M. S. RAMAIAH INSTITUTE OF TECHNOLOGY
BANGALORE

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU, BELGAUM)

SYLLABUS
(FOR THE ACADEMIC YEAR 2016- 2017)

I & II SEMESTER B ARCH
2016 BATCH

B. ARCHITECTURE

HISTORY OF THE INSTITUTE:

M. S. Ramaiah Institute of Technology was started in 1962 by the late Dr. M.S. Ramaiah, our Founder Chairman who was a renowned visionary, philanthropist, and a pioneer in creating several landmark infrastructure projects in India. Noticing the shortage of talented engineering professionals required to build a modern India, Dr. M.S. Ramaiah envisioned MSRIT as an institute of excellence imparting quality and affordable education. Part of Gokula Education Foundation, MSRIT has grown over the years with significant contributions from various professionals in different capacities, ably led by Dr. M.S. Ramaiah himself, whose personal commitment has seen the institution through its formative years. Today, MSRIT stands tall as one of India's finest names in Engineering Education and has produced around 35,000 engineering professionals who occupy responsible positions across the globe.

SCHOOL OF ARCHITECTURE

M S Ramaiah Institute of Technology (MSRIT), Bangalore, is a leading institution offering undergraduate, post graduate and research programs in the areas of engineering, management and architecture. The institute was established in the year 1962 under the aegis of Gokula Education Foundation. Its mission is to deliver Global quality technical education by nurturing a conducive learning environment for better tomorrow through continuous improvement and customization.

The school of architecture, MSRIT, Bangalore, started in the year 1992. Since its establishment, the school has played a vital role in providing quality education. The Council of Architecture and AICTE has recognized this program.

The mission of the school is to uphold MSRIT mission and thus provide quality education to the students and mould them to be excellent Architects with adequate management skills and noble human qualities.

Full time faculty members having postgraduate qualification from prestigious institutions in India and abroad are teaching in this school. Experienced and well respected practicing architects are invited to provide their experiences as visiting faculty. New milestones are continually being set and achieved. The synergy of the progressive management, committed faculty and students are ensuring in excellent academic results year after year. This is reflected in the high number of University ranks that are secured.

The School of Architecture is now autonomous (affiliated to VTU) providing scope for further improvement. The focus has been towards fostering novel concepts and solutions in architectural design. The student's response is very encouraging and the school recognises and appreciates such good students by awarding them. Many of the students after graduation have pursued higher studies in various universities in the country and abroad. There is a good demand for the school graduates in the industry and is developing initiatives towards co-branding of the industry and the institution school. Many have started their own enterprise and architectural practice as well.

All this has been possible as a result of the efforts of the impeccable faculty of the school. The faculty is committed to the welfare and success of the students. The teachers of the school are also engaged in enhancing their knowledge and skills and many are engaged in research activities as well. The school has experts in specialized disciplines like Planning, Landscape Architecture and Interior Design. Faculties of the school also actively participate in National and International conferences and publish and present papers.

The school as part of consultancy started off with the maiden project to redevelop the MSRIT engineering college campus and is now involved in various campus designs.

SCHOOL OF ARCHITECTURE

TEACHING STAFF

Sl No	Name	Qualification	Designation
1	Dr. Sridhar Rajan	PhD	HOD
2	Ar. Vishwas Hittalmani	M Arch	Professor
3	Ar. Rajshekhar Rao	M Arch (PhD)	Associate Professor
4	Ar. S. Jotirmay Chari	M Arch (PhD)	Associate Professor
5	Rashmi Niranjan	MA (Fine arts) (PhD)	Associate Professor
6	Dr. Mona Lisa	M Arch , PhD	Associate Professor
7	Er. M. Vijayanand	M Tech (PhD)	Assistant Professor
8	Ar. Vishwa. S	M Plan	Assistant Professor
9	Ar. Lavanya Vikram	M Arch	Assistant Professor
10	Ar. Sudha Kumari	M Arch	Assistant Professor
11	Er. Aruna Gopal	BE	System Analyst
12	Ar. Arpita Singh	M Arch	Assistant Professor
13	Ar. Sivadeepti Reddy	M Arch	Assistant Professor
14	Ar. Waqar Abid A. Z	B. Arch	Assistant Professor
15	Ar. Kriti Bhalla	B. Arch	Assistant Professor
16	Ar. Kusum Singh	M. Arch	Assistant Professor
17	Ar. Kanika Bansal	M. Arch	Assistant Professor
18	Ar. Apoorva Lakshmi R	M. Arch	Assistant Professor
19	Ar. Surbahon Rajkumar	M. Arch	Assistant Professor
20	Ar. Karishma Susan Kurian	M. Arch	Assistant Professor
21	Ar. Jeeno Soa George	M. Arch	Assistant Professor
22	Ar. Nagajyotsna	B. Arch	Assistant Professor
23	Ar. Preeti Ann Cherian	M. Arch	Assistant Professor
24	Ar. Anjali Chariyath	M. Arch	Assistant Professor

ADMINISTRATIVE STAFF

1	Mrs. Padmavathy. B	MBA	FDA
2	Mrs. Ambika	M Tech	Assistant Instructor

SUPPORT STAFF

1	Mr. R Subramani	Attender
2	Mr. Ramachandra Chari	Attender

Vision and Mission of the Institute and the School

The Vision of MSRIT: To evolve into an autonomous institution of international standing for imparting quality technical education.

The Mission of the institute in pursuance of its Vision: MSRIT shall deliver global quality architectural education by nurturing a conducive learning environment for a better tomorrow through continuous improvement and customization.

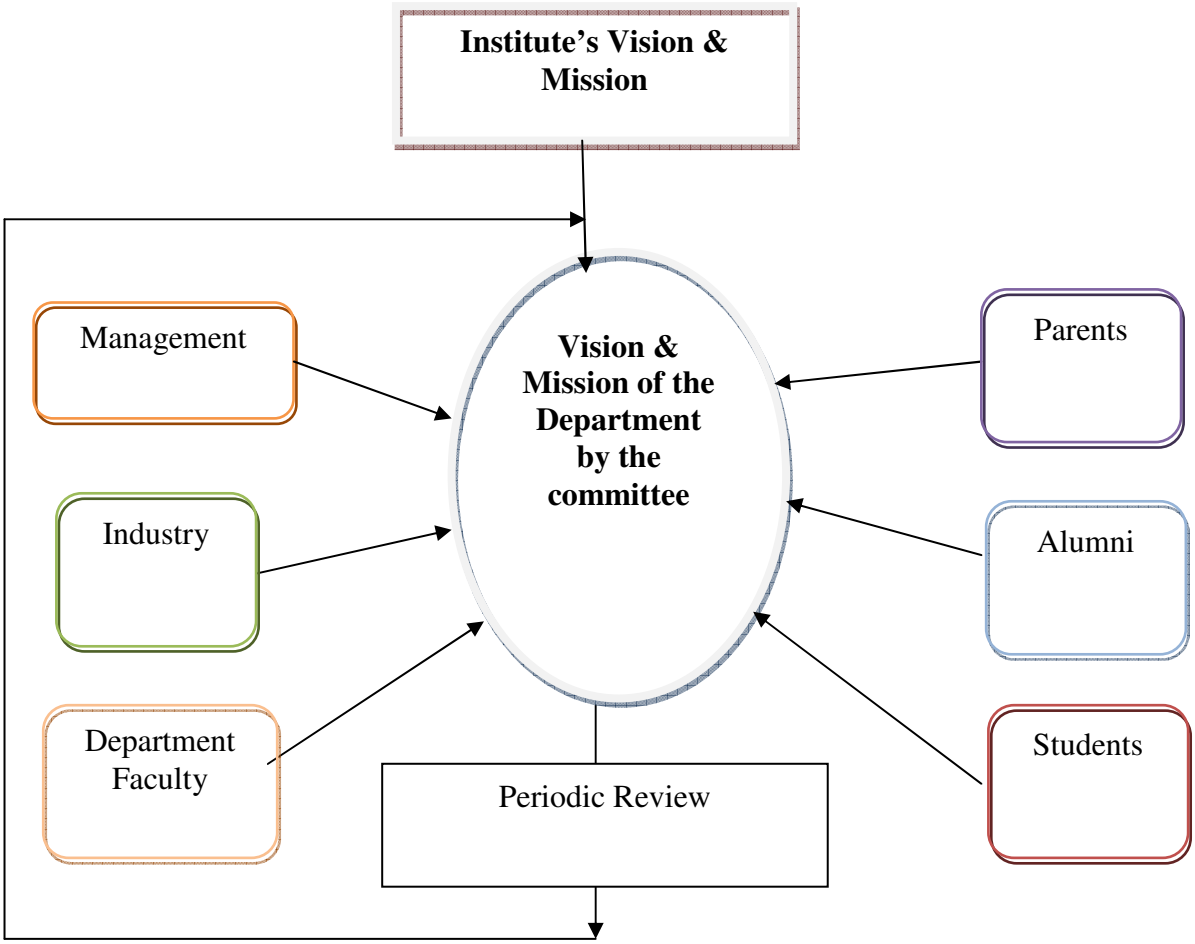
Quality Policy
"We at M. S. Ramaiah Institute of Technology, Bangalore strive to deliver comprehensive, continually enhanced, global quality technical and management education through an established Quality Management system Complemented by the Synergistic interaction of the stake holders concerned".

Vision of the School
To achieve and propagate high standards of excellence in architectural education.

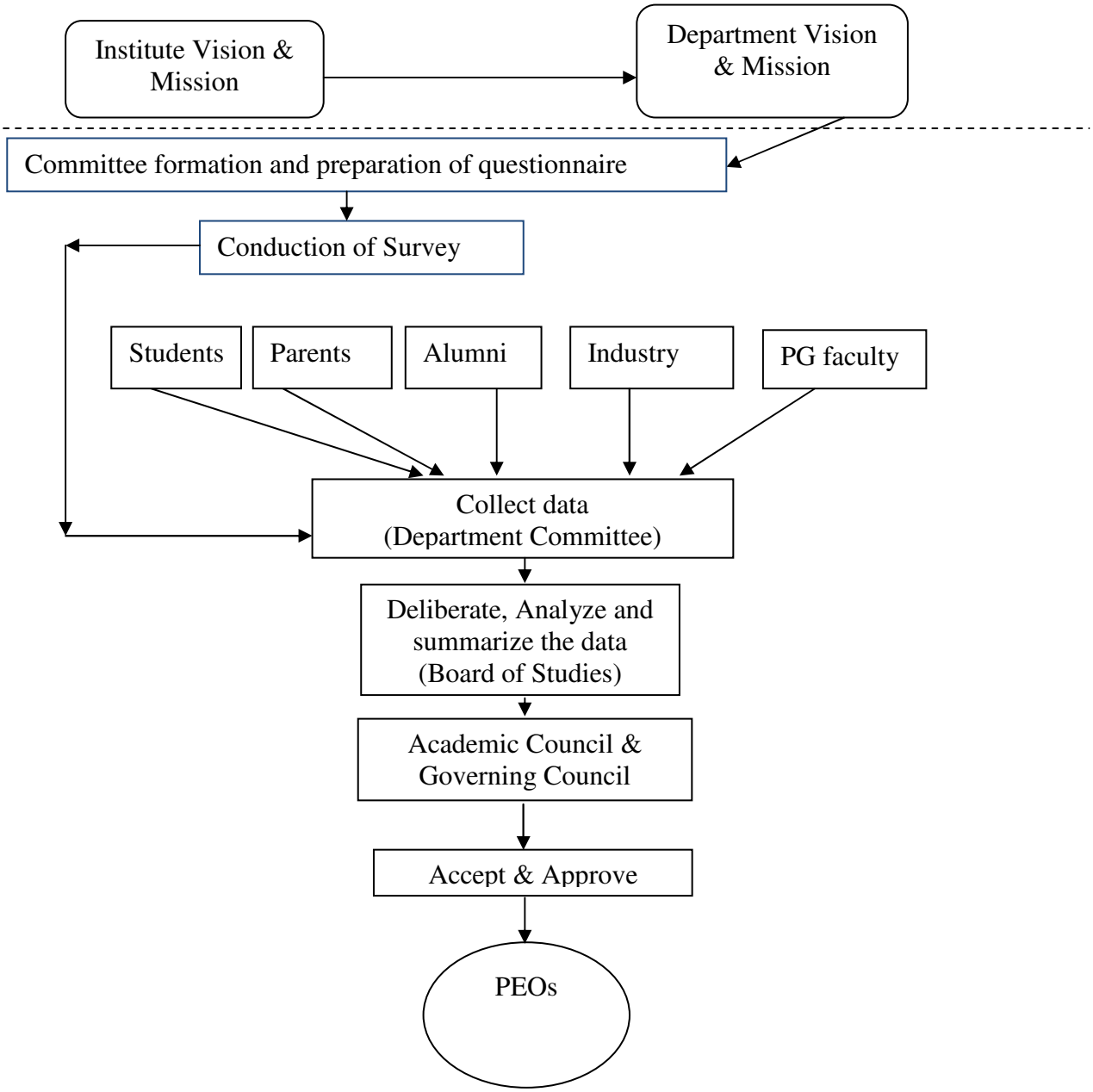
Mission of the School
- The school's commitment is to prepare people to make a difference;
- To create an environment that shall foster the growth of intellectually capable, innovative and entrepreneurial professionals, who shall contribute to the growth of the society by adopting core values of learning exploration, rationality and enterprise; and
- To contribute effectively by developing a sustainable technical education system to meet the changing technological needs incorporating relevant social concerns and to build an environment to create and propagate innovative designs and technologies.

Process of deriving the vision and mission of the department

Process of deriving the vision and mission of the department is shown in Figure below



Process of Deriving the PEOs of the program

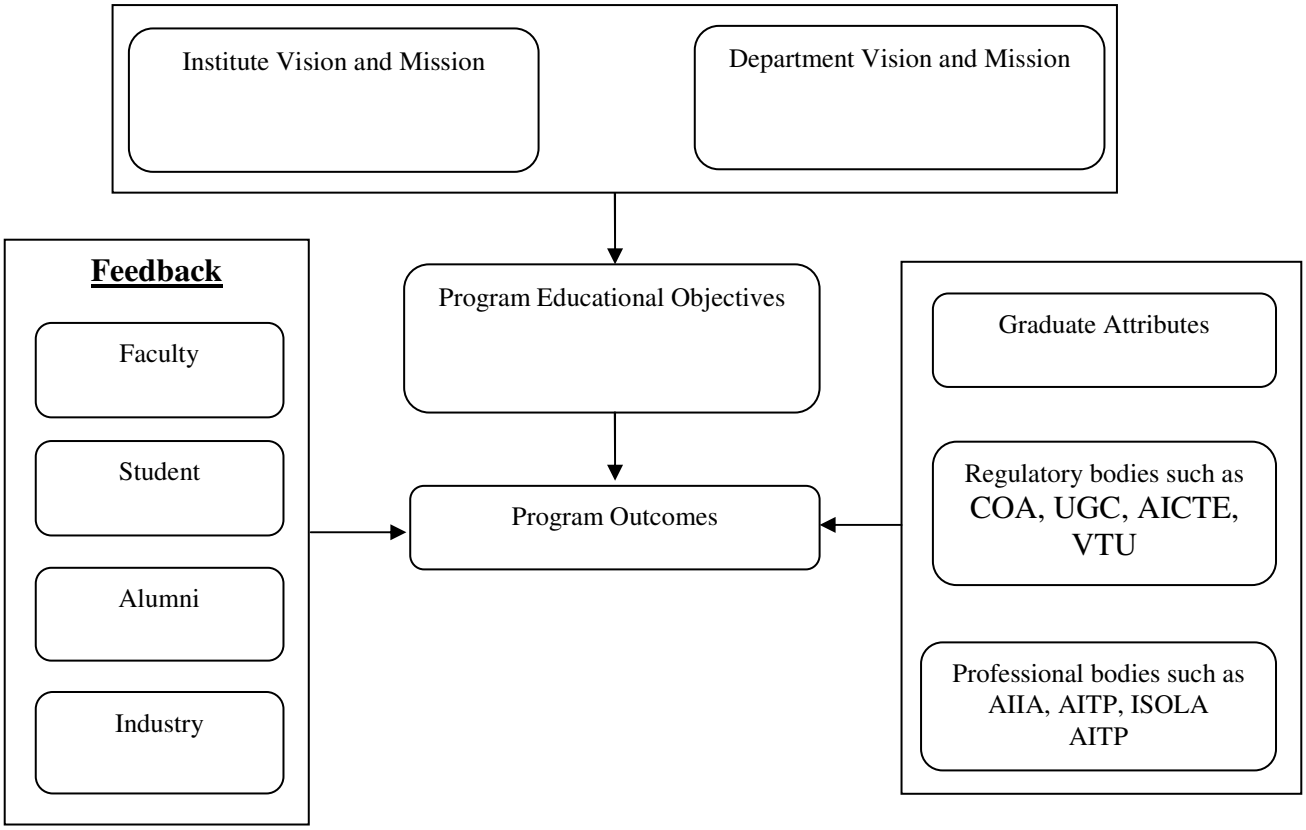


Programme Educational Objectives (PEOs) of the program (Prepared by Arch dept)

PEO 1: Use the knowledge and skills of Architecture to analyze the real life problems and interpret the results.
PEO 2: Effectively design, implement, improve and manage the integrated socio-technical systems.
PEO 3: Build and lead cross-functional teams, upholding the professional responsibilities and ethical values.
PEO 4: Engage in continuing education and life-long learning to be competitive and enterprising.

Process of deriving the Program Outcomes

The Programme outcomes are defined taking into account the feedback received from faculty, alumni, Industry and also from guidelines put across by regulatory/professional bodies and graduate attributes which are in line with programme educational objectives. The following Fig. 2.1 indicates the information flow.



PO's of the program offered

a. Apply knowledge and skills of arts and sciences to the various architectural scenarios.
b. Design and develop projects based on function, form and analysis
c. Design and improve integrated systems of people, materials, information, facilities, and technology.
d. Function as a member of a multi-disciplinary team.
e. Identify, formulate and solve industrial requirements and problems.
f. Understand and respect professional and ethical responsibility.
g. Communicate effectively both orally and in writing.
h. Understand the impact of design solutions in a global and societal context.
i. Recognize the need for and an ability to engage in life-long learning.
j. Have knowledge of contemporary issues in industrial and service sectors.
k. Use updated techniques, skills and tools of architecture throughout their professional careers.
l. Implement the concepts of project and construction management to satisfy customer expectations.

Mapping of PEO's and PO's

The correlation between the Program outcomes and Program Educational objectives are mapped in the Table shown below:

Correlation between the POs and the PEOs

Sl. No.	Program Educational Objectives	Program Outcomes											
		a	b	c	d	e	f	g	h	i	j	k	l
1	Use the knowledge and skills of Architecture to analyze the real life problems and interpret the results.	X	X			X				X		X	X
2	Effectively design, implement, improve and manage the integrated socio-technical systems.	X	X	X	X	X		X	X			X	X
3	Build and lead cross-functional teams, upholding the professional responsibilities and ethical values.				X		X	X					X
4	Engage in continuing education and life-long learning to be competitive and enterprising.								X	X	X	X	

Curriculum breakdown structure:

The curriculum of Architecture program is so structured to include all the courses that together satisfy the requirements of the program specific criteria prescribed by the **Council of Architecture**. The Course code, Course title, the number of contact hours and the number of credits for each course are given in the following table. The courses are grouped in line with the major components of the curriculum namely: (i) Humanities and Social Sciences, (ii) Arts and Science, (iii) Basic Architecture and Engineering courses, (iv) Professional core courses, (v) Electives and (vi) Project and industry exposure/internship.

Breakup of Credits for B Arch Degree Curriculum. (I to X Semester)

Sem	HSS	AS	BAE	PCS	Electives	Project / Internship	Total Credits
I	1	7	6	11	-	-	**25**
II	-	8	6	11	-	-	**25**
III	-	6	8	11	-	-	**25**
IV	-	3	11	11	-	-	**25**
V	2	6	6	11	-	-	**25**
VI	2	-	12	11	-	-	**25**
VII	3	-	8	11	3	-	**25**
VIII	5		3		2	15	**25**
IX	-	-	-	-	-	25	**25**
X	-	-	-	-	-	25	**25**
Total	**13**	**30**	**60**	**77**	**5**	**65**	**250**

HSS - Humanities and Social Sciences - 13
AS - Arts and Science - 30
BAE - Basic Architecture & Engineering - 60
PCS - Professional Core Subjects - 77
Elective - Professional Electives, relevant to the chosen specialization - 05
Project / Internship - Project Work and Internship in Architect's office - 65

Board of Studies for the Term 2016-2017

1.	Prof. Dr. Sridhar Rajan	HOD & Chairperson
2.	Ar. Sharukh Mistry	VTU Nominee
3.	Ar. Vidyadhar S. Wodeyar	Member, Practicing Architect
4.	Ar. S. J. Anthony	Member, Practicing Architect
5.	Ar. Ullhas Rane	Member, Practicing Architect
6.	Prof. Vishwas Hittalmani	Member
7.	Prof. (Dr.) Rajshekhar Rao	Member

M. S. RAMAIAH INSTITUTE OF TECHNOLOGY, BANGALORE
(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU, BELGAUM)
SCHEME OF TEACHING & EXAMINATION OF I SEMESTER B. ARCH
ACADEMIC YEAR 2016- 2017

2016 Batch			**Teaching scheme per week**			**Examination scheme**			
Sl. No	**Code**	**Subject**	**Lecture/ Studio**	**Tutorial**	**Practical**	**Total Credits**	**Exam**	**CIE Marks**	**SEE Marks**
1	AR101	Basic Design	6	0	1	7	SEE (TW)	50	50
2	AR102	Building Materials & Construction Technology I	3	0	1	4	SEE (TW)	50	50
3	AR103	Architectural Graphics I	2	0	1	3	SEE (TW)	50	50
4	AR104	History of Architecture I	3	0	0	3	SEE	50	50
5	AR105	Architectural Structures I	3	0	0	3	SEE	50	50
6	AR106	Art in Architecture	3	0	0	3	CIE	100	
7	AR107	Communication Skills	0	0	1	1	SEE	50	50
8	AR108	Creative Workshop	0	0	1	1	CIE	100	
9	AR109	Kannada	2	0	0	-	SEE	50	50
		TOTAL	22	0	5	25			

TW = TERM WORK CIE = CONTINUOUS INTERNAL EVALUATION SEE = SEMESTER END EXAMINATION

Evaluation Pattern : Marks allocation for SEE

Subject Code	Subject Name	Design	Drawing	Elective	Educational Tour
AR101	Basic Design	20	20	05	05

		Portfolio	Materials portfolio
AR102	Building Materials and Construction Technology I	35	15

		Portfolio	Assignment
AR103	Architectural Graphics I	30	20

		Portfolio	Assignment
AR106	Art in Architecture	40	60

		Models	Group Exercises	Workshop
AR108	Creative Workshop	40	20	40

Note:

- Electives * and Educational Tour ** are part of Basic / Architectural Design.
- *Electives will be announced in the Semester I-VIII, Studio Manuals.
- ** Educational Tour details will be announced in the Semester I-VIII, Tour Manuals.
- For all viva voce examinations one internal faculty and one external faculty will conduct the exam.
- Portfolios have to be submitted for all viva voce exam subjects and retained in the department for one year.
- All students have to register and submit the portfolios on the first day at the beginning of the viva Voce exam and attend the theory exam which is mandatory for architectural design subject
- All students have to register and submit the portfolios on the first day at the beginning of the term work exam.

M. S. RAMAIAH INSTITUTE OF TECHNOLOGY, BANGALORE
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SCHEME OF TEACHING & EXAMINATION OF II SEMESTER B. ARCH
ACADEMIC YEAR 2016- 2017

2016 Batch			**Teaching scheme per week**			**Examination scheme**			
Sl. No	**Code**	**Subject**	**Lecture / Studio**	**Tutorial**	**Practical**	**Total Credits**	**Exam**	**CIE Marks**	**SEE Marks**
1	AR201	Architectural Design I	6	0	1	7	SEE (Viva voce)	50	50
2	AR202	Building Materials & Construction Technology II	3	0	1	4	SEE	50	50
3	AR203	Architectural Graphics II	3	0	-	3	SEE	50	50
4	AR204	History of Architecture II	3	0	-	3	SEE	50	50
5	AR205	Architectural Structures II	3	0	-	3	SEE	50	50
6	AR206	Surveying & leveling	1	0	1	2	SEE	50	50
7	AR207	Computers in Architecture I	-	0	1	1	CIE	100	
8	AR208	Art Appreciation	2	0	-	2	SEE	50	50
		TOTAL	21	0	4	25			

TW = TERM WORK CIE = CONTINUOUS INTERNAL EVALUATION SEE = SEMESTER END EXAMINATION

Evaluation Pattern : Marks allocation for SEE

Subject Code	Subject Name	Design	Drawing	Viva Voce	Elective	Educational Tour
AR201	Architectural Design - I	20	15	05	05	05

		Assignment	Project
AR207	Computers in Architecture I	50	50

Note:

- Electives * and Educational Tour ** are part of Basic / Architectural Design.
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- ** Educational Tour will be announced in the Semester I-VIII, Tour Manuals.
- For all viva voce examinations one internal faculty and one external faculty will conduct the exam.
- Portfolios have to be submitted for all viva voce exam subjects and retained in the department for one year.
- All students have to register and submit the portfolios on the first day at the beginning of the viva Voce exam and attend the theory exam which is mandatory for architectural design subject
- All students have to register and submit the portfolios on the first day at the beginning of the term work exam.

SEMESTER - I
BASIC DESIGN

Course Code: AR 101 **Credits: 6: 0: 1**
Pre requisite: Nil **Contact Hours: 112 hours**

Course Coordinators: As per Time Table

Course Objectives:
- Expose the Students to the meaning and purpose of design.
- Train the students in visual composition using 2D and 3D objects
- Train the students in architectural perception and visualization.

Course Contents:

UNIT I

Principles and elements of composition with 2D & 3D exercises using single and multiple elements, colors textures and different materials.

UNIT II

To translate, connect and bring out the relationship of aesthetic principles with architecture

UNIT III

Emphasis on transformation of conceptual drawings to 2D drawing. Basics of preparation of plans, elevations, sections and views.

UNIT IV

Focus on Drafting and rendering using different media, views and sketches. Enable the students towards presentation techniques and understanding the form by 3D manual study models and Anthropometry study.

UNIT V

Preparation of final sheets with all the requirements and final models.

References:
1. "How Designers Think" by Bryan Lawson
2. Time savers standards for architectural design data by John Hancock
3. Neufert's standards
4. Form, Space & Order by Francis DK Ching

Course Outcome: The students will be able to
- Make compositions using basic principles of design, elements of design & materials. (PO - a, b, c)
- Apply anthropometry in designs.(PO - a, b, d, k)
- Establish relationship between space making & form generation & application of different materials. (PO - a, b, c, h)
- Render with manual presentation techniques. (PO - a, g, k)

SEMESTER – I

BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY –I

Course Code: AR102 **Course Credits: 3:0:1**
Prerequisite: Nil **Contact hours: 70 hours**
Course Coordinators: As per Time Table

Course Objectives

- To introduce to the students, the fundamental principles of architectural construction drawings.
- To introduce to the students, the fundamental principles of load bearing construction and its major components in building.
- To develop an understanding in students, of the basic building materials.

Course Contents:

UNIT I

Introduction to drafting and drafting equipments: Lines, Hatches, Lettering, Scales and proportion, Composition

UNIT II

Brick masonry: Basic components of masonry, Stretcher and Header bond, English Bond, Flemish Bond.
Material: Clay bricks, aggregate, stone
Stone Masonry: Ashlar masonry, Rubble masonry
Material study: Stone, Brick, Mud mortar.

UNIT III

Arches: Typical arch and its basic components, Ogee arch, semi circular arch, four centered arch
Lintels: R.C.C lintel, Brick lintel, stone lintel.
Material Study: Sand, Fly ash, cement, lime, aggregate.

UNIT IV

Typical Section through a building and foundations
Material study: P.C.C, Concrete blocks

References:

1. "Construction Technology" By Chudley
2. "Construction Of Buildings" By Barry
3. "Building Construction, Principles, Practice And Materials" By Hardie Glen
4. "Text Book Of Building Construction" By Arora & Bhindra
5. "Building Construction Illustrated" By Francis D K Ching

Course Outcome: The students by the end of the course will be able to

- Draft and read architectural drawings using architectural conventions. (PO - g, k)
- Identify the basic building components of a building such as brick, mortar, masonry construction, lintels and arches and their construction methods. (PO - c, k)
- Use appropriate building materials based on the properties, behavior and applications and identifying the particular materials for usage of load bearing buildings. (PO - c, k)
- Observe and understand innovative details in construction.(PO - k)

SEMESTER – I

ARCHITECTURAL GRAPHICS - I

Course Code: AR103 **Course Credits: 2:0:1**
Prerequisite: Nil **Contact hours: 42 hours**
Course Coordinators: As per Time Table **Course Objectives**

- To enhance the drawing skills and visual skills of students in understanding the two dimensional representations of simple three dimensional objects.
- To allow students to explore and understand the relation of objects interpenetrating and the orthographic projections of objects and relate to buildings
- The students should express the combined effect of the above two with various presentation techniques

Course Contents:

UNIT I

Introduction to fundamental techniques of architectural drawings, drafting and lettering

UNIT II

Introduction of plane geometry and polyhedral structures

UNIT III

Orthographic projection of solids and sections of solids

UNIT IV

Developments and interpenetrations of objects

UNIT -V

Three dimensional representations of solid forms (isometric and axonometric) and model making in different materials.

References:

1. Rendering with pen & ink" by Robert Gill.
2. Drawing and Perceiving by Douglas Cooper
3. "Architectural Graphics" by C.Leslie Martin
4. "Geometrical Drawing for Art Students" by I .H.Morris.
5. "Perspective" by S.H.Mullik

Course Outcome: The students will be able to demonstrate

- The techniques of orthographic projection in drawings. (PO - g, i)
- The importance and representation of three dimensional forms in design projects. (PO - g)
- Graphical presentation skills for effective communication in design. (PO - g, a, k)

SEMESTER – I

HISTORY OF ARCHITECTURE –I

Course Code: AR104 **Course Credits: 3:0:0**
Prerequisite: Nil **Contact hours: 42 hrs**

Course Coordinators: As per Time Table

Course objectives: The students will be exposed to

- Introduction to critical appreciation of buildings
- Synoptic study of influences of culture and climate
- Construction techniques and architectural characteristics

Course Contents:

UNIT I

Egypt - Influences, Architectural character; Development of Mastaba, Pyramids, Evolution of pyramids,; Rock hewn tombs; Egyptian cult temple, Mortuary temple - & Mamisi temple; Pylon, Obelisk, Hieroglyphics, Sphinx etc

UNIT II

Architecture of West Asia - Architectural character, influences; Ziggurats - Urnammu, Tchoga Zanbil, Assyrian Ziggurat; Palaces – Khorsabad;
Persia – Influences, Architectural character, columns, capitals etc; Palace at Persepolis & Firuzaba

UNIT III

Indus valley civilization - Town planning and construction principles, Great bath, salient features of Indus valley civilization, Granary, House plan, toilet, privy etc
Vedic period – Vedic village, huts, gateway, influence of Vedic elements over Buddhist
Mouryan period – Architectural character, Ashok Stambha.Buddhist period – Stupas; Hinayana & Mahayana Buddhism – Chaitya halls and Viharas; stupa development, Chaitya window, torana, Vedika and other ornamental features

UNIT -IV

Greece – Brief study of Mycenaean architecture as an introduction to Greek architecture
Influences, Architectural characters like Optical corrections, Visual effects, orders (Doric, Ionic, Corinthian) and their evolution, moldings, ornamental features etc; Salient features of Greek temples, Agora, Acropolis, Parthenon (Doric order), Erechtheon (Ionic order), Theatre Epidaurus, Tower of winds (Corinthian order)

UNIT – V

Rome – Brief study of Etruscan architecture as an introduction to Roman architecture
Influences, architectural character – orders, types of constructions etc; Circular & rectangular temples; Monuments – Forum, Collosseum, Triumphal Arches, Thermae, Basilica, Victory column, Aqueduct

References:

1. “History of Architecture” by Bannister Fletcher
2. “Architecture of the world” by Henry Stierlin, Benedict taschen Publication, Germany
3. “Hindu Architecture” Percy Brown

Course outcome:

The students will be able to

- Carry out critical appreciation of historical buildings. (PO - a,g,h,i)
- Analyze Influences of culture and climate of the period on buildings. (PO - c)
- Analyse construction techniques and architectural characteristics of the period. (PO - k)

SEMESTER – I

Architectural Structures-I

Course Code: AR105 **Credits: 3: 0: 0**
Prerequisite: Nil **Contact Hours: 42**
Course Coordinators: As per Time Table

Course Objectives: The students would be introduced to

- Basic Structural Elements and understanding of their behavior. To Learn the properties & usage of structural Materials
- Study the Force system, Resolution of forces, Parallelogram law & conditions of Equilibrium. Analyze the problems on resolution of forces
- Learn types of Loads & Supports systems. Analyze the problems related to the different conditions of loads & supports, Support reactions of Beams & Trusses.
- Find Centroid of Geometrical sections and solve problems related to it.
- Understand the concepts of finding Moment of Inertia & solve problems relating to it

Course Contents:

UNIT I

Basic Structural Elements & Materials: Introduction to basic structural systems, beam, Arch, Truss, frames, , vault, dome, slab, shells.
Materials: Basic mechanical properties of Structural steel, Bricks, Stones, Concrete & Timber.

UNIT II

Forces: Definition of force and classification of system of force.
Concurrent coplanar forces, triangle law of forces, parallelogram law of forces, rectangular components, resolution of forces , Problems on resolution of forces
Theorem of transmissibility & composition of forces, Static of equilibrium conditions, resultant and equilibrant of force system, Problems on the above to determine the equilibrant and static equilibrium
Problems on calculation of resultant
Moment of a force & condition of equilibrium, Non concurrent non parallel forces, Lever arm , couple
Varignon's theorem of moments – derivation & simple problems, Problems on Non concurrent non parallel forces

UNIT III

Types of loads - Concentrated load, UDL, UVL
Types of supports, Problems on support reactions for the beams,trusses

UNIT IV

Properties of the section & the definition – C/s area, centroid, second moment of area ,
Section modulus & radius of gyration of standard areas, Derivation of centroid – Square, rectangular, circular & flanged sections
Problems on the above geometrical figures for centroid – Square, rectangular, circular, Tee & I-sections

UNIT V

Derivation of MI of Square, rectangular, circular about its centroidal axis, Parallel axis theorem & explanation

Problems on MI - Square, rectangular, circular, Hollow circular, hollow rectangular, square sections, Tee section, Symmetrical I section and unsymmetrical I section

References:

1. Structures, by D L Schodeck – Published by Prentice Hall, USA
2. Engineering Mechanics – Ferdinand L Singer, Harper Collins Publications, Third Edition.
3. Engineering Mechanics by S.P. Timoshenko and D.H.Young.
4. Elements of Civil Engineering by mimi-das saikia, bhargab mohan das, madan mohan das
5. Elements of Civil Engineering by Shakeeb ul Rehman
6. Elements of Civil Engineering & Engineering Mechanics by R V Raikar
7. Elements of Civil Engineering & Engineering Mechanics by MN Seshaprakash & Ganesh B

Course Outcome:

The students will be able to

- Adopt the different Structural systems & the materials used for structural construction. (PO - a, e)
- Analyze the various force systems , work on problems relating to the resultant, equilibrium, equilibrant etc. (PO - a, e)
- Analyze the Beams & Trusses with different types of load conditions & different types of support conditions. (PO - a, e)
- Find the centroid of geometrical sections. (PO - a, e)
- Find the Moment of Inertia of the geometrical sections. (PO - a, e)

SEMESTER – I

ART IN ARCHITECTURE

Course Code: AR106 **Credits: 3:0:0**
Pre requisite: Nil **Contact Hours: 42 hrs**

Course Coordinator: As per Time Table

Course Objectives
The students are exposed to
- Develop basic artistic skills in sketching, free-hand drawing, calligraphy etc,
- Understand and apply different techniques and media of rendering for design presentation.
- Effective visualization of design projects

Course Content:

UNIT I
Sketching views of built forms, vegetation, human figures, vehicles etc.

UNIT II
Understanding color schemes in rendering.

UNIT III
Rendering the plan

UNIT IV
Rendering the elevation

UNIT V
Rendering the views (perspective and isometric)

References:
Principles of Design in Architecture by K W Smithies
Principles of two dimensional Designs – Wucios Wong

Course Outcome: The students will be able to
- Use the rendering and visualization techniques learnt in design presentations. (PO - a, g, k)
- Use different types of rendering methods. (PO - a, g, k)

SEMESTER – I

COMMUNICATION SKILLS

Subject code: AR107 **Credits 0:0:1**
Prerequisites: Nil **Contact Hours: 28 hours**

Course Coordinator: As per Time Table

Course Objectives
The students are introduced to the basics of communication in English through written and spoken activities and help the learner to use the language in a proficient way. The general purpose is to develop the learner's communicative competence in English.

Course Content:

UNIT I

Understanding Communication Process
Introduction to communication and its process, Forms of communication, Levels of communication, Barriers to communication, Nonverbal communication,

UNIT II

Effective Presentation and Group discussion skills, Importance of body language

UNIT III

Grammar
Parts of speech, usage of tenses, Identifying errors in sentences, words commonly confused and misused, Usage of Phrasal verbs and Idioms
Using right choice of words in a given context

UNIT IV

Writing skills
Paragraph writing, Expansion of ideas

UNIT V

Technical writing
Basics of letter writing, Job application letter, preparing a resume / curriculum vitae
E-mail letters

References:
1.Technical communication – Principles and Practice- Meenakshi Raman & Sangeetha Sharma, Oxford University Press – 2007
2. A Practical English Grammar – A.J. Thomson & A. V. Martinet, Oxford University Press – 1987
1.Working in English: Teachers Book – Jones Leo
2. Communicative English for Professional Courses – Mudambadithaya G S
3. English Conversation Practice – Taylor G

Course Outcome
- The student would be able to exhibit proficiency in the English language, communicate effectively and thereby enhance their employability. (PO - g)

SEMESTER - I

CREATIVE WORKSHOP

Course Code: AR 108 **Credits: 0: 0: 1**
Pre requisite: Nil **Contact Hours: 42 hours**
Course Coordinators: As per Time Table

Course Objectives:

- To enable students to learn about different materials for model making with basic shapes
- To enable the students to understand relation between scale and proportion
- To explore the creative part in understanding the subject, foreground & background of any given architectural frame
- To encourage the students to explore more on pottery, plastic clay, thermocole and other exploration of materials
- To enable them to learn sculptris software to know the basics of character modeling

Course Contents:

UNIT I

Introduction to different materials. Making basic shapes out of different materials to explore the nature & texture of the materials.

UNIT II

Introduction to basic carpentry.

UNIT III

Character modeling by SCULPTRIS, to explore more on molding shapes digitally

UNIT IV

Pottery and paper Mache exercises

UNIT V

Exercises involving a large scale study models to understand the human scale.

References:

1. "Art of architectural Model" by Akto Busch
2. "Unfold paper in Design, Art, Architecture & Industry" by Petra Schmidt & Nicola Stattman

Course Outcome:

The students will be able to

- Use different types of materials and its feasibility in model making. (PO - a, c, g)
- Visualize the basic relations of form and space in architecture. (PO - a, b, i)

SEMESTER – I

KANNADA MANASU

Course Code: AR 109 **Credits: NIL**
Pre requisite: Nil **Contact Hours: 28 hours**
Course Coordinators: As per Time Table

Course Objectives

- Students will be introduced to kannada language, literature, state and culture etc.,
- Analysis of various literary forms and stages.
- Comparing and criticizing the literary forms

Course Contents:

UNIT I

Vyakthi chithra, pravasa kathana,vignana lekhana, vinoda, parichaya lekhana,khathe etc.,

UNIT II

Prabandha lekhana(essay):-"Annappana reshme khaailey"-Kuvempu
Ithara prabandhagala parichaya

UNIT III

Kavana(poem):-"Belchiya haadu"-Dr.Siddalingaiah
Dalitha sahitya kurithu vivarane

UNIT IV

Thantragnana baraha (Technology related article):-"Vritthi shikshanadalli kannada madhyama Lekhanagalannu kurithu parichaya

UNIT V

Janapada kavya(folklore):-konavegowda
Vignana lekhana:-"Aane halladalli hudugiyaru"-BGL Swamy

References:

1. Kannada sahitya Charithre-M.K. Krishnaiah (edition 2003)
2. Kannada sahitya Kosha-Rajappa Dalavayi (edition)
3. Kannada Manasu:Kannada Vishwavidyalaya, Hampi (Lingadevaru halemane) Edition-2007

Course outcome:

The students will be able to

- Use the language at ease in daily life situations.(PO - g, i)

SEMESTER – I

KANNADA KALI

Course Code: AR 109 **Credits: NIL**
Pre requisite: Nil **Contact Hours: 28 hours**
Course Coordinators: As per Time Table

Course objectives:
Objective is to give them the knowledge of basic conversation skills in Kannada language.

UNIT I

Basic conversation: Between two persons and group conversation.

UNIT II

Structure pattern: Formation of words and sentences.

UNIT III

Translation: Kannada to English – English to Kannada

UNIT IV

Vocabulary: making simple sentences.

UNIT V

Numbers: Alphabet and basic Grammer

References:

1. Kannada Kali: For Engineering and Medical non Kannadiga students.
2. Writer: Lingadevaru Halemane (II Edition 2007)

Course outcome:
The students will be able to

- Use the language at ease in daily life situations. (PO - g, i)

SEMESTER - II

ARCHITECTURAL DESIGN - I

Course Code: AR201 **Credits: 6: 0: 1**
Pre requisite: Nil **Contact Hours: 112 hours**
Course Coordinators: As per Time Table

Course Objectives:
- Expose the students to the relationship between human feelings and architectural form.
- Train them in space and form making.
- Train the students in architectural perception and visualization.

Course Contents:

UNIT I

To create space and form and exhibit through models made of different materials to express the look and feel.

UNIT II

Undertake transformation of solids, coordination of form and function.

UNIT III

Explore the relationship between human feelings and architectural form – observe aspects of design like aesthetics, light, circulation, structures – study activity flow, interview users – analyse and interpret data – form guidelines for design

UNIT IV

Concept development, site studies, visualize space and activity, concepts, single line plans and 3D forms, organize space, volumes, massing and frame aesthetics; make a study model

UNIT V

Basics of preparation of floor plans, elevations and sections, reviews and revisions
Drafting, rendering, reviews, discussions, revisions of drawings, Preparation of a physical model of the completed design and portfolio of semester work

References:
1.”Form space and Order” by Francis D.K Ching
2. “Design fundamentals in architecture” by VS Parmar
3. “How Designers Think” by Bryan Lawson
4. “Design Thinking” by Peter G Rowe
5. “Art of Thinking” by Vincent ryan Ruggiero
6. “How Building works: The Natural Order of Architecture” by Edward allen
7. “Architectural Drafting and Design” by Ernest R weidhaas
8. “Design of Enclosed Spaces” by Piera Scuri

Course Outcome: The students will be able to
- Visualize the relationship between human feelings and architectural form. (PO - a, b, k)
- Create space and form. (PO - a, b, c, g)
- Perceive and visualize architectural pursuits. (PO - a, b, g, k)
- Represent design through drawing. (PO - a, k)

SEMESTER – II

BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY –II

Course Code: AR202 **Course Credits: 3: 0 :1**
Prerequisite: Nil **Contact hours: 70 hrs**

Course Coordinators: As per Time Table

Course Objectives

- To provide the students with understanding of load bearing structures
- Students should be able to identify and analyze the requirements of the building component and communicate the construction details through drawings.
- To understand building materials, properties, application in building

Course Contents:

UNIT I

Doors: Introduction to doors and frames, detail study of panel doors with glass and mesh, flush doors, batten ledged and braced doors. Materials- Properties and usage of timber

UNIT II

Windows: Introduction to wooden windows – detail study of fixed and sash windows.

UNIT III

Staircase: Introduction to types of staircase. Detail study of R.C.C waist slab staircase and R.C.C folded plate staircase. Construction of RCC Pre-Cast Staircase, Steel staircase and Composite staircase

UNIT IV

Materials-Role of Timber in building industry. Study of steel as construction materials including their characteristic properties, application etc.

References:

1. "Construction Technology" By Chudley
2. "Construction Of Buildings" By Barry
3. "Building Construction, Principles, Practice And Materials" By Hardie Glen
4. "Text Book Of Building Construction" By Arora & Bhindra
5. "Building Construction Illustrated" By Francis D K Ching

Course Outcome: The students will be able to

- Draft and read architectural drawings using architectural conventions. (PO - a, g, k)
- Identify the components of a building such as doors, windows, roofing systems, staircase and their construction methods. (PO - k, c)
- Use appropriate building materials based on the properties, behavior and applications and usage of steel in building. (PO - k, c)

SEMESTER – II

ARCHITECTURAL GRAPHICS - II

Course Code: AR203 **Course Credits: 3: 0: 0**
Prerequisite: Nil **Contact hours: 42 hrs**
Course Coordinators: As per Time Table

Course Objectives

- To introduce the fundamental techniques of architectural drawings and enhance the visual skills

Course Contents:

UNIT I

Perspective: Understanding fundamental techniques of 1- point perspective and 2- point perspective construction to enhance the student's architectural drawing skills and the visual skills, finally assisting them in appreciating built forms in their design presentations.

UNIT II

Sciography: Learning about light, shade and shadow on built forms and applying the knowledge of sciography on the design presentations to understand the undulations, depths, hierarchy of surfaces and built forms.

UNIT III

Rendering: Developing an understanding the importance of color schemes in design presentations as well as its application on built forms to create pleasing environments.

References:

1. "Rendering with pen & ink" by Robert Gill.
2. "An Introduction to Perspective" by Ray Smith (Royal Academy of Arts)
3. "Drawing and Perceiving" by Douglas Cooper
4. "Geometrical Drawing for Art Students"by I.H.Morris.
5. "Perspective" by S.H.Mullik
6. "Architectural Graphics" by C.Leslie Martin

Course Outcome: The students will be able to

- Carry out perspective drawings. (PO - a)
- Identify the importance & need of presentation skills. (PO - g, a)
- Develop skills in graphical presentations. (PO - g, k)

SEMESTER – II

HISTORY OF ARCHITECTURE -II

Course Code: AR204 **Course Credits: 3:0:0**
Prerequisite: Nil **Contact hours: 42 hrs**
Course Coordinator: As per Time Table

COURSE OBJECTIVES

- Introduction to critical appreciation of buildings
- Synoptic study of influences of culture and climate
- Construction techniques and architectural characteristics

Course Contents:

UNIT I

Introduction, Early Christian Architecture – Influences & Arch. Character
Early Christian Architecture – Basilican church with examples
Early Christian Architecture – Baptistery & tombs
Byzantine Architecture – Influences & Arch. Character, Santa Sophia
Byzantine Architecture – S. Vitale and S. Marks, Venice

UNIT II

Romanesque - Italy- Influences & Arch. Character
Romanesque - Italy- Pisa Cathedral and S. Michele
Romanesque - France- Influences & Arch. Character
Romanesque - France- Angouleme Cathedral & Abbey –aux- Hommes

UNIT III

Romanesque - Britain- Influences & Arch. Character
Romanesque - Peterborough Cathedral
Gothic Architecture in Britain- Influences & Arch. Character
Gothic Architecture in Britain- Salisbury Cathedral and West Minister Abbey

UNIT IV

Gothic Architecture in France- Influences & Arch. Character
Gothic Architecture in France- Notre Dame Cathedral, Amiens Cathedral
Late Medieval Architecture in Italy- Influences & Arch. Character
Late Medieval - Italy- Milan Cathedral, S. Maria del Fiore, Doge's Palace

UNIT V

Renaissance Architecture in Italy,France,Britan– Introduction, Architectural character, Examples
Baroque architecture in Italy, France, Britan – Introduction, Architectural character, Examples

References:

1. History of Architecture by Bannister Fletcher
2. Architecture of the world-Romanesque by Henry Stierling

Course Outcome: The students will be able to

- Carry out critical appreciation of historical buildings. (PO - a, g, h, i)
- Analyze influences of culture and climate of the period. (PO - c)
- Apply the knowledge of construction techniques and architectural characteristics of the period. (PO – a ,k)

SEMESTER – II

ARCHITECTURAL STRUCTURES – II

Course Code: AR205 **Credits: 3:0:0**
Prerequisite: NIL **Contact hours: 42 hours**
Course Coordinator: As per Time Table

Course Objectives:
- The student should be able to develop and understand the properties of materials.
- The student should be able to develop and understand the behavior of materials.

Course Contents:

UNIT I

Simple Stress and Strain: Introduction Properties of materials Stress, Strain, Hooke's law, Poisson's ratio, Stress – Strain diagram for structural steel & non ferrous materials, Principle of Superposition & Problems.

UNIT II

Elastic constants and Elongation of bars: Total elongation of tapering bar of circular & rectangular sections, Elongation due to self weight, Problems on above, Derivation of expression for volumetric strain, elastic constants & relationships among constants and Problems on elastic constants.

UNIT III

Shear Force and Bending Moment: Relationship between loading, shear force & bending moment, Shear force & bending moment equations - cantilever beams, Simply supported beam and overhanging beams with point load, UDL, Moment and Problems on above.

UNIT IV

Elastic stability of Compression members: Elastic stability of columns – introduction, short & long columns, Euler's theory on columns, Effective length, slenderness ratio, radius of gyration, buckling load.

UNIT V

Buckling loads of columns: Assumption & derivation of Euler's buckling load for different end conditions, Limitations of Euler's Theory, Rankine's formula, Problems on above.

References:

1. Popov P: Engineering Mechanics of Solids, Prentice Hall India Ltd.
2. B.S. Basavarajaiah and P.Mahadevappa: Strength of Materials, Khanna Publishers
3. Rajput: Strength of Materials, S.Chand publishers, 4th Edition, New Delhi, 2007.
4. Bansal R.K.: A Textbook of strength of materials, Laxmi Publishers, New Delhi, 4th Edition, 2007.

Course Outcome: The students will be able to
- Analyze the properties of materials and determine the relationship between elastic constants. (PO - a, e)
- Demonstrate and understand the behavior of materials by representing the type of supports and reactions of a statically determinate structure. (PO - a, e)
- Demonstrate the maximum shear force and bending moment of a statically determinate structure. (PO -a, e)
- Demonstrate the design of axial load carrying capacity of the column. (PO - a, e)

SEMESTER – II

SURVEYING AND LEVELING

Course Code: AR206 **Credits: 1:0:1**
Prerequisite: Nil **Contact Hours: 42 hours**
Course Coordinator: As per Time Table

Course Objectives:
Introduction to surveying and leveling principles and practices

Course Contents:

UNIT I

Importance of surveying to engineers. Types and classification of survey. Principles of surveying. Definition of maps and understanding topographical maps of survey of India. Shrunk scale problems.

UNIT II

Chain surveying- instruments for chain surveying, direct and indirect ranging, principles and uses of cross staff, optical square. Concept of field book, types of chains and tapes, finding out area of irregular figures by chain, tape, cross staff, construction of pentagon and hexagon using chain surveying.

UNIT III

Plane table and accessories, Advantages and disadvantages of plane table survey, basic definitions, principles of plane tabling, setting up and orientation, methods of plane tabling: radiation and intersection, plane table traversing.

UNIT –IV

Leveling – basic definitions, classification of leveling methods, types of levels- dumpy level, temporary adjustments of dumpy level, reduction of levels, plane of collimation method, problems, profile leveling- methods and application, fly leveling.

UNIT –V

Theodolite- study of transit theodolite and function of parts- temporary adjustments, measurement of horizontal angles- repetition and reiteration, measurement of vertical angles, contouring- definition, uses of contours, characteristics of contours, GIS and its application, total station and its uses.

References:

1. A.M. Chandra, Plane Surveying, new age International.
2. Alok, Plane Surveying- S Chand and Company Ltd.
3. Punmia B.C "Surveying" Vol. 1 & 2. Laxmi Publications Pvt. Ltd., New Delhi.
4. S.K.Roy, Fundamental of Surveying- Prentice Hall of India, New Delhi.

Course Outcome: The students will be able to

- Practically carry out marking of geometrical form on ground. (PO - a, e)
- Analyze principle of surveying and leveling. (PO - a, e)
- Use instruments for applications. (PO - a, e)

SEMESTER – II

COMPUTERS IN ARCHITECTURE -I

Course Code: AR207 **Credits: 0: 0: 1**
Prerequisite: Nil **Contact Hours: 28**
Course Coordinator: As per Time Table

Course Objectives:

- To develop skills required in using computers as a tool for architectural design representation
- To develop skills with 3D visualization & animation using Google Sketch-Up.
- To learn Presentation techniques using Google Sketch-Up

Course Contents:

UNIT I

User Interface essentials: View settings, navigations, orbit, save.
Draw Tools: Basic shapes using draw tools, Unit setup, push-pull, follow me

UNIT II

Modify: Scale, rotate, Copy, Mirror
Measurements: Protractor, tape, Divide, array

UNIT III

Views: Camera views, Scenes, Walkthrough
Styles: Preset styles, face & edge styles

UNIT IV

Material: Applying colors & Textures, creating new materials.
Shadows: Shadow & fog settings

UNIT V

Presentation: Section planes, orthogonal views, background styles.
Output: Save as images, Walkthrough as Video file.

References:

1. Sketch-Up Knowledge bank online help
2. Sketch-up 8 for Dummies by Aidan Chopra
3. Video Tutorials online & reference guides

Course Outcome: The students will be able to

- Use sketch-up to create 3D models of Buildings. (PO - k)
- Use Materials & View Styles to enhance the view of the building model. (PO - k)
- Use presentation techniques in sketch-up to communicate design. (PO - k)

SEMESTER – II

ART APPRECIATION

Course Code: AR208 **Credits: 2:0:0**
Pre requisite: Nil **Contact Hours: 28 hours**
Course Coordinator: As per Time Table

Course Objectives The students will be exposed to

- The meaning of art and its role.
- Evaluate a work of art by appreciation and differentiate clearly from non-art.
- identify the nature and characteristics of various types of art
- The importance of understanding and appreciating/criticizing works of art, their meaning and role. Study of various forms of art like, fine arts, commercial arts, spatial arts, temporal arts etc. Examples / projects expressing the application of the above have to be carried out.

Course Content

UNIT I

Role of Art**:** Introduction**,** Art and Architecture**,** Role and Meaning- artist, Architect and Craftsman**,** Art in Architecture

UNIT II

Types of Art: Fine arts, performing arts, visual art, spatial arts**,** folk arts, commercial arts, industrial arts abstract art, temporal art, pop art, abstract art, digital art, Types of Architecture

UNIT III

Art Criticism: Types of Criticism**,** Criticism of works of art, movements and isms in art, impressionism, expressionism, etc

UNIT IV

Art Forms- Visual Arts: Painting, Photography and Architecture**,** Sculpture and Architecture

UNIT V

Art Forms- Performing Arts: Film and Architecture, Music and Architecture, .Drama and Architecture, Literature and Architecture, Advertising and Architecture

References:

1. "Humanities through the arts" by F. David Martin and Lee A. Jacobus.
2. "Art in the western world" by David Robb and J J Garrison
3. "Principles of Design in Architecture" by K W Smithies
4. Aesthetics a text book- Yuri Borev
5. Art in History, History in Art- David Freedberg and Jan de Vries
6. Principles of two dimensional Design – Wucios Wong

Course Outcome: The students will be able to

- Visualize the role of art, to distinguish between art, craft and architecture. (PO - a)
- Differentiate the different types of art and understand their relevance. (PO - a)
- Develop a sense of criticism. (PO - g)
- Exhibit the historical development of art. (PO – g, i)
- Relate architecture to the allied fields of art. (PO – I, k)