B.ARCHITETURE SYLLABUS

For admitted batches of 2015-16 onwards

DEPARTMENT OF ARCHITECTURE
ANDHRA UNIVERSITY COLLEGE OF ENGINEERING (A)
VISAKHAPATNAM

DEPARTMENT OF ARCHITECTURE, AU COLLEGE OF ENGINEERING

SCHEME OF INSTRUCTIONS & EVALUATION

FOR ADMITTED BATCHES 2015-16

1/5 B.ARCH 1ST SEMESTER											
S.No	**Code No.**	**Subject**	**Scheme of Instruction**					**Scheme of Examination**			
			Credits	**Lectures (periods/ week)**	**Tutorials/ Drawing (periods/ week)**	**Lab Hrs**	**Total (periods/ week)**	**Internal**	**External**	**Total**	**Duration of exam**
1	06.1.1.1	Basic Design & Visual Arts	8	2	6	-	8	50	50	100	5 Hrs.
2	06.1.1.2	Architectural Drawing & Graphics-1	5	2	3	-	5	50	50	100	5 Hrs.
3	06.1.1.3	Building Materials & Building Constructins-1	6	2	4	-	6	50	50	100	5 Hrs.
4	06.1.1.4	Introduction to Architecture, Art Culture	3	3	0	-	3	30	70	100	3Hrs.
5	06.1.1.5	Structural Mechanics-1	4	4	0	-	4	30	70	100	3Hrs.
6	06.1.1.6	English	3	3	0	-	3	30	70	100	3Hrs.
7	06.1.1.7	Survey & Site Studies	3	2	0	3	5	50	50	100	Practical
8	06.1.1.8	Sports/NSS/NCC	2	3	0	-	3	-	-	-	
		Total	34	21	13	3	37	290	410	700	

1/5 B.ARCH 2nd SEMESTER											
S.No	**Code No.**	**Subject**	**Scheme of Instruction**					**Scheme of Examination**			
			Credits	**Lectures (periods/ week)**	**Drawing (periods/ week)**	**Lab Hrs.**	**Total (periods/ week)**	**Internal**	**External**	**Total**	**Duration of exam**
1	06.1.2.1	Architectural Design-I	8	2	6	-	8	50	50	100	5 Hrs
2	06.1.2.2	Architectural Drawing & Graphics-II	5	2	3	-	5	50	50	100	5 Hrs
3	06.1.2.3	Building Materials & Building Construction-II	6	2	4	-	6	50	50	100	5 Hrs
4	06.1.2.5	History of Architecture –I	3	3	0	-	3	30	70	100	3 Hrs.
5	06.1.2.6	Structural Mechanic-II	4	4	0	-	4	30	70	100	3 Hrs.
6	06.1.2.7	English Lab	2	3	0	-	3	50	50	100	3 Hrs.
7	06.1.2.8	Workshop Practice	3	2	0	3	5	50	50	100	Practical
8	06.1.2.9	Sports/NCC/NSS	2	3	0	-	3	-	-	-	-
			33	21	13	3	37	310	390	700	

1ST YEAR 1ST SEMESTER

06.1.1.1: BASIC DESIGN AND VISUAL ARTS:

Credits	08	Lab (Hrs.)	-
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	06	External Marks	50
		Duration of Exam	5.00Hrs.

Course Objective:

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. The Course provides with knowledge of the principles of design and design elements. Exercises complement the lectures and ensure that the students learn to develop a series of compositions in two and three dimension.

Course Outcomes:

Exercises complement the lectures and ensure that the students learn to develop a series of compositions in two and three dimension.

The Course also prepares ground for the students to gain an understanding into the fundamental issues in architectural design and develop the skill to create architectural solutions for simple problems.

Course Contents:

Freehand drawing:

Introduction to fundamentals of drawings and its practice.

Free hand line sketching and drawing of natural and man-made.

Study of shades and shadows. Object drawing, simple, natural and geometric forms.

Outdoor Sketching of Historic or new built up structures of Architectural importance using different mediums.

Elements of Design:

Introduction to design: Meaning of design, importance of design.

Fundamental elements of design and their definitions-point, line, shape, form, space, texture, value and colour.

Principles of design:

Introduction to the principles of design - unity, balance, symmetry proportion, scale, hierarchy, rhythm, contrast, harmony, focus etc.

Ordering principles – axis, symmetry, hierarchy, Rhythm, Datum, and Transformations.

Colour:

Colour theory, colour wheel, primary, secondary, tertiary colours, colour schemes, colour value & intensity.

Principles of Perception:

Proximity, Similarity, Closure (Gestalt type). Optical illusion

Form and space:

Understanding properties of form, Articulation and Transformation of form – additive, subtractive and dimensional transformations.

Form defining space

Assignments:

Sketches,sheets and Models to understand basic design principles, elements and their expressive qualities.

Creative Exercises of 2d to 3d compositions.

Exercise related to positive and negative spaces

Mural, ideogram, 3D Abstract models

Text books:

1. Francis, D.K.Ching – Form Space & Order

References:

1. Wong Wucius – Principles of two dimensional designs
2. Ikuyoshi Shibikawa and Yumi Takahashi – Designer s Guide to Colour
3. Von Mesis – Elements of architecture
4. Robkrier – Architectural Composition
5. Johannes Itten – Design & Form
6. Donald E. Helper, Paul I. Wallach – Architecture Drafting & Design
7. David A.Hanks: The Decorative Design of Frank Lloyd Wright.
8. K.W.Smithies Principles of Design in Architecture.
9. Alan pipes – Drawing for 3 – dimensional design.

06.1.1.2: ARCHITECTURAL DRAWING & GRAPHICS –l

Credits	05	Lab (Hrs.)	-
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	03	External Marks	50
		Duration of Exam	5.00Hrs.

Course Objective:

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

Course Outcomes:

Students learn to develop drafting skills to to facilitate effective visual communication.

Course Content:

1. Introduction to Drawing:

Introduction to drawing equipment, familiarization, use and handling. Drawing sheet sizes, layouts and composition. Simple exercises in drafting, line types, line weights; dimensioning. Lettering Styles: Roman and Gothic style lettering; Freehand lettering, title panels and legends.

2. Simple Geometrical Construction:

Constructing simple and complex geometrical shapes involving various drafting technique drawing regular shapes; Special methods of drawing regular polygons; Regular polygons inscribed in a Circle.

3. Projections and section of Solids:

Solids of revolution, solids in simple position, Axis perpendicular to a plane, axis parallel to both planes, axis inclined to both planes etc

Section planes, true shape of section, Sections of Prisms, Pyramids, Cylinders, Cones, Spheres etc

4. Advanced geometry:

Intersection of surfaces

Line of intersection, intersection of prism and prism, cylinder and cylinder, cylinder and prism, cone and cylinder, cone and prism, cone and cone, sphere and cylinder or prism. Orthographic Projections-Representation of 3D elements in Plan and Elevations, Study of isometric, axonometric and oblique views, Ionic volute (by Gibbs Rule), Entasis of column, intersection of solids &

5. Architectural Symbols:

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

6. 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.

Text books:

l. N.D.Bhat, V.M.Panchal "Engineering Drawing" – Plane and Solid Geometry.
2. P.S.gill – A text book of Geometrical Drawing.
3. Francis D K Ching - Architectural Graphics.

References:

1.Moris.I.H. "Geometrical drawing for Art students".
2.Nelson J.A. – Hand book of Architectural & Civil Drafting.
3.John D.Bies – Architectural Drafting: Structure & Environment.
4.Thoms. E. French – graphic Science & Design.
5.T.B.Nichols and Normal keep – Geometry of Construction.
6.Shah: Building Drawing.
7.Drawing architecture – Paul Hagarth
8.Drawings by architects – Claudius Conli
9.Pencil techniques in modern design – Alkin, Urbelleth and Lione

06.1.1.3: BUILDING MATERIALS & BUILDING CONSTRUCTION-I

Credits	06	Lab (Hrs.)	-
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	04	External Marks	50
		Duration of Exam	5.00Hrs.

1. Elementary construction methods:

Explaining basic principles of Load bearing and Framed structures.

2. Mortars – Cement, sand, lime:

Sand: Sources of sand , classification, functions, properties, tests for silt and organic contents, size of sand and grading.

Mortar : Types, proportioning, mixing and grinding, mortar mills. Surkhi mortar, cement mortar, methods of preparing, handling and uses of mortars, light weight mortars i.e. cinder, sawdust and fibrous plasters, gypsum, plaster, composition and uses, Plaster of Paris.

3. Brickwork:

Claybricks:

. Constituents, harmful constituents, and selection of clay, requirements and tests. Fire clay bricks ;varieties; sand lime bricks; paving bricks; Terra-cotta-its varieties; ordinary, glazed, porous, polished and fine-uses and properties.

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

4. Stone masonry:

Classification of stones**:**

Granite, laterite, quartzite, marble and slates –properties and uses; stones, paving sets. Preservation of stonework, quarrying of building stones, quarry dressing tool used.

Technical terms; stone walls, rubble work, ashlar work, masonry joints, window sills, plinth, cornices, surface finishes.

5. Lintels & Arches:

Lintels of wood, stone, brick, etc.

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

06.1.1.4: INTRODUCTION TO ARCHITECTURE, ART & CULTURE

Credits	03	Lab (Hrs.)	-
Lectures (Periods /week)	03	Internal Marks	30
Tutorials/ drawing(periods/week)	--	External Marks	70
		Duration of Exam	3.00Hrs.

Course Objective:

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

Course Outcome:

The Course is intended to provide brief background knowledge of Culture and Art in different parts of the world.

Course Content:

Unit I: Introduction to Art, Culture, Society, Civilization and Architecture.

Unit II: Earlier attempts of man for shelter and shelter forms since the prehistoric period with reference to culture, climate, technology and material

Unit III: Understanding the relationships of art, culture and architecture at different time such as : art , arts & crafts movement etc , periods in the world history.

Unit IV: Indian Art and Architecture.

Unit V: Western Art and Architecture.

Unit VI: Elements of Art & Principles of Design studied from historic examples.

Unit VII: Study of ornament in Architectural Design, different types of ornamentation in buildings and study of historic examples

Unit VIII: Present day trends in visual arts and Architecture

Documentation

The study of any vernacular settlements and buildings of the region to understand construction methods, plans and building façade, organization in relation to aesthetic / religious/ social philosophy and environmental factors

Assignments: Sketches, notes, tutorials, tests and presentations

Reference: Story of Architecture.

Case studies:

The study of vernacular settlements and buildings of the region to understand construction methods, plans and building façade, organization in relation to aesthetic / religious/ social philosophy and environmental factors in the Visakhapatnam metropolitan region.

Text books:

References:

1.Craven, C. Roy. Indian Art a Concise History.
2. Christopher Alexander, Pattern Language, New York: Oxford University Press
3. Thomas Mitchell, Redefining Designing: From to Experience,
4. A history of architecture – Sir Banister Fletcher
5. Introduction to architecture – Stephen Gardner.
6. A chronology of western architecture – Doreen Yarwood
7. The great ages of architecture – Bodo Lichy
8. World architecture – an illustrated history – Trewin Copplistone and others

06.1.1.5: STRUCTURAL MECHANICS-I

Credits	04	Lab (Hrs.)	-
Lectures (Periods /week)	04	Internal Marks	30
Tutorials/ drawing(periods/week)	--	External Marks	70
		Duration of Exam	3.00Hrs.

- Introduction: forces, composition, resolution, moments and couples; transformation of couple; resolution of force into force and couple.
- Concurrent and non-concurrent co-planar force systems, resultant and equilibrate analytical and graphical solutions.
- Equilibrium of bodies acted upon by concurrent and non-concurrent co-planar force systems, forces and members of trusses by method of joints and method of sections.
- Simple stresses and strains, elasticity, stress, strain, types of stresses, elastic limit, modulus of elasticity, composite sections. Stresses due to change in temperature.
- Elastic constants, linear strain, lateral strain, Poisson's ratio, volumetric strain, relation between E, N (or G), and K.
- Torsion of shafts – introduction to the basic equation $\boldsymbol{\tau/j = f_s/R = G\theta/l}$
- Beams: Shear force and bending moment diagrams for simply supported, cantilever and overhanging beams for various loads. Relation between shear force and bending moment.
- Moment of inertia, Polar moment of inertia and section modulus for various structural shapes.

Text books:

- Mechanics of solids by S.S. Bhavikatti
- Engineering Mechanics by S.P.Timoshenko & D.H.Young
- Analysis of Structures - Analysis, Design and Details of Structures (Vol.1) by V.N.Vazirani and M.M.Ratwani
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References:

a. Elements of strength of materials by Timoshenko & Young
b. Applied Mechanics by S.Ramamrutham.

06.1.1.6: ENGLISH

Credits	03	Lab (Hrs.)	-
Lectures (Periods /week)	03	Internal Marks	30
Tutorials/ drawing(periods/week)	--	External Marks	70
		Duration of Exam	3.00Hrs.

Vocabulary: Word Search, Discuss and Note – Word Quiz – A List of 100 Basic Words – One Word Substitutes – 100 Difficult Words, Synonyms, Antonyms, Idioms, Technical Terms.

Grammar: Types of Sentences, Verbs, Adverbs, Pronouns, Adjectives, Gerunds & Infinitives, Articles, Quantifiers, Punctuations, Conjunctions, Exclamation.

Reading: Famous People – What is Personality, Personality based on Blood Groups – News Report, Magazine Article, Mobile Towers and Health – An Excerpt from Short Story, An Excerpt from a Biography – Open Letter to Prime Minister, Business Dilemmas: An Email Exchange – A Review of IPL: The Inside Story, Marck Zukerberg: World's Youngest Billionaire – Solar Power: The Way Forward, From the Very Small to the Very Large.

Listening: Life in a Hostel – Eating Away those Blues!, Meeting Carl Jung – A Documentary on the Big Cat – A Consultant Interviewing Employees – A Conversation about a Business Idea – An Interview with a Woman Engineer.

Speaking: Your Favorite Holiday Destination – Describe Yourself – Why we need to save our Tiger – A Dialogue – Your First Interview – Pair Work: Setting up a New Business-Great Engineering Achievements.

Scenario: Sharing a Flat – Living in the Twenty First Century – Global Warming – Reality TV – Recession – The Sky-High Project.

Writing: Writing Sentences – Using your Dictionary – Paragraph Writing, Arguing a Case – Essay, Formal Letters, Emails, Reports and Presentations.

Life Skills and Core Skills: Self Awareness and Self Motivation – Communication, Adaptability – Motivation, Problem Solving – Personal Presentation Skills, Stress Management – Professionalism Ethics – Innovativeness and Creativity.

OBJECTIVES:
Reading Skills

- Addressing explicit and implicit meanings of a text on current topics.
- Understanding the context.
- Learning new words and phrases.
- Using words and phrases in different contexts.

Writing Skills

- Using the basic structure of a sentence.
- Applying relevant writing formats to create paragraphs, essays, letters, emails, reports and presentations.
- Retaining a logical flow while writing.
- Planning and executing an assignment creatively.

Interactive Skills

- Analyzing a topic of discussion and relating to it.
- Participating in discussions and influencing them.
- Communicating ideas effectively.
- Presenting ideas coherently within a stipulated time.

Life Skills and Core Skills

- Examining self-attributes and identifying areas that require improvement: self-diagnosis and self-motivation.
- Adapting to a given situation and developing a functional approach to finding solutions: adaptability and problem solving.
- Understanding the importance of helping others: community services and enthusiasm.

LEARNING OUTCOMES:

- The overall performance of the students will be enhanced after the course; they will be in a position to make presentations on topics of current interests – politics, famous personalities, science and technology, tourism, work and business environment, with increased public speaking skills.
- Students will be able to read, listen, speak and write effectively in both academic and non-academic environment.
- The students will be updated with certain real life situations, which they can handle when come face to face.

Prescribed Text Book: Life Through Language: A Holistic Approach to Language Learning. Board of Editors, Pearson Publishers, India 2013.

Life Through Language: An Effective Learning Experience

Life through Language has a systematic structure that builds up communicative ability progressively through the chapters. It will enable the learner to manage confusion; frame question for themselves and others; develop new ideas; support ideas with evidence; express themselves with poise and clarity; and think critically. Acquisition of skills leads to confidence.

Chapter – 1

People and Places:- Word Search – Ask Yourself – Self-Assessment-I – Self-Assessment – II - Sentence and its types – A Guide book entry – Life in a Hostel-Your Favorite Holiday Destination – Designing a Holiday- Writing Sentences – Self-Awareness – Self-Motivation.

Chapter – 2

Personality and LifeStyle:- Word Quiz – Verbs – Adverbs – A Big Fat Wedding – Wine and Dine – Going Places – Negotiations – Proving Yourself – Meeting Carl Jung – Describing Yourself – Living in the 21st Century – Using Your Dictionary – Communication – Adaptability.

Chapter – 3

Media and Environment:- A list of 100 basic words – Nouns – Pronouns – Adjectives – News Report – Magazine Article – User's Manual for new iPod – A documentary on the big cat – Why we need to save our tigers: A dialogue – Global warming – Paragraph Writing – Arguing a case – Motivation – Problem Solving.

Chapter – 4

Entertainment and Employment:- One word substitutes – Parts of Speech – Gerunds and infinitives-An excerpt from short story-An excerpt from a biography-A Consultant interviewing employees-Your first Interview-Reality TV-Writing an essay-Correcting Sentences-Integrity Sense of humor.

Chapter – 5

Work and Business:- A list of 100 difficult words – Articles, Quantifiers – Punctuation – Open Letter to Prime Minister Business Dilemmas: An email exchange – A review of IPL: The Inside Story, Mark Zuckerberg: World's Youngest Billionaire-A Conversation about a business Idea-Pair Work: Setting up a new business-Recession-Formal Letters-Emails-Reports-Professionalism-Ethics.

Reference Books:

1. Basic Vocabulary. Edgar Thorpe, Showick Thorpe. Pearson P. 2008
2. Quick Solutions to Common Errors in English, Angela Bunt. MacMillan P. 2008
3. Know Your English (Volume 1 & 2), by Dr. S. Upendra, Universities Press, India 2012
4. Business Communication Strategies. Maathukutty Monipally. Tata Mc Grahill P. 2009.

06.1.1.7 SURVEYING & SITE STUDIES

Credits	03	Lab (Hrs.)	03
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	--	External Marks	50
		Duration of Exam	Practical

Basic principles and chain surveying:

Definitions, scales and symbols, sources of error in surveying and theory of probability, measurement of distance, instruments used, ranging of survey lines, chaining a line with examples, chaining on sloping ground, errors in chaining, tape corrections, chain surveying principles, off-sets, field notes, instruments, obstacles in chaining, plotting chain survey with practical examples.

Traversing and plain table surveying:

Tape and chain traversing, instruments used, methods of traversing, bearing lines, local attraction, plotting, magnetic declination, precautions in using compass, traversing by theodolite, instruments used and methods, plain table surveying methods, two point and three point problems, exercise in preparation of base map of small areas.

Computation of areas and leveling

Computation of areas, from field notes and from plan with examples, leveling: instruments used, definitions principles, reduction of levels classification of leveling, errors in leveling contouring; characteristics of contour lines, interpolation and interpretation of contours, uses of contour lines.

Automated surveying:

introduction to the use of digital surveying technologies such as total station, G.P.S through demonstrations.

Site studies:

Plot, site, land and regions, size, shape of sites. Analysis of accessibility, topography, climate, landforms, surface drainage, soil, water, vegetation, ecology and visual
aspects.

Note: Field book to be submitted at the end of the semester.

Viva Voce:

Student should field book and they should attend a practical Exam and Viva voce conducted by both an external and an internal examiner.

Text books:

1. Surveying vol-I – B.C.Punmia
2. Text book of Surveying – C. Venkataramiah, Unversiities Press.

References:

1. Planning design criteria- joseph de chiara & lee coppleman
2. Site planning – Kevin Lynch

1ST YEAR 2ND SEMESTER

06.1.2.1:ARCHITECTURAL DESIGN-I

Credits	08	Lab (Hrs.)	--
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	06	External Marks	50
		Duration of Exam	5:00 Hrs.

Course objectives:

Lectures on theory of Architecture and principles of planning. Elements of composition, analytical classification of spaces for different uses and their relation to one another. Study of horizontal and vertical circulation in buildings. detailed study of analysis of sites and surroundings

Course Outcomes:

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

Course Content:

Organisation of form and space

Spatial relationship and spatial organisation

Circulation

Path space relationship, elements and form of circulation

Proportion and scale

golden section, classical orders, modular, anthropometry, Understanding of human and visual scale. An understanding of basic human functions and their implications for space requirements. Minimum and optimum areas for various functions, User data-Bubble and circulation diagrams

Assignments:

The list of suggested topics to be covered as design problems including preparation of measured drawings and design of single unit spaces with emphasis on form

•Detailed study of spaces such as living, dining, bedrooms, kitchen, toilet, etc. including the furniture layout, circulation, clearances, lighting and ventilation, etc.

Application in the design of simple household and street furniture At least two design problems Examples such as Design of Bus shelter/ Milk booth, /Security cabin/ATM center/ Internet center/ Gateway

References:

1.Time Savers Standards.
2. Architect's Data- Ernst Neufert
3.Architect's handbook- Charanjit Shah.
4. Form Space & order – Frantis, K. Chary

06.1.2.2: ARCHITECTURAL DRAWING & GRAPHICS –II

Credits	05	Lab (Hrs.)	--
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	03	External Marks	50
		Duration of Exam	5:00 Hrs.

Course Objective:

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

Course Outcomes:

Students learn to develop drafting skills to to facilitate effective visual communication.

Course Content:

1. Perspective:

Introduction to Perspective in one point or parallel perspective, two point or angular perspective, introduction to three-point perspective of different geometrical form, built forms.

2. Sciography:

Introduction to Sciography in the study of shade and shadows, points, lines, surfaces, geometrical solids of various forms and groups of forms leading to advanced examples of shades and shadows on buildings or parts of buildings.

3. Rendering:

Introduction to the rules of composition and perspective in architectural rendering, color study, values, tones and general approach to rendering. Various colour schemes, water colour and poster colour rendering, pencil rendering and monochrome and wash rendering etc. treatment of sky, clouds, landscape elements, human figures, foreground and surroundings, shadow projections in renderings

Assignment

a. Sketching-incorporating above principles
b. Architectural Documentation:
   Detailed measured drawing and documentation of any interesting building – preparation of maps, plans, elevations, sections, views etc.

Text books:

l. N.D.Bhat, V.M.Panchal "Engineering Drawing" – Plane and Solid Geometry.
2. Francis D K Ching - Architectural Graphics.

References:

1.Perspective – space and design – Lance Bowen Bellings.
2.Moris.I.H. "Geometrical drawing for Art students".
3.Nelson J.A. – Hand book of Architectural & Civil Drafting.
4.P.S.gill – A text book of Geometrical Drawing.
5.John D.Bies – Architectural Drafting: Structure & Environment.
6.Thoms. E. French – graphic Science & Design.
7.T.B.Nichols and Normal keep – Geometry of Construction.
8.Shah: Building Drawing.
9.Drawing architecture – Paul Hagarth
10.Drawings by architects – Claudius Conli
11.Perspective – H. Pranchlay
12.Pencil techniques in modern design – Alkin, Urbelleth and Lione
13.Perspective – space and design – Lance Bowen Bellings.

06.1.2.3: BUILDING MATERIALS & BUILDING CONSTRUCTION-II

Credits	06	Lab (Hrs.)	--
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	04	External Marks	50
		Duration of Exam	5:00 Hrs.

1. Timber:

Timber Advantages of timber construction, exogenous and endogenous trees, hard wood and and soft wood, growth of tree and its structure: wood and heart, felling of trees, conversion of felled logs, storage, sawing of timber, shrinkage and distortion, wastage, method of sawing. Drying and seasoning, moisture contents, purpose of seasoning, natural artificial.

Defects in timber: Natural defects, seasoning defects and defects due to fungal action. Causes of decay, factors affecting decay, preservation of timber by applying preservatives like tar, oil, water soluble and organic solvents.

2. Veneers and veneering:

Resin bonded plywood, laminated wood, insulating boards and other miscellaneous Boards. Varieties of Timber, Characteristics and Uses

3. 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.

4. Doors:

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

5. Windows:

Ordinary casement, top and bottom hung, pivoted and sliding sash.
Hardware: fixtures, locks, hinges, fastenings, etc.

6. Wooden ground and upper floors:

Terms defined, bridging, joists, binder beams and
girders, solid and herringbone strutting, floor boards, ceiling joists, trimming floors to accommodate fire place.

06.1.2.4. HISTORY OF ARCHITECTURE-I

Credits	03	Lab (Hrs.)	--
Lectures (Periods /week)	03	Internal Marks	30
Tutorials/ drawing(periods/week)	--	External Marks	70
		Duration of Exam	3:00 Hrs.

Course Objectives:

History of architecture to be studied as history of development of building forms (3D) ornamentation, structural solutions, construction methods, plans and building façade, organization in relation to aesthetic / religious/social philosophy and environmental factors. The study should focus on the general trends and not on specific examples/ buildings.

Course Outcome:

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 content:

- Architectural development in the ancient civilizations in Egypt and Mesopotamia, study of pyramids, temples, mastabas, ziggurats, etc.
- Architecture in the classic Greek and roman periods, temples, agoras gateways, circuses, amphitheatres, basilicas, etc.
- Architecture in the early Christian, Romanesque gothic, Byzantine, periods in Europe and rest of the world excluding Asia.

Internal evaluation will be through tests and/ or a seminar to be presented by each student using maps, plans, section/ elevations/ views and other diagrammatic and graphic means.

Text Books:

1. A history of architecture – Sir Banister Fletcher

References:

1. World architecture – an illustrated history – Trewin Copplistone and others
2. Introduction to architecture – Stephen Gardner.
3. A chronology of western architecture – Doreen Yarwood
4. The great ages of architecture – Bodo Lichy
5. Meaning in western architecture – Christian Noberg Schulz

06.1.2.5. STRUCTURAL MECHANICS-II

Credits	04	Lab (Hrs.)	--
Lectures (Periods /week)	04	Internal Marks	30
Tutorials/ drawing(periods/week)	--	External Marks	70
		Duration of Exam	3:00 Hrs.

- Theory of simple bending; M/I=f/y=E/R, application of flexural formula.
- Bending and Shearing stresses distribution in beams for different sections.
- Combined stresses (direct and bending stresses) of symmetrical and unsymmetrical sections-beams
- Deflection of beams: Relation between slope, deflection and curvature, Deflection of cantilever and simply supported with different loadings using double integration method and moment area methods.
- Propped cantilever beams: Shear Force and Bending Moment diagrams.
- Analysis of beams and frames: BM& SF diagrams for Fixed and Continuous beams. Application of Clapeyron's theorem of three moments, Moment distribution method for continuous beams. Kani's method of analysis for structural frames including sway.
- Three Hinged Arches- determination of horizontal thrust, radial shear, normal force, and axial thrust. Shear force and bending moment diagrams for three-hinged arch.

Text books:

- Analysis of Structures - Analysis, Design and Details of Structures (Vol.1 and Vol.2) by V.N.Vazirani and M.M.Ratwani
- Basic structural analysis by C.S. Reddy

References:

1. Intermediate Structural analysis by C.K.Wang
2. Elements of strength of materials by Timoshenko & Young
3. Structural mechanics – Punmia

06.1.2.6: ENGLISH LAB

Credits	02	Lab (Hrs.)	--
Lectures (Periods /week)	03	Internal Marks	50
Tutorials/ drawing(periods/week)	--	External Marks	50
		Duration of Exam	3:00 Hrs.

The **Language Lab** focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.

SYLLABUS:

1) English Sound Pattern-Letters
2) Sounds of English
3) Pronunciation
4) Stress and Intonation

OBJECTIVES:

- To make students recognize the sounds of English through Audio-Visual aids.
- To help students build their confidence and help overcome their inhibitions and selfconsciousness while speaking in English. *The focus shall be on fluency.*
- To familiarize the students with stress and intonation and enable them to speak English effectively.

LEARNING OUTCOMES:

- Students will be sensitized towards recognition of English sound pattern.
- The fluency in speech will be enhanced.

Prescribed Text Book: *Speak Well*, Board of Editors, Orient Black Swan Publishers, Hyderabad, 2012.

Speak well, the print as well as audio materials, is learner friendly and suitable for use in a multimedia language laboratory. These materials are developed to facilitate practice in improving the intelligibility and communication skills in English, for technical, students at the undergraduate level.

The materials mainly aim at self-study, monitory by a teacher whenever essential. The teacher intervention is kept to a minimum, only to give right direction to the learners.

Communication in any language depends on clarity of speech. This is true of English too. Articulation of the sounds, and pronunciation of words from the basis for intelligibility. The few units focus on bringing home the importance of this aspect with copious examples and opportunities for practice. Models of standard pronunciation are given. Explanations are kept short and simple. The IPA symbols, presenting the sound system in English, used in this book are the same as in Standard English dictionaries. These symbols are to be used at the recognition level to facilitate the learners' use of the dictionary for pronunciation. Problem areas are pointed out and, where necessary, deviation in the pronunciation of Indian speakers of English are brought to the notice of the learners.

The units called 'Interactions' pay attention to natural conversational skills in different contexts with focus on various functions of the language. Model conversations are provided as samples. Notes on appropriate expressions used in different situations drawn the learners' attention to the use of language in context. Exercises and activities reinforce the functions introduced.

Unit-1: Letters and Sounds
Worksheet-1
Unit-2: Interactions-1
Worksheet-2
Unit-3: The sounds of English
Worksheet-3
Unit-4: Interactions-2
Worksheet-4
Unit-5: Pronouncing words- some important patterns
Worksheet-5
Unit-6: Interactions-3
Worksheet-2
Unit-7: Stress and Intonation
Worksheet-2

Reference books:

1. Cambridge English Pronouncing Dictionary, Cambridge University Press, India, 2012.
2. A Textbook of English Phonetics for Indian Students by T. Balasubramanian, Macmillan Publisher, 1981.

DISTRIBUTION AND WEIGHTAGE OF MARKS

1. The practical examinations for the English Language Lab shall be conducted as per the University norms prescribed for the core Engineering practical sessions.

2. For the Language lab sessions, there shall be a continuous evaluation during the semester for 50 Sessional marks and 50 semester-end Examination marks.

3. For the 50 Sessional marks, 20 marks shall be awarded for day-to-day performance, 10 marks to be awarded by conducting Internal Lab Test(s), and 20 marks for work sheets attached to the lab manual.
4. For the 50 semester- end (External) marks, 30marks shall be awarded for written examination (dialogues, the sounds of English and stress) and 20 marks for external examiner viva-voce, tested by way of reading a passage or a conversation.

Note: The external lab shall be conducted by the teacher concerned with the help of another English faculty of affiliated Colleges of the University/other Institutions.

06.1.2.7: WORK SHOP PRACTICE

Credits	03	Lab (Hrs.)	03
Lectures (Periods /week)	02	Internal Marks	50
Tutorials/ drawing(periods/week)	--	External Marks	50
		Duration of Exam	Practical

Course content:

Model making: Preparation of wooden base for model Making of three dimensional building blocks & forms using different types of materials such as paper, rubber, acrylic, polystyrene, FRP, etc. Three to four exercises to be done.

Course outcome:

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

References:

1. Designing with models – Criss. B. Mills.