

FIRST YEAR (2ND SEMESTER)

1RARC201: ARCHITECTURAL DESIGN - II

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER				In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks		
FIRST	1RARC201	ARCHITECTURAL DESIGN STUDIO – II	1	0	5	100	50	50	200	6	7

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.

CONTENTS:

Anthropometrics Studies: Studies and introduction to human dimensions and functions. space-activity, relationships, measure drawings of simple living units.

Living spaces and building: Measuring drawing and dimensioning of simple components, building components. Designing for basic functions of human beings, e.g. living, eating, sleeping, cooking, toiletries, etc.

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

APPROACH:

- Exercise to emphasis the significance of the user in the process of design.
- Selection of building for measure drawing of prototypes only.
- The design of building unit to be completed in the following stages: prototype study, problem identification, site analysis, preliminary sketch etc. Models of the final design necessary for greater comprehension.

References:

1. Ching, Francis D. K. (2010) *“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.

1RARC202: BUILDING CONSTRUCTION & MATERIALS - II

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER				In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks		
FIRST	1RARC202	BUILDING CONSTRUCTION & MATERIALS - II	1	0	5	100	50	50	200	6	6

OBJECTIVES:

- To acquaint the students to building materials such as Timber, Reinforced Concrete and Reinforced Brick Work.
- To familiarize the students with construction techniques for use of the above materials in building works.

CONTENTS:

1. MATERIALS:

Timber: Classification. Characteristics. Defects. Preservation.

Reinforced Cement Concrete

and Reinforced Brick Concrete: Types. Mixing, Curing, Water Cement Ratio. Qualities and Workability.

2. CONSTRUCTION:

Brick Work: Arches, Brick, Stone, elementary principles, definition and centering. Corbelling. Coping, String Courses, Decorative Brick work, Brick Jails. Special Bonds-Rat Trap Bond, Garden Bond etc.

Timber: Elementary Carpentry, Common Joints, Details off Ledged and Braced Batten Doors.

D.P.C.: Vertical Damp proofing.

APPROACH:

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

References:

1. McKay, W. B. (1955). *Building Construction*. Volume I, II, III and IV. Longmans. Harlow.
2. Ching, F. D. K., Adams & Cassandra (2000). *Building Construction Illustrated*. Wiley and Sons.
3. Barry R. (2007). *The Construction of Buildings – Barry* Volume I, II, III and IV. Blackwell Science Ltd.
4. Chudley, Roy (2005). *Construction Technology*. Longmans.

5. Mitchell & Charles F. (1934). *Building Construction (Elementary and Advanced)*. B. T. Batsford.
6. Rangwala, S. C. (2007). *Building Construction*. Charotar Publishing House.
7. Punmia B. C., Jain A. J., and Jain A.J. (2005). *Building Construction*. Laxmi Publications.
8. Rangwala S.C. (2014). *Building Materials*. Charotar Publishing House.
9. Gambhir M., Jamwal Neha. (2011). *Building Materials Products, Properties and Systems*. Tata McGraw Hill Publishers, New Delhi.
10. Gupta R. K. (2009). *Civil Engineering Materials and Construction Practices*. Jain brothers, New Delhi.
11. National Building Code of India, 2005, Bureau of Indian Standards.

12. Morris, M., (2000). *Architecture and the Miniature: Models*. John Wiley and Sons.
13. Raghuvanshi, B.S. (2001). *A Course in Workshop Technology - Vol. I and II*. Dhanpat Rai and Co.

1RARC203: STRUCTURE - II

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER				In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks		
FIRST	1RARC203	STRUCTURE - II	2	1	0	50	50	-	100	3	4

OBJECTIVE:

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

CONTENTS:

Stresses in Trusses: Definitions, forces in members, analytical method, method of sections, Graphical method, Link polygon.

Direct and Bending stresses

Distribution of shear Stress: Shear stress in the section of a beam, different sections.

Deflection of Beams: Simple cases.

Column: Definition, end conditions, buckling and critical loads, slenderness ratio.

APPROACH:

- The lectures by the experts in the field will be arranged for the students so as to give them exposure to the practical aspects of design.

References:

1. Nautiyal B. D. (2011) *“Introduction to Structural Analysis”*. B.H.U.
2. Punmia P. C. (2012) *“Strength of Materials & Mechanics of Structures”*. L.P.
3. Khurmi R. S., (2009) *“Strength of Materials”*. S. Chand.
4. Ramamrutham S.(2004) *“Strength of Materials”*. Dhanpat Rai Pub.

1RARC204: ARCHITECTURAL DRAWING - II

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER			In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks			
FIRST	1RARC204	ARCHITECTURAL DRAWING - II	1	5	0	50	50	-	100	6	4

OBJECTIVES:

- To familiarize the student with theoretical, practical and pictorial aspects of architectural drawing.
- To introduce the students to graphic treatment of two-dimensional drawings.
- To development perception and presentation of simple architectural forms and buildings.

CONTENTS:

Metric Drawing: 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.

Perspective Drawing: 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.

Perspectives of simple and complex box blocks.

Perspective of simple curved surface.

Perspective of simple household furniture items.

Shades and Shadows: Values in Shades and shadows.

Constructing plan shadows (point, line and plane).

Constructing shadows in elevations (point, line and plane).

Short -cut methods for constructing shadows

Presentation techniques in Sciography.

Solid Geometry: Construction of section, intersection and interpenetration of solids.

APPRAOCH:

- The emphasis will be on drawing in the studio and different mediums will be used.
- The sun-path model would be used as a teaching aid while teaching shades and shadows.

References:

1. Morris, I. H. (2004). *Geometrical Drawing for Art Students*. Orient Longman, Madras.
2. Francis Ching, *Architectural Graphics*, Van Nostrand Rein Hold Company, New York, 1964.

3. Bhatt, N. D. *Elementary Engineering Drawing (Plane and Solid Geometry)*. Charotar Publishing House, India
4. Stegman, G. K., Stegman, H. J. (1966). *Architectural Drafting*. American Technical Society, U.S.A.
5. Martin, C. L. (1964). *Architectural Graphics*. The Macmillan Company. New York.

1RAR205: ARTS & GRAPHICS - II

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER			In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks			
FIRST	1RAR205	ARTS & GRAPHICS - II	1	5	0	50	50	-	100	6	4

OBJECTIVES:

The subject of Arts and Graphics would encompass:

- Introduction to Art and appreciation of art and Its philosophies.
- Familiarization with principles and theories of graphics and architectural composition.
- Development of Art and Graphic skills.

CONTENTS:

Philosophy of Art

(Introduction to great Masters

and Modern, Art Movements): Renaissance —Giotte, Leonardo da Vinci, Michael Anleo.
Baroque — Rambrandt.
Realism – Radin, Ingres.
Impressionism – Manet, Ranoir, Gauguin, Van Gosh.
Gauvism- Matisse.
Cubism - Picasso, Henry Moore. Duchamp.
Expressionisms — Paul Klee. Chagall.
Surrealism - Dali.

Theory of Design

(Introduction to Architectural Composition):

Unity, Elements of unity, - Texture, Colour, Tone Direction, Proportion, Form and shape, solids and voids.

Aspects of unity — Dominance, harmony, proportion, rhythm, vitality.

Arts and Graphics skills:

Free hand drawing - drawing people, furniture, fabric and transport from imitation, observation and recapitulation.

Rendering techniques - for textures of materials and finishes; using equipments like transfers, airbrush, rendering architectural drawings.

APPROACH:

- The theory part of the course will be an overview, covered through audiovisual lectures delivered by experts in the field.
- Studio exercises of graphic composition will be in the form of drawing, collages and models.

- The students would be taught to handle various mediums in studio work as part of development of art and graphic skills. The examination paper would so set so as to test the knowledge and understanding of the student for eh distinct part-of the syllabus.

References:

1. Morris, I. H. (2004). *Geometrical Drawing for Art Students*. Orient Longman, Madras.
2. Ching, F. D. K. (1964). *Architectural Graphics*, Van Nostrand Rein Hold Company, New York.
3. Bhatt, N. D. (2010). *Elementary Engineering Drawing (Plane and Solid Geometry)*. Charotar Publishing House, India.
4. Stegman, G. K. & Stegman, H. J. (1974). *Architectural Drafting: Functional Planning and Creative Design*. American Technical Society, U.S.A.

1RARC206: ENVIRONMENT & ECOLOGY

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER			In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks			
FIRST	1RARC206	ENVIRONMENT & ECOLOGY	1	2	0	50	50	-	100	3	3

OBJECTIVE:

- 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.

CONTENTS:

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.

Soil – Edaphic Factors Definition of soil, Formation of soil, Soil profile, Classification, Soil complex, Soil depletion, degradation and conservation.

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.

Biotic Factors Concept of species, Plants – Propagation, Animals – Extinction, Human population dynamics, Ecological succession, Ecosystem development, Climate concept, formation of biomes.

Ecosystem Kinds of ecosystem – natural and artificial, Structure, function and energy flow of ecosystem.

Air Pollution Kinds of air pollution, Sources of air pollutants, Effects – Depletion of Ozone, Acid Rain, Prevention & control of air – pollution, Noise pollution

Global Environmental Issues Global warming & climate change, Loss of bio-diversity, Desertification, Deforestation

References:

1. Sharma P.D. “*Ecology and Environment*”, Rastogi Publications, Meerut, India.
2. Perlman, D. and Milder, 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. Paolo, S. “*Arcology: The City in the Image of Man*”, Rev. Edn. MIT Press
6. Voula, M., “*Sustainable Development, Energy and the city: A Civilization of Concepts and Actions*”, Elsevier.

1RARCP207: SURVEYING & LEVELING (PRACTICAL)

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER				In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks		
FIRST	1RARCP207	SURVEYING & LEVELING (PRACTICAL)	0	1	2	50	-	50	100	3	3

OBJECTIVES:

- To bring about awareness of the role of surveying and leveling in architectural and planning projects.
- To familiarize the student will be techniques of surveying and leveling.

CONTENTS:

Surveying:

Role of surveying in Architecture. Types of survey.

Introduction to various techniques — Chain and Plain Table Survey. Travers Survey.

Contouring — Contour Maps characteristics, use and interpretation.

Leveling:

General painciples of Leveling in context of Architecture and Planning. Theodolite — Theodolite and Its use on site.

Photogrammatery:

Definition, principles and application of photography in Surveying.

APPROACH:

- Emphasis on field exercises and on site surveys
- The theoretical part of the course shall be covered through lectures.

References:

1. Arora, K. R. (1991). *Surveying*. Vol. I. Standard Book. New Delhi.
2. De, A. (2002). *Plane Surveying*. S. Chand and Company. New Delhi.
3. Kanetkar, T. P., Kulkarni, S. V. (1989). *Surveying and Leveling*. Vol. I. Vidyarthi Griha Prakashan. Pune.
4. Punmia, B. C. (2005). *Surveying*. Laxmi Publications Private Limited. Bangalore.
5. Venakataramaiah, C. (1996). *Text Book of Surveying*. University Press. Hyderabad.
6. Chandra, A. M. (2007). *Plane Surveying*. New Age International. New Delhi.
7. Brinker, R. C. (1997). *The Surveying Handbook*. CBS Publishers.

**1RARCP208: COMPUTER APPLICATIONS TO ARCHITECTURE – I
(PRACTICAL)**

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER				In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks		
FIRST	1RARCP208	COMPUTER APPLICATIONS TO ARCHITECTURE – I (PRACTICAL)	0	1	2	50	-	50	100	3	3

OBJECTIVE:

- To acquaint the students with the basic knowledge of Computers.
- To familiarize the students with the different Computer Operating Systems.
- To introduce the Computer Data entry skills to the students.

CONTENTS:

Introduction of Computers: General historical background of computer development. Introduction to hardware and general idea of their use.

Operating Systems: Basic knowledge of different operating system and basic commands in MS DOS, windows- salient features.

General Idea about other Popular operating systems: UNIX, Linux etc.

Data Entry & Data retrieval: General typing skills.

APPROACH:

- The emphasis should be given to actual working on computer and
- Typing skills to be developed.

References:

1. “Microsoft Office – 2013”.
2. Dr. Paolo Coletti, “*Basic Computer Course Book*”, Free University of Bolzano Bozen.
3. IH. Morris,(2004). *Geometrical Drawing for Art Students* - Orient Longman, Madras.
4. Francis Ching,(1964.) *Architectural Graphics*, Van Nostrand Rein Hold Company, New York.

1ARC2010: SEAMLESS LEARNING

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER			In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks			
FIRST	1ARC2010	SEAMLESS LEARNING	0	0	2	100	-	-	100	2	1

Course objectives:

- To sensitize among the students importance of values in a social system.
- To develop a sense of social responsibility among the students and encourage them to take up the initiative to serve for the noble cause.

METHODOLOGY

1. The course shall be inclusive of the various activities which shall be performed under the expert guidance of the course instructor.

1ARC2011: CO – CURRICULAR ACTIVITIES

	SUBJECT CODE	SUBJECT NAME	L	T	P/S	Evaluation				Contact Hours	Credits
YR		SECOND SEMESTER			In Sem.	End Sem. Theory	End Sem. Jury and/or Exam.	Total Marks			
FIRST	1ARC2011	CO – CURRICULAR ACTIVITIES	0	0	2	100	-	-	100	2	1

Course objectives:

- To sensitize among the students importance of co-curricular activities in a social system.
- To give an opportunity of brushing up the skills to a limit of perfection and facilitating for the overall development of the students.
- To encourage the students for taking up the challenge of competing with the students of the other schools to ensure the enhancement of their interaction and coherent development.

METHODOLOGY

1. The students shall be informed about the various competitions/ conferences, being organized in and around at National and International level, by the respective club and/ or course co-ordinators.
2. The students shall be given effective guidance related to the respective clubs and other activities.
3. The students shall be enrolled in at least one club as a mandate.