REVISED DIPLOMA CURRICULUM OF ARCHITECTURAL ASSISTANTSHIP (PART-II)

For the State of Meghalaya

(2024-2025)

National Institute of Technical Teachers' Training & Research
Block – FC, Sector – III, Salt Lake City, Kolkata – 700 106

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Prog. Name: Architectural Assistantship

Semester - III

Sl. N	Category of course	Code	Course Title	Study Scheme				Evaluation Scheme							Total Marks	Credit
					Contact Hour/Week			Theory				Practical				
					L	T	P	End Exam	Progressive Assessment			End Exam	Progressive Assessment			
									Class Test	Assign -ment	Atten dance		Sessio nal	Viva		
1	Program Core Course	AAPC201	Analysis of Structure	-	3	0	0	60	20	15	5	0	0	0	100	3
2		AAPC203	Climatology & Environmental Science	-	3	0	0	60	20	15	5	0	0	0	100	3
3		AAPC205	Building Construction -I	-	2	0	2	60	40	0	0	0	50	0	150	3
4		AAPC207	Surveying	-	2	0	0	60	20	15	5	0	0	0	100	2
5		AAPC209	Surveying Lab		0	0	4	0	0	0	0	40	40	20	100	2
6		AAPC211	Architectural Design-I	-	0	0	4	0	0	0	0	0	100	0	100	2
7		AAPC213	Building Services-I	-	3	0	0	60	20	15	5	0	0	0	100	3
8		AAPC215	Architectural Graphics	-	0	0	4	0	0	0	0	0	100	0	100	2
9		AAPC217	History of Architecture	-	1	0	2	50	0	0	0	0	25	25	100	2
TOTAL				**-**	**14**	**0**	**16**	**350**	**120**	**60**	**20**	**40**	**315**	**45**	**950**	**22**

Prog. Name: Architectural Assistantship

Semester - IV

Sl. No	Category of course	Code	Course	Study Scheme				Evaluation Scheme							Total Marks	Credit
					Contact Hour/Week			Theory				Practical				
					L	T	P	End Exam	Progressive Assessment			End Exam	Progressive Assessment			
									Class Test	Assignment*	Attendance		Sessional	Viva		
1	Program Core Course	AAPC202	Design of Structure	-	3	1	0	60	20	15	5	0	0	0	100	4
2		AAPC204	Building Construction -II	-	2	0	2	60	40	0	0	0	50	0	150	3
3		AAPC206	Building Services-II	-	3	0	0	60	20	15	5	0	0	0	100	3
4		AAPC208	Architectural Design - II	-	0	0	6	0	0	0	0	0	100	0	100	3
5		AAPC210	Working Drawing-I	-	1	0	6	0	0	0	0	0	150	0	150	4
6		AAPC212	Auto CAD	-	0	0	4	0	0	0	0	0	100	0	100	2
TOTAL				**-**	**09**	**01**	**18**	**180**	**80**	**30**	**10**	**0**	**400**	**0**	**700**	**19**

SEMESTER - III

ANALYSIS OF STRUCTURE

L	T	P		Course Code No.: **AAPC201**
3	0	0		
Total Contact hrs.: Lecture:45 Tutorial:0 Practical: 0 **Credit : 3**			**Total marks: 100**	**Theory:** End Term Exam.:60 P.A: 40

RATIONALE:

The course is required to give basic inputs and principles of structural designs of buildings.

LEARNING OUTCOME:

After completion of this course, the students will be able to

- Calculate Shear force and bending moment of determinate beams
- Calculate Slope and deflection of beams
- Analyse both determinant and in-determinant beams
- Calculate deflection of different structural members

COURSE CONTENT DETAILS

UNIT NO	CONTENT	TIME ALLOTTED (HRS.)
UNIT –I	**Introduction:** Aim, object and Scope of study the subject, introduction to load-deformation,shear strain curves for some common materials	**2**
UNIT –II	**Shear force and bending moment of determinate beams** **2.1** Define a beam **2.2** Explain various types of supports **2.3** Explain various types of beams State and illustrate the concept of shear force, bending moment, Shear force and bending moment diagram in case of cantilever and simply supported beam subjected to concentrated load and U.D.L. acting separately & together.	**10**
UNIT –III	**Bending stress in beams** **3.1** Show the use of pure bending equation (No derivation) for followings	**06**

	a) Rectangular solid and hollow sections b) Circular, solid and hollow sections	
UNIT –VI	**Slope and deflection of beams by double integration method** **4.1** State and explain the differential equation of elastic curve (expression only) **4.2** State and explain the sign conventions for slope and deflection **4.3** State and explain the slope and deflection calculation for simplysupported beam subjected to single concentrated load at mid span and U.D.L. over entire span.	**12**
UNIT –V	**Shear force and bending moment of indeterminate beams (symmetrical loadings)** **5.1** Define Indeterminate structures, how to determine the degree of indeterminacy, Differentiate between statically determinate & indeterminate structures **5.2** Show the analysis of fixed beam carrying point load **5.3** Show the analysis of fixed beam carrying U.D.L. over entire span **5.4** Illustrate the use of Clapeyron's three moment equation to solve continuous beams having two spans only subjected to symmetric point load and U.D.L. (No over hangs).	**15**

REFERENCE BOOKS:

1. Theory of Structure - by S. Ramamrutham
2. Theory of Structure - by R. S. Khurmi & J. K. Gui
3. Theory of Structure - by V. Rajaraman
4. Programmed Text in Strength of Materials -by TTTI, Chandigarh.
5. Analysis of structures, Vol. I - by V.N.Vazirani and M.M.Ratwani
6. Introduction to Mechanics of Solids -by E. P. Popov
7. Elements of Strength of Materials - by S. P. Timoshenko and D. H. Young
8. Strength of Materials – by Surendra Singh
9. Basic Structural Analysis – by Reddy
10. Intermediate Structural Analysis – by C.K. Wang

CLIMATOLOGY & ENVIRONMENTAL SCIENCE

L	T	P		Course Code No.: **AAPC203**
3	0	0		
Total Contact hrs.: Lecture:45 Tutorial:0 Practical: 0 **Credit : 3**			**Total marks: 100**	**Theory:** End Term Exam.:60 P.A: 40

RATIONALE:

In this age of environmental concern, knowledge of climatology is required to develop climatically and ecologically sustainable architecture. This course provide the learners an opportunity to gain knowledge about that.

LEARNING OUTCOME:

After completion of this course, the students will be able to

- Explain various climatic conditions of earth andits application in building design in different climatic zones.
- Discuss ecology and how to maintainan balance.

COURSE CONTENT DETAILS

1.0 Climatic Condition

- State and explain elements of climate
- State and explain Temperature Date and measurement
- State and explain Humidity Use of psychometric chart
- State and explain Vapor pressure
- State and explain Precipitation
- State and explain Driving rain
- State and explain Sky condition
- State and explain Solar radiation measurement date earth thermal balance
- State and explain wind measurement and date global wind pattern influence of topography
- Discuss the special characteristic earth quake storm etc.
- Vegetation
- Brief classification of tropical climate

2.0 Element of site climate.Thermal Factor

- Explain the *Thermal comfort factors*

- Explain the following thermal quantities
- Heat
- Conductance
  - Surface conductance.
  - Transmittance.
  - Convention.
  - Radiation.
  - Explain briefly about heat exchange in buildings.

3.0 Climatic Control in Building

- Give brief idea about different means of mechanical control Heating, Ventilation, cooling, Air-conditioning
- Discuss briefly about structural control. Means of solar control-curtains, blinds, glasses
- Explain Sun's position-Solar angles, Horizontal & vertical shadow angle, Angle of Incidence, solar chart, sun path diagram
- Discuss Shading devices -Vertical devices, Horizontal devices & egg-cratedevices
- Give brief idea about ventilation and air movement
- Illustrate different application under different climatic condition.

4.0 Ecology

- Discuss Ecology *of human habits*
- Give introduction to sustainable architecture
- Give introduction to Energy efficient and solar passive architecture.
- Introduction to Green Building Concept

REFERENCE BOOKS:

1. Climatology by Otto. H. Koeinsberge.
2. Environmental Services in Architecture by Kinzey & Sharp.

BUILDING CONSTRUCTION – I

L	T	P		Course Code No.: **AAPC205**
2	0	2		
Total Contact hrs.: Lecture:30 Tutorial:0 Practical: 30 **Credit : 3**			**Total marks: 150**	**Theory:** End Term Exam.:60 P.A: 40 **Practical:** P.A. : 50

RATIONALE:

The course is required to develop the knowledge and know how about different constructional methods, skills, and technology in different types of building constructional activities.

LEARNING OUTCOME:

After the completion of the course students will be able to :

- Use the knowledge of stone masonry in the field of construction
- Describe the methods brick construction and use it in field
- Explain the construction work by using cement concrete
- Differentiate between types of foundation and their construction details.
- Draw the diagrams of joinery work and list the items used in carpentry work.
- Classify different doors & windows and their construction details.

COURSE CONTENT DETAILS

UNIT NO. & TITLE	CONTENT	TIME ALLOTTED (HRS.)
UNIT-I	**Stone masonry** Classify different types of stones used in building construction Describe different types of stone masonry Describe different types of tools used in stone masonry Describe various types of stone dressing. Describe the principles of stone masonry.	**06**
UNIT-II	**Brick masonry** Describe various types of bricks used in masonry. Illustrate the principles of brick masonry. Describe with sketches various types bonds in brick masonry State and explain different types of tools and equipment in brickmasonry.	**06**

UNIT-III	**Cement concrete construction** Describe various types of materials used in cement concrete construction Describe various types of Mixing, placing and compacting cementconcrete. Explain how the curing of cement concrete work is done. State and explain different types of cement concrete construction : Case-in-site and precast State the advantages of cement concrete Explain different types of use of reinforcement in cement concrete work Describe various types of defects in cement concrete construction andtheir removal.	**06**
UNIT-IV	**Foundation** Describe various types of simple foundations for masonry load beamingwalls and piers Describe various types of different isolated and combined foundation inR.C.C. Describe various types of raft foundation Draw the different parts of pile foundation and its type Describe and draw various types of grillage foundation with constructiondetail.	**06**
UNIT-V	**Carpentry and Joinery** Describe various types of tools used in carpentry work Describe various types of types of joineries used in timber work.	**05**
UNIT-VI	**Doors and windows** State define different types of Doors & windows Explain & draw various types of Ledge and braced door Explain & draw various types of Ledge and frame door Explain& draw various types of Ledged, framed and brace doors Explain& draw various types of framed, paneled doors and flush doors,swing door, sliding door, sliding folding door, collapsible gate, rolling shutter Aluminum frame door and PVC doors Explain & draw various types windows.	**08**
UNIT-VII	**Damp proofing & water proofing treatment** Explain causes of dampness - defects caused by dampness Explain methods of prevention of dampness Explain damp proofing treatment for (i) foundation & plinth (ii) basement Explain water proofing treatment to flat roofs, parapet, wall & windowsill & chhajja.	**08**

RECOMMENDED BOOKS:

1.0 Building construction by W.B. Mackey.(vol.I&II)
2.0 Building construction by Rangawalla.
3.0 A Text Book of Materials & Construction/TTTI
4.0 A Text Book of Building Construction/S. P. Amora & S. P. Bindra

SURVEYING

L	T	P		Course Code No.: **AAPC207**
2	0	0		
Total Contact hrs.: Lecture:30 Tutorial:0 Practical: 0 **Credit : 2**			**Total marks: 100**	**Theory:** End Term Exam.:60 P.A: 40

RATIONALE:

Survey is preamble to civil Engineering and architecture. Knowledge of surveying is required to prepare a site plan / contour plan of an existing site or campus containing buildings.

LEARNING OUTCOME:

After completion of the subject students will be able to :

- Use principles of chain surveying and the instruments for it along with their correctness checks.
- Compass (prismatic only) and use it.
- Calculate the bearings of line and convert them from one system to other.
- Use plane table and its accessories for traversing.
- Dumpy level and use it for taking the levels of different points on ground.
- Define contour line, internal and explain various characteristics of contouring anduse of contour lines.
- Introduction to Transit theodolite and Total Station

COURSE CONTENT DETAILS

UNIT NO. & TITLE	CONTENT	TIME ALLOTTED (HRS.)
UNIT-I	**Chain Survey** 1.1 State and explain the Principles of chain surveying. 1.2 Instruments used theirdescription and checking their correctness. 1.3 State and explain the ranging and chaining of a line State and explain the errors in chaining and solve problem State and explain the offsets	**04**
UNIT-II	**Compass Survey** 2.1 Describe and explain the prismatic compass, its adjustment and use.	**04**

UNIT-III	**Bearings** **3.1** Explain W.C.B. and R. B. and conversion from one to another **3.2** Explain Fore and back bearings and their conversion **3.3** Explain Computation of angles from bearings and bearing from angles **3.4** Explain Local attractions, its determination and necessary correction to the bearings.	**06**
UNIT-IV	**Plane Table Survey** **4.1** Explain and state the orientation by back sighting and by magnetic needle **4.2** Describe the methods of plane table survey by **4.3** Traversing method **4.4** Resection method	**06**
UNIT-V	**Leveling** **5.1** Conduct the study of levels (Dumpy level) **5.2** Explain the principles of leveling **5.3** Describe the temporary adjustment of dumpy level **5.4** Computation of Levels by H.I. method and rise and fall method.	**06**
UNIT-VI	**Contouring** **6.1** Explain the contour line, contour internal, horizontal equivalent **6.2** Explain the various characteristics of contouring **6.3** Explain the interpolation of contours by various methods.	**04**
UNIT-VII	**Modern Survey Instruments** **7.1** Introduction to Theodolite **7.2** Introduction to Total Station **7.3** Principles to Total Station and its advantages **7.4** Application of Total Station in surveying	**15**

REFERENCES

1. Surveying & Levelling Vol.I - by T.P.Kanetkar & S.V.Kulkarni; Griha Prakash,Pune
2. Surveying Vol.I - by B.C.Punmia; Laxmi Publications, Delhi-6
3. A text book of surveying and levelling - by R.agor; Khanna Publishers, Delhi-6
4. Surveying and Levelling - by Hussain and Nagraj; S.Chand & Co, Delhi-
5. Surveying & Levelling - by S.C.Rangawala; Charotar Book Stall, Pune
6. Surveying & Levelling - by N.N. Basak; Tata Mc. Graw Hill
7. Plane Surveying - by A. De; S. Chand & Co.

SURVEYING LAB

L	T	P		Course Code No.: **AAPC209**
0	0	4		
Total Contact hrs.: Lecture:0 Tutorial:0 Practical: 60 **Credit : 2**			**Total marks: 100**	**Practical:** End Term Exam.:40 P.A: 60

RATIONALE

This course gives the learners an opportunity of applying the knowledge gained in the concerned theory through field-oriented practice.

LEARNING OUTCOME:

After completion of the survey practical students will be able to :

- Do the chaining of a field and its different aspects
- Set, read and find bearing by use of prismatic compass
- Survey a traverse using the plane table
- Do the levelling work of a field with different stations inside it
- Prepare contouring of a small plot of area.

COURSE CONTENT DETAILS

UNIT NO & TITLE	CONTENT	TIME ALLOTTED (HRS.)
UNIT-I	**Chain Surveying** Do the Ranging of a line more than 100 mt. Length and measuring its correct length applying chain corrections. Take offsets of objects on both sides of line plotting the above details. Explain how to overcome the obstructions in chaining in the following cases Vision free, but chaining obstructed (Pond, river etc.) Chaining free, vision obstructed (Raised ground, hills etc.)	**16**
UNIT-II	**Compass Survey** Set the instrument and show how to take readings Find the bearing of line and applying check Find the angles Demonstrate the closed traversing of a small plot (without interior details)	**08**

UNIT-III	**Plane Table Surveying** Set the instrument with orientation Demonstrate the Plane table traversing by different methods	**06**
UNIT-IV	**Levelling** Demonstrate the temporary adjustments of a dumpy level and reading the staff Find the exact level difference between two stations visible from the centre of instrument station Demonstrate the fly levelling between two stations with three setting.	**14**
UNIT-V	**Contouring** Demonstrate the contouring of a small plot and plotting the contour by various methods (Direct & indirect) Sessional work: All practical work as done during the course Draw the layout of a small residential building Prepare a site plan of an existing campus.	**08**
UNIT-VI	**Total Station** Demonstrate the use of Total Station in Traversing Demonstrate the use of Total Station in Vertical Distance Measurement and setting Out Works	**08**

REFERENCE BOOKS:

1. Surveying & Levelling Vol.I - by T.P.Kanetkar & S.V.Kulkarni; Griha Prakash, Pune
2. Surveying Vol.I - by B.C.Punmia; Laxmi Publications, Delhi-6
3. A text book of surveying and levelling - by R.agor; Khanna Publishers, Delhi-6
4. Surveying and Levelling - by Hussain and Nagraj; S.Chand & Co, Delhi-
5. Surveying & Levelling - by S.C.Rangawala; Charotar Book Stall, Pune
6. Surveying & Levelling - by N.N. Basak; Tata Mc. Graw Hill
7. Plane Surveying - by A. De; S. Chand & Co.

ARCHITECTURAL DESIGN – I

L	T	P		Course Code No.: **AAPC211**
0	0	4		
Total Contact hrs.: Lecture:0 Tutorial:0 Practical: 60 **Credit : 2**			**Total marks: 100**	**Practical:** End Term Exam.:00 P.A. :100

RATIONALE:

The course is designed to develop designing and drafting ability, beginning with the basic need of human being that is shelter. Different aspects of Shelter designing from function to form is practiced by presenting scaled drawings in different medium.

LEARNING OUTCOME:

After completion of the course, the students will be able to design a small residence (two/multi storied) and a duplex bungalow.

COURSE CONTENT DETAILS

UNIT NO	CONTENT	TIME ALLOTTED (HRS.)
UNIT-I	**Design of a single/ more than one family residence** Do background study – anthropometrics, activity analysis, bubblediagram functional requirement of buildings, Area analysis. Draw the single line conceptual drawing. Draw the double line plan & elevations (Preliminary drawing) Do the Presentation drawing with following : i) Site plan ii) Ground floor plan showing parking and landscaping iii) Typical floor plan showing furniture layout iv) Road side and another side elevation v) Minimum two sectional elevations through toilet & staircase vi) One three dimensional view.	**60**

REFERENCES

1. Ching, F.D.K and Juroszek, S.P (1998). *Design Drawing*. New York: Van Nostrand Reinhold
2. Neufert, P. (2000). *Architects Data*. 3rd Ed. UK: Blackwell Wiley
3. Agkathidis, A., Hudert, M. and Schillig, G. (2007). *Form Defining Strategies: Experimental Architectural Design*. New York: Wasmuth.
4. Watson, D. (Editor). (2005) *Time-saver Standards for Architectural Design: Technical Data for Professional Practice, 8th Ed*., McGraw-Hill.
5. Ching, F. D. K. (2012). Architecture: Form, Space and Order. 3rd Ed. Hoboken: John Wiley & Sons.

BUILDING SERVICES-I

L	T	P		Course Code No.: **AAPC213**
3	0	0		
Total Contact hrs.: Lecture:45 Tutorial:0 Practical: 0 **Credit : 3**			**Total marks: 100**	**Theory:** End Term Exam.:60 P.A: 40

RATIONALE:

Building services are about the services part of a buildinglike, the electrical services, mechanical services such as air conditioning, lighting, ventilation, fire protection, acoustics and sound insulations, elevators, escalators, as well as civil engineering services such as water supply, sanitary services, etc. have become most essential services for residential, industrial, high rise, hotels, motels, monumental buildings. This course aims to provide students, knowledge about these services.

LEARNING OUTCOME:

After completion of the course, students will be able to :

- Explain basic principles & methods of water supply system
- Explain basic principles & methods of sanitation & drainage
- Explain acoustics & methods of sound insulation & noise control
- Explain basic principles & methods of lighting
- Explain basic principles & methods of ventilation
- Explain basic principles & methods of electrical installation
- Have a brief idea of fire fighting system in a building
- Have a brief idea of mechanical equipment for vertical transportation

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT -I	**Water supply** **1.1** State and explain the source of water with brief idea about potable wales **1.2** State and explain the basic idea of water treatment process **1.3** Describe the principles and methods of wales distribution system **1.4** State and explain the elements of domestic water supply – storage of wales and distribution pipes	**25**

UNIT -II	**Sanitation & Drainage** **2.0** State the importance of sanitation in relation to public health and explainthe necessity of public sewers **2.1** State and explain sewage disposal system, such as conservancy andwater carriage system. **2.2** Describe separate, combined and partially separated methods of DrainageSystem. **2.3** Describe the elements of domestic sanitation **2.3.1 Septic tank** 2.3.1.1 State different types of septic tank 2.3.1.2 Describe the construction of septic tank with sketches 2.3.1.3 Illustrate the volume calculation 2.3.1.4 Describe the method of disposal of septic tank effluent **Drainage Pipes** 2.3.2 Soil pipes 2.3.2.1 Waste pipe 2.3.2.2 Anti-siphoage pipe 2.3.3 Ventilating pipe **2.3.4 Traps** 2.3.4.1 P Trap 2.3.4.2 Q Trap 2.3.4.3 S Trap 2.3.4.4 Floor trap 2.3.4.5 Gully Trap **2.3.5 Chambers** 2.3.5.1 Inspection chamber 2.3.5.2 Gully chamber 2.3.5.3 Manhole **2.3.6 Sanitary fixtures** 2.3.6.1 Water closet 2.3.6.2 Flushing cistern 2.3.6.3 Urinal 2.3.6.4 Bidet **2.4 House drainage:** Describe and explain methods of providing house drainage andunderground pipes with sketch.	**30**

REFERENCE BOOKS:

1. Text book on Water Supply and Sanitary Engineering - by G.S.Birdie
2. Public Health Engineering - by Hussain
3. Water supply & Sanitary Engineering - by Rrangawala
4. Environmental Engineering - by Duggal
5. Water Supply & Sewage - by Steel
6. Environmental Engineering - by A.K.Chatterjee
7. CPHEEO Manual-Water Supply - by Ministry of Urban; Development, Govt. of India

ARCHITECTURAL GRAPHICS

L	T	P		Course Code No.: **AAPC215**
0	0	4		
Total Contact hrs.: Lecture:0 Tutorial:0 Practical: 60 **Credit : 2**			**Total marks: 100**	**Practical:** End Term Exam.:0 P.A: 100

RATIONALE

The aim of this course is to make the students familiar with visual arts and its basic principles and allow students to explore the potential of pencil as a powerful tool for visual communication.

LEARNING OUTCOME:

After completion of the course, the students will be able to

- Draw one point & two-point perspectives of interior & exteriorsof a building
- Render it with sciography.

COURSE CONTENT DETAILS:

TOPIC WISE DISTRIBUTION OF PERIODS:

Sl.No.	Topics	Periods
1.	Perspective Projection	45
2.	Sciography	45
		90

COURSE CONTENTS: (based on specific objectives)

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
Unit 1	**1. Perspective Projection** 1.1 One point perspective projection of interior of any residential space 1.2 Two-point perspective projection of interior of any residential space 1.3 Perspective view of Exterior of a building.	**-1 sheet** **-1 Sheet** **-1 Sheet**
Unit 2	**2. Sciography** 2.1 Terminologies – shade, shadow, angle of incidence. 2.2 Sciography on orthographic projection of :	**-2 Sheets**

	a) Points b) Lines - parallel to both plane, perpendicular to one and parallel toother, inclined to one or both planes. c) Lamina - in perpendicular and oblique position 2.3 Sciography on orthographic projection of : a) Simple right regular solids. b) Combination of solids, one casting shadow on other 2.4 Sciography on orthographic projection of a building **2.5** Sciography on perspective projection of the above building - 1 sheet	**-2 Sheets** **-1 Sheet** **-1 Sheet**

REFERENCE:

1. Architecture : Form, Space and Order by Francis D.K. Ching
2. Architectural Graphic Standards by the American Institute of Architects and Dennis J. Hall
3. Rendering in Pen and Ink by Arthur L. Guptill, Edited by Susan E. Meyer

HISTORY OF ARCHITECTURE

L	T	P		Course Code No.: **AAPC217**
1	0	2		
Total Contact hrs.: Lecture:15 Tutorial:0 Practical: 30 **Credit : 2**			**Total marks: 100**	**Theory:** End Term Exam.:50 **Practical:** P.A: 50

RATIONALE:

This course is to be studied to develop knowledge about the chronological development of architecture from the pre stone age to modern days and to know individual style of great architectural development in different parts of the world in postmodern era.

LEARNING OUTCOME:

After completion of this course students will be able to

- Discuss about different architectural style of European, Indian & contemporary architecture
- Apply these in the design work.

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT -I	**Egyptian Arch** **1.1** State the architectural Characteristics features **1.2** Draw the Sketch of mastaba, great pyramid of Giza, Temple of Khonsu at Karnok. The great spinxof Chepheren	**15**
UNIT -II	**Greek Arch** **2.1** State the architectural characteristic features **2.2** Draw the Greek classical orders: Doric, Ionic, and Corinthian **2.3** Draw the Temple of Parthenon at Athens.	

UNIT -III	**Roman Arch**	
	3.1 State the architectural characteristics feature **3.2** Draw the Roman orders: Doric, Ionic, Corinthian, Composite, andTuscan. **3.3** Draw the Temple of Saturn at Rome **3.4** Draw the Aquaduct.	**15**
UNIT -IV	**Early Christian Architecture** **4.1** State the architectural characteristics features **4.2** Draw the Sketch of Basilica Church of St. Peter at Rome.	
UNIT -V	**Byzantine Architecture** **5.1** State the architectural Characteristics features **5.2** Draw the sketch of Hagia Sophia, Istanbal, and Constantinople	
UNIT -VI	**Romanesque Architecture** **6.1** State the Typical characteristics **6.2** Draw the Abey Church Cluny	
UNIT -VII	**Gothic Architecture** **7.1** State the Characteristic features with sketch of at l least one example	
UNIT -VIII	**Renaissance Architecture** **8.1** State the characteristic features with sketch of one example.	
UNIT -IX	**Buddhist Architecture** **9.1** State the architectural characteristics of features of stupa **9.2** State the architectural characteristics great stupa at Sanchi. **9.3** Draw the Chaitya hall **9.4** Draw the Vihara **9.5** State the Characteristic features of followings with sketches of atleast one example (a) Draw the Stupa (b) Draw the Chaitya Hall (c) Draw the Vihara.	

UNIT -X	**Temple Architecture (Indo Aryan style)**	**15**
	10.1 State the Characteristics features of *Orissan* *Temple* with Sketch **10.2** Draw the Sun Temple at Konark **10.3** Draw the Lingaraj Temple, at Bhubaneswar **10.4** Draw the Characteristics features of Khajuraho style (Northen Indian Style) **10.5** Draw the Kandariya Mahadev Temple, Khajuraho **10.6** Explain the Dravidian style of Architecture • Draw the of sketch of Gopuram. • Draw the Minakshi Temple	
UNIT -XI	**Muslim Architecture** 11.1 Study of typical Indian mosque. 11.2 Draw the Tajmahal. 11.3 Draw the Kutub minar. **N.B.** : Students are to do the sketches inside the classroom under the guidance of theteacher and to be evaluated instantly.	
UNIT -XII	**Contemporary Architecture** 12.1 Examples of Works of eminent architects like 12.2 Frank Lloyd Wright Le Corbusier	

REFERENCE BOOKS:

1. A History of Architecture (Century Edition)/Sir Banister Fletcher/Butterworth Heinemann (Hb), CBS Publishers & Distributors (Pb)
2. Indian Architecture Vol. 1 (Buddhist & Hindu)/Percy Brown/D.B. TaraporevalaSons & Co. Pvt. Ltd.
3. Indian Architecture Vol. 2 (Islamic Period)/Percy Brown/DB. Taraporevala Sons& Co. Pvt. Ltd.
4. Islamic Architecture in India/Satish Grover/Galgotia Publishing Company, NewDelhi
5. Buddhist and Hindu Architecture in India/Satish Grover/CBS
6. The Story of Architecture from Antiquity to the Present/Jan Gympel/Konemann(Pb)
7. Crash Course in Architecture/Eva Howarth/Caxton Editions
8. The Great Ages of World Architecture/G.H. Hiraskar/Dhanpat Rai & Publishers, N. Delhi.

SEMESTER - IV

DESIGN OF STRUCTURE

L	T	P		Course Code No.: **AAPC202**
3	1	0		
Total Contact hrs.: Lecture:45 Tutorial:15 Practical: 0 **Credit : 4**			**Total marks: 100**	**Theory:** End Term Exam.:60 P.A: 40

RATIONALE:

After gaining the knowledge of theories of structure the implementation through design is important. Therefore, this course is essential to learn the art of design of structure.

LEARNING OUTCOME:

After completion of the course, students will be able to

- analyze single reinforcement sections
- design single reinforcement sections

COURSE CONTENT DETAILS

UNIT NO & TITLE	CONTENT	LECTURE HOURS
UNIT –I	**Introduction:** Aim and objectives of Design Properties of Reinforced Concrete and its use Properties and Grades of Concrete and Steel Methods of Design Introduction to IS 456 : 2000	**01**
UNIT –II	**Working Stress Method (WSM)** Assumptions and Methodology of Working Stress Method of Design	**00**
UNIT –III	**Limit State Method (WSM)** Introduction to Limit State Method, Differences from Working Stress Method, Concept of characteristic strengths and design strengths, partial safety factors Assumptions in Limit State method of design as per IS: 456 Different types of Limit States Introduction to design for flexure only	**06**

UNIT –IV	**Flexural Members / Beams : Singly Reinforced Sections** Definition Balanced, Under Reinforced and Over Reinforced Sections Moment of resistance calculation, numerical problems	**09**
UNIT –V	**Flexural Members / Beams: Doubly Reinforced Sections** Discuss the necessity of doubly reinforced sections State and explain the *Moment of resistance calculation*	**09**
UNIT –VI	**Shear stress in beams** Discuss the shear stress induced in homogeneous beams Discuss the shear stress induced in R.C. beams Discuss the effect of shear in R.C. beams Discuss shear failure of beams Discuss shear reinforcement in beams	**09**
UNIT –VII	**Design of Slabs** Explain one way slabs Explain two way slabs (I.S. Code method only) Discuss the simply supported slabs with corners free to lift (Not held down) Discuss the simply supported slabs with corners held down.	**09**
UNIT –VIII	**Design of axially loaded column and foundation** Find out the effective length of a column Find out the long and short column Find out the safe load on column State and explain the design of square and rectangular column. State and explain the design of square footing	**20**
UNIT –IX	**Design of two-flight staircase** Explain technical terms in connection with staircase, dog-legged stair Explain design of stairs simply supported on edges	**09**

REFERENCES

1. Shah, V. L., and Gore, V., Limit State Design of Steel Structures, Structures Publications, Pune.
2. Dayarathnam P., Design of Steel Structures, S. Chand and Company, Delhi.
3. Subramanian N., Design of Steel Structures, Oxford University Press.

BUILDING CONSTRUCTION – II

L	T	P		Curri. Ref. No.: **AAPC204**
2	0	2		
Total Contact hrs.: Lecture:30 Tutorial:0 Practical: 30 **Credit : 3**			**Total marks: 150**	**Theory:** End Term Exam.:60 P.A: 40 **Practical :** P.A.:50	

RATIONALE

Students are required to have the knowledge of complex constructional methodology and supervisory techniques which are included in this course.

LEARNING OUTCOME:

After completion of this course, students will be able to :

- Analyze different type of roofs and roof coverings
- Explain different stairs and their construction procedure
- Draw and supervise the floorings
- Supervise the form-work of a construction
- Supervise the pointing and plastering work of a building
- Supervise the painting, varnishing and distempering work of building.

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT –I	**Roofs** **1.1** Define and classify the types of roofs **1.2** Describe the Pitched roof in details.	**06**
UNIT –II	**Stairs** **2.1** Define the staircase **2.2** Describe the wooden staircase **2.3** Describe the R.C.C. staircase **2.4** State and describe different type of staircase with sketches.	**07**
UNIT –III	**Floors** **3.1** State and describe different types of floors **3.2** Describe the methods of laying of floors **3.3** State and explain the Furnishing of floors with different floor finishes like cement, coloured cement, mosaic, terrazzo, tiles etc with sketches **3.4** State and explain the special consideration for rubber, linoleum and PVC flooring.	**07**

UNIT –IV	**Partition Walls** **4.1** State & explain different types & uses of Partition walls **4.2** State & Explain simple detail of construction of Partition walls	**05**
UNIT –V	**False Ceiling** **5.1** State & explain different types & uses of False ceiling **5.2** State & Explain simple detail of construction of False ceiling	**05**
UNIT –VI	**Formwork** **6.1** Describe briefly the requirement and materials for formwork **6.2** Describe the formwork for columns, floors walls and stairs.	**05**
UNIT –VII	**Pointing and plastering** **7.1** State and describe the method and types of pointing **7.2** State and describe the method of plastering **7.3** State and describe the different types of external finishes	**05**
UNIT –VIII	**Painting, varnishing, distempering** **8.1** State and explain the properties and types of paints and process ofpainting **8.2** State and explain the properties and types of varnishes and the process ofvarnishing **8.3** State and explain the properties of distemper and the process of distempering.	**05**

RECOMMENDED BOOKS:

1. Building construction by W.B. Mackey.(vol.III&IV)
2. Building construction by Rangawalla.

BUILDING SERVICES-II

L	T	P		Course Code No.: **AAPC206**
3	0	0		
Total Contact hrs.: Lecture:45 Tutorial:0 Practical: 0 **Credit : 3**			**Total marks: 100**	**Theory:** End Term Exam.:60 P.A: 40

RATIONALE:

The aim of this course is to provide the learners a knowledge of acoustics principles, sound insulation and noise control in enclosed rooms. It also includes lighting, ventilation, electrical insulations, Fire-fighting system and escalators.

LEARNING OUTCOME

After completion of this course, students will be able to :

- Explain the principles of acoustics, sound insulation and noise control
- Explain the basic lighting design for interiors and exteriors.

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT –I	**Acoustics, sound insulation and noise control** **1.1** Basic principles of acoustics 1.1.1 Define noise, reflection & absorption of sound, dead room andlive room, echo 1.1.2 Explain audible range of sound and effect of noise **1.2** Transmission of sound 1.2.1 Explain the Sound propagation within the structure of solids 1.2.2 Explain the Air borne propagation of sound in the open air. 1.2.2.1 Explain the Free field condition (geometric propagationattenuation) 1.2.2.2 Explain the External noise sources 1.2.2.3 State the Design recommendations. 1.2.3 State and explain the air borne propagation of sound in enclosedrooms (Room acoustics) Design criteria	**(60)** **16**

	1.2.3.1 State the Room volume 1.2.3.2 State the Shape of the room 1.2.3.3 State the Surface enclosing the room 1.2.3.4 State the transmission loss. 1.2.3.5 State the Factors influencing hearing conditions and good acoustic environment. 1.2.3.6 State the Criteria for reverberation in rooms **1.3** Methods of noise control & sound insulation 1.3.1 State the Classification of acoustical material andabsorption coefficient 1.3.2 Describe the constructional measures for sound insulation	
UNIT –II	Lighting **2.0** Explain the Fundamental of light **2.1** Explain the Visual performance and vision **2.2** Define and explain the Laws of illumination **2.3** Explain the artificial sources of light **2.4** Explain the Lamps and their characteristics **2.5** Explain the basic lighting design for interiors and exteriors.	**10**
UNIT –III	Ventilation **3.0** State and explain Orientation of building – climatic factors desirableconditions of comfort **3.1** State and explain Natural Ventilation **3.2** State and explain Mechanical Ventilation	**06**
UNIT –IV	Electrical installations **4.0** State and explain substation to overhead lines and underground cables **4.1** State and explain domestic wiring system 4.1.1 State and explain surface and concealed wiring 4.1.2 State and explain wiring accessories **4.2** State and explain Symbols **4.3** State and explain single line-wiring diagram.	**10**
UNIT –V	Fire-fighting system **5.0** State and explain the role and importance **5.1** State and explain the fire detection and fire fighting **5.2** State and explain different fire fighting methods to be adopted in buildings.	**10**
UNIT –VI	**6.0** Mechanical equipment for vertical transportation lift and escalators **6.1** State and explain the types, uses, functioning	**08**

REFERENCE

1. Hall F., and Greeno R., (2017). *Building Services Handbook, Incorporation current building and Construction Regulations*, 9th ed., Routledge Taylor & Francis Group, London, UK.

2. Portman J., (2016). *Building Services Engineering: After Design, During Construction*, 1st ed., John Wiley & Sons, Ltd, Oxford, UK.

ARCHITECTURAL DESIGN – II

L	T	P		Course Code No.: **AAPC208**
0	0	6		
Total Contact hrs.: Lecture:0 Tutorial:0 Practical: 90 **Credit : 4**			**Total marks: 100**	**Practical:** End Term Exam.:00 P.A:100

RATIONALE

The objective of the course is to develop designing and drafting skill of different types of small buildings having different functions. Site planning is an important aspect of architectural design. So organizing blocks of building and laying streets and open space among them are included in the course.

LEARNING OUTCOME:

After completion of this course, students will be able to

- Organise different residential unit inside a residential complex along with Landscape elements, streets, essential amenities and open spaces.
- Analyse a given case
- Prepare the Presentation drawing with three dimensional view

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT -I	Design of a small institutional building Urban or rural community center, primary school, bank, restaurant, post office,primary health center (Any one of the above). Conduct the Background study Activity analysis, space analysis, bubble diagram, functional requirementof buildings, Area Analysis. Case study of any related building. Do the Site analysis and Draw the single line conceptual drawing Draw the double line floor plan and elevations (Preliminary drawing) Prepare the Presentation drawingThree dimensional view.	**90**

RECOMMENDED BOOKS:

1. Times –Saver Standards for architectural design by Michael Crosbie, Donald Watson (Published by Tata McGraw Hill Publishing Co.)

2. Architectural Design M. Pratap Rao (Published by Standard Publishes)

3. Time-Saver Standards for Architectural Design by Joseph De Chiara (Published by McGraw-Hill education-Europe)

4. Space Planning Basics by Mark Karlen , Rob Fleming(Published by J. Wiley & Sons,2004)

5. Neuforts' Data.

WORKING DRAWING - I

L	T	P		Course Code No.: **AAPC210**
1	0	6		
Total Contact hrs.: Lecture:15 Tutorial:0 Practical: 90 **Credit : 4**			**Total marks: 150**	**Theory:** End Term Exam.:00 **Practical:** P.A: 150

RATIONALE

This course is required to learn the micro details of a structure of a building of two orthree storied.

LEARNING OUTCOME:

After completion of this course, the students will be able to

- Prepare working drawing(Architectural)
- Draw the complete working drawing of a 2 storied masonry building.

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT –I	**Architectural working drawing of a masonry building** Preparation of working drawing (Architectural) for a) *Draw the* Trench cutting plan b) *Draw the* Foundation plans and sections c) *Draw the* Ground floor plan in detail d) *Draw the* First floor plan e) *Draw the* roof plan f) *Draw the* Four sides elevation g) *Draw the* Sections (two of each must be through Staircase and toilet respectively)	**(90)** **10** **10** **15** **12** **8** **20** **15**

RECOMMENDED BOOKS

1. Working Drawings handbook by Keith Styles and Andrew Bichard

2..Building Drawing by Shah (Tata Mc Graw HillEducation,1981)

AUTO CAD

L	T	P		Course Code No.: **AAPC212**
0	0	4		
Total Contact hrs.: Lecture:0 Tutorial:0 Practical: 60 **Credit : 2**			**Total marks: 100**	**Theory:** End Term Exam.:0 **Practical** P.A: 100

RATIONALE:

In this age of Computer and IT the knowledge of Auto Cad is really essential to produce architectural drawing in a faster and more accurate way.

LEARNING OUTCOME:

After completion of this course, students will be able to

- Draw building plans, elevations, details etc. in a AUTO CAD medium
- Obtain hard copies of the drawings
- Work out a complete project in AutoCAD medium.

COURSE CONTENT DETAILS

UNIT NO.	CONTENT	TIME ALLOTTED (HRS.)
UNIT –I	**Introduction:** State and compare AutoCAD – 2000, how it is different from manual drafting.	**03**
UNIT –II	**Getting started:** Explain the followings AutoCAD screen.Working Platform Methods of Command Entry.Coordinate System. Selection of Units. Selection of Working area.Types of commands.	**03**
UNIT –III	**Draw commands** • Explain & demonstrate *Arc* • Explain & demonstrate *Circle* • Explain & demonstrate *Ellipse* • Explain & demonstrate *Donut* • Explain & demonstrate *Polygo.* • Explain & demonstrate *Line* • Explain & demonstrate *Pline.*	**08**
UNIT –IV	**Edit Command** State and demonstrate the following edit commands briefly. ERASE. ,OOPS, TIRM, COPY, MOVE ,OFFSET ,ARRAY, BEAK, STRETCH,EXPLODE, MIRROR ,FILLET ,CHAMFER, PEDIT, EDIT, HATCH ,U, SCALE	**08**

UNIT –V	**Display Commands** • State and show PAN • State and show REDRAW • State and show REGEN • State and show ZOOM.	**03**
UNIT –VI	**Utility Commands** • State and show END • State and show LIMITS • State and show QUIT • State and show SAVE • State and show UNITS.	**03**
UNIT –VII	**Label Commands** • State and show DIMENSION. • State and show HATCH • State and show TEXT	**10**
UNIT –VIII	**Inquiry Command** • State and show AREA • State and show DIST • State and show HELP • State and show? • State and show ID • State and show LIST.	**03**
UNIT –IX	**Drawing Aids** • State and show OSNAP • State and show TRAKING • State and show SNAP	**03**
UNIT –X	**Special Commands** • State and show BLOCK • State and show INSERT • State and show LAYER • State and show LINE TYPE • State and show LT SCALE • State and show WB BLOCK	**05**
UNIT –XI	**State & explain installation of AutoCAD-2000**	**02**
UNIT –XII	**State & explain Output Command** State & explain PLOT	**04**
UNIT –XIII	**Project** The students will completely do a small residential building plan, section, site plan, roof plan, elevations, details of kitchen and toilet etc., and take out the printout and submit them as an album	**35**

RECOMMENDED BOOKS:

1. AutoCAD 2000 by Syam tico.
2. Autodesk Auto CAD Architecture 2024 Fundamentals By Elise Moss, Published July 14, 2023