



SHIVAJI UNIVERSITY, KOLHAPUR

REVISED SYLLABUS AND STRUCTURE
(CBCS) Fourth Year (Sem VII & VIII)

IN

B. Architecture.

To be introduced from the academic year 2022-23(w. e.
f. July 2022) onwards

FOURTH YEAR ARCHITECTURE ENGINEERING – CBCS PATTERN

SEMESTER –VII																				
Sr. No	Course (Subject Title)	TEACHING SCHEME									EXAMINATION SCHEME									
		THEORY			TUTORIAL			PRACTICAL/STUDIO			THEORY					VIVA-VOCE			TERM WORK	
		Credits	No. of Lecture	Hours	Credits	No. of Lecture	Hours	Credits	No. of Lecture	Hours	Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Max	Min
1	PC – 701 ** Adv. Arch. Design	1	1	1				9	6	6							100	45	100	50
2	PC – 702 Env.Plan ning & Urban Design	1	1	1				2	3	3							100	45	100	50
3	PC-703 Adv. Bldg .Specificat ion ,Valuation and Project Managem ent System	1	1	1				2	3	3	3	ESE	100	100	45	As per BOS Guidelines	50	23	50	25
4	BS & AE 704 Adv. Structure – I	3	3	3							3	ESE	100	100	45				50	25
5	PE – 705 ** Urban and Regional Planning	1	1	1				1	2	2	3	ESE	100	100	45				50	25

As per BOS Guidelines

6	PAECC – 706 Research Methodology	1	1	1				1	2	2	2	ESE	50	50	23			50	25
7	PE – 707 Elective – IV	1	1	1				1	2	2		-	-	-	-	50	23	50	25
8	PE – 708 Elective – V	1	1	1				1	2	2						50	23	50	25
	TOTAL	10	10	10				17	20	20			350			350		500	
SEMESTER –VIII																			
1	PAECC –801 Practica Training And Report							15	90 working days Trainin g							100	45	100	50
	TOTAL							15								100		100	
	TOTAL	10	10	10				32					350			450		600	

* Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

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- Per Semester Periods per week –30
- Total week – 15 weeks per semester

CIE- Continuous Internal Evaluation ESE – End Semester Examination

• Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.Arch.-IV;Sem VII & VIII : 1400
• Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60Minutes	• Total Credits for B.Arch.-IV (Semester VI I& VIII) : 42
• There shall be separate passing for theory and practical (term work)courses.	

Semester VII

Sr. No	Code No.	Subject	Credits
1.	PC – 701	** Advanced Architectural Design - I	10
2.	PC-702	Environmental Planning & Urban Design	3
3.	PC - 703	Advanced Building Specification Valuation and Project Management System	3
4.	BS & AE – 704	Advanced Structure – I	3
5.	PE – 705	** Urban and Regional Planning	2
6.	PAECC – 706	Research Methodology	2
7.	PE – 707	Elective – IV	2
	PE – 707-A	Project Management	
	PE – 707-B	Vernacular Architecture	
8.	PE – 708	Elective - V	2
	PE – 708 -A	Architectural Conservation	
	PE – 708 -B	Road safety & Civic Sense	

Course Title : Advanced Architecture Design - I	
Course Code : PC 701**	Semester : VII
Teaching Scheme : L : 01 St : 09 Total : 10	Credits : 10
Examination Scheme : Term Work - 100 Marks Viva-Voce - 100 Marks	Total marks: 200

Course Description:

To familiarize students with large scale Architectural building projects with emphasis on Horizontal and Vertical Planning along with building services & systems, architectural controls and building bye laws.

Course Objectives :

- To understand the planning aspects of large scale Architectural Buildings
- To study planning aspects of Vertical Buildings.
- To understand the Bye Laws deeply processed on Architectural design.
- To be exposed to suitable building materials and construction technologies to evolve a design solution
- How to meet socio-economic demands in design.
- Parameters like, role of population density, user-satisfaction, participative architecture
- To take design decisions in a comprehensive manner, understanding their implications in the complex typology of the project.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Understand the typologies of Architectural Design projects in Urban area.
- Understand aspects of Campus Planning along with Contemporary Architectural Practices.
- Understand planning aspects of Vertical Buildings.
- Understand Bye-laws and planning guidelines with respect to design typology.
- Understand and implement in design assignment, various architectural services such as sewage & sullage disposal, water supply, Electricity, Air-conditioning ,fire fighting , Acoustics and CCTC Surveillance related to the interior layout of the concerned building.

Course Content
Unit No. 1 – (5%) <ul style="list-style-type: none"> • Understanding and analysis of design requirements • Analysis of site proximities • Understanding the local building bye laws
Unit No. 2 – (5%) <ul style="list-style-type: none"> • Case study/ Book study/ Net study/ Site visits of similar design • Problem. • Analysis and presentation of case studies
Unit No. 3 – (5%) <ul style="list-style-type: none"> • Data collection of the proposed design problem • Site visits and site analysis i.e. Topography, Vegetation, etc.

<ul style="list-style-type: none"> • Implication of the local building bye laws
Unit No. 4 – (25%) <ul style="list-style-type: none"> • Conceptual design and design development with considerations of Building services ,climatic and landscape elements • Application of Advance Materials • Application on design strategies
Unit No. 5 – (20%) <ul style="list-style-type: none"> • Final design presentation with supporting sketches ,detailing, models and views.
Unit No. 6 – (40%) <ul style="list-style-type: none"> • Layout of building services. • Detailing of required services • Services support calculations.

Sessional work:

Major Project (First) :

Housing projects, Institutional building projects, Educational campuses, Hospitals, Shopping complexes, Concert hall, Museum & Art galleries involving campus planning and various categories of Vertical Buildings etc. It should have built up area in the range of 5000 sq.m. to 6000sq.m. This project will have 60 % weightage of marks.

Minor Project (Second):

Detailing of various services and layouts ,along with support calculations. Separate portfolio of layout of Architectural services is expected. It will have 40 % weightage of marks.

Expected Presentations Outputs:

Design portfolio must include presentations of pre stage design .Architectural Drawings of post stage design along with detailed services .Supported with 3D views and models.

References :

- Neufert architects data – The handbook of building types
- Architecture: Form , Space & Order – Francis DKching
- The Local Building Byelaws
- National Building Code of India 2016- Vol -1/2/3
- Monologues of Eminent Architects 8. Books on Building Services
- Books on Landscape Architecture
- Planning Guidelines

Course Title : Environmental Planning and Urban Design	
Course Code : PC-702	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 3
Examination Scheme : Term Work - 100 Marks Viva-Voce - 100 Marks	Total marks: 200 Marks

Course Description:

Environmental Planning

The rapid and haphazard growth of towns and cities and associated problems of the environment, it is important to understand the macro and micro issues that connect the environment and human habitat. This course looks at the relationship between the built environment with the overall environment. Our ancient traditional wisdom has been able to create a built environment that was responsive to climatic and other local conditions and also aesthetically pleasing. Most of the human habitat that one comes across in villages are built on sustainable design principles. Thus, this course looks at strategies that have been in use since historical times to create sustainable neighborhoods. At the same time, it looks at how modern technology can be used to achieve goals of sustainable development.

Urban Design

Introducing Urban Design is important to understand the city as a context to architecture. Any building impacts the street and public space and is, in turn, constrained by the framework of urban building regulations. Designing the transition of the private space into the public realm and its articulation, determining the overall volume of built space and its form require an understanding of the complex urban fabric. The course is designed to explain the complex urban fabric through different environmental dimensions. The subject will be taught in congruence with the Design studio, and assignments for the subject will be linked to the design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Objectives :

- Developing student consciousness to understand all environmental aspects at the urban scale.
- Developing an understanding of factors effecting built and open spaces at urban scale and methods not only to study user patterns, perceptions and behavior, but also record, document and analyze them.
- Developing techniques to understand movement systems, activity patterns, visual and physical linkages.
- Studying land use, building uses, social, physical and perceptual context and behavior. User patterns, perceptions and behavior.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Work in a team to undertake studies related to neighborhood planning and large area Development and present the documentation before a group of experts.

- Demonstrate understanding of campus planning, sustainable settlement planning, landscape design, and the statutory framework related to waste management, environmental protection, and sustainability through a large-scale urban design project/Housing case study. (Case studies, International/National)
- Apply vernacular as well as modern urban design strategies that can mitigate the negative impacts of urban climate.
- Appreciate the role of efficient resource (water, waste, materials, energy) management in the development of a sustainable neighborhood and Demonstrate an understanding of the concepts of Urban renewal, different government schemes of slum Upgradation.
- Understand and implement URDPFI guidelines.

Course Content
<p>Unit No. 1 – (10 %)</p> <ul style="list-style-type: none"> • Environmental planning - types of planning - planning processes and tools - indicators of sustainability in planning and development of vernacular settlements, natural resource utilization and optimization • Environmental approaches to the site planning, design, and development of a built environment (Various factors like Physiography, Soil, Geology, Vegetation, Microclimate, etc. will be explained concerning the urban design project/ Housing case studies or independent case studies)
<p>Unit No. 2 – (30 %)</p> <ul style="list-style-type: none"> • Neighborhood as a major constituent of the City Plan, Traditional and modern approaches to neighborhood planning, planning and design standards for area distribution, density, development controls and building byelaws, UDPFI guidelines, NBC provisions. Sustainable Infrastructure for neighborhoods. Energy generation, water and waste management.
<p>Unit No. 3 – (20 %)</p> <ul style="list-style-type: none"> • Introduction To Urban Design, Importance of Urban Design, Elements of Urban Design, Terminology of Urban Design • Introduce basic concepts of urban design, reading the city, understanding urban issues with the intent of resolving the interface of buildings with each other and with the urban space they help to define between them.
<p>Unit No. 4 – (20 %)</p> <ul style="list-style-type: none"> • Impact of built density, building footprint, the urban form including height and geometry, the orientation of streets, etc. on microclimate, especially light, ventilation, and temperature. • Improving environmental quality, energy efficiency, efficient resource management (soil, water, waste, and materials) through appropriate site selection, effective neighborhood planning and Urban design strategies; road networking- hierarchy of roads, land-use zoning strategies, landscape design, etc.
<p>Unit No. 5 – (20 %)</p> <ul style="list-style-type: none"> • Image of the City – Elements of Urban Design to define imageability –Reading the city- Study changes in image through eras of Settlement/ Neighbourhood. Principles of Urban Design – Urban Scale, Urban Mass, Urban space,

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|---|
| <ul style="list-style-type: none">• Activity and circulation, Identify and analysis of principles in your study area. |
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References :

- Ian Mcharg, Design with Nature
- Kevin Lynch, Site planning
- Edward. T. Q, Site Analysis
- J.O. Simmonds, Site Planning
- W. Peterman, Neighbourhood planning and community-based development
- Norman Foster, Solar Power
- Relph Edward, Place and Placelessness
- Kostof S, Castillo G, Tobias R. The city assembled: The elements of urban form through history.
- Eisner Simon, Gallion, Arthur Eisner, Stanley. The Urban Pattern
- Kostof Spiro. The City Shaped: Urban Patterns and Meanings through History
- URDPFI Guidelines Vol I-2014 (<http://moud.gov.in/URDPFI>)
- URDPFI Guidelines II A-II B-2014 (<http://moud.gov.in/URDPFI>)
- Unified Development Control And Promotion Regulations for Maharashtra State.

Course Title : Advanced Building Specification, Valuation and Project Management System	
Course Code : PC-703	Semester : VII
Teaching Scheme : L: 01 St :03 Total:04	Credits : 3
Examination Scheme : Theory- 100 Marks Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 200

Course Description:

Aim and object of the course Advanced Building Specification, Valuation and Project Management is to make the students to learn different methods of framing specifications for construction materials and building items, to understand methods of land and building valuation and also to understand tools and techniques of construction project management and construction equipments.

Course Objectives :

- To make the students to understand importance of specifications.
- To develop the ability in students to draft specifications for building materials & Items.
- To make the students understand the basic concepts of Land & Building valuation.
- To make the students understand the different approaches of valuation.
- To develop the ability of students to understand the concept of depreciation.
- To develop the ability to prepare Valuation Reports.
- To understand the organization structure in construction industries.
- To Know the activities of the project and schedule it effectively considering the duration with resources available,
- To organize efficiently for successful completion of the project.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Students are able to **Understand** methods of framing detailed specifications for building projects
- Students are able to **Prepare** valuation of buildings by different approaches
- Students are able to **Use** scheduling Techniques in construction projects
- Students are able to **Develop** insight to discover and create entrepreneurial opportunities and the expertise to successfully launch, manage, and grow their own venture.

Prerequisite: Student should have internalized knowledge of the courses –Building Construction and Technology, Knowledge of Construction Materials and Estimating Costing ,Reading skills of working drawings from previous years subjects

Course Content
<p>Unit No. 1 – (5%)</p> <ul style="list-style-type: none"> • What is Specification? What is necessity of Specifications? • What is importance of Specifications in building construction? • Types of Specifications (a) General (b) Detailed • Open specification, advantages and disadvantages • Restricted specifications • Standard Specification, Special Specification
<p>Unit No. 2 – (5%)</p> <ul style="list-style-type: none"> • How to write the specifications? • Use of Indian standards and “Red Book” for drafting specifications (Only Introduction) • Specifications for basic building materials like brick, stone, sand, aggregate, water, timber, lime, cement, steel etc.
<p>Unit No. 3 – (5%)</p> <ul style="list-style-type: none"> • Specifications for construction items like Excavation, Brick work, Stone work, Plain Cement Concrete, Reinforced Cement Concrete, Reinforcement Steel, Structural steel, Cement plaster, Cement pointing, Wooden or metal doors / Windows, Mangalore tile roofing, Sheet Roofing, Waterproofing, Construction Chemicals, Painting etc.
<p>Unit No. 4 – (25%)</p> <ul style="list-style-type: none"> • What is valuation? • Differentiate between Cost, Price and Value • What are Purposes of Valuation? • What are types of Values?
<p>Unit No. 5 – (20%)</p> <ul style="list-style-type: none"> • Different approaches of valuation: Direct comparison Approach, Income Approach, Cost Approach. • Methods of valuation: Rental method, Depreciation & Sinking Fund methods, Direct Comparison with capital value, Valuation based on profit, Valuation based on cost and Development method of valuation,
<p>Unit No. 6 – (40%)</p> <ul style="list-style-type: none"> • Reversionary value of Land, Belting method of land valuation • Valuation Tables • Valuation Questionnaire • Case Study • Valuation Reports.

Unit No. 7 – (40%)

- Introduction and need of Project Management. Its goal and objectives
- Fundamentals of Project Management planning (Programming) Scheduling (Work breakdown,time scheduling) controlling and reviewing.

Unit No.8

- Introduction to Bar chart or Gantt chart advantages of Bar chart, Limitations of Bar chart
- Introduction to the CPM and PERT, its historical background, advantages of CPM / PERT Network, elements of network, Network rules and preparation of CPM AND PERT Network and problems based on it.

Unit No.9

- Introduction to the construction equipments and their use. Standard and Special equipments and its classifications selection of construction equipment its cost of owning and operations (Only introduction).
- Introduction study of excavation equipments and their ideal output, earth cutting and hauling equipment.

Sessional work

- Minimum five short notes on units no.1 to 3.
- Detailed specification of any five building materials.
- Detailed specification of any five building items.
- Minimum five short notes on units no.4 to 6.
- Problems on calculation of Land/Building valuation (minimum two)
- One case study with data collection and preparation of valuation report,
- Minimum five short notes on units no.7 to 9.
- Work break down structure for a building project.
- Preparing Bar Chart for a small building project.

References :

- Estimating and Costing in Civil Engineering (Including Specifications & Valuation) by B.N. Datta
- PWD Red Book
- Theory and Practice of valuation By Roshan Namavati
- Valuation of Real Properties by Rangwala
- Construction Project management by Kumar Neeraj Jha
- Construction Management and Equipment by Sourabh Kumar Soni

Course Title : Advanced Structures-I	
Course Code : BS & AE-704	Semester : VII
Teaching Scheme : L: 03 Total:03	Credits : 3
Examination Scheme :Theory - 100 Marks Term Work - 50Marks	Total marks: 150

Course Description:

The course Advanced Structures - I, Aim and object of this subject is to make the students to learn conceptual structural design aspects of advanced structural systems and components, their structural behavior and structural detailing for advanced foundation systems, slabs, stairs, retaining walls, water tanks, concrete mix design, precast, prestressed and prefabricated construction methods.

The course Advanced Structures-I, at Semester -VII, aims to give an idea to the students to understand concepts behind modern structural systems and economics in structural design systems. The intent of the syllabus is to explore the Students to investigate the structural behavior of various structural systems and elements through design exercises, case studies, and site visits etc.

Course Objectives :

- To make the students to understand structural behavior.
- To become familiar with conceptual designs of various structural components.
- To create ability to design two-way slabs.
- To detail reinforcement in RCC structural members based on their structural behavior and Detailing in structural steel.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Students are able to Understand structural behavior of advanced structural components.
- Students are able to Analyze& Conceptually Design advanced structural components
- Students are able to Detail reinforcement in structural members
- Students are able to Prepare structural layouts of projects

Prerequisite: Student should have internalized knowledge of the courses -Building Construction and Technology, Knowledge of Construction Materials and Reading skills of working drawings from their previous semesters syllabi.

Course Content
Unit No. 1 – (5%) <ul style="list-style-type: none"> • Special types of Shallow Foundations: Combined Foundations, types, concepts, structural behavior and reinforcement detailing. Raft Foundation, Concept, types & structural behavior reinforcement details • Deep foundations: Pile foundations - Types of piles based on materials types based on structural behavior like friction piles , end bearing piles etc., group of piles , pile cap

Unit No. 2 – (5%)

Slabs:

- Two way slab- concept, design steps, design problems
- Flat slab- concept , advantages, disadvantages ,elements
- Grid/waffle/Coffer Slab - concept ,code provisions
- Hollow block slab, Filler slab- concept and advantages

Unit No. 3 – (5%)

Stairs: Structural behavior and reinforcement detailing of following types of slab

- Waist slab
- Cantilever
- Folded plate/slabs
- Stringer beam type
- Circular & semicircular
- Helical
- Freestanding
- For the above types detailing in steel material also

Unit No. 4 – (25%)

Retaining Walls: Elements, structural behavior & reinforcement details of

- Cantilever retaining wall
- Counter fort type
- Buttress type
- Advantages & Disadvantages

Unit No. 5 – (20%)

Water Tanks: Structural behavior and reinforcement detailing of following types:

- Underground water tank(UGWT),
- water tank resting on ground,
- Elevated Service Reservoir (ESR),
- Shapes in plan: square, rectangular, circular, advantage and disadvantages,
- Aesthetical forms of E.S.R.

Unit No. 6 – (40%)

Concrete Mix Design:

- Parameters for mix design, Water cement ratio,
- Test for wet & hardened concrete
- Concept of ready Mix Concrete (RMC)
- Self-Compacting Concrete. (SCC)
- High strength concrete (HSC)

Unit No. 7 – (40%)

Constructional Methodology:

- Precast Concrete elements- advantages & disadvantages
- Prefabricated steel works- advantages & disadvantages
- Prestressed concrete structure- Concept, Pre-tensioning & post tensioning, advantages & disadvantages

Sessional work:

- Reinforcement detailing of Combined footing or Raft foundation or Pile & pile cap.
- Design of two-way slab, draw plan & section with reinforcement detailing.
- Structural detailing of any one type of staircase.
- Reinforcement detailing of any one type of Water tank or Retaining wall.
- Short notes (minimum Five) based on above syllabus.

References :

- Design of Reinforced Concrete structures by S.Ramamrutham.
- Reinforced Concrete Structures by Dr.I.C.Syal Dr.A.K.Goel
- RCC Designs by Dr.B.C.Punmia Ashok Kumar Jain Arun Kumar Jain
- IS Code 456

Course Title : Urban and Regional Planning	
Course Code : PE-705 **	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 2
Examination Scheme : Term work : 50 Theory : 100	Total marks: 150

Course Description:

The course Urban and Regional Planning deals with different concepts of Town planning/Settlements through timeline from ancient till 20th century. Course touches the journey of Town planning from Ancient till today with reference to India and rest of the world. Course Urban and Regional planning gives the basic idea about the Urban, Regional and Rural planning and how these are playing an important role with each other in the development. It gives the brief idea about city building and how it relates with Architecture. Course describes the current scenario of Indian planning approach with the introduction of various Acts, Rules, Regulations and laws. Course touches the basic topics which will help students in conceptual and technical understanding. For conceptual understanding course describes the basic ideas about the evolution of cities and settlements, why study of history is important for any contemporary approach of town planning, idea about Neighborhood, Housing, Rural Planning, various issues with application of various concepts, methods to improve urban condition. For technical understanding, brief outline of topics like survey, zoning, legislation in planning. Course gives the brief outline about the Transport land use.

Course Objectives :

- Main objective of the subject is to give an introduction and overview of Urban and Regional Planning and its dynamics with Architecture.
- Course maintains contact with Architectural profession and help to enhance the Architectural profession.
- This course helps students in order to encourage allied professional opportunities.
- Course helps students to encourage experience in planning and related areas.

Course Outcomes(COs):

At the end of the course the student should be able to :-

- Students will understand the basic terminologies with reference to Urban and Regional planning.
- Students will understand the urban processes involved in urban planning and development.
- Students will be able to understand different town planning concepts which will help them to understand the role of planning in Architecture.
- Students will be able to understand the technical part of architectural practice through the perception of urban and regional planning.
- Prerequisite: Student should have internalized knowledge of the course –Urban and Regional Planning.

Course Content
<p>Unit No. 1</p> <ul style="list-style-type: none"> Understanding the terms Urban, Rural and Regional. Basic idea about Urban planning, Rural planning and Regional Planning. Aim, objectives and Principles of Town planning.
<p>Unit No. 2</p> <ul style="list-style-type: none"> General understanding of Town planning concepts/ideas/principles which have evolved through ages (Ancient, Medieval, Renaissance-Neo Classical, etc.) outside India. Countries like Egypt, Greece, Roman towns, Sumerian cities. General understanding of Town planning concepts/ideas/principles which have evolved through ages (Ancient, Medieval, Renaissance-Neo Classical, etc.) with reference to India. Examples – Mohenjo-Daro, Mauryan Town planning and regional planning, Jaipur. Industrial revolution, Impact of industrial revolution on towns/cities. (Transportation, communication, factory town)
<p>Unit No. 3</p> <ul style="list-style-type: none"> Study of various different ideas/ concepts of town planning in 18th, 19th and 20th century – City beautiful Movement, concept of Robert Owen, Model towns, Garden city, Satellite town, Philosophy of Petrick Geddes – Geddian Triad, Urban renewal. Utopian solutions – Tony Garnier, Soriya Mata, F.L.Wright, Le Courbusier, Lewis Mumfod, C.A. Doxiadis Evolution of cities – Ecopolis to Nekropolis Classification of towns with reference to population and function, density.
<p>Unit No. 4</p> <ul style="list-style-type: none"> Survey, Zoning Survey – Definition, Necessity, types, methods to collect data Zoning – Definition, Classification Neighborhood, Housing Neighborhood – Definition, ideas of Neighborhood by Stein and Perry- Radburn Idea, Engelhardt, Jose Sert Housing – Concept, Types, Agencies for Housing schemes Slum
<p>Unit No. 5</p> <ul style="list-style-type: none"> Transport Planning Introduction, Network characteristics – The form, classification and hierarchy -Road patterns, Intercity roads, Intra city roads, other roads. Definition of terms – ROW, C/W, Kerb, roundabouts Grade separators, Junctions Mode characteristics – Modal split Transport survey Traffic survey, Parking survey Parking – on street and off-street parking Street lighting

Unit No. 6

- Legislation in planning
- Evolution of planning legislation in India, Bombay Town planning act, Model town planning act, M.R.T.P. Act 1966, Land acquisition act.
- M.R.T.P. Act 1966 – provisions,
- Development plan procedure of preparation, content of Development plan
- Regional plan procedure of preparation, content of regional plan
- Draft development plan, Interim development plan
- Eminent domain, Police power
- Development control, Building Bye laws

Unit No. 7

- Village Planning
- Necessity, objectives, various means in the various five-year plans, Problems in Rural Housing, Rural housing schemes.

References :

- Town planning by Abir Bandyopadhyay
- Fundamentals of Town planning by G.K. Hiraskar
- The Urban Pattern City planning and Design by Arthur Gallion, Simon Eisner
- M.R.T.P. Act 1966

Course Title : Research Methodology	
Course Code : PAECC-706	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 02
Examination Scheme : Theory - 50 Marks Term Work - 50 Marks	Total marks: 100

Course Description:

The course Research Methodology deals with architecture as a bridge in between theoretical knowledge and practical application. Research Methodology refers to a search for knowledge. Research Methodology is a scientific investigation or inquiry specially for new facts in any branch of knowledge. Research comprises defining and redefining problems, formulating hypothesis or suggested solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions and after carefully testing the conclusions application in practice. Study of this course serve the purpose, the search for knowledge through objective and systematic method of finding solution to a problem. The course is designed to arouse in the student a sense of curiosity to discover answers to questions through application of scientific procedures.

Course Objectives :

- To introduce the significance of research in architecture and to aware the students the relation in between theoretical and practical knowledge with each other how they are co related.
- The students will be aware about the importance of critical inquiry as a way of gaining knowledge and adding to it through research. To aid the students in adopting skills in writing.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Students are able to **comprehend** the relationship between the practical and theoretical aspects in Architecture.
- Students are able to **formulate** a project topic at the level of an undergraduate level.
- Students are able to **structure** a chosen topic in the context of a research.
- Students are able to **acquaint** with the terms and principles of architectural research and to strengthen their knowledge in Architecture.

Prerequisite: Student should have internalized knowledge of all areas of architecture so that they can start their work of research on a particular topic to come up with specific outcome.

Course Content
Unit No. 1 – (5%) Introduction to Research, Meaning of research, its significance in Architecture, Relationship between Design and Research, Types of research in Architecture
Unit No. 2 – (10%) Research Design – Components of research Design, Formulating Research questions, Hypothesis, Methods of Data collection, analyzing the data. Defining scope and limitations Significance of research outcome Formulating Aim and objectives for research
Unit No. 3 – (25%) Literature study and research Significance of literature study in research, different sources of information such as books, journals, newspapers, internet, magazines, audio recordings, etc. Referencing and documenting the bibliography
Unit No. 4 – (25%) Writing Research papers – Abstract writing Structure of paper – introduction, methods and conclusion
Unit No. 5 – (25%) Report Writing – Significance of report writing, Different steps in report writing, layout of Research report, Types of reports, Different sections of report, technical writing and language, formatting of report, Plagiarism.

Sessional work:

- Synopsis writing
- Conference paper/Research paper writing
- Notes based on units

References :

- Research Methodology: Methods and Techniques by Kothari, C.R. Kothari, Gaurav Garg, 2019, New Age International Limited, Publishers London -New Delhi- Nairobi
- Architectural Research Methods-Second Edition, Linda Groat and David Wang, 2018, Wiley India Pvt. Ltd, New Delhi
- Research Methodology -A step by step guide for beginner – 3rd edition, Sage Publications, 2011
- Research Design: Qualitative, quantitative and mixed methods approaches by Creswell, J.W. 2nd Edition 2003, Thousand Oaks:Sage

Course Title : Project Management	
Course Code : PE-707-A	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 02
Examination Scheme : Theory - 50 Marks Term Work - 50 Marks	Total marks: 100

Course Description:

The courses Project Management deals with Introduction & necessity of Project Management, Purpose, goal & objectives of project management. The course Project Management, includes different management techniques suitable for planning and constructional projects. The course will develop an understanding of the management system for accomplishing the task efficiently in terms of both time and cost. The role of Project Management in an Architect's professional life can be multifarious depending upon type of consultancy, owner ship of firm etc. The most common ones are as follows:

Office Management: Managing his / her own office and field staff; staffing, allocating space, funds, equipment, etc. and establishing, managing and promoting ones business.

Design Management: Coordinating with all the stakeholders, consultants and others having a say in design processing order to arrive at a final program in a timely and efficient manner.

Project Management: The scope of activities will depend upon the Project Delivery Method deployed but broadly deals with all the activities concerned with the implementation process subsequent to the preparation of design and construction drawings.

Course Objectives :

- The student will understand different management techniques suitable for planning and Constructional Projects.
- To understand the management system to overcome the problems like Cost overruns, missed deadlines, quality/safety issues and lack of planning by construction firms leading to loss of return and customers / share holders' trust.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Enumerate the attributes of a project, phases in project cycle, stake holders involved and their management.
- Prepare project schedule through identification of critical tasks and path in a project.
- Discuss the tools and skill-sets required for managing office set-ups.

Course Content
<p>Unit No.1- Introduction To Project Management</p> <ul style="list-style-type: none"> • Project management concepts-objectives, Planning, Scheduling, Controlling and Re-viewing. • Role of decision in project management. • Purpose, goal & objectives of project management. • Phases involved in Project lifecycle i.e. from inception phase to the Post-construction phase. • Project Delivery Methods. • Various stakeholders in construction industry and the roles and responsibilities. • Traditional management system, Gantt's /Bar and Load chart. • Development of bar chart, Merits and Demerits.
<p>Unit No. 2 – Introduction To Modern Management System</p> <ul style="list-style-type: none"> • Introduction to Critical path method • Network, Concept of event, activity, time estimates, float and slack. • PERT network, introduction to the theory of probability and statistics. Probabilistic time estimation for the activities for the activities of PERT Network. • Difference between CPM & PERT technique.
<p>Unit No. 3 – Managing safety in construction</p> <ul style="list-style-type: none"> • Introduction to construction site conditions in India. • Guidelines for construction safety. • Site Layout for construction Works, Site office & management. • Types of Construction Equipment(Introductory): standard versus special equipment - earth moving(JCB, tractors, excavators, drag line, trenching equipment, etc.,) transporting (various types of trucks), spreading and compacting (motor graders and various types of rollers) and concreting equipment (including concrete mixers, transporting and pumping equipment), hoisting machines, formwork, shoring material etc.
<p>Unit No. 4 – Computerized project management :(Introductory)</p> <ul style="list-style-type: none"> • Application of Computers in Project management for calculation of material requirement and labour requirement Using Abstract Sheet of typical project.

References :

- Construction project management :a practical guide to field Construction Management by S. Keoki Sears, Richard Hudson Clough, Glenn A. Sears.
- Construction Project Management: Planning, Scheduling and Controlling by K. K. Chitkara.
- S.P. Mukhopadhyay, "Project Management for architects and Civil Engineers", IIT, Kharagpur, 1974.
- Jerome D. Wiest and Ferdinand K. Levy, "A Management Guide to PERT/CPM", prentice hall of Indian pub. Ltd. New Delhi 1982.
- SR. A. Burgess and G. White, "Building production and project management", the construction press, London 1979.
- The A to Z of Practical Building Construction and its Management by Sandeep Mantri.

Course Title : Vernacular Architecture	
Course Code : PE-707-B	Semester : VII
Teaching Scheme : L-01 St-02 Total:03	Credits : 2
Examination Scheme : Term work: 50 External: 50	Total marks: 100

Course Description:

Vernacular architecture is architecture for the local needs using local materials and construction techniques expressing culture and local traditions. The aim of the course is to study the various vernacular architecture forms in the various regions of India & World.

Course Objectives :

- Identify and conserve the untapped values and principles of vernacular architecture in the evolution of new architectural theories
- Study various aspects of vernacular building , to analyze and apply the findings in contemporary buildings.

Course Outcomes(COs):

At the end of the course the student should be able to:

- Understand the aspects of vernacular architecture
- Apply theories of vernacular aspect in contemporary architectural designs.

Prerequisite: Student should have internalized knowledge of the basics of vernacular architecture

Course Content
Unit No. 1 Introduction to Vernacular architecture it's nature, purpose and scope. With respect to traditional wisdom of building analytical review, classification, salient features and important contributions in evolving sustainable practice solutions.
Unit No. 2 Study of examples of Vernacular architecture in history of world architecture (outside Indian subcontinent) to understand evolution of building forms based on functions, building materials and construction techniques, art & crafts, the local conditions, traditions, climate & geography, religion & culture in the period when they were built.
Unit No. 3 Case studies of works of architects in contemporary world architecture (outside Indian subcontinent) whose works are influenced by the Vernacular Architecture of the region.
Unit No. 4 Study of examples of Vernacular architecture in history of architecture in Indian subcontinent; to understand evolution of building forms based on functions, building materials and construction techniques, art & crafts, the local conditions, traditions, climate & geography, religion & culture in the period when they were built.
Unit No. 5 Case studies of works of architects in contemporary Indian architecture, whose works are influenced by the Vernacular Architecture of the region.

Unit No. 6

Design assignment based on vernacular characteristics & principles, having built up area between 200 – 250 sq.m.

References :

- Vernacular Architecture: An Illustrated Handbook By R.W. Brunskill 4th ed 2000
Publisher Faber and Faber
- Architecture Without Architects: A Short Introduction to Non-pedigreed Architecture by
Bernard Rudofsky
- Bhatia, Gautam, Laurie Baker, Life, Work, Writings, New Delhi, India, 1994 Publisher
Penguin Books
- Voluntary Agencies and Housing: A Report on Some Voluntary Agencies Working in the
Field of Housing in India, by Madhao Achwal. Published 1979 UNICEF
- Handmade Houses and Other Buildings The World of Vernacular Architecture By John
May 2010 Thames & Hudson
- Hassan Fathy- Architectural Monographs, By James Steele 1988 St. Martin's Press

Course Title : Architectural Conservation	
Course Code : PC -708 - A	Semester : VII
Teaching Scheme : L-01 St-02 Total:03	Credits : 2
Examination Scheme : Term work: 50 External: 50	Total marks: 100

Course description :

The aim of the course is to introduce the various issues and practices of Conservation, to familiarize the students with the status of conservation in India. To give a brief introduction of various agencies involved in the field of conservation worldwide and the policies. Students shall be briefed with the outline of the status of conservation and restoration practice in the country and the various guidelines for the preservation, conservation and restoration of buildings.

Course Objectives :

- To provide an overview of built heritage, its conservation and documentation.
- To study the principles of heritage conservation and documentation

Course Outcomes(COs):

- Understand the concept of heritage conservation of historical buildings, their values, architectural characteristics, and the theory and practice of architectural conservation in India and abroad.
- Develop a sensitivity towards the heritage and its conservation.
- Assignments shall be completed in the group work to cover the main objectives along with the individual understanding of the concept of architectural conservation with proper conclusions.

Course Content
Unit No. 1 Introduction To Architectural Conservation <ul style="list-style-type: none"> • Introduction to architectural conservation, understanding the heritage values, definitions and ethics in conservation. • Introduction to architectural conservation-movements, agencies, various charters and the principles derived by – ICCROM, ICOMOS, UNESCO, etc. • Understand the emerging concepts in the Heritage conservation- Living Heritage and Cultural Landscape • Understand the concept of building conservation, area conservation, urban conservation
Unit No. 2 Conservation Legislations <ul style="list-style-type: none"> • Guidelines followed for the conservation procedure, study of various acts, central and state government policies, legislations, role of ASI, SDA, INTACH in architectural conservation.
Unit No. 3 Preparatory Procedure For The Conservation, Methods And Techniques <ul style="list-style-type: none"> • Conservation procedure in India, Understand the listing or grading of heritage structures, basic principles in conservation, ethics and values in conservation of historic buildings, documentation of heritage structures, degrees of intervention, the conservation team, inspection of historic structures, structural aspects of the historic buildings, understand the causes of decay in materials and structure
Unit No. 4 Methodology Of Conservation Procedure

<ul style="list-style-type: none"> • Initial inspection and study of further documentation of a heritage structure. • Preparation of report
Unit No. 5 Appraisal of Heritage building <ul style="list-style-type: none"> • Make an appraisal of a medium size heritage building w.r.t. above aspects and suggest the adaptive reuse of that structure and conservation management strategy

References :

- Conservation of Historic Buildings, Third edition, Bernard M. Feilden, Architectural Press Publications
- Approach to Conservation and restoration Specific Focus on Cultural Heritage of Shimla, Saumya Sharma
- Conservation and Reuse Proposals for Heritage Buildings, Misirlisoy Damla
- Conservation Of Cultural Property, Ranjeet Pratap Singh
- Heritage Conservation: Preservation and Restoration of Monuments, by [N.L. Batra](#)
- Protection, Conservation and Preservation of Indian Monuments by [Shanti Lal Nagar](#)
- Conservation of Cultural Heritage by [A K Jain](#)
- Conservation and Management of Cultural Heritage, D. Dayalan, Aryan Books International
- INTACH Journal of Heritage Studies – Approaches to Conservation in India (Volume 1 – 2015)
- Conservation Briefs, Identification and Documentation of Built Heritage in India, Divya Gupta

Course Title : Road safety & Civic Sense	
Course Code : PC -708 -B	Semester : VII
Teaching Scheme : L : 01 St : 02 Total:3	Credits : 3
Examination Scheme : Term work: 50 External: 50	Total marks: 100

Course Description:

To familiarize students with large scale Architectural building projects with emphasis on Horizontal and Vertical Planning along with building services & systems, architectural controls and building bye laws.

Course Objectives :

- To introduce the concepts Principles tools and aids of Road Safety and Civic Sense to the students of B.Arch.
- To acquaint them with the design and safety standards for roads. Also inculcate the practice of safe road behavior and civic sense among them.

Course Outcomes(COs):

- Understand typologies Introduction to Road Safety, Typology of Roads : Components and Design , Intersections , Pedestrian Circulation and Barrier Free Design , Traffic signs and Road Markings, Traffic Signals Traffic Control Aids Street Lighting etc. and implement them in Urban design & Advanced Design studio work.

Course Content
Unit No. 1 – (20 %) Introduction to Road Safety Road as an active space, Types of Users, User Behavior, Sensory Factors like Vision and Hearing in User Behavior. Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelres, Auto Rickshaw, Bicycles and Cycle Rickshaw, Non-Motorised Vehicles. Vehicle Characteristics: Dimensions, Weight, Turning Radil, Braking Distance, Lighting System, Tyres etc.
Unit No. 2 – (20 %) Typology of Roads : Components and Design Road Classification : National Highways, State Highways, Disttrict Roads, (MDR and ODR) Village Roads Urban Road Classification : Expressways Arterial Sub-Arterial Collector Local Service Roads One-way , Two way etc Mountainous Roads, Speed Limits of the Road types. Design of Roads : Cross Sectional Elements Right of Way Carriageway, Median Shoulders , Sidewalk Lanes Cycling Track Green Strip Curbs, Camber etc. Spatial Standards for the Cross-Section Design. Relationship between Road Design and Road Safety.

<p>Unit No. 3 -(20 %)</p> <p>Intersections Types of Road Intersections: Basic Forms of at-grade Junctions (T.Y. Staggered skewed Cross Scissors Rotary etc. Grade Separated Junctions (with or without interchange) Three Leg, Four Leg, Multi-Leg etc.</p> <p>Design of Intersections : Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional Lanes, Pedestrian Crossings Median Openings Traffic Calming Components like Speed Breakers and Table Top Crossings etc.</p> <p>Design Considerations for Diverging Merging and Weaving Traffic.</p> <p>Location and Design for Traffic Signals.</p>
<p>Unit No. 4 – (20 %)</p> <p>Pedestrian Circulation and Barrier Free Design</p> <p>Requirement of Pedestrian Infrastructure : Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings Pedestrian Bridges Subways Cycle Tracks etc.</p> <p>Barrier Free Design : Location and Design Standards for Ramps for Wheel Chair Access, Other Provisions like Tactile for Visually Challenged etc.</p> <p>Safety Provisions : Pedestrian , Anti Skid Flooring Pedestrian Signal Walk Button etc.</p>
<p>Unit No. 5 – (20 %)</p> <p>Traffic signs and Road Markings</p> <p>Types of Traffic Signs : Principles and Types of Traffic Signs Danger Signs Prohibitory Signs Mandatory Signs Informatory Signs Indication Signs Direction Signs Place Identification Signs Route Marker Signs, Etc. Reflective Signs LED Signs Static and Dynamic Signs</p> <p>Types of Road Markings : Centre Lines Traffic Lane Lines Pavement Edge Lines No Overtaking Zone Markings Speed Markings Hazard Markings Stop Lines Pedestrian Crossings Cyclist Crossings Route Markings Material Colour and Typography of the Markings.</p>
<p>Unit No. 6 – (10 %)</p> <p>Traffic Signals Traffic Control Aids Street Lighting</p> <p>Traffic Signals : Introduction Advantages and Disadvantages</p> <p>Signal Indications , Vehicular Pedestrian and Location of the Signals.</p> <p>Signal Face , Illustration of the Signals Red Amber Green Signals and its Significance Flashing Signals Warrant of Signals Co-ordinate Control of Signals.</p>

References :

1. Urban & Regional Planning - Fourth Edition by Peter Hall.
2. Fundamentals of Town Planning by G.K. Hiraskar
3. Textbook of Town planning by Abir Bandopadhyay
4. The Urban Pattern city planning and Design by Gallion Arthur.

**FOURTH YEAR ARCHITECTURE ENGINEERING –
CBCS PATTERN**

SEMESTER – VIII																									
Sr No	Course (Subject Title)	TEACHING SCHEME										EXAMINATION SCHEME													
		THEORY				TUTORIAL				PRACTICAL/STU DIO			THEOR Y					VIVA-VOCE			TERM WORK				
		Credit	No. of Lectur	Hours		Credit	No. of Lectur	Hours		Credit		No. of Lectur	Hours	Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Max	Min		
SEMESTER – VIII																									
1	PAECC –801 Practic al Trainin g and Report									15	90 working days Traini ng								100	45	100	50			
	TOTAL									15								100		100					
	TOTAL	10	10	10						32				350				450		600					

*Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

Candidate contact hours per week : 30 Hours(Minimum)	Total Marks for B.Arch.-IV;Sem VII & VIII : 1400
Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60Minutes	Total Credits for B.Arch.-IV (Semester VI I& VIII) : 42
There shall be separate passing for theory and practical (term work)courses.	

lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60Minutes)
- Per Semester Periods per week –30
- Total week – 15 weeks per semester

CIE- Continuous Internal Evaluation ESE – End Semester Examination.

Course Title : Practical Training and Report	
Course Code : PAECC - 801	Semester : VIII
Teaching Scheme : 90 working days Training	Credits : 15
Examination Scheme : TH :0 TW:100 Viva:100	Total marks: 100

Course Description

- All students who have appeared for Fourth Year B. Arch. Semester VII Exam will proceed for Final Year B-Arch Semester VIII - Practical Training
- The candidate will enroll himself at the college by paying his full fees and obtain permission to join for practical Training.
- The students will have to complete practical training under a registered architect in Private Office Corporate office / Government Organizations under mentorship of an architect having experience of at least 5 years with the permission and approval of the Principal HOD/Director of the college. The period of practical training shall be of one semester of 16 weeks /96 working days.
- Training in Foreign Country shall be done under the Registered Architect of that Country and to be approved and monitored by the Head of the University or Institution
- At the end of each Semester the candidate will have to submit to the department, the training report is stipulated format with drawings) along with the certificate by the employer to the effect that he/she has completed training satisfactorily for the stipulated period.
- The Student has to appear for the internal & external viva examination as per the exam schedule announced by the University at the end of the Semester
- The student should attend the office regularly and work full-time and should follow the discipline and days/ hours of the organization. He is also expected to keep his eyes open and observe general working of the office whole. His minimum attendance in the office should be 96 full working days.
- During this period, the student will maintain a log-book as prescribed and it shall counter signed by Principal of that office alongwith the professor-in-charge. The candidate is expected to work in an office or on work site during this period, in accordance with the discipline of the organization where he is working. The student should send a fortnightly report on his training, counter signed by the Principal of the office to the institution. The candidate will enroll himself at the college by paying his full fees and the successful completion of his period will be certified by the Principal of the College based on his recorded in his log-book.
- If a student feels that he is not getting proper training in an office, then with the permission of the Head of the Department, he may go for training in some other office without break and give due intimation of at least a fortnight to the original office.

Course Objective

- The purpose of the practical training is to expose the students to practical field of design and construction understand the application of academic knowledge acquired in the college.

Course Outcomes (COs):

At the end of the course the student should be able to:

- Gain practical knowledge of all the theory courses dealt in earlier semester.
- Acquire skill sets required for working of an Architect's Office.

Content
<ul style="list-style-type: none">• Students are able to understand Day-to-day working of an Architect's Office and Correspondence.• Students are able to understand Preliminary approval drawings & Presentation techniques.• Students are able to understand Municipal approval Drawings and detailed drawings.• Students are able to understand Working Drawings and detailed drawings in terms of construction , materials used & services.• Students are able to understand Preparing estimates, checking of contractor's bills.• Students are able to understand Site visit for Supervision of the work.• Students are able to understand Item rates, labor rates and cost of standard materials available in the market.• Students are able to appreciate Historic & Vernacular buildings