of the semester internal jury Viva-voce to be conducted (the jury comprises of the subject incharge and the HoD nominee)

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	P - 2	Int. : Ext.	Duration of Exam
UC-BARCH107-19	Workshop – I	Credits - 01	100	No exam only Internal viva-voce

Course Objective

The student will gain basic hands on experience and fundamental knowledge in carpentry, brick masonry and model making.

Course Outcomes: At the end of the course, the students will able to –

- Gain the basics knowledge of the carpentry tools and its joints.
- Attain skill to work with different materials for making architectural model.

Detailed Syllabus

UNIT-I

- Exercise in 2-D compositions (formal, informal, abstract or modern etc.)
- Block making of 3-D geometrical blocks (by choosing different forms and different materials).
- Soap carving for creating three dimensional forms in space

UNIT-II

- Carpentry – Introduction to the types, use of carpentry Tools and various joints in Carpentry.

UNIT-III

- Model Making—making of different types of trees and other landscape elements like street lamps, pathways, plantation, water-bodies and different types of automobiles.
- Preparation of wooden base for model making.

UNIT-IV

- Brick/Stone Masonry – Low height wall construction by using either bricks or stones for the understanding of various bonds, jallies etc.

Instructions for the Faculty:

- The Faculty is required to give a complete demonstration of brick work, stone work, textured & timber work and other various exterior finishes through audio-visual aids, to be presented to the students.
- The Faculty is advised to take the students for site visits and the work of wall construction shall be attempted in groups.

Evaluation Criteria for Exam / Question Paper Setting:-

In the end of the semester internal jury Viva-voce to be conducted (the jury comprises of the subject incharge and the HoD nominee)

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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Course Code	Course Name	2 - L	Int. : Ext.	Duration of Exam
UC-BTHU101-18	Communicative English	2	60:40	03 Hours

Course Objective

The student will gain basic hands on experience and fundamental knowledge English and become the independent users of English Language.

Course Outcomes: At the end of the course, the students will able to –

1. Have proficiency in reading & listening, comprehension, writing and speaking skills.
2. Understand spoken and written English language, particularly the language of their chosen technical field.
3. Converse fluently.
4. Produce clear and coherent texts on their own.

Detailed Syllabus:-

UNIT-I Vocabulary Building & Basic Writing Skills

- The concept of Word Formation
- Root words from foreign languages and their use in English
- Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives.
- Synonyms, antonyms, and standard abbreviations.
- Sentence Structures
- Use of phrases and clauses in sentences
- Importance of proper punctuation
- Creating coherence
- Organizing principles of paragraphs in documents
- Techniques for writing precisely

UNIT-II Identifying Common Errors in Writing

- Subject-verb agreement
- Noun-pronoun agreement
- Misplaced modifiers
- Articles

- Prepositions
- Redundancies
- Clichés

UNIT-III Mechanics of Writing

- Writing introduction and conclusion
- Describing
- Defining
- Classifying
- Providing examples or evidence

UNIT-IV Writing Practices

- Comprehension
- Précis Writing
- Essay Writing
- Business Writing-Business letters, Business Emails, Report Writing, Resume/CV

Evaluation Criteria for Exam Question Paper Setting:-

One objective type compulsory question to be set covering the entire syllabus in addition to eight others (two from each unit). The students are required attempting total 05 questions i.e. compulsory question and one from other from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC-BTHU102-18	Communicative Skill Laboratory	2 - P	1	Viva- Voce

Course Objective

The objective of the course is to help the students become the independent users of English language.

Course Outcomes: At the end of the course, the students will able to –

1. Students will acquire basic proficiency in listening and speaking skills.
2. Students will be able to understand spoken English language, particularly the language of their chosen technical field.
3. They will be able to converse fluently
4. They will be able to produce on their own clear and coherent texts.

Detailed Syllabus:-

Interactive practice sessions in Language Lab on Oral Communication

- Listening Comprehension
- Self-Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 1st Semester)

Course Code	Course Name	L/S, T, P	Credits	Duration of Exam
UC-HSMC122-18	Human Values and Professional Ethics	1– L, 2 Tut	2	03 Hours

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Course Outcomes: At the end of the course, the students will able to –

By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. They would have better critical ability. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

Course code: HSMC122-18

The course has 28 lectures and 14 practice sessions in 5 modules:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

1. Purpose and motivation for the course, recapitulation from Universal Human Values-I
2. Self-Exploration–what is it? - Its content and process; ‘Natural Acceptance’ and Experiential Validation- as the process for self-exploration.
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario.
6. Method to fulfil the above human aspirations: understanding and living in harmony at various levels.

Include practice sessions to discuss natural acceptance in human being as the acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking.

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - happiness and physical facility
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure Sanyam and Health.

Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship.
14. Understanding the meaning of Trust; Difference between intention and competence
15. Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship.
16. Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals.
17. Visualizing a universal harmonious order in society- Undivided Society,

Universal Order- from family to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

18. Understanding the harmony in the Nature

19. Interconnectedness and mutual fulfilment among the four orders of nature - recyclability and self-regulation in nature

20. Understanding Existence as Co-existence of mutually interacting units in all-pervasive space

21. Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

22. Natural acceptance of human values

23. Definitiveness of Ethical Human Conduct

24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

25. Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of peoplefriendly and eco -friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems.

26. Case studies of typical holistic technologies, management models and production systems.

27. Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations.

28. Sum up.

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. to discuss the conduct as an engineer or scientist etc.

3. READINGS:

3.1 Text Book

1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010.

3.2 Reference Books

1. Jeevan Vidya: EkParichaya, A. Nagaraj, Jeevan VidyaPrakashan, Amarkantak, 1999.

2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.

3. The Story of Stuff (Book).

4. The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi

5. Small is Beautiful - E. F Schumacher.

6. Slow is Beautiful - Cecile Andrews
7. Economy of Permanence - J CKumarappa
8. Bharat Mein Angreji Raj -PanditSunderlal
9. Rediscovering India - by Dharampal
10. Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11. India Wins Freedom - Maulana Abdul Kalam Azad

Evaluation Criteria for Exam / Question Paper Setting:-

One objective type compulsory question to be set covering the entire syllabus in addition to eight others (two from each unit).
The students are required attempting total 05 questions i.e. compulsory question and one from other from each unit.

Core References

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2nd Semester

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Bachelors of Architecture

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Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-1, Stu-5	Int. : Ext	Duration of Exam
UC/BARCH-201/19	Architectural Design - II	Credits - 6	60:40	06 Hours+ Ext viva-voce

Course Objective
Understand the Architectural design of a small building with reference to function,

form and structures.

Course Outcomes - At the end of the course, the students will be able to:

Develop a basic understanding of function, form, structure in the design of small structure. Understand & gain a fundamental knowledge of architecture design process and its principles.

Detailed Syllabus

UNIT-I

Design of small buildings - Security check post , Milk booths, Cafes, Canopy etc. (involving circulation, form structure, and function)

UNIT-II

Architect's Office, Doctor's Clinic, Lawyer office & such similar projects of small scale (Cycle stand, E- Rickshaw stand, Taxi stand & Parking layouts, etc.)

Minimum 2 -5 exercises to be taken. (01 major, 02 minor and 02 as time problem)

NOTE - All buildings should have accessibility to the physically challenged persons as per SC guidelines.

Instructions for the Faculty –

- The Basic methodology of teaching should be based on
- Library study to understand the basic functions of building and anthropometric.
- Case Study to understand the similar buildings in similar context.
- The emphasis of design should be on the space organisation and built form.
- Stress should be given to new thoughts/ innovation in design.

Design faculty should encourage and motivate the students for live projects of their immediate surroundings.

Evaluation Criteria for Examination/ Question Paper Setting:

One compulsory question is to be set from the entire syllabus.

The answer sheet shall be retained at the institute after the exam for conduct of the viva voce which will be conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-1, ST-3,	Int. :Ext.	Duration of Exam
UC-BARCH202-19	Architectural Drawing - II	Credits - 4	60:40	03 Hours

Course Objective

To make students learn the techniques to represent different objects through 3-D and developing skill for visualization of 3-D forms through isometric/axonometric views, perspective and sciography to enhance the designing skills.

Course Outcomes - At the end of the course, the students will be able to:

- Understand the fundamental techniques of technical drawing used in 3-D.
- Analyse the 3-dimensional drawings of the building with Sciography.

Detailed Syllabus**UNIT-I (Isometric/ Axonometric projections)**

- Principle of Isometric projection, Isometric grid and Scale.
- Isometric /Axonometric Views of simple/complex forms.
- Fundamentals of Sciography (point, line, plane, solids etc.)
- Sciography in Plans and Elevations
- Sciography in Isometric/Axonometric Views

UNIT – II (Perspective Drawing)

- Introduction to theory of Geometrical Perspective Drawing.
- Perspective by Side Elevation Method.
- Angular (Two Point Perspective) and Parallel (One Point Perspective)
- Perspective of different Solids and Building elements
- Perspective by Grid Point method and Measuring Line method.
- Sciography in Perspectives (both one point & two point perspectives)

Instructions for the Faculty

- The Faculty is required to give maximum examples of the perspective view to enable the students to draw the views by using thumb rules.
- Emphasis should be laid on learning by doing and students have to be encouraged to make proper models to understand the geometry of forms.

Evaluation Criteria for Examination/ Question Paper Setting:

Total four questions are to be set two from each unit & students are required to attempt total two questions i.e. one from each unit. The distribution of marks for unit I: Unit II is 15: 25 marks

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-1 ,ST-2	Int. : Ext.	Duration of Exam
UC-BARCH203-19	Architectural Graphics - II	Credits-3	60 : 40	03 Hours

Course Objective
The objective of the course in

Architectural Graphics is to make the students familiar with the basic potential of Pencil and colours as a powerful tool of Graphic Communication.

Course Outcomes - At the end of the course, the students will be able to:

- Gain a fundamental knowledge of architecture Graphics and its principles.
- Attain the knowledge about the role of colours in presentation drawing and rendering techniques used in architectural design.

Detailed Syllabus

UNIT- I (Colours as an effective presentation tool and its use in architecture design)

- Colour theory, Understanding colour value and intensity
- Colour Wheel showing Primary, Secondary and Tertiary colours.
- Colour Schemes & Charts showing Tints and Shades of various colours.
- Effect of colours in relief compositions.

UNIT- II (Crayons, Oil Pastels and water colour as presentation medium)

- Representation of different textures in colour (brick, stone, timber, marble, glass etc.)
- Outdoor/indoor sketching of buildings, huts, group of trees, different kinds of trees/shrubs/grass with varying foliage in colours
- Colour rendering of blocks/geometrical forms, human figures, different types of vegetation, different transport modes and buildings etc.
- Rendering of drawings (Plan, elevation, 3-D views) in oil pastels and water coloured medium from previous semester design problem.

Instructions for the Faculty

- Workshops related to colour rendering will also be organised, highlighting its technique and style which can be organised indoor or outdoor. The students must be encouraged to appreciate the natural/man-made landscape and to understand the interrelationship of nature and architecture.

Evaluation Criteria for Examination/ Question Paper Setting:

Total four questions are to be set one from each unit & students are required to attempt all the questions.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-2	Int. : Ext.	Duration of Exam
UC-BARCH204-19	History of Architecture - II	Credits-2	40:60	03 Hours

Course Objective

To understand the role of geo-physical, societal, political and

technological factors in the evolution of architectural and urban forms.

Course Outcomes - At the end of the course, the students will be able to:

- Develop an understanding of architecture as an outcome of various social, political and economic influences and as a response to the cultural and climate conditions.
- Develop an understanding of the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture.

Detailed Syllabus

UNIT-I (Buddhist Architecture)

- Buddhist Art and Architecture : beginning & origin of Buddhist architecture and the important Socio- political factors in selection of sites
- Building typology: Stupas, Viharas, Chaitya halls etc..

UNIT-II (Hindu Architecture)

- Hindu temple Architecture: evolution of temple form (rock-cut and structural form) and the comparison of different temple forms in various regions of India.
- Styles of Hindu temple Architecture: Dravidian, Indo-Aryan, Jain temples

Instructions for the Faculty

- The Faculty is required to give more emphasis on the functional components, architectural form, construction and ornamentation aspects of the buildings especially in different regions of India (Orissa, Gujarat, Rajasthan, Khajuraho, Southern region and western region of India) by considering limited examples (not more than 05) of each type of Architecture
- The Faculty is required to develop a holistic understanding in students to analysis the different architectural style/building typology.
- Educational trip will be organised to impart the practical knowledge of the content.

Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-1, ST-4,	Int. :Ext.	Duration of Exam
UC-BARCH205-19	Building Construction & Materials - II	Credits-5	60:40	03 Hours

Course Objective

The main objective is to introduce the properties of timber as building materials and to familiarize the students with traditional construction methods of a single storeyed building in timber with sloping roofs.

Course Outcomes: At the end of the course, the students will be able to-

- Comprehend timber as a building material and its application in building components and Gain knowledge on construction of Door, window, roof made out of it.
- Understand various surface finishes for single storey building and the fundamental knowledge for water proofing details in simple structures.

Detailed Syllabus (This subject consists of two Parts)**Part A: Building Materials****UNIT-I (Materials)**

- Timber: Sources of timber, its classification & characteristics, defects of Timber, different Preservation and treatment measures and Uses of Timber in building construction.
- Industrial timber products and their applications-plywood, particleboard, laminated board, block board and batten board etc.

UNIT – II (Foundation & D.P.C)

- Foundation – introduction and importance of foundations, Types of Foundations (brick and stone) and their design considerations for load bearing structures.
- Damp proof course – introduction and types of D.P.C. , laying and maintenance of D.P.C. layers

- Water proofing: - Water proofing materials (liquid, semi liquid and solid) – Composition, Properties, Applications.
- Surface finishes:-White wash, Distemper, Paints and Varnishes- Types, Applications, Suitability, Advantages and Disadvantages.

Part B: Building Construction

UNIT – III (Doors & Windows)

- Carpentry joints - Introduction to Joints in Carpentry,
- Doors -Types of Doors, Design and construction details of Framed, Ledged, Braced & Battened Door, Flush Door, and Wire mesh Door, Panelled Door etc. (considering different types of Joints and Joinery details)
- Windows - Types of Windows, Design and Construction details of Casement, Bay, Clearstory, Corner window Dormer window etc. (considering different types of Joints and Joinery details)

UNIT – IV (Foundation, Walls and Roofs)

- Roofs - Construction of R.B.C. roof, Jack Arch Roof, Tiled and Battened Roof and concepts of water proofing & Thermal Insulation of roofs.
- Walls- various types of timber frame walls with details of joints and cladding
- Dhajji wall construction
- Foundation of timber post

NOTE: Draw the section through a single storey building covering the foundation, D.P.C. layer, window with sill and lintel level, roof and wall junction, roof insulations and parapet wall details.

Instructions to the Faculty

- The faculty should encourage the students to visit the construction site/conduct market survey w.r.t. the topics covered in the class.
- Audio-visual lectures should be presented.

Evaluation Criteria for Examination/ Question Paper Setting:

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-2, Sem./Tut-1	Int. : Ext.	Duration of Exam
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UC/BARCH-206/19	Theory of Structures-I	Credits-3	40:60	03 Hours
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Course Objective

Give introduction of basic principles governing structural systems. Make students understand basic properties of solids and sections which influence their behaviour under the effect of various types of forces.

Course Outcomes: At the end of the course, the students will able to –

1. Develop techniques for analysing forces in statically determinate structures.
2. Apply basic knowledge of Maths and Physics to solve real life problems related to structures.
3. Describe Hooke's law relationships and perform calculations

Detailed Syllabus:

UNIT I

- Various types of Gravitational and Lateral Loads (I.S. 875) such as Dead, Live, Wind, Earthquake etc.
- Type of Forces, Cause- Effect, Concurrent Forces, Coplanar Forces and Parallel Forces. Triangle Law of Forces, Parallelogram Law of Forces, Equilibrium of Forces, Concept of Resultant, Conditions of Equilibrium.
- Centre of Gravity, Definition, Centroid, Centre of Gravity of Plane Figures, Moment of Inertia; Radius of Gyration of simple cross-section of beams and columns, Theorem of Parallel and Perpendicular Areas.

UNIT II

- Classification of Frames, Type of stresses and strains, Analysis of determinate trusses by Method of Joints, Design examples.

UNIT III

- Moment of Resistance, Theory of Bending, Bending Stresses, Sectional Modulus of Rectangular and Circular Sections , bending and shear stress distribution across a section.

UNIT IV

- Types of Stresses & Strains, Hooke's law, Young Modulus, Shear Modulus, Bulk Modulus.

Instructions for the Faculty – the student of architecture must be clear the design concepts.

Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	L-2	Int. : Ext.	Duration of Exam
UC-BARCH207-19	Theory of Design - I	Credits -2	40:60	03 Hours

Course Objective

The objective is to establish the role and importance of Theory of Design as a broad, comprehensive activity to help students to formulate a responsible opinion and a well-reasoned judgement by looking at the design in depth and in a critical way.

Course Outcomes: At the end of the course, the students will be able to-

- Develop a basic understanding of spatial organisation
- Learn about the inter-dependence of function, structure and form in architectural design. .

Detailed Syllabus

UNIT-I

- Formal Collision of Geometry and Articulation of Forms.
- Analysis and classification: space usage & inter-relationship of different spaces within a building.

UNIT-II

- Organization of Form and Space
- Spatial Organization and Circulation Elements including Approach, Entrance, Configuration of the Path (Path- Space Relation, Form of the Circulation Space).

UNIT - III

- Form defining Space with Horizontal Elements and Vertical Elements.

UNIT - IV

- Quality of Architectural Space
- Study the philosophy of any four Contemporary Indian Architects

Instructions for the Faculty

- The Faculty is required to guide the students with building examples (taken from Indian/world architecture) to understand the necessary relationship between indoor and outdoor space in context to the theory of design and must encouraged the students to do in depth study of design theory.
- Audio-visual lectures should be presented and the subject must be taught in coordination to site visits or study tour for topics relating to theory of form, space and basic architectural forms.
- The students must be engaged into self-teaching by giving more stress on seminars.

Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	P - 2	Int. : Ext.	Duration of Exam
UC-BARCH208-19	Workshop - II	Credits-01	100	No Exam only Internal Viva-voce

Course Objective

The student will gain basic hands on experience and fundamental

knowledge in model making, sculpture and clay modelling.

Course Outcomes: At the end of the course, the students will able to--

- Proficiency in handling clay as a material.
- Acquire skills in different types of architectural model making using various materials and get hold of skill in sculpture making in various mediums.

Detailed Syllabus

UNIT-I (Clay & Sculpture)

- Clay Modelling, Pinching, Coiling Techniques Slab Techniques
- Sculptures in Plaster of Paris, Wires, Scrap, Wood, Ceramic tiles etc.

UNIT- II (Model Making in paper, cardboard and mount board)

- Prepare block model of the design project introduced in the semester along with site plan details such as parking area, green areas and landscape techniques etc.
- To prepare a detailed model of mixed materials of a major design project of same semester.

Instructions for the Faculty

- The Faculty is required to organize one or two Sculpture/Mural workshop to enable the students to understand the concept of “learning by doing”.
- Model making shall be attempted in groups consisting of 2-3 students.

Evaluation Criteria for Examination/Question Paper Setting

In the end of the semester internal jury Viva-voce to be conducted (the jury comprises of the subject incharge and the HoD nominee)

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 2nd Semester)**

Course Code	Course Name	L-2,	Int. : Ext.	Duration of Exam
UC/BARCH-209/19	Environmental Science	Credits - 2	40:60	03 Hours

Course Objective

Upon successful completion of the course, students should be able to Measure environmental variables and interpret results. Evaluate local, regional and global environmental topics related to resource use and management

Course Outcomes: At the end of the course, the students will able to

- 1 Propose solutions to environmental problems related to resource use and management
- 2 Interpret the results of scientific studies of environmental problems
- 3 Describe threats to global biodiversity, their implications and potential solutions

Detailed Syllabus:-

UNIT- I (Natural Resources)

- Introduction: Definition and scope and importance of multidisciplinary nature of environment. Need for public awareness.
- Natural Resources: Natural Resources and associated problems, use and over exploitation, case studies of forest resources and water resources.
- Ecosystems: Concept of Ecosystem, Structure, interrelationship, producers, consumers and decomposers, ecological pyramids-biodiversity and importance. Hot spots of biodiversity

UNIT- II (Environmental Pollution)

- Environmental Pollution: Definition, Causes, effects and control measures of air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, nuclear hazards.
- Solid waste Management: Causes, effects and control measure of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies.
- Disaster Management: Floods, earthquake, cyclone and landslides.

UNIT- III (Social Issues)

- Social Issues and the Environment From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of pollution) Act. Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation Public awareness

UNIT- IV (Human Pollution)

- Human Population and the Environment, Population growth, variation among nations. Population explosion – Family Welfare Programme. Environment and human health, Human Rights, Value Education, HIV/AIDS. Women and child Welfare. Role of Information Technology in Environment and human health. Case studies

Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 2nd Semester)

Course Code	Course Name	P/FW-2	Int. : Ext.	Duration of Exam
UC/BARCH-210/19	Mentoring & Professional Development-I	Non-Credits	100: -	No Exam

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of

- Overall Personality
- Aptitude (Technical & General)
- General Awareness (Current Affairs & GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. class activities and outdoor activities for achieving the above suggestive list of activities to be conducted are:

Part A (Class Activities)

- Expert and video lectures
- Aptitude Test
- Group Discussions
- Quiz (Technical & General)
- Presentation by the Students
- Team Building Exercises

Part B (Outdoor Activities)

- Sports: NSS/NCC
- Society activities in various student chapters i.e. NASA, ISTE, SCIE, SAF, CSI, Various Clubs such as Cultural, Hobby, Adventure etc.

Evaluation shall be based on rubrics for Part A & B

IK Gujral Punjab Technical University Kapurthala

Mentors faculty incharge shall maintain a proper record of the marks of the students and the same shall be submitted to the department.

Bachelor of Architecture (B.Arch) Teaching Scheme 2019

Third Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks Int : Ext	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total			
PC	1	UC/BARCH-301/19	Architectural Design -III	1	-	-	5	06	60:40	6	06 + External Viva Voce
BS & AE	2	UC/BARCH-302/19	Building Construction & Materials-III	1	-	-	3	04	60:40	4	04
	3	UC/BARCH-303/19	Structure Systems-II	1	-	-	1	02	100	2	External Viva Voce
	4	UC/BARCH-304/19	Structure Design-I	2	2	-	-	04	40:60	3	03
	5	UC/BARCH-305/19	Surveying & Leveling	2	-	2	-	04	40:60	3	03
	6	UC/BARCH-306/19	Climate & Architecture-I	2	2	-	-	04	40:60	3	03
PAECC	7	UC/BARCH-307/19	Computer Application-I	1	-	2	-	03	100	2	External Viva Voce
SEC	8	UC/BARCH-308/19	* Educational Tour I/ Summer Training-I / Vacation Assignment-I	-	-	-	-	-	100	1	Internal Assessment by jury Viva-voce
			Total					27		24	

Note: * UC/BARCH-308/19 is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester.

P. Singh

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3rd Semester

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

Lyoti

Prabhu

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-301/19	Architectural Design -III	1L, 5 stu	6	06 Hours + External Viva Voce

Course Objective: To make students understand and appreciate the constraints in the designing of a building of a small scale with reference to function, form and structure. And to create awareness about the role and Importance of physical factors in Architectural Design e.g. orientation, ventilation, adequate protection from natural elements, and human dimensions in various postures (in applied form), their relation to everyday utilities including table, chair, bed etc. Introduction to barrier free buildings at a small scale.

Course Outcomes: At the end of the course, the students will able understand the nuances of house, school, cafeteria and post office design. They will also be well versed with various physical factors of architecture design and equipped with the norms of barrier free design.

Detailed Syllabus:-

UNIT-I

Design of House, Primary School, without urban regulatory controls with emphasis on environmental and ecological issues.

UNIT-II

Design of Cafeteria, Post Office etc,

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The answer sheet shall be retained at the institute after the exam for conduct of the viva voce which will be conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners.

Instructions for the Faculty –

Design faculty should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment)It is recommended that 2-3 projects to be handled by students from the topic given above. Library and prototype studies should be carried out for remaining projects. Model and perspective should be made integral part of project presentation.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

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Manish
Prashant
Harman
Jyoti

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-302/19	Building Construction & Materials-III	1 L, 3 Stu	4	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of timber products and Glass in buildings.

Course Outcomes: At the end of the course student will able to become aware of the different types of timber roofing systems and trusses. Understand details for trusses, staircases, sliding doors, sliding folding doors, partitions, panelling, work out and apply appropriate details for building construction of the same.

This subject consists of two parts

PART - I Building Materials with emphasis on learning of material.

PART - II Building Construction with emphasis on construction drawings by pencil only.

Detailed Syllabus:-

PART – A: BUILDING MATERIAL

UNIT-I

(a) **Glass**

- Glass as a building material, Classification, Composition, Properties and Use of Glass.
- Character and uses of various types of Glass and their application in buildings

UNIT-II

(b) **Timber Products**

- Manufacturing process and qualities of Decorative and Commercial timber product used in buildings

Note: All contemporary uses must be studied of glass and timber products.

PART – B: BUILDING CONSTRUCTION

UNIT-III

- (a) Section of a Double Storeyed Building through Toilet and Stair case showing the details of Foundation, D.P.C, Floor, Window, Lintel, Chhajja, R.C.C Roof, Terrace and Parapet.
- (b) Types of Staircases-- Design and detailing of RCC and Timber Staircases.
- (c) R.C.C. Form work and Shuttering details for- Column (square and round), Slab and Beam, Wall, Staircase etc.

UNIT-IV

(a) **Flooring**

- Construction of PCC, Terrazzo, (Cast-in-situ and tiles) and various types of Stone flooring. Contemporary floor must also be studied.

(b) **Cladding**

- Cladding of interior and exterior facades in various commonly used materials

Prashant

Go. Hamid

Mukto

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Field visit to study the complete process of laying of reinforcement and concreting. Preparing Construction sheets on above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

R. Singh

Joshi

Ge.:: Namay

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L/ Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-303/19	Structure Systems-II	1 L, 1 Tut	2	Ext Viva Voce

Course Objective: To make students learn basics principles of structure systems with emphasis on learning by doing and making 3-D models to provide the student with different spatial experience.

Course Outcomes:

At the end of the course, the students will be able to gain ability to comprehend the Design erection process and application of large span structures. To understand the need and importance of prefabricated components and structures as an alternative to cast in situ construction process. To understand the needs, requirements, and selection for various types of structures systems.

UNIT-I

- Structures acting mainly through Composition of Compression and Tension members such as Vector-active structure system in co-active tension and compression in;
 - a) Space frames.
 - b) Trusses (Timber & Steel).
 - c) Domes (Ribbed & Geodesic)

UNIT-II

- Structure acting mainly through axis:
 - a) Lattice structure
 - b) Polyhedron structure
 - c) Tree type

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through External Viva Voice of the work done by the student during the semester

Instructions for the Faculty –

Emphasis must be given on learning by doing i.e preparing the models of the structure system covered. Students be encourage to present a PPT on the topics assigned and submit its report for external evaluation.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

Prashant
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Joti

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-304/19	Structure Design-I	2 L, 2 Tut	03	03

Course Objective:

The aim and objective of the course on structure design-I is to get introduced to basic structural members in masonry and timber, to give knowledge of design of timber beams in buildings and to enable understanding of basic concepts of shear force and bending moment.

Course Outcomes: At the end of the course, the students will able to Design timber beams by applying codal provisions, Design Masonry foundation and retaining walls, Analyse indeterminate structures and to calculate shear force and bending moment in determinate structures.

Detailed Syllabus: -

UNIT-I

Design of Foundations in Masonry work-- Safe Bearing Capacity, Load on Foundations, Depth of Foundation, Rankine's formula, Footing Sections.

Design of Retaining Walls in Masonry-- Loads, Resultant Pressure, Stability of Structure, Middle Third Rule, Design examples.

UNIT – II

Bending Moment/ Shear Force, Type of Supports, Loads and Beams, BM and SF diagram for Simply Supported Beams with Point Load and Uniformly Distributed Load--Design examples

UNIT – III

Design of Simple Timber Beam, Bending Stress Check, Shear Check, Deflection Check, Bearing Check, Design examples with UDL and Concentrated load.

UNIT – IV

Analysis of portal frame by slope deflection method (Non-sway)

Evaluation Criteria for Exam / Question Paper Setting: -

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit

Instructions for the Faculty-

The students of architecture must be made clear about the design concepts and tutorials be made an integral part of learning.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-305/19	Surveying & Leveling	2 L, 2 FW	3	03

Course Objective: To make students understand and learn about and basics of surveying and levelling and its application in designing of buildings.

Course Outcomes: At the end of the course, the students will able to do chain surveying, compass survey, plane table survey, levelling, contouring. Students will have knowledge of survey instruments also.

Detailed Syllabus: -

UNIT-I

Chain Surveying: Principal of chain surveying, description of different equipment, Methods of chaining, selection of base line and stations, obstacles in chaining, ranging rods.

Prismatic Compass survey: Description of Prismatic & surveyors compass methods of traversing, local attractions and its elimination, adjustment of closing error.

UNIT-II

Plane Table survey: Description of different equipment's, different methods of plane tabling, Two point and three-point problems and their solutions.

Levelling: Methods of levelling, Sensitivity of bubble tube, setting out grade lines, permanent adjustment of levelling instruments.

UNIT-III

Contouring: Setting out contour gradient, different method of contouring, characteristics and uses of contours.

UNIT-IV

Survey Instruments: Abney level, Theodolite, Total Station: Introduction, Various components, Operation, Advantages/ Disadvantages

Evaluation Criteria for Exam / Question Paper Setting: -

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Instructions for the Faculty –

Faculty should conduct survey on ground. All concepts in theory must be put in practical site.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

P. Subash
Jyoti Nikate

Ge. Hameed

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-306/19	Climate & Architecture-I	2 L, 2 Tut	3	3

Course Objective:

To make students understand the role and importance of climate as one of the major determinant of built form and to familiarize them with various climate controlling devices.

Course Outcomes: At the end of the course, the students will be able to understand the fundamentals of climatology as an important consideration in architecture design and it will orient his/ her proposal accordingly. Like thermal comfort, design sensitivity towards climate and climatic zones.

Detailed Syllabus:-

UNIT-I Fundamentals

Introduction to climatology, Importance of studying Building climatology, Elements of climate, Global climate factors, Interrelationship of climatic elements and Psychrometric chart

UNIT-II Movement of Sun

Understanding the movement of Sun, Solar Chart and its importance, Importance of understanding the optimum orientation of buildings and their forms in relation to Sun, Concept and Design of Shading Devices

UNIT-III Thermal Comfort

Definition and explanation of Thermal Comfort, Human Heat Balance and Physical Comfort, Relationship of Climatic Elements with Thermal Comfort, Thermal Stress Index.

UNIT-IV Climatic Zones

Tropics and its Climatic zones, Macro and Micro Climate(site climate), Role of Climate with respect to Shelter, Study of various Indigenous Shelters in response to various Climate Zones in the Tropical belt of India, Principles of Architectural Design in different Climatic Zones in India (As per National Building Code)
Introduction to computer software's dealing with fundamental climatology

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

P. Singh

M. K. Singh

Dr. J. K. Singh
Dr. R. K. Singh

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-307/19	Computer Application-I	1, -, 2, -,	2	Ext Viva Voce

Course Objective To make students aware of the role and importance of Computers in the field of Architecture.

Course Outcomes: At the end of the course, the students will be able to understand basics of Computers hardware, operating systems and operative languages, being a fundamental course the students will be introduced to the basic of hardware and software. They will be introduced to 2D presentation..

Detailed Syllabus:-

UNIT-I

- Introduction to MS Office tools (power point presentation, word file/excel etc.)
- Basic commands like copy, paste, stretch, offset, move fillet, extend, trim and other 2D commands.
- 2D modelling in Auto Cad, Auto Cad Revit, Google Sketch up,
- Drawing the basic Plans, Sections, and Elevations.

UNIT-II

- Basic Text writing and dimensioning of the Plans, Elevation and Sections.
- Basic hatching and filling of the Walls in the Plans, Elevations and Sections.
- Basic rendering in the Auto Cad and in other Software's in 2D/3D such as Photoshop, Revit, and Sketch up etc.

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through Internal Viva Voice of the work done by the student during the semester.

Instructions for the Faculty –

Emphasis should be laid on developing the skill pertaining to 2-D on the Software's and basic introduction to 3-D Software's.

P. Singh

Jain

gc: Namak *Mukta*

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-308/19	* Education I/Summer Training-I / Vacation Assignment-I		1	Int. Viva Voce

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The education tour is encouraged to be undertaken by the students under faculty supervision. During or after the semester the tour report shall be submitted to the class coordinator for assessment.

The students should be encourage undertaking approx. 04 week summer training in a design / construction/allied office. Alternatively student should also be encouraged to do any online course of similar duration during the summer vacation.

Vacation assignment is to be assign by the HoD in consultation with class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

Prabir

Je

Ge *Damod* *Mukto*

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 6	Duration of Exam
UC/BARCH-401/19	Architectural Design -IV	1 L, 5 ST	Int : Ext 60:40	06 + External Viva Voce

Course Objective:

To make students appreciate the elements of vernacular/rural Architecture of a particular region of the state of Punjab and understand the role of vernacular/traditional in relative thermal comfort.

Course Outcomes: At the end of the course, the students will be able to Study Social and Physical environment and methods of construction in Vernacular/Rural Architecture, emerging out of the traditional way of life of the people in a given place with special reference to Punjab and understand the principles of design in vernacular/ traditional architecture w.r.t to thermal comfort, climate, and topography.

Detailed Syllabus:-

- Study of Rural, Vernacular, Historical Settlements/buildings of distinct Architectural characteristics including detailing with physical planning and other related systems.

BUILDINGS

- Community Buildings
- Panchayat Ghar, Rural Dispensary or hostel
- Farmer's House, Village Dairy Farmhouses, Rural School, etc.

NOTE:-All buildings should have accessibility to specially-abled persons.

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The evaluation is to be done through Viva-voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panelist of examiners. The answer sheet shall be retained at the institute after the exam for the viva voce.

Instructions for the Faculty –

Design faculty should encourage and motivate the students for live projects of their immediate surroundings. (Identifying need, Framing requirements, and solution for the same, and it should be evaluated as one of the assignments and marked accordingly.)

Minimum two projects/assignments should be handled by students during the semester including a detailed study of a representative village & historical site. The study shall be done in groups to bring out the existing settlement pattern, socio-economic conditions, the pattern of life, building typology, materials/building technology used, and important architectural features. The end product shall be a well-documented report and drawings. Library/case study shall be made an integral part of every assignment.

Note – Design brief should be designed in such a way that incorporated the Agro-related infrastructure part in the design

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-402/19	History of Architecture-III	2 L	Int : Ext - 40:60	03

Course Objective: To make students understand how different architectural solutions were evolved (in successive historical periods) within the constraints/limitations imposed by prevalent social and religious costumes, available building materials, prevailing climate, topography, complex structural problems, and building technology available at the time.

Course Outcomes: At the end of the course, the students will be able to approach the architectural structures provided by their ancestors and co-relate them with the contemporary scenario.

Detailed Syllabus:- Study of world Architecture from the early stage to the Early Roman period besides the early era of Indian Architecture and Buddhist Architecture.

UNIT- I

Roman Architecture, Christian Architecture

UNIT- II

Byzantine Architecture, Romanesque Architecture

UNIT- III

Chulkyan and Ashoka period of Hindu Architecture, Dravidian Architecture

UNIT-IV

Indo Aryan Architecture, Orissa, Gujrat, Khajuraho

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

For each period given in the syllabus, stress is to be laid on the Architectural character and elements of Architecture with one or two representative examples to highlight those features. Emphasis should be laid on understating the evolution of buildings and form. The continuous evaluation shall be made of students' work based on class models, assignments and sketches and seminars, etc.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)-

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-403/19	Building Construction & Materials-IV	1, -, -, 3,	Int : Ext 60:40	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of the roof and floor coverings in building construction.

Course Outcomes: At the end of the course student will be able to become aware of the roof and floor coverings. Understand details for trusses, staircases, sliding doors, sliding folding doors, partitions, paneling, work out and apply appropriate details for building construction of the same.

This subject consists of two parts

PART - I Building Materials (with emphasis on the learning of material).

PART - II Building Construction (with emphasis on construction drawings by pencil only).

Detailed Syllabus:-

PART – A BUILDING MATERIALS

UNIT-I

- (A) **Roof-Coverings** - Constituents, Properties, Uses, Process of Laying of Roof Covering Materials e.g. G.I. Sheets, Asbestos Cement Sheets (Plain & Corrugated) with accessories, Clay Tiles - Country, Allahabad & Mangalore Tiles, etc.

UNIT-II

- (B) **Floor Coverings-** Constituents, Properties, Uses and Process of Laying of Floor Covering Materials e.g. Linoleum, Cork Sheet, Parquette, Rubber (Tiles and Sheets) and Types of Stone and tile Flooring.

PART – B BUILDING CONSTRUCTION

UNIT-III

Roofs and Trusses (Timber)

- Introduction to different types of Roofs
- Principles of Construction and Details of King Post and Queen Post Trusses with Gutters, Eaves, and Ridge Details with/without Soffit and Roof Covering.
- Timber Built-up Trusses of various Spans.

UNIT-IV

- Doors & Windows - Design and Details of special-purpose door

- Timber partition, glass block partition, timber paneling
- Timber Staircase-Design and Details, Dhajji Wall Construction

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study the complete range of products available in the market under different trade names with their manufacturing details, specifications, and performance. Field visit to study the complete process of laying of reinforcement and concreting. Preparing Construction sheets on the above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-404/19	Structure Design -II	2 L, 2 Tut	Int : Ext - 40:60	03

Course Objective: The aim and objective of the course on structure design-II are to get introduced to the design of reinforced concrete structures and to make the building structurally safe.

Course Outcomes: At the end of the course, the students will able to – design RCC Beams, Slabs, Columns, and footings with different loads for one-story simple buildings.

Detailed Syllabus: -

UNIT- I

Beam

Design of Single Reinforced Beams, Doubly Reinforced Beams, Depth/ Thickness of Section Area of reinforcement, Shear Check, Shear Reinforcement, Introduction to Cantilever beam, T- Beams and L- Beams

UNIT- II

Slab

Design of One-Way Slab, Depth/Thickness of Section Area of Reinforcement, Shear Check, I S 456 Code- provisions, Introduction to Two Way Slab, I_y/I_x ratio

UNIT- III

Column

Design of Columns, Long /Short Columns, Basic Equation of Design, IS 456 Code Provisions, Section of Column, Longitudinal and Lateral Reinforcement

UNIT-IV

Footing

Design of Isolated Square Footings, Consideration of Bending Moment, One Way Shear, and Two-Way Shear, Area of reinforcement

Evaluation Criteria for Exam/ Question Paper Setting: -

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty - The students of architecture must be made clear about the design concepts and tutorials be made an integral part of learning. The faculty also should encourage the students to read the code IS 456-2000.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-405/19	Building Services-I	2 L, 1 T	Int : Ext - 40:60	03

Course Objective: To make students learn and understand the requirements of Building Services and their application to buildings with a focus on Water Supply, Drainage, and Sanitation.

Course Outcomes: At the end of the course, the students will able to:

- Understand the terminology and basic principles of water supply, stormwater drainage, and sanitation.
- Understand water requirements in various types of buildings, types of water storage and distribution systems, sanitary & drainage system requirements, and their integration in architectural design.
- Understand the functions of various sanitary fittings and fixtures and be aware of the different types of materials and specifications of the same.
- Develop design skills for water supply and drainage systems in buildings and prepare architectural drainage layouts.

Detailed Syllabus:-

UNIT- I

WATER SUPPLY

Water- Role & Importance, Sources, Quality, Impurities, Water Supply- Introduction, Basic Principles, Systems of Water Supply, Water Storage – Systems, Capacity and Location, Calculation of Water consumption, Domestic, hot and cold water supply systems, Pipes materials- Size and their jointing details, Fittings- sanitary fittings like Ferrule, Stopcock, Bibcock, etc, Metering- Various kinds of Water Meters and connections.

UNIT- II

SANITATION

Sanitation- Role, Importance, Basic principles of disposal of waste from buildings, Dry and Wet Carriage Systems, Sanitary Fittings-- Washbasins, WC's, Bath Tubs, Sink, Urinals, Bidets, Flushing Cistern, Traps, etc.

Various types of joints, Pipes materials- Size and their jointing details, Septic Tanks, Treatment Plants, Manholes, Chambers- Purpose, Location, Structure and Ventilation, Drainage Systems- Types, Advantages/Disadvantages -- separate, combined and partially combined systems, Stack system--One pipe and two pipe systems, Testing of Drains, Gradients-- Purpose and Principle for laying Drains and Sewers. Self -cleansing and non-scouring velocities, Size of Drain Pipes, and Materials used.

UNIT- III

STORMWATER DISPOSAL

Types of Roads-WBM (water-bound macadam) Road-Tar, Bitumen, Asphalt and RCC roads, Description and Suitability of Roads for Storm Water Drainage with Comparative Cost Analysis, Pavements- Types (Soil stabilized, Brick and Stone paving, interlock tiles), Use, Advantages/Disadvantages, Drainage- Sub- drains, Culverts, Ditches, Gutters, Drop inlets and Catch Basins, Rain Water Disposal for individual buildings. Rain Water Harvesting

UNIT-IV

Preparation of the drawings/ layouts of the building services in the design project of 3 and 4 semesters by the student. Kitchen and bathroom partition be highlighted.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Market survey to study materials available. The subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites, the actual display of Fittings, Pipes, Joints used, and by carrying out exercises in the layout of simple drainage systems for Small buildings, Planning of Bathrooms and Lavatory Blocks in Domestic and Multi-storied buildings

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)**

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-406/19	Climate & Architecture-II	2L, 1 T	Int : Ext - 40:60	03

Course Objective: To acquaint the students and make them aware of the concept of climate as a significant determinant of built forms and to familiarize them with various climate control devices.

Course Outcomes: At the end of the course, the students will be able to understand advanced climatology and ventilation as an important consideration.

Detailed Syllabus:-

UNIT- I

Ventilation in Buildings:- Ventilation - Introduction and its mechanism, Wind Movement, Air movement within and around buildings, the effect of surrounding elements and pattern of wind flow, Guidelines for designing well-ventilated buildings. Optimum Orientation of Building—Importance, Form, and Placement of Building

UNIT- II

Solar Radiations:- Introduction to basic Thermal Units, Theory of Heat Flow, Heat Transmission, etc, Thermal Properties of various Building Materials, Solar Radiations- Movement of Sun, Method of Recording, Radiation Gains by various Materials, Study of various Landscape Elements and Solar Passive Devices for Climatic Control within Buildings

UNIT- III

Introduction to Green Building Rating systems

Sustainable development - Concept, Definition, Importance and Scope, Introduction to Energy Demand and Consumptions, Energy Saving Technique in Buildings, Alternate Energy Sources in India, and various Green Building Rating systems in India

UNIT-IV

Introduction to Codes for Energy Conservation of Building

Role of NBC sustainability and ECBC Codes in the design of buildings, Introduction to software which student can use for design as per these codes.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject shall be made a combination of guest lectures by experts, visits to the existing Green Buildings, attending seminars organized by the Professional Bodies/ others, and preparing Models/ Charts to make students familiar with the use of natural elements as an essential input to design sustainable buildings.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-407/19	Computer Application -II	1L, 2 FW	Int : Ext - 40:60	Ext Viva Voce

Course Objective: To make students aware of the role and importance of Computers in the field of Architecture.
To develop 3D skills in the students by familiarizing them with different software.

Course Outcomes: At the end of the course, the students will be able to :

1. Develop skills required for using Computers as a tool for design, 3D modeling, and rendering.

2. Familiarize themselves with 3D model design and rendering techniques using different software for building visualization/design representation.
3. Produce 3D models and renderings of simple and complex buildings using CAD and other software programs.

Detailed Syllabus:- Being an advanced learning course, students will be introduced to 3D- and rendering techniques of the buildings.

UNIT- I

- 3-D Modelling on Auto cad of Single Story and Multi-Story Buildings,
- 3-D Modelling of Multiple Building in a Single Site, Camera View of the Buildings,
- 3-D Modelling on 3-D Max.
- View on Google Sketch Up

UNIT- II

- Rendering of the View on any of the following Software
 - 3D- Max,
 - Photoshop,
 - V-ray and
 - Any other Software.

UNIT- III

- Basics of Animation on Google Sketch-up /3D-Max

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through Internal Viva Voice of the work done by the student during the semester.

Instructions for the Faculty –

Emphasis should be laid on developing the skill of 3-D on the Software's

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits – No Credit	Duration of Exam
UC/BARCH-408/19	Mentoring and Professional Development-II	-, -, 2, -,	Int : Ext – 100:00	No Exam

The objective of mentoring will be the development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split into two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

UNIT – II (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Teambuilding Exercises

UNIT – II (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

The evaluation shall be based on rubrics for Part – A & B Mentors/Faculty in charges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-409/19	Constitutional Law	2L	Int : Ext - 40:60	03

Course Objective

The objective of the course is to familiarize students (Prospective engineers) with an elementary knowledge of laws that would be of utility in their profession. The syllabus covers the Constitution of India and new areas of law like IPR, ADR, Human Rights, Right to Information, Corporate law, Law relating to Elections, and Gender Studies. To be supplemented by the historical development of laws wherever required.

Course Outcomes: At the end of the course, the students will able to get the basic knowledge of law and constitution.

Detailed Syllabus:-

UNIT- I :

Constitutional Law covering the Preamble; Fundamental Rights, Judicial Activism including Equality and Social Justice, Life and Personal Liberty and Secularism and Religious freedoms; Directive Principles of State policy; Fundamental Duties; Emergency provisions – kinds, legal requirements and legal effects; (5 Lectures)

UNIT- I A:

Human Rights and Public International Law covering Human Rights in International Law-Theoretical foundation, human rights, and international law; Historical development of human rights; Human Rights in Indian tradition and Western tradition; Covenant on Civil & Political Rights 1966 including Optional Protocol – I (Individual Complaint Mechanism) & Optional Protocol – II (Abolition of Death Penalty); Covenant on Economic, Social and Cultural Rights 1966 including Optional Protocol – I (2002); UN Mechanism and specialized agencies, (UNICEF, UNESCO, WHO, ILO, FAO, etc.); International NGOs – Amnesty International, Human Rights Watch, Greenpeace Foundation; Enforcement of Human Rights in India including Supreme Court, High Courts, Statutory Commissions – NHRC, NCW, NCM, NC-SCST, etc. Public International Law, covering Introduction, Customs, Treaties, State territories including Recognition of States and Governments, Law & Practice of Treaties and Law of Sea; (5 Lectures)

UNIT- II :

General Principles of Contract under Indian Contract Act, 1872 covering General principles of contract – Sec. 1 to 75 of Indian Contract Act and including Government. as a contracting party, Kinds of government contracts and dispute settlement, Standard form contracts; nature, advantages, unilateral character, principles of protection against the possibility of exploitation, judicial approach to such contracts, exemption clauses, the clash between two standard form contracts; (4 Lectures)

UNIT- II-A:

Arbitration, Conciliation and ADR system covering Arbitration – meaning, scope and types – the distinction between the law of 1940 and 1996; UNCITRAL model law – Arbitration and expert determination; Extent of judicial intervention; International commercial arbitration; Arbitration agreements – essential and kinds, validity, reference and interim measures by the court; Arbitration tribunal – appointment, challenge, the jurisdiction of the arbitral tribunal, powers, ground of challenge, procedure and court assistance; Award including Form and content, Grounds for setting aside an award, Enforcement, Appeal, and Revision; Enforcement of foreign awards – New York Convention Awards and Geneva Convention 24 Awards; Distinction between conciliation, negotiation, mediation and arbitration, confidentiality, resort to judicial proceedings, costs; (5 Lectures)

UNIT- III :

Law relating to Intellectual property covering Introduction – meaning of intellectual property, main forms of IP, Copyright, Trademarks, Patents and Designs, Secrets; Other new forms such as plant varieties and geographical indications; International instruments on IP – Berne convention, Rome convention, TRIPS, Paris convention and international organizations relating IPRs, WIPO, WTO etc; Law relating to Copyright in India including Historical evolution of Copy Rights Act, 1957, Meaning of copyright – literary, dramatics and musical works, sound records and cinematographic films, computer programs, Ownership of copyrights and assignment, Criteria of infringement, Piracy in Internet – Remedies and procedures in India; Law relating to Trademarks under Trademark Act, 1999 including Rationale of protection of trademarks as Commercial aspect and Consumer rights, Trademarks, registration, procedures, Distinction between trademark and property mark, Doctrine of deceptive similarity, Passing off an infringement and remedies; Law relating to Patents under Patents Act, 1970 including Concept and historical perspective of patents law in India, Patentable inventions with special reference to biotechnology products, Patent protection for computer programs, Process of obtaining patent – application, examination, opposition and sealing of patents, Patent cooperation treaty and grounds for opposition, Rights and obligations of patentee, Duration of patents – law and policy considerations, Infringement and related remedies; (8 Lectures)

UNIT- III-A:

Right to Information Act, 2005 covering, Evolution and concept; Practice and procedures; Official Secret Act, 1923; Indian Evidence Act, 1872; Information Technology – legislation and procedures, Cybercrimes – issues and investigations; (3 Lectures). Labour Laws, covering Industrial Disputes Act, 1947; Collective bargaining; Industrial Employment (Standing Orders) Act, 1946; Workmen"s Compensation Act, 1923; (3 Lectures). Corporate Law, covering Meaning of corporation; Law relating to companies, public and private (Companies Act, 1956) general provisions; Law and multinational companies – International norms for control, FEMA 1999, collaboration agreements for technology transfer; Corporate liability, civil and criminal; (4 Lectures)

UNIT- IV :

Election provisions under Indian Constitution (Art.324–329), covering Representation of Peoples Act and Prevention of Corruption Act, 1988; Superintendence, directions and control of elections to be vested in Election Commission;

Prohibition as to ineligibility for inclusion in electoral roll on ground of religion, race, caste or sex; Election to the house of people and to the legislative assemblies of States to be on the basis of adult suffrage; Power of parliament to make provisions with respect to elections to legislatures; Power of legislature of State to make provisions with respect to elections to such legislature; Bar to interference by courts in electoral matters; Offences relating to elections under IPC 1860 (Sec.171-A to 171-I), Definition – candidate electoral rights, Bribery, undue influence and impersonation at elections and punishments, False statement in connection with election, Illegal payment in connection with election, Failure to keep election accounts; (4 Lectures)

UNIT- IV A:

Gender Studies, covering Meaning of gender, international perspective and national perspective; Laws relating women in India; Judicial approach and responses- 25 Vishaka V/s State of Rajasthan 1997 SC; Rights enforcement mechanism in India; Landmark judicial decisions of Supreme Court relating to women; (4 Lectures)

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Emphasis should be laid on developing the knowledge for the law and constitution.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

5th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 6	Duration of Exam
UC/BARCH-501/19	Architectural Design -V	1L, 5 Studio	Int : Ext -60:40	12 (in 2 days) + External Viva Voce

Course Objective: To make students understand and appreciate the constraints in the designing of buildings regarding function, form, and structure. To create awareness about the Role and Importance of physical factors in Architectural Design on flat or contour site.

Course Outcomes: At the end of the course, the students will be able to understand the nuances of commercial and public buildings. They will also be well versed with various physical factors of architecture design and equipped with the norms of barrier-free design and design of building with respect to site topography.

Detailed Syllabus:-

Design of structures of simple and normal complexity and detailing of buildings. All buildings should have accessibility to specially-abled persons.

UNIT-I Commercial Buildings

Hotels, Motels, Restaurants, Hostels, Club Houses, etc.

UNIT-II Public buildings

Institution and Public Buildings- Museum, Libraries, and Court Houses, etc.

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The answer sheet shall be retained at the institute after the exam for the conduct of the viva voce which will be conducted at the institute level by Internal / External

jury members appointed in consultation with the university from the approved panelist of examiners. . The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty are required to take a well prepared well-researched lecture on the building topology and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment)It is recommended that 2-3 projects to be handled by students from the topic given above. Library and prototype studies should be carried out for the remaining projects. Model and perspective should be made an integral part of project presentation.

One project should be on a contoured side preferably.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-502/19	Building Construction & Materials-V	1, 3	Int : Ext -60:40	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of materials i.e. Iron/ Steel? Aluminium in buildings.

Course Outcomes: At the end of the course student will able to Become aware of the different types roofing systems and trusses. Understand details for trusses, staircases, sliding doors, partitions work out and apply appropriate details for building construction of the same.

Detailed Syllabus:-

PART – A BUILDING MATERIALS

UNIT-I

The study of manufacturing process, casting, characteristics, form and uses of Cast Iron, Wrought Iron, Steel, Stainless Steel, Aluminium, copper as building materials.

UNIT-II

Properties and applications of copper, titanium and carbon fibre in buildings.
Various structural members, Sections and Joinery in Steel, Aluminium and PVC.

PART – B BUILDING CONSTRUCTION

UNIT-III

a) Steel, Aluminium, and PVC

- Doors and windows
- Frames
- Sliding door

b) Aluminum, and PVC

- Partition Walls
- Aluminium composite panelling details
- Curtail wall details.

UNIT-IV

c) Steel Trusses

- Steel Trusses types, 12m. howe trusses
- Constructional details of Simple Truss, North Light Truss

d) Constructional details of Steel flooring, Steel, beams, Column (stanchions), Grillage Foundation & Staircase details.

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Preparing Construction sheets on above topics.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Camp

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-503/19	Structure Systems-III	1, 1, -, -,	Int : Ext 60:40	Ext Viva Voce

Course Objectives: At the end of the course, the students will be able to understand the concept of High rise, Long span, shell, flat slabs, tensile and pneumatic structures and the structural and construction issues involved with each type of structure.

Course Outcome: After completing this course, the student will be able to: Understand the basic principles of structures. Realize the fundamental requirements of long span structures Understand the architectural features and necessity of shells and plate structures Comprehend the design principles and applications of pneumatic and tensile structures

Detailed Syllabus:-

UNIT-I

Recapitulation of what has been done in previous semester.

UNIT-II

Form Active Structural System or Structural System in Simple Stress Conditions:

- Cable Structures (Roofs, Bridges etc.)
- Tents Structures

UNIT-III

Surface active Structure System:

- Shells.
- Folded Plates.

UNIT-IV

Vertical Structure System for High Rise Buildings.

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through External Viva Voice of the work done by the student during the semester

Instructions for the Faculty –

Emphasis must be given on learning by doing i.e. preparing the models of the structure system covered. Students be encourage to present a PPT on the topics assigned and submit its report for external evaluation.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-504/19	Structure Design-III	2L, 2 Tut	Int : Ext -40:60	03

Course Objective

The aim and objective of the course on Structure Design- III is to make students aware about the design methodology adopted and principals involved in designing the structural elements used in the built environment with focus on steel.

Course Outcomes: At the end of the course, the students will able to –

Design Beams, Compression members, trusses for different conditions by applying code provisions along with the knowledge of Riveted and welded joints

Detailed Syllabus:

UNIT I

COMPRESSION MEMBER

Design of Compression members subjected to axial loading involving: Effective length, Radius of gyration, Slenderness ratio, Permissible Stresses

UNIT II

STEEL BEAM

Design of Steel Beams and Sections on the basis of: Bending Stress, Shear Check

UNIT III

STEEL TRUSS

Design of Steel Truss Members for Given Loading, Compressive and Tensile Forces

UNIT IV

RIVETED/WELDED JOINTS

Riveted Connections: Different types of Rivets, Type of Riveted Joints, Failure of Riveted Joints, Efficiency of Riveted Joint

Welded Connections: Different types of Welds, Advantages/Disadvantage of Welded/ Riveted connections

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-505/19	Building Services-II	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students learn and understand the requirements of Building Services and their application to buildings with focus on Electrical, lighting, fire and mechanical circulation.

Course Outcomes: At the end of the course, the students will able to:

- Understand the terminology and basic principles MEP Services
- Develop design skills for MEP layouts in architecture design

Detailed Syllabus:-

UNIT- I

ELECTRICAL SERVICES

- Electricity- Ohm's , Kirchhoff's Laws and basic Principles.
- Electric Circuits-- Series and Parallel.
- Domestic installations- Water heater, Radiator etc.
- Wires- Specifications /Carrying capacity , Electrical loads.
- Types of Switches, Sockets and Fixtures.
- Distribution Boards, Circuit Breakers, Fuses, Electrical Meters and their layout.
- Design considerations for Electrical Installations from generation to distribution(Energy Flow Diagram).
- Protection against Overload, Short circuit, Earth fault, Lightning and other safety measures for buildings.
- Wiring systems- Materials, Types/Methods of wiring

UNIT-II

ILLUMINATION

- Light - Propagation, Reflection, Radiation, Transmission and Absorption.
- Illumination –Laws, Measurement, Luminous Intensity, Brightness, Luminance Flux, Glare and their effect. Etc.
- Illumination Schemes- Types and their design considerations.
- Light Flux method for calculation of number of lamps for illumination.
- Lamps-Incandescent, Sodium Vapour, Mercury Vapour, Fluorescent and Neon lamps etc.
- Types of Luminaries for interior and exterior lighting.
- Residential, commercial, industry, flood and street lighting.
- Testing before commissioning of electrical services.

UNIT-III: FIRE SAFETY

- Fire—Causes, Spread, Combustibility of Materials and Safety Norms.
- Fire Detection/Warning- Equipment including Smoke Detectors, Monitoring Devices, Alarm Systems. Etc.
- Fire Fighting— Planning, Designing, Installations, Equipment, Operation and Maintenance.
- Design Criteria for Fire Exit and Escapes in High Rise Buildings.

UNIT-IV- MECHANICAL CIRCULATION

- Lifts-Types, Control and Operation, Carrying Capacity, Rated Load, Rated Speed,
- Lift - Sections, Machine Room, Components, Lift Well and Lift Pit.
- Design Standards - Lifts Lobby, Lift Cars etc
- Escalators and Conveyors- Installation and Planning Requirements

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Market survey to study and products available. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites.

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-506/19	Theory of Design-III	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students learn and understand the To make students drive deeper into the Architecture problems and look for directive principles guiding the philosophy of design used by masters of modern Architecture and to assess their contribution by their own criteria.

Course Outcomes: At the end of the course, the students will able to understand, appreciate and learn the design principles, philosophy of design used by masters of modern architects.

Detailed Syllabus:-

UNIT- I

FOREIGN ARCHITECTS

- 1.Louis I.Kahn
- 2.Eero Saarinen
- 3.Philip Johnson

UNIT- II

- 4.Paul Rudolph
- 5.John Utzon
- 6.Kenzo Tange
7. Laurie Baker

UNIT- III

INDIAN ARCHITECTS

- A.P.Kanvinde
C.M. Correa
B.V.Doshi

UNIT- IV

- J.A.Stein
U.C.Jain
Raj Rewal

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the study and application of the subject into the architecture design. The faculty must also try to cover the emerging contemporary architects to strengthen the students knowledge base.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject

by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-507/19	Landscape Architecture	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students understand the elements of Landscape Design and its application in Architectural Design solutions.

Course Outcomes: At the end of the course, the students will be able to understand and appreciate the elements, principle and need of design and apply the same in landscape design solutions.

Detailed Syllabus:-

UNIT- I

- Introduction to Landscape Architecture.
- Elements of Landscape design and its relation to the built environment
- Plant characteristics, plant propagation and impact of climate, soil and manure.

UNIT- II

- Structure, Colour, Form, Foliage of various types of Trees, Shrubs, Cacti Bushes and Creepers etc.
- Identification and study of a few Indian plants and trees.

UNIT- III

Study on comparative basis of development of landscape design through history:

- Indian Gardens
- Persian Gardens
- Mogul Gardens
- Japanese Gardens

UNIT- IV

- Italian Gardens
- French Gardens
- English Gardens

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Faculty may introduce a landscape design problem as a part of assignment. Focus on the live study and application of the subject into the architecture design. Faculty must also touch upon the garden/ landscapes of other countries/ region of the world.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (A)/19	Green Buildings & Rating System	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To acquaint the students and make them aware of the concept of green buildings and rating systems as a significant determinant of built forms and to familiarize them with aspects.

Course Outcomes: At the end of the course, the students will able to Understand Green buildings and their rating systems.

Detailed Syllabus:-

UNIT- I

- Understand energy, sources of energy and reserves of the conventional and non-conventional energy resources.
- Energy conservation and related Acts prevailing in the country, Energy star rating of the buildings and Equipment.
- Building as consumer of energy – definitions, need , importance of green buildings, difference between green and conventional buildings.
- Introduction to building rating system in India LEED, BEE, GRIHA, IGBC, ECBC

UNIT- II

- Study of ECBC rating system w.r.t passive design techniques, orientation, form shading, cool roofs, fenestration day lighting etc.
- Artificial lighting/ energy consumptions in buildings energy management system.

UNIT- III

- Various rating systems around the world.
- Case study of National and International Examples of rated buildings

UNIT- IV

- Application of learning in Architecture design studio.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (B)/19	Hill Architecture	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students aware and understand the specific requirements of art and science of designing buildings in hill areas based on climate, topography, local materials, social factors etc.

Course Outcomes: At the end of the course, the students will able to design on a hill and on contour site.

Detailed Syllabus:-

UNIT- I

- Hill Architecture- Introduction, historical perspective, specific attributes/unique features etc.
- Traditional Hill Architecture of Medieval Europe- overview , specific features, building materials, building technologies

UNIT- II

- Hill Settlements-Approach, overview ,specific features of planning and designing in different climatic regions of the world
- Disasters in Hill Areas: - Issues and Options.

UNIT- III

- Hill Architecture in India- Growth, Development, Character and unique features
- Building Typologies- Study of various types of traditional buildings in different Hill Regions of India with their unique features
- Factors effecting design of buildings in Hill Areas- Topography, Climate, Vegetation, Materials, Technology, Sustainability Social factors etc- their role and importance

UNIT- IV

- Building Technologies- Study of different technologies for construction of Foundations, Walls. Floors, Roof etc in Hill Regions of India
- Study of Traditional Hill Settlements in India with their planning features
- Hill Architecture in Post- independence Period- Approach, Pattern, Typical features, Materials, Technologies etc and their impact on ecology, environment and Sustainability of Hill Areas

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design. Faculty may introduce a small design problem separately as hill architecture assignment.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (C)/19	Emerging Technologies in Architecture	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students aware of the latest emerging trends and technologies and their application to different aspects of architecture such as design, construction, building services and material selection and application.

Course Outcomes: At the end of the course, the students will able to:

- Understand use of various emerging technologies and their application in Architectural Design and Construction.
- Know about technical advances and advantages of computational technologies through the use of computer modelling, rendering and digital fabrication, with focus on the exploration of space and place making through the use of computer modelling and design construction.
- Have an understanding of Building Automation for building types and their applicability to different building services

Detailed Syllabus:-

UNIT- I (DIGITAL ARCHITECTURE)

Basic introduction to the use of computer applications in the field of Architecture and Building Design and construction, concepts of visualization, like 3D modelling, parametric modelling, animation and digital fabrication. Use of building performance simulation modelling for designing energy efficient buildings through use of different softwares such as ecotect etc. Introduction to Design-data management tools such as Revit, ArchiCAD etc and parametric design tools such as Rhino and Grasshopper etc.

UNIT- II (SERVICES & CONTROL TECHNOLOGIES)

Detail study of Building Automation for building types like residential complexes, commercial & public buildings, specialized buildings etc.

Applicability of systems and specialized devices for/in HVAC, Emergency services, Water supply, Security, Day today applications and Building maintenance

Introduction to Automation software tools, such as Energy plus, E-quest etc

UNIT- III (INFORMATION SYSTEMS)

Introduction of Geographic Information Systems and various tools available, uses of GIS in different fields, etc. Mapping and Geographic Information Systems tools, such as ArcView Management Information Systems: Introduction of MIS and its uses in the building industry, for example in construction management, data management, etc. Management Information Systems tools, such as MS projects, MS VISIO

UNIT- IV (MATERIALS TECHNOLOGY)

Wood: Structure and properties of Renewability issues hardwoods and softwoods Bending and laminating wood Manufactured boards Processing - shaping, forming and joining Protecting and finishing wood Metals: Standard sizes and sections Protecting and finishing metals Plastics: Types, properties and characteristics Molecular structure in plastics Shaping, joining and finishing Pigmentation of plastics Durability and cost Ceramics: Design principles for Environmental issues associated moulding concrete with the manufacture and disposal of materials Composite Materials: Types, properties and applications

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Market survey to study materials available. Subject shall be taught through the combination of Guest Lectures,
Field visits, Visits to the Project Sites
Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)**

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
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UC/BARCH/ /508 (D)/19	Product Design	2, 1, -, -,	Int : Ext -40:60	03
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Course Objective: To expose the students to the requirements of designing for the human comfort in accordance with anthropometry. The students will have knowledge of ergonomics and its applications in Product design including designing for the physically challenged and the elderly

Course Outcomes: At the end of the course, the students will able to gain knowledge of product design.

Detailed Syllabus:-

UNIT- I

INTRODUCTION - Human being in the manmade world and importance of ergonomics, Gross human anatomy, Ergonomics for children and old people, Definitions related to Ergonomics and Product design, Historical development in the concept of ergonomics and product design, Role of Product designer.

UNIT- II

ERGONOMICS AND DESIGN - Application of human factors data. Human activities, their nature and effects, Man-machine interaction and physical environment - Environmental Condition including, thermal, illumination and noise. Applied anthropometry – Human response to climate, Human performance and system reliability, designer's priorities.

UNIT- III

ASPECTS OF PRODUCT DESIGN - Visual, Auditory, Tactual, Olfactory human mechanisms, Physical space and arrangement. Product display, process of seeing, visual discrimination, quantitative and qualitative visual display, Alphanumeric and related displays, Visual codes and symbols. Processes of product designing, manufacturing and testing Form, Colour, Symbols, User specific criteria, Material selections, Technology and recyclability, Packaging. Multiple Utility oriented approach to Product Design.

UNIT- IV

UNIVERSAL DESIGN - Design of special elements in buildings for physically challenged and old aged - Design of Household elements, tools and devices. - Design of furniture. - Design of Industrial Product – Automobiles and Electrical - Element design for differently abled, old and children.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Teaching in the subject shall be made a combination of guest lectures by Experts, seminars. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The

Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)**

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (E)/19	Architecture Acoustics	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To understand the behaviour of sound in an enclosed space and remedial measures for controlling unwanted noise, towards creating the most favourable conditions for indoor and outdoor acoustic environment.

Course Outcomes: At the end of the course, the students will be able to understand the concept on architecture acoustics.

Detailed Syllabus:-

UNIT- I

-Nature of Sound: Sound Waves, Sound Levels- Power, Intensity and Pressure, Auditory Range - thresholds of hearing & pain, Decibel scale, Sound Effects on Human; Incidence of Sound-reflection, absorption & transmission; Noise, Sound in Open Air effects of wind flow & temperature gradients, acoustic shadow ; Sound in Enclosed Space-air-borne & structure borne (impact) sound, direct & reverberant components, reverberation time using Sabine's formula (dead & live room), echo, resonance.

UNIT- II

Environmental Acoustics: Various Noise Sources, Planning Against Noise-zoning, distancing & screening, green belts & landscaping, noise barriers, Outdoor Noise Regulations in India, Open-air Auditorium.

UNIT- III

General Building Acoustics: Acceptable Indoor Noise Levels, Transmission Loss and insulation against air-borne sound, Various Sound Absorbents, Reduction of Noise, Noise isolators in Construction- hollow & composite wall, resilient surface materials, floating floor construction for concrete & wooden floors, suspended ceiling, Acoustic treatment of skirting, windows & ventilators.

UNIT- IV

Residential Buildings: Sources of Noise and Recommendations- site planning, internal planning, sound insulation.

Educational Buildings: Sources of Noise and Recommendations- site planning, internal planning, noise reduction within rooms, sound insulation.

Auditoria and Theatres: Sources of Noise- outdoor and indoor, Recommendations- geometry & shape, seating arrangement, design criteria for different purposes; Electro-acoustic installations

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Market survey to study materials available. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (A)/19	Sociology for Architects / Fundamentals of Sociology	2L,	Int : Ext -40:60	03

Course Objective: To make students learn and understand the To make students drive deeper into the Architecture problems and look for directive principles guiding the philosophy of design used by masters of modern Architecture and to assess their contribution by their own criteria.

Course Outcomes: At the end of the course, the students will able to the aspects of sociology for architects and its fundamentals.

Detailed Syllabus:-

UNIT- I

Sociology: Definition and Subject matter, Nature and Scope, Emergence of Sociology, Sociology and its relationship with Anthropology, Political Science, Economics, and History

UNIT- II

Basic Concepts: Society, Culture, Community, Institutions, Association, Social Structure, Status and Role, Norms and Values, Folkways and Mores

UNIT- III

Individual and Society : Individual and society, Socialization, Stages and agencies of Socialization, Development of Self – contributions of George Herbert Mead, C.H. Cooley's Looking Glass Self The Concept of Group : Types of Groups – Primary and Secondary groups, In-Group and Out-group, Reference Group

UNIT- IV

Social Stratification: Caste, Class, Power, Gender and Race. Theories of Stratification – Functionalist, Marxist, Weberian. Social mobility and its determinants.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (B)/19	Health Education- I	2L	Int : Ext -40:60	03

Course Objective: Health Education provides every student an opportunity to gain new and useful information related to daily living, self-esteem, family and community living. The course is divided into two major segments. The first segment is a general overview of mental and social health. The second segment covers a variety of topics including anatomy, problems of aging, environmental and political issues in health, sex education, AIDS education, alcohol, tobacco and other drugs (ATOD), diseases, first aid, and nutrition.

Course Outcomes: At the end of the course, the students will be able to understand the importance of health education.

Detailed Syllabus:-

UNIT- I - Mental and Social Health

- Making healthy decisions
- Personality, self-esteem, and emotions
- Managing stress
- Mental disorders and suicide
- Family relationships
- Preventing violence

UNIT- II - Alcohol, Tobacco, and Other Drugs (ATOD)

Alcohol's effects on the body

- Long-term risks of alcohol

- Teens and tobacco
- Risks of tobacco use
- Legal and illegal drugs
- Preventing drug abuse

UNIT- III – Nutrition

- Food and nutrition
- Guidelines for healthy eating
- Making healthy food choices
- Safely managing your weight
- Nutrition for individual needs
- Keeping your digestive system healthy

UNIT- IV - Family Life and Human Sexuality

- Reproductive Anatomy
- HIV, STDs, and Pregnancy
- Contraception
- Negotiation and Refusal Skills
- Healthy Relationships

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, expert lectures or seminars.

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (C)/19	Music (Vocal, Instrumental),	2L	Int : Ext -40:60	03

Course Objective: To make students learn and understand the music.

Course Outcomes: At the end of the course, the students will able to relate music with architecture and distinguish between good not so good music.

Detailed Syllabus:-

UNIT- I

Study of following Rāgas: 1.Durga 2.Jaunpuri 3.Bihag 4.Desh

UNIT- II

Vocal Music 4 Drut Khyāl in all Rāgas. 5.Swarmallika in any one Rāgas 6.Lakshangeet in any One Raga

UNIT- III

Instrumental Music 7.Different bols patterns in Rāgas. 8.Razakhani gat in Raga Kedar/Bihag/Jaunpuri. 9..Basic technique of Jhala Playing.

UNIT- IV

10.Ability to recite the following Thekas with Tali & Kali a) Chartaal b) Ektaal 11.Basic knowledge of Playing alankaar in Harmonium Vocal - Playing of Tanpura is compulsory

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, expert lectures or seminars.

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (D)/19	Laser/ Printing Technology	2L	Int : Ext -40:60	3

Course Objective: The objective of this course is to impart the basis knowledge of different printing processes along with their role, importance and applications.

Course Outcomes: The learning outcome of this course is expected that after completion of this course the students will be having the detail knowledge of various printing processes and the recent development in this industry and they will implement their knowledge for print production operations.

Detailed Syllabus:-

UNIT- I

Historical development in Printing Technology. Recent trends in the field of printing and allied technologies.
Pre-Press, Press and Post press operations

UNIT- II

Letterpress Printing Process; Characteristics, role, importance and applications.
Offset Printing Process; Characteristics, role, importance and applications.

UNIT- III

Flexography Printing Process; Characteristics, role, importance and applications.
Gravure Printing Process; Characteristics, role, importance and applications.

UNIT- IV

Screen Printing Process; Characteristics, role, importance and applications.
Digital Printing Process; Characteristics, role, importance and applications.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, expert lectures or seminars.
Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (E)/19	Creative Writing	2L	Int : Ext -40:60	3

Course Objective: This course will focus on expressive writing in many different forms. Students will have the opportunity to explore several different types of poetry and prose styles, as well as responding to literature, art mediums, quotes, and music. Originality and writing that shows thought will be emphasized. Strategies to avoid writer's block and new ways to uncover ideas for writing will be studied.

Course Outcomes: in Creative Writing will write poems, short stories, plays, news stories, comic strips, children's books, an autobiography and other types of writing that express creativity. Students will also study writing samples from professional writers

Detailed Syllabus:-

UNIT- I

Characteristics of Good Writing prose & Poetry Figurative Language Imagery Sensory Details Point of View Rhyme Repetition Parallelism Short Story Theme

UNIT- II

Word Choice Precise language Poetic Forms Adventure Story Character, Setting, Plot Style Playwriting

UNIT- III

Humor Using Structure to Reflect Theme Art, Music as Inspiration for Poetry Descriptive Writing Persuasive Writing—Commercial News Story Memoir—Reflective Writing Methodology

UNIT- IV

Autobiography Children's Books Action in Story Writing Paint-Write Project Anthology Fable Fairy Tale review writing, precis, summary, abstract and paper writing

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

All offsets must be directed towards narrative writing. Students should be encouraged irrespective of the genre, topic, style. Focus on enhancement of creative and artistic expression should be there.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-510/19	Educational Tour II/ Summer Training-II/Vacation Assignment-II		1	

The education tour to one day to one or two week duration be encouraged to be undertaken by the students under faculty supervision . During or after the semester the term report shall be submitted to the class coordinator for assessment.

The students be encourage to undertake approx. 04 week summer training in a design / construction office. alternatively student should also be encouraged to do any online course of similar duration during the summer vacation.

Vacation assignment are be assign by the HoD in consultation with class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

6th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 6	Duration of Exam
UC/BARCH-601/19	Architectural Design -VI	1, -, -, 5	Int : Ext - 60:40	12 (in 2 days) + External Viva Voce

Course Objective: To make students understand and appreciate the constraints in the designing of a building, the principles and approach to the designing of complexes in the context of urban design, environmental components and urban services.

Course Outcomes: At the end of the course, nature of urban complexes, scale and other elements of urban design to be incorporated. They will also be well versed with various physical factors of architecture design and equipped with the norms of barrier free design & large span coloum free structures.

Detailed Syllabus:-

UNIT-I

Auditorium, Cinemas, Theatres, Multiplex.

UNIT-II

Specialized Housing EWS, LIG, MIG and HIG

Study of an urban complex as a prototype so as to have a basic knowledge of various aspects in planning with focus on urban activity, services and construction methods along with social aspects, growth and change.

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The answer sheet shall be retained at the institute after the exam for conduct of the viva voce which will be conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners. . The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty is required to take a well prepared well researched lecture on the building topology and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment) It is recommended that 2-3 projects to be handled by students from the topic given above. Library and prototype studies should be carried out for remaining projects. Model and perspective should be made essential part of project presentation.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-602/19	History of Architecture-IV	2L	Int : Ext - 40:60	03

Course Objective

To appreciate the constraints in the Architectural design of an ancient building with reference to its function, form and structures. To make student understand how different Architectural solutions were evolved (in successive historic periods) within the limitation imposed by prevalent social and religious customs, available building materials, climate of region/topography, complex structural problems and the limited technology available at that time period.

Course Outcomes: At the end of the course, the students will be able to –

- Develop a holistic approach to architecture as an integral component of the built environment.
- Develop an understanding of architecture as an outcome of various social, political and economic influences and as a response to the cultural and climate conditions.
- Understand the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture

UNIT-I

- Gothic Architecture
- Renaissance Architecture- Origin, growth and development in Europe

UNIT-II

- Mannerism - Basic contents and its impact on the development of Architecture
- Baroque & Rococo style.

UNIT-III

- Architecture of Imperial or Delhi style under various rulers.
- Architecture of Provincial Styles

UNIT-IV

- Architecture of Mogul period
- Mughal Architecture buildings

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-603/19	Estimating Costing & Specifications- I	2, 1, -, -,	Int : Ext - 40:60	03

Course Objective: To make students understand the factors affecting cost of buildings and methods of preparing estimates of architectural projects.

Course Outcomes: At the end of the course, the students will able to prepare detailed estimates and cost of two-storeyed residential buildings in masonry and reinforced cement concrete.

Detailed Syllabus: -

UNIT- I

- Estimate & Types of Estimate.
- Methods of Estimates--Approximate & detailed methods of Estimate including Plinth area method, Carpet/Floor Area method, Cubic Content method.

UNIT- II

- Preparing estimates of quantities of materials for various items of work e.g. earthwork, brickwork, flooring, roofing etc- units of measurements and payments.
- Analysis of rates of material and labour required for various items of work.
- Bill of Quantities-Methods of taking out the quantities of R.C.C. construction.

UNIT- III

- Case study/practical exercise in preparing a detailed estimate of a two storeyed residential building with respect to the quantities of material and labour required as well as analysis of

rates for material and labour.

- Introduction, importance, Role, Functions and Types of Specifications
- Detailed Specifications for various basic building materials

UNIT- IV

- Writing specifications for civil works as:-
 - Damp Proof Course
 - Brick Masonry
 - Concreting
 - Flooring
 - Plastering & Pointing
 - Timber Doors & Windows
 - Steel Doors & Windows
 - Painting and Varnishing
 - Services, Sanitary Fixtures & Electric Wiring

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-604/19	Architecture Legislation - I	2L	Int : Ext - 40:60	03

Course Objective: To make students understand students familiar with the role and importance of Legal Framework in Designing the Built Environment and Promoting orderly growth of Human Settlements

Course Outcomes: At the end of the course, the students will able to understand need for building byelaws, importance of legislation in building industries ana NBC norms.

Detailed Syllabus:-

UNIT- I

- Need, Role and Importance of Legislation in the Building Industry
- Building Bye- laws-- Contents and Scope
- Study of Building Bye- laws Chandigarh- Intent and Contents
- Study of Building Bye- laws ,PUDA- Intent and Contents

UNIT- II

- Study of Municipal Building Bye- laws - Intent and Contents
- Architectural Controls- Need, Typology, Contents and Applicability
- Introduction to various Acts- Periphery Control, Property Regulation Act, Regional and Town Planning Act, Chandigarh Capital Act, Heritage Conservation Act.

UNIT- III

- Requirements of Submission of Documents/ Drawings for approval of Building Plans in Chandigarh, PUDA, Local Bodies
- Completion/ Occupation Certificate for Buildings- Need and Procedure
- Preservation and Conservation of Heritage Buildings, Heritage Regulations

UNIT- IV

- National Building Code, - Study of Important Definitions , Types of Buildings,
- Protection of Industrial/ Multi-Storeyed Buildings against Fire etc w.r.t. National Building Code
- Disability Act

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-605/19	Building Construction & Materials-VI	1, 3Studio	Int : Ext - 60:40	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of materials in Interior project and its detailing.

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand construction/detailing of work associated with interior finishes and works.

Detailed Syllabus:-

UNIT-I

Complete working drawings of a residential building including Site plan, Floor plans, Elevations, Sections, and Services showing-

- Constructional details of Kitchen
- Constructional details of Toilets
- Built in Furniture (Cup boards etc.)
- Staircase
- Joinery details

UNIT-II

Temporary construction work

- Shoring
- Underpinning
- Scaffolding

Evaluation Criteria for Exam / Question Paper Setting:-

- Two questions are to be set from each Unit.
- Students are required to attempt Three Questions with One question from each Unit.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Field visit to study the complete process of lying of reinforcement and concreting. Preparing Construction sheets on above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-606/19	Structure Design (Project) -IV	1, 3, -, -,	Int : Ext - 40:60	03

Course Objective: To create skill among students to apply the knowledge gained regarding structural design in an applied project and to make buildings safe against natural/ manmade disasters

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand construction/detailing of work associated with interior finishes and works.

Detailed Syllabus:-

UNIT-I

Detailed Structural Design & Drawings of a Public /Residential Building, (R.C.C. frame structure) with emphasis laid on practical design considerations.

UNIT-II

Earth quake Resistant Design.

Introduction to Codal provision, IS- 4326 and IS- 1893 for Earth quake Resistant Design of Buildings.

UNIT-III

Earth quake Resistant provisions for Brick Masonry& R.C.C. Buildings.

UNIT-IV

Project based on pervious Unit

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-607/19	Building Services-III	2L	Int : Ext - 40:60	03

Course Objective: To make students learn and understand basic principles governing design/provision of HVAC, Building Management System and Acoustics within the buildings

Course Outcomes: At the end of the course, the students will be able to :

1. Know about the working principles of the building.
2. Understand the role of services and would be able to design appropriate space, location for it.
3. Know about the acoustics materials where, how and why we are using these materials.
4. Understand the importance of intelligent buildings.

Detailed Syllabus:-

UNIT- I

AIR CONDITIONING

- Air conditioning--Role, Importance and Principles governing Air conditioning
- Refrigeration Cycle, Air cycle, Cooling Load
- Methods of Cooling and Heating-Evaporative Cooling etc
- Types of Air Conditioning Systems-Unit and Central
- Standards and location of various parts- Plant, Ductwork, Fan ,Filters, Outlets, Dampers etc
- Natural and Artificial Ventilation

UNIT- II

ACOUSTICS

- Acoustics- Introduction, Role, Importance, Concept, Basic Principles of Design,
- Sound- Basic principles governing transmission, reverberation, absorption, reflection etc.
- Acoustics-Materials- application, advantages and disadvantages
- Acoustics in Buildings- Design considerations for various buildings including Class Room, Studio, Lecture Theatre, Auditorium, OAT etc

UNIT- III

BUILDING AUTOMATION/BUILDING MANAGEMENT SYSTEM

- Building Automation-Introduction, Relevance, Scope and Importance
- Building Management System- Functions, Applicability to different services
- Building Management System- Limitations, Advantages, Disadvantages components and integration in buildings
-

UNIT- IV

INTELLIGENT BUILDINGS

- Intelligent Buildings- Concept, applicability and limitations

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-608/19	Climate & Architecture (Sustainable Design) -III	2L	Int : Ext - 40:60	03

Course Objective: To educate and make students aware about sustainability issues, need and importance of promoting sustainable Architecture.

Course Outcomes: At the end of the course student will be able to become aware overall intent is to make students aware of sustainable development, need and principle.

Detailed Syllabus:-

UNIT-I

- **Sustainable Development**- Introduction, definitions, objectives and scope
- **Man and Environment**- Introduction, issues and options
- **Human Settlements**- Planning, Growth, Development, Problems
- **Global warming** – Introduction, Causes, Effects and Remedies, Carbon Credits.
- **Architect-Role in Sustainable Development.**

UNIT-II

- Energy - **Role, Importance in buildings**
- Sources of Energy- **Non- renewable and renewable – Role and Importance**
- **Sustainable Materials** – Production and use
 - **Quality of indoor/outdoor environment**

UNIT-III

- **Sustainable Design** – Concept, Objectives, Principles, Approach to Sustainable design
 - **Built Environment**- Sustainable Construction, Ecological Buildings, Green Building

UNIT-IV

- Building Rating System
- ECBC Code
- Sustainability Assessment - LEED, Life Cycle Assessment, GRIHA
- Climate responsive and Solar Passive Strategies in Indian Climates
- Recycling/Reuse
- India's approach to sustainable Development.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
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UC/BARCH-609 (A)/19	Sustainable Cities & Communities	2L, 1T	Int : Ext 40:60	03
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Course Objective: To educate and make students aware about sustainability issues, need and importance of promoting sustainable Architecture. This course looks at pragmatic action in the face of three huge global trends

Course Outcomes: At the end of the course student will be able to Become aware overall intent is to make students understand The course also takes a "built environment" approach. This is not the only way to understand cities! But it is useful since it looks at components of cities: the physical structures like roads, transit, buildings and more that are needed to support other attributes like jobs, schools, housing, and hospitals.

Detailed Syllabus:-

UNIT-I

Introduction and Orientation, Expectations Ground rules and Guidelines

UNIT-II

Principles Theories, Frameworks, Definitions, Practices Tools, Techniques, Metrics

UNIT-III

Transportation, Housing and Construction, Green Design and Architecture

UNIT-IV

The Future(s) of Sustainability, Megaprojects and Cities

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)**

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
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UC/BARCH-609 (B)/19	Vernacular / Rural / Indigenous Architecture/ Mud Arch	2L, 1T	Int : Ext 40:60	03
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Course Objective: The subject looks at specific vernacular architectural communities of India. Identifies and interprets specific local, regional, and national vernacular traditions from India. Develops a broader sense of understanding of the relationship between architecture, environment and culture

Course Outcomes: At the end of the course student will be able to Become aware overall intent is to make students understand construction/detailing of work associated with interior finishes and works.

Detailed Syllabus:-

UNIT-I

Introduction to the field of Vernacular Architecture, traditional architecture

UNIT-II

Vernacular Architecture in the eastern, northern eastern India

UNIT-III

Vernacular Architecture of northern and western India

UNIT-IV

Vernacular Architecture of the Southern India & central India.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
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UC/BARCH-609 (C)/19	Architecture Conservation/ Restoration and Preservation	2L, 1T	Int : Ext 40:60	03
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Course Objective: The objective is to introduce ideologies and various philosophies that helped to formulate the principles of conservation discipline as it exists today in India and abroad. The students shall be introduced to the various charters and agencies and its role in the field of conservation.

Course Outcomes: At the end of the course student will able to:

- Be acquainted with the philosophies and principles of conservation.
- Understand the various charters and roles of various organisations in conservation.
- Understand degree of intervention for restoration and preservation of built heritage and appropriate remedial measures and solutions for strengthening and retrofitting of historical structures.

Detailed Syllabus:-

UNIT – I

Introduction to Conservation, History of Conservation movement in West and India, Understanding various conservation Philosophies, Approaches and Principles, Understanding of various definitions and terminology such as Historicity, Heritage, Culture, Authenticity, Values, Transformations, Regeneration, Revitalization, Redevelopment, Integrated Conservation etc.

UNIT – II

Introduction to Fundamental approaches and procedures for the inventories, Understanding process of identification and listing, Introduction to methods of documenting historic sites and structures through site sketches and measured drawings.

UNIT – III

Understanding the Concepts and policies of conservation of built environment with the relevance of Charters as a code of practice in conservation, the role of various international and national agencies [Archaeological Survey of India (A.S.I.), Indian National Trust of Art & Cultural Heritage (INTACH), International Council of Monuments & Sites (ICOMOS), World Heritage Committee, and UNESCO] engaged in conservation practice and policy making.

UNIT – IV

Issues related with physical deterioration of built heritage and its conservation, various types of defects/decays, its causes and classification of different agents of deterioration. Study of issues to be considered and techniques for Restoration and preservation of built heritage.

Role of Historic Building/Area/City in Present Context : Understanding Historic City by doing a study of its Heritage Components, various aspects for spatial Planning, the role of conservation and relevance of historic buildings/areas in present context

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)**

Course Code	Course Name	L, S/T, P/FW, ST	Credits – 3	Duration of Exam
UC/BARCH-609 (D)/19	Furniture Design	2L, 1T	Int : Ext 40:60	03

Course Objective: Furniture design course is intended to impart skills and techniques for developing and also innovating high-end household furniture, office/corporate furniture and resorts/hotel furniture.

Course Outcomes: At the end of the course student will be able to become aware overall intent is to make students understand construction/detailing of furniture design.

Detailed Syllabus:-

UNIT-I

Fundamentals of Design in Design of Simple Furniture and Ergonomics
Furniture design through ages medieval, European, Indian, modern and contemporary.

UNIT-II

Indoor – outdoor furniture, house hold, office furniture, inbuilt and standalone furniture.

UNIT-III

Space and Form Studies in Space Graphics - furniture graphics, materials & techniques for furniture design and construction.

UNIT-IV

Estimation costing and specifications, software's

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

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**IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)**

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (E)/19	Lighting and Illumination/ Lighting Design	2L, 1T	Int : Ext 40:60	03

Course Objective: Architectural Lighting Design is both science and art. An Architectural Lighting Designer understands the intricate details and process of construction, as well as an understanding of light, vision, and how together they define our built environment. Light allows us to see. Light defines what we see. With an understanding of how light works, Architects and Interior Designers can extend their knowledge beyond forms and surfaces – they can enter a world of brilliance, glow, shadow, sparkle, and darkness.

Course Outcomes: A basic understanding of light is explored with a “hands-on” approach in the first assignment, a 3-Dimensional study of how light affects your perception. The exercise consists of fabricating small non-architectural abstract light concepts with light. The student’s individual discovery of new materials and light effects is encouraged.

Detailed Syllabus:-

UNIT-I

An overview of the history of light - Electric Lamps: Incandescent/Halogen/Fluorescent/HID/LED - learn basic wiring and simple lighting effects

UNIT-II

Light and Vision: Seeing and Measuring Light. Color & Color Media, and LEDs, - learn about vision and perception, color, and - understanding shade and shadow

UNIT-III

controlling light, luminaire optics and distributions - introduction to light fixture materials and construction, and components

UNIT-IV

Light in Architecture and the Psychology of Light

learning to develop a lighting concept, approach, and strategy - drawing lighting, and rendering techniques

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

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IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-614 - 618/19	Open Elective- II/Mooc Swayam	2L	2	Certificate from concerned/imparting agency

The list of major domain of MOOC's courses are attached in the preamble & the department will have a MOOC coordinator who will display the list of MOOC in every semester.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-619/19	Mentoring and Professional Development-III		Non Credit	No Exam

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

UNIT – I (Class Activities)

- Expert and video lectures
- Aptitude Test
- Group Discussion
- Quiz (General/Technical)
- Presentations by the students
- Team building Exercises

UNIT – II (Outdoor Activities)

- Sports/NSS/NCC
- Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B Mentors/Faculty in charges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.