DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW.

B.ARCH. CREDIT SCHEDULE FOR ALL SEMESTERS
&
SYLLABUS FOR FIRST & SECOND SEMESTERS
IN ACCORDANCE TO CHOICE BASED CREDIT SYSTEM

TO BE EFFECTIVE FROM THE SESSION 2016 - 17

B. ARCH. SEMESTER – I
RAR – 101, ARCHITECTURAL DESIGN - I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	30	70	**100**	75	25	**100**	**200**	6	6 HRS.

OBJECTIVES

- Orientation of students to the profession of architecture.
- Introduction to basic design and the basic understanding of form and space in architecture.
- Field trips to relevant sites shall be compulsory for all assignments.

Module-1	**Orientation to the Architecture Profession**	Role of an Architect in the built environment. Building process, Role of other professional in building. A general survey of the changes in habitat in history. Architects act, C.O.A., I.I.A., NASA.
Module-2	**Space and Architecture**	Understanding design as to create for a particular purpose and architectural design as to create space – exercise in terms of simple drawing and sketching of objects available in nature and surroundings. Form created through lines (columns) and planes (volumes), combination thereof.
Module-3	**Form and Transformations**	Additive, Dimensional, Subtractive- exercises primarily through 3-D models of simple geometrics.
Module-4	**Scale in Architecture**	Simple measurement exercises.
Module-5	**Order in Architecture**	Geometrical, Structural, Dimensional, Material, Spatial order - through observation of surroundings as well as simple exercises in 2-D and 3-D. Exercises in order and transformations of form and space.

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachussets.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Design Exercises of Module 2 - 5**	**8**	**8**	**64**
2	**Tutorial of Module - 1**	**1**	**6**	**6**
			TOTAL	**70**

B. ARCH. SEMESTER – I
RAR – 102, CONSTRUCTION & MATERIALS – I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	**75**	50	25	**75**	**150**	4	3 HRS.

OBJECTIVES

- To familiarize the students with constituents, properties and uses of traditional building materials used in construction.
- To understand the usage of these traditional building materials in simple building works.
- To develop skills in understanding the complexities & constrains of brick masonry.
- To familiarize the student with the basic building construction practices on site.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1	**Clay & Clay Products**	Mud including stabilised earth, Burnt Brinks, Brick Tiles, Brick Ballast and Surkhi
Module-2	**Lime**	Availability, Preparation and Uses
	Cement	Manufacture and Properties.
	Sand &Surkhi	Characteristics, Availability and Uses.
Module-3	**Mortar**	Mud, Lime, Cement.
	Concrete	Lime, Cement.

LIST OF ASSIGNMENTS (Markrt Surveys, Seminars & Report)

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit brick kiln/ lime kiln/ cement factory etc. for better understanding and submit report.

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-4	**Workshop/Construction Yard Practice**	Practicing in construction yard by making the examples of brick masonry works etc.
Module-5	**Site Exposure**	Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

LIST OF ASSIGNMENTS

1. To study the various tools, equipments used in masonry works.
2. To construct examples of brick masonry works in construction yard.
3. To survey construction work on site and submit report.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-6	**Element of Building**	Terminology, Nomenclature of various parts of building from foundation to roof.
Module-7	**Brick Work**	Brick Terminology, Simple Bonds e.g. English bond & Flemish (single and double) bond in brick work for up to two brick thick walls.
Module-8	**Brick Work**	Details at quoins and junctions in English bond and Flemish bond for up to two brick thick walls.
Module-9	**Brick Work**	Details of piers (attached and detached), Buttresses, Lintel and Sill. Corbelling, Coping, String courses.
Module-10	**Brick Work**	Special Bond - Rat Trap Bond. Brick jalis.

CONSTRUCTION PLATES

1. To understand the types of bricks.
2. To understand square stopped ends of said bonds in brick masonry.
3. To understand L, T and X Junctions of said bonds in brick masonry.

4. To understand of piers (attached and detached), Buttresses, Lintel, Sill, Corbelling, Coping, and String Courses.
5. To understand Special Bond - Rat Trap Bond.
6. To understand the application of Cavity walls and Brick jails in brick masonry

APPROACH

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will be construction details as applicable to Indian climatic conditions.
- Site visits and market surveys will be an integral part of sessional work.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
3. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
4. The Construction of Buildings – Barry Volume I, II, III and IV
5. Chudley, Roy, "Construction Technology", Longman, 2005.
6. Building Construction_Mitchell (Elementary and Advanced)
7. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
8. Building Construction-Bindra&Arora.
9. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
10. Building Materials by SC Rangwala: Charotar Pub. House, Anand
11. M. Gambhir, NehaJamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill
12. Publishers, New Delhi, 2011.
13. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
14. National Building Code of India (Latest Edition), Bureau of Indian Standards.
15. Engineering Materials-Deshpande.
16. Engineering Material-Roy Chowdary
17. Designing with models – Criss. B. Mills.
18. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
19. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
20. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
21. Wenninger (Magrus.J.) Spherical Models, Cambridge University Press, 1979

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Construction Sheets/Plates of Module 6 – 10**	**6**	**4**	**24**
2	**Tutorial/Quiz/Sketches of Module 1 – 5**	**2**	**3**	**6**
3	**Market Survey & Seminar of Module 1 – 3**	**1**	**10**	**10**
4	**Workshop/Yard of Module 4**	**1**	**4**	**4**
5	**Site Visit Reports of Module 5**	**2**	**3**	**6**
			TOTAL	**50**

B. ARCH. SEMESTER – I
RAR – 103, ARCHITECTURAL STRUCTURES - I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	**50**	50	0	**50**	**100**	2	3 HRS.

OBJECTIVES:

- To understand the basic principles of structural mechanics so that it forms the basis for study of structural design.

Module-1	**Elements of Statics**	Force, Law of parallelogram of forces, Law of triangle of forces, Polygon Law of forces, Resolution of forces. Resultant of number of concurrent coplanar forces. Condition of equilibrium, Moment of force, Moment and arm of couple, Theorems on couples.
Module-2	**Simple Stresses and Strains**	Elasticity, Stress, Strain, Types of stresses, Elastic limit, Hook's law, Modulus of elasticity, Modulus of rigidity, Bulk modulus, Stresses in composite bars/section, Modular ratio, Equivalent area of a compound section. Primary or Linear strain, Poison's ratio, Shear stress, Principal stresses and strains (for simple cases), Mohr's circle.
Module-3	**Centre of Gravity & Moment of Inertia**	Definition, Methods of finding out centre of gravity of simple figures, Centre of parallel forces. Definition, Important theorems, Calculation of moment of inertia of different shapes and its application, Moment of inertia of composite sections.
Module-4	**Shear Force and Bending Moments**	Beams shearing force and bending moment, Shear force and Bending moment diagrams for cantilever and simply supported beam, and overhanging beam.
Module-5	**Stresses in Beams**	Simple beams bending, Section modulus, Moment of resistance, Shear stress in section of beam.

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku , "Elementary Structural Analysis".
5. Rama Armarutham S., "Strength of Materials".

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Tutorial of Module 1 - 5**	**5**	**7**	**35**
			TOTAL	**35**

B. ARCH. SEMESTER – I
RAR – 104, ARCHITECTURAL DRAWING - I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	15	35	**50**	50	0	**50**	**100**	3	3 HRS.

OBJECTIVES

- To familiarize with drawing tools and accessories.
- To give a basic knowledge of good drafting and lettering techniques.
- To develop comprehension and visualization of geometrical forms.
- To familiarize with the concept of enlarging and reducing scales.

SECTION – A, ARCHITECTURAL DRAWINGS & MODELS (MANUAL)

Module-1	**Free Hand Drawing and Lettering**	Free hand and mechanical lettering.
Module-2	**Basic Technical Drawing**	Concept and types of line, Division of lines and angles, Drawing polygons, Inscribing and circumscribing circles in polygons, Drawing geometrical curves helix, Conoid etc.
Module-3	**Orthographic Projections**	Definition, Meaning and concept, Planes of Projections, First angle projections, Projection of points, Lines and planes in different positions.
Module-4	**Orthographic Projections**	Projection of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.) in different positions. Sections of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.) in varying conditions of sectional plane.
Module-5	**Development of Surfaces**	Development of surfaces of cubes, prisms, cylinders, pyramids, cones and spheres.
Module-6	**Solid Geometry**	Construction of section, Intersection and interpenetration of solid.

REFERENCE BOOKS

1. IH. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004.
2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.
3. N.D.Bhatt, Elementary Engineering Drawing (Plane and Solid Geometry), Charotar Publishing House, India
4. George K.Stegman, Harry J.Stegman, Architectural Drafting Printed in USA by AmericanTechnical Society, 1966.
5. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Drawing Sheets of Module 1 - 6**	**18**	**1.5**	**27**
2	**Model Making of Module 4 - 6**	**8**	**1**	**8**
			TOTAL	**35**

B. ARCH. SEMESTER – I
RAR – 105, ARTS AND GRAPHICS - I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	15	35	**50**	50	0	**50**	**100**	2	3 HRS.

OBJECTIVES

- Introduction to art and appreciation of art and its philosophies.
- Familiarization with principles and theories of art
- Development of art and graphic skills.

Module-1 **Philosophy of Art** Relevance of art of life, artist, society, religion, and mysticism.

Module-2 **Exercises** Doodling
Sketching- Still life and scenery (shrubs, trees, grass, plants, flowers, rocks and water) with emphasis on Solid-void, shade-shadow, colour-hues
Composition: comprehension of scale through two dimensional and three Dimensional drawings.

Module-3 **Theory of Design** Elements of Design- Line, Direction, Shape, Size and Form and learn them graphically through Drawing lines, Joining points, Drawing curves,

REFERENCE BOOKS

1. Arnold Dana, "Art History – A Very Short Introduction" , Oxford University Press.
2. Stallabrass, Julian, "Contemporary Art – A Very Short Introduction" , Oxford University Press.

CRITERIA FOR ASSESSMENT OF ASSIGNMENTS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Drawing Sheets/Sketches of Module - 2**	**5**	**5**	**25**
2	**Tutorial/Quiz/Sketches of Module – 3**	**2**	**2.5**	**05**
3	**Seminar of Module – 1**	**2**	**2.5**	**05**
			TOTAL	**35**

B. ARCH. SEMESTER – I
RAR – 106, ECOLOGY & ENVIRONMENT

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	**50**	50	0	**50**	**100**	2	3 HRS.

OBJECTIVES

- To inform about the fundamentals related to Ecosystem.
- To develop understanding of the Environment and Environmental issues, their causes and mitigation measures.
- Finally, the application of ecological and environmental principles and guidelines to their architecture/planning projects.

Module-1	**Introduction**	Definition and origin of ecology, Basic concepts of ecology, Major divisions of ecology, Definition of environment, Interaction among ecological factors – light & temperature, precipitation, humidity, gases/wind, topography. Global warming & climate change, Loss of bio-diversity, Desertification, Deforestation,
Module-2	**Ecosystem**	Kind of ecosystem, Structure, Function and energy flow of ecosystem. Ecological succession, Ecosystem development, Climax concept.
Module-3	**Soil – Edafic Factors**	Definition of soil, Formation of soil, Soil profile, Classification, Soil complex, Soil depletion, degradation and conservation, relation of soil and built environment.
Module-4	**Water Regimes**	Water in nature, Water balance problem, Surface / ground water, Sources of water pollution, Ground water pollution, Marine pollution, Prevention control of pollution, Conservation & management, impact of human intervention on water.
Module-5	**Air Pollution**	Kinds of air pollution, Sources of air pollutants, Effects – Depletion of Ozone, Acid Rain, Prevention & control of air – pollution, Noise pollution, Effect of human habitat and human activity on atmosphere.
Module-6	**Built Environment and Ecology**	Understanding the interrelationship between man, nature and built-form (in urban / rural area).

REFERENCE BOOKS

1. Sharma P.D., "Ecology and Environment", Rastogi Publications, Meerut, India.
2. Perlman, D. and Miclder, J., "Practical Ecology for Planners Developers and Citizens", Island Press.
3. Platt, R.H., "The Ecological City: Preserving and Restoring Urban Bio diversity", N.Y.Academy of Sciences.
4. Register, R., "Ecocities: Building cities in balance with Nature", New Society Publishers.
5. Todd, N.J. and Todd, J., "Principles of Ecological Designs", North Atlantic Book.
6. Paolo, S., "Arcology: The City in the Image of Man", Rev. Edn. MIT Press
7. Voula, M., "Sustainable Development, Energy and the city: A Civilization of Concepts and Actions",Elsevier.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Tutorial/Quiz/Sketches of Module – 2 - 6**	**5**	**5**	**25**
2	**Seminar of Module – 1**	**1**	**10**	**10**
			TOTAL	**35**

B. ARCH. SEMESTER – I
RAR – 107, COMMUNICATION SKILLS & TECHNIQUES

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	**50**	50	0	**50**	**100**	1	3 HRS.

OBJECTIVES

- To development in students communicative, writing and presentation skills.
- To enable them to record, report analyzes, evaluate and understand architecture, both in its theoretical and practical form.

Module-1	**Revision**	Sentence, Phrase, Clause and parts of speech - Noun-gender, Number case, Pronoun-personal' reflexive, Emphatic, Demonstrative, Indefinite, Distributive, Reciprocal, Adjective, Article, Preposition, Conjunction and Interjection. Vocabulary, Word building and word formation, Phrases and idioms, Proverbs, Reading a dictionary, Using a thesaurus.
Module-2	**Composition and Comprehension**	Essay, Story and letter writing, Summarizing, Comprehension - unseen passages.
Module-3	**Technical Communication**	Objective, Process, Levels and Flow of communication, Communication networks, Visual aids, Group communications.
Module-4	**Effective Presentation Strategies**	Effective speaking, Types of speaking, Presentation with electronic aids.

REFERENCE BOOKS

1. Raman Meenakshi and Sharma Sangeeta, "Technical Communications – Principles and Practices", Oxford UniversityPress, New Delhi.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Tutorial of Module – 1 - 4**	**6**	**5**	**30**
2	**Presentation of Module - 4**	**1**	**5**	**05**
			TOTAL	**35**

B. ARCH. SEMESTER – I
RAR – 108, COMPUTERS

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	**50**	0	0	**0**	**50**	1	-

OBJECTIVES

- Introduction to basic knowledge of computers - operating system, software and hardware.
- To familiarize with software associated with text formatting, spread-sheets and presentation.
- Development of effective presentation techniques.

Module-1 **Introduction**

Introduction to computers and hardware's, General idea about popular operating systems and software, Basics of Internet.

Module-2 **MS Office - MS Word**

Create a document that can be used by previous versions of word, Saving Options.

Create a document -

Open a new document and start typing, Start a document from a template, Delete a document, Add a heading, Adjust the spaces between lines or Paragraphs, Insert a page break, Insert a picture or clip art, Insert or create a table, Headers, Footers, and Page numbers, Create a table of contents, Apply themes to Word documents, Add a cover page.

Read documents in Word -

Read a document, Mark up a document, Find or look up words and phrases, Turn on or off - full screen reading view.

Module-3 **MS Office – MS Excel**

Getting Started with Excel -

Create a workbook, Enter data in a worksheet, Format a worksheet, Format numbers in a worksheet, Print a worksheet, Create an Excel table, Filter data by using an auto filter, Sort data by using an auto filter, Apply conditional formatting, Apply data validation, Create a formula, Use a function in a formula, Chart your data, Create a macro, Create a pivot table report, Activate and use an add-in

Keyboard shortcuts in Excel 2010 -

Keyboard access to the ribbon, CTRL combination shortcut keys, Function keys, Other useful shortcut keys.

Module-4 **MS Office – MS Power point**

Create a basic Power Point presentation -

Name and create a new presentation, Open a presentation, Save a presentation, Insert a new slide, Add, Rearrange and delete slides, Add text to a slide, Apply a template to your presentation, Apply a theme to add color and style to your presentation, Insert a picture or clip art and insert content or insert a screenshot, Add, Change, or Delete shapes, Create a smart art graphic, Add slide numbers, Page numbers, Date and time, Create a hyperlink, Deliver and distribute your presentation, View a slide show and View your speaker notes privately, while delivering a presentation on multiple monitors, Print out a presentation, Tips for creating an effective presentation.

REFERENCE BOOKS

1. "Microsoft Office – 2013".
2. Dr. Paolo Coletti, "Basic Computer Course Book", Free University of Bolzano Bozen.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial of Module – 1 - 3	5	5	25
2	Presentation of Module - 4	1	10	10
			TOTAL	35

B. ARCH. SEMESTER – II
RAR – 201, ARCHITECTURAL DESIGN - II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	30	70	**100**	75	25	**100**	**200**	6	6 HRS.

OBJECTIVES

- Introduction to human activity and spaces required for activities.
- Introduction to basic building components and their dimensions.
- To appreciate the elements in architectural design of single unit built-up structures.
- Field trips to relevant sites shall be compulsory for all assignments.

Module-1	**Anthropometrics Studies**	Studies and introduction to human dimensions and functions, Space-activity relationships, Measure drawings of simple living units.
Module-2	**Living Spaces and Building**	Measuring, Drawing and dimensioning of simple building components. Designing for basic functions of human beings, e.g. living, eating, sleeping, cooking etc.
Module-3	**Building Design**	Design of mono-cellular-unit/structure on a level plane, Designing of simple activity spaces, Designing of multiple but simple activity spaces involving primarily horizontal circulation.

SUGGESTED STUDIO EXCERCISES

Small space structures such as Kiosks/Small shops, Milk booths, Bus shelters, Petrol pumps, Gazebo, Florists shop, Entrance gates, Exhibition stalls, ATMs, Chowkidar's hut etc.

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachussets.
3. "Neufert Architect's Data", Blackwell Publishing.
4. Donald Watson and Michael J. Crosbie, "Time – Saver Standards for Architectural Design, Technical Data for Professional Practice", McGRAW - HILL.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Design Exercises of Module 1 - 3**	**6**	**10**	**60**
2	**Measured Drawing of Module - 1**	**1**	**10**	**10**
			TOTAL	**70**

B. ARCH. SEMESTER – II
RAR – 202, CONSTRUCTION & MATERIALS – II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	**75**	50	25	**75**	**150**	4	3 HRS.

OBJECTIVES

- To acquaint the students to usage of building materials such as Timber and Hardware, Damp Proofing Courses and Cement Concrete.
- To familiarize the students with construction techniques for use of the above materials in building works. and joinery in carpentry
- To familiarize the student with the basic building construction practices on site/yard.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1	**Timber & Hardware**	Classification, Characteristics, Defects, Preservation. Hinges, Handles, Knobs, Bolts, L-drops, Locks, Stoppers, Stays, Silencers, Chain guards, Closers, Catchers, Knockers etc. in various materials.
Module-2	**D.P.C.**	Asphalt, Bitumen, Synthetic, etc.
Module-3	**Cement Concrete**	Types (Plain & Reinforced), Mixing, Curing, Water Cement Ratio, Qualities and Workability.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit Timber depot/Ready mix concrete plants etc. for better understanding and submit report.

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-4	**Workshop / Construction Yard Practice**	Practicing in construction yard by making the examples of brick masonry works, Carpentry works etc.
Module-5	**Site Exposure**	Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

LIST OF ASSIGNMENTS

1. To study the various tools, equipments used in masonry and carpentry works.
2. To construct examples of brick masonry works in construction yard.
3. To construct examples of timber joints in workshop and study the various hardware used in doors and windows.
4. To survey construction work on site and submit report

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-6	**Brick Work**	Arches in brick and stone, Elementary principles, Centering. Cavity walls.
Module-7	**Foundation**	Need, Design criteria, Foundation concrete, Details of simple spread foundations for load bearing walls of various thicknesses up to two brick thick.
Module-8	**Timber**	Elementary carpentry, Common joints,
Module-9	**Timber**	Details of framed, ledged, braced and batten doors.
Module-10	**D.P.C.**	Horizontal and Vertical D.P.C.

CONSTRUCTION PLATES

1. To understand the terminology of arches and the various type of arches in brick.
2. To understand the application of cavity walls in brick masonry.
3. To understand spread foundation for masonry load bearing walls.
4. To understand various types of joints in timber.
5. To understand wooden Framed, Ledged, Braced and Batten Door.

6. To understand horizontal and vertical DPC for load bearing walls.

APPROACH

- The students would be familiarized with glossary of vernacular terminology as prevalent in this part of the county
- The emphasis will be on construction details as applicable to Indian conditions.
- Site visits to Timber market and Construction sites.
- Knowledge about rates of materials should be given.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
3. The Construction of Buildings – BarryVolume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction_Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
7. Building Construction-Bindra&Arora.
8. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
9. Building Materials by SC Rangwala: Charotar Pub. House, Anand
10. M. Gambhir, NehaJamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill
11. Publishers, New Delhi, 2011.
12. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
13. National Building Code of India 2005, Bureau of Indian Standards, 2005.
14. Engineering Materials-Deshpande.
15. Engineering Material-Roy Chowdary
16. Designing with models – Criss. B. Mills.
17. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
18. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
19. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
20. Wenninger (Magrus.J.) Spherical Models, Cambridge University Press, 1979

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Construction Sheets/Plates of Module 6 – 10**	**6**	**4**	**24**
2	**Tutorial/Quiz/Sketches of Module 1 – 5**	**2**	**3**	**6**
3	**Market Survey & Seminar of Module 1 – 3**	**1**	**10**	**10**
4	**Workshop/Yard of Module 4**	**1**	**4**	**4**
5	**Site Visit Reports of Module 5**	**2**	**3**	**6**
			TOTAL	**50**

B. ARCH. SEMESTER – II
RAR – 203, ARCHITECTURAL STRUCTURES - II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	**50**	50	0	**50**	**100**	2	3 HRS.

OBJECTIVES:

- To understand the basic principles of structural mechanics so that it forms the basis for study of structural design.

Module-1	**Stresses in Trusses**	Introduction, Perfect frame, Deficient frame, Redundant frame, Type of supports and their reactions, Analysis of cantilever and simply supported trusses by Analytical method, Method of sections, Graphical method.
Module-2	**Torsional Stress in circular shaft**	Introduction, Torsion in shafts - Pure torsion, Theory of pure torsion, Torsional moment of resistance, Assumptions in the theory of pure torsion, polar modulus, Power transmitted by a shaft, Torsional rigidity.
Module-3	**Plain Cement Concrete**	Concrete mix, Curing and strength of concrete, Effect of temperature, Shrinkage, Fatigue.
Module-4	**Deflection of Beams (Cantilever and Simply supported)**	Introduction, Calculation of slope and deflection by Double Integration, Macaulay's Method, and Moment area Method. Conjugate beam method.
Module-5	**Column and Struts**	Definition, End conditions, Buckling and critical loads, Slenderness ratio, Various column theories. Stress distribution of the section of an eccentrically loaded rectangular column, the middle third rule, Core or kernel of section (Rectangular and Circular sections).

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku , "Elementary Structural Analysis".
5. Rama Armarutham S., "Strength of Materials".

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Tutorial of Module 1 - 5**	**5**	**7**	**35**
			TOTAL	**35**

B. ARCH. SEMESTER – II
RAR – 204, ARCHITECTURAL DRAWING - II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	2	2	15	35	**50**	50	0	**50**	**100**	3	3 HRS.

OBJECTIVES

- To familiarize the student with theoretical, practical and pictorial aspects of architectural drawing.
- To develop perception and presentation of simple architectural forms and buildings.
- To develop or upgrade an understanding about AutoCAD 2D, as an important tool for drafting, designing, analyzing and representation of the drawings in a desired manner.

SECTION – A, ARCHITECTURAL DRAWING (MANUAL)

Module-1 Metric Drawing

Introduction, Types, Uses and advantages, Isometric, Axonometric and Pictorial view.

Metric drawing and projection and their dimensioning.

Metric of plane figures composed of straight lines.

Metric of circles.

Metric of simple and complex blocks.

Module-2 Perspective Drawing

Introduction, Purpose and use, Differences with metric projections, Anatomy of a perspective – cone of vision, Station point, Picture plane, Eye level, Horizon line, Ground line, Vanishing point, etc., Types of perspective - One point, Two points, and Three point perspectives.

One Point Perspective - Perspectives of simple and complex box blocks.

One Point Perspective - Perspective of simple curved surface.

One Point Perspective - Perspective of simple household furniture items.

Two Point Perspective - Perspectives of simple and complex box blocks.

Two Point Perspective - Perspective of simple curved surface.

Two Point Perspective - Perspective of simple household furniture items.

SECTION – B, ARCHITECTURAL DRAWING (COMPUTER)

Module-3 Exploring the Interface

Installation and launching autocad, Using Application menus, Using ribbons, Expanding panels, Understanding flyouts, Pick point in the drawing area, Saving a file and working with multiple files.

Module-4 Creating your First Drawing

Starting from scratch, Understanding paper area, Unit, Scale, Planes, Using the UCS icon, Design templates, Types and use of 2D Drafting tools, Dimensioning, 2D keyboard commands.

Module-5 Organisation of Drawing

2D isometric views, Materials and textures, Reference other drawing files, Link and embed data (OLE), Work with data in other formats and exporting 2D drawings to various software, Extract data from drawings and spread sheets, Access external databases.

Module-6 Effective Presentation

Layer management, Plotting and publishing the drawing in modal space and paper space.

REFERENCE BOOKS

1. IH. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004.
2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.
3. N.D.Bhatt, Elementary Engineering Drawing (Plane and Solid Geometry), Charotar Publishing House, India
4.. George K.Stegman, Harry J.Stegman, Architectural Drafting Printed in USA by AmericanTechnical Society, 1966.
5. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964
6. Introducing AutoCAD and AutoCAD LT - GeorgeOmura
7. Mastering AutoCAD - GeorgeOmura
8. AutoCAD 2013 and AutoCAD LT 2013 "BIBLE" - Ellen Finkelstein

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets			
a	of Module – 1	5	1.5	7.5
b	of Module – 2	7	2.5	17.5
2	Computer Lab of Module 3 - 6	4	2.5	10
			TOTAL	35

B. ARCH. SEMESTER – II
RAR – 205, ARTS AND GRAPHICS - II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	2	15	35	**50**	50	0	**50**	**100**	2	3 HRS.

OBJECTIVES

- Introduction to art and appreciation of art and its philosophies.
- Familiarization with principles and theories and graphic and architectural composition
- Development of art and graphic skills.

SECTION – A, ARTS AND GRAPHICS

Module-1 Philosophy of Art
A brief introduction to different eras and movement in Art and their association with Architecture of that time.
For example Renaissance (Giotto, Leonardo da vinci, Michael Angelo), Baroque (Rembrandt), Realism (Rodin, Ingres),Impressionism (Monet, Renoir, Gauguin, Van Gogh), Fauvism (Matisse), Cubism (Picasso, Henry Moore, Duchamp), Expressionism (Paul klee, Chagall) and Surrealism (Dali)

Module-2 Theory of Design
A brief introduction to Unity, Elements and aspects of Unity, Texture, Colour, Tone Direction, Proportion, Form and shape, Solids and Voids and their understanding through graphic presentation.

Module-3 Free hand drawing and Rendering Techniques
Drawing People, Furniture, Fabric and Transport from imitation, observation recapitulation.
Texture of materials and finishes, using equipment's like transfers and airbrush.
Rendering architectural drawings.

SECTION – B, PHOTOGRAPHY

Module-4 Introduction to Photography
Development of photography, Historical background, Different types of cameras.

Module-5 Photography Techniques
Lighting techniques, Digital photography with DSLR.

LIST OF ASSIGNMENTS (Field Exercises &Drawings)

1. To understand the techniques of photographing various subjects - Landscape, Portrait, and Building etc.

REFERENCE BOOKS

1. Arnold Dana, "Art History – A Very Short Introduction" , Oxford University Press.
2. Stallabrass, Julian, "Contemporary Art – A Very Short Introduction" , Oxford University

CRITERIA FOR ASSESSMENT OF ASSIGNMENTS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Drawing Sheets/Sketches of Module - 3**	**4**	**5**	**20**
2	**Tutorial/Quiz/Sketches of Module - 1 & 2**	**4**	**2.5**	**10**
3	**Photograph & Tutorial of Module – 4 & 5**	**2**	**2.5**	**05**
			TOTAL	**35**

B. ARCH. SEMESTER – II
RAR – 206, SURVEYING

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	2	15	35	**50**	50	0	**50**	**100**	1	3 HRS.

OBJECTIVES

- To develop knowledge and skills related to surveying and levelling principles and practice.

Module-1	**Introduction**	Definition, classification, principles of surveying, Units of measurement, Scale, Signs convention.
Module-2	**Chain Survey**	Instruments used, Types of chain, Instruments for ranging, Setting out angles, Erecting perpendiculars, Selection of station, Methods of taking offset and Obstacles in chaining.
Module-3	**Plane Table Survey**	Plane table and accessories, Methods of plane table survey, Radiation, Intersection, Traversing and resection.
Module-4	**Compass Survey**	The prismatic compass, Surveyor compass and its construction and **u**ses, Reduced and whole circle bearing, Magnetic declination, Effect of local attraction.
Module-5	**Levelling & Contouring**	Definition, Types of level, Booking and reduction of levels, Profile & cross section leveling, Errors in leveling. Characteristics of contours, Direct and indirect methods of contouring, Interpolation, Uses of contours, Calculation of area & volume.
Module-6	**Theodolite**	Study of instruments, Definition of different terms, Temporary adjustments, Uses, Measuring horizontal and vertical angles, Method of repetition, Extension of lines.

LIST OF ASSIGNMENTS (Field Exercises & Drawings)

1. To find out horizontal distance between two points and plotting the details on lateral side of chain line using chain, tape, ranging rod & cross staff etc.
2. Two point problem & three point problem.
3. Making L-section & Cross section of a profile.
4. Making grids on ground using theodolite & taking spot level &drawing contour lines.
5. Making a regular polygon in field and finding error of closure using different equipment.

REFERENCE BOOKS

1. Surveying Volume I & II by Dr. B.C. Punmia
2. Surveying and Leveling (Part – 1) by Kanetkar TP and Kulkarni SV
3. Surveying Volume -1 by Dr. K.R.Arora.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Tutorial of Module 1 - 6**	**5**	**5**	**25**
2	**Surveying Lab of Module 2 - 6**	**4**	**2.5**	**10**
			TOTAL	**35**

B. ARCH. SEMESTER – II
RAR – 207, HISTORY OF ARCHITECTURE – I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	**50**	50	0	**50**	**100**	2	3 HRS.

OBJECTIVES

- To inform about the development of architecture in the ancient western world and the cultural and contextual determinants that produced that architecture.
- To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate
- To gain knowledge of the development of architectural form with reference to technology, style and character in the prehistoric world and in ancient Egypt, West Asia, Greece and Rome.

Module-1	**Prehistoric Age**	Introducing concepts of culture and civilization - Paleolithic and Neolithic culture - art forms and evolution of shelter - megaliths - agricultural revolution and its impact on culture and civilization with examples from Carnac and Stonehenge.
Module-2	**Birth of Civilization**	In reference to the Asia-minor region with nascent cities like Jericho, Catalhoyuk, and Hattasus etc.
Module-3	**Ancient River Valley Civilizations: Egypt**	Landscape and culture of Ancient Egypt- history - religious and funerary beliefs and practices - monumentality tomb architecture: evolution of the pyramid from the mastaba – Great Pyramid of Cheops, Gizeh etc. Temple architecture: mortuary temples and cult temples - Temple of Ammon Ra, Karnak, Khons - Temple of Abu Simbel (Rock Cut) etc.
Module-4	**Ancient River Valley Civilizations: Mesopotamia**	Urbanization in the fertile crescent - Sumerian, Babylonian, Assyrian and Persian culture, Evolution of city-states and their character, law and writing , theocracy and architecture - Ninveh, Khorsahbad, Marie, Babylon etc. Evolution of the ziggurat - Ziggurat of Ur, Urnamu etc., Evolution of the palaces - Palace of Sargon, Khorsabad - Palace at Persepolis.
Module-5	**Ancient Civilizations: Aegean**	With reference to cities in Aegean like Troy, Sparta, Mycenae, which formed the basic of Greek civilization?
Module-6	**Classicial Period: Greece**	Orders in architecture: Doric, Ionic, Corinthian - optical illusions in architecture, Domestic architecture; Public Buildings: Agora, Stoas, Theaters, Bouletrion and Stadias. Greek temple: evolution and classification - Parthenon and Erecthion, Geometry and symmetry of individual buildings and their relationship with others based on different organizing principles and conditions of site.
Module-7	**Classical Period: Rome**	Roman history: Republic and Empire- Roman religion and the Roman temple - Roman character - lifestyle, Roman urban planning - art and architecture as imperial propaganda: forums and basilicas. Orders in architecture: Tuscan and Composite, Domestic architecture – structural forms, materials and techniques of construction. Rome: Forum Romanum and other Imperial forums, Enclosure and manipulation of space: Pantheon - Public buildings: Colloseum, Circus Maximus, Thermae of Caraculla.

REFERENCE BOOKS

1. Sir Banister Fletcher, A History of Architecture, University of London, The AntholonePress, 1996.
2. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford UniversityPress, London, 1985.
3. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994
4. Pier Luigi Nervi, General Editor - History of World Architecture - Series, Harry N.Abrams,
5. Inc.Pub., New York, 1972.
6. S.Lloyd and H.W.Muller, History of World Architecture - Series, Faber and Faber Ltd.,

7. London, 1986.
8. Gosta,E.Samdstrp, Man the Builder, Mc.Graw Hill Book Company, New York, 1970.
9. Webb and Schaeffer; Western Civilisation Volume I; VNR: NY: 1962
10. Vincent Scully: Architecture; Architecture – The Natural and the Man Made: Harper Collins Pub: 1991.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Sheets/Sketches of Module 1 - 7**	**7**	**3**	**21**
2	**Tutorial/Quiz of Module 1 - 7**	**3**	**3**	**9**
3	**Seminar**	**1**	**5**	**5**
			TOTAL	**35**

B. ARCH. SEMESTER – II
RAR – 208, RESEARCH / SEMINAR / WORKSHOP - I

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	2	0	15	35	**50**	0	0	**0**	**50**	1	-

OBJECTIVES

- Understanding basic principles of any research with special reference to architectural research and applications.

Module-1	**Introduction**	Importance of architectural research and writing.
Module-2	**Technical Writing**	Language, Impersonal and formal language, Elements of style, Techniques.
Module-3	**Book Reviews**	Basics of reviewing a book.

LIST OF ASSIGNMENTS

1. Review of an architectural book/books prescribed by subject teacher.
2. Report and presentation on ongoing architectural project.
3. The assignments preferably should be associated with the ongoing design assignments and design workshops could be clubbed with research also.

REFERENCE BOOKS

1. Raman Meenakshi and Sharma Sangeeta, "Technical Communications – Principles and Practices", Oxford University Press, New Delhi.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	**Tutorial of Module - 2**	**3**	**5**	**15**
2	**Tutorial of Module - 3**	**1**	**20**	**20**
			TOTAL	**35**