BACHELOR OF ARCHITECTUR

5-year Undergraduate Degree Course (With Effective from 2022-2023 Admitted Batch and onwards)

SCHEME OF SYLLABUS

Note: Induction Training:In the first year three weeks of the course, an

induction training program is mandatory before the start of formal classes, to orient the students towards architectural aptitude, education and career.

1/5 B.ARCH 1st SEMESTER

Course code	Category	Course Title	Ho \	Hours per week		Hours per IA week		Hours per IA EE week		EE/EJ	Total Marks	Credits	Exam (Hrs.)
			L	S	Ρ								
ARC110	I PC	Basic Design & Visual Arts	2	6	-	50	50	100	8	5 Hrs.			
ARC1102	2 PC	Architectural Drawing & Graphics-I	2	3	-	50	50	100	5	5 Hrs.			
ARC1103	B PC	Introduction to Architecture, Art & Culture	3	-	-	30	70	100	3	3 Hrs.			
ARC1104	4 BS&AE	Building Materials & Construction-I	2	3	-	50	50	100	5	3 Hrs.			
ARC1105	5 BS&AE	Structural Mechanics-I	3	-	-	30	70	100	3	3Hrs.			

ARC1106	BS&AE	Survey & Site Studies	2	-	3	50	50	100	3.5	VV
ARC1107	SEC	English (Life Skill Courses)	3	-	-	30	70	100	2	3Hrs.
ARC1108	MNC	Professional Ethics and Universal Human values	2	-	-	-	-	-	NC	-
		Sub-Total	19	12	3	290	410	700	29.5	
1/5 B.AF	RCH 2 nd	SEMESTER								
ARC1201	PC	Architectural Design-I	2	6	-	50	50	100	8	5 Hrs
ARC1202	PC	Architectural Drawing &								
		Graphics-II	2	3	-	50	50	100	5	5 Hrs
ARC1203	PC	History of Architecture – I	3	-	-	30	70	100	3	3 Hrs.
ARC1204	PC	Carpentry and Model Making								
		Workshop	2	-	2	50	50	100	3	VV
ARC1205	BS&AE	Building Materials- &								
		Construction-II	2	3	-	50	50	100	5	3 Hrs.
ARC1206	BS &AE	Structural Mechanics-II	3	-	-	30	70	100	3	3 Hrs.
ARC1207	SEC	English Language Lab								
		(Life Skill Courses)	—	—	2	50	50	100	2	VV
		Sub-Total	14	12	3	310	390	700	29	
L-	Lectures	s S [.]	- Stu	udio			P- Pra	actical/	Works	shop
EE/EJ : E	nd Exam	/External Jury IA: Intern	al A	sse	ssm	nent	V	V: Viva	a-Voce	
	C	Category							Credi	ts
PC – Prof	essional					35				
BS&AE – Basic Sciences and AppliedEngg.									19.5	
Skill Enha	ancemen	t Courses / Life Skill Course	s						4	
Mandator	VAICTE	Non Credit Course							0	
Total Cro	dite of 1	et Voor							58 5	
		31 1 601							50.5	,

2/5 B.ARCH 1st SEMESTER

Course code	Category	Course Title	Ho	Hours per week		Hours per IA week		EE/EJ Total Credits Marks			Exam (Hrs.)
			L	S	Ρ						
ARC2101	PC	Architecture Design-II	2	6	-	50	50	100	8	10 Hrs.	
ARC2102	PC	Design Case study									
		documentation	2	-	-	50	—	50	2	IVV	
ARC2103	PC	History of Architecture-II	3	-	-	30	70	100	3	3Hrs.	
ARC2104	BS&AE	Building Materials &									
		Construction-III	2	3	-	50	50	100	5	3Hrs	
ARC2105	BS&AE	Building Services-I (Water									
		supply & Sanitary Engg.)	3	-	-	30	70	100	3	3Hrs.	
ARC2106	BS&AE	Climatology-I	3	-	-	30	70	100	3	3Hrs.	
ARC2107	BS&AE	Structural Mechanics-III	3	-	-	30	70	100	3	3Hrs.	

ARC2108 SEC	Computer Applications-I								
	(Skill advanced course)	2	—	2	50	50	100	3	E VV
ARC2109 MNC	NCC, NSS, NSO	—	—	2	_	—	—	_	—
	Sub-Total	20	9	43	210	430	750	30	
2/5 B.ARCH 2nd	SEMESTER								
ARC2201 PC	Architectural Design-III	2	6	-	50	50	100	8	10 Hrs
ARC2202 PC	History of Architecture-III	3	-	-	30	70	100	3	3 Hrs
ARC2203 BS&AE	Building Materials &								
	Construction-IV	2	3	-	50	50	100	5	3 Hrs.
ARC2204 BS&AE	Building Services-II (Acoustics)	3	-	-	30	70	100	3	3 Hrs.
ARC2205 BS&AE	Climatology-II	3	-	-	30	70	100	3	3 Hrs.
ARC2206 BS&AE	Design of Structures-I	3	-	-	30	70	100	3	3 Hrs.
ARC2207 SEC	Computer Language Program	_							
	Python Programming	3	-	-	30	70	100	3	3 Hrs.
ARC2208 SEC	Computer Language Program	-							
	Python (LAB)	-	-	3	50	50	100	1.5	VV
ARC2209 MNC	Indian Traditional Knowledge	2	_	—	-	_	_	NC	_
	Sub-Total	21	9	3	300	500	800	29.5	

Summer Internship 8 weeks / Community Service Project Summer Internship 8 weeks: Every student must complete a mandatory 8-week Summer Internship at any local Architectural firm (Chief Architect of the firm shall have at least 2 years of professional experience) during the summer vacation, and the completion certificate along with portfolio must be submitted in the department at the beginning of the 3rd year of the 1st Semester for oral presentation by the student and evaluation through the departmental committee for awarding a credit.

L- Lectures	S- Studio	P- Practical/ Workshop
EE/EJ : End Exam / External Jury	IA: Internal Assessment	VV: Viva-Voce
Category		Credits
PC – Professional Core		24
BS&AE - Basic Sciences and App	olied Engg.	28
Skill Enhancement Courses / Skill	advanced course*	7.5
Mandatory AICTE Non Credit Cour	se	0
Total Credits of 2nd Year		58.5

3/5 B.ARCH 1st SEMESTER

Course code	Category	Course Title	Hours per week		Hours p weeł		Hours per week		Hours per week		Hours per week		IA	EE/EJ	Total C Marks	Credits	Exam (Hrs.)
			L	S	W												
ARC310	1 PC	Architecture Design-IV	2	6	-	50	50	100	8	VV							
ARC3102	2 PC	Specification, Estimation & Costing	3	-	-	30	70	100	3	3Hrs.							
ARC3103	3 PC	^Landscape Design & Site Planning	3	-	-	30	70	100	3	3Hrs.							

	Sub-Total	21	9		250	500	750	30	
Personality Develop course suggested b	ment or any mandatory y AICTE	2	_			Se	elf-Lear	ning	
Summer Internship & second year (to be /Community Service	3 Weeks (Mandatory) after evaluated during V semester) e Project.	_	_	_	_	50	50	2	VV
ARC3107 *OE-I	*Open Elective-I	3	—	_	30	70	100	3	3Hrs.
ARC3106 BS&AE	Design of Structures- II	3	-	-	30	70	100	3	3Hrs.
ARC3105 BS&AE	Building Services-III (Electrical and HVAC Services)	3	-	-	30	70	100	3	3 Hrs.
ARC3104 BS&AE	Building Materials & Construction-V	2	3	-	50	50	100	5	3 Hrs.

* **Open Electives** - Student shall choose an open Elective from the list of courses offered by the department in such a manner that he/she has not studied the same course in any form during the Programme. (Or) The student may be allowed (with prior permission from HoD) to select course (Minimum of 8 Weeks) from NPTEL/ SWAYAM platform other than the basic courses of the programme and submission of pass certificate at the end of the semester is mandatory for completion of the semester.

^^Community Service Project like botanical survey and documentation should be an integral part of the Landscape Design as an assignment.

3/5 B.ARCH 2nd SEMESTER

Course	Category	Course Title	Ho	ours	per k	IA	EE/E、	l Total Marks	Credit	ts Exam (Hrs.)
			L	S	W			marite		()
ARC2101	PC	Architecture Design - II	2	6	-	50	50	100	8	10 Hrs.
ARC3201	PC	Architectural Design - V	2	6	-	50	50	100	8	VV
ARC3202	PC PC	Working Drawings-I	3	-	2	50	50	100	4	VV
ARC3203	B PC	Human Settlements &								
		Town Planning	3	-	-	30	70	100	3	3Hrs.
ARC3204	PC	Building Repairs and								
		Maintenance Services	3	—		30	70	100	3	3Hrs
ARC3205	5 BS&AE	Design of Structures- III	3	-	-	30	70	100	3	3Hrs.
ARC3206	BS &AE	Environmental Science for								
		Architecture	3	-	-	30	70	100	3	3 Hrs.
ARC3207	' SEC	Computer Applications-II								
		(Skill advanced course)	2	—	2	50	50	100	3	VV
ARC3208	3 *OE-II	*Open Elective-II	3	—	—	30	70	100	3	3Hrs.
Constituti	on of India	or any mandatory course								
suggeste	d by AICTE	Ξ2	_	—		Se	lf-Learni	ng		
Constitu	tion of Ind	ia or any mandatory course								
suggeste	d by AICTE	E2	—	—S	elf-L	earning	I			
		Sub-Total	23	9	4	300	500	800	30	

Summer Internship 8 weeks: Every student must complete a **mandatory** 8-week Summer Internship at any local architectural firm (chief architect of the firm shall have at least 4 years of professional experience) during the summer vacation, and the completion certificate along with portfolio must be submitted in the department at the beginning of the 4th year of the 1st Semester for oral presentation by the student and evaluation through the departmental committee.

*Open Electives - Student shall choose an open Elective from the list of courses offered by the department in such a manner that he/she has not studied the same course in any form during the Programme. (Or) The student may be allowed (with prior permission from HoD) to select course (Minimum of 8 Weeks) from NPTEL/ SWAYAM platform other than the basic courses of the programme and submission of pass certificate at the end of the semester is mandatory for completion of the semester

Category	Credits
PC – Professional Core 32	
BS&AE – Basic Sciences and Applied Engg.	17
Skill Enhancement Courses / Skill advanced course*	3
Open Elective Course	6
Summer Internship	2
Mandatory AICTE Non-Credit Course	0
Total Credits of 3rd Year	60

4/5 B. ARCH1st SEMESTER

Course code	Category	Course Title	Ho	ours wee	per ek	IA	EE/EJ	Total Ci Marks	redits	Exam (Hrs.)
			L	S	Ρ					
ARC2101	PC	Architecture Design-II	2	6	-	50	50	100	8	10 Hrs.
ARC4101	PC	*Architecture Design-VI	2	7	_	50	50	100	9	VV
ARC4102	PC	Working Drawings-II	2	_	4	50	50	100	5	VV
ARC4103	PC	Urban Design	3	_	_	30	70	100	3	3 Hrs.
ARC4104	PC	Structural Design for Architectural Project	3	_	_	50	50	100	3	VV
ARC4105	BS&AE	Building Services-IV								
		(Advanced Services)	3	_	_	30	70	100	3	3 Hrs.
ARC4106	PE	Professional Elective-I	3	_	_	30	70	100	3	3Hrs.
		a) Architectural Conservation								
		b) Barrier free Architecture								
ARC4107	SEC	Soft Skills								
		(Skill advanced course)	2		-	50	50	100	2	VV
Summer	Internship 8	8 Weeks (Mandatory) after								
second ye	ear (to be)	evaluated during V semester)	—	—	—	—	50	50	2	VV
		Sub-Total	19	6	3	290	460	750	30	

*Community Service Projectshould be an integral part of the Architecture Design-VI Major Design Project.

4/5 B. ARCH 2nd SEMESTER

Course code	Category	Course Title	Hours per week LSP	IA	EE/EJ	Total Cr Marks	edits	Exam (Hrs.)
ARC4201	PAECC	Practical Training		50	50	100	22	VV
		Sub-Total		50	50	100	22	_

Note: 24 weeks of Practical Training in an Architectural FirmEvery student must complete a mandatory 24 weeks Internship at any architectural firm (Chief Architect of the firm shall have at least 6 years of professional experience- from the date of availing the CoA No.).

Category	Credits
PC – Professional Core	20
BS&AE – Basic Sciences and Applied Engg.	3
Skill Enhancement Courses / Skill advanced course*	2
Professional Elective Course	3
Professional ability Enhancement Compulsory Course / Job Oriented Course	e 22
Summer Internship	2
Total Credits of 4 th Year	52

5/5 B.ARCH 1st SEMESTER

Course code	Category	Course Title	Hours per IA week		IA	EE/EJ Total Credits Marks			Exam (Hrs.)	
			L	S	W					
ARC5101	PC	Architecture Design-VII	2	6	_	50	50	100	10	VV
ARC5102	PC	Housing	3	—	_	30	70	100	3	3 Hrs.
ARC5103	PC	Architectural Design Thesis-I	2	3	_	50	50	100	5	VV
ARC5104	PAECC	Project Management	3	_	_	30	70	100	3	3 Hrs.
ARC5105	PE	Professional Elective - II	3	_		30	70	100	3	3Hrs
		a) Disaster Resistant Buildings and Management								
		 b) Appropriate Building Technologies 								
ARC5106	PE	Professional Elective - III a) Interior Design	3	_		30	70	100	3	3Hrs
		b) Theory of Design								
ARC5107	OE-III	*Open Elective-III	3	—	_	30	70	100	3	3Hrs
		Sub-Total	19	96		250	4560	700	30	

*Open Electives - Student shall choose an open Elective from the list of courses offered by the department in such a manner that he/she has not studied the same course in any form during the Programme. (Or) The student may be allowed to select course (Minimum of 8 Weeks) from NPTEL/ SWAYAM platform other than the basic courses of the programme and submission of pass certificate at the end of the semester is mandatory for completion of the semester

5/5 B.ARCH 2nd SEMESTER

Cours code	e Category	Course Title	H	ours we	s per ek	IA	EE/EJ	Total C Marks	redits	Exam (Hrs.)
			L	5	VV					
ARC52	201 PC	Architecture Design Thesis-II Professional Practice 8	3	15) —	50	50	100	18	VV
AILOJZ	.02 1 ALOO	Legislation	3	_	_	30	70	100	3	3Hrs
ARC52	203 PE	Professional Elective - IV	3	_	_	30	70	100	3	3Hrs
		 a) Green Buildings & Rating Systems, ECBC & Bldg. bye-laws b) Sustainable Cities and 								
		Communities								
ARC52	204 PE	Professional Elective - V a) Traffic and Transportation Planning	3	_	_	30	70	100	3	3Hrs
		b) Hospital Systems & Servic	es			20	70	100	2	21.140
ARUSZ	US UE-IV	Open Elective-IV	3	_	_	30	70	100	3	JUIS
		Sub-Total	15	15	;	170	330	500	30	
Categ	ory	10							Crea	dits
PC – Professional Core 36))				
Professional Elective Course 12										
Open Elective Course 6										
Total	Credits 5th	rear							60)
S.No. Category No. of Courses offer						ffered				
							i	n the Who	ole Pro	ogram
1	Open Electi	ives					4 N	los. (Oth	er tha	n Basic
courses in the Program					ramme)					
2	2 Professional Electives					5 Nos.				
3	3 Life Skill Courses / Skill Oriented Courses 2 Nos.									
4	Skill advanced Courses				3 NOS.					
5	5 Summer Internship 8 weeks Each (Mandatory Internships)			2 NOS. (1 Otal 4 Months)						
0 7	Practical framing internship - 24 weeks(mandatory internship) - 1 No. (6 Months Duration) Skill Enhancement Courses Ales									
0	Skill Ennancement Courses			TINUS.						
0	Community Service Project			Z NOS.						
9 10	9 Environmental Science for Architecture 1 No. 10 Mondatary AICTE Nan, Cradit Courses 1 No.									
TU Manualory AIGTE NON- Great Courses 4 NOS.										
List of	Professional	Electives offered - 10 Nos.		I	_ist o	f Oper	Electiv	es offere	d – 12	Nos.
1. Arch	itectural Con	servation	1. IN	1E/ (OB –	Indust	rial Man	agement	Entre	preneur

Ship/Organizational Behavior

2. Barrier free Architecture	2. Sustainable Architecture
3. Disaster Resistant Buildings and Management	3. Product Design
4. Appropriate Building Technologies	4. Architectural Pedagogy
5. Interior Design	5. Management & Marketing Skills
6. Theory of Design	6. Futuristic Architecture
7. Green Buildings & Rating Systems, ECBC & Bldg. bye-laws	7. Architectural Journalism
8. Sustainable Cities and Communities	8. Bio-Climatic Architecture
9. Traffic and Transportation Planning	9. Theory of Environmental Planning
10. Hospital Systems & Services	10. Environmental Impact Assessment
	11. Remote Sensing & GIS
	12. Advanced Surveying & Geometric Techniques

2022-23

S.No	Category	Code	No. of Credits	% of Credits	Suggested Breakup % Credits by CoA, 2020 Guidelines
1	Professional Core	PC	147	50.69	50
2	Basic Sciences and Applied Engineering	BS&AE	67.5	23.28	20
3	Professional Elective	PE	15	5.17	10
4	Open Elective	OE	12	4.14	5
5	Professional ability Enhancement Compulsory Course	PAECC	32	11.03	10
6	Skill Enhancement Courses / Life Skill Courses / Skill Advanced Courses /				
	Skill Oriented Courses	SEC	16.5	5.69	5
		Total	290	100	100

Bachelor of Architecture 5-year Undergraduate Degree Course

(With Effective from 2022-2023 Admitted Batch and onwards)

SYLLABUS

Induction Training

Students entering an institution have diverse thoughts, backgrounds and preparations. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

In this context, in the beginning of the first semester a three-week long induction program is proposed for the students. Regular classes would start after the completion of the induction program. Its purpose is to make the students feel comfortable in their new environment, open them up, set a healthy daily routine, create bonding in the batch as well as between faculty and stu-

dents, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature. Introduction of faculty members, discussion with faculty members, visits to various spaces in the department/ school, such as climatology lab, computer center, material museum, construction yard, students' works exhibition, etc. The Induction Program is also used to rectify some critical lacuna, like deficiency in comprehension of English language by many students. The following are the activities under the induction program in which the student would be fully engaged throughout the day for the entire duration of the program

Physical Activity

This would involve a daily routine of physical activity with games and sports. It would start with all students coming to the field for light physical exercise or yoga in the morning. There would also be games in the evening or at other suitable times according to the local climate. These would help develop team work. Each student should pick one game and learn it for three weeks. There could also be gardening or other suitably designed activity where labour yields fruits from nature.

Creative Arts

Every student would choose one skill related to the arts whether visual arts or performing arts. Examples are painting, sculpture, pottery, music, dance etc. The student would pursue it every day for the duration of the program. These would allow for creative expression. It would develop a sense of aesthetics and also enhance creativity which would, hopefully, flow into architectural design later.

Universal Human Values

It gets the student to explore oneself and allows one to experience the joy of learning, stand up to peer pressure, take decisions with courage, be aware of relationships with colleagues and supporting staff in the hostel and department, be sensitive to others, etc. Need for character building has been underlined earlier. A module in Universal Human Values provides the base. Methodology of teaching this content is extremely important. It must not be through do's and don'ts, but by getting students to explore and think and by engaging them in a dialogue. It is best learnt through group discussions and real life activities rather than lecturing. The role of group discussions, however, with clarity of thought of the teachers cannot be over emphasized. It is essential for giving exposure, guiding thoughts, and realizing values. The teachers must be from within the institute and also from outside of the Institute. Discussions would be conducted in small groups of about 20 students with a faculty mentor each. It is to open thinking towards the self. Universal Human Values discussions and activities could even continue for rest of the semester, and not stop with the induction program.

Besides drawing the attention of the student to larger issues of life, it would build relationships between teachers and students which last for their entire 5-year stay and possibly beyond.

Lectures by Eminent People

Lectures by eminent people, say, once a week would give the students exposure to people who are socially active or are in public life. They could be from any field well known for their integrity.

Visits to Local Area

A couple of visits to the landmarks of the city, or a hospital or orphanage could be organized. This would familiarize the students with their city as well as expose them to the world of under privileged.

Familiarization

The students should be told about different methods of teaching and learning being used in the institute and how it is different as compared to school

education or coaching. They should also be shown the laboratories, workshops & other facilities and also be introduced to the faculty, administrative staff etc. and whom they should approach for a specific need or issue. They should be told about what becoming an architect means and the importance of the role of architect in society, and in nation building.

FIRST SEMESTER

ARC1101 : BASIC DESIGN AND VISUAL ARTS

Course Objective:

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

* The Course provides with knowledge of the principles of design and design elements.

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

Course Outcome:

* The student will gain an understanding into the fundamental issues in architectural design and develop the skill to create architectural solutions for simple problems

SYLLABUS

(Freehand drawing)

Introduction to fundamentals of drawings and its practice. Free hand line sketching and drawing of natural and man-made scenes. Study of shades and shadows. Object drawing, simple, natural and geometric forms. Outdoor Sketching of Historic or new built up structures of Architectural importance using different mediums.

(Elements of Design)

Introduction to design: Meaning of design, importance of design. Fundamental elements of design and their definitions-point, line, shape, form, space, texture, colour. Study historic examples.

(Principles of design)

Introduction to the principles of design – Axis , Symmetry , Balance, Contrast, Focus, Emphasis, Hierarchy, Rhythm, Harmony, Datum, Unity, Scale & Proportion, etc. Study of Historic Examples. Application of the Principles in compositions.

(Colour)

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

(Principles of Perception)

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

(Form and space)

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

(Visual arts)

Present day trends in visual arts and architecture.

Note:

Sketches and Models to understand basic design principles, elements and their expressive qualities. Creative Exercises of 2D to 3D compositions. Exercise related to positive and negative spaces; Mural, ideogram, 3D Abstract models

Assessment:

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for 20M, and 30 Marks for continuous assessment (portfolio) i.e. total marks of (20M+30M)=50M.

TEXT BOOKS:

1) Form Space & Order by Francis, D.K.Ching REFERENCES:

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

ARC1102 : ARCHITECTURAL DRAWING & GRAPHICS -I

Course Objective:

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

Course Outcome:

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

SYLLABUS

(Introduction to Drawing)

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

(Simple Geometrical Construction)

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

(Projections and section of Solids)

Solids of revolution, solids in simple position, Axis perpendicular to a plane, axis parallel to both planes, axis inclined to both planes etc. Section planes, true shape of section, Sections of Prisms, Pyramids, Cylinders, Cones, Spheres etc.

(Advanced geometry)

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

(Architectural Symbols)

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

(Measuring and Drawing to Scale)

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

Assessment:

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for 20M, and 30 Marks for continuous assessment (portfolio) i.e. total marks of (20M+30M)=50M

TEXT BOOKS:

1) "Engineering Drawing" – Plane and Solid Geometry by N.D.Bhat, V.M.Panchal

2) A text book of Geometrical Drawing by P.S.gill

3) Architectural Graphics by Francis D K Ching

REFERENCES:

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

ARC1103: INTRODUCTION TO ARCHITECTURE, ART & CULTURE

Course Objective:

The course creates awareness about fundamental ideas, methodologies and terminologies in art and architecture in different parts of the world, shedding light on what meanings they communicated, and how they are important to our contemporary society.

Course Outcome:

The Course is intended to provide brief background knowledge of Culture and Art in different parts of the world. It is also intended to serve as an introduction to other more advanced courses within the discipline of art history.

SYLLABUS

(Art and Architecture)

Introduction to Art, Culture, Society, Civilization and Architecture.

(Shelter Forms)

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

(Architecture Movements)

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

(Indian Architecture)

Introduction to Indian Art and Architecture.

(Western Architecture)

Introduction to Western Art and Architecture.

(Ornamentation)

Study of ornament in Architectural Design, different types of ornamentation in buildings and study of historic examples.

Assessment:

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

TEXT BOOKS:

1) G. K. Hiraskar- The Great Ages of World Architecture.

REFERENCES:

1) Indian Art a Concise History by Craven, C. Roy.

2), Pattern Language, by Christopher Alexander New York: Oxford University Press.

3) Redefining Designing: From to Experience by Thomas Mitchell.

4) A history of architecture by Sir Banister Fletcher

5) Introduction to architecture by Stephen Gardner.

6) A chronology of western architecture by Doreen Yarwood.

7) The great ages of architecture by Bodo Lichy.

8) World architecture – an illustrated history by Trewin Copplistone and others

ARC1104 : BUILDING MATERIALS & CONSTRUCTION-I

Course Objective:

* The objective of the subject is to enable students to understand the building materials and basic structural systems, their properties and applications, and

* Their intrinsic relationship to structural systems and environmental performance.

* Application of Basic Building Materials in simple situations

Course Outcome:

* With the successful completion of the course student should have capability to:

* Identify and differentiate types of bricks, stones etc.

* Type of foundation and load bearing masonry

* Principles behind lintels and arches and their application

* Analyze a design decision situation and come up with correct material choice and construction specification

SYLLABUS

(BUILDING MATERIALS)

Study of basic building materials like brick, stone, cement, lime, sand and mortar with respect to their classification, composition and general idea about their chemical properties, physical properties, structural strength, aesthetic qualities, manufacturing processes. Introduction to building materials as described in Indian architectural texts. Emphasis should be on developing understanding about making choice of appropriate building materials in a given situation.

(BRICK CONSTRUCTION)

Elementary construction methods explaining basic principles of load bearing structures. Types of bricks, bats and closers etc. English and Flemish brick bonds, stopped ends, quoins, piers, junctions, jambs for various thicknesses. Jointing, pointing and copings.

(STONE WALLS)

Stone masonry, dressing of stones. Types of rubble masonry walls like Random Rubble, Coursed Rubble, Ashlar, etc., stone coping, jointing and pointing.

(FOUNDATION AND PLINTH)

Need for foundations, preliminary design criteria. Details of brick and stone footings for load bearing walls of various thicknesses. Plinth filling details, Damp Proof Course, timbering to trenches.

(ARCHESAND CORBELLING)

Concept of span and its application in creating openings in masonry walls with lintels and arches. Structural difference in the behaviour of lintel and arches. Elementary principles of arch construction, terminology and types of lintels, corbelling and arches with their materials for construction.

TEXT BOOKS:

- 1) W.B. Mc Kay, Building Construction Volume 1 to 4
- 2) R. Barry, Building Construction Volume 1 to 5
- 3) Francis Ching D.K., Building Construction Illustrated
- 4) S.K. Sharma, Civil Engineering construction Materials
- 5) Sushil Kumar, Building Construction

ARC1105: STRUCTURAL MECHANICS-I

Course Objective:

* To study the equilibrium of rigid bodies in static equilibrium and type of forces induced in the members of a truss. Study of basic types of internal forces (stresses) acting in a body and the elastic properties of a material.

* Calculate the cross-sectional properties of standard and built up shapes.

Course Outcome:

* The student will be in a position to calculate the forces acting on a rigid body in equilibrium and the nature of the force in the members of a truss.

* To determine the elastic properties of a material and the nature of internal force (stresses) acting in the body and able to calculate the cross-sectional properties of standard and built up shapes.

SYLLABUS

(INTRODUCTION TO STATICS AND FORCES)

Introduction to Statics, Basic Concepts, Scalars and Vectors, Units, Force Systems, External and Internal Effects, Principle Of Transmissibility, Action and Reaction, Free body diagram, Force Classification, Concurrent Forces: Rectangular Components, Moment of a force, Varignon's Theorem. Parallel forces in a plane: Couple, Force-Couple Systems, Transformation of couple; Resolution of force into force and couple. Resultants of Parallel and Concurrent force systems in a Plane.

(EQUILIBRIUM OF GENERAL CASE OF FORCES IN A PLANE)

Composition of Forces in A Plane, Resultant and Line of Action, Equilibrium of Forces in A Plane, Categories of Equilibrium, Two and Three Force Members. Plane Trusses: Introduction, Types of Plane Trusses, Method of Joints, Internal and External Redundancy, Method of Sections.

(CENTRE OF GRAVITY AND MOMENT OF INERTIA)

Centroids and Centre of Gravity: Centre of gravity of parallel forces in a plane, Centroid and Centre of Gravity of composite bodies, Theorems of Pappus (or Guldinus), Moment of Inertia-Definition, Parallel Axis Theorem, Second Moments of Areas by integration, Moment of Inertia of composite bodies, Polar moment of inertia and Section modulus.

(STRESSES AND STRAINS)

Simple stresses and strains, elasticity, stress, strain, property of elasticity, Hooke's Law, Stress-Strain diagram for mild steel, types of stresses, elastic limit, modulus of elasticity, Stresses due to change in temperature, Elastic constants, linear strain, lateral strain, Poisson's ratio, volumetric strain, relation between Young's Modulus, modulus of Rigidity, and Bulk modulus.

(TORSION OF SHAFTS)

Torsion of solid and hollow circular shafts – introduction to the basic equation $T = \underline{fs} = \underline{Ge}$

Derivation and Application of the basic equation, Power

J R

transmitted.

(SHEAR FORCE AND BENDING MOMENT)

Beams: Types of beams, Types of supports, Types of loads, Shear force and bending moment, Sign convention, Shear force and bending moment diagrams for simply supported beam, cantilever beam and overhanging beams for various loads, Relation between intensity of loading, shear force and bending moment at a section.

Assessment:

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M) = 30M.

TEXT BOOKS:

1) Analysis of Structures - Analysis, Design and Details of Structures (Vol.1) by V.N. Vazirani and M.M. Ratwani

2) Engineering Mechanics by S.P.Timoshenko & D.H.Young

3) Mechanics of solids by S.S. Bhavikatti

REFERENCES:

1) Elements of strength of materials by S.P.Timoshenko & D.H.Young

2) Applied Mechanics by S.Ramamrutham.

ARC1106: SURVEY & SITE STUDIES

Course Objective:

* To develop the knowledge and skills related to surveying and understand working principles of survey instruments and types of errors, obstacles encountered in field and calculations.

Course Outcome:

* The student will be able to learn about basics involved in different types of surveying instruments like tape, compass, levelling and develop surveying skills in measuring of distances, angles, and levelling and to apply error adjustment to the recorded reading to get an accurate surveying output

SYLLABUS

(Basic principles and chain surveying)

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

(Plane table surveying)

Plane table surveying: Introduction-Advantages, Accessories-Working operations such as fixing the table to tripod, leveling-centering-orientation by back-sighting. Methods of plane tabling-Plane table traversing- two point and three point problems, Errors in plane tabling, exercise in preparation of base map of small areas.

(Compass Survey)

Introduction to compass survey, Definitions of Bearing, Designation of bearing – Whole circle bearing(W.C.B) & Reduced bearing(R.B), Conversion of bearings from one systems to the other, Calculation of angles for bearings

and vice versa, Magnetic compass, Prismatic compass, Magnetic dip, Temporary and permanent adjustments of compass, Magnetic Declination, Local attraction, Precautions in using compass, Errors in compass survey.

(Levelling)

Introduction, instruments used, Definition of Back Sight(BS), Intermediate Sight(IS), Fore Sight(FS), Height of Instrument(HI), Turning Point(TP), Booking and reduction of levels, classification of levelling, Uses and adjustments of dumpy level, Temporary and permanent adjustments of a dumpy level, Differential levelling, Profile leveling, Longitudinal section (L.S), Cross section leveling (C.S), Reciprocal levelling. Height of Instrument methods, Rise and fall method, Checks, Problems in leveling, Errors in levelling. Contouring: Definitions, Contour Interval, Characteristics of contours, and methods of locating contours-Direct and indirect methods-interpolation of contours-Contour Gradient-Uses of contour maps.

(Theodolite and Traverse Surveying)

Theodolite, types of theodolites, temporary adjustments, measurements of horizontal angle, method of repetition, method of reiteration, uses of theodolites, errors in theodolite or permanent adjustments of a theodolite, trigonometric levelling, elevation of top of the tower in same plane and different plane. Methods of traversing, checks in closed and open traverse, plotting methods of traverse Survey-Closing error-Balancing the traverse.

(Automated surveying (introduction only)

Introduction to Modern surveying and mapping technologies such as total Station, Photogrammetric surveying, Aerial photogrammetry, Digital maps, Digital elevation modelling (DEM), GIS, GPS, etc. Their advantages and dis-advantages, errors and limitations. Introduction to the use of total station, G.P.S through demonstrations only.

Site studies:

Site studies: Plot, site, land and regions, size, shape of sites.

Analysis of accessibility: topography, climate, landforms, surface drainage, soil, water bodies and vegetation.

Field Work:

1. Finding the distance between two points and area using chain.

2. Preparation of base map of small area and finding the area using Plane table surveying or Chain surveying

3. Profile leveling

4. Longitudinal and cross section leveling.

5. Closed traverse using Compass surveying or Theodolite.

6. Height of remote point using Theodolite.

7. Preparing Contour map of small area.

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

Assessment:

Continuous assessment will be conducted for all the field studies mentioned in the syllabi for 50 Marks as internal. Student has to submit Field book and record for external viva-voce. The student should attend a practical Exam and Viva-voce conducted by external examiner.

TEXT BOOKS:

1) Surveying –Vol.-I by B.C. Punmia, Laxmi Publishers.

2) Surveying -Vol.-II by B.C. Punmia, Laxmi Publishers.

3) Text book of Surveying by C. Venkatramaiah, Universities

ARC1107 : ENGLISH

Course Objectives

* To make students understand the explicit and implicit meanings of a text/topic;

* To give exposure to new words and phrases, and aid to use them in different contexts;

 * To apply relevant writing formats to draft essays, letters, emails and presentations; and

* To adapt oneself to a given situation and develop a functional approach to finding solutions: adaptability and problem solving.

Course Outcomes:

* Students will be able to analyse a given text and discover the various aspects related to language and literature;

* Learn the various language structures, parts of speech and figures of speech;

* Develop one's reading and writing abilities for enhanced communication; and

 * Learn to apply the topics in real-life situations for creative and critical use.

SYLLABUS

On the conduct of life: William Hazlitt Life skills: Values and Ethics

If: Rudyard Kipling

The Brook: Alfred Tennyson

Life skills: Self-Improvement

How I Became a Public Speaker. George Bernard Shaw

The Death Trap: Saki

Life skills: Time Management

On saving Time: Seneca

Chindu Yellama

Life skills: Innovation

Muhammad Yunus

Politics and the English Language: George Orwell

Life skills: Motivation

Dancer with a White Parasol: Ranjana Dave

Grammar: Prepositions – Articles – Noun-Pronoun Agreement, Subject-Verb Agreement – Misplaced Modifiers – Clichés, Redundancies.

Vocabulary: Introduction to Word Formation – Root Words from other Languages – Prefixes and Suffixes – Synonyms, Antonyms – Common Abbreviations

Writing: Clauses and Sentences – Punctuation – Principals of Good Writing – Essay Writing – Writing a Summary

Writing: Essay Writing

Life skills: Innovation

Muhammad Yunus

Prescribed Textbook:

Language and Life: A Skills Approach Board of Editors, Orient Black Swan Publishers, India. 2018.

TEXTBOOK:

 Language and Life: A Skills Approach Board of Editors, Orient Blackswan Publishers, India. 2018.

REFERENCES:

1) Practical English Usage, Michael Swan. OUP. 1995.

2) Remedial English Grammar, F.T. Wood. Macmillan.2007

3) On Writing Well, William Zinsser. Harper Resource Book. 2001

4) Study Writing, Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.

5) Communication Skills, Sanjay Kumar and PushpLata. Oxford University Press. 2011.

6) Exercises in Spoken English, Parts. I-III. CIEFL, Hyderabad. Oxford University Press.

PROFESSIONAL ETHICAAND UNIVERSAL HUMAN VALUES

Common for all B.Tech, B.Arch. and B.Tech+ M.Tech Integrated courses (W.e.f. 2022-23)

Course Objectives:

 \ast To recognize the moral values that should guide the Engineering Profession.

* To resolve moral issues concerning one's profession.

 * To develop and exhibit a set of moral beliefs and attitudes that engineers should inculcate.

* To inculcate social values and morality in one's life.

 * To develop awareness about Professional/ Engineering Ethics and Human Values.

Learning Outcomes:

Students will be able to:

* Apply the conceptual understanding of ethics and values into everyday practice.

* Understand the importance of moral awareness and reasoning in life.

* Acquire professional and moral etiquette that an engineer requires.

* Develop the acumen for self-awareness and self- development.

* Develop cultural tolerance and integrity.

* Tackle real- life challenges with empathy.

CONTENTS

Unit-I: HUMAN VALUES : Values – Respect – Caring – Sharing – Honesty – Courage – Self confidence – Communal Harmony Morals – Virtues.

Unit-II: PROFESSIONAL VALUES : Integrity – Discipline – Valuing Time – Cooperation – Commitment – Code of conduct – Challenges in the workplace

Unit-III: PROFESSIONAL ETHICS: Overview – Engineering ethics – Moral issues – Profession – Models of professional roles - Responsibility

Unit-IV: RESPONSIBILITIES AND RIGHTS : Safety and risk- Collegiality and loyalty – Confidentiality – Occupational crime – human rights – Employee rights –Intellectual property rights

Unit-V: GOBAL ISSUES : Globalization – Environmental ethics –Computer ethics – Code of ethics – Multinational corporations- engineers as advisors in Planning and Policy making

Suggested Textbook:

R.S. Nagarazan. A Textbook on Professional Ethics and Human Values. New Age International Publishers. 2006. Reference Books:

1) Premvir Kapoor. Professional Ethics and human values. Khanna Publishing House. 2019.

2) B.S. Raghavan. Human Values and Professional Ethics. S. Chand Publications. 2012.

3) R.R. Gaur & Others. A Foundation Course in Human Values and Proff. Ethics. ExcelBooks.2009.

4) A.N. Tripathi. Human Values, New Age International (P) Limited.2009.

5) R. Subramanian. Professional Ethics. OUP India. 2013.

SECOND SEMESTER

ARC1201 : ARCHITECTURAL DESIGN-I

Course objectives:

* To study and preparation of measured drawings and design of single unit spaces with emphasis on form including the furniture layout, circulation, clearances, lighting and ventilation, etc.

Course Outcome:

* Student will understand principles of design, and develop the ability to translate abstract principles of design into architectural solutions for small problems

SYLLABUS

Organisation of form and space: Spatial relationship and spatial organisation

Circulation: Path space relationship, elements and form of circulation

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

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

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

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

Assessment:

Continuous assessment will be conducted for major (30M) and minor (20M) design problems i.e. total marks of (30M+20M) =50M REFERENCES:

1) Time Savers Standards by Joseph De Chiara & John Callender, McGraw-Hill International Edition

2) Architect's Data by Ernst Neufert, 3rd edition

3) Architects Handbook: Ready Reckoner by Charanjit Shah, Galgotia Publishing Company.

4) Architecture: Form Space & order by Francis D. K. Ching, John Wiley & Sons

ARC1202

ARCHITECTURAL DRAWING & GRAPHICS –II

Course Objective:

* The course introduces students to fundamental techniques of architectural documentation and develops the appropriate skills for visual representation by Perspective, sciography and rendering techniques.

Course Outcome:

* Students learn in developing drafting and documentation skills and understanding study of shade and shadows of different geometrical forms and improve in rendering skills to facilitate effective visual communication and architectural presentation.

SYLLABUS

(Perspective)

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

(Sciography)

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

(Rendering)

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

(Architectural Documentation)

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

Assessment

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for 20M, and 30 Marks for continuousassessment (portfolio) i.e. total marks of (20M+30M)=50M

TEXT BOOKS:

1) "Engineering Drawing" – Plane and Solid Geometry by N.D.Bhat, V.M.Panchal.

2) Architectural Graphics by Francis D K Ching. REFERENCES:

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

ARC1203 : HISTORY OF ARCHITECTURE-I

Course Objectives:

* To study development of building forms, ornamentation, structural solutions, construction methods, plans and building facade, organization in relation to aesthetic/ religious/social philosophy and environmental factors in history. The study should focus only on the general trends.

Course Outcome:

*Acquire knowledge to identify the common characteristics among the monuments of a particular style. Acquire graphic skills to present a building, analyse its elements and explain the composition. Acquire knowledge on good practices of architecture in the past.

SYLLABUS

(The Ancient Civilizations)

Architectural development in the ancient civilizations in Egypt and Mesopotamia, study of pyramids, temples, mastabas, ziggurats, etc.

(Classical Period)

Architecture in the classic Greek and roman periods, temples, agoras gateways, circuses, amphitheatres, basilicas, etc.

(Early Christianity)

Architecture in the early Christian, Byzantine.

(The Age of Church Building)

Romanesque, gothic periods in Europe and rest of the world excluding Asia.

Assessment:

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

TEXT BOOKS:

1) A History of Architecture by Sir Banister Fletcher, CBS; 20 edition (2002) REFERENCES:

1) World architecture – an illustrated history by Trewin Copplistone and others

- 2) Introduction to architecture by Stephen Gardner.
- 3) A chronology of western architecture by Doreen Yarwood
- 4) The great ages of architecture by BodoLichy
- 5) Meaning in western architecture by Christian Noberg Schulz

ARC1204 : CARPENTRY AND MODEL MAKING WORKSHOP

Course Objective:

* To Train the students in basic skills of carpentry work and to develop ability to appreciate the three dimensional.

* To prepare the students for better eye- mind- hand coordination and equip them with various model making techniques.

Course Outcome:

With the successful completion of the course student will be able to

* Review various tools and techniques for model making and design model for real life situation

SYLLABUS

(BUILDING MODELS AND CARPENTRY)

Introduction to model making and its need. Role of scale-models in design. Essentials of model making such as understanding of various tools and machines employed. Survey of various materials available for model making such as papers, mount boards, wood, plastics, films, plaster of Paris, acrylic, Styrofoam, wax, metals, glass, etc. and exploring their potential in model-making. Introduction to the use of different types of tools and different types of joints used in carpentry, Joinery details which are commonly used in timber construction.

Assessment

Three carpentry joinery models (Maximum 25 Marks) and two three dimensional building blocks models for 25M, total marks of (25M+25M) =50M REFERENCES:

1) Criss. B. Mills, Designing with Models

2) Wenninger, Spherical Models

3) John W. Mills, The Technique of Sculpture

4) Carpentry and Joinery by Peter Brett \cdot 2005, Nelson Thornes publishers

ARC1205 : BUILDING MATERIALS & CONSTRUCTION-II

Course Objective:

* The objective of the subject is to enable students to understand aspects of materials and construction components/elements for building envelop and interiors

Course Outcome:

With the successful completion of the course student should have capability to:

- * Identify and differentiate types of timber, their joinery, finishes, etc.
- * Understand the properties and uses of manmade and natural materials.
- * Understand and differentiate between various types of openings

* Analyse a design decision situation and come up with correct material choice and construction specification.

SYLLABUS

(Timber as Building Material)

Timber as a building material, its physical properties and uses, defects, seasoning, decay and preservation. Industrial timbers such as ply wood, hard board, block board, particle board, etc. with their properties and uses. Introduction to timber as described in Indian architectural treatises.

(Metals and man-made Building Materials)

Use of Iron in building industry such as pig iron, wrought iron and cast iron their properties and uses. Steel as building material, its definition, properties, Manufacture, casting, heat treatment, mechanical treatment process of steel, market forms of steel, corrosion ant treatment. Aluminium and aluminium alloys their manufacturing, properties, durability, and uses. Study of aluminium products and other non-ferrous metals such as copper, lead, zinc etc. Study of protection to non-ferrous metals and products such as anodizing, powder coating, painting, chromium plating, varnishing, melamine treatments, etc.

Paints and surface finishes their composition, properties and methods of application of different types of paints such as oil, synthetic enamels, acrylic and other plastic emulsions and formulations, interior and exterior grade paints. Cement based paints.

(Timber joinery)

Carpentry and joinery: Terms defined, mitring, ploughing, grooving, rebating, veneering, various forms of joints in wood work, such as lengthening joints, bearing joints, halving, dovetailing, housing, notching, tusk and tenon, etc. Jamb- casing. Timber joints as described in Indian architectural treatises.

(Doors)

Types of doors based on operation such as swing door, revolving door, sliding door, sliding-folding door. Details of Wooden Doors their definition of terms, types of doors such as ledged, ledged and braced, panelled, flush doors, glazed doors etc. Hinged, single and double shutters. Z section doors, pressed steel and box section doors. Rolling shutters, collapsible gates. Complete aluminium swing, Sliding, sliding folding, and revolving doors. PVC / UPC Doors.

(Windows)

Types of windows based operation and location – fixed window, Casement window, Sliding window, pivoted window, louvered window, bay window, clerestory window, corner window –gable and dormer window, etc. Details of Timber windows and ventilators such as ordinary casement, top and bottom hung, pivoted and sliding sash with fixtures, locks, hinges, fastenings, etc. Z section window, pressed steel and box section windows. Aluminium casement and sliding windows. PVC / UPC windows.

Assessment

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for 20M, and 30 Marks for continuous assessment (portfolio) i.e. total marks of (20M+30M)=50M

TEXT BOOKS:

6) W.B. Mc Kay, Building Construction Volume 1 to 4

7) R. Barry, Building Construction Volume 1 to 5

8) Francis ChingD.K., Building construction illustrated

9) S.K. Sharma, Civil Engineering construction Materials

10)Sushil Kumar, Building Construction

ARC1206: STRUCTURAL MECHANICS-II

Course Objective:

* To study the bending, shear stress distribution and combined stresses in beams for different symmetrical and unsymmetrical sections.

* The relation between slope, deflection and curvature and deflection of statically determinant beams for different loadings. Analysis of statically in determinant beams and Three-Hinged arches.

Course Outcome:

* The student will be in a position to calculate/access the variation of internal forces in a beam along the section of a beam for different cross-section; the deflection limits in a member.

* The variation of shear force and bending moment along the length of the continuous beams. The behaviour of three hinged arches subjected to different loadings.

SYLLABUS

(THEORY OF SIMPLE BENDING)

Theory of simple bending; $5\emptyset@\ddot{U} = 5\emptysetS\ddot{U} = 5\emptyset8\ddot{U}$, application of flexural formula.

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(BENDING STRESSES IN BEAMS)

Bending and Shearing stresses distribution in beams for different sections. Combined stresses (direct and bending stresses) of symmetrical and unsymmetrical sections-beams only.

(DEFLECTION OF BEAMS)

Deflection of beams (with supports at the same level): Relation between slope, deflection and curvature, Deflection of cantilever beam and simply supported beam with uniformly distributed load and point loads only using double integration method and moment area method.

(PROPPED CANTILEVER BEAMS)

Propped cantilever beams (with supports at the same level): Shear Force and Bending Moment diagrams of propped cantilever beams with uniformly distributed load and point loads only.

(ANALYSIS OF BEAMS AND FRAMES)

Analysis of beams and frames (with supports at the same level): Bending Moment (BM) & Shear Force (SF) diagrams for fixed beams and Continuous beams with uniformly distributed load and point loads only. Application of Clapeyron's theorem of three moments, Moment distribution method for continuous beams, Kani's method of analysis for structural frames (single storey single bay) including sway with uniformly distributed load and point loads only.

(THREE HINGED ARCHES)

Three Hinged Arches (with supports at the same level): determination of horizontal thrust, radial shear, normal force, and axial thrust. Shear force (SF) and bending moment (BM) diagrams for three-hinged arches.

Assessment:

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M) =30M TEXT BOOKS:

1) Analysis of Structures - Analysis, Design and Details of Structures-Vol.-1 by V.N. Vazirani and M.M. Ratwani and S.K. Duggal

2) Analysis of Structures - Theory, Design and Details of Structures-Vol.-2 by V.N. Vazirani and M.M. Ratwani and S.K.Duggal

REFERENCES:

- 1) Basic structural analysis by C.S. Reddy
- 2) Intermediate Structural analysis by C.K.Wang
- 3) Theory of Structures by S. Ramamrutham and R.Narayanan
- 4) Elements of strength of materials by S.P.Timoshenko & D.H.Young

ARC1207 : ENGLISH LANGUAGE LAB

Introduction

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

Course Objectives

* To make students recognize the sounds of English through Audio-Vi- sual aids.

* To help students build their confidence and help them to overcome their inhibitions and selfconsciousness while speaking in English. The focus shall be on fluency.

* To familiarize the students with stress and intonation and enable them to speak English effectively.

Course Outcomes

* Students will be sensitized towards recognition of unique English soundpattern and the fluency in speech will be enhanced.

* A study of the communicative items in the laboratory will help thestudents become successful in the competitive world.

* Students will be able to express themselves fluently and accurately insocial as well professional context.

* Students will be able to participate in group activities like roleplays, group discussions and debates.

(Introduction to Phonetics)

The Sounds of English (Speech sound – vowels and consonants) - Stressand Intonation - Accent and Rhythm.

(Listening Skills)

Listening for gist and specific information - listening for Note taking, summarizing and for opinions - Listening to the speeches ofeminent personalities.

(Speaking Skills)

Self-introduction - Conversation Skills (Introducing and taking leave) - Giving and asking for information - Role Play - Just A Minute (JAM) session - Telephone etiquette.

(Reading and Writing skills)

Reading Comprehension - Précis Writing - E-Mail writing - Punctuation.

441

(Presentation skills)

Verbal and non-verbal communication - Body Language - Making a Pre- sentation.

DISTRIBUTION AND WEIGHTAGE OF MARKS

The practical examinations for the English Language Lab shall be con- ducted as per the University norms prescribed for the core Engineering prac- tical sessions.

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

For the 50 sessional (Internal) marks, 30 marks shall be awarded for day-to-day performance and for completing activities in the lab manual, 20 marks to be awarded by conducting Internal Lab Test(s).

For the 50 semester- end (External) marks, 30 marks shall be awarded for written examination (dialogues, the sounds of English and stress) and 20 marks for External Examiner viva-voce. REFERENCE BOOKS:

441

1) Ashraf Rizvi. *Effective Technical Communication*. Tata McGraw HillEducation Private Limited, New Delhi.

2) Speak Well. Orient Blackswan Publishers, Hyderabad.

3) Allan Pease. Body Language. Manjul Publishing House, New Delhi.