

**Jawaharlal Nehru Architecture & Fine Arts University
School of Planning and Architecture, Hyderabad**

Academic Regulations

(As Approved by Board of Studies in Architecture on 02-09-2010)

**Bachelor of Architecture – Five Years Degree
Course**

1. Award of the B. Architecture Degree:

A student will be declared eligible for the award of the B. Architecture Degree if he fulfills the following academic regulations:

He has to pursue the course of study for not less than five academic years and not more than ten academic years.

- ii. He has to register for and study all the subjects and fulfill academic requirements of all subjects.

Note: Students, who fail to fulfill all the academic requirements for the award of the degree within ten academic years from the year of their admission, shall forfeit their seat in the course and their seat shall stand cancelled.

Courses of study: The Following majors by means of elective subjects are offered.

Architecture
Building Construction Management
Landscape Architecture
Interior Design

3. Distribution and weight age of the marks:

- i. The performance of the student in each semester/ shall be evaluated subject-wise with a maximum of 400 marks in Design Studio and 100 marks in other subjects. The Design thesis in the eight semester shall be evaluated for 600 marks. Practical Training in final Year (Ninth & tenth semesters) shall be evaluated for 400 marks.

- ii. The distribution of marks in general for the subjects shall be: For all Theory/Practicals/Studio subjects: 50 % for Internal Evaluation and 50 % for End Evaluation, unless specified otherwise.
- iii. Out of a total of 600 marks for the Design thesis, 300 marks shall be for Internal Evaluation and 300 marks for the End Evaluation which shall be by an external jury and viva-voce, The End Evaluation shall be conducted by a board of examiners consisting of the guide, Head of the Department (or his/her nominee) and an external examiner.

4. Attendance:

- i. A student has to put in a minimum of 75% of the attendance in aggregate of all the subjects for becoming eligible to register for the end examinations and for acquiring credits in the each semester.
- ii. Condonation of shortage of attendance in aggregate of attendance up to 10% (65% and above and below 75%) in each semester may be granted by the College Academic Committee.
- iii. A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester.

Note:

- a) Shortage of Attendance below 65% in aggregate shall in no case be condoned.
- b) Students whose shortage of attendance is not condoned in any semester are not eligible to take their End Examination of that class and their registration shall stand cancelled. They shall seek re- admission for that semester when offered next.
- c) Condonation of shortage of attendance as stipulated in 4(ii) above shall be granted on genuine and valid grounds with supporting evidence.
- d) A stipulated fee shall be payable towards condonation of shortage of attendance.

5. **Minimum Academic Requirements:**

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item No.4.

- a. A student shall be deemed to have satisfied the minimum academic requirements in each subject if he secures not less than 45% of marks in the End Evaluation and a minimum of 50 % of marks in the sum total of the internal evaluation and End Evaluation taken together.
- b. A student shall be promoted from 3rd to 4th year only if he fulfills the Academic requirements of all the subjects of 1st year.

A student shall be promoted from 4th year to 5th year only if he fulfills the academic requirements of all the subjects of the 2nd year, however, as there is no course work in IX semester, the student shall be permitted to proceed with the work of the final year, but the results of which shall be with held & declared only after he has

- c. Satisfied the academic requirements, of all the subjects of the 2nd year.
- d. Re-registration:
A student shall pass in all the subjects specified in the course structure. A student who fails to fulfill the minimum academic requirements in any subject and secures less than 50% of marks in the internal evaluation, may be permitted the option of re-registering in that subject, which will enable him to redo/improve and resubmit the work for internal evaluation. In such cases of re-registration, the student's previous performance both in the internal evaluation and end evaluation for the particular subject/s shall stand cancelled and he shall be required to appear for his end evaluation again.

However, such re-registration shall be subject to a limit of only two theory subjects or one theory subject and one studio /Seminar/ Practical subject at any given time. Re-registration of any course should be done within 15 days from the date of commencement of class work.

6. Withholding of the results:

The results of a student are withheld if:

- i. He has not cleared any dues to the Institution / Hostel.
- ii. A case of disciplinary action against him is pending disposal.

7. Course pattern:

1. The entire course of study is of five academic years.
All the years shall be on semester pattern.

A student eligible to appear for the end examination in a subject, but absent or has failed in End

2. Examination may appear for that subject at the supplementary examination

8. **Award of Class:**

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of the B. Arch. Degree he shall be placed in one of the following three classes:

First Class with Distinction	70% and above
First Class	Below 70% but not less than 60%
Second Class	Below 60% but not less than 50%

(The marks in the internal evaluation and examination shall be shown separately in the marks memorandum)

9. **Minimum Instruction Days:**

The minimum instruction for each semester shall be **90** days excluding the examination days.

10. **General:**

- I. Where the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".
- II. The academic regulations should be read as a whole for the purpose of any interpretation.

- III. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Vice-Chancellor is final.
- IV. The University may change or amend the academic regulations or syllabi at any time and the change or amendments made shall be applicable to all the students with effect from the dates notified by the University.

**JNAFAU School of Planning and Architecture
Department of Architecture**

Effective for the students admitted to 1st year from Academic year 2010-2011 onwards.

FIRST SEMESTER

S. No.	Course No.	Course Title	*		Credits	Marks		
			S/L/Th/P (Hrs)			I	E	T
1	AR 1.1	Basic Design	S	9	9	200	200	400
2	AR 1.2	Architectural Drawing and Graphics-I	S	4	4	50	50	100
3	AR 1.3	Building Construction- I	S	4	4	50	50	100
4	AR 1.4	Building Materials - I	Th	2	2	50	50	100
5	AR 1.5	Structural Mechanics - I	Th	3	3	50	50	100
6	AR 1.6	Introduction to Art and Architecture	Th	2	2	50	50	100
7	AR 1.7	Computer Applications-I	L	2	2	50	0	50
8	AR 1.8	Workshop- I	L	4	4	50	0	50
Total				30	30	550	450	1000

SECOND SEMESTER

S. No.	Course No.	Course Title	*		Credits	Marks		
			S/L/Th/P (Hrs)			I	E	T
1	AR 2.1	Architectural Design -I	S	9	9	200	200	400
2	AR 2.2	Architectural Drawing and Graphics - II	S	4	4	50	50	100
3	AR 2.3	Building Construction - II	S	4	4	50	50	100
4	AR 2.4	Building Materials - II	Th	3	3	50	50	100
5	AR 2.5	Structural Mechanics - II	Th	3	3	50	50	100
6	AR 2.6	History of Architecture - I	Th	3	3	50	50	100
7	AR 2.7	Surveying and Leveling	Th /L	4	4	50	50	100
Total				30	30	500	500	1000

THIRD SEMESTER

S. No.	Course No.	Course Title	*		Credits	Marks		
			S/L/Th/P (Hrs)			I	E	T
1	AR 3.1	Architectural Design - II	S	9	9	200	200	400
2	AR 3.2	Architectural Drawing and Graphics - III	S	4	4	50	50	100
3	AR 3.3	Building Construction - III	S	4	4	50	50	100
4	AR 3.4	Structural Mechanics - III	Th	3	3	50	50	100
5	AR 3.5	History of Architecture - II	Th	3	3	50	50	100
6	AR 3.6	Building Services-I	Th	4	4	50	50	100
7	AR 3.7	Climatology	Th	3	3	50	50	100
Total				30	30	500	500	1000

FOURTH SEMESTER

S. No.	Course No.	Course Title	*		Credits	Marks		
			S/L/Th/P (Hrs)			I	E	T
1	AR 4.1	Architectural Design -III	S	9	9	200	200	400
2	AR 4.2	Building Construction-IV	S	4	4	50	50	100
3	AR 4.3	Design of Structures - I	Th	3	3	50	50	100
4	AR 4.4	History and Theory of Architecture-I	Th	3	3	50	50	100
5	AR 4.5	Building Services-II	Th	3	3	50	50	100
6	AR 4.6	Landscape Design and Site Planning	Th / S	4	4	50	50	100
7	AR 4.7	Computer Applications-II	L	4	4	50	50	100
Total				30	30	500	500	1000

FIFTH SEMESTER

S. No.	Course No.	Course Title	*		Credits	Marks		
			S/L/Th/P (Hrs)			I	E	T
1	AR 5.1	Architectural Design - IV	S	9	9	200	200	400
2	AR 5.2	Building Construction - V	S	4	4	50	50	100
3	AR 5.3	Design of Structures – II	Th	3	3	50	50	100
4	AR 5.4	History and Theory of Architecture-II	Th	3	3	50	50	100
5	AR 5.5	Building Estimating Costing and Specifications	Th	4	4	50	50	100
6	AR 5.6	Environmental Studies	Th	3	3	50	50	100
7	AR 5.7	Computer Applications-III	L	4	4	50	50	100
Total				30	30	500	500	1000

SIXTH SEMESTER

S. No.	Course No.	Course Title	*		Credits	Marks		
			S/L/Th/P (Hrs)			I	E	T
1	AR 6.1	Architectural Design - V	S	9	9	200	200	400
2	AR 6.2	Working Drawings and Details	S	6	6	50	50	100
3	AR 6.3	Architectural acoustics	Th	3	3	50	50	100
4	AR 6.4	Building Codes and Bye Laws	Th	3	3	50	50	100
5	AR 6.5	Building Economics and Sociology	Th	3	3	50	50	100
6	AR 6.6	Human Settlements and Town Planning	Th	4	4	50	50	100
7	AR 6.7	Barrier Free Built Environment	Th	2	2	50	50	100
Total				30	30	500	500	1000

SEVENTH SEMESTER

S · N o ·	Course No.	Course Title	* S/L/Th /P (Hrs)		Cred it s	Marks			
						I	E	T	
1	AR 7.1	Advance Design Studio Advance Architectural Design (Design Studio) Building Construction Management (Design Studio) Landscape Architecture (Design Studio) Interior Design (Design Studio)	S	12	12	200	200	400	
	AR 7.1.1								
	AR 7.1.2								
	AR 7.1.3								
	AR 7.1.4								
2	AR 7.2	Advanced Construction and Materials	S	6	6	50	50	100	
3	AR 7.3	Advanced Structural Systems	Th	2	2	50	50	100	
4	AR 7.4	Green Buildings and Infrastructure	Th	2	2	50	50	100	
5	AR 7.5	Advanced Services	Th	2	2	50	50	100	
6	AR 7.6	Pre Thesis Seminar	Th	2	2	100	0	100	
7	AR 7.7	ELECTIVE - I Urban Design (Elective – I)	Th	4	4	50	50	100	
	AR 7.7.1								
	AR.7.7.2								Housing [Elective – I]
	AR 7.7.3								Building Construction and Management [Elective – I]
	AR 7.7.4								Interior Design [Elective – I]
	AR 7.7.5								Landscape Architecture [Elective – I]
Total				30	30	550	450	1000	

EIGHTH SEMESTER

S. No	Course No.	Course Title	* S/L/Th/P (Hrs)		Credits	Marks		
						I	E	T
1	AR 8.1	Design Thesis	P	22	22	300	300	600
2	AR 8.2	Professional Practice	Th	4	4	50	50	100
3	AR 8.3 AR 8.3.1 AR 8.3.2 AR 8.3.3 AR 8.3.4	ELECTIVE - II Architectural Illumination (Elective – II) Architectural Journalism (Elective – II) Furniture and Product Design (Elective – II) Disaster Resistant Architecture (Elective – II)	Th	4	4	50	50	100
Total					30	30	400	400
						800	800	800

FINAL YEAR (NINTH & TENTH SEMESTER)

S. No.	Course No.	Course Title	* S/L/Th/P (Hrs)		Credits	Marks		
						I	E	T
1	AR 9.1	Practical Training			60	200	200	400
Total						200	200	400
Grand Total					300	4200	4000	8200

Note: Students needs to choose the specific subjects for majors according to the table given below

Major	Design Studio A.R 7.1	Elective – I AR. 7.7
Architecture	AR 7.1.1	Any one subject from AR 7.7.1, AR 7.7.2, AR 7.7.3, AR 7.7.4, AR 7.7.5.
Building Construction Management	AR 7.1.2	AR 7.7.3
Landscape Architecture	AR 7.1.3	AR 7.7.4
Interior Design	AR 7.1.4	AR 7.7.5

*** S - Studio Class, L- Lab, Th – Theory, P – Project, I – Internal, E – External, T - Total**

Note: Students opting for major in Building Construction Management, Landscape Architecture and Interior Design are required to choose courses offered in Design studio and Elective – I, as per their major. For subjects Design Thesis and Practical Training students may choose topics / options related to their majors. The School / College reserves the prerogative of offering any one or more of the majors.

FIRST SEMESTER

AR 1.1 BASIC DESIGN

L/s: 9/Wk Int: 200 End Exam: 200 Total: 400 End Exam: 5hrs Cr: 9

Course Overview:

Basic Design provides the framework for understanding design as a new language by sensitizing students to the conceptual, visual and perceptual issues involved in the design process.

Objectives of the Course:

To impart an understanding of principles of composition, and to appreciate design and design elements. Exercises complement the lectures and ensure that the students learn to develop a series of compositions in two and three dimensions.

Expected Skills / Knowledge Transferred:

The Course prepares ground for the students to gain an understanding into the fundamental issues in design and develop the skill to create solutions for simple elements of building.

Course Contents:

Unit – I

Introduction to design –importance of design; Study and appreciation of design examples from natural and man-made environments

Unit – II

Elements of design: point, line, shape, form, space, texture, value, colour and material; Introduction to the principles of composition: unity, balance, symmetry, proportion, scale, hierarchy, rhythm, contrast, harmony, focus, etc; Application of the principles of composition in two dimensional compositions; Transformations in two dimensions: shapes and patterns; use of grids in creating repetitive patterns; Principles of composition-using grids, symmetrical /asymmetrical, rule of thirds, center of interest etc. Explorative exercises in two dimensional compositions.

Unit - III

Developing compositions in two dimensional designs like- logos, cover page, collage, mural, floor patterns, grills, railings, gates etc.

Unit - IV

Concepts of geometry –different three dimensional forms, primitive forms and

understanding the behavior when combined- Transformations to three dimensional forms; Explorative exercises in three dimensional compositions.

Unit - V

Developing compositions in three dimensional designs like- Entrances, gateways, portal, compound walls built-in furniture etc.

Unit - VI

Colour theory, color wheel, primary, secondary, tertiary colors, color schemes, color value and intensity. Theoretical inputs to be followed by exercises to develop the ability to translate abstract principles into two and three dimensional compositions.

Unit - VII

Study of ornament in architectural design; Different types of ornamentation in buildings; Study and evaluation of artifacts and historic examples and their applicability

Exercises in related to documentation of artifacts at historical sites and to understand them with respect to the surround environment; to transform the designs to present context or usage.

Reference books:

Wucius, Wong. Principles of two Dimensional Design. Van Nostrand Reinhold 1972.

Maier Manfred Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY. (1977)

Ching, Francis D.K. Architecture: Form, Space, and Order, 2nd ed. Van Nostrand Reinhold, New York, 1996.

Hanks, A. David. Decorative Designs of Frank Lloyd Wright, Dover Publications, Inc. New York, 1999.

Hepler, E. Donald, Wallach, I. Paul. Architecture Drafting and Design, 3rd ed. McGraw-Hill Book Company, New York, 1977.

Itten, Johannes. Design and Form: The basic course at the Bauhaus, Thames and Hudson Ltd., London 1997.

Krier, Rob. Architectural Composition, Academy Editions, London, 1988.

Meiss, Pierre Von. Elements of Architecture: From form to place, E and FN Spon, London, 1992.

Pipes, Alan. Drawing for 3-Dimensional Design. Thames and Hudson Ltd., London 1990.

Shibikawa, Ikuyoshi and Takahashi, Yumi. Designers Guide to Colour.

Smithies, K.W. Principles of Design in Architecture. Chapman and Hall, 1983.

AR 1.2 ARCHITECTURAL DRAWING AND GRAPHICS – I

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Cr: 4

Course Overview:

The course introduces the fundamental techniques of architectural drawing and develops the appropriate skills for visualization and representation.

Objectives of the Course:

To introduce architectural drawing techniques and to facilitate effective visual communication.

Expected Skills / Knowledge Transferred: Freehand, scale drawing, conventional architectural representations in drawings and graphics.

Course Contents:

Unit – I

Introduction: Fundamentals of drawing and its practice, introduction to drawing equipment, familiarization, use and handling.

Unit – II

Drawing: Drawing sheet sizes, layouts and composition. Simple exercises in drafting, line types, line weights; dimensioning, Typography –anatomy of Type, Styles, Roman and Gothic style lettering; Freehand lettering, title panels and legends.

Unit – III

Geometrical Construction: Constructing simple and complex geometrical shapes involving various drafting technique drawing regular shapes using T-squares, set-squares; Special methods of drawing regular polygons; Regular polygons inscribed in a Circle.

Unit – IV

Architectural Symbols: Representation of building elements, openings, materials, furniture and accessories; human postures; vegetation; vehicles; terminology and abbreviations used in architectural representation.

Unit – V

Measuring and Drawing to Scale: Scales and construction of scales, scaled drawings of simple objects, furniture, rooms, doors and windows etc., in plan, elevation and section. Reduction and enlargement of drawings.

Unit – VI

Free Hand Drawings: line strokes, light and shade techniques of simple, natural and 3D geometric forms. Study of proportions and scale; structure and axes of objects; Outdoor sketching of simple building forms.

Note: This is a studio subject and students should be made to prepare drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate site visits.

Reference books:

Moris, I.H. Geometrical Drawing for Art Students.

Thoms, E. French. Graphic Science and Design, New York: MC Graw Hill.

Nichols, T.B. and Keep, Norman. Geometry of Construction, 3rd ed. Cleaver – Hume Press Ltd., London, 1959.

Bhatt, N.D. and Panchal V.M. Engineering Drawing: Plane and Solid Geometry, 42nd ed. Charotar Pub., Anand, 2000.

Gill, P.S. T.B. of Geometrical Drawing, 3rd ed. Dewan Suhil Kumar Kataria, Ludhiana, 1986.

Shah, M.G., Kale, C.M. and Patki, S.Y. Building Drawing: with an integrated approach to built environment, 7th ed. Tata McGraw Hill Pub., Delhi, 2000.

Bies, D. John. Architectural Drafting: Structure and Environment. Bobbs – Merrill Educational Pub., Indianapolis.

Nelson, A. John. H.B. of Architectural and Civil Drafting, Van Nostrand Reinhold, New York, 1983.

AR 1.3 BUILDING CONSTRUCTION-I

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Cr: 4

Course Overview:

The course introduces to the methods and techniques of construction of basic elements of a simple building.

Objectives of the Course:

To understand the elementary and simple construction methods, explaining basic principles and considerations in the construction of one roomed rectilinear building with verandah.

Expected Skills / Knowledge Transferred:

To understand the techniques of construction of a simple load bearing structure with simple material like brick, stone etc.

Course Contents:

Unit – I

Brickwork: Various types of bonds, stopped ends, junctions, piers, jambs, footings, foundations, corbelling, damp proof course, window sills, thresholds, copings, mortar joints and pointing.

Unit – II

Stone masonry: stone walls, rubble work, ashlar work, masonry joints, window sills, plinth, cornices, surface finishes.

Unit – III

Composite masonry: Brick backed ashlar, rubble backed ashlar, concrete backed masonry, ashlar faced concrete walls, marble faced masonry; tile faced concrete, hollow block masonry.

Cladding: Cladding of various materials-marble, granite, slate, tiles, metal etc.

Unit – IV

Lintels: Lintels of wood, stone, brick.

Arches: arches; terms defined; various forms of arches like segmental, semi-circular, elliptical, three-centered, flat and relieving arch, etc.

Unit – V

Ground and upper floors: solid floor, brick flooring, floor finishing and floor coverings, Basement floor

Flooring Finishes: Brick on edge, concrete, wood, Indian patent floor, granolithic, terrazzo, pitch mastic, Magnesium Oxide, Chloride, flag stone or shahbad stone flooring, etc.

Unit – VI

Flat roofs: Madras terrace, Jack arch, elementary knowledge about R.C.C roof and floor slabs.

The class work and home assignments should include appropriate site visits by the students. Student will maintain field observations / record books. At least two exercises to be done in the construction yard.

Reference books:

Barry, R. The Construction of Buildings Vol. 2, 5th ed. East-West Press. New Delhi, 1999.

Bindra, S P. and Arora, S P. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub. New Delhi, 2000.

Hailey and Hancork, D.W. Brick Work and Associated Studies Vol. 2. MacMillan, London, 1979.

Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.

Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand, 2004.

AR 1.4 BUILDING MATERIALS – I

L/s: 2/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr: 2

Course Overview:

The course provides information on the properties, use, installation and costs of basic building materials.

Objectives of the Course:

To impart knowledge on the various building materials,

To highlight the current trends and innovations in the usage of building materials.

Expected Skills / Knowledge Transferred:

Knowledge required for specifying appropriate materials for various spaces in buildings.

Course Contents:

Unit –I

Brick: Composition of earths, standard, market and ISI.size properties, as per ISI brick manufacturing processes, requirements and tests foe good bricks. Fire clay bricks - varieties; sand lime bricks; paving bricks; Terra-cotta-its varieties: ordinary, glazed, porous, polished and fine; sun dried brick, Special types of bricks, uses and properties Different uses of brick in construction.

Building Tiles: Roof, floor and wall tiles.

Unit –II

Stones: Classification of stones: granite, laterite, quartzite, marble and slates -properties and uses; stone units - khandki, rubble, black stones, stone metal, flag stones. method of quarrying of

building stones, types of stone dressings defects in stone, stones used in construction, uses in construction, aggregates. tool used, Preservation of stone work.

Unit –III

Sand : Pit, river sea sand, gravel, bulk age of sand, impurities in sand their removal, tests for silt and organic contents different grades of sand with respective to size and their application. I.S.I. standards, use in mortar and concrete.

Unit –IV

Cement: Ingredients and properties of cement, Types of cement, Grades of cement, Initial and final setting time, Test of cements, ISI Standards, Pozzolana material and its properties.

Unit –V

Mortars: Types, proportioning, mixing and grinding, mortar, cement mortar, lime mortar, methods of preparing, handling and uses of mortars, Surkhi-mortar, light weight mortars i.e. cinder, sawdust and fibrous plaster, gypsum plaster, Plaster of Paris and application

Concrete: Concrete and its constituents, aggregate: coarse and fine, properties of concrete, strength, durability, etc. Effect of age on strength.

Grading: importance, fineness modulus, combined aggregate, water cement ratio. Mixing and Curing.

Unit –VI

Timber: Building timber types and its properties, sawing of timber, shrinkage and distortion, wastage, methods of sawing. Drying and seasoning, moisture contents, purpose of seasoning, natural and artificial. Defects in timber. Use and application of timber in construction.

Processed woods: Plywood and Synthetic boards properties and application. Use of alternative materials as substitute to wood. ISI standards

Unit –VII

Ferrous Metals - Pig iron, cast iron, wrought iron, steel, manufacturing processes and casting. Characteristics form and uses of cast iron, wrought iron and steel.

Alloys steel, stainless steel, steel-treatment, steel tempering, annealing, normalizing, and case hardening, their objectives and effect on alloy steels. Galvanizing, oxidation and casting of metallic products, corrosion of iron and their prevention. Metallic protective coatings.

Non ferrous Metals: Basic idea of important ores, properties and uses of Aluminum, Zinc, Copper, Tin and Lead

Reference Books:

Hailey & Hancork, D.W. Brick Work & Associated Studies Vol. 2. MacMillan, London, 1979.

Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.

Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand, 2004.

Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub, Delhi, 2003.

Note: Students should be exposed to on site and Laboratory tests of above materials.

Students should conduct market survey of above

AR 1.5 STRUCTURAL MECHANICS – I

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr: 3

Course Overview:

Gives an in-depth understanding of the concepts associated with different Elements of Structures.

Objectives of the Course:

To provide knowledge of different forces, force systems, Beams types sectional Properties behavior of different members due to applied forces.

Expected Skills / Knowledge Transferred: Basic principles of mechanics and behavior of elements of structures.

Course Contents:

Unit – I

Introduction: Forces, system of forces, resultant, equilibrant Parallelogram law, Triangle law, Lamis Theorem, polygon law, resultant of coplanar, concurrent force system, couple, characteristics of couple, moment, Equilibrium, Varignon's Theorem.

Unit – II

Analysis of trusses, types of stresses, Loads on trusses, 2-D truss analysis using method of joint (Cantilever & Simply Supported)

Unit – III

Stress, Strain, type of stresses, stress-strain curve for ductile Material, Hooke's law, Modulus of Elasticity, Bars of Varying Section, Bars of Composite Section.

Unit – IV

Shear stress, types of Strain, poissons Ratio, Shear modulus Bulk Modulus Relation between the three Elastic Constants members subjected to 3 mutually perpendicular forces

Unit – V

Types of Beams, types of loads, calculation of reactions for simply supported beam (Using Point loads & Udl's) definition shear force & Bending Moment SFD&

BMD for Cantilever beams.

Unit – VI

Shear force & Bending Moment diagrams for simply supported & over hanging beams for point loads & UDL, point contra flexure & its location, Relation between loading, SF & BM

Unit – VII

Definition of centroid, line of symmetry ,centroid for some standard shapes, calculation of centroid for shapes like L,T,C,I Sections etc., moment of inertia, Derivation of M.I formula for Rectangle, circle, Triangle, calculation of M .I for L,T,C,I Sections etc.,

Unit VIII

Types of joints, lap joint & butt joint, failure of riveted joints, strength of the joint, efficiency of joint, Unwins formula, chain riveting & Diamond Riveting

Reference Books

Khurmi. R.S. Engineering Mechanics, S. Chand and Co. Ltd., New Delhi, 1999.

Ramamrutham. S. Engineering Mechanics, 7th ed. Dhanpat Rai Pub. Co. Ltd., Delhi, 2004.

Timoshenko. S. and Young, D.H. Engineering Mechanics, McGraw-Hill International Editions

AR 1.6 INTRODUCTION TO ART AND ARCHITECTURE

L/s: 2/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr: 2

Course Overview:

Provides knowledge on traditional art form, innovations in and influences on architecture and thinking process in design;

Objectives of the Course:

To analyze various art forms, and understand the techniques involved in creative thinking.

Expected Skills / Knowledge Transferred: different skills for creative thinking, understanding various art forms, appreciate art and architecture.

Course Contents:

Unit – I

Purpose and relevance of art,

Unit – II

Development of art; A survey of history of art forms; pre-historic period to the present times; Changing nature of art through time in terms of content; form and material;

Unit – III

Exploration of art forms - study of traditional and contemporary art forms - painting sculpture, architecture, decorative arts, design arts, digital art. Relationship between art and architecture from earliest times.

Unit – IV

Definitions and general understanding of architecture, role of architect in a building project. The changing role of architects, his relation with other consultants, contractors and client, technical knowledge and other skills required as inputs. Various subjects to be learnt by architecture students, their relevance to practice.

Unit – V

Various factors influencing the architecture of a region, architecture as a response to social, technological and environment forces. Evolution of shelter forms in regions of the world and examples of vernacular architecture in the world, with particular reference to India.

Reference Books:

Craven, C. Roy. Indian Art a Concise History.

Kumar, Raj (Ed.). Essays on Indian Art and Architecture. Discovery Pub., New Delhi, 2003.

Fisher, E. Robert. Buddhist Art and Architecture. Thames and Hudson, London, 1993.

Ghosh, A (Ed.). Jain Art and Architecture Vol. 1-3. Bharatiya Jnanpith, New Delhi.

James C. Snyder, Introduction to Architecture, New York: Mc Graw Hill.

Christopher Alexander, Pattern Language, New York: Oxford University Press

Thomas Mitchell, Redefining Designing: From to Experience,

James snyder and Anthony Y catanse, Introduction to Architecture, Mc Graw-Hill Book company, New York, 1979.

Rapoport, Amos, House form & Culture

AR 1.7 COMPUTER APPLICATIONS – I

L/s:2/Wk Int: 50 End Exam: NIL Total: 50 End Exam: NIL Cr: 2

Course Overview:

The course imparts basic knowledge on computers to upgrade the general understanding and ability in computing in the realm of architecture.

Objectives of the Course:

To enable the student to make audio-visual presentations, word processing, and other basic computing.

Expected Skills / Knowledge Transferred: Knowledge on basic hardware and software required for architectural applications, Ms-Office, photo Editing techniques, use of World Wide Web.

Course Contents:

Unit – I

Introduction: Introduction and history of computer, software and hardware concepts - bits, bytes - types of languages – operating systems (windows, DOS).

Introduction to Word Processing Package, Toolbar, creating a new document, formatting text, inserting tables, pictures, page Numbers and date/time, spelling and grammar checking, taking printouts.

Unit – II

Spread Sheets: Introduction to Spread Sheets, Microsoft Excel, creating formulas, basic operations, borders and shading, creating charts.

Unit – III

Multi-media Presentations: Introduction, multi-media presentation (like MS. Power point) Creating a Presentation, different views in PowerPoint, slide manipulation, slide animation, slide transitions, view slide show, navigating while in slideshow, hyper linking to various other media/ application outputs, scanning of different media in different formats, setting of options, resolution settings, management of file size, integrating partial scans of large documents. Pack up a presentation for use on another computer.

Unit – IV

Exploring Microsoft Access:

Introduction, creating new and opening existing, creating a database using a wizard, creating a database without using a wizard, tables – and their working, creating a table from scratch, Primary Keys, Switching views, entering data, manipulating data, advanced table feature examples.

relationships - linking multiple tables together, forms – and their workings, creating a form using a wizard, reports – and their working, creating, report and mail-merge, labels using a wizard.

Unit – V

Internet concepts: Introduction to Internet, use of internet, various search engines, hyper text markup Language, e-mails.

Unit – VI

Photo Editing and Desktop Publishing (application)-I: Import and export of photo edited files, objects in photo editing, fills, outlines, basic toolbox of photo editing software (like Coral Draw), color management tools, starting your page right, introduction to Flash multimedia software.

Unit – VII

Photo Editing and Desktop Publishing (application) - II:

Introduction, software and system requirements, preferences, workspace, graphics terminology, image depth, resolution and image size, image sources, straightening and cropping of images, basic correction of images, printing, Photoshop software: selections, choosing foreground and background colors, filling with color, options and preferences, file browser, stepping back in time, use ram efficiently, sharpening images, working with layers, painting, color theory, image modes, channels, more advanced adjustment commands, file format categories.

Reference books:

Adobe Creative Team. Adobe Photoshop CS (Class Workbook).

Droblas, Adele. Fundamental Photoshop: A Complete Introduction, Greenberg.HTML Black Book

Sagman. Microsoft Office for Windows, India Addison Wesley, 1999.

Woody, Leon Hard. Microsoft Office 2000, Prentice Hall of India, New Delhi.

AR 1.8 WORKSHOP

<i>L/s: 4/Wk</i>	<i>Int: 50</i>	<i>End Exam: NIL</i>	<i>Total: 50</i>	<i>End Exam: NIL</i>	<i>Cr: 4</i>
------------------	----------------	----------------------	------------------	----------------------	--------------

Course Overview:

The course provides the foundation and capability to represent the concepts three dimensionally.

Objectives of the Course:

To introduce various fabrication skills and techniques necessary to produce scale-models and to encourage preparation of models as an essential phase in design development and evaluation.

Expected Skills / Knowledge Transferred: Dexterity; Knowledge of materials and their properties; craft skills; visualization skills;

Course Contents:

Unit – I

Introduction to model-making: Need; role of scale-models in design; general practices; Digital models.

Unit – II

Essentials of model-making: understanding of various tools and machines employed, best practices involved in operating the tools and the techniques.

Unit – III

Survey of various materials available for model making such as papers , mount boards , wood, plastics, films, plaster of paris, acrylic, Styrofoam, wax, metals, glass, FRP, etc. and exploring

Their potential in model-making. .chamfering at 45 degrees in mountboard.

Unit – IV

Techniques of Scale-modeling: Use of different scales; templates; measuring aids; conventions followed.

Unit – V

Techniques for preparation of presentation models, mock-ups, simulation of various materials and textures such as wood, glass, aluminum, steel, bricks, roofing tiles, flooring, corrugated sheets, upholsteries etc.

Unit – VI

Carpentry: Introduction to the use of different types of tools and different types of joints used in carpentry. Joinery details which are commonly used in timber construction. Application of surface finishes such as polish, varnish, lacquer on wood.

Unit—VII

Photography in built models, using lighting and natural background.

Assignments.

At least three major assignments involving the individual students to fabricate

- a. Scale model of a piece of furniture
- b. Presentation of models
- c. mock-up of an everyday object
- d. Three-dimensional forms etc.

Documentation of the important phases of fabrication is must which shall become the basis for internal evaluation.

Reference books:

Bernald, S and Copplene, Myers. History of Art.

Craven, C. Roy. Indian Art a Concise History.

Krier, Rob. Element of Architecture. Academy Editions, London, 1992.

Lang, Jon. A Concise History of Modern Architecture in India. Permanent Black, Delhi, 2002.

Magnet, Jacque. The Aesthetic Experiences: An anthropologist looks at the Visual Art.

Preble, Duame. Art Forms.

Snyder, C. James and Catanese, J. Anthony. Introduction to Architecture.

Tapert, Annette. Swid Powell: Objects by Architects. Rizzoli, New York, 1990.

Thyagarajan. Basic practical photography

Ching Francis D.K Architecture: Form, Space, and Order

SECOND SEMESTER

AR 2.1 ARCHITECTURAL DESIGN – I

L/s: 9/Wk Int: 200 End Exam: 200 Total: 400 End Exam: 5 hrs Cr: 9

Course Overview:

This course is intended to provide framework for understanding design as a process.

Objectives of the Course:

To impart knowledge related to design process and introduce various problem solving approaches.

Expected Skills / Knowledge Transferred:

To understand principles of design. To develop the ability to translate abstract principles of design into architectural solutions for small problems.

Course Contents:

Unit - I

Anthropometrics: Basic -average measurements of human body in different postures-its proportion and graphic representation, application in the design of simple household and street furniture. Use of mannequins in defining spatial parameter of design.

Unit - II

Study of functional spaces and the issues like clearances, lighting and ventilation, furniture arrangements; Minimum and optimum areas for various functions; Detailed study of spaces such as living, dining, bedrooms, kitchen, toilet, etc.

Unit - III

Study of the human considerations like, privacy, convenience, comfort, etc.; Case study of a house and a critical appraisal of the spaces.

Unit - IV

Introduction to design process. Pre- Design Studies: Preparation of design brief, the user requirement and their implications, Study of the site and the context; Design Response: Development of concept, Graphic tools like circulation diagrams, Figure Ground studies, etc. Integration of form and function in the design of bus shelter, milk booth, watchman's cabin, traffic police kiosk, flower stall, ATM Center, etc.

At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1980.

Kirk, Paul Hayden and Sternberg, D. Eugene. Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA, 1960.

Neufert, Ernst. Ernst Neufert Architects Data, Granada Pub. Ltd., London, 1970.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub. Co., New Delhi, 1996.

AR 2.2 ARCHITECTURAL DRAWING AND GRAPHICS – II

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Cr: 4

Course Overview:

The course is intended to develop the techniques of architectural drawing pertaining simple and complex solid geometrical forms of Building geometry Sciography and Documentation .

Objectives of the Course:

To impart the skills of three dimensional visualization and presentation.

Course Contents:

Unit – I

Building Geometry: Study of points, lines, and planes leading to simple and complex solid geometrical forms; Orthographic Projections-Representation of 3D elements in Plan and Elevations, use of circle in mouldings- Ovolo Covetta, Ogee, Lancet, Horse shoe, Moorish, Stilted and Rampant, Tudor, three centered and drop. Exercises on Ionic volute, Entasis of column etc., working with models to facilitate visualization.

Unit –II

Sciography:

Simple and composite forms, shadows on horizontal, vertical planes and on their own surfaces. Study of shade and shadows of simple geometrical solids of various forms and groups of forms.

Shade and shadow techniques leading to advanced practical examples: shades and shadows on buildings or parts of buildings. Relative changes in building shades and shadows with sun angle, time, building height . Introduction to sciography in perspective.

Unit-III

Architectural Documentation:

Detailed measured drawing and documentation of any interesting building – preparation of maps, plans, elevations, sections, views etc.

Reference books:

Thoms, E. French. Graphic Science and Design, New York: MC Graw Hill.

Nichols, T.B. and Keep, Norman. Geometry of Construction, 3rd ed. Cleaver – Hume Press Ltd., London, 1959.

Bhatt, N.D. and Panchal V.M. Engineering Drawing: Plane and Solid Geometry, 42nd ed. Charotar Pub., Anand, 2000.

Gill, P.S. T.B. of Geometrical Drawing, 3rd ed. Dewan Suhil Kumar Kataria, Ludhiana, 1986

Shah, M.G., Kale, C.M. and Patki, S.Y. Building Drawing: with an integrated approach to built environment, 7th ed. Tata McGraw Hill Pub., Delhi, 2000.

Claude Batley -Design Development of Indian Architecture

Ernest Burden -Architectural Delineation

AR 2.3 BUILDING CONSTRUCTION- II

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Cr: 4

Course Overview:

The course introduces to the methods and techniques of construction of doors and

windows, stairs and partitions of a building using different materials.

Objectives of the Course:

To understand the elementary and simple construction methods like joinery details in wood ,fixing of hardware.

Expected Skills / Knowledge Transferred:

To understand the techniques of constructing doors and windows, staircase and partitions using different materials

Unit – I

Carpentry and joinery: Terms defined; mitring, ploughing, grooving, rebating, veneering. Various forms of joints in wood work, such as lengthening joints, bearing joints, halving, dovetailing, housing, notching, tusk and tenon etc;

Unit – II

Doors: Definition of terms, types of doors: wooden, ledged, ledged and braced, paneled, flush door. Hinged, single and double shutters, sliding, folding, revolving, pivoted.

Unit – III

Windows: Casement, top and bottom hung, pivoted and sliding sash.
Hardware: fixtures, locks, hinges, fastenings for doors and windows.

Unit – IV

Steel: windows, rolling shutters and grills. Aluminium doors and windows.

Unit – V

Wooden ground and upper floors: Terms defined, bridging joists, binding joists, binders, beams and girders, solid and herring bone strutting, floor boards, ceiling joists, trimming floors to accommodate fire place. Details of fire place.

Unit – VI

Partition Walls: Brick partition, reinforced brick partition, brick nogged partition, lath and plaster partition, pre-cast concrete partition, glass block and glass create partition, common wooden partition, trussed partition.

Unit – VII

Staircases: Terms defined, Tread, riser, stringer, nosing, flight, landing, head room, handrail, balusters, newel post etc., types of stairs i.e., straight, doglegged, open well, geometrical, circular, spiral, bifurcated, wooden stairs, stone stairs, metal stairs and elementary knowledge of R.C.C. stairs.

Reference Books

Barry, R. The Construction of Buildings Vol. 2, 5th ed. East-West Press. New Delhi, 1999.

Bindra, S P. and Arora, S P. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub. New Delhi, 2000.

Hailey and Hancork, D.W. Brick Work and Associated Studies Vol. 2. MacMillan, London, 1979.

Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.

Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand, 2004.

Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub, Delhi, 2003.

AR 2.4 BUILDING MATERIALS – II

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr: 3

Course Overview:

The course is intended to provide information on the properties, uses, installation and costs of building materials. The course highlights on Mechanical and physical properties of various materials. Influence of various factors on these properties. Causes of defects, their prevention and remedies. Testing of materials.

Objectives of the Course:

To provide knowledge on the various types of building materials used while highlighting the current innovations and trends.

Expected Skills / Knowledge Transferred:

Knowledge required for specifying appropriate materials for various spaces in buildings.

Course Contents:

Unit – I

Laminates and Veneers: Resin bonded ply wood, types of laminates, laminated wood, insulating boards and other miscellaneous boards, veneers from different varieties of timber, their characteristics and uses MDF& HDF Boards.

Unit – II

Paints and Varnishes: Protective coating, paints, constituents of paints, their functions, water paints, distempers, and cement based paints, emulsion paints, selection of paints, and storage of paints.

Types varnishes (oil and spirit): characteristics and uses of varnishes. French polish, anti-corrosive paint, damp proofing finishes.

Unit – III

Glass and glass products: Composition and fabrication of glass, types of glass, wired glass, fiber glass, rock wool, laminated glass, glass-crete blocks, structural glass, their properties and uses in buildings.

Unit – IV

Plastics: Polymer types, thermo setting and thermo plastics, resins, common types of moldings, fabrication of plastics, polymerization and condensation, plastic coatings.

Composite materials, classification, properties and uses - linoleum, plastic coated paper, polythene sheets, reinforced plastic, plastic laminates and PVC.

Unit – V

Floorings :Introduction, essential requirements of a floor, factors affecting selection of flooring material, Various natural as well as artificial flooring materials like brick, flag stone, tiled ,cement concrete, granolithic, terrazzo, marble, shahbad stones timber flooring, timber floor supported on RSJ ,flag stone floor resting on RSJ,, vitrified tiles, ceramic tiles, , Mosaic, rubber, Linoleum, and PVC and PVA flooring

Unit – VI

Roof Coverings: Introduction, requirements of good roof technical terms, classification, types of roof coverings for pitched roof. : Roofing tiles and roofing with cement products like A.C. sheet roofs, G.I. Sheets roofs, slates,

Unit – VIII

Miscellaneous Materials and treatments: Properties and uses of Asbestos, cork, felt, mica, adhesive, Bakelite, china clay, fiber glass, leather, canvass, jute, rubber, Asphalt and Bitumen

Materials for Special Treatments: Fire resistant, waterproofing, thermal insulation, acoustical treatment and anti-termites treatment.

Reference books:

Chowdary, K.P. Engineering Materials are used in India, 7th ed. Oxford and IBH Pub. Ltd., New Delhi, 1990.

Moxley, R. Mitchell"s Elementary Building Construction, Technical Press Ltd.

Rangwala, S.C. Building Construction: Materials and types of Construction, 3rd ed. John Wiley and Sons, Inc., New York, 1963.

AR 2. 5 STRUCTURAL MECHANICS –II

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr: 3

Course Overview:

Gives an in-depth understanding of the concepts associated with different Elements of Structures.

Objectives of the Course:

To provide knowledge of behavior beams, columns stress behavior due to applied forces.

Expected Skills / Knowledge Transferred: Basic principles of mechanics and behavior of elements of structures.

Unit-I

Theory of simple bending Introduction, pure bending & ordinary bending, Assumptions derivation of flexure formula section modulus Numericals on flexure equation.

Unit-II

Shear stresses in beams Introduction, derivation of shear stress formula, shear stress distribution for standard shapes like rectangle circle triangle I, T L, C Section Numericals.

Unit-III

Direct & bending Stresses Introduction, stress distribution of eccentrically loaded column, middle third rule, core or Kernal of Section, stress distribution for column with one axis eccentricity, two axis eccentricity, Numericals.

Unit IV

Deflection-I-Introduction of slope & deflection, slopes & deflections for cantilever beams with point load & udl's using double integration method & moment area methods

Unit V

Deflection-II- Introduction of Macaulay's method, slopes & deflections simply supported beams with point load & udl's double integration & Macaulay's methods

Unit-VI

Fixed beams Introduction Advantages and disadvantages of fixed beams over simply supported beams, SFD & BMD for fixed beams with combination of point loads & udl's (No formula derivations)

Unit-VII

Propped Cantilevers Introduction, Reaction of a prop, Cantilevers with Udl's, point loads, prop at end & at intermediate positions, slope & deflection

Unit-VIII

Welded joints: Introduction, Advantages and disadvantages of welded joints, types, strength of fillet weld, design of welded joint for plates and unsymmetrical sections for axial loading

Reference Books:

Khurmi. R.S. Engineering Mechanics, S. Chand and Co.Ltd., New Delhi, 1999.

Ramamrutham. S. Engineering Mechanics, 7th ed. Dhanpat Rai Pub. Co. Ltd., Delhi, 2004.

Timoshenko. S. and Young, D.H. Engineering Mechanics, McGraw-Hill International Editions

AR 2. 6 HISTORY OF ARCHITECTURE- I

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr: 3

Course Overview:

History of Architecture to be studied as development of building forms in response to social, religious, aesthetic and environmental factors. The study should focus on the three dimensional forms, plan forms, façade organization, structural solution, construction methods and ornamentation. The study should focus on the general trends and not on specific examples of buildings.

Objectives of the Course:

- To expose the students to a wide spectrum of architectural styles ranging from pre-historic to modern times.
- To explain the students the evolution of architecture in relation to time with special emphasis to social, religious and environmental factors.
- To make the students understand the developments in the construction technology in different periods.

Expected Skills / Knowledge Transferred:

- 1) Acquire knowledge to identify the common characteristics among the monuments of a particular style.
- 2) Acquire graphic skills to present a building, analyze its elements and explain the composition.
- 3) Acquire knowledge on good practices of architecture in the past.

Course Contents:

Unit – I

Architectural development in the ancient civilizations in Indus valley, Egypt and Mesopotamia, Study of Pyramids, Temples, Mastabas, Ziggurats.

Unit – II

Architecture in the Classic Greek periods, different orders, optical correction and appreciation of perfection.

Unit – III

Architecture in Roman period; Grand scale, application of Greek orders; Construction of vaults; study of different typologies of buildings; development of roads and aqueducts;

Unit – IV

Architecture in the early Christian, Byzantine, Romanesque, Gothic periods in Europe and rest of the world excluding Asia.

Unit – V

Architecture in Renaissance and Baroque: revival in architecture, study of building typologies.

Unit-VI

The other architecture styles preceding the advent of Industrial revolution in Europe - Mannerist architecture, Jacobean architecture, Elizabethan architecture, Victorian architecture and Moorish architecture.

Reference books:

Fletcher, Sir Banister. A History of Architecture, 19th ed. CBS Pub., Delhi, 1992.

Yarwood, Doreen. A Chronology of Western Architecture. B.T. Batsford Ltd., London, 1987.

Schulz, Christian Norberg. Meaning in Western Architecture, 2nd ed. Rizzoli Intl. Pub., New York, 1981.

Copplistone, Trewin and Others. World Architecture: An Illustrated History, 11th ed. Hamlyn, London, 1979.

Bindoo. D.D, History of Architecture, Milind P Lakshana, Hyderabad – 2006.

Wittkaner R Architectural Principles in the Age of Humanism, Chichester :Academy Editions 1998

AR 2.7 SURVEYING AND LEVELING

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr: 4

Course over view

To explain the different techniques and instruments used in survey of land tracts

Objectives of the Course:

To explain the techniques and instruments used in survey of land tracts.

Expected Skills / Knowledge Transferred:

Surveying skills and related theory.

Course Contents:

Unit – I

Introduction – Definitions – Basic Principles of Surveying; Classification of Survey; Uses of Survey - Scales and Symbols-Sources of errors in Survey – Linear Measurement: accurate and approximate methods, duties of Surveyor.

Unit – II

Chain Surveying – Introduction – Types of chains and tapes. Instruments for chaining and taping – ranging-cross staffs – offsets – obstacles in chain surveying – errors and corrections (standardization, temperature and pull) composition of Areas (Trapezoidal rule – Average ordinate-Simpson rule).

Unit – III

Compass Surveying: Introduction – Prismatic Compass and Surveyors Compass – Types of Bearings-Designation of bearings – Fore bearing and back bearing – Types of Traverse – Temporary adjustments of prismatic compass, local attraction, Corrections, precautions, errors.

Unit – VI

Plane Table Survey: Introduction – Types of Plane Tables and their Accessories – Setting up the plane table – traversing – Radiation Method – Intersection Method – Resection Method (two point problem). Three point problem

Unit – V

Leveling – Introduction –Definitions of terms used in leveling – Principle of leveling – Classifications temporary adjustments of dumpy level, RL's by height of Instrument and rise and fall method, Contouring and their characteristics, uses, – errors in leveling.

Unit – VI

Theodolite – Introduction – vernier Theodolite – uses of Theodolite - Temporary adjustments – Traversing.

Unit – VII

Automated Surveying – Introduction to use of Digital Surveying – Instruments such as distomat – total station, Electronic Theodolite, G.P.S.

Unit – VIII

Site Studies – Plot, site, land and regions, size and shape of site, Analysis of accessibility, Topography, Climate, land forms, Surface Drainage, Soil, Water, Vegetation, Ecology and Visual aspects.

Reference books:

Arora, K.R. Surveying Vol. I, 6th ed. Standard Book House, Delhi, 2000.

Lynch, Kevin. Site Planning. MIT Press, Massachusetts, 1962.

Punmia, B.C. Surveying Vol. 1, 13th ed. Laxmi Publications Pvt. Ltd., New Delhi, 1996.

THIRD SEMESTER

AR 3.1 ARCHITECTURAL DESIGN – II

L/s: 9/Wk Int: 200 End Exam: 200 Total: 400 End Exam: Viva-voce Cr: 9

Course Overview:

This course is intended to provide skills for designing a single use, small span and single-storey buildings.

Objectives of the Course:

To develop abilities in design in the context of user requirements.

Expected Skills / Knowledge Transferred: Use of standards, handling of space, and application of knowledge gained from other subjects in design.

Course Contents:

The design issues to be addressed:

Various functions and their spatial implications.

Formulations of concept.

Anthropometry and furniture layout

Horizontal circulation

Interior volumes and space articulation through different materials.

Integration of form and function.

The list of suggested topics to be covered as design problems:

Balwadi, Kindergarten School, Primary Health Centre, Doctor's Clinic, small Cafeteria, Highway Restaurant, Village Post Office, Bank extension counter, Police Station, Architect's Office, Departmental Store, School Gymkhana and Youth Club etc.

Necessary theoretical inputs to be given highlighting the norms and design issues.

The topics not covered as design problems

will have to be covered by the Studio faculty members through lecture/slide show sessions and site visits.

At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems.

Note: In end exam which is a viva-voce the students have to present the entire semester work for assessment.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1980.

Kirk, Paul Hayden and Sternberg, D. Eugene. Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA, 1960.

Neufert, Ernst. Ernst Neufert Architects Data, Granada Pub. Ltd., London, 1970.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub. Co., New Delhi, 1996.

AR 3.2 ARCHITECTURAL DRAWING AND GRAPHICS – III

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Cr: 4

Course Overview:

The course is intended to develop the techniques of architectural rendering, graphic skills required for effective presentations and documentation techniques.

Objectives of the Course:

To impart the skills of composition, rendering and documentation

Course Contents:

Introduction to Pictorial Views:

Isometric, Dimetric and Trimetric Views, Oblique View etc.

Unit –I

Perspective:

Characteristics of perspective drawings: perspectives of simple geometric solids and spaces and complex geometries. Advanced examples in one point or parallel perspective, two point or angular perspective, introduction to three point perspective.

Unit-II

Rendering techniques:

Introduction to surfaces and media, observation, recording and basic representation techniques in different media through drawing pencil, pen, brush,

charcoal, crayons etc.

Introduction of rules of composition, color study, values, tones and general approach to rendering, Entourage, Treatment of sky, clouds, landscape elements, human figures, foreground and surroundings, shadow projections in renderings.

Unit-III

Graphic skills and Presentation Techniques:

Page layout and Composition grids; Illustration techniques; Portfolio design and formats; Digital techniques in graphics

Reference books:

David E. Carter, The Big Book of Design, David E. Carter Books

Joyce Rutter Kaye, **Design Basics**, Rockport.

Graphics Book, Rotovision

Ellen Lopton and Jennefer Cole Phillips, Graphic Design The New Basics, Princeton Architectural Press

Atkin, William W, Corbelletti, Raniero and Fiore, R. Vincent. Pencil Techniques in Modern Design, 4th ed. Reinhold Pub. Corporation, New York, 1962.

Bellings, Lance Bowen. Perspective-Space and design.

Burden, Ernest. Architectural Delineation: A photographic approach to presentation, 2nd ed. McGraw-Hill, Inc., New York, 1982.

Conli, Claudius. Drawings by Architects.

Hagarth, Paul. Drawing Architecture.

Pranchlay, H. Perspective

AR 3.3 BUILDING CONSTRUCTION-III

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Cr:4

Course Overview:

The course focuses on understanding the potentials as well as shortcomings of RCC as a building material.

Objectives of the Course:

To introduce and expose the students to various ways in which RCC is used in building construction. The course intends to impart the theory of reinforced concrete construction (in conjunction with the Theory of Structures which is a separate course), and practical knowledge through site visits to the construction sites.

Course Contents:

Unit - I

Introduction to RCC: Understanding the properties and characteristics of RCC. Its advantages and disadvantages. Cast-in-situ and pre-cast constructional methods in RCC.

Unit - II

Understanding the structural components of a typical RCC frame structure with reference to their location, junctions, load transfer and design.

Unit III

Substructure: RCC foundations – isolated footing (rectangular and trapezoidal footings), pile foundation, combined footing, raft foundation.

Unit – IV

Superstructure: RCC columns – different shapes, different combinations and loading conditions (axial, bending, non axial), slenderness factor. RCC beams - Single and doubly reinforced beams, T and L beams, continuous beams, lintels and brackets. RCC slabs – One way and two way slabs.

Unit - V

Miscellaneous: RCC staircases and ramp – Waist slab and folded plate staircases. RCC Balconies, chajjas etc.

Unit VI

Advanced concepts: Flat slab, coffered slab, diaphragms, retaining walls and water tanks.

Note: This is a studio subject and students should be made to prepare construction drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate side visits.

References:

Bindra and Arora. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub., New Delhi, 2000.

Foster, J. Stroud. Mitchell Building Construction: Elementary and Advanced, 17th ed. B.T. Batsford Ltd, London, 1963.

McKay, W.B. Building Construction Metric Vol. 1 – IV, 4th ed. Orient Longman, Mumbai, 2005.

Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub. Distributors, Delhi, 2003.

AR 3. 4 STRUCTURAL MECHANICS –III

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr: 3

Objectives of the Course:

To impart sound knowledge of strength, behavior of various materials and techniques in the analysis of structures.

Expected Skills / Knowledge Transferred:

Ability to analyze the standard members in structures.

Course Contents:

Unit – I

Continuous beams: Shear Force and Bending Moment diagrams for continuous beams using theorem of three moments (excluding derivation and sinking of supports).

Unit – II

Moment Distribution Method: Introduction, carryover, relative stiffness, application of Moment Distribution Method to Continuous beams, single bay frame without sway (excluding sinking of supports)

Unit – III

Kani's method / Rotation Contribution Method: Introduction, rotational factors, application of Kani's method for beams and frames (single bay with out sinking of supports).

Unit – IV

Columns and Struts: Buckling and crushing failures, types of end conditions, Euler's theory of long columns for different end conditions and equivalent length derivations, Rankine's equation, Derivation and application of the basic formula.

Unit-V

wind pressure on chimneys ,Maximum & Minimum intensities of stress at bottom of chimneys Retaining walls subjected to earth pressure.

Unit – VI

Torsion of Shafts: Assumptions, Derivation of basic equation $T/J = G\theta/l = fs/R$, Power Transmitted by shafts, application of basic equation to shafts.

Unit – VII

Arches: Determination of horizontal thrust, bending moment and radial shear for three-hinged parabolic and segmental arches with supports at same level and different levels.

Reference books:

A.K.Jain and Punmia. Strength of Materials

Ramamrutham, S. Theory of Structures, 17th ed. Danpat Rai Pub. Co. Ltd., New Delhi, 2005.

Reddy, C.S. Basic Structural Analysis, 18th ed. Tata McGraw Hill Pub.Co.Ltd., New Delhi, 1991.

AR 3. 5 HISTORY OF ARCHITECTURE– II

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr: 3

Course Overview:

History of Architecture to be studied as development of building forms in response to social, religious, aesthetic and environmental factors. The study should focus on the three dimensional forms, plan forms, façade organization, structural solution, construction methods and ornamentation. The study should focus on the general trends and not on specific examples of buildings.

Objectives of the Course:

- To expose the students to a wide spectrum of architectural styles ranging from pre historic to pre independence period in India.
- To explain the students the evolution of architecture in relation to time with special emphasis to social, religious and environmental factors.
- To make the students understand the developments in the construction technology in different periods.

Expected Skills / Knowledge Transferred:

- 1) Acquire knowledge to identify the common characteristics among the monuments of a particular style.
- 2) Acquire graphic skills to present a building, analyze its elements and explain the composition.
- 3) Acquire knowledge on good practices of architecture in the past.

Course Contents:

Unit – I

Development of Vedic Architecture, Development of architecture in India and rest of Asia in Buddhist Architecture

Unit – II

Evolution of Hindu temple form, early rock cut examples; Early Chalukyans.

Unit – III

Development of Hindu Architecture: Nagara style in Orissa, KahjuraHo, Gujarat etc.

Unit – IV

Development of Hindu Architecture: Dravidian style in Pallava, Chola, Pandya periods.

Unit – V

Development of Hindu Architecture under late Chalukyans, Development of Jain Architecture.

Unit-VI

Islamic Architecture in India: Early Saracenic School in India: Imperial school at Delhi

Unit-VII

Islamic Architecture in India: Provincial styles at Gujarat, Deccan, Bengal, Moghul Architecture in India.

Reference books:

Brown, Percy. Indian Architecture: Buddhist and Hindu Periods. D.B. Taraporevala Sons and Co., Mumbai, 2003.

Grover, Satish. The Architecture of India. Vikas Pub. House Pvt. Ltd., Ghaziabad, 1980.

Rowl, Benjamin. Art and Architecture of India.

Tadgell, Christopher. The History of Architecture in India: from the Dawn of Civilization to the End of the Raj. Om Book Service, New Delhi, 1990.

Vistara. The Architecture of India

AR 3.6 BUILDING SERVICES – I

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr:4

Course Overview:

Understanding the significance, design and functioning of water and sewerage systems as essential components in building design and site planning.

Objectives of the Course:

To introduce and expose the students to various ways to provide information on the principles and appurtenance of water supply and sanitation systems.

Expected skills and knowledge transferred: To enable students to design sanitary and water supply systems for buildings, and prepare water supply and drainage plans for building sites.

Course Contents:

Water Supply

Unit- I

Introduction to water supply and sanitation. Traditional sources of water supply and sanitation. Classification of water based on its usage.

Unit – II

Elements of public / private water supply system, Different sources of water supply such as wells, reservoirs, etc. Water and its qualities, pumping and Distribution

Unit – III

Types of fittings like taps, bathtubs, showers, jets, cocks, valves, electrical fixtures, etc. Faucets for kitchens, bathrooms and toilets. Check valves, foot valves, sump pump check valves, and pressure test gauges.

Unit – IV

Building service connections, cold and hot water distribution systems in buildings and their design, materials, joints, fittings and valves (gate, flap, ball, flush valves etc.). Direct and indirect systems, individual water supply, special installation in multistoried buildings. Special emphasis on city level distribution of water.

Sanitation

Unit – V

Conventional water treatment – sedimentation, coagulation, filtration and disinfection. Distribution system, sanitary, storm and combined sewerage system. Design of sewerage systems, Location of sewage systems, conventional wastewater treatment, activated sludge, trickling filters etc.

Unit – VI

Design of drainage and vent pipes, system for low-rise and high-rise buildings, building drains, sewers, gullies, inspection chambers, manholes, connection to public sewer, cross connections, ferrule, water meters, stopcocks, bib cocks etc.

Unit VII

Types of fixtures and materials- wash basins, water closets, urinals, bidets, sinks etc. Conditions of flow in building drainage pipes, traps, vents and their material

specifications. Over-head and under-ground reservoirs. Details study of Independent House and Apartment

Unit –VIII

Waste -water disposal systems, septic tank and its design, soil absorption system, alternatives, solid wastes collection and removal from buildings. On-site processing and disposal methods. Aerobic and Anaerobic decomposition, purifying capacity of water bodies. Biochemical Oxygen Demand

Unit – IX

Roads and Pavements – Different types, water bound macadam, tar bitumen, asphalt and Cement concrete roads, soil stabilization, types of paving-murram, brick, and stone paving. Drainage of roads, sub-drains, culverts, ditches and gutters.

References:

Husain, S.K. T.B. of Water Supply and Sanitary Engineering, 3rd ed. Oxford and IBH Pub. Ltd., New Delhi, 1994.

Kshirsagar, S.R. Water Supply Engineering, 6th ed. Roorkee Pub., Roorkee, 1980.

Rangwala, S.C. Water Supply and Sanitary Engineering: Environmental Engineering, 19th ed. Charotar Pub. House, Anand, 2004.

AR 3.7 CLIMATOLOGY

<i>L/s: 3/Wk</i>	<i>Int: 50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>End Exam: 3hrs</i>	<i>Cr:3</i>
------------------	----------------	---------------------	-------------------	-----------------------	-------------

Course Overview:

Science (tools, data, standards, methods and principles) of building design and site planning as related to climate, particularly to tropical climates as found in India.

Objectives of the Course:

To equip the student with the basic understanding of climatic types in India, and the impact on requirements of building design and site planning; to introduce them to the basic science of building design and site planning for thermal comfort, daylighting and natural ventilation; familiarize them with the data, methods, principles, standards and tools for planning and designing for climatic comfort

Expected Skills / Knowledge Transferred:

The student should be able to 'predict' climatic conditions in a given building (simple residence) and undertake redesign for given parameters

Course Contents:

Note: The topics here to be dealt with keeping in mind Indian climatic conditions.

NBC and BIS guidelines / standards have to be introduced at all relevant contexts.

Unit – I

Introduction to Building Climatology:

Climate and built form interaction. Global Climatic factors, elements of climate, graphic representation of climatic data, Mahoneys Tables, macro and micro climate; challenge of rapid, extreme environmental change

Unit – II

Tropical Climates:

Definition, classification of tropical climates, characteristics of different climatic zones, Design considerations for warm-humid, hot-dry, composite and upland climates.

Unit – III

Thermal Comfort:

Thermal comfort factors, Physiological aspects, Body heat balance, comfort range, comfort charts.

Unit – IV

Heat flow through Buildings:

Basic principles of heat transfer through buildings, performance of different materials, Periodic heat flow.

Unit – V

Sun and the Design process:

Solar geometry, Solar charts, Sun angles and shadow angles, orientation for sun, sun control, design of shading devices, building form and heat gain, basic principles of daylighting, sunlight and glare.

Unit – VI

Natural Ventilation:

Air movement around and through buildings, Orientation for wind, stack effect, Induced ventilation.

Unit – VII

Passive Cooling:

Passive methods of Cooling, roof pond, desiccant cooling, evaporative Cooling, and earth sheltered buildings etc.

Site Planning (including landscaping) and building planning and design considering climate factors

Detailed appraisal/analysis of climatological performance of an existing residence and or a workplace; followed by redesigning or the same to improve climatological performance.

Reference books:

Koenigsberger, O.H. and Others. Manual of Tropical Housing and Building. Orient Longman, Chennai, 2003.

Konya, Allan. Design for Hot Climates.

Kukreja, C.P. Tropical Architecture. Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 1978.

Markus, T.A. and Morris. E.N. Buildings, Climate and Energy. Pitman Pub. Ltd., London, 1980.

Olgay and Olgay. Solar Control and Shading Devices.

FOURTH SEMESTER**AR 4.1 ARCHITECTURAL DESIGN- III**

L/s: 9/Wk Int: 200 End Exam: 200 Total:400 End Exam: Viva-voce Cr: 9

Course Overview:

This course focuses on buildings for residential use.

Objectives of the Course:

To enhance the understanding of the complexities of architectural design for residential needs and develop creative design solutions for good living environments.

Course Contents:**The design issues to be addressed:**

Organization of functional activities in relation to user requirements and the site.
Relating the system of horizontal and vertical circulation, open spaces, parking etc.

Responding to socio-economic factors such as income levels, privacy, territoriality, interaction etc.

Considering materials, structure and services in relation to the design proposal.

Integration of plan forms and three dimensional compositions.

Detailing for the physically handicapped and the elderly.

The list of suggested topics to be covered as design problems:

Large guest house, students hostel, small hotel, holiday resort, motel, row houses, block of flats and residential complexes at a small scale, housing for specific communities in urban and rural areas such as home for the aged,

fishermen's housing etc.

Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems will have to be covered by the Studio faculty members through lecture/slide show sessions and site visits.

At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems.

Note: In end exam which is a viva-voce the students are to present the entire semester work for assessment.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1990.

Neufert, Ernst. Ernst Neufert Architects Data, Granada Pub. Ltd., London, 2000.

Peloquin, Albert. Barrier-Free Residential Design. McGraw-Hill, Inc., New York, 1994.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub., New Delhi, 1996.

Untermann, Richard and Snall, Robert. Site Planning for Cluster Housing.

AR 4.2 BUILDING CONSTRUCTION-IV

<i>L/s: 4/Wk</i>	<i>Int:50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>End Exam: 5 hrs</i>	<i>Cr:4</i>
------------------	---------------	---------------------	-------------------	------------------------	-------------

Course Overview:

The course work deals with principles, methods and construction practices of structural steel work.

Objectives of the Course:

To introduce and expose students to various aspects involving use of steel for construction activity of buildings and structures.

Course Contents:

Unit - I

Structural Steel Work: General principles and terms defined, standard sections i.e. beams joints, angles, channels, tees, bolts, rivets and welding.

Unit – II

Steel Work Connections

Bolt Connections, Riveting and welding methods.

Unit – III

Steel Members

Columns and stanchions, stanchions or column bases, beam and girders, column and beam connections plate girders, lattice or warren girder.

Unit - IV

Steel Roof Trusses

Steel trusses, types for various spans, tubular steel roofs, monitor roof, north light roof truss, details of steel –roof trusses.

Unit – V

Lantern light, dome light, structural steel practice and drawings as per IS Code.

Unit – VI

Portal frame, Geodesic principles, cable net and tensile structures.

Note: This is a studio subject and students should be made to prepare construction drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate site visits.

Reference books:

Bindera and Arora. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub., New Delhi, 2000.

McKay J.K. Building Construction Metric Vol. 4, 4th ed. Orient Longman Pvt. Ltd., Mumbai, 2002.

Mitchell. Advanced Structures.

Rangwala, S.C. Engineering Materials: Material Science, 31st ed. Charotar Pub. House, Anand, 2004.

AR 4.3 DESIGN OF STRUCTURES - I

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3hrs Cr:3

Course Overview:

This course focuses on structural design of different elements of building in RCC.

Objectives of the Course:

To develop the structural design skills in RCC elements

Course Contents:

Unit – I

Introduction to RCC design, Design Philosophies: Working stress and limit state method, singly reinforced beam, Analysis and Design using both working stress and limit state methods.

Unit – II

Situations where doubly reinforced beams are used, analysis and design of doubly reinforced beam using limit state method only.

Unit – III

T-beams: introduction, analysis and design of T-beam using Limit State method only. Design of shear reinforcement for all types of beams with and without cranking (Limit State method only)

Unit – IV

Slabs: Introduction, Design of One way and two way reinforced slabs (simply supported, Restrained, continuous) by limit state method only.

Unit-V

Design of axially loaded RCC columns and columns subjected to BM about one and two axis using limit state method only.

Unit-VI

Design of stair case (Dog-legged only) using working stress method.
Design of lintels and cantilever beams and slabs using limit state method only

Unit-VII

Design of RCC Isolated footings for columns (Square and Rectangle) - working stress method only.

Unit-VIII

Introduction, to prestressed concrete, Pretensioning & Post tensioning methods, Problems of beams.

Reference books:

A.K.Jain. Reinforced Concrete: Limit State Design, 5th ed. New Chand and Bros., Roorkee, 1999.

Ramamrutham. S. and Narayan, R. Design of RCC Structures, 12th ed. Dhanpat Rai Pub. Co. Pvt. Ltd., Delhi, 1998.

AR 4.4 HISTORY AND THEORY OF ARCHITECTURE-I

L/s: 3/Wk Int: 50 EndExam:50 Total: 100 End Exam: 3hrs Cr:3

Course Overview:

History of Architecture to be studied as development of building forms in response to social, religious, aesthetic and environmental factors. The study should focus on the three dimensional forms, plan forms, façade organization, structural solution, construction methods and ornamentation. The study should focus on the general trends and theories and not on specific examples of buildings.

Objectives of the Course:

To expose the students to a wide spectrum of architectural styles and theory.

To explain the students how architecture evolved in relation to time with special emphasis to social, religious and environmental factors.

To make the students understand the developments in the construction technology in different periods.

Expected Skills / Knowledge Transferred:

1. Acquire knowledge to identify the common characteristics among the monuments of a particular Style.
2. Acquire graphic skills to present a building, analyze its elements and explain the composition.
3. Acquire knowledge on good practices of architecture in the past.

Course Contents:**Unit – I**

Influence of Industrial Revolution on building materials, Construction Technology, evolution of new building types and increasing user requirements.

Unit – II

Characteristic styles of modern architecture up to First World War. Steel structures, Arts and crafts movement, Art Nouveau, Vienna School, Chicago School,

Monumentalism, Expressionism and beginning of RCC. Theories of John Ruskin, William Morris, Henry Vande velde, Otto Wagner, Peter Behrens and Louis Sullivan.

Unit – III

Contributions to Architecture and Theory made by pioneers-Le-Corbusier, Frank Lloyd Wright, Walter Gropius, Mies Van der Rohe in the periods between the World Wars.

Unit – IV

Characteristics of modern architecture after the Second World War. Study of Alvar Aalto, Eero Saarinen, Richard Neutra, Louis I Kahn, Phillip Johnson, etc.

Unit – V

Design theories and contributions of Engineer- architects like Pier Luigi Nervi, Felix Candela, Buckminster Fuller, and Frei Otto.

Unit – VI

Pre-independence architecture in India: Development of secular architecture from the end of the 18th Century to the middle of the 20th Century.

Reference books:

Benevolo, Leonardo. History of Modern Architecture: the tradition of modern architecture Vol.1. Routledge and Kegan Paul, London, 1971.

Frampton Kenneth Modern Architecture: A Critical History
London: Thomes & Hudson,1980

Benevolo, Leonardo. History of Modern Architecture: the modern movement Vol.2. Routledge and Kegan Paul, London, 1971.

Curtis, J.R. William. Modern Architecture since 1900. Prentice-Hall, Inc., New Jersey, 2002.

Giedion, Sigfried, Space, Time and Architecture: the growth of a new tradition, 4th ed. Harvard Universtiy Press, Cambridge, 1962.

Hilberseimer, L. Contemporary Architecture: Its roots and trends. Paul theobald, Chicago, 1964.

Pevsner,Nicolaus Oersonem: Pioneers of Modern Design from William Morris to Walter Gropius-

Sharp, Dennis. Twentieth Century Architecture: A Visual History, Facts On File. New York, 1991

Norberg schul C., Principles of Modern Architecture, London Andreas papadakes,2000.

AR 4. 5 BUILDING SERVICES-II

<i>L/s: 3/Wk</i>	<i>Int:50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>EndExam:3 hrs</i>	<i>Cr: 3</i>
------------------	---------------	---------------------	-------------------	----------------------	--------------

Course Overview:

Study of Building Services and Utilities generally installed in buildings and their role in enhancing utilitarian value of the buildings. The study to focus on understanding basic working, principles, terms and definitions, as well as practical aspects and solutions utilized in architecture.

Objectives of the Course:

To gain knowledge regarding layout of utilities and services in the building envelope, functioning of service and their applications in building.

Course Contents:

Unit – I

Fundamental principles of Electricity: Voltage, Amperage, wattage, generation, and transmission of power, distribution in cities, HT and LT consumers, Transformers and load calculations, Single and three phase connections, Indian Electricity rules., Types of Generators, UPS

Unit – II

Building Wiring System: Service wires, metering, light and power circuits. electrical safety devices, MCB, ELCB, distribution boards, wiring methods, ISI Codes and standard materials, Conductors, switch boards, electrical points in general building, pipe earthing, plate earthing.

Unit – III

Electric layouts: Electrical symbols, NBC, preparation of layouts for residences, offices, construction and working of at least six domestic appliances, location in buildings, Types of electric motors and pumps.

Unit – IV

Building lighting system: artificial illumination, various types of lamps, advantages and disadvantages, method of lighting, direct, semi direct, indirect, concealed lighting, spot lighting, task lighting, decorative lighting, rope lights, neon lights, flood lighting, yard lighting, under water lighting.

Unit – V

Lighting Calculation: NBC standards, nominal illumination levels in building interiors, lux, lumen, intensity, lighting schemes.

Unit – VI

Principles of air-conditioning: IAQ, comfort conditions, gas laws, refrigeration cycle, a/c equipment, compressor heat exchangers, condenser, evaporators,

Unit – VII

Types of Air-conditioning: single zone, multi zone, window air conditioners, split air conditioners, ductable air conditioners, package system and central air conditioning,
all air systems and chilled water systems.
a/c plant room, AHU's
Building ducting, diffusers and grills, FC units.

Reference books:

Electrical wiring and Contracting (Vol.1 to Vol.4), London The New era Publishing Company.

Dr. Frith Abnwas and others, Electrical Engineering hand Book

William. J. Guinness, Mechanical and electrical Equipment for Buildings, New York: Willey

Bovay. H.E., Handbook of Mechanical and Electrical Systems for Buildings New York: MC Graw Hill

AR 4.6 LANDSCAPE DESIGN AND SITE PLANNING

L/s: 4/Wk Int: 50 EndExam: 50 Total: 100 End Exam: 3 hrs Cr: 4

Course Overview:

This course introduces students to landscape design and site planning and relate it to design and planning of built environments. It provides an overview of development of landscape design, site studies, plant studies and application of the knowledge at various levels of design.

Objectives of the Course:

1. To develop a conceptual understanding of landscape design and site planning principles.
2. To develop skills in integrating landscape design with built environments.

Course Contents:

Unit – I

Introduction and History of Landscape Architecture. Introduction to landscape Architecture and Role of Landscape design in built environment.

A brief review of Landscape Design and garden design in history in various regions Persian, Spanish, Italian, French, Moghul, English, Japanese Garden styles.

Changing perception of mans relationship with nature in various phases of history and its influence on environment.

Evolution of concepts in landscape design after the industrial revolution leading to new theories in integrating built spaces to open spaces. Increasing awareness of ecological variables in landscape design.

Unit - II

Site Studies and Site Planning

Principles of site Planning and land use; review of definition applied in typical landscape development situations.

Site survey and appraisal – understanding different site characteristics – topography, vegetation, Hydrology, Access, Surroundings etc. documents, site characteristics and establishing relationship with design / Architecture Programme requirements.

Philosophical and design issues related to site development – siting of buildings,

spatial and contextual relationships of built and outdoor space and circulation, site and its relationship to surroundings. Importance of climate and social factors in development of site.

Process of design development. Identifying functional requirements of site.

Development of site by mutual exploitation of forms and use of grading principles.

Unit -III

Plants and Design

Introduction to study of plants in relation to landscape design and architecture. An overview of use of plants in history.

Study of Plant material – Botanical Nomenclature anatomy and physiology of plant growth study of trees, shrubs, ground cover, indoor plants in Indian context.

Design with plants – Basic principles of designs. The physical attribute of plants and relation to design. Appearance, functional and visual effects of plants in landscape design and built environment.

Selection and management of plant material in relation to built environment.

Unit -IV

Elements in Landscape Design

Use of landform, water and vegetation in landscape design.

Hard landscapes: design of paths, roadways streets, terraces etc and use of land form effectively.

Soft landscapes: design of lawns, shrubs, hedges, trees – in relation to buildings and other landscape elements.

Design concepts related to use of sculpture, outdoor lightings, Architectural feature, street furniture and grouping them into meaningful compositions for visual and functional effects.

Unit -V

Landscape Construction and Services

Study of landform its technical expression through grading plan, sections and earthwork computations.

Irrigation systems – sprinkler trickle irrigation, drip irrigation and laying irrigation networks.

Construction of structure in landscape circulation roads, parking, paths, level changes – walls, steps lamps, construction of screens, trellis, wall fences gales decks, pools etc.

Unit -VI

Contemporary concepts and concerns

Contemporary attitude to development and design of open spaces – Urban landscape, Parks, Rural landscape etc.

Introduction to concepts of green architecture and micro climate planning. The

role of landscape components in modifying micro climate with respect to temperature, humidity, precipitation and percolation.

Assignments

Simple exercises in using plants and landscape elements

Studio exercise emphasizing relationship between built form and outdoor areas and site planning issues.

Reference books:

Blake, Alan. Landscape Construction and Detailing. B.T. Batsford Ltd., London, 1996.

Colvin, Brenda. Land and Landscape.

Hacheat, Brian. Planting Design.

Harris, C.W. and Dines, T. Nicholas. T.S.S for Landscape Architecture. McGraw Hill, New York, 1995.

Laurie, Michael. An Introduction to Landscape, 2nd ed. Prentice Hall, New Jersey, 1986.

Lynch, Kevin. Site Planning. MIT Press, Massachusetts, 1962.

John I.Mutloch. Introduction to Landscape Design, 2nd ed. John Wiley & Sons, Inc, New York, 2001

Santapau. H. Common Trees. National Book Trust, New Delhi, 1981.

Trivedi, P. Pratibha. Beautiful Shrubs. Indian Council of Agricultural Research, New Delhi, 1990.

AR 4.7 COMPUTER APPLICATIONS-II

<i>L/s: 4/Wk</i>	<i>Int: 50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>End Exam: 3 hrs</i> <i>Practical</i>	<i>Cr:4</i>
------------------	----------------	---------------------	-------------------	--	-------------

Course Overview:

To orient the student to create two and three-dimensional objects in space with special emphasis on presentation and visualization of interiors and exteriors of building using different rendering techniques using CAD.

Objectives of the Course: To explore computer modeling techniques using CAD

Expected Skills / Knowledge Transferred:

To learn basic skills of modeling, scripting (rendering) in CAD, and to exercise methods of interface within CAD.

Course Contents:

Unit - I

Starting Auto CAD: Introduction to the menu, starting drawings from scratch, Creating and using templates-starting drawings with setup wizards. Saving and closing a file.

Unit - II

Using co-ordinate system: The UCS, Working with Cartesian and polar co-ordinate systems, using displays with key shortcuts.

Unit – III

Setting up the drawing environment: Setting the paper size, Setting units, setting grid limits, drawing limits, Snap controls, Use of paper space and model space.

Unit - IV

Basic commands dealing with drawing properties: Layer control, change properties, line weight control, etc.

Unit - V

Inquiry methods: Using database information for objects, calculating distance and angle, areas etc.

Unit - V1

Dimensioning commands and Blocks: Dimensioning the objects in linear, angular fashions along with quick time dimensioning etc. Creating and working with blocks, creating symbols, use of blocks in creating a layout of a residential area-one exercise to be done as lab assignment.

Reference books:

Teyapoovan, T. Engineering Drawing with Auto CAD 2000. Vikas Pub. House Pvt. Ltd., New Delhi, 2000.

Parker, Daniel and Rice, Habert. Inside Auto CAD Daniel. 1987.

Georgemura, Auto CAD Release 2000.

AutoCAD 2010 Textbook-AutoCAD 2010: A Problem-Solving Approach-Customizing AutoCAD 2010

Beginning AutoCAD 2007- By Bob McFarlane, Robert McFarlane

FIFTH SEMESTER

AR 5.1 ARCHITECTURAL DESIGN – IV

L/s: 9/Wk Int: 200 End Exam: 200 Total:400 End Exam: Viva-voce Cr: 9

Course Overview:

This course focuses on institutional design - facilities required and detailing design for institutions in urban context.

Objectives of the Course:

To enable the student to design institutions within the given conditions.

Expected Skills / Knowledge Transferred:

Detailing skills required for the design of institutions in urban contexts.

Course Contents:

The following issues relating to institutional design will be addressed to:

- Nature of contemporary institutions, correlation to urban structure.
- Development control and urban infrastructure affecting design.
- Various attitudes to building in urban context.
- Integration of function: movement, climate, acoustics, structure and services into the group of buildings.
- Landscaping and site planning
- Institutional character from abstract to detail.
- User behavior and requirement pertaining to the physically handicapped.

Necessary theoretical inputs to be given highlighting the norms and design issues.

The topics not covered as design problems may be covered by the studio faculty members through lecture/slide shows. And site visits.

The topics to be covered as design problems may include:

- Institution of learning –colleges with its various departments such as medical, engineering. Law, business, music and dance colleges, vocational training institutions etc.
- Institutions of health such as hospitals, reformatories and rehabilitation institutes for the disabled.
- Institutions of research in various disciplines.

- Administrative and Legal institutions such as high courts, secretariat, development authorities, directorates etc.

At least two major exercise (one problem should be pertinent to the urban fabric) and two minor design/time problems should be given and the final submission shall necessarily include a model for at least one of the two main problems.

Note: In end exam which is a viva-voce the students have to present the entire semester work for assessment.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1990.

Hand Book of Planning and Design Data.

Kirk, Paul Hayden and Sternberg, D. Eugene. Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA, 1960.

Konya, Allan. Libraries: A Briefing and Design Guide. The Architectural Press, London, 1986.

Neufert, Ernst. Ernst Neufert Architects Data. Granada Pub. Ltd., London, 2000.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Rosenfield, Isadore. Hospital Architecture and Beyond. Van Nostrand Reinhold, New York, 1969.

Stone, G. Louis. Institutional Buildings Architecture of Controlled Environment.

Tergsone, W.R. Practical Laboratory Planning.

Wild, Friedemann, Libraries for Schools and Universities. Van Nostrand Reinhold, New York, 1972.

AR 5. 2 BUILDING CONSTRUCTION – V

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5 hrs Cr:4

Course Overview:

Course focuses on issues related to failures in buildings, decay and damage, approaches for maintenance, repairs and renovation of buildings.

Objectives of the Course:

To create awareness among the students regarding problems related to old buildings and methods to mitigate their problems.

Course Contents:

Unit - I

Failures:

Introduction to building failures: causes of decay and damage in old buildings, issues of maintenance and repair. Preliminary inspection and general observation, decayed elements difference between decay and damage.

Unit - II

Timber:

Moisture content, treatment prior to installation, factors reducing strength of timber, approach to repair and to the timber roofing system.

Unit - III

Bricks:

Strength reducing factors in brick work, effect of ageing, weathering, temperature variation of brick-work, joints and cracks, construction defects, repair and maintenance.

Unit - IV

R.C. Concrete:

Mixing methods at site, structural design for repairs, causes of failure in concrete structures, pressure-grouting.

Unit - V

Methodical approach to Repairs:

Cracks over openings, sinking and sagging balconies, repairs to decayed floors and floor joints, example: Jack arch., madras roof terrace, foundation sinking, repairs to walls. Propping, strutting and under pinning.

Unit - VI

Unusual problems:

Repairs to large span rooms, water proofing the roof terraces, leakages from toilets, case studies and site visits.

Note: This is a studio subject and students should be made to document the problems in old buildings through inspections and propose remedial measures by preparing construction drawings as studio exercise with the theoretical inputs given through lectures.

Reference books:

Feilden, M. Bernard. Conservation of Historic Buildings. Butterworth Scientific, London, 1992.

McKay, W.B. Failures and Repair of Concrete Structures Vol. IV.

Raikar, R.N. Learning From Failures: Deficiencies in Design. Construction and Service, R and D Centre, New Bombay, 1987.

AR 5.3 DESIGN OF STRUCTURES-II

L/s: 3/Wk Int:50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:3

Course Overview:

Course focus is on Structural Design of elements of Industrial Building in Steel.

Objectives of the Course:

To develop the structural design skills of the student in steel.

Expected Skills / Knowledge Transferred: Develop capability to design Steel structures.

Course Contents:

Unit – I

Design of simple beams including check for shear and deflection for laterally supported and unsupported conditions, analysis of simple beam from strength and stiffness considerations.

Unit – II

Design of built up beams with flange plates only, Introduction to plate girders (No Design calculations)

Unit – III

Axially loaded tension members: introduction, net effective areas, analysis and design of tension members including rivet and welded connections, (L-Angle and T-section only)

Unit – IV

Columns: Analysis and design of axially loaded steel columns using single I-section, 2 channels placed back to back and toe to toe, 4-angles etc., including lacing system.

Unit-V

Design of slab base and gusseted base for axial loads (with out moments) for different columns.

Unit-VI

Design of grillage foundation for isolated columns only

Unit-VII

Purlins: Introduction, Dead load, live load and wind loads, design of angle purlin and I-section purlin.

Unit-VIII

Bracket Connections, Riveted & Welded Connections design of Joints.

Reference books:

Ram Chandra. Design of Steel Structures Vol. I, 10th ed. Standard Book House, Delhi, 1999.

Dayaratnam, P. Design of Steel Structures. Wheeler Pub., Allahabad, 1992.

Ramamrutham, S. and Narayanan, R. Design of Steel Structures, 4th ed. Dhanpat Rai and Sons, Delhi, 1995.

AR 5.4 HISTORY AND THEORY OF ARCHITECTURE-II

L/s: 3/Wk Int:50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:3

Course Overview:

The course is designed to study the contemporary developments in Architecture and its impact on built form, structure, construction methods etc.

Objectives of the Course:

To orient the students to various developments in the field of architecture for a greater understanding of trends in contemporary architecture.

Course Contents:

Unit – I

Contemporary trends in architecture of India after Independence. Influence of Le Corbusier and. Louis.I.Khan.

Unit – II

Theory and works of Achyut Kanvinde, J.A. Stein, Habib Rehman etc.,

Unit - III

Contributions made by Pioneers - Charles Correa and B.V. Doshi. Anant Raje, Raj Rewal

Unit – IV

Design Theories and works of contemporary architects - Uttam Jain, Hasmukh Patel, including Chandravarkar and Thacker, Jaisim, Anil Laul, Shirish Beri, Romi Khosla, Ranjit Sabiki, Shashi Bhooshan and Sanjay Mohe.

Unit – V

Familiarisation of architecture at Auroville and Laurie Baker's work in Kerala.

Unit – VI

Contemporary trends in the rest of the world architecture. Theory of Post Modernism.

Unit – VII

Design Theories and works of Charles Moore, Michael Graves, Richard Meyer, Aldo Rossi, Cesar Pelli, I.M. Pei, Yamasaki, Peter Eisenmann etc.

Unit – VIII

Design Theories and works of Hassan Fathy, Geoffery Bawa, Norman Foster, Renzo Piano, Richard Rogers, Frank Gehry, Zaha Hadid, Santiago Calatrava, Tadao Ando etc.

Reference Books:

Bahga, S.S: Post Independent Architecture.

Bhatt, Vikram and Scriver, Peter. Contemporary Indian Architecture After the Masters. Mapin Pub. Pvt. Ltd., Ahmedabad, 1990.

Curtis, J.R. William. Modern Architecture since 1900. Prentice-Hall, Inc., New Jersey, 2002.

Jencks, Charles.The Language of Post-Modern Architecture, 4th ed. Academy Editions, London, 1984.

Frampton, K Tad Ando- buildings, Projects Writings, New York Rizzoli, 1984.

AR.5.5 BUILDING ESTIMATING COSTING AND SPECIFICATIONS

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

The course deals with various methods of quantity surveying, rate analysis of building and valuation and specifications for different materials used.

Expected Skills / Knowledge Transferred:

Techniques of estimating and costing and writing specification related to building construction.

Course Contents:

Unit - I

Quantity Surveying: Introduction - Definitions and terms used, principles, units of measurements. Methods of preparing approximate estimates (plinth area and cubic

content method), basic differences and advantages.

Unit - II

Detailed Building Estimation: Method of obtaining detailed quantities of building items (center line method, long wall and short wall method) PWD System to be followed.

Unit - III

Detailed estimation for load bearing structures framed structure (ground floor only)

Unit - IV

Example and exercise in obtaining all items from excavation to finishes.

Unit - V

Preparing approximate estimates for services like water supply, plumbing, electrical work, mechanical equipment and air conditioning. (for residential building).

Unit - VI

Rate analysis: Cost of materials and labour for various works, data sheet for different items of works, different methods of execution i.e. piece work, daily basis, lump sum, labour rates and percentage etc

Unit - VII

Valuation – Introduction – state the purposes of valuation of building explain the terms, market value, book value, capital cost, capitalized cost, year's of purchase, list out various methods of estimating the depreciation of building properties, calculate the value of the property by different methods.

Unit-VIII

Specifications: Definition, purpose and importance of specifications, General or brief specifications, Detailed specifications, writing of specifications, for items like earthwork excavations, foundation, CRS masonry, DPC, PCC, RCC, brickwork, doors and windows (wooden), mortars, plaster, painting, flooring like terrazzo flooring and tiles, ceramic tiles, marble, granite, distemper, snowem, glazing, specification, writing to include materials, tests pre and post installation, modes of measurements.

Reference books:

Datta, B.N. Estimating and Costing in Civil Engineering: Theory and Practice, 23rd ed. UBS Pub. Distributors Ltd., New Delhi, 1993.

Bride, G.S. Estimating and Costing, 2nd ed. Dhanpat Rai and Sons, Delhi, 1982.

Rangwala, S.C. Valuation of real Properties, 6th ed. Charotar Pub.

6 House, Anand, 2003.

Standard Specification and rates, Government of Andhra Pradesh, Government Press, Hyderabad

Indian Standards Institution. National Building Code of India 1983. Indian Standards Institution, New Delhi, 1984.

Lerrs, Jack. Engineering Construction Specification.

Macey, W. Frank. Specification in Detail, 5th ed. Technical Press Ltd, London, 1955.

Lewis, R. Jack. Building Construction Specifications. Prentice-Hall, Inc., New Jersey, 1975.

Govt. of Maharashtra. Standard Specifications, Government Press, Nagpur, 1972.

AR 5.6 ENVIRONMENTAL STUDIES

<i>L/s: 3/Wk</i>	<i>Int:50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>End Exam: 3 hrs</i>	<i>Cr:3</i>
------------------	---------------	---------------------	-------------------	------------------------	-------------

Course Overview:

A compulsory subject for all the undergraduate students of various discipline highlights significance of maintaining balance and sustainability of various components of the environment.

Objectives of the Course:

To sensitize the students towards sustainable environment.

Course Contents:

Unit – I

Environmental studies – Introduction: - Definition, scope and importance, Measuring and defining environmental development indicators.

Unit - II

Environmental and Natural Resources: Renewable and non-renewable resources - Natural resources and associated problems - Forest resources - Use and over - exploitation, deforestation, case studies - Timber extraction - Mining, dams and other effects on forest and tribal people - Water resources - Use and over utilization of surface and ground water - Floods, drought, conflicts over water, dams - benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. - Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Unit - III

Basic Principles of Ecosystems Functioning: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem Ecological succession. - Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem:

- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit - IV

Biodiversity and its conservation: Introduction - Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - *Biodiversity* at global, National and local levels. - India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit - V

Environmental Pollution: Definition, Cause, effects and control measures of:

- a. Air pollution
- b. Water pollution
- c. Soil pollution
- d. Marine pollution
- e. Noise pollution
- f. Thermal pollution
- g. Nuclear hazards

Solid waste Management: Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

Unit - VI

Social Issues and the Environment: From unsustainable to sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies -Environmental ethics: Issues and possible solutions. -Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. -Wasteland reclamation. - Consumerism and waste products. -Environment Protection Act. -Air (Prevention and Control of Pollution) Act. -Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental legislation. -Public awareness.

Unit - VII

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

Studies.

Unit - VIII

Field work: Visit to a local area to document environmental assets River /forest grassland/hill/mountain -Visit to a local polluted site-Urban/Rural/industrial/ Agricultural Study of common plants, insects, birds. -Study of simple ecosystems - pond, river, hill slopes, etc.

TEXT BOOK:

Erach Bharucha, A Text Book of Environmental Studies for Undergraduate Courses, University Grants Commission.

AR 5.7 COMPUTER APPLICATIONS-III

<i>L/s: 4/Wk</i>	<i>Int:50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>End Exam: 5 hrs</i>	<i>Cr:4</i>
------------------	---------------	---------------------	-------------------	------------------------	-------------

Course Overview:

This subject aims to further architectural design skills through advanced computer applications. The subject focus is in the area of computational media techniques and technologies and their impact on architectural design and production. This digital studio critically explores the impact of existing and emerging digital media and software, for advanced digital visualization, simulation and communication as well as associated theories and methods on the conceptualization and development of architecture. Computational media is broadly defined across three categories: digital techniques for visualization; data collection and analysis, building information modeling (BIM) and introduction to physical model making using computer technologies.

Unit –I

Introduction to digital theory and this unit equips students with an understanding of the territory of computational design through its theoretical vocabulary and relevant histories.

Making of Architectural vector diagrams to explore design and for digital communication using vector applications like coreldraw, illustrator etc.

Unit –II

3d modeling and different types of methods in 3 modeling like polygonal modeling , NURBS modeling ,subdivision surface modeling and building information modeling etc to design and test Architectural built environments virtually.

Unit –III

Scene setup involves arranging virtual objects, lights, cameras and other entities on a scene which will later be used to produce a still image or an animation. Image

processing and video editing to create Architectural walkthroughs.
Digital solar studies

Unit –IV

Building information modeling; using 3 dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction. The process produces the Building Information Model (also abbreviated BIM), which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.

Design and documentation using building information modeling application like Revit Architecture, ArchiCAD, Bentley Architecture etc

Unit –V

Introduction to Organic modeling and 3d printing to explore biomimetics and emergent concepts in the field of architecture and design by using advanced computational technologies

References:

Catalytic Formations: Architecture and Digital Design. Ali Rahim

BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors- Chuck Eastman

Building Information Modeling – Willem Kymmell

SIXTH SEMESTER

AR 6.1 ARCHITECTURAL DESIGN –V

L/s: 9/Wk Int: 200 End Exam: 200 Total: 400 End Exam: Viva-voce Cr: 9

Course Overview:

Course aims at teaching the design of buildings for passive recreation and large span buildings for public uses.

Expected Skills / Knowledge Transferred:

Design vocabulary, enhancement and sensitization of student in design preparation and its relation to structural systems

Course Contents:

Design issues should address the following:

- Environmental and micro climate.
- User behavior and requirements.
- Utility and space enhancement.

- Form and function.
- Circulation: horizontal and vertical.
- Site Planning and Landscape detailing.
- Structural details such as beam framing, Building Services / HVAC etc.
- Design detailing considering the barrier free environment.
- Socio-economic profile of user group.
- Parking details and standards.

Topics considered for design are:

Passive Recreation buildings such as:

- Infotainment center.
- Civic Centre
- Convention Centre.
- Cultural Centre.
- Community Centre.

Public Buildings - Large Span structures:

- Bus terminals.
- Multiplex.
- Auditorium Complex.
- Museum and Art Gallery.
- Kalyana Mandapam.

At least two major exercises and one minor design / time problem need to be covered. Design proposal along with a scale model / digital model must be submitted for the two main problems.

Sufficient theoretical inputs need to be given highlighting the norms and standards of design parameters.

Note: In end exam which is a viva-voce the students have to present the entire semester work for assessment.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1980.

Dawes, John. Design and Planning for Swimming Pools. The Architectural Press, London, 1979.

Ruknitein, M. Harvey. Central City Malls.

AR 6.2 WORKING DRAWINGS & DETAILS

L/s: 6/Wk Int: 50 End Exam: 50 Total: 100 End Exam: Viva-voce Cr:6

Course Overview:

The focus of the course is to impart skills related to the preparation of drawings meant for construction work on the site and to improve the students' ability of detailing.

Objectives of the Course:

To impart training in the preparation of working drawings for buildings with specific reference to code of practice as per IS Code No. 962 of 1969 and incorporating specifications as complementary to the working drawings.

To sensitize the students in preparing finer design details required for buildings.

Expected Skills / Knowledge Transferred:

To prepare working drawings for a project and resolve complex aspects in the buildings with appropriate materials and design details.

Course Contents:**Unit - I**

Preparation of working drawings: Suitable scales of drawings, methods of giving dimensions: on plans, sections, elevations and other standards.

Unit – II

Preparation of Plans Building marking plan, centerline plan, foundation plan, column centerlines drawings, floor plans, terrace floor plan.

Unit - III

Elevation and Sections

Detailed elevations, detailed sections – at least one through staircase and one through toilet, typical wall profile sections and elevations.

Unit - IV

Details

Layout for Sanitation: and detailed plans, Electrical layout: plans and details, details of staircases, toilets and kitchens.

UNIT – V

Detailing for walls, floors, ceilings through detail drawings to large scale in the form of plans, sections, elevations. Surface Treatment; Cladding, texture treatment.

UNIT – VI

Detailing of architectural elements such as staircase, balcony, verandah, shading devices vertical and horizontal components of the building.

UNIT – VII

Detailing of Doors, windows, storage shelves for frames, shutters, joinery of frame to shutter, shutter to panelling etc. and other fixing details.

UNIT – VIII

Design details appropriate for creating Barrier Free Environment.

*Note: - Students shall prepare at least two working drawing sets, one for a small residence and one for a large building.

Reference books:

Lerrs, Jack. Engineering Construction Specification.

Liebing, W. Ralph and Raul, Ford Mimi. Architectural Working Drawings, 2nd ed. John Wiley and Sons, New York, 1983.

Macey, W. Frank. Specification in Detail, 5th ed. Technical Press Ltd, London, 1955.

Shah, M.G., and Others. Building Drawing: with an integrated approach to build environment, 3rd ed. Tata McGraw Hill Pub., co. Ltd, New Delhi, 1996.

Standard Specification of Government of Andhra Pradesh State.

Lewis, R. Jack. Building Construction Specifications. Prentice-Hall, Inc., New Jersey, 1975.

Govt. of Maharashtra. Standard Specifications, Government Press, Nagpur, 1972.

Datta, B.N. Estimating and Costing in Civil Engineering: Theory and Practice, 23rd ed. UBS Pub. New Delhi, 1993.

Wakita, Osamu A. & Linde, Richard M. The professional practice of architectural detailing, 2nd ed. New York: Wiley, 1987.

Robert, C. Mc Hugh. Working Drawing Hand Book, New York: VNR, 1977.

AR 6.3 ARCHITECTURAL ACOUSTICS

<i>L/s: 3/Wk</i>	<i>Int: 50</i>	<i>End Exam: 50</i>	<i>Total: 100</i>	<i>End Exam: 3 hrs</i>	<i>Cr:3</i>
------------------	----------------	---------------------	-------------------	------------------------	-------------

Course Overview:

Acoustics to be studied as a determinant of built form with emphasis on the application to architecture.

Objectives of the Course:

To give an over view of acoustics as a deterrent of built from.

To equip the students with tools for application of acoustical design in architecture.

Expected Skills / Knowledge Transferred:

The knowledge of specific acoustic requirements of different spaces

Skills to deal with acoustic problems within buildings

Knowledge that enables to deal effectively with specialists and consultants in

acoustics

Course Contents:

Unit – I

Need to study acoustics; pioneers and their works. Acoustics examples from the past: methods used for good acoustics.

Unit – II

Basic theory: Generation, propagation, transmission; reception of sound; Frequency, wavelength and velocity of sound; sound intensity; inverse-square law; decibel scale, decibel addition, small numerical examples in intensity of sound.

Unit – III

Human ear, Loudness perception, subjective effects, characteristics of sound in speech and music, A-weighted sound levels.

Unit – IV

Room acoustics: Behavior of sound in enclosed spaces. Ray-diagrams, sound paths, effect of geometry and shapes, sound adsorption, sound absorption coefficients, Sabine's formula, and resonant panels.

Unit – V

Acoustic design process and different types of buildings, Auditoriums, concert halls, cinema halls, Seminar rooms, lecture halls, class rooms and open offices. Case study of an auditorium with a report containing drawings and calculations of reverberation time etc. Detailed acoustic design for any one type of building.

Unit-VI

Noise reduction: Sound isolation, transmission loss TL, TL for walls, sound leaks in doors, noise reduction between rooms, Construction details for noise reduction. Noise reduction and built form, Noise reduction through landscapes elements, land use planning for noise control.

Unit-VII

Noise reduction from mechanical equipment, Rubber mounts, vibration isolation guidelines, characteristics of duct system, noise in AC ducts, vibration isolation of pumps and generators.

Unit-VIII

Speech privacy, annoyance, background noise. Communication in open plans, electronic sound systems, loud speaker's layout.

Reference books:

Poella, L. Lestie. Environmental Acoustics.

Moore, J.E. Design of Good Acoustics, The Architectural press, London, 1961.

Burris, Harlod. Acoustics for the Architect.

Lord, Peter and Templeton, Duncan. The Architecture of Sound: Designing Places of Assembly. Architectural Press Ltd., London, 1986.

Egan, David. Architectural Acoustics, MC Graw-Hill Book Ccompany, New York, 1988

AR 6.4 BUILDING CODES AND BYELAWS

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:3

Course Over View: Deals with codes and regulations to be applied to building Projects.

Objectives of the Course: To provide an introduction to the codes and bye laws applicable to building projects

Unit-I

Introduction to building codes and norms

Need and nature of building codes, standards and regulations, overview of basic terminologies, nature of building codes in special regions like heritage zones, air funnels, environmentally sensitive zones, disaster prone regions, coastal zones, hilly areas, etc.

Unit-II

Study of building regulations

Overview of administrative processes for obtaining building permits at various stages; General Land-use, building classifications and permissible uses; Norms for exterior and interior open spaces, Setbacks and margins, norms for building projections in open spaces, considerations in FAR, guidelines for open green areas.

Unit – III

Norms for Vehicular Areas

Means of access, norms for access widths for various types of buildings, requirements of parking spaces, standards for turning radius, access to service areas.

Unit-IV

Norms for Fire Protection

Overview of fire protection norms for various building classifications, norms for fire-exit ways and building materials, concept of fire zoning, doorways, stairways, passages and corridors, fire escapes etc.

Unit-V

Norms for building services

Norms for lighting and ventilation, introduction to basic terminologies, components of daylight factor, general principles of opening for good lighting, considerations in artificial lighting; general principles for natural and mechanical ventilation, overview of norms for acoustical and electrical installations.

Unit – VI

Requirements for parts of buildings

Plinth, Habitable rooms, kitchen, wet areas, mezzanine, store rooms, elevated parts like chimneys, parapets etc.

Unit - VII

Introduction to local building byelaws

Study of local administrative provisions for obtaining building permits, architectural control and provision of building services, regulations for super structures, building height regulations, regulations for multi-storied buildings etc.

Reference books:

Bhagiratha Rao, E.L. Land Acquisition Manual in Andhra Pradesh.

Buch, N. Mahesh. Planning the Indian city.

Chand, Mahesh and Puri, Vinay Kumar. Regional Planning in India. Allied Pub. Ltd., Bombay, 1990.

Gallion, B. Arthur and Eisner, Simon. Urban Pattern: City Planning and Design, 5th ed. Van Nostrand Reinhold, New York, 1986.

Hyderabad Urban Development Authority. Hyderabad Urban Development Authority, HUDA, 1981.

Khosla, R.K. Urban and Rural Development in India, Delhi: Indian Publishers & Distributors.

Patterson, T. William. Land-use Planning Techniques of Implementation.

Rama Reddy, Padala and Srinivas Reddy, Padala. Commentates on Land Reforms Laws in Andhra Pradesh.

Rame Gowda, K.S. Urban and Regional Planning. Univ. of Mysore, Mysore, 1972.

Rangwala, S.C. and Others. Town Planning, 18th ed. Charotar Pub. House, Anand, 2003.

Singh, Alok Kumar, and Others (ed). Strategies in Development Planning.

Durga Prasad, M.V. Law of Flats, Apartments and Buildings, 4th ed. Asia Law House, Hyderabad, 1997.

Hyderabad Municipal Bye laws.

Indian Standards Institution. National Building Code of India 1983. Indian Standards Institution, New Delhi, 1984.

Scott, G. James. Architectural Building Codes, New York: Vanstrand Reinhold.

AR 6.5 BUILDING ECONOMICS AND SOCIOLOGY

L/s: 3/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:3

Course Overview:

To introduce the economics and sociological aspects in architecture.

Course Contents:

Unit – I

Brief introduction of general economics through an introductory survey of concepts in micro and macro economics as applicable to building industry as follows.

Micro Economics: The market, budget constraint, choice, demand and supply, uncertainties, equilibrium, technological constraints, profit maximization and cost minimization, monopoly and oligopoly, production welfare and public good.

Macro Economics: GNP, NNP, demand and supply, inflation, interest rate, employment, saving and investment, monetary and fiscal systems and policies.

Unit – II

General discussions on various economic issues such as public versus private participation, equity, labour intensive versus capital intensive projects.

Unit – III

General economics of the basic inputs into building construction- land, labour, capital and materials.

Unit – IV

Financing for projects, sources costs and utility in financing. Agencies and institutions directly and indirectly influencing economic aspects of project.

SOCIOLOGY:

Unit – V

Family as the basic unit of 'Society'. Differences in lifestyles due to regional background, religion, caste, income group, etc. and their implication in Architectural design of the housing units.

Sociological aspects in the history of the evolution of housing / shelter forms.

Unit – VI

Sociological problems of interaction, isolation, privacy, accessibility, conflict, alienation related to the planning and design of different buildings with the references to the people of different age group/population groups.

Unit – VII

Power structures in society – local self government, administrative structures – structure of decision making processes related to building projects at various government and private organizations levels.

Reference books:

Amos Rappoport, House Form and Culture

Wallis, Wilson D and Willey, M.M., Text book of Sociology, 1st ed., Khel Sahitaya Kendra, New Delhi, 2001.

Charon, Joel M. The Meaning of Sociology, 6th ed., Prentice Hall, New Jersey, 1999.

Thio, Alex. Sociology: a brief introduction, 4th ed. Allyn and Bacon, Boston, 2000.

Schaefer, Richard T. Sociology: a brief introduction, 4th ed. McGraw Hill, Boston, 2002.

Bilton, Tony and Oth. Introductory Sociology, 3rd ed. Palgrave, New York, 1997.

Stone, P.A. Building Economy: Design Production and Organisation a synoptic view, 2nd ed., Pergamon Press, Oxford, 1976.

Koutsoyiannis, A. Modern Microeconomics, 2nd ed., ELBS with MacMillan Press, 1994.

Nobbs, Jack and Hopkins, Ian. Economics: a core text, 4th ed. McGraw-Hill, London, 1995.

Teck, Hoon Hian and Oth. Economics: theory and applications, McGraw-Hill, Taiwan, 1998.

Dewett, K.K. Modern Economic Theory, Shyam Lal Charitable trust, New Delhi, 2005.

AR 6.6 HUMAN SETTLEMENTS AND TOWN PLANNING

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

This course focuses on the review of origin of Human Settlements to the level of understanding the various Town Planning problems.

Objectives of the Course:

To make the student understand about various planning related issues.

Expected Skills / Knowledge Transferred:

Should be in a position to make a neighbourhood plan for 5000 people.

Course Contents:

Unit - I

Historic Evaluation: Brief review of the origin of early human settlements, factors responsible. Development of various settlement forms. Types of settlements

(urban and rural) classification of areas within the urban settlements in terms of types of land uses, densities, administrative division, building types etc. Land use and factors influencing it in urban and rural settlements.

Unit - II

Sociological aspects: Essential elements of society Rural and Urban Communities, Growth of Socio-cultural thought through the ages.

Influence of religion and culture on domestic and civil architecture.

Unit - III

Urbanization: Facts, Theories. Socio-spatial problems of migrants, slums, high and low density housing; high rise living such as isolation, alienation, accessibility, conflicts etc as related to planning and design of buildings in different areas of the city. Social Survey and social research.

Unit - IV

Transportation and communication: potential and limitations of roadways, railways, airways and waterways in the development of a settlement.

Unit - V

Principles of Ekistics: Brief introduction to the theory of "Ekistics". Introduction to the concepts of green belts, satellite towns, neighbourhood, roads in solving some of the problems in urban development. Indian context: Growth pattern of urban and rural settlements; problems and potentials.

TOWN PLANNING

Unit - VI

A brief introduction to the implication of town forms in urban planning and development processes. National, regional, urban, rural, local etc. emphasizing the difference and relationships among them.

Unit - VII

A general and introductory study of inputs, objectives, preparation and outputs of Master plan for a city; land-use classification, features and relationships with transportation. Meaning and use or implication of O-D surveys, desire line diagrams trip generation, attraction, distribution and modal split.

Unit - VIII

Introduction to housing and community facilities; role of F.S.I, densities in housing.

Unit - IX

Basic methodology for planning of industrial areas and recreation areas.

Unit - X

Brief introduction to redevelopment schemes and urban renewal, problem of slum and shanty areas and a review of the concepts regarding solutions: clearance, rehabilitation and improvement.

At least one exercise related to the preparation of a layout for a residential neighbourhood of about 5000 populations.

Reference books:

Bhagiratha Rao, E.L. Land Acquisition Manual in Andhra Pradesh.

Buch, N. Mahesh. Planning the Indian city.

Chand, Mahesh & Puri, Vinay Kumar. Regional Planning in India. Allied Pub. Ltd., Bombay, 1990.

Doxiadis, C.L. Ekistics: Introduction to the science of Human Settlement.

Gallion, B. Arthur & Eisner, Simon. Urban Pattern: City Planning & Design, 5th ed. Van Nostrand Reinhold, New York, 1986.

Hyderabad Urban Development Authority. Hyderabad Urban Development Authority, HUDA, 1981.

Khosla, R.K. Urban and Rural Development in India.

Patterson, T. William. Land-use Planning Techniques of Implementation.

Rama Reddy, Padala & Srinivas Reddy, Padala. Commentates on Hand Reforms Laws in Andhra Pradesh.

Rame Gowda, K.S. Urban and Regional Planning. Univ. of Mysore, Mysore, 1972.

Rangwala, S.C. & Others. Town Planning, 18th ed. Charotar Pub. House, Anand, 2003.

Rappoport, Amos. House, Form and Culture.

Singh, Alok Kumar, & Others (ed). Strategies in Development Planning.

AR 6.7 BARRIER FREE BUILT ENVIRONMENT

L/s: 2/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:2

Course Overview: Indian Disabilities Act, is promulgated in 1995 for the purpose of ensuring equal opportunities to persons with disabilities in society for their development through education, training and rehabilitation services. The principle objective is to ensure their full participation by preventing discrimination and integrating them into the mainstream of society. An Architect plays a very crucial role in this endeavor by designing the needed barrier free environment. The

objective of this course is to acquaint the students of architecture regarding the various provisions and design issues.

Knowledge Transfer /Expected Skills:

Multi sectoral collaborative approaches in design for persons with disabilities and elderly persons / Inculcate skills required for designing for barrier free built environments for physically challenged persons. techniques involved in making such provisions.

Course Contents:

Unit – I

Introduction to Provisions of persons with Disabilities (Equal opportunities, Protection of Rights and Full Participation) Act, 1995, Type of disabilities - Orthopedic, Hearing, Visual Impairments, National Policy for provisions for elderly persons, Concept of equal opportunity, human rights, social justice and empowerment of physically challenged persons.

Unit-II

Introduction to similar efforts in other countries. Initiatives at global and International level for protection of rights of disabled and also elderly person. American disabilities Act 1990 etc.

Unit-III

Information on various types of national Institutes, agencies and professional bodies involved in disabled welfare, associated norms and standards there of. The role of NGO's, professional and outreach.

Unit-IV

Design principles in Architecture for creating environments friendly for various types of physically challenged persons. Educational Institutions, Hospitals, Transportation terminals such as bus, railway stations and airports for barrier free spaces. Study of Standards as given in TSS, TCPO, CPWD, ADA etc., and others.

Unit-V

Provisions in public spaces and site planning – parks, play grounds, public transportation, parking lots, Details of side walks, road intersections, access to public toilets, in, ,.

Unit-VI

Provisions in design of public buildings - Details in, ramps, guide rails, lifts, dimensions of wheel chairs, accessibility in public buildings, Signage, audio visual facilities etc. Design of Toilets and interiors spaces for use of physically challenged.

Exercises in design of user friendly spaces for physically challenged persons. Term paper on certain type of disability and requirements there of for making environs barrier free or any other exercise appropriately framed by the subject faculty.

Reference books:

Micheal J. Bednar. “Barrier Free Environments”, Dowden, Hutchinson and Ross, Ive 1977.

Ministry of Urban Affairs and Employment. Central Public Works Department, India, “Guidelines and Space Standards for Barrier Free Environment for Disabled and Elderly Person, 1998.

Unnati. “Design Manual for a Barrier – Free Built Environment”, Handicap International, December, 2004,

SEVENTH SEMESTER

AR 7.1ADVANCE DESIGN STUDIO

AR 7.1.1 ADVANCE ARCHITECTURAL DESIGN [DESIGN STUDIO]

L/s: 12/Wk Int: 200 End Exam: 200 Total: 400 End Exam: Viva-voce Cr:12

Course Overview:

This Course deals with the design of large scale, multistorey, complex projects and aims to develop skills for a comprehensive design approach in the areas of, Urban Design Housing Design and Campus Design.

Objectives of the Course:

To develop skills for a comprehensive design in areas of urban design, housing and campus design for making a complete design portfolio from the brief to tender drawings.

Expected Skills / Knowledge Transferred: To develop skills for comprehensive understanding and dealing with Architecture of a group of buildings, inter connected with elements of urban design.

Course Contents:

I. Urban Design: issues to be addressed:

- Issues of urban structure, urban space and form.
- Issues of conservation.
- Issues in zoning, land use, density, development control.
- Issues of building in context, urban infill

Design exercise related integration of diverse functional needs, access systems, parking, services etc. Design detail shall comprise of (at least one example each) using

1. 'Hi-tech' materials / construction.
2. Conservation related materials / construction.

II Housing Design: Issues to be addressed for the design project pertaining to housing design:

- Density, mixed land use, ground coverage, development controls.
- Urban systems, services and their integration with the project.
- User requirements (derived from surveys)
- Issues in appropriate technology and costs.
- Issues of hierarchy, identity of space, public and private scales of space. Integration of community institutions etc.
- Detailing for the disabled and the elderly.
- Indian / local architectural responses to climate, culture, traditional values, building elements, symbols motifs and special character.

Design exercise related to housing design for specific target groups.

III. Campus Design: Issues to be addressed for the design project pertaining to campus design:

- Issue in preparation of Master Plan for Institutions: academic, administrative, staff housing, student hostels etc.
- Environmental considerations.
- Phases of development.
- Scope for expansion for future developments
- Safe and comfortable vehicular and pedestrian movement.
- Issues of character and landscaping.
- Details pertaining to the disabled.

Students would need to undertake one of the design subjects for the studio exercise. Students may be required to develop a brief, translate it into requirements and design.

One Major design exercise and one Time problem/minor design exercise should be given

The evaluation shall be through periodic internal reviews. The final submission will include a brief report of about 1000 words explaining the concept and design proposals for main portfolio. It will also include a model.

Note: In end exam, which is a viva-voce, the students have to present the entire semester work for assessment.

Reference books:

Alexander, Christopher. Pattern language: Towns, Buildings, Construction. Oxford University Press, New York.

Richard. D. Dober. Campus Architecture: Building in the Groves of Academy. McGraw Hill, New York, 1996.

Chiara, De Joseph and Others. Timesavers standard for Housing and Residential development, 2nd ed. McGraw Hill, Inc, New York.

Newman, Oscar and Others. Defensible space: People and Design in the Violent City. Architectural Press, London, 1972.

**AR 7.1.2 BUILDING CONSTRUCTION MANAGEMENT
(DESIGN STUDIO)**

L/s: 12/Wk Int: 200 End Exam: 200 Total: 400 End Exam: Viva-voce Cr:12

Note: Students of Building *Construction Management* major are required to take this subject under *Design Studio*.

Course Overview:

Major studio work, focusing on construction management of large scale projects for effective and efficient implementations.

Objectives of the Course:

To equip students of Construction Management specialization with various techniques of project implementation.

Expected Skills / Knowledge Transferred: The skills related to construction management of large building projects.

Course Contents:

Preparation of working drawings in detail for large building project (building more than 5000 sq. mtrs.) covering the following aspects Implementation scheduling – Resource planning-time, labour, material, equipment and personnel requirements, estimation-scheduling, control and procurement.

Preparation of network charts and flow charts with control mechanism in place, including quality and cost control – sticking to budgetary estimates and foreseeing any disturbances in scheduling, devise resilience and adaptive measures.

Report of Construction Management: Preparation of Project report on any live, ongoing or completed-large scale project.

Reference books:

- Gupta, B.L. and Gupta, Amit.** Construction Management, Machinery and Accounts, 3rd ed. Standard Pub, 2005.
- Loraine, R.K.** Construction Management in Developing Countries. Thomas Telford, London, 1993.
- Srinath, L.S.** PERT and CPM Principles and Applications, 3rd ed. Affiliated East-West Press, New Delhi, 2003.
- Singh, Harpal.** Construction Management and Accounts 14th ed. Tata McGraw-Hill Pub., New Delhi, 1981.
- Gould, E. Frederick and Joyce, E. Nancy.** Construction Project Management. Prentice Hall, New Jersey, 2000.
- Shrivastava, U.K.** Construction Planning and Management, 3rd ed. Galgotia Pub., New Delhi, 2004.
- Chitkara, K.K.** Construction Project Management: Planning, Scheduling and Controlling. Tata McGraw-Hill Pub., New Delhi, 1999.
- Sharma, S.C.** Construction Equipment and its Management, 4th ed. Khanna Pub., New Delhi, 2004.

AR 7.1.3 LANDSCAPE ARCHITECTURE (DESIGN STUDIO)

L/s: 12/Wk Int: 200 End Exam: 200 Total: 400 End Exam: Viva-voce Cr:12

Note: Students of *Landscape Architecture Major* are required to take this subject under *Design Studio*.

Course Overview:

This course will focus on design and development of small to medium scale projects and aims to develop skills for design of comprehensive landscape proposal for simple residential landscape, community level open spaces and campus design.

Objectives of the Course:

To expose students to issues concerned with landscape design and site planning.
To expose students to wide range of design alternatives and preparation comprehensive designs for landscape projects.

Expected Skills / Knowledge Transferred:

Basic skills in design and orientation in landscape design are prerequisites for the students. The student is expected to obtain skills in development of concepts based on perceptual evaluation of site and propose design alternatives. Solutions to small and medium scale landscape design projects

Course Contents:

- Emphasis on form and spatial relationships leading to open space order and frame work.
- Concerns for Social, Psychological considerations of the individual and large groups of people, their interaction and resultant forms of environment.
- Issues related to functional requirement and design strategies.
- Microclimate and environmental consideration.
- Issues related to health, welfare, safety and enjoyment.
- Issues related to zoning, density and develop controls.
- Issues related to services and site development.
- Issues related to visual and aesthetic and contextual consideration.

Students would need to undertake one small and one medium scale designs in site planning.

The exercises taken up shall deal the issues comprehensively from general understanding to providing complete landscape design solutions. The exercise can be split into different stages such as Data collection, Case studies, Synthesis and Design development.

Reference books:

Southerland, Designing the new landscape.

Hacket, Brian. Planting Design.

Laurie, Michael. An Introduction to Landscape, 2nd ed. Prentice Hall, New Jersey, 1986.

Lynch, Kevin. Site Planning. MIT Press, Massachusetts, 1962.

Jellico, Man and Landscape.

AR 7.1.4 INTERIOR DESIGN (DESIGN STUDIO)

L/s: 12/Wk Int: 200 End Exam: 200 Total: 400 End Exam: Viva-voce Cr:12

Note: Students of *Interior Design Major* are required to take this subject under *Design Studio*.

Objectives of the Course:

To enable the students to demonstrate design ideologies in the field of interior design

Course Contents:

Interior requires that students have a full understanding of the interior design field and have mastery of the design process, presentations, project administration and

business skills.

Two interior schemes of different functional types: Residential / commercial at different scales will form the major design assignments.

Focus is on Portfolio creation by producing a complete and correct set of working drawings, from plans through details and specifications and sample boards

Portfolio preparation

The student will create a portfolio that clearly expresses his/her ability to design by using detailed drawing, rendering and Model Making. Usage photography and graphic design in preparing a professional portfolio is also encouraged.

Reference books:

Archi World. Interior Best Collection: Residence, Commerce, Office, Restaurant Asia I-IV. Archi World Co., Korea, 2003.

Friedmann, Arnold and Others. Interior Design: An Int. to Architectural Interiors. Elsevier, New York, 1979.

Miller, E. William. Basic Drafting for Interior Designers. Van Nostrand Reinhold, New York, 1981.

Kurtich, John and Eakin, Garret. Interior Architecture, Van Nostrand Reinhold, New York, 1993.

Rao, M. Pratap. Interior Design: Principles and Practice, 3rd ed. Standard Pub., 2004.

AR 7.2 ADVANCED CONSTRUCTION & MATERIALS

L/s: 6/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 5hrs Viva-voce Cr:6

Course overview:

The course supplements the previous theory of construction and to introduce the advanced developments in Building Construction. The students are expected to understand the theory and Practical nuance of Advanced Construction Practices.

Objectives of course:

To introduce the students to the latest developments in construction and building materials. Students should be able to grasp the construction Techniques and their adoptability to architectural forms.

Course contents

Unit I

Advanced construction methods in RCC , pre-stressed concrete beams slabs frames, lift slab construction post tensioning, multi-storied building frames, circular slabs and beams. uses of rapid-hardening cement, ready mix concrete [RMC} , light weight concrete surface finishes of cement

Unit II

Folded plates like prismatic, V-type, trough type, pyramidal, prismatic and RCC folded plate and geometrical staircases, Shell structures, cyclonical shells, hyperbolic paraboloids,

Unit III

Construction techniques for erection of space frames, suspended roofs, membrane structures, cable structures.

Unit IV

Curtain walls: types of curtain walls, components, structural solutions, construction and erection. glass wall system-glass; sheet metal wall systems sheet metal cladding.

Unit V

Advanced Building Materials plastic, PVC, metals, synthetic boards, fire proof/resistant boards/tiles, acoustic materials, glass, composite panels and their applications, non- load bearing gypsum blocks

Reference books:

James Ambrose, Building Construction Enclosure System
1990

Andrea deplazes (ED), Constructing Architecture: Materials processes structures-A hand Book Second Extended edition

Robert E Fischer, Engineering for Architecture 1989

R Barry, The construction of Buildings Volume 4 4th Edition

Schall, Rolf. Curtain Walls: Design Manual. Reinhold Pub., New York, 1962.

AR 7.3 ADVANCED STRUCTURAL SYSTEMS

L/s: 2/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:2

Course Overview:

The course supplements the previous courses on theory of structures, while introducing the advanced development in structural form. The students are expected to understand the theory behind these structural forms and not expected to solve numerical problems.

Objectives of the Course:

- To inform the students about the recent developments in structural forms.
- To increase the student's ability to identify the structural forms suitable for architectural expression.

Expected Skills / Knowledge Transferred:

- The students are expected to gain knowledge about the recent developments and advanced concepts in the structural forms.
- The students are expected to analyse and understand the nature of stresses that are developed in the major elements of advanced types of structures.

Course Contents:**Unit – I**

Construction and form, Structure and Form Equilibrium under simple tension or compression, the catenary and the arch, the simply supported beam, the domical shell.

Unit – II

Structural elements: Beams and slabs Arches and catenaries; vaults, domes and curved membranes; Trusses, Portal frames and space frames.

Unit – III

Relation between structure and architecture, Geometry of form and structural function, Aesthetic theories of the expression of structural function in architectural form.

Unit – IV

Structural Systems: single and double layer grids; braced domes, ribbed domes, plate type domes, Network domes, Lamella domes, Geodesic domes, Grid domes. Braced and folded structures.

Unit – V

Space frames: Folded plates, shells, cyclonical shells, Hyperbolic paraboloids, free forms.

Cable structures: Simply curved suspended roofs, combination of cables and struts.

Unit –VI

Curtain Walls: Types of Curtain Walls and their Components Structural problems, construction and erection.

Reference books:

Candela, Felix. Architecture and Structuralism. 1963.

Lane, Allen. Developments in Structural Form. Penguin Books Ltd, London, 1975.
Macdonald, J. Angus. Structure and Architecture, 2nd ed. Architectural Press, Oxford, 2003.
Michaels, Leonard. Contemporary Structures in Architecture. 1950.
Schall, Rolf. Curtain Walls: Design Manual. Reinhold Pub., New York, 1962.
Siegel, Curt. Structure and Form in Modern Architecture. Crosby Lockwood and son Ltd., London, 1962.
Subramanian, N. Principles of Space structures. Wheeler and Co., Allahabad, 1983.
Zannos, Alexander. Form and Structure in Architecture: The role of statical function. Van Nostrand Reinhold Co., New York, 1987.

AR 7.4 GREEN BUILDING AND INFRASTRUCTURE

L/s: 2/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:2

Course Overview:

The course focuses on developing an understanding regarding environmental sustainability and environmentally responsible green buildings. It address the design concerns in architecture to develop resource-efficient buildings that have minimum adverse impact on the natural environment.

The emphasis is to gain an understand regarding the existing concepts, ideas and processes in Architecture and built environment and also recognize rapidly emerging building solutions and technological initiatives that complement current practices in order to attain human health and environmental goals.

Objectives of the Course:

Develop skills to promote eco friendly characteristics in the area of architecture and buildings and identify crucial technologies, facilities and applications that help in developing green buildings.

Course Contents:

Unit - I

Introduction to Macro Environment: Elements of climate, weather, Water cycle, Carbon cycle, Environmental quality, Deforestation, climatic change, Ozone depletion and implications.

Unit - II

Micro-environment: Natural environment Vis a vis built environment. living environment Characteristics and components of Urban Ecosystem solar radiation, heat flow, air-movement, Land use, drainage and sanitation.

Unit - III

Concepts of green field development: Brown field development, environmental impact and ecological balance, FAR, layouts, sustainable Site development, vegetation, landscape elements, alternative services and technologies, rain water harvesting, on site sewerage retention, treatment, recycle and reuse

Unit - IV

Building Resources: Passive energy system Design, Building envelope, orientation and components of building fabric and Shading, High rise buildings, modular building Construction, curtain walls, Sourcing and recycling of building materials, alternative Calcareous, metallic and non metallic, materials

Unit - V

Building Infrastructure: Active Energy Systems in buildings, Utilities and services, building automation. electro-mechanical systems, lifts and transportation, captive power plant and equipment, operation & maintenance

Unit - VI

Indoor air quality: fresh air requirements standards, Sick Building Syndrome, VOC and pollutants.

Unit - VII

Introduction to building rating systems: building auditing, points system, components, and weight age, agencies and institutions, GBC, TERI etc, green buildings in the contexts of Indian sub continent,

Reference books:

Green Building Technologies - Godrej Centre CII a Madhapur, Hyderabad.

Greening Building – Green Congress, US.(web).

HSMI. Sustainable Building Technology – HUDCO, HSMI (Human Settlement Management Institution, New Delhi.

Koenigsberger, O.H. and Others. Manual of Tropical Housing and Building. Orient Longman, Chennai, 2003.

Odum, P. Eugene. Ecology and Environments, 2nd ed. Oxford and IBH Pub., New Delhi.

TERI, The Building Energy Audit – TERI (Tata Energy Research Institute).

HMDA Hyderabad- Green building guidelines

AR 7.5 ADVANCED SERVICES

L/s: 2/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:2

Course Overview:

Study of services and facilities used in special type of buildings. The emphasis is laid on operation of services, working of different equipment employed for carrying out building function in specific different building types

Objectives of the Course:

To develop understanding of special services, definitions and terms used, working of equipment, installation of facility, special provisions to be made in building design.

Expected Skills / Knowledge Transferred: Principles and installations of specialized services in buildings and building complexes and NBC standards.

Course Contents:

Unit - I

Special services in High rise buildings: Types of lifts, Passenger, Capsule, Hospital bed lift; goods lift etc. Working and operation of lifts, parts of lifts; industry standards and capacity calculations. Provision to be made in buildings for installation, Introduction to working and design of escalator.

Unit - II

Electronic Systems in Buildings: Telephone and communication, networks in buildings EPABX, Security systems, Burglar alarms, video surveillance, access control, design of computer labs, access flooring, server rooms.

Unit - III

Fire safety in buildings: portable fire fighting equipment, NBC standards, built in wet riser system, sprinkler system, fire hydrant, class of fire and occupancy, cooking gas distribution in buildings, piped gas supply, bottled gas supply, kitchen Stoves, burners

Unit - IV

Swimming Pools: Pool tank design, patio, finishes, Water circulation, cascades, channels, filtration and water treatment, Water quality and disinfection, balancing tank.

Unit - V

Hotel services: Specialty services required for hospitality industry, Laundry services, Kitchen services, Channeled Music, Internet,

Unit – VI

Environmental services: waste generation in Industrial buildings, various types of waste, solid, liquid, gas, treatment and disposal facilities, waste generation in hospital buildings, design provision for its disposal,

Unit - VII

Alternative energy sources for buildings:, hot water solar energy system, applications of photo voltaic cells, biomass digesters, wind energy.

Reference books:

Faber, Oscar and Kell, J.R. Heating and Air-Conditioning of Building. Architectural Press, Surrey, 1945.

Prasad, Manohar. Refrigeration and air-conditioning, 5th ed. New Age Intl. Pub., New Delhi, 1996.

Tiwari, Satish. Water and Energy resources.

AR 7.6 PRE THESIS SEMINAR

L/s: 2/Wk Int: 100 End Exam: 0 Total: 100 End Exam: NIL Cr:2

Course Overview:

The course provides students with a framework to understand some emerging concepts in architecture and projects of design complexity and equip the student with adequate architectural design research methods for the realization of thesis concept. During the course of study, the subject of the thesis is developed and the project articulated.

Objectives of the Course: To impart knowledge to students, on the tools and methods needed to handle a design project of reasonable complexity individually,

Expected Skills / Knowledge Transferred: The skills required to collect, assimilate and synthesis data relevant to handle a design thesis project independently.

Course Contents:

UNIT - I

Introduction to architectural thesis Project, Difference between design thesis and design studio, selection of topics for architectural design thesis, design thesis topics based on building typologies, preparation of synopsis, Methodology of design thesis

UNIT - II

Emerging concepts in architecture due changes in social, economic, technological variables. Review of design projects related to real world instances and relevant to community at large. Review of projects of design complexity, involving themes, sub themes and architectural expression.

UNIT - III

Research in architecture: Tools and Methods required to handle a design project. Scientific methods of research with special emphasis on architectural research methods. Architectural enquiry visual, observations, questionnaire formats of enquiry, Literature Review and case studies. Data analysis techniques interpretation of data.

Unit IV

Thesis report writing and presentation:

- Formats for presentation of data, case studies and analysis.
- Formats for presentation of thesis design- media appropriate in the architectural profession such as two dimensional drawing, physical models, three dimensional computer models.
- Report Writing: Techniques in report writing, presentation of contextual information relevant to interpretation of the data collected and design; reporting the design development from concept to design solution, explain the relation of the design to existing knowledge on the topic in the form of coherently written thesis report.

The inputs to the students on various design thesis topics would be in the form of Expert /Guest Lectures

Each student in consultation with the faculty shall choose a thesis topic, collect necessary data, review literature on the chosen topic and present a written paper and seminar at the end of the semester.

Reference books:

Mukhi, H.R. Technical Report Writing: Specially prepared for Technical and Competitive Examinations, New Delhi: Satya Prakashan, 2000.

Barrass, Robert. Writing At Work \b a guide to better writing in administration, business and management, London: Routledge, 2003.

Seely, John. The Oxford guide to effective writing and speaking, 2nd ed., Oxford ; New York : Oxford University Press, 2005.

Jo Ray McCuen, Anthony Winkler. Readings for writers, 9th ed., Fort Worth : Harcourt Brace College Publishers, 1998.

Treece, Malra. Effective reports, 2nd ed., Boston: Allyn and Bacon, 1985.

AR 7.7 ELECTIVE – I (For General Architecture)

AR 7.7.1 URBAN DESIGN (Elective – I)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

The course focuses on creating awareness in students in the subject 'Urban

Design' as a specialization in the area of architecture and urban planning.

Objectives of the Course:

To give an overview of urban design as an interface between the fields of architecture and urban planning.

To impart the knowledge about various developments in the field of urban design.

Course Contents:

Unit - I

Discussion on Architecture, Urban design, Town Planning Interface. Urban Morphology and Elements of Urban Design. Nature of urban design projects in public and private developments.

Unit - II

Classical cities, medieval towns, neoclassic cities, and industrial towns. Characteristics of towns built by Hindu and Muslim rulers in India. Colonial inheritance, growth of post towns, civil lines, cantonments, railway and resort towns and Design in New Delhi.

Unit - III

Modern movements in city design such as 'city- beautiful' and 'Garden city' movements, utopian model Towns in the west. Changing structure of cities: sectors, blocks, streets, squares, buildings and open spaces.

Unit – IV

Role of planning agencies such as development authorities, Urban Arts Commission in the design of cities. Influence of city development policies namely Master plans, zoning regulations, on Urban Design. Built-form and space requirement in residential, commercial industrial and recreational land uses, activities. Patterns of subdivision and land-development.

Unit – V

Elements of urban spaces: squares and streets. Use of landscape in urban design, such as tree avenues, street fencing, side walks etc.

Lighting and illumination of cities, methods of lighting, signage and elements of utility services in the city.

Unit – VI

Urban conservation and its role in urban design. Past and present trends in urban conservation. Role of architectural control in urban conservation and city character and style.

Reference books:

- Bacon, N. Edmund.** Design of Cities. Penguin Books, New York, 1976.
- Benevolo , Leonard.** History of the City.
- Krier, Rob.** Urban Space, 3rd ed. Academy Editions, London, 1984.
- Moughtin, Cliff and Others.** Urban Design: Ornament and Decoration. Butterworth-Heinemann, London, 1995.
- Moughtin, Cliff.** Urban Design Street and Square.
- Mumford, Lewis.** City in History: Its origin transformation and its prospects.
- Sprelregen, Paul.** Urban Design: The Architecture of Towns and Cities.
- Lynch, Kwin,** the Image of the city Cambridge mass: MIT press, 1965

7.7.2 HOUSING (Elective – I)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

The course introduces the basic concepts and issues related to urban and rural housing.

Objectives of the Course:

To give an understanding and appreciation of housing in terms of issues, problems and directions.

Course Contents:

Unit – I

Evolution of Housing:

Brief review of the historical development of housing in various contexts.

Unit – II

Housing situation in India

Housing need and Demand: Housing and Habitat policy and perspective at the national level. Problems and Issues in urban & Rural Housing, Housing Agencies and their role in housing development.

Unit – III

Housing Standards

Issues involved in formulating housing standards for rural and urban areas, desirable and minimum standards. Residential Densities

Unit – IV

Housing Strategies

Review of different forms of housing globally – particularly with reference to the third world countries.

Brief acquaintance with some strategies such as sites and services upgrading existing shelter, stimulating private – sector production, developing building materials and alternative technologies, improving architectural design., protecting inner-city renters, land sharing, resettlement etc.

Unit – V

Housing Layouts and Design

Traditional pattern of housing design, Row Housing, Cluster Housing Apartment housing, low rise versus high rise housing, Incremental housing, neighborhood unit. Case studies of housing Projects

Unit – VI

Housing Process

Managing and financing of housing projects. People's participation, Technology Transfer, development control rules and environmental aspects

Reference books:

Alexander, Christopher. Pattern language: Towns, Buildings, Construction. Oxford University Press, New York.

Chiara, De Joseph and Others. Timesavers standard for Housing and Residential development, 2nd ed. McGraw Hill, Inc, New York.

Desai, A.R. and Pillai, Devadas. Slums and Urbanization, Popular Prakashan Pvt. Ltd.

HUDCO. Housing for the Low Income. HUDCO.

Poulose, K. Thomas. Reading Material on Housing. Institute of Town Planners, New Delhi.

Cedric Prgh (1990) Housing and Urbanisation, Sage Publication New Delhi

AR. 7.7.3 BUILDING CONSTRUCTION MANAGEMENT (Elective – I)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

To introduce the importance of construction management in the field of architecture.

Course Contents:

Unit – I

Introduction

Construction in India; its role in development, importance of Management in Construction, role of Construction Manager, Construction team, responsibilities and authorities of Construction Manager Organization.

Unit - II

Management Techniques:

Planning for Construction Projects: Principles, objectives, advantages of planning, stages of planning.

Scheduling: Definition, advantages

Methods of Scheduling: Bar chart, Milestone chart, Controlling, Life cycle curves. Job layout, work break down structure

Project Management through Networks

Introduction, objectives, advantages, terms and definitions, types of networks, rules for drawing a network, Fulker son's Rate of numbering the events.

Introduction to PERT, CPM, difference between PERT and CPM, finding critical path.

Unit – III

Introduction to construction equipments, performance, characteristics and usage of equipment used in large scale projects.

Human Resource management: manpower estimation at various stages, recruitment, training, under and over manning.

Materials Management: Materials of construction, classification codification, ABC analysis, estimation of materials procurement, inventory / stock control, purchase procedure, stores management.

Quality control in Construction: Importance of quality, elements of quality, organization for quality control, quality assurance techniques.

Unit – IV

Labour Legislations pertaining to construction industry, payment of wages act, migration Act, Factories Act, Contract Labour Act, Labour Welfare Fund Act, Workmen's Compensation Act.

Construction Safety Management: Importance of safety causes of accidents, safety measures, safety benefits to employees, employees and customers.

Unit – V

Economics of Project Management: Economic analysis of projects, economic studies, sensitivity analysis. Cost estimating principles, parameter estimation, detailed estimates, cost concepts, classification of costs, elements of costs, and cost analysis for control.

Unit – VI

Budgetary Control Systems: Types of budgets, new approaches for budgeting, responsibility of accounting, profit centre approach.

Financial Management: Meaning and scope, financial statement analysis, ratio analysis, funds flow analysis.

Working Capital Management: Meaning, policy for working capital, estimating working capital needs. Capital investment decision, long term financing working of financial institutions in India and abroad, self-financing, financing mechanisms.

Value engineering: Definition, value engineering job plan, life cycle costing, value engineering applications.

Unit – VII

Introduction to Linear programming, Transportation problem, Sensitive analysis.

Reference books:

Gupta, B.L. and Gupta, Amit. Construction Management, Machinery and Accounts, 3rd ed. Standard Pub, 2005.

Loraine, R.K. Construction Management in Developing Countries. Thomas Telford, London, 1993.

Srinath, L.S. PERT and CPM Principles and Applications, 3rd ed. Affiliated East-West Press, New Delhi, 2003.

Singh, Harpal. Construction Management and Accounts 14th ed. Tata McGraw-Hill Pub., New Delhi, 1981.

Gould, E. Frederick and Joyce, E. Nancy. Construction Project Management. Prentice Hall, New Jersey, 2000.

Shrivastava, U.K. Construction Planning and Management, 3rd ed. Galgotia Pub., New Delhi, 2004.

AR 7.7.4 INTERIOR DESIGN (Elective – I)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Note: This course is intended for students of Architecture and specific to students of Interior Design Major.

Course Overview:

The course provides a frame work of the discipline by addressing to the theoretical, social, historical, technological, professional aspects of Interior Design.

Course Contents:

Unit – I

The profession of Interior Design; Role of an Interior Designer- past and present; Scope of services; Interior Design Process. Interior Design and Concepts: Elements and Principles of design- an overview and their applications in interior designing.

Unit - II

Interior Space planning and human dimensions. Focuses on physical, psychological Behavioural and human factors, study of Proxemics, Behavioural settings.

Unit - III

Introduction to the fundamentals of Interior Design such as Lighting, Furniture, Space, Materials, Furnishings, Art etc.

Unit – IV

Colours in interiors – Colour Theory, Effect of light on colour, various colour schemes like analogues, complementary, triadic etc. Colour symbolism. Psychology of colour, Industrial colour codes. International standards.

Unit – V

Introduction to Furniture and Accessories: An overview of historical perspective of furniture and styles, accent pieces and accessories from Egyptian period to the present. Basic Furniture vocabulary. Styles of Interiors – Italian, English, French, Japanese styles etc.

Unit – VI

Interior lighting – direct and indirect lighting, location and light grid systems, types of luminaries, quality of lighting. Ambient, task and accent lighting. Exposure to eminent interior designers' works- Indian and international

Unit – VII

Business perspectives of Interior design – an overview of practice of interior design in India.

Reference books:

Archi World. Interior Best Collection: Residence, Commerce, Office, Restaurant Asia I-IV. Archi World Co., Korea, 2003.

Friedmann, Arnold and Others. Interior Design: An Int. to Architectural Interiors. Elsevier, New York, 1979.

Miller, E. William. Basic Drafting for Interior Designers. Van Nostrand Reinhold, New York, 1981.

Kurtich, John and Eakin, Garret. Interior Architecture, Van Nostrand Reinhold, New York, 1993.

Rao, M. Pratap. Interior Design: Principles and Practice, 3rd ed. Standard Pub., 2004.

AR. 7.7.5 LANDSCAPE ARCHITECTURE (Elective – I)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Contents:

Unit - I

Study of landform its technical expression through grading plan, section, profiles layout plans and earthwork computations.

Principles of soil mechanics and landscape drainage and their application to surface and subsurface drainage of small scale projects.

Unit –II

Basic principles of outdoor lighting, types of fixtures and their use in varying situations.

Introduction to irrigation systems – sprinkler trickle irrigation, drip irrigation and laying irrigation networks.

Unit -III

Factors related to construction; of structures and systems.

Materials and techniques of landscape construction with emphasis on appropriateness for intended use.

Construction of structure in landscape

Circulation roads, parking, paths; Level changes – walls, steps, ramps;

Construction of Garden, landscape feature Such as screens, trellis, wall fences gates decks; fountains and pool construction.

Unit -IV

Planting and establishment of woody plants, installing time, covers and herbaceous plants.

Planting principles – Bed preparation, mounding, application of fertilizers, roll preparation, pruning and maintenance.

Reference books:

Landphair, C. Harlow. Landscape Architecture Construction, 2nd ed. Elsevier, New York, 1988.

Motloch, L. John. Int. to Landscape Design, 2nd ed. John Wiley and Sons, Inc., New York, 2001.

Moorhead, Steven (Ed.). Landscape Architecture. Rockport Pub, Massachusetts, 1997.

Pregill, Philip and Volkman, Nancy. **Landscapes in History: Design and Planning in the western Tradition.** Van Nostrand Reinhold, New York, 1993

EIGHTH SEMESTER

AR 8.1 DESIGN THESIS

L/s: 22/Wk Int: 300 End Exam: 300 Total: 600 End Exam: Viva-voce Cr: 22

Course Overview:

Thesis should reflect the knowledge gained from all the courses undertaken by the student in all the previous semesters.

Objectives of the Course:

To develop assimilation, synthesis and application of research in Architecture

Expected Skills / Knowledge Transferred:

Student should be in a position to comprehend the design philosophy, theories, data analysis and application in a chosen area of study.

Course Contents:

Each student is expected to prepare a design thesis based on the preliminary work undertaken in the Pre Thesis Seminar, under an approved guide/adviser by the department.

The design Thesis shall comprise of Architectural Design proposals, Structural design for a component of architectural design proposal. The Component of Design for which structural design is to be provided will be chosen with the help of faculty in charge of structural design subject. The student will also be required to produce a project feasibility report for the specific design undertaken for the design thesis.

Thesis should reflect the knowledge gained from the course learnt in the previous semesters

The particulars of schedule, content, presentation, format etc., is to be decided by the department, from time to time and shall be strictly followed.

At the end of the semester, each student is expected to submit all original drawings prepared as per the department's specifications. Three copies of the report in the specified format along with a model submitted to the department, after obtaining the approval of the respective guides / advisers.

The department shall schedule the final viva-voce, at its convenience, only after the receipt of the thesis submission by a student. The performance sheet submitted by

the advisor and the thesis committee should be the basis for allowing the student to appear for the final viva-voce.

For End exam, viva-voce is to be conducted by a jury comprising of an external examiner, one internal examiner and head of the department or his nominee.

For the structural design project and Project Feasibility report a separate External Viva voce will be conducted. A total of 50 internal Marks (30 and 20 respectively) and 50 external marks (30 and 20 respectively) shall be allotted for the same out of total 300 marks.

References:

Mukhi, H.R. Technical Report Writing: Specially prepared for Technical and Competitive Examinations, New Delhi: Satya Prakashan, 2000.

Barrass, Robert. Writing At Work \b a guide to better writing in administration, business and management, London: Routledge, 2003.

Seely, John. The Oxford guide to effective writing and speaking, 2nd ed., Oxford ; New York : Oxford University Press, 2005.

Jo Ray McCuen, Anthony Winkler. Readings for writers, 9th ed., Fort Worth : Harcourt Brace College Publishers, 1998.

Treece, Malra. Effective reports, 2nd ed., Boston: Allyn and Bacon, 1985.

AR 8.2 PROFESSIONAL PRACTICE

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

The course provides overview and specific conditions of COA regulations, Architects Act 1972 in Architectural practice.

Objectives of the Course:

To impart awareness and technicalities of code of conduct, and the significance of Architects Act 1972 in Professional Practice.

Expected Skills / Knowledge Transferred: Legal, Technical and Financial aspects of Architectural practices and management skills for professional practice.

Course Contents:

Unit - I

Role and responsibility of architect in society; architectural profession as compared to others professions; difference between profession and business; architect's registration, COA, IIA and other organizations related to architectural profession.

Architects approach to works; ways of getting works; types of works, works partly

executed by other architect; various precautions to be taken before taking up the work; conditions of engagement between the architect and client; commencement of work.

Unit - II

Architect's duties; drawings to be prepared; Architects relation with other parties connected with works such as client, contractor, sub-contractors, consultants, municipal and public authorities.

IIA Code professional conduct; COA Architects Professional conduct Regulations 1989
Scale of charges; units and mode of measurements - clerk of work and his duties; Inspection of work: during 'construction; certificate of payment to contractor; bill of quantities; Schedule of rates, tenders; public, limited and negotiated tender documents and allied formalities.

Unit – III

Contracts; types of contracts such as item rate, lumpsum, cost plus percentage etc. General principles of Indian contract Act; Building contracts, conditions and forms of contract, study of standard contract of the Indian Institute of Architects. Administration of contract. Principle of Arbitration, Indian Arbitration act 1940, Powers and duties of arbitrators, revoking authority; umpire, award cost fixedfee, cost with penalty, labour day work, piece work Daily

Easement: definition; various types of easements; Dominant, and servient owners; essential conditions for enjoyment of easement; Fire insurance's definition, cover note; insurance for new work and additions; insurable value of property, claim for damage due to fire. Insurance of completed and pied building

Unit - IV

Preliminary knowledge of transfer of property Act; registration, stamp duty under registration and Govt. Power. Income tax, wealth, land acquisition Acts; general information about land acquisition procedures.

Accidents during progress of work and after completion, damage to persons and properties affected; workmen's compensation Act with regards to the affected persons and properties.

Consumer protection Act and related acts on Architects.

(Atc 20 of 1942) Architects Act 1972; Professional Practice Regulation and architectural education regulations under the Architects Act.

Unit - V

Types of offices for architectural practice; staff structure; filing of records; correspondence and drawings; maintenance of accounts; presentations in meetings, recording minutes of meeting. A small report to be prepared by each student after visiting an architect's office.

Role of consultants and Co-ordination between different convctants on a big project.

Study of building byelaws to enable to design and prepare drawings for submission to concerned bodies.

National building code, Fire prevention and safety measures.

Reference books:

Banerjee, D.N. Principles and Practice of Valuation, 5th ed. Eastern Law House, Calcutta, 1998.

Dalton, J. Patrick. Land Law, 4th ed. Pitman Pub., London, 1996.

Indian Institute of Architects. H.B. Professional Practice. The Architects Pub. Bombay.

Indian Standards Institution. National Building Code of India 1983. Indian Standards Institution, New Delhi, 1984.

Namavati, H. Roshan. Professional Practice, 8th ed. Lakshani Book Depot, Bombay, 2001.

Namavati, H. Roshan. Theory and Practice of Valuation, 2nd ed. Lakshani Book Depot, Bombay, 1991.

M.Dedbhkth Architectural practice in India by Prof.M.Deobhkta

V.SApte:Arch Practice Procedures

AR 8.3 ELECTIVE – II (For General Architecture)

AR 8.3.1 ARCHITECTURAL ILLUMINATION (Elective II)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Objectives of the Course:

The course is intended to give an in depth understanding of the scientific and design aspects of lighting in Architecture

Course Contents:

Unit – I

Light and vision, basic units, photometry and measurement, quality and quantity of light of different sources of light. Daylight, incandescent lamps, halogen lamps, electric gas discharge lamps, fluorescent lamps, high discharge lamps. A market survey of lamps with cost and technical specifications.

Unit – II

Design of lighting; lumen method, point by print method, design tools, design

documentation, simple numerical.

Unit – III

Specific lighting design requirement of different buildings such as homes, offices, industrial, hospital, art galleries, museums and exhibitions, case study of at least one type of the building by each student.

Unit – IV

Out door lighting: road lighting, high-mast lighting, tunnel lighting, landscape lighting, decorative lighting, facade lighting, spot lighting.

Unit – V

Lighting as determinant of form for architecture with graphic examples.

Unit – VI

Daylighting, advantages of daylighting; design tools in daylighting. Case studies and various examples, behaviour of daylighting in an interior spaces. Potentials of daylighting as an energy resource.

Unit – VII

Integration of daylighting with artificial lighting; lighting controls, intelligent building systems for lighting.

Unit – VIII

Conservation of energy in lighting use of daylight, optical fiber lighting, LED in lighting and the emerging trends in lighting.

Reference books:

Moore, Fuller. Concepts and practice of Architectural Day Lighting. Van Nostrand Reinhold co., New York, 1985.

Valia, Anil. Designing with light: A Lighting H.B. International Lightning Academy, Mumbai, 2002, Architectural Physics: Lighting.

Hopkinson R.G, Her Majestrip stationery office, London.

David Egan. M, concepts in Architectural lighting Mc Grew Hill Book company, New York, 1983

AR.8.3.2. ARCHITECTURAL JOURNALISM (Elective II)

L/s: 4/Wk	Int: 50	End Exam: 50	Total: 100	End Exam: 3 hrs	Cr:4
-----------	---------	--------------	------------	-----------------	------

Course Overview:

The Course prepares ground for the students to gain an understanding into the

fundamental issues in architectural Photography and develop the skill to create Articles/presentation capturing the essence through the photographs.

Course Contents:

Unit – I

Definition of Photo Journalism - Brief History - Photographs as social Documentaries - Birth of modern Photo Journalism since 1950s - visual awareness – visual survey - EDFAT methods in using the camera - Equipment required for Photo Journalism.

Unit - II

Development of writing skills: Usage of language and Vocabulary and grammar-introduction to methodology of writing essays, news writing, precis writing, writing in architectural blogs; listening comprehension, analyze talks and information gathered and to edit gathered information to build an article. Originality of topic. Collecting clippings from articles, blogs and books.

Unit -III

Photo Journalism in perspective - Snap shots - Advance amateur Photography - Art Photography - Photo Journalism - Approach to Photo Journalism - News Papers and Magazine Design elements: Page make -up - Layout - color scheme - Font - Blurb - Pictures - Ads etc- Other magazines - Documenting of Places - Rural- Urban - Public relations.

Unit - IV

Key texts concerning architectural journalism and journalists; to critically contrast their outputs in terms of production, content and/or presentation; to develop an ability to critically appraise selected individual pieces of journalism. Awards for Architectural Journalism and some of the important recipients
People journalism and law-legal boundaries-issues libel and invasions of privacy-ethics-the photo journalist on scene

Unit - V

Production of contemporary architectural journalism; Building pictures - Instant, Report - Editing - Editorial thinking – the picture Editor - Editing practices, creating drama - Photo editing -Documentary-evolution of the word document-methods and techniques.

Assignments should include an article based on ability to originate, plan, research, present and produce a piece of architectural journalism. The techniques and processes used in the production should be identified by the student.

Reference books:

Kopelow, Gerry. How to photograph buildings and interiors, 3rd ed. New York: Princeton Architectural Press, 2002.

De Mare, Eric Samuel. Architectural photography, London: Batsford, 1975.

Busch, Akiko. The photography of architecture: twelve views, New York: Van Nostrand Reinhold Co., 1987.

Mehta, Ashvin. Happenings: \b a journal of luminous moments, Vapi, Gujarat: Hindustan Inks, 2003.

Mohd, Al Asad. Architectural Criticism and Journalism

Sommer, Robert. Tom Wolfe on Modern Architecture

AR 8.3.3 FURNITURE AND PRODUCT DESIGN (Elective II)

L/s: 4/Wk	Int: 50	End Exam: 50	Total: 100	End Exam: 3 hrs	Cr:4
-----------	---------	--------------	------------	-----------------	------

Course Overview:

The course provides a framework in understanding the Theoretical, historical functional and human issues of the subject.

Objectives of the Course:

To impart a comprehensive understanding of the general theory and practice of the subject.

To inculcate in student a natural curiosity in allied discipline of design

Course Contents:

Unit – I

Understanding of the functional and formal issues in design – study and evaluation of popular dictums such as “Form follows function”, form and function are one”, “Less is more”, “God is in details” etc.

Evaluation of visual design for functional objects.

Gestalt theory of design: Law of closure, law of proximity, law of continuity etc.

Unit – II

Evolution of furniture through ages till present day

Unit – III

Human factors engineering and Ergonomic considerations; Principles of Universal Design and their application in furniture and product design.

Unit – IV

An introduction of various manufacturing processes most frequently adopted in furniture and product design such as, Injection Moulding; investment casting, sheet metal work, die-casting, blow-moulding , vaccum – forming etc.

Unit – V

Signage and Graphics – Environmental graphics: signage categories and materials.

Unit – VI

A detailed study involving the design aspects of any one of the following: Lifestyle accessories, Luminaire design, a piece of furniture, Point of Purchase design, Signage.

References:

Héctor Roqueta. Product design, London: te Neues, 2002.

Morley, John. The history of furniture: twenty-five centuries of style and design in the Western tradition, Boston: Little, Brown and Company, 1999.

Aronson, Joseph. The Encyclopedia of Furniture, 6th printing, New York: Crown Pub. 1944.

Saville, Laurel. Design secrets: furniture, Gloucester, Mass. : Rockport Publishers, 2006.

Datschefski, Edwin. The total beauty of sustainable products, Hove: Rotovision, 2001.

Papanek, Victor J. The green imperative: natural design for the real world, New York: Thames and Hudson, 1995.

AR 8.3.4 DISASTER RESISTANT ARCHITECTURE (Elective II)

L/s: 4/Wk Int: 50 End Exam: 50 Total: 100 End Exam: 3 hrs Cr:4

Course Overview:

This course introduces and explains disaster resistant methods of construction

Objectives of the Course:

To develop understanding about the nature of disasters and their effects on built environment.

To develop understanding about the ways of building that would resist disasters.

Course Contents:

Unit - I

Building safety from Natural Hazards:

Earthquake, Fire safety in buildings, Cyclone effects: High winds, storm surge and safety aspects in buildings, related to Cyclones, Floods, Landslides.

Elementary Seismology:

Occurrence of earthquake in the world, plate tectonics, faults, earthquake hazard maps of India and the states.

Causes of earthquake, seismic waves; magnitude, intensity, epicenter and energy release, characteristics of strong earthquake ground motions. Seismological Instruments: Seismograph, Accelerograph, Seismoscope / Multi SAR.

Unit - II

Introduction to Theory of Vibrations:

Single degree undamped and damped systems, resonance, response to earthquakes, elastic response, concepts of response spectrum. Flexibility of long and short period structures.

Unit - III

Site Planning, Building Forms and Architectural Design Concepts for Earthquake Resistance:

Historical experiences, Site Selection, Site Development.

Building forms: - Horizontal and vertical eccentricities, mass and stiffness distribution, soft storey etc.; Seismic effects related to building configuration.

Plan and vertical irregularities, redundancy and setbacks, Special Aspects:- Torsion, appendages, staircases, adjacency, pounding; Contemporary international approaches.

Unit – IV

Performances of Ground and Buildings in Past Earthquakes:

Earthquake Effects:- On ground, soil rupture, liquefaction, landslides; Behavior of various types of buildings, structures, power plants, switch yards, equipments, lifelines and collapse patterns; Behavior of Non Structural Elements like services, fixtures, mountings. Social and Economic Consequences of earthquakes, Lab simulations of models.

Seismic Design Principles:

Concept of seismic design, stiffness, strength, period, ductility, damping, hysteric energy dissipation, center of mass, center of rigidity, torsion, design eccentricities; Ductility based design: Design of energy absorbing devices, Seismic base isolation and seismic active control.

Unit – V

Structural Detailing:

Innovations and Selection of appropriate materials; IS Code provisions for the buildings:-IS:1893-2002, IS:4326-1993; Horizontal and Vertical seismic coefficients, valuation of base shear, distribution of shear forces in multi-storey building; Seismic Detailing Provisions: Masonry and Wooden Buildings (IS: 4326, IS: 13828), Adobe houses (IS: 13827); Seismic Designs and Detailing of RC and Steel Buildings:IS: 1893 – 2002; IS: 13920 – 1993; IS: 456 – 2000; IS: 800 – 2004; Special reinforcing and connection details in structural drawings.

Unit – VI

Earthquake Resistance Construction Details:

Various Types and Construction details of: Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls, openings, roofs, terraces, parapets, boundary walls, under ground and overhead tanks, staircases and isolation of structures; Local practices: traditional regional responses.

Unit – VII

Construction Quality Control:

Sequences of Construction: Good supervision practices, Critical check points and certification at certain stages, reporting, maintenance of records, testing.

Vulnerability Assessments and Seismic Strengthening of Buildings:

Seismic vulnerability evaluation of existing buildings; Weakness in existing buildings, aging, weathering development of cracks; Concepts in repair, restoration and seismic strengthening, materials and equipments for restoration of masonry and concrete structures. Methodologies for seismic retrofitting.

Reference books:

Abbott, L. Patidc. Natural disasters.

Arhold, Christopher and others. Building configuration and Seismic Design.

Disasters and Development -

National Geographic. Restless Earth: Disaster of nature.

Singh, P.P. and Sharma, Sandhir. Modern dictionary of natural disasters.

FINAL YEAR (NINETH & TENTH SEMESTER)

AR 9.1 PRACTICAL TRAINING

Int: 200	EndExam:200	Total: 400	EndExam:Viva-Voce	Cr:60
----------	-------------	------------	-------------------	-------

Course Overview:

Internship for a period of not less than 40 weeks in both the semesters put together in one year.

Objectives of the Course:

To provide experience in Architectural Practice.

Expected Skills / Knowledge Transferred: The skills required for an architect to grow into a complete professional.

Course Contents:

Every student must work in an Architect's Office as a full-time trainee for a period of 40 calendar weeks in one year (excluding Viva-voce) from the date of commencement of training. The Chief Architect in the firm should be registered with the Council of Architecture and have a minimum of five years of practical/professional experience after her/his graduation. The student should involve herself/himself in various aspects of work in an office like working drawings, presentation drawings, quantity and cost estimation, site supervision, municipal drawings, etc.

Note: Detailed instructions given by the University regarding the training, the frequency of reporting to the department, etc. will be issued at the end of the Eighth Semester, which the student must strictly follow.

After completion of training, every student will have to submit a detailed report with a set of drawings on at least four projects on which she/he has worked during the forty calendar weeks of the practical training period.

Evaluation:

- The internal assessment shall be evaluated at the end of 40 weeks (Tenth Semester) and shall be conducted by the faculty deputed by the department in the institute.
- The detailed report and drawings prepared during practical Training by students will be evaluated at a viva-voce by a jury consisting of one external, one internal and head of the department or his nominee.

After submission of the report the department at its convenience will arrange for the conduct of the viva-voce examination.

