

<u>Supporting Documents – IKGPTU,</u> <u>Mohali Campus-II</u> List of New Courses Introduced



1.2.1 List of New Courses Introduced during Last Five Years

S.No	Program	Subject Code	Subject Name
1.	B. Architecture	UC/BARCH-210/19	Mentoring & Professional Development- I
2.	B. Architecture	UC/BARCH-409/19	Constitutional Law
3.	B. Architecture	UC/BARCH-408/19	Mentoring and Professional Development-II
4.	B. Architecture	UC/BARCH/ /508 (A)	Green Buildings & Rating System
5.	B. Architecture	UC/BARCH/ /508 (B)	Hill Architecture
6.	B. Architecture	UC/BARCH/ /508 (C)	Emerging Technologies in Architecture
7.	B. Architecture	UC/BARCH/ /508 (D)	Product Design
8.	B. Architecture	UC/BARCH/ /508 (E)	Architecture Acoustics
9.	B. Architecture	UC/BARCH/ /509 (A)	Sociology for Architects / Fundamentals of Sociology
10.	B. Architecture	UC/BARCH/ /509 (B)	Health Education- I
11.	B. Architecture	UC/BARCH/ /509 (C)	Music (Vocal, Instrumental),
12.	B. Architecture	UC/BARCH/ /509 (D)	Laser/ Printing Technology
13.	B. Architecture	UC/BARCH/ /509 (E)	Creative Writing
14.	B. Architecture	UC/BARCH-608/19	Climate & Architecture (Sustainable Design) -III
15.	B. Architecture	UC/BARCH-609 (A)	Sustainable Cities & Communities
16.	B. Architecture	UC/BARCH-609 (B)	Vernacular / Rural / Indigenous Architecture/ Mud Arch
17.	B. Architecture	UC/BARCH-609 (C)	Architecture Conservation/ Restoration and Preservation
18.	B. Architecture	UC/BARCH-609 (D)	Furniture Design
19.	B. Architecture	UC/BARCH-609 (E)	Lighting and Illumination/ Lighting Design
20.	B. Architecture	UC/BARCH-610(A)	Psychology for Architects
21.	B. Architecture	UC/BARCH-610(B)	Health Education- II
22.	B. Architecture	UC/BARCH-610(C)	Dance forms (any form)
23.	B. Architecture	UC/BARCH-610(D)	Web designing Management
24.	B. Architecture	UC/BARCH-610(E)	Advanced HVAC & Design for Fire
25.	B. Architecture	UC/BARCH-802/19	Comprehensive Smart Village Development/ Agro related infrastructure
26.	B. Architecture	UC/BARCH-806 (A)	GIS/ Remote sensing/ Geospatial Technologies/Geomatics Techniques for Architects
27.	B. Architecture	UC/BARCH-806 (B)	Indian Architecture/ Vastu Shastra
28.	B. Architecture	UC/BARCH-806 (C)	Advance Building Materials
29.	B. Architecture	UC/BARCH-806 (D)	Retail Design
30.	B. Architecture	UC/BARCH-806 (E)	Advance Structure Systems
31.	B. Architecture	UC/BARCH-807 (A)	Ekistics
32.	B. Architecture	UC/BARCH-807 (B)	Art Appreciation
33.	B. Architecture	UC/BARCH-807 (B)	Industrial / Prefab Technologies
34.	B. Architecture	UC/BARCH-807 (B)	Interior Design
35.	B. Architecture	UC/BARCH-807 (B)	Building Information Modelling (BIM)/ Advance Computer
			Software's
36.	B. Architecture	UC/BARCH-808 (A)	Client psychology
37.	B. Architecture	UC/BARCH-808 (B)	Society's perception for architects & Architecture
38.	B. Architecture	UC/BARCH-808 (C)	Generic Skills & Entrepreneurship development
39.	B. Architecture	UC/BARCH-808 (D)	Cyber laws & Ethics
40.	B. Architecture	UC/BARCH-808 (E)	Human resources development & Organization
			behaviour
41.	B. Architecture	UC/BARCH -902/19	Research Methodology & Dissertation
42.	B. Architecture	UC/BARCH-905 (A)	Town & Country Planning
43.	B. Architecture	UC/BARCH-905 (B)	Art & Architecture

Name of the Department: Architecture

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44.	B. Architecture	UC/BARCH-905 (C)	Building Maintenance		
45.	B. Architecture	UC/BARCH-905 (D)	Graphics & Communication Design		
46.	B. Architecture	UC/BARCH-905 (E)	Advance Digital Architecture		
47.	B. Architecture	UC/BARCH-906 (A)	Traffic & Transportation		
48.	B. Architecture	UC/BARCH-906 (B)	Contemporary Indian Architecture (Modern Trends)		
49.	B. Architecture	UC/BARCH-906 (C)	Building System Integration & Management		
50.	B. Architecture	UC/BARCH-906 (D)	Cost effective Construction		
51.	B. Architecture	UC/BARCH-906 (E)	Building Industry		
52.	B. Architecture	UC/BARCH-907 (A)	French		
53.	B. Architecture	UC/BARCH-907 (B)	German		
54.	B. Architecture	UC/BARCH-907 (C)	Spanish		
55.	B. Architecture	UC/BARCH-907 (D)	Chinese		
56.	B. Architecture	UC/BARCH-907 (E)	Any Indian Language		
57.	B. Architecture	UC/BARCH-1004	Building Economics		
58.	B. Architecture	UC/BARCH-1005	Contemporary World Architecture		
59.	B. Architecture	UC/BARCH-1006	Architecture Design With Steel and Glass/ High Rise		
			Buildings,		
60.	B. Architecture	UC/BARCH-1007	Architecture Journalism & Photography		
61.	B. Architecture	UC/BARCH-1008	Futuristic Architecture		
62	M. Architecture	UC/MARCH-206-10/20	Elective I (Architecture Appreciation)		
63	M. Architecture	UC/MARCH-311-15 /20	Open Elective- I		
			GREEN BUILDINGS		
64	M. Architecture	UC/MARCH-308/19	Open Elective- I		
65	M. Architecture	UC/MARCH-309/19	Digital Architecture		

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		Digital Architecture
18.45	UC/MARCH-309/19	

(Signature of Hand of Department)

Detailed Syllabus:

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

Sports: NSS/NCC

Part B (Outdoor Activities)

IK Gujral Punjab Technical

UniversityBachelorofArchitecture(B.

Arch. 4thSemester)

• 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

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312

Course Code	CourseName	L, S/T,P/FW, ST	Credits-2	DurationofExam
UC/BARCH-409/19	ConstitutionalLaw	2L	Int:Ext - 40:60	03

CourseObjective

The objective of the course is to familiarize students (Prospective engineers) with elementary knowledge of laws that would be of utility in their profession. The syllabus covers Constitution of India and new areas of law like IPR, ADR, Human Rights, Right to Information, Corporate law, Law relating Elections and GenderStudies.Tobe supplementedbythe historicaldevelopment of lawswherever 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, directive principles of State policy, fundamental duties, provisions, laws relating to women in India covering landmark judicial decisions of Supreme Court relating to women.

UNIT II:

General principles of contract under Indian Contract Act, 1872 covering sec. 1 to 75 and including government as a contracting party, kinds of government contracts, standard form contracts, nature and advantages. Historical development of human rights, UN mechanism and specialized agencies (UNICEF, UNESCO, WHO, ILO etc.) Enforcement of human rights in India including Supreme court high courts, statutory commissions- NHRC, NCW, NC-SCST etc.

UNIT III:

ADR system mechanism covering arbitration- meaning, scope and types, arbitration agreement, tribunal, jurisdiction and grounds of challenge of arbitral award. Distinction between conciliation, arbitration, negotiation and mediation. Information Technology –legislation and procedures, cybercrimes.

UNIT IV:

Law relating to intellectual property covering meaning of intellectual property, brief on forms of IPcopyright, trademark, patents, designs, secrets, other new forms such as geographical indications, Right to information act- concept and evolution, election provisions under the Indian constitution (Art. 324-329), offences relating to elections under IPC 1860 (sec 171A – 171I).

valuation Criteria for Exam / Question Paper Setting:-

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

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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 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-	Mentoring and Professional	-, -, 2, -,	Int : Ext - 100:00	No Exam
408/19	Development-II			

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.

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Course Code	Course Name	L, S/T, P/FW,	ST Credits - 3	Duration of Exam

UC/BARCH/ /508	Green	Buildings	&	Rating	2, 1, -, -,	Int : Ext -40:60	03
(A)/19	System						

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 toUnderstand 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.

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

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. 5thSemester)

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Course Code 🧹	Co	ourse Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
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JC/BARCH/ /508 B)7⁄19	Hill Architecture	2, 1, -, -,	Int : Ext -40:60	03	
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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, specificattributes/unique featuresetc.
- Traditional Hill Architecture of Medieval Europe- overview, specificfeatures, building materials, buildingtechnologies

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 prector

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Instructions for the Faculty -

314

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.

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

Course Code	Course Name	L, S/T, P/FW,	Credits - 3	Duration of Exam
		ST		
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

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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.

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

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

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.

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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.

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

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508	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 able to understand the concept on architecture acoustics.

Detailed Syllabus:-

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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 Constructionhollow & 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.

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Mohali Campus-II

317

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.

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

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

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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.

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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.

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

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

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 able understand the importance of health education.

Detailed Syllabus:-

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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

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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.

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

Course Code	Course Name	L, S/T,	Credits - 2	Duration of Exam
	the second for the second	P/FW, ST		
UC/BARCH/ /509	Music (Vocal, Instrumental),	2L	Int : Ext -40:60	03
(C)/19	1. 1. A. I.			

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:-

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UNIT-I

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

UNIT-II

Vocal Music 4 Drut Khyãl in all Rãgas. 5.Swarmallika in any one Rãgas 6.Lakshangeet in any One Raga

UNIT- III

Instrumental Music 7.Different bols patterns in Rãgas. 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.

Director I.K.G.P.T.U Mohali Campus-II

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.

Director I.K.G.P.T.U Mohali Campus-II

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

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

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

I.K.G.P.T.U Mohali Campus-II

321

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. 5thSemester)

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

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.

Director I.K.G.P.T.U Mohali Campus-II

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. 6thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (A)/19	Sustainable Cities & Communities	2L, 1T	Int : Ext 40:60	03

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 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

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Introduction and Orientation, Expectations Ground rules and Guidelines
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UNIT-II

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

Director LX.G.P.T.U Mohali Compus-II 322

mous-II

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. 6thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (B)/19	Vernacular / Rural / Indigenous Architecture/ Mud Arch	2L, 1T	Int : Ext 40:60	03

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 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.

Director I.K.G.P.T.U Mohali Campus-II

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. 6thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (C) /19	Architecture Conservation/ Restoration and Preservation	2L, 1T	Int : Ext 40:60	03

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

LK.G.P.T.U Mohali Campus-H 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.

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

		L, S/T, P/FW, ST	Credits - 3	Duration of Exam
Course Code	Course Name	2L, 1T	Int : Ex 40:60	
UC/BARCH-609	Furniture Design			

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 able to Become aware overall intent is to make

students understand construction/detailing of furniture design.

Detailed Syllabus:-

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

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

pace 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:

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

LK.G.P Mahali Campusthe 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. 6thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (E)/19	Lighting and Illumination/ Lightin Design	g 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 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 effect your perception. The exercise consists of fabricating small non-architectural abstract t 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

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

learning to develop a lighting concept, approach, and strategy - drawing lighting, and rendering techniques Light in Architecture and the Psychology of Light

IKG.P.T.U Mohali Campus-II

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. 6thSemester)

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.

Director

LK.G.P.T.U Mohali Campus-II IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 6thSemester)

Course Code	Course Name		L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH- 619/19	Mentoring and Development-III	Professional		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.

Director I.K.G.P.T.U Mohali Campus-II 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. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (A) /19	GIS& Remote	2 L, 1T	Int : Ext 40:60	03
	sensing			

Course Objective:To introduce the students to the basic concepts and principles of various components of remote sensing, GIS, and GPS and to provide exposure to its practical applications

Course Outcomes: The course will enable the students to understand: The Principles of Remote sensing, satellite images, and Applications of remote sensing. The GIS and its Data models. The Global Navigation Satellite System. **Detailed Syllabus:**-

UNIT-I

Remote Sensing: Physics of remote sensing, Electromagnetic spectrum – wavelength regions important to remote sensing, Spectral reflectance curves, Remote sensing satellites, and their data products, resolution concept, Platforms, and Sensors

UNIT- II

Satellite Image - Image Interpretation and Analysis- basic elements of image interpretation- visual interpretation keys - Digital Image Processing - Pre-processing - image enhancement techniques - multispectral image classification - Supervised and unsupervised, Applications of remote sensing

UNIT-III

Basic concepts of geographic data, GIS and its components, Data models, Topology, Process in GIS: Data capture, data sources, geospatial analysis, basic components of GIS – standard GIS software's – Data type – Spatial and non-spatial (attribute) data – measurement scales – Data Base Management Systems (DBMS).

UNIT-IV

Data Entry, Storage and Analysis - Data models – vector and raster data — data input by digitization and scanning, georeferencing– attribute data analysis, Modelling– Land Information system. GIS Applications, Global Navigation Satellite System (GNSS), GPS, GLONASS, GALILEO, GPS: The space segment, Control segment, User segment, GPS Applications

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 commencement of the semester.

Instructions for the Faculty -

empus-II

Focus on the life 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. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (B) /19	Indian Architecture/ Vastu Shastra	2 L, 1T	Int: Ext 40:60	03

Course Objective: To develop an understanding of rules and regulations of the Ancient Hindu System, Science of architecture.

Course Outcomes: At the end of the course, the students will able to will be able to Analyze the different principles and systems of Vastu shastra.

Detailed Syllabus:-

UNIT-I

Indian Architecture (Urban) – Banaras, Kashmir, Gujarat,, and North east.

UNIT-II

Indian Architecture (Rural) – Vernacular Architecture of India.

UNIT-III

Terminology of Vastu- shastra, fundamental concepts, elements of vaastu, designs based on directional alignments, laws of nature, Indian Traditional Vastu shastra and Evolution of Vaastushastra in contemporary Architecture, modern Vastu science fundamentals. : Magnetism in the Earth, Magnetic Compass, Magnetic Axis, Magnetic Directions, Natural Directions, Earth Movement -Earth's self-Revolution around its Own Axis. Sun or Solar Movement, Wind Flow Movement, Zones inside the Vastu / Buildings, Clockwise Movement, Slope of Plot - Slope for erecting Vastu, Shape of Plot - Shape for Planning the Vastu.

UNIT-IV

Study of Residential and Public buildings and other buildings designed on the basis of Vastu Shastra Example in Architecture based on Vastu Shatra.

Evaluation Criteria for Exam / Question Paper Setting:-

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

I.K.G.PT.U Mohali Campus-II The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty -

Assignments, Site visits, Plates

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. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (C) /19	Advance Building	2 L, 1T	Int : Ext 40:60	03
	Materials			

Course Objective:This course deals with some more building materials used in the construction industry. It is aimed to help the student learn and understand the application of advanced building materials.

Course Outcomes: At the end of the course, the students will able to will be able to understand various advanced building materials in respect of their, composition, uses, properties and applications in the construction sector.

Detailed Syllabus:-

UNIT-I

- Advanced building materials Introduction
- General Building Material trends: Eco-friendly, cost-effective, Nano-technology, aesthetic materials, recycled materials etc.
- Properties of advanced building materials: thermal control, light control, ventilation, illumination, insulation, moisture control, self-cleaning, damp proofing etc.
- Types of advanced building materials, based on composition- cement based, glass based, plastic based, metal based composite materials
- Types of advanced building materials, based on behaviour/ technology- Intelligent building materials, Interactive building materials, eco-friendly building materials

UNIT-II

- Cement based composite building materials, Different types of fibres- steel fibre, carbon fibre, natural fibre, Proportioning of fibres and cement, Design and structure of cement composites, uses and application
- Glass based composite building materials, composition, properties and uses
- Plastic based composite building materials, composition, properties and uses
- Metal based composite building materials, composition, properties and uses
- Multiphase materials, composition, properties and uses
- Study of materials like Lotusan, Aerogels, Titanium dioxide facade, bio-concrete, bulkfullerene, metal foam, liquid granite, magnetic curtains, ETFE, solar cells, solar shingles etc.

Director L.K.G.P.T.U

Sighali Campus-H

Related Case studies/examples of applications in modern buildings

UNIT-III

- Intelligent building materials- types, general composition, uses, application
- Interactive building materials- types, general composition, uses, application
- Eco-friendly building materials- types, general composition, uses, application
- Related Case studies/examples of applications in modern buildings

UNIT- IV

 Latest building material, construction technology and market trends of the following applications in buildings:

Advance Floor and Wall finishes, Ceiling and Roofing materials Clay and Cement Products, Building fixtures, Paints & Varnishes Ferrous and Non Ferrous Metals

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 of one from each unit.

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

Instructions for the Faculty -

Market survey, sample collection of various building materials, the know-how of application, exploring the characteristics of each material Site visits for studying and understanding the application of building materials

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.

Director L.K.G.P.T.U Mohali Campus-II

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (D) /19	Retail Design	2 L, 1T	Int: Ext 40:60	03

Course Objective:To make students understand the to get known to the students about prevailing, past, and future scenarios of retailing in India

Course Outcomes: At the end of the course, the students will be able to design a retail outlet.

Detailed Syllabus:-

UNIT-I

Introduction – Meaning, nature, scope, importance, growth, and present size. Career options in retailing, Technology induction in retailing, future of retailing in India, **UNIT-II**

Types of retailing: stores classified by owners, stores classified by merchandising categories. Retailing formats, cash and carry business; Retailing models- franchiser franchisee, directly owned; wheel of retailing and retailing life cycle; cooperation and conflict with other retailers. UNIT- III

> Director J IN.G.P.T.U Mohali Campus-II

Retail planning- importance and process; developing retailing strategies: objectives, action plans, pricing strategies and location strategies, visual merchandising and displays

UNIT-IV

Retail Selling Skills: Pre-Check, Opening the Sale, Probing, Demonstration, Trial, Handling Objections, Closing, Confirmations & Invitations. Retail Audits, Online Retailing, changing role of retailing in globalised world

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 -

Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

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. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (E) /19	Advance Structure	2 L, 1T	Int : Ext 40:60	03

Course Objective:To make students understand the principles and to familiarize the students with the advanced building technologies

Course Outcomes: At the end of the course, the students will able to will be able to Analyze what are the housing issues we are facing. Understand how we can contribute to eliminate this housing problem. Know about what our government is doing to provide basic comfortable environment for the citizens of India.

Detailed Syllabus:-

UNIT-I

Introduction to Limit state method and practicing design of structural elements slabs, beams, columns and foundations.

I.K.G.P.T.U Mohali Campus-II

UNIT- II

Industrial Structures in Steel. Multi Storied / Tall Structures / Towers.Large Span Construction-flat slabs-shell structures, folded plates, portal frames space frame & trusses, tensile structures.

UNIT- III

Pre-fabricated construction & Pre-engineered building. New Material in Construction. Cold form sections, FRP (Fibre Reinforced Polymer)

UNIT- IV

Earth Quake resistant construction practices and design. Behaviour of structures during earth quacks. Retrofitting of 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 -

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. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(A) /19	Ekistics	2 L, 1T	Int : Ext 40:60	03

Course Objective:To make students understand the principles and implications of Ekistics & understand the role, importance in architecture and planning.

Course Outcomes: This course intends to develop an understanding the evolution of settlement planning. Detailed Syllabus:-

UNIT-I

Introduction: Meaning and Scope in Relation to town planning and architecture. • Settlement patterns in later periods of history; Changing form and pattern of human settlements in ancient, medieval, colonial and modern India

Mohali Campus-II

UNIT-II

Role and contribution of the following towards contemporary town planning thought- Patrick Geddes, Patric Abercrombie, Daniel Burnham, Soria Y Mata, Frederick Olmstead, Ebenezer Howard, Clarence Perry, Clearance stein, CA Doxiadis, Le Corbusier, Frank Lloyd Wright **UNIT- III**

Globalization and its impact on cities – Urbanization, emergence of new forms of developments – self sustained communities – SEZ – transit development – integrated townships – case studies. • Scope and Content of Master plan – planning area, land use plan, and Zoning regulations – zonal plan – need, linkage to master plan and land use plan – planned unit development (PUD) – need, applicability and development regulations -

UNIT- IV

Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation, and Conservation – JNNURM – case studies. • Definition and explanation of the concepts of density, FAR, land use, and zoning The emergence of the metropolitan phenomenon; Planning problems of cities and Solutions • Rural and regional Systems: The rural-urban relationships; Problems of rural systems.

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 commencement of a semester.

Instructions for the Faculty -

The presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials, and PPT's) on varied topics to supplement the information base and make it more interactive.

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. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(B) /19	Art Appreciation	2 L, 1T	Int: Ext 40:60	03

Course Objective:To make students understand the principles of art and appreciation. Disseminating a broad overview of Art and Design and enabling students to understand visual awareness, creativity and cultural understanding of Design as a Multidimensional creative Art

Course Outcomes: At the end of the course, the students will able to gain knowledge and understanding of the

Director I.K.G.P.T.U Mohali Campus-II

universal and timeless qualities that identify all great art. To introduce the students to the importance of art in today's world and the purposes art has served from pre - historic through modern times in a variety of cultures both western and oriental. To understand artistic intent and expression through basic element of art and architecture and to increase appreciation of art in today's society.

Detailed Syllabus:-

UNIT- I

Introduction- Defining the disciplinary differences Introduction to various types of Art, Concept of beauty and Aesthetics. Evolution of art and design. A historical perspective History of Art. Art through ages. Importance of Visual perception, Design elements from nature. **UNIT- II**

Expression of Art and Design Relationship between Art and Design with man, space and environment. Concept of space. Articulation of form, sense of enclosure, Organisation of spaces.

UNIT- III

Introduction to theories Golden proportion, Theories of scale and proportion, Vitruvian theory, Modular man, principles of Design and elements of Architecture.

UNIT- IV

Relations in Art, Design and Architecture Factors influencing the process of Art, Design and Architecture. Form and function. Review of selected examples.

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 -

Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

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-807(C) /19	Industrial / Prefab Technologies	2 L, 1T	Int : Ext 40:60	03
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IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 8thSemester)

Course Objective: To understand the design principles related to prefabrication elements and to obtain knowledge on the concepts of production, transportation, assembling & erection of precast buildings.

Course Outcomes: At the end of the course, the students will able to describe various structural systems and standard organizing requirements. Identify and differentiate structural behaviour of building elements. Design building elements and applications. Identify and describe working principles of various joints. Design and detail precast and activities by innovation.

Detailed Syllabus:-

UNIT-I

Introduction -Types of prefabrication, prefabrication systems and structural schemes- Disuniting of structures Structural behaviour of precast structures - Specific requirements for planning and layout of prefabrication plant - IS Code specifications

UNIT-II

Precast Cast Elements - Handling and erection stresses- Application of prestressing of roof members; floor systems two way load bearing slabs, pre stressed beam , Precast column -precast shear walls Wall panels, hipped plate and shell structures.

UNIT-III

Prefabricated Design - Designing and detailing prefabricated units for 1) industrial structures 2) Multistorey buildings and 3) Water tanks, silos bunkers etc., 4) Application of prestressed concrete in prefabrication.

UNIT-IV

Prefabricated Buildings - Production, Transportation & erection- Shuttering and mould design Dimensional tolerances- Erection of R.C. Structures, Total prefabricated buildings assembly Process

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. 8th Semester)

IK.G.P.T.U Mohali Campus-II

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(D) /19	Interior Architecture	2 L, 1T	Int : Ext 40:60	03
	& Space			
	Programming			

331

Course Objective:To appreciate the complexities and constraints in the design and execution of architectural interiors..

Course Outcomes: At the end of the course, the students will able the Interior Design principles and their applications in interiors, and to foster creative ability and inculcate skills to understand and conceive architectural design.

Detailed Syllabus:-

UNIT-I

Introduction to Interior Architectural Design Definition of interior design, Interior architectural design process, vocabulary of design in terms of principles and elements, Introduction to the design of interior spaces as related to typologies and functions, themes and concepts - Study and design

UNIT-II

Elements of Interior Architecture - Enclosing Elements Introduction to various elements of interiors like floors, ceilings, walls, staircases, openings, interior service elements, incidental elements etc., and various methods of their treatment involving use of materials and methods of cons **UNIT-III**

V. Elements of Interior Architecture – lighting accessories & interior landscaping Study of interior lighting, different types of lighting their effects types of lighting fixtures. Other elements of interiors like accessories used for enhancement of interiors, paintings, objects-de-art, etc. Interior landscaping, elements like rocks, plants, water, flowers, fountains, paving, artifacts, etc. their physical properties, effects on spaces and design values.

UNIT- IV

Elements of Interior Architecture - Space Programming Study of the relationship between furniture and spaces, human movements & furniture design as related to human comfort. Function, materials and methods of construction, changing trends and lifestyles, innovations and design ideas. Study on furniture for specific types of interiors like office furniture, children's furniture, residential furniture, display systems, etc. Design Projects on Residential, Commercial and Office Interiors.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with a 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

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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. 8thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(E) /19	Building Information	2 L, 1T	Int : Ext 40:60	03
	Modelling (BIM)/			
	Advance Computer			
	Software's			

Course Objective:To make students understand the principles and implications of Building Information and Modelling (BIM) in Architecture profession.

Course Outcomes: At the end of the course, the students will able to Understand that BIM is used to collaboration - between engineers, owners, architects and contractors in a three dimensional environment (common data environment), and it shares information across these disciplines. BIM is the management of information through the whole life cycle of a built asset, from initial design all the way through to construction, maintaining and finally de-commissioning.

Detailed Syllabus:-

UNIT-I

Introduction to Building Information Modelling. The advantages of using the software. Introduce various software like Revit, ArchiCAD, etc. Special Features of Revit Architecture Understanding Revit Elements Working in one model with many views Using Ribbon & Quick Access Toolbar(QAT) Using Project Browser

UNIT-II

WORKING WITH PROJECT: Configure Project UNITS Settings Adding Levels Referring Layout With Temporary Dimensions Adding Columns. MODELLING WALLS, DOORS AND WINDOWS: Adding Walls Wall Properties And Types Using Modifying Tools Adding Doors And Windows All Joints LINKING IN REVIT Linking AutoCAD Drawing Files Import Tips Create A Group UNIT- III

MODELLING ROOF, CEILING & FLOOR Working with Roofs Working with Ceilings Working with Floors WORKING WITH STAIRS Working with Stairs Adding Railings to Stairs

UNIT-IV

VIEWS, VISIBILITY & GRAPHIC CONTROLS Hiding and Isolating objects in a model Displaying Objects Above-Below in Plan Views DOCUMENTATION Adding Schedule Views Modifying Schedule Views Exporting to AutoCAD Adding Text

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 -

Director I.K.G.P.T.U Mohali Campus-II Focus on the live study and application of the subject into the architecture design.Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (A)	Town & Country	2 L, 1T	Int : Ext 40:60	03 Hours
	Planning			

Course Objective:To make students understand the role and importance of Town Planning in the evolution of Human Settlements and Urban Forms in the Historical and Modern Context.

Course Outcomes: At the end of the course, the students will able to will be able To make students aware and familiar with special constructional details involving finishing and furnishing, extension and expansion joints and basements with details.

Detailed Syllabus:-

UNIT-I

- Introduction, Role, Importance and Scope of TownPlanning
- Planning Principals of Human Settlement in Nile Valley, Greek and Roman Periods.
- Town Planning in India- Vedic period, Indus Valley, Islamic, Medieval and ColonialPeriod.
- Classification of Human Settlements based on Road Pattern, Form, Use, Scale/ Population etc.

UNIT-II

- Master Plan Objectives, Role, Importance and Methodology.
- Regional Plan Objectives, Role, Importance and Methodology

UNIT-III

- Planning Concepts- Garden City, Linear City, Industrial City and Sustainable City and Neighbourhood
- Existing Towns and Cities in India- Problems, Remediesetc.
- Urbanization Causes, Pattern and Effect inIndia.

UNIT-IV

- Study of New Towns in India Chandigarh, New Delhi & GandhiNagar.
- Town Planning in Punjab
- Role of Development Authorities in UrbanDevelopment.

Evaluation Criteria for Exam / Question Paper Setting:-

Nifector I.K.G.P.T.U Mohali Campus-II

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (B)	Art & Architecture	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: The knowledge and understanding of the universal and timeless qualities that identify all great art. To introduce the students to the importance of art in today's world and the purposes art has served from pre - historic through modern times in a variety of cultures both western and oriental. To understand artistic intent and expression through basic element of art and architecture and to increase appreciation of art in today's society.

Course Outcomes: At the end of the course, the students will able to – explain key research concepts of Art in Architecture.

Detailed Syllabus:-

UNIT-I

Introduction & Terminology Grammar of the language of art - Natural, Realistic, Symbolic, Abstract, Modern and Contemporary.

UNIT- II

Ideologies of Aesthetics in Art Complete understanding of Ideologies of aesthetics in art while discussing the art of Western and Oriental. Plato, Aristotle, Baumgartan, I.A. Richards, Leo Tolstoy, Sigmund Freud. Shading: Six limbs of Indian painting. Rasa theory of 'Bharat Muni'. Iconography.

UNIT-III

Development of Art Development of art over the period of time. Tracking the progress in art in aspects of the Functional diversity of styles, Art as form of social consciousness, Impact of Cultural and Religion on art, Understanding the role of art in contemporary society.

UNIT-IV

Building Crafts: Craft and technology and its role in enhancing Interior Architecture, Best studies related to craft sector from Gujarat, Rajasthan, Uttarakhand, Etc., Continuity and revival of craft,, Interventions: Process/product design/ technology/marketing based.

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.

Director I.K.G.P.T.U Mohali Campus-II

Instructions for the Faculty –

Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (C)	Building	2 L, 1T	Int : Ext 40:60	03 Hours
	Maintenance			

Course Objective: To create exposure to the concept of retrofitting for buildings and different techniques of retrofitting.

Course Outcomes: At the end of the course, the students will able to – Comprehend the concept of retrofitting in buildings, its needs and methods. Acquire knowledge on the various techniques of retrofitting for various building components like beams, slabs, column etc

Detailed Syllabus:-

UNIT- I

- Maintenance- Introduction, Need, Scope, Importance& Role of anArchitect.
- Maintenance-Economic and Social significance
- Maintenance Problems and issues related to materials, design anddetailing.

UNIT- II

- Climate- Effect on the life cycle of buildings.
- Deterioration and Decay of buildings- Typology, Reasons, Prevention
- Deterioration and Decay- Causes, Effect, Remedies

UNIT- III

- Defects in Buildings-Efflorescence, Dampness, Settlement, Cracks, Corrosion etc causes, effects, preventive and remedy
- Retrofitting of Buildings for Structural safety

UNIT-IV

- Building service and maintenance -- water supply, sewerage, and Sanitation system.
- Case study of any existing building

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 –

Director I.K.G.PT.U Mohali Campus-II

333

Teaching in the subject will be a combination of Expert lectures, Specific case studies and field visits to buildings in deteriorating conditions.Lectures from representatives of industry and visits to the industrial units involved in producing materials to make buildings safe will be made integral part of teaching

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (D)	Graphics &	2 L, 1T	Int : Ext 40:60	03 Hours
	Communication			
	Design		and the second	

Note - Detailed syllabus for the subject shall be finalized on year to year basis depending upon the expertise available. The experts in the field will deliver lectures and demonstrate the latest techniques for development of skills.

Director I.K.G.P.T.U Mohali Campus-II

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (E)	Advance Digital	2 L, 1T	Int : Ext 40:60	03 Hours
	Architecture			

Course Objective:To introduce the concept of digital design and fabrication. To introduce the concept of energy modelling and analysis in design.

Course Outcomes: At the end of the course, the students will able to – understand the fundamental of digital architecture with the help of application to software.

Detailed Syllabus:-

UNIT-I

Fundamentals • Introduction, History and Scope of Digital Technologies in Architecture • Digital design media • CAD Models: Presentation, visualization, drafting, modelling • CAD vs. BIM

UNIT-II

Computational Design • Roles of Computing in Architectural Design • Study of Computational models • Foundations in computational geometry • Design models: Formation models, Generative models, Performance model • Computation design styles, parametrises • Scripting and Algorithms: principles of algorithmic design, visual programming • Artificial Intelligence

UNIT- III

Fabrication • Prototyping, Additive and subtractive manufacturing • Materiality • Digital production and fabrication

UNIT- IV

Performance Models • Concepts in energy modelling and analysis of sources, such as electricity, HVAC, Acoustics, day lighting, wind etc. • Green Building Concepts, LEED, BREEAM, IGBC, GRIHA • ECBC and its application in Indian Buildings

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 –

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I.K.G.P.T.U Mohali Campus-II Teaching in the subject will be a combination of Lectures, presentations, Assignments, live project work.

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (A)	Traffic &	2 L, 1T	Int : Ext 40:60	03 Hours
	Transportation			

Course Objective: To make the students conversant with methods, techniques of traffic and transportation, the socio-economic issues related to the movement of humans and goods in general and in urban areas in particular.

Course Outcomes: At the end of the course, the students will able to – Exposure to basic understanding of transport planning and management in urban areas. **Detailed Syllabus:-.**

UNIT-I

- Need, Role and Importance of traffic and transportation planning
- Urban & regional transport systems, Comparative advantages and disadvantages
- Role of Bicycle as a preferred mode of transport including planning for Bi-cycles
- Understand transport and socioeconomic activities, future developments.

UNIT-II

- Problems encountered in inter and intra-city transport system
- Accidents: Causes and remedial measures
- Traffic control devices
- Signage: Function and classification

UNIT-III

- Geometric design of roads and intersections, Rotaries, over bridges, underpasses, flyovers
- Roads design elements: Functional classification and alignment, Intersections
- Urban traffic and transport problems

UNIT-IV

- Traffic Survey: Volume, speed and delay, origin and destination
- Parking survey
- National Transport Policy

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 -

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Director I.K.G.P.T.U Mohali Campus-II Teaching in the subject will be a combination of Expert lectures and visits to areas of high traffic.

Students should be made to do a small traffic survey in a congested area.

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. Elearning. 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. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (B)	Contemporary	2 L, 1T	Int : Ext 40:60	03 Hours
	Indian			
	Architecture			
	(Current Trends)			

Course Objective: Introduce the initiation and development of Modern Architecture in the subcontinent and contemporary architecture in India and the world.

Course Outcomes: At the end of the course, the students will able to - Ability to understand the role of societal developments as predicators of change in architectural paradigms through the study of Modern Architecture in the sub-continent and contemporary architecture ofIndia and the world **Detailed Syllabus:-**

UNIT-I

- The initiation and development of Modern Architecture in the sub-continent. Critical Regionalism revisited in the context of the sub-continent.
- Impact of globalization, energy crisis and climate change on architecture.

UNIT-II

- Overview of post-independence architecture with the help of selected examples of master architects of the period.
- Contemporary world architecture to include notions of the Post-modern City, Deconstruction, Globalization, Post-modern Tradition, Revisiting of Tradition, Cradle to cradle Design, Post-modern Ecology etc. through selected examples.

UNIT-III

Contemporary Building Materials

- Study the needs ultra-performance materials in building design as a substitute for special performance, thermal/sound/moisture protection, fitting, equipment and furnishing.
- The types of advanced concrete bendable concrete, light transmitting concrete, translucent concrete, pervious concrete, eco-cement etc. and types of reinforcement materials, properties and performance in concrete reinforcement. Aramid fibres, bio-steel, Carbon / Graphite Fibres and fibre-glass etc.
- Use of composite materials namely Polymer Matrix Composites (PMCs), Fibre Reinforced Polymers (FRPs) along with cement, steel, aluminium, wood, glass for thermal insulation, fire protection, coating and painting and structural monitoring etc.

UNIT-IV

Contemporary current trends •

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.

LK.G.P.T.U Mohali Campus-II **Instructions for the Faculty** – Teaching in the subject will be a combination of Expert lectures and application based study

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (C)	Building System	2 L, 1T	Int : Ext 40:60	03 Hours
	Integration &		and the state of the	
	Management			

Course Objective: To understand intelligent building systems and its relevance in modern times and to develop an understanding of automated buildings systems and sensors.

Course Outcomes: At the end of the course, the students will able to – Understanding of approach for effective energy management in building through automated systems and sensors.

Detailed Syllabus:-

UNIT-I

- Study of automated buildings, responsive buildings.
- Introduction to facility management. Study of management of facilities, planning and operational techniques in various models of building intelligence.

UNIT- II

- Study development of various control systems, computer-integrated building (from single function systems to integrated solutions).
- Use building intelligence in energy management.

UNIT- III

 Case study of intelligent building systems in India with issues related to site, shell, skin, services and technology, intelligent design and construction, effective space utilization, expectations of user, effective communication of architectural concepts to user, locating people and information.

UNIT-IV

- Introduction to Building automation in general and understanding the issues related to the control system in a building.
- Basic concept of computerized control systems, network designed to monitor and control various systems for lighting, ventilation, alarms & security, communication, etc.
- Issues related to illumination and lighting. Systems to allow / control Natural light. Aperture/openings and shading devices control systems based on automated systems.
- Issues related to systems of communication (mechanical systems).

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

LK.G.P.T.U Mohali Campus-II

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures and should conduct live projects. **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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (D)	Cost effective	2 L, 1T	Int : Ext 40:60	03 Hours
	Construction			

Course Objective: To make the students aware of the use of conventional and non-conventional resources for low cost construction and to understand the various low cost design systems and to understand use of materials, construction and execution techniques in design of low cost buildings. **Course Outcomes**: At the end of the course, the students will able to – understand the Low Cost Building Techniques in architecture.

Detailed Syllabus: -

UNIT- I

- An introduction to the subject to understand the various building techniques adopted in different climatic zones of the country, which resulting in varied vernacular expressions.
- Use of cost effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

UNIT-II

- Need for low cost construction, both in the rural, the urban sectors and related issue and challenges.
- Low-cost building construction systems, methods & techniques. Introduction to low-cost buildings, building components influencing cost of buildings.
- Study Modular coordination in building design, prefabrication- total and partial, and impact
 of prefabrication on employment.

UNIT-III

- Study of usages pattern of low cost buildings by the habitants.
- Comparative analysis of building materials and costing.
- Research and development by various organizations in the country and foreign countries to reduce the cost.

UNIT-IV

- Works of Laurie Baker, Hassan Fathy, Revathi kamath, Nari Gandhi etc
- Case study of low-cost building projects in India with issues related to site, material, services, technology, and construction, and expectations of user. Post-occupancy evaluations of such projects.

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, sample collection of various building materials of cost effective, know-how of application, exploring the characteristics of each material Site visits for studying and understanding

I.K.G.P.T.U Mohali Campus-M application of low cost building materials.

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. 9thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (E)	Building Industry	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective:To give the knowledge and awareness of building industry

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

Detailed Syllabus:-

UNIT-I

Introduction : Review of the nature of building Industry within socio-economic, technological & developmental factors in rural and urban sectors. **Component of Building Industry** : Various segments of building industry and their inter play. Housing as an integrated industry. National policy for building industry.

UNIT-II

Rural Building Industry : Need and demand of rural building industry within the socio-economic and cultural set up. Role of Rural Building Industry in national policy of Rural Development.

Research & Development : Role of professional bodies, research organisation, programmes of

extension and development of public & private sectors. Design Techniques i.e. coordination,

standardisation, prefabrication, system design etc. together with constructional & operational

management for the development of development of building industry.

UNIT-III

Building Material Industry : Importance of Building material industry. Production and stock of indigenous & modern materials to meet national and individual needs for speed & economy.

UNIT-IV

Finances and Building Industry : National allocation, financial organisation, Govt. incentives, selfhelp, community participation, cooperative & individual efforts.

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.

Director I.K.G.P.T.U Mohali Campus-II Teaching in the subject will be a combination of Expert lectures and application based study **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 IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 10thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (A)	Building Economics	2L, 1 S/T	Int : Ext 40:60	03

Course Objective:To understand the various alternate building materials used and their applications in the construction industry. To create awareness, impart knowledge and promote understanding of the role and importance of Economy and Cost –effectiveness in the buildings to promote sustainability.

Course Outcomes: At the end of the course, the students will able to, Recognise mud as an alternate material and to understand its properties and construction techniques. Comprehend the various types of alternate construction blocks. Gain knowledge on the applications of natural materials such as bamboo and straw in building construction. Appreciate the applications of alternate cement based building materials. Critically analyse the cost effective construction techniques through case studies.

Detailed Syllabus:-

UNIT-I

- Building Economics-Introduction, Definition, Role, Scope, Importance and Principles of buildingeconomics.
- Cost of Building- Components, Impact of various components, Types of costs including Construction Cost, Maintenance cost, Operational Costetc
- UNIT- II
 - Cost Management- Aims, Objectives, Need, Principles, Procedure, CostAnalysis.
 - Analysis of Comparative Economics of Low Rise and High RiseBuildings

UNIT- III

- **Technology** Role, Importance, Use, Up-gradation of local Technologies to make buildings cost-effective.
- Materials- Role, Importance, Innovative building materials, up-gradation of local materials, Comparative analysis of available buildingmaterials
- **Construction Techniques** Study of Innovative Building Techniques for cost reduction with comparative merits andDemerits

UNIT- IV

- Introduction, Role and Importance of Modular construction, Pre- Engineered Buildings, Mass Production, Standardization etc in costeffectiveness
- Cost Reduction -through Planning, Designing and Specification of buildings involving Space Optimization and StructuralInnovations



Director LK.G.P.T.U Mohali Campus-II Space Norms- Role and importance of Space Norms for Cost –reduction, Principles for defining Space Norms, Norms defined inNBC.

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

Instructions for the Faculty -

Teaching in the subject will be a combination of Expert lectures, Specific case studies and field visits to Low Cost buildings. Lectures from representatives of industry and visits to the industrial units involved in producing building materials will be made integral part of teaching. Students would also be encouraged to attend building material exhibitions etc.

Core References:

semester.

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.

Director L LK.G.PT.U Mohali Campus-II

IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 10thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (B)	Contemporary	2L, 1 S/T	Int : Ext 40:60	03
	World Architecture			

Course Objective: Develop an awareness of contemporary architecture. Update their comprehensive knowledge of architecture

Course Outcomes: At the end of the course, the students will able to –Knowledge about contemporary phase of architecture . Understandings of current trends and styles in architecture.

Detailed Syllabus:-

UNIT- I

Evolution through the formal and the informal built-form, forces that shaped both. Cross connections showing form determining factors. Manifestations and significant theories, pragmatic and the abstract. Theories seen independently of the styles as classified later in history. Brief review of state of art of designing and the theories of Design and Architecture studied during the B. Arch. degree program, with emphasis on 20th century up to present period.

Influencing factors in the shaping of contemporary world architecture, study of examples of modern structures in this period and analyze the influences with respect to Advances in Construction Technology and new materials of construction.

UNIT- III

Influencing factors in the shaping of contemporary world architecture ,study of examples of modern structures in this period and analyze the influences with respect to ,Architectural expression influenced by vernacular and regional Architecture.

UNIT- IV

Influencing factors in the shaping of contemporary world architecture, study of examples of modern structures in this period and analyze the influences with respect to, Architectural expression influenced by world as a global village.

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 will be a combination of Expert lectures, Specific case studies and field visits to Low Cost buildings. Lectures from representatives of industry and visits to the industrial units involved in producing building materials will be made integral part of teaching. Students would also be encouraged to attend building material exhibitions etc.

Core References:

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

Director LX.O.RT.U Mohali Campus-IA

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. 10thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (C)	High Rise Buildings	2L, 1 S/T	Int : Ext 40:60	03

Course Objective: To make students aware and understand the context of planning, designing and construction of High Rise buildings and their role and importance in shaping the Human Settlements and Urban Form in the Modern Context.

Course Outcomes: At the end of the course, the students will able to -Relate the performance of buildings subjected to various loadings and examine the significance of diverse structural components in a high-rise structure. Perceive the resisting capacity of elements exposed to different effects . Safeguard the stability of a structure through approximate methods. Understand the importance of service core design and analyse the relation of service planning.

Detailed Syllabus:-

UNIT-I

- High Rise Buildings- Introduction, Historical perspective, Origin, Definition, Role,
- Importance, Limitations, Advantages and Disadvantages
- Planning /Designing of High RiseBuilding
- Construction of High RiseBuildings

UNIT-II

- Building Technologies used in theConstruction
- Building Materials used in the Construction
- Study of Building Services in the High RiseBuildings

UNIT- III

- Fire Safety and Structural safety of High RiseBuildings
- Study of Legal Framework governing the High RiseBuildings

UNIT- IV

- Study of National Building Code
- Study of famous High Rise Buildings-Burj Khalifa, Sears Towers, Empire State • Building, World Trade Centre, Imperial Towers and Orchid Woods Mumbai.

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 will be a combination of invited lectures , visit to Multi- Storeyed/ High Rise Buildings and library studies/power point presentations of High Rise Buildings mentioned above.

Core References:

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

K.G.P.T.U Mohali Campus-II 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. 10thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (D)	Architecture	2L, 1 S/T	Int : Ext 40:60	03
	Journalism &			
	Photography			7

Note - Detailed syllabus for the subject shall be finalized on year to year basis depending upon the expertise available. The experts in the field will deliver lectures and demonstrate the latest techniques for development of skills.

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IK Gujral Punjab Technical University Bachelor of Architecture (B. Arch. 10thSemester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (E)	Futuristic	2L, 1 S/T	Int : Ext 40:60	03
	Architecture			

Course Objective: To gain the knowledge and awareness of futuristic material and architecture.

Course Outcomes: At the end of the course, the students will able to use the knowledge of futuristic material and architecture in the projects

Detailed Syllabus:-

UNITI

Future concepts envisioned by earlier theorists and architects like Antonio Saint Elia and F.L. Wright

UNIT II

Emerging architectural paradigms such as programme generated architecture, dynamic architectural systems, virtuality, Trans architecture, data driven structures and 'glocal' approach through the study of relevant projects.

UNIT III

Evolution of contemporary architectural concepts-historical revival biomimicry adaptive reuse and low cost buildings; Futuristic building materials: Buildings; Futuristic building materials: Building tectonics and systems

UNIT IV

Study of specific building types-houses, office spaces, public buildings, skyscrapers and transportation hubs through various projects . Sustainable buildings including energy efficiency, Zero Energy and Energy Plus buildings and resource conservation

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 will be a combination of invited lectures , visit to Multi- Storeyed/ High Rise Buildings and library studies/power point presentations of High Rise Buildings mentioned above.

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

Director I.K.G.P.T.U Mohali Campus-I 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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