



ROYAL GLOBAL UNIVERSITY  
— GUWAHATI —

**(ROYAL SCHOOL OF ARCHITECTURE)  
(RSA)**

SYLLABUS & COURSE STRUCTURE 2023

**BACHELOR IN ARCHITECTURE (B.ARCH)**

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<b>COURSE STRUCTURE OF B.Arch</b>														
Semester	CORE COURSE (33)	credit	Ability Enhancement Compulsory course(AECC) (9)	credit	Ability Enhancement Elective Course (AEEC) (2) (Skill Based)	credit	Elective: Discipline Specific DSE-4	credit	Minor Compulsory Courses (9)	Credit	Elective: Generic (GE) (8)	Credits	No of papers each semester	Total credits
<b>I</b>	Core1 Architectural Design I	5	Communicative English – I	1					Basic Design & Visual Arts	3			<b>9</b>	<b>26</b>
	Core2 Graphics I	4	Behavioural Science-I *	1				Theory of Structures I & Mathematical tools	3					
	Core3 Building Construction & Material I	5												
	Core4 Architecture & Culture	2												
	Core5 Workshop	4												
<b>II</b>	Core6 Architectural Design II	8	Communicative English – II	1					Theory Of Structure II	3			<b>9</b>	<b>28</b>
	Core7 Graphics II	5	Behavioural Science-II	1				Surveying and Levelling	3					
	Core8 Building Construction & Material II	4								Model Making	1			
	Core9 History of Architecture I	2												
<b>III</b>	Core10 Architectural Design III	8	Communicative English – III	1	AEEC/ SEC/-1*	2							<b>9</b>	<b>26</b>
	Core11 Building Construction & Material III	4	Environmental Science	2				Theory of Structure III	2					
	Core12 Climate Responsive Architecture	2												
	Core13 History of Architecture II	2												
	Core 14 Building Services I	3												

IV	Core15 Architectural Design IV	8	Communicative English -IV	1	AEEC/ SEC/- 2*	2	DSE 1	3	Theory of Structure IV	3			8	26				
	Core16 Building Construction & Material IV	4													Core17 History of Architecture III	2	Building Services II	3
V	Core18 Architectural Design V	8	Communicative English -V	1			DSE- 2	2			GE-1 Theory of Structures V	3	9	28				
	Core19 Building Construction & Material V	4													Core20 History of Architecture IV	2	GE-2 Open	3
	Core21 Building Services III	3																
	Core22 Theory of Art and Architecture	2																
VI	Core23 Architectural Design VI	8	Communicative English.-VI	1			DSE- 3	3			GE-1 Theory of Structures VI	3	8	27				
	Core24 Building Construction & Material VI	4																
	Core 25 Working Drawing and BIM	3													GE-2 Open	3		
	Core26 Building Services IV	2																
VII	Core27 Architectural Design VII	8				DSE- 4	3				GE-1 Advanced Construction & Services	3	8	26				
	Core28 Town Planning I	3																
	Core29 Urban Design	3													GE- 2 Open	3		
	Core30 Advanced Structures	2																
	Core 31 Research Methodology	1																

<b>VIII</b>	Core32 <b>Architectural Design VIII</b>	<b>8</b>									<b>GE-1 Conte mpora ry Archit ecture</b>	<b>3</b>	<b>8</b>	<b>26</b>
	Core 33 <b>Pre Thesis</b>	<b>2</b>									<b>GE- 2 Open</b>	<b>3</b>		
	Core 34 <b>Town Planning II</b>	<b>3</b>												
	Core 35 <b>Interior Design</b>	<b>3</b>												
	Core 36 <b>Estimation and Costing</b>	<b>2</b>												
	Core 37 <b>Construction &amp; Project Management</b>	<b>2</b>												
<b>IX</b>	Core 38 <b>Professional Training</b>	<b>26</b>											<b>1</b>	<b>26</b>
<b>X</b>	Core39 <b>Architectural Thesis</b>	<b>18</b>											<b>3</b>	<b>26</b>
	Core40 <b>Professional Practice &amp; Constitutiona l Law</b>	<b>4</b>												
	Core41 <b>Universal Design</b>	<b>4</b>												
<b>Extra credits can be earned in the 10th semester by a student (if he/she chooses to) through Mooc/Seminar/Self studies.</b>														
<b>Total</b>		<b>197</b>		<b>10</b>		<b>4</b>		<b>11</b>		<b>21</b>		<b>24</b>	<b>72</b>	<b>265</b>
<b>Note: Study Tours to be compulsory part of Architectural Design from 2nd Year - 4th Year.</b>														

	AEEC/SEC-1 (in third semester)	AEEC/SEC-2( in fourth semester)	<b>DSE-1</b>			<b>DSE-2</b>
	(Choose any one)	(Choose any one)	1. Landscape Architecture 2. Adobe Photoshop 3. Photography 4. Adobe Illustrator			1. Architectural Documentation 2. Low income Settlement Studies 3. Cultural Studies 4. Art in Architecture
<b>1</b>	Autocad	REVIT/ArchiCad/sketch up	<b>DSE -3</b>			<b>DSE 4</b>
<b>2</b>	<b>ILD-1</b>	<b>ILD-2</b>	1. Green Buildings			1. Disaster Mitigation & Management
<b>3</b>	<b>FRENCH-1</b>	<b>FRENCH-2</b>	2. Sustainable cities & Communities			2. Architectural Journalism
<b>4</b>	<b>C++</b>	<b>LATEX</b>	3. Vernacular Architecture			3. Traffic Awareness
			4.Vastu in Architecture			4. Landscape Patterns & Perception – Design Studio
<b>5</b>	<b>Any other course offered by other schools of RGU and opted by Student</b>	<b>Any other course offered by other schools of RGU and opted by Student</b>				

Name of Course: B.Arch.

Programme Structure: 1st Year

Total Credits of the Course: 265 Credits							
1st semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C111	Architectural Design I	1	0	4(S)	5	5
2	ARC132C112	Graphics I	1	0	3(S)	4	4
3	ARC132C114	Building Construction & Materials I	1	0	3(S)	4	4
4	ARC132C105	Architecture & Culture	2	0	0	2	2
5	ARC132C117	Workshop	0	0	2	2	4
Ability Enhancement Compulsory Courses (AECC)							
6	CEN982A101	Communicative English -I	1	0	0	1	1
7	BHS982A104	Behavioral Science I	1	0	0	1	1
Ability Enhancement Elective Courses (AEEC)							
	NIL						
Minor Compulsory Courses (Offered by the Department)							
8	ARC132M113	Basic Design & Visual Arts	2	1	1	4	5
9	ARC132M106	Theory of Structures I & Mathematical tools	3	0	0	3	3
Generic Elective							
	NIL						
<b>TOTAL</b>						<b>26</b>	<b>30</b>

2 <sup>nd</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C211	Architectural Design II	1	0	7(S)	8	8
2	ARC132C212	Graphics II	1	0	3(S)	4	4
3	ARC132C213	Building Construction & Materials II	1	0	3(S)	4	4
4	ARC132C204	History of Architecture-I	2	0	0	2	2
Ability Enhancement Compulsory Courses (AECC)							
5	CEN982A201	Communicative English -II	1	0	0	1	1
6	BHS982A204	Behavioral Science -II	1	0	0	1	1
Ability Enhancement Elective Courses (AEEC)							
	NIL						
Minor Compulsory Courses (Offered by the Department)							
7	ARC132M205	Theory of Structures- II	3	0	0	3	3
8	ARC132M206	Surveying & Levelling	1	0	1	2	4
9	ARC132M217	Model Making	0	0	1	1	2
Generic Elective							
	NIL						
<b>TOTAL</b>						<b>26</b>	<b>30</b>

3 <sup>rd</sup> Semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C311	Architectural Design III	1	0	7(S)	8	8
2	ARC132C312	Building Construction and Material III	1	0	3(S)	4	4
3	ARC132C303	Climate Responsive Architecture	2	0	0	2	2
4	ARC132C305	History of Architecture II	2	0	0	2	2
5	ARC132C317	Building Services I	1	0	2	3	5
Ability Enhancement Compulsory Courses (AECC)							
6	CEN982A301	Communicative English -III	1	0	0	1	1
7	EVS982A303	Environmental Science	2	0	0	2	2
Ability Enhancement Elective Courses (AEEC)							
8	ARC132S318	Computer Application I	0	0	2	2	4
Minor Compulsory Courses (Offered by the Department)							
9	ARC132M306	Theory of Structures III	2	0	0	2	2
Generic Elective							
	NIL						
<b>TOTAL</b>						<b>26</b>	<b>30</b>



4 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C411	Architectural Design IV	1	0	7(S)	8	8
2	ARC132C412	Building Construction and Material IV	1	0	3(S)	4	4
3	ARC132C404	History of Architecture III	2	0	0	2	2
Ability Enhancement Compulsory Courses (AECC)							
4	CEN982A401	Communicative English -IV	1	0	0	1	1
Ability Enhancement Elective Courses (AECC)							
5	ARC132S417	Computer Application II	0	0	2	2	4
Department Specific Elective Course (DSE)							
6	ARC132D413	DSE1 (Landscape Architecture)	2	0	1	3	4
Minor Compulsory Courses (Offered by the Department)							
7	ARC132M405	Theory of Structures IV	3	0	0	3	3
8	ARC132M416	Building Services II	2	0	1	3	4
Generic Elective							
	NIL						
<b>TOTAL</b>						<b>26</b>	<b>30</b>

5 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C511	Architectural Design V	1	0	7(S)	8	8
2	ARC132C512	Building Construction and Material V	1	0	3(S)	4	4
3	ARC132C503	History of Architecture IV	2	0	0	2	2
4	ARC132C514	Building Services III	2	0	1	3	4
5	ARC132C508	Theory of Art and Architecture	2	0	0	2	2
Ability Enhancement Compulsory Courses (AECC)							
5	CEN982A501	Communicative English -V	1	0	0	1	1
Ability Enhancement Elective Courses (AECC)							
Department Specific Elective Course (DSE)							
6	ARC132D517	DSE II (Architectural Documentation)	1	0	1	2	3
Generic Elective							
7			3	0	0	3	3
8	ARC132G505	Theory of Structures V					
9	ARC132G516	GE-2(OPEN)	3	0	0	3	3
<b>TOTAL</b>						<b>28</b>	<b>30</b>

6 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects <i>(Please Add rows, as required)</i>							
1	ARC132C611	Architectural Design VI	1	0	7(S)	8	8
2	ARC132C612	Building Construction and Material -VI	1	0	3(S)	4	4
3	ARC132C613	Working Drawing	1	1	1	3	4
4	ARC132C616	Building Services IV	2	0	0	2	2
Ability Enhancement Compulsory Courses (AECC)							
6	CEN982A601	Communicative English -VI	1	0	0	1	1
Ability Enhancement Elective Courses (AECC)							
Department Specific Elective Course (DSE)							
7	ARC132D617	Green Buildings/ Vaastu in Architecture/ Art Appreciation	1	0	2	3	5
Generic Elective							
8	ARC132G604	Theory of structures VI (GE – 1)	3	0	0	3	3
9	ARC132G616	GE-2(OPEN)	3	0	0	3	3
<b>TOTAL</b>						<b>27</b>	<b>30</b>

7 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C711	Architectural Design VII	1	0	8(S)	9	9
2	ARC132C702	Town Planning	3	0	0	3	3
3	ARC132C713	Urban Design	1	0	1	2	3
4	ARC132C704	Advanced Structures	2	0	0	2	2
5	ARC132C715	Research Methodology	1	0	0	1	1
Ability Enhancement Compulsory Courses (AECC)							
	NIL						
Ability Enhancement Elective Courses (AEEC)							
	NIL						
Department Specific Elective Course (DSE)							
6	ARC132D716	Interior Design	1	0	2	3	5
7	ARC132D717	Traffic Awareness	1	0	2	3	5
8	ARC132D718	Gender Sensitive Design Approach in Architecture	1	0	2	3	5
9	ARC132D719	Universal Design	1	0	2	3	5
10			1	0	2	3	5
Generic Elective							
11	ARC132G719	Advanced Construction & Services	1	0	2(S)	3	3
12		GE-2(OPEN)	1	1	1	3	4
<b>TOTAL</b>						<b>26</b>	<b>30</b>

8 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C811	Architectural Design VIII	1	0	9(S)	10	10
2	ARC132C812	Dissertation	1	0	3	4	7
4	ARC132C814	Professional Practice & Introduction to Constitutional Law	4	0	0	4	4
5	ARC132C805	Estimation & Costing	3	0	0	3	3
6	ARC132C806	Construction & Project Management	2	0	0	2	2
Ability Enhancement Compulsory Courses (AECC)							
	NIL						
Ability Enhancement Elective Courses (AEEC)							
	NIL						
Generic Elective							
7	ARC132G807	Contemporary Architecture	3	0	0	3	3
8		GE-2(OPEN)	1	1	1	3	4
<b>TOTAL</b>						<b>29</b>	<b>30</b>

9 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C931	Professional Training	NA	NA	NA	26	30
<b>TOTAL</b>						<b>26</b>	<b>30</b>

10 <sup>th</sup> semester B.Arch.							
Sl.No.	Subject Code	Names of subjects	L	T	P/S	C	TCP
Core Subjects							
1	ARC132C021	Architectural Thesis	0	0	18(S)	18	18
2	ARC132C002	Disaster Mitigation & Management	1	0	1	2	3
3	ARC132C003	Advance Objectives 1 - Urban Design/Landscape Architecture/Conservation Architecture/Interior Design.	0	0	3(S)	3	3
4	ARC132C004	Advance Objectives 2 – MEP (Mechanical Electrical & Plumbing Services)	0	0	3(S)	3	3

<b>TOTAL</b>				<b>26</b>	<b>27</b>
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**Scheme of Evaluation of all Architectural subjects shall be as per the norms of The Council of Architecture.**

<p><b>Theory Papers (T):</b></p> <ul style="list-style-type: none"> <li>• Continuous Evaluation: Total 50% <b>(Assignment, Class Test, Viva, Seminar, Portfolio: Any Three)</b> Mid-term examination: <b>10%</b> Attendance: 5%</li> <li>• End Term Examination: 50%</li> </ul>	<p><b>Practical Papers (P):</b></p> <ul style="list-style-type: none"> <li>• Continuous Evaluation: 100% <b>(Skill Test, Jury/ viva, Portfolio, Assignment: Any Three)</b> Attendance: 5%</li> </ul>
<p><b>Combined Theory &amp; Practical Papers (TP):(To be conducted by the concerned School)</b></p> <ul style="list-style-type: none"> <li>• <b>Total Assessment -100%</b> <ul style="list-style-type: none"> <li>❖ Continuous Evaluation: 50% Including,               <ol style="list-style-type: none"> <li>1. (Assignment, Jury, Portfolio, and Viva: Any Three)</li> <li>2. Mid-term examination: 10%</li> <li>3. Attendance: 5%</li> </ol> </li> <li>❖ End Semester Theory Examination: 50 %</li> </ul> </li> </ul>	
<p><b>Studio Papers (S): with External examiner</b></p> <ul style="list-style-type: none"> <li>• Continuous Evaluation: 50% <b>(Skill Test, Jury/ viva, Portfolio, Assignment: Any Three)</b> Attendance: 5%</li> <li>• End term examination: <b>50 %</b></li> </ul>	

**SYLLABUS (I SEMESTER)****Paper I/Subject Name: Architectural Design I****Subject Code: ARC132C111****L-T-P/S-C –1-0-4-5****Credit Units: 05****Scheme of Evaluation: (T/P/TP/S):S****Course Objective:**

- To develop an understanding of an existing space used on a regular basis through sketching, measured drawings and activity analysis.
- To develop design sense of spaces.

**Prerequisites: NIL**

## Detailed Syllabus:

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Study and mapping :</b> Study, map and analyse of a particular space used by the student regularly in terms of scale, anthropometrics, material and activity etc.eg own room, working area, classroom etc.	20
II.	<b>Analysis of space requirement:</b> Analyse the mapped space in terms of its purpose, use and requirement. Exercises relating to personal experiences to behavioural needs and translating them into documented information and redesigning that space.	20
III.	<b>Concept Development :</b> Development of a strategic design idea for the documented room to solve or accentuate a space for better usability and aesthetics	20
IV	<b>Design solution and representation:</b> Finalization of design and make presentation drawing for execution. Develop sense of material used and construction techniques.	20
TOTAL		80

**Remarks:**

Design of security cabin, Entrance gate, Memorial, Bus stop etc.

**Text Book:**

1. *Time saver standards for building types*, De Chiara, Joseph and Crosbie, Michael J.; 2<sup>nd</sup> Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**

1. Neufert, Peter; *Neufert's architects' data*; 4<sup>th</sup> Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard*; 11<sup>th</sup> Ed.; 2008; John Wiley; New York.

**Course Outcomes: The students will**

- Be able to critically analyze a space with a design eye and come up with strategic design solutions
- Develop a sense of aesthetics & understand the importance of presentation drawings.
- Develop a sense on Study and Mapping, Analysis of space requirement, Concept Development and Design Solution & Representation.

**SYLLABUS (I SEMESTER)****Paper II/Subject Name: Graphics I****Subject Code: ARC 132C112****L-T-P/S-C –1-0-3-4****Credit Units: 04****Scheme of Evaluation: (T/P/TP/S):S****Course Objective:**

- To familiarize students with drawing materials and equipment and also with freehand drawing of lines, curves, objects, human figures and vegetation, lettering and fonts.
- To orient students to the principles of plane geometry, scale etc.

**Prerequisites: NIL**

## Detailed Syllabus:

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Architectural Graphic Fundamentals–A</b> Lines, lettering and dimensioning, reduction and enlargement of drawings on different scales, representation of materials and architectural elements through architectural graphic symbols	16
II.	<b>Architectural Graphic Fundamentals –B</b> Introduction to architectural plans, elevations and sections.	16
III.	<b>Orthographic Projections:</b> Principles and projection methods of orthographic projection of straight lines, planes, solids. Development of surfaces, sections of solids and intersections of solids.	16
IV	<b>Design Tools:</b> Develop proficiency in presentation skills such as power point presentation, graphs etc.	16
TOTAL		64

**Text Book:**

1. *Engineering drawing*, Bhatt, N.D and Panchal, V. M; 1<sup>st</sup> Ed.; 2008; Charotar Publishing House; Gujrat.

**Reference Books:**

1. Ching, F.D.K; *Architectural graphics*; 6<sup>th</sup> Ed.; 2015; John Wiley; New York.
2. Smith, Matt; *Microsoft office 2010: Ultimate tips and tricks*; (e book).

**Course Outcomes: The students will**

- Develop techniques of architectural representation.
- Comprehend an object or space and represent it graphically.

- Understand the importance of presentation drawings.
- Develop a sense on various Architectural Graphic Fundamentals, Orthographic Projections and Design Tools.

<b>SYLLABUS (I SEMESTER)</b>
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<b>Paper III/Subject Name: Building Construction and Material I</b>
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<b>Subject Code: ARC 132C114</b>
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<b>L-T-P/S-C –1-0-4-5</b>
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<b>Credit Units: 05</b>
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<b>Scheme of Evaluation: (T/P/TP/S):S</b>
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**Course Objective:**

- To introduce students to the technicalities of building construction and material.
- To acquaint with various methods of construction.

**Prerequisites: NIL**

Detailed Syllabus:

Modules	Topics (if applicable) & Course Contents	Periods
I	<p><b>Introduction to basic Building Materials:</b> Sand, Aggregate, Concrete, Cement, Lime, Stone</p> <ul style="list-style-type: none"> <li>• Sand: Availability, properties.</li> <li>• Aggregate: Sources and types.</li> <li>• Concrete Blocks: Types, sizes, qualities and manufacturing process in brief.</li> <li>• Stones: Types, properties quarrying and uses of stone for aesthetic &amp; structural purpose.</li> <li>• Lime: varieties, properties and uses in building.</li> <li>• Lime Mortar: Preparation and application</li> </ul>	20
II	<p><b>Part A: Bricks and Brick Masonry:</b> Types of brick masonry and bonds (Header, Stretcher, English Bond, Flemish Bond, Rat Trap Bond etc.)</p> <p><b>Part B: Brick Construction Techniques</b> Foundations, Buttresses, Lintels and Coping</p>	20
III	<p><b>Part A: Stone Masonry:</b> Types of masonry.</p> <p><b>Part B: Stone Construction Techniques</b> Foundations, Lintels and Coping</p>	20
IV	<p><b>Part A: Brick and Stone arches</b></p>	20

	<ul style="list-style-type: none"> <li>• Construction of Brick and Stone Arches</li> </ul> <p><b>Part B: Substitute of Brick and Stone:</b></p> <ul style="list-style-type: none"> <li>• AAC Blocks</li> <li>• Fly Ash Bricks</li> <li>• Mud Blocks (Hollow and solid stabilized mud blocks)</li> <li>• Glass Blocks</li> <li>• Hollow Concrete Blocks</li> <li>• FRP (Fibre Reinforced Plastic)</li> </ul>	
TOTAL		80

**Text Book:**

1. *Building construction*; Mackay, W.B.; *Building construction*; 1<sup>st</sup> Ed.; 2005; Donhead; London.
2. *Building Construction*, Kumar S; 20<sup>th</sup> Ed.; 2010; Standard Publishers.

**Reference Books:**

1. Chudley, R; *Construction technology*; 2<sup>nd</sup> Ed.; 1987; ELBS; Harlow
2. Barry, R; *Construction of building*; 4<sup>th</sup> Ed.; 1999; East West Press; New Delhi

**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques
- Be oriented to various texture, colour of materials along with their strength and durability
- Be oriented towards Brick Construction, Stone Construction, and types of Foundations.

**SYLLABUS (I SEMESTER)**

**Paper IV/Subject Name: Architecture and Culture**

**Subject Code: ARC132C105**

**L-T-P/S-C: 2-0-0-2**

**Credit Units: 02**

**Scheme of Evaluation: (T/P/TP):T**

**Course Objective:**

- To familiarize students to the basic introduction of Culture, Society and Early River Valley civilizations.-5
- Critical appreciation of works and synoptic study of architectural characteristic features of various phases and periods.

**Prerequisites: NIL**

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Pre-Historic World: Paleolithic and Neolithic - Primitive man-Shelters, Settlements, Religious and Burial systems :</b> Oval hut, Nice, Dolmen tomb, Gallery grave, Passage grave, Houses at Catal Huyuk, Stone Henge, Menhirs etc.	08
II.	<b>River Valley Cultures and Early Civilizations: Mesopotamia, Egypt, Indus Valley, Yellow River.</b> Pyramid of Cheops, Great Ziggurats, Mastabas, Layout of Mohenjo Daro, Harappa, Lothal and Dholavira, Great Bath, Granaries etc.	08
III.	<b>Classical Buddhism:</b> a) Mauryan and early Buddhist Cultures (Design norms, standards, prescription and style), Philosophies, Viharas , Great Stupa of Sanchi, etc., b) Hinayana & Mahayana Phase.	08

IV	<b>Pre-Classical:</b> Mycenean, Persian & Etruscan Civilizations.	08
TOTAL		32

**Text Book:**

1. *History of architecture in India*, Christopher, Tadgell; 2<sup>nd</sup> Ed.; 2002; Phaidon; London
2. *The Great Ages of World Architecture*, Hiraskar G. K; 20<sup>th</sup> Ed.; 2018; Dhanpat Rai & Co

**Reference Books:**

1. Percy, Brown; *Indian architecture, Buddhist and Hindu period*; 1<sup>st</sup> Ed.; 2014; CBS; New Delhi
2. Grover, Satish; *Architecture of India: Buddhist and Hindu*; 2<sup>nd</sup> Ed.; 2010; CBS; New Delhi

**Course Outcomes: The students will**

- Be introduced to the World history systems of knowledge.
- Be introduced to history of culture, understanding human cultural development, products and sociology.
- Will develop a sense of Prehistoric World, River Valley Cultures and Early Civilizations, Classical Buddhism and Pre – Classical.

**SYLLABUS (I SEMESTER)**

**Paper V: Workshop**

**Subject Code: ARC132C117**

**L-T-P/S-C –0-0-2-2**

**Credit Units: 02**

**Scheme of Evaluation: (T/P/TP/S):P**

**Course Objective:**

- To develop skills in understanding various tools, processes and materials.

**Prerequisites: NIL**

Detailed Syllabus:

Modules	Topics (if applicable) & Course Contents	Periods
I.	<p><b>Carpentry Installation:</b></p> <ul style="list-style-type: none"> <li>• Introduction to the carpentry tools, processes, joints and wood working machines</li> <li>• Preparation of various carpentry joints, fixing of plywood, blackboards, commercial boards etc. and their application in furniture.</li> <li>• Handling materials like wood, marble, steel, MS, plywood, POP, Aluminium etc.</li> <li>• Understanding nailing, screwing, riveting and their various conditions and types of applications.</li> </ul> <p>Hands on experience to come up with a product or installation</p>	16
II.	<p><b>Foundry Installation:</b></p> <ul style="list-style-type: none"> <li>• Introduction, type of patterns, pattern making, preparation of moulds and moulding equipment details.</li> <li>• Hands on experience to come up with a product or installation,</li> </ul>	16
III.	<p><b>Fabrication Installation:</b></p> <ul style="list-style-type: none"> <li>• Introduction to welding equipment, processes and its applications.</li> <li>• Painting and polishing; Classification of paints, varnishes ingredients of paints, painting methods-brush, spray, hot spray etc.</li> <li>• Hands on experience to come up with a product or installation.</li> </ul>	16



IV	<b>Masonry Installation:</b> <ul style="list-style-type: none"> <li>• Introduction to basic masonry tools. Understanding various building materials and their tools used for cutting, joining and extension.</li> <li>• Hands on experience to come up with a product or installation.</li> </ul>	16
TOTAL		64

**Text Book:**

NA

**Reference Books:**

NA

**Course Outcomes: The students will**

- Learn hands on experience of working with materials.

**SYLLABUS (I SEMESTER)**

**Paper VIII/Subject Name: Basic Design and Visual Arts**

**Subject Code: ARC132M113**

**L-T-P/S-C: 1-0-2-3**

**Credit Units: 03**

**Scheme of Evaluation: (T/P/TP/S):S**

**Course Objective:**

- To develop skills in manual presentation techniques, use of various media of presentation, Principles of 2-D & 3-D compositions and Principles of Design.
- To help students to understand the visual & aesthetic qualities of Art and its relation to Architectural Design situation.
- To develop freehand drawing and rendering skills in different medium and using it as tool of expressing ideas visually.

**Prerequisites: NIL**

Detailed Syllabus:

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Design Elements :</b> <ul style="list-style-type: none"> <li>• Lines: properties and nature of lines along with usage</li> <li>• SHAPE AND FORMS: organic/ geometric shapes and understanding their role w.r.t space (positive/negative).</li> </ul>	12
II.	<b>Texture and colour, Visual scale and weight:</b> <ul style="list-style-type: none"> <li>• Textures: tactile texture, visual texture and how they are implied</li> <li>• Colour: HUE-SATURATION, VALUE, INTENSITY nature of Colour, implications, Colour wheel, colour scheme.</li> </ul> Sense of scale, depth with representation techniques	12
III.	<b>Design principles:</b> <ul style="list-style-type: none"> <li>• Balance (symmetrical/asymmetrical)</li> <li>• Contrast (anomaly, emphasis, subordination)</li> <li>• Rhythm/ repetition</li> <li>• Proportion/scale</li> </ul>	24

	<ul style="list-style-type: none"> <li>• Harmony and unity.</li> <li>• Variety</li> <li>• Radiation</li> </ul>	
IV	<b>Freehand Drawing:</b> <ul style="list-style-type: none"> <li>• Use of various drawing and sketching tools like pencils, ink pens, charcoal pencils, etc.</li> <li>• Free hand drawings of household furniture, street furniture, human beings, cars, trees, etc.</li> </ul>	18
V	<b>Painting:</b> <ul style="list-style-type: none"> <li>• Use of painting tools and materials like brushes, paper, water colour, poster colour, etc.</li> </ul>	18
VI	<b>Sculpture:</b> <ul style="list-style-type: none"> <li>• Sculpture in different medium, clay, plaster of paris, wood. Wire and any other medium..</li> </ul>	12
TOTAL		96

**Remarks:**

- Design of security cabin, Entrance gate, Memorial, Bus stop etc.

**Text Book:**

1. *Time saver standards for building types*, De Chiara, Joseph and Crosbie, Michael J., 2<sup>nd</sup> Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**

1. Neufert, Peter; *Neufert's architects' data*; 4<sup>th</sup> Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard*; 11<sup>th</sup> Ed.; 2008; John Wiley; New York.

**Course Outcomes: The students will**

- Be able to critically analyze a space with a design eye and come up with strategic design solutions
- Develop a sense of aesthetics & understand the importance of presentation drawings.
- Develop a sense of Design Elements, Texture and Colour; Visual Scale and Weight, Design Principles, Freehand Drawings, Paintings and Sculpture.

**SYLLABUS (I SEMESTER)**

**Paper IX/Subject Name: Theory of structures I and mathematical tools**

**Subject Code: ARC132M106**

**L-T-P/S-C: 3-0-0-3**

**Credit Units: 03**

**Scheme of Evaluation: (T/P/TP/S):T**

**Objective:**

- To give an introduction to the basic principles governing structural systems.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Introduction to the subject and theory of structure:</b> <ul style="list-style-type: none"> <li>• Technical names and function of various structural components from foundation to roof</li> <li>• Fundamentals and mechanics</li> <li>• S.I. system and units</li> <li>• Understanding structure why things don't fall down</li> </ul> Basic Math <ul style="list-style-type: none"> <li>• Re-visiting basic mathematical tool in terms of area and volume calculation, fundamentals of calculus etc.</li> </ul>	12
II	<b>Structural systems:</b> <ul style="list-style-type: none"> <li>• Ways to create inner space</li> <li>• Understanding loads of various types</li> </ul>	12

III	<b>Understanding the forces and Moments:</b> <ul style="list-style-type: none"> <li>• Definition, cause, effect, units</li> <li>• Types of forces,</li> <li>• Conditions of equilibrium</li> <li>• Beam reactions</li> </ul>	12
IV	<b>Centroid and Moment of Inertia:</b> <ul style="list-style-type: none"> <li>• Definition, determination of centroid for simple lamina, moment of inertia and radius of gyration of simple cross section of beams – triangular, circular and rectangular.</li> </ul>	12
Total		48

**Text Books:**

1. *Sanjay; Strength of materials*, Bansal, R K and Bansal; 4<sup>th</sup> Ed.; 2009; Laxmi Publications, New Delhi.

**Reference Books:**

1. Ramamrutham S.; *Strength of materials*; 16<sup>th</sup> Ed.; 2009; Dhanpat Rai; New Delhi

**Course Outcomes: The students will**

- Develop a sense of structural implications and working around it to suit their design needs.
- Able to critically analyze on Introduction to the subject and theory of structure, Structural systems, Understanding the forces and Moments, Centroid and Moment of Inertia.

**SYLLABUS (II SEMESTER)**

**Paper I/Subject Name: Architectural Design II**

**Subject Code: ARC132C211**

**L-T-P/S-C –1-0-7-8**

**Credit Units: 08**

**Scheme of Evaluation: (T/P/TP/S):S**

**Course Objective:**

To translate knowledge of abstract design principles through enhancement of thought process into a workable design.

**Prerequisites: NIL**

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I	<b>Collection of user's data:</b> Determining a design problem that could revolve around basic design principles	16
II.	<b>Activity &amp; Area analysis:</b> Activity & Area analysis of the design problem	32
III.	<b>Movement and circulation analysis:</b> Movement and circulation analysis of the design problem	32

IV	<b>Design solution and representation:</b> Finalization of design and make presentation drawing for execution. Develop sense of material used and construction techniques.	48
<b>TOTAL</b>		128

**Remarks:**

- Design of small residence, doctor's clinic, small cottage, cafeteria etc

**Text Book:**

1. *Time saver standards for building types*, De Chiara, Joseph and Crosbie, Michael J.; 2<sup>nd</sup> Ed.; 2011; Tata McGraw Hill; New Delhi.
2. Neufert, Peter; *Neufert's architects' data*; 4<sup>th</sup> Ed.; 2012; John Wiley; New Delhi

**Reference Books:**

1. Ramsay and Sleeper; *Architectural graphic standard*; 11<sup>th</sup> Ed.; 2008; John Wiley; New York.
2. Pandya, Yatin; *Elements of space making*; 1<sup>st</sup> Ed.; 2014; Mapin Publishing; Ahmedabad.
3. Richardson, Phyllis; *XS: Big ideas, small buildings*; 1<sup>st</sup> Ed.; 2001; Thames & Hudson; London

**Course Outcomes: The students will**

- Be able to critically analyze a space with a design eye and come up with strategic design solutions.
- Develop a sense of aesthetics.
- Understand the importance of presentation drawings.
- Understand the Collection of user's data, Activity and Area Analysis, Movement and Circulation analysis, Design solution and representation.

**SYLLABUS (II SEMESTER)**

**Paper II/Subject Name: Graphics II**

**Subject Code: ARC 132C212**

**L-T-P/S-C –1-0-4-5**

**Credit Units: 05**

**Scheme of Evaluation: (T/P/TP/S):S**

**Course Objective:**

- To develop techniques of sciography, perspective drawing, surface development, etc
- To comprehend perspectives of built forms, exercises in parallel, angular and bird's eye views, shades and shadows cast by simple forms on plain surfaces.

**Prerequisites: NIL**

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Sciography:</b> Sciography of Simple Geometric Forms Leading to sciography of architectural forms.	13
II.	<b>Perspective Drawing:</b> Definition of perspective technique (picture plane, stationary point etc.) and their role in drawing perspectives, one point, two point and three point perspectives of geometrical shapes leading to perspectives of built forms, exercises in parallel, angular and bird's eye views, shades and shadows cast by simple forms on plain surfaces.	22

III.	<b>Surface Development:</b> Development of surfaces of solids, isometric, axonometric of solids. Plotting of sciography on perspective drawings.	13
IV	<b>Presentation Illustrator and Photoshop:</b> Graphical presentation and rendering in pen and ink of architectural drawings and materials.	32
<b>TOTAL</b>		80

**Text Book:**

1. *Engineering drawing*, Bhatt, N.D and Panchal, V. M; 1<sup>st</sup> Ed.; 2008; Charotar Publishing House; Gujrat.

**Reference Books:**

1. Ching, F.D.K; *Architectural graphics*; 6<sup>th</sup> Ed.; 2015; John Wiley; New York
2. Carpo, Mario and Lemerle, Frederique; *Perspective, projections and design: Technologies of architectural representation*; 2<sup>nd</sup> Ed.; 2013; Taylor & Francis; Hoboken.

**Course Outcomes: The students will**

- Understand basic techniques of sciography of simple geometric forms.
- Develop sense in isometric and axonometric of solids.
- Understand Sciography, Perspective Drawing, Surface Development, Presentation Illustrator and Photoshop.

<b>SYLLABUS (II SEMESTER)</b>
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<b>Paper III/Subject Name: Building Construction and Material II</b>
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<b>Subject Code: ARC132C213</b>
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<b>L-T-P/S-C –1-0-3-4</b>
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<b>Credit Units: 04</b>
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<b>Scheme of Evaluation: (T/P/TP):S</b>
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**Course Objective:**

- To introduce students to the technicalities of building construction and material.
- To acquaint with various methods of construction.

**Prerequisites: NIL**

Detailed Syllabus:

Modules	Topics (if applicable) & Course Contents	Periods
I	<b>Timber and Commercial Wood</b> <ul style="list-style-type: none"> <li>• Quality of timber used in building, defects, seasoning and preservation of timber, types Natural, hard and softwood, uses of timber for aesthetic &amp; structural purposes</li> <li>• Uses of commercial wood in building i.e., plywood, block boards, particleboards, veneers and laminates and other types.</li> </ul>	16
II	<b>Doors:</b> <ul style="list-style-type: none"> <li>• Types of wooden Doors, i.e., ledged, braced, battened, panelled, flush and glazed doors, study of joinery details.</li> </ul>	16
III	<b>Windows:</b> <ul style="list-style-type: none"> <li>• Types of wooden glazed windows, Fixed, side and top hung pivoted, louvered, ventilators and fanlights, study of joinery details.</li> </ul>	16

IV	<b>Roof:</b> <ul style="list-style-type: none"> <li>Timber and steel trussed roof, various parts, their purposes and method of construction. Use of AC sheet, GI sheets and aluminium sheets for roofing.</li> </ul>	16
<b>TOTAL</b>		64

**Text Book:**

- Building construction*; Mackay, W.B. ; *Building construction*; 1<sup>st</sup> Ed.; 2005; Donhead; London.
- Building Construction*, Kumar S; 20th Ed.; 2010; Standard Publishers.

**Reference Books: :**

- Chudley, R; *Construction technology*; 2<sup>nd</sup> Ed.; 1987; ELBS; Harlow
- Barry, R; *Construction of building*; 4<sup>th</sup> Ed.; 1999; East West Press; New Delhi

**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques
- Be oriented to various textures, colour of materials along with their strength and durability.
- Be able to develop sense on various types of Doors, Windows and Roof.

**SYLLABUS (II SEMESTER)**

**Paper IV/Subject Name: History of Architecture-I**

**Subject Code: ARC 132C204**

**L-T-P/S-C -2-0-0-2**

**Credit Units: 02**

**Scheme of Evaluation: (T/P/TP/S):T**

**Course Objective:**

- To familiarize student to the development of culture, society and understand the world view of early civilizations
- Critical appreciation of works and synoptic study of architectural characteristic features from the following phases and periods

**Prerequisites: NIL**

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>History of Indian Art &amp; Architecture:</b> A brief about history of history of Indian Art & Architecture and its influence on Culture and Society.	8
II.	<b>Classical Greece and Rome:</b> Study of principles of design, proportion, composition, visual effects. Eg. Doric, Ionic, Corinthian, Tuscan & Composite orders, Optical Corrections, Parthenon, Theatre at Epidaurus, Pantheon, Colosseum, Thermae of Caracalla, Pont due gard, Nimes, Basilica of Trajan, Arch of Septimius Severus, Column of Trajan.	8
III.	<b>Ecclesiastical:</b> Early Christian, Byzantine, Medieval and Gothic Vedic Culture, Kingship in India, Hellenistic influences.	8
IV	<b>Vedic Culture:</b> a) Settlement Patterns during Vedic Civilization. b) Vaastu Shastra and its Principles, Layout Planning (Residence) using Vaastu Principles.	8
<b>TOTAL</b>		32

**Text Book:**

1. *History of architecture in India*, Christopher, Tadgell; 2<sup>nd</sup> Ed.; 2002; Phaidon; London.
2. *Indian architecture, Buddhist and Hindu period*, Percy Brown; 1<sup>st</sup> Ed.; 2014; CBS; New Delhi.

**Reference Books:**

1. Grover, Satish; *Architecture of India: Buddhist and Hindu*; 2<sup>nd</sup> Ed.; 2010; CBS; New Delhi

**Course Outcomes: The students will**

- Understand about Indian Art and Architecture and its influence on Culture and Society.
- Be oriented towards various Architectural characteristics, features of various Civilizations.
- Understand about History of Indian Art & Architecture, Classical Greece and Rome, Ecclesiastical, Vedic Culture.

**SYLLABUS (II SEMESTER)****Paper VII/Subject Name: Theory of structures-II****Subject Code: ARC132M205****L-T-P/S-C: 3-0-0-3****Credit Units: 03****Scheme of Evaluation: (T/P/TP/S):T****Objective:**

- To give an introduction to the basic principles governing structural systems

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Simple Stresses and Strains:</b> Concept of Deformable Bodies. Types of stresses (compressive, tensile, shear) and strain (axial, shear, volumetric) Simple problems. Modulus of Elasticity, typical stress strain behaviour of steel and concrete.	12
II	<b>Elastic constants:</b> Elastic constants, Rigidity Modulus, Poisson's Ratio. Bulk Modulus and Shear Modulus .Relations. Modulus of Elasticity and Modulus of Rigidity	12
III	<b>Shear and Bending Moments in beams:</b> B.M & S.F diagrams for simply supported and cantilever beams.	12
IV	<b>Analysis of Trusses:</b> Application of Trusses, Composition of forces in a plane, Method of joints, Method of sections	12
<b>TOTAL</b>		48

**Text Books:**

1. *Sanjay; Strength of materials*, Bansal, R K and Bansal; 4<sup>th</sup> Ed.; 2009; Laxmi Publications, New Delhi.

**Reference Books:**

1. Ramamrutham S.; *Strength of materials*; 16<sup>th</sup> Ed.; 2009; DhanpatRai; New Delhi

**Course Outcomes: The students will learn**

- Structural implications and working around it to suit their various Design needs.

<b>SYLLABUS (II SEMESTER)</b>
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<b>Paper VIII/Subject Name: Surveying &amp; Levelling</b>	<b>Subject Code: ARC132M206</b>
<b>L-T-P/S-C –2-0-2-3</b>	<b>Credit Units: 03</b>
	<b>Scheme of Evaluation: (T/P/TP/S):T</b>

**Course Objective:**

To develop concepts of various types of land surveying and prepare and interpret maps and drawing.

**Prerequisites: NIL**

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I	<b>Introduction:</b> Principles & Classification of survey, Basic measurements, Principles and methods of surveying	16
II.	<b>Plane Surveying:</b> Chain survey, Compass survey, Plane table surveying	16
III.	<b>Theodolite &amp; Levelling:</b> Theodolite survey, Types of levelling, sources of errors, Computations & Permanent adjustment of levels, Problems on RL.	16
IV	<b>Contouring and Application:</b> Characteristics of contours, direct and indirect methods of contouring, interpolation, uses of contours, setting out works such as centre lines of a building, grade for sewer, centre line of a bridge. Area and Volume calculation.	16



**Text Book:**

1. Surveying Vol I” by PC Punmia.

**Reference Books:**

1. Kanetkar TP and Kulkarni SV; Surveying and Levelling (Part-I)”
2. N.N. Basak; Surveying and Levelling

**Course Outcomes: The students will**

- Be able to develop the knowledge and skills related to surveying and leveling principles and practice.
- Get to learn about Basic Introduction , Plane Surveying, Theodolite & Leveling, Contouring and Application.

**SYLLABUS (IISEMESTER)****Paper IX: Model Making**

Subject Code: ARC132M217

L-T-P/S-C –0-0-3-1

Credit Units: 01

Scheme of Evaluation: (T/P/TP/S):P

**Course Objective:**

- To develop model making skills and visualization.

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Single material model:</b> Paper scaled model	12
II.	<b>Monochrome model:</b> Scaled model	12
III.	<b>Composite material model:</b> Scaled model	12
IV	<b>Site model with landscaping and site features and contours:</b> Scaled model	12

<b>TOTAL</b>	48
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**Text Book:**

NA

**Reference Books:**

NA

**Course Outcomes: The students will**

- Identify basic processes and material properties relevant to the discipline of model making.
- Develop a sense of Single material model, Monochrome model, Composite material model and Site Model with landscaping and site features and contours.

<b>SYLLABUS (III SEMESTER)</b>
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<b>Paper I /Subject Name: Architectural Design III</b>	<b>Subject Code: ARC132C311</b>
<b>L-T-P/S-C –1-0-7-8</b>	<b>Credit Units: 08</b>
	<b>Scheme of Evaluation: (T/P/TP/S): S</b>

**Course Objective:**

- To expose students to vernacular architecture in terms of local construction technique, building material, architectural language of a particular region.
- To understand the impact of socio-cultural, climate, topography etc. of the region in architecture of a place.
- To make attempts in designing religious precincts, community centres, vocational training institute, primary schools etc.

**Prerequisites:** NIL

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I	<b>Study and mapping:</b> Statistical analysis of the region to determine various user groups to establish a relationship between human feelings and the built form.	32
II.	<b>Study and documentation of local style of architecture and material used and derive concepts:</b> Use of locally available resources and its implication on the economy of the built environment.	32
III.	<b>Concept Development and planning/zoning:</b> To develop clusters and community formations through space planning. Discussion and development of design	32
IV	<b>Design solution and representation:</b> Finalization of design and make presentation drawing for execution. Presentation of works of design through portfolio or panels	32
<b>TOTAL</b>		128

**Remarks:** Design of School, Primary Health Centre, Post Office, Bank Branch, Guest House, Restaurant or any other area that can be designed which includes site planning in detail.

**Text Book:**

1. *Time saver standards for building types*; De Chiara, Joseph and Crosbie, Michael J.; *Time saver standards for building types*; 2<sup>nd</sup> Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**

1. Christopher, Alexander; *The Timeless Way of Building*; 1<sup>st</sup> Ed.; 1979; Library of Congress Cataloguing in Publication Data; London.
2. Bhatia, Gautam; *Lauri Baker: Life, Works and Writings*; 1<sup>st</sup> Ed.; 1994, Penguin Books India Limited; New Delhi.

**Course Outcomes: The students will**

- Be able to critically analyse local architecture and developed its modern adaptation.
- Develop a sense of aesthetics.
- Understand the importance of presentation drawings.
- Develop a sense of Study and mapping, Study and documentation of local style of architecture and material used and derive concepts, Concept Development and planning/zoning, Design solution and representation.

**SYLLABUS (III SEMESTER)**Paper II/Subject Name: **Building Construction and Material III**Subject Code: **ARC132C312**L-T-P/S-C: **1-0-3-4**Credit Units: **04**Scheme of Evaluation: **(T/P/TP/S):S****Course Objective:**

- To introduce students to the technicalities of building construction and material
- To acquaint with various methods of construction

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
IA	<b>FOUNDATIONS:</b> Types of foundations; isolated, combined, Raft, Base slab, Grillage, Introduction of Pile foundations. Principles and methods of construction of RCC & steel foundations and columns. <b>Formwork:</b> Design & planning of form work in timber, steel. Propping, centering, camber, cleaning, surface treatment	15
IB	<b>Material: Concrete:</b> Concrete Ingredients, grades of concrete, admixture, properties of concrete, production of concrete, mix proportioning, mixing, transporting, placing, compaction, curing of concrete and ready mix concrete, sampling and testing of concrete, Construction joints, expansion joints, finish in concrete, chemical admixture. Uses of concrete for aesthetic & structural purpose.	1
IIA	<b>MASONRY:</b> Construction & design of Masonry: Foundations with masonry. Composite Masonry, load bearing wall tiles, glass block masonry.	
IIB	<b>Material: Special Concrete:</b> Concreting under water, special concretes like light weight and high density concrete. Construction joints, expansion joints, finish in concrete, chemical admixture. Uses of concrete for aesthetic & structural purpose	15
IIIA	<b>STAIRS:</b> Classification of stairs, Location and materials Technical terms.	1
IIIB	<b>Material: Steel</b> Properties and architectural uses of mild steel and stainless steel for aesthetic & structural purpose	15
IVA	<b>Introduction to Bamboo</b> Types of Bamboo with joinery details	1
IVB	<b>Material: Introduction to Bamboo</b> Properties and architectural aesthetic and structural uses and purposes, advantages, disadvantages	15
<b>TOTAL</b>		64

**Text Book:**

1. *Building construction*; Mackay, W.B. ; *Building construction*; 1<sup>st</sup> Ed.; 2005; Donhead; London.

**Reference Books:**

1. Chudley, R; *Construction technology*; 2<sup>nd</sup> Ed.; 1987; ELBS; Harlow.
2. Barry, R; *Construction of building*; 4<sup>th</sup> Ed.; 1999; East West Press; New Delhi.
3. Kumar, Sushil; *Building Construction*; 19<sup>th</sup> Ed.; 2001; Standard Publishers Distributors; Delhi.
4. Arora, Bindra; *Building Materials*;

**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques.
- Be oriented to various textures, workability of materials along with their strength and durability.
- Have a profound overview about Foundations, Stairs, Masonry and Formwork.

**SYLLABUS (III SEMESTER)**Paper III /Subject Name: **Climate Responsive Architecture****Subject Code: ARC132C303****L-T-P/S-C –1-0-2-2****Credit Units: 02****Scheme of Evaluation: (T/P/TP/S):T****Course Objective:**

- To study the role of climate change in architectural design, the planning and construction of buildings with respect to climatic conditions and also varied materials impacting the human comfort level.

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I	<b>Introduction to the impacts of climate change:</b> Introduction to extreme events and gradual changes of the climate; To study human heat balance and comfort. To familiarize students with the design and settings for buildings for daylight and factors that influence temperature. Human comfort (body & thermal), thermal comfort factors and indices. Principles of thermal design, structural and ventilation controls and their application in building. Illumination and day lighting. Use of shading angles for lighting and radiation techniques and their application in buildings. To inform about the air pattern around buildings and the effect of wind on design of buildings and developing a site. Effect of climatic elements of thermal comfort environment.	12
II.	<b>Elements of Climate:</b> Elements of climate, measurement and representations of climate data. Classification of tropical climates, major climate zones of India. Effects of landscape elements on site/micro climate.	12
III.	<b>Thermal Comfort:</b> Body's heat exchange with surrounding environment. Thermal comfort indices viz., Effective temperature, bio-climatic chart etc., Kata thermometer and globe thermometer. Effects of landscape elements on site/micro climate.	12
IV	<b>Design Principles:</b> Design of buildings and developing a site. To expose the students to the various design strategies for building in different types of climatic zones in India. Exposure to different design strategies across the globe.	12
<b>TOTAL</b>		48

**Text Book:**

- Manual of Tropical Housing and Building*, Koenigsberger, O.H.; 1<sup>st</sup> Ed.; 2009; Orient BlackSwan; Hyderabad.
- Climate design -Part I*, Orient Longman, Madras.

**Reference Books:**

- Manakbhavan., *Bureau of Indian Standards IS 3792 (1987), Hand book on Functional requirements of buildings other than industrial buildings, (Part I – IV)*,.
- Evans, Martin; *Housing Climate and Comfort*; 1<sup>st</sup> Ed.; 1980; Architectural Press, London.
- Givoni, B; *Man, Climate and Architecture*; 1<sup>st</sup> Ed.; 1969; Applied Science Publishers Ltd., London.
- Givoni, B; *Passive and Low Energy Cooling of building*; 1<sup>st</sup> Ed.; 1994; Van Nostrand Reinhold; New York.
- Gallo, C, Sala, M & Sayigh, A.M.M; *Architecture, Comfort and Energy*; 1<sup>st</sup> Ed.; 1988; Elsevier Science Ltd; New York.

**Course Outcomes: The students will**

- Have a profound overview about climate vulnerability, the impacts of advancing climate change,
- Get to enhance their knowledge of the practical field with sensitiveness towards the environment.
- Have a profound overview of Introduction to the impacts of climate change, Elements of Climate, Thermal Comfort, Design Principles.

**SYLLABUS (III SEMESTER)****Paper IV/Subject Name: History of Architecture II****Subject Code:ARC132C305****L-T-P/S-C: 2-0-0-2****Credit Units: 02****Scheme of Evaluation: (T/P/TP/S):T****Course Objective:**

- To provide an understanding of the evolution of Hindu Architecture in India in its various stylistic masses, characterized by technology, ornamentation and planning practices.

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Evolution of Hindu temple:</b> Evolution of Hindu temple –both Indo Aryan and Dravidian- Early temples at Udaigiri.Tigawa and Sanchi –Experiments at Aihole (Durga temple and Ladhkan Temple), Deogarh, Bhitargaon and Badami. Beginning of Dravidian architecture – Pallavas, rathas at Mamallapuram, Shore temple, Kailsanatha and Vaikuntaperunal temple at Kancheepuram.	8
II.	<b>The Chola and Pandya:</b> The Cholas – Brihadeshwara temple at Thanjavur and Gangaikonda Cholapuram The Pandyan contribution- gopurams The Hoysala temples at Belur, Halebid and Somnathpur. Eg.Channakesava Temple, Belur, Hoysalesvara temple, HalebidKesava temple, Somnathpur.	8
III.	<b>Indo Aryan:</b> Indo Aryan Mode- the beginning in Orissa- the Lingaraja at Bhubaneshwar. Hindu architecture at Raiputana( Temple of Surya, Osia, Marwar) and Gujrat ( Temple of Surya, Modhera).The Khajuraho group- KhanariyaMahadev, Jain temple- Chaurmukh temple at Ranpur.	8
IV	<b>Later Dravidian Period:</b> Later Dravidian period- the vijayanagar and Madurai Dynasties – Noted temples at Hampi(Vitthala temple and HazaraRamam Temple). Madurai (Meenakshi temple) and Srinagar.	8
<b>TOTAL</b>		32

**Text Book:**

- Indian Architecture. Buddhist and Hindu Period” by Brown Percy

**Reference Books:**

- Grover Satish. “Architecture of India- Buddhist and Hindu.

**Course Outcomes: The students will**

- Understand Hindu Temple as cradle of knowledge, art, architecture and culture.
- Be able to explore the origins and evolution of Hindu temple traditions and regional styles in India.
- Understand the Evolution of Hindu Temple Architecture, The Chola and Pandya, Indo Aryan, Later Dravidian Period.

**SYLLABUS (III SEMESTER)****Paper V/Subject Name: Building Services I****Subject Code: ARC132C317****L-T-P/SC: 1-0-4-3****Credit Units: 03****Scheme of Evaluation: (T/P/TP/S):TP**

**Course Objective:** To develop concepts of water management, sanitation and disposal to develop the designs with better services.

**Prerequisites:** NIL

**Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Water Supply:</b> Introduction to water supply, Assessment of water requirements, Sources of supply, collection & method of supply. Catchment areas, reservoirs, recharge of ground water (methods) and their location. Roof top rain water harvesting. Recovery of used water. Physical, Chemical and biological examination of water, Water treatment.	20
II.	<b>Water Management:</b> Water pipes– materials (GI, PVC, CPVC/ UPVC pipes, introduction to Copper plumbing, Pipe Accessories, Storage tanks, Pumps, Pipes – laying and jointing. Supply for a neighbourhood and town. Rain water Harvesting, Recharging, Recycling and reuse, application in planning, water supply distribution systems (Urban & rural). <u>Sheet work on water supply, overhead water tank and calculations.</u>	20
III.	<b>Sanitation : Sanitary pipes, fittings and fixtures, layout and design</b> Principles of sanitation, Study of Indian Standards and plumbing by-laws (NBC) Introduction to various sanitary pipes, joints, fittings and fixtures, their functions, placements and construction details. Study of internal and external drainage of various buildings. Single stack system, one pipe and two pipe systems, testing of house drains, Gradient used in laying drains and sewers, Self-cleaning and non-scoring velocities of drain pipes.	20
IV.	<b>Sanitation: Waste water treatment and disposal methods</b> Study of traps, inspection chambers, Manholes, Septic tanks, Soak pits and Public sewage line. Study of disposal systems for domestic effluents from fitting to sewer line. Water waste- sewage disposal, primary treatment, secondary treatment and tertiary treatment. Modern types of sewage treatment plant <b>Solid waste, collections, treatment and disposal</b> Prevalent SWM practices and deficiencies, Storage of waste at source, collection, segregation and transportation of waste. Disposal of solid wastes: Sanitary Land filling, Composting, Incineration, Pulverisation. Pyrolysis-advantages and disadvantages. Biogas systems and modern renewable energy systems. <u>Sheet work on septic tank, soak pit, inspection chamber and calculations.</u>	20
<b>TOTAL</b>		80

**Text Book:**

3. *Sanitary Engineering – (Vol I and II)*; Deshpande, R. S.; 1 st Ed; Unique Book Cooperation
4. *Water Supply and Sanitary Engineering*; Birdii, G.S; 1st Ed.; 1980; Standard Publishers Distributors

**Reference Books:**

1. Shah, Charanjit S; *Water Supply and Sanitary Engineering*;
2. Rangwala, S.C; *Water Supply and Sanitary Engineering*; 1<sup>st</sup> Ed.; 2005; Charotar Publishing House;
3. Fair, G.M, Geyer, J.C. and Okin, D; *Water and Waste water engineering Volume II*; 1<sup>st</sup> Ed.; 1968; John Wiley & Sons; New York.
4. CPHEEO; *Manual on sewerage and sewerage treatment*; 1<sup>st</sup> Ed.; 1980; Ministry of works and housing; New Delhi.
5. *Relevant IS Codes of India*
6. *Renewable energy, basics and technology, supplement volume on integrated energy systems*

**Course Outcomes: The students will**

- Learn the importance, significance and applications of different methods of water supply and sanitation as an important part of construction and architecture.
- Have a profound overview of Water Supply, Water Management, Waster Water Treatment and Disposal Methods, Solid Waste, Collections, Treatment and Disposals.

**SYLLABUS (III SEMESTER)****Paper VIII/Subject Name: Computer Application I****Subject Code:ARC132S318****L-T-P/S-C: 0-0-4-2****Credit Units: 02****Scheme of Evaluation: (T/P/TP/S):P****Objective:**

The objectives of AEEC/SEC/-1\* are:

- To familiarize students with drawing aids and equipment along with learning to computerise design drawings.
- To orient students to the digital tools.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Interface:</b> Introduction to the interface, Digital drawings tools, drawing lines and shapes, modifying lines and shapes, drawing with accuracy and speed tools and commands. Page setup.	16
II	<b>Drawing and Modifying:</b> Drawing and Modifying objects, properties, Units, dimensions, lines and pen weight. Blocks, array.	16
III	<b>Introduction to Commands:</b> Basic drawing commands, editing commands, scaling, setting dimensioning variables etc.	16
IV	<b>Presentation and plotting:</b> Presentation, hatching and rendering, texts, Layers, planes , views and viewports Import/export, layout , xref, print setup and plotting(with a specific project submission)	16
<b>Total</b>		64

**Text Books:**

1. *Up and Running with AutoCAD 2015: 2D & 3D Drawing and Modelling*, Gindis, E; 1<sup>st</sup> Ed.; 2014; Elsevier; London.

**Reference Books:**

1. Seidler, D. R.; *Digital Drawing for Designers: A Visual Guide to AutoCAD 2012*; 1<sup>st</sup> Ed.; 2007; Fairchild Publications; London.
2. Smith, B. L.; *3ds Max 2008 Architectural Visualization Beginner to Intermediate*; 1<sup>st</sup> ed.; 2007; 3DATS; China.
3. Moss, Elise; *Autodesk AutoCAD Architecture 2016 Fundamentals*; 1<sup>st</sup> Ed.; 2011; SDC Publications; London.
4. Omura, George & Benton, Brian C; *Mastering AutoCAD 2016 and AutoCAD LT 2016*; 1<sup>st</sup> Ed.; 2017; John Wiley & Sons; London.

**Course Outcomes: The students will learn**

- Develop techniques of computerize architectural representation
- Comprehend an object or space and represent it graphically and digitally
- Understand the importance of design tools - (AutoCAD).
- Develop sense of Interface, Drawings and Modifying, Introduction to Commands, Presentation and Plotting.



**SYLLABUS (III SEMESTER)****Paper X /Subject Name: Theory of structures-III****Subject Code: ARC132M306****L-T-P/S-C: 2-0-0-2****Credit Units: 02****Scheme of Evaluation: (T/P/TP/S):T****Objective:**

- To introduce structural implications in buildings with respect to different stresses, columns and beams.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Bending Stress and Shear Stress:</b> Pure Bending Theory, Derivation & application of bending stresses in beams : Rectangular, circular, I & T beam section; Shear stresses & its distribution.	8
II	<b>Direct and Bending stress &amp; Torsion:</b> Application of direct & bending stresses. Torsion of solid & hollow circular shafts of similar material; derivation & application.	8
III	<b>Columns and Struts:</b> Columns & struts; Euler's theory of hinged ends, application of Rankine's theory.	8
IV	<b>Stability of Structures:</b> Concept of Strength and Stiffness of Structures and Structural Members. Stability of Buildings, Dams and Retaining walls; Stress derivation and application.	8
<b>TOTAL</b>		<b>32</b>

**Text Books:**

5. Analysis of structures I and II, Ramamrutham

**Reference Books:**

1. Vazirani; *Analysis of structures; Analysis, Design and Details of Structure, 14<sup>th</sup> Ed; 2015; Khanna Publishers.*

**Course Outcomes: The students will learn**

- The above mentioned theories to be applied to the ongoing architectural design project
- To prepare a structural layout with columns and beams designed for the building.
- To develop sense on Bending Stress and Shear Stress, Direct and Bending stress & Torsion, Columns and Struts, Stability of Structures.

**SYLLABUS (IV SEMESTER)****Paper I /Subject Name: Architectural Design IV****Subject Code:ARC132C411****L-T-P/S-C: 1-0-7-8****Credit Units: 08****Scheme of Evaluation: (T/P/TP/S):S****Objective:**

- To orient students towards contemporary architecture with special emphasis on sustainability.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Sustainable development and case study:</b> A detailed study of sustainability with case studies. Site to be identified and mapped in terms of LEED or IGBC	32
II	<b>Concept development and site planning:</b> Concept development of the project and detailed site planning considering sustainability criteria and site planning considering local planning and development norms and building byelaws	32
III	<b>Detailed planning:</b> Detailed building planning with services and construction techniques considered	32
IV	<b>Representation drawings:</b> Finalization of design and make presentation drawing for execution. Presentation of works of design through portfolio or panels	32
<b>TOTAL</b>		128

**Remarks:**

Design of Vocational training centre, resort, school etc.

**Text Books:**

- Time saver standards for building types*, De Chiara, Joseph and Crosbie, Michael J; 2<sup>nd</sup> Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**

- Bhatia, Gautam; *Lauri Baker: Life, Works and Writings*; 1<sup>st</sup> Ed.; 1994, Penguin Books India Limited; New Delhi

## Course Outcomes:

**The students will learn**

- To design large scale building projects with sustainable design options.
- To develop ideas on Sustainable development and case study, Concept development and site planning, Detailed planning, Representation drawings.

**Remarks**

- The design problem is to be selected in such a way that it lets the student explore several themes on contemporary architecture. The design should also encourage use of both locally available material with new innovation technique and new building material in a sustainable manner. Projects such as eco-resort, civic buildings, institution etc. could be taken up.

**SYLLABUS (IV SEMESTER)**Paper II/Subject Name: **Building Construction and Material IV**Subject Code: **ARC132C412**L-T-P/S-C: **1-0-3-4**Credit Units: **04**Scheme of Evaluation: **(T/P/TP/S):S****Course Objective:**

- To introduce students to the technicalities of building construction and material
- To acquaint with various methods of construction

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
IA	<b>RCC ROOFS:</b> Study of principles and methods of construction of RCC one way, two way slabs, ribbed slab, filler slab, flat slab, sloping RCC roof, vaults and domes, including form-work techniques and reinforcement details with understanding the functions of RCC beams.	26
IB	<b>MATERIAL: Paints:</b> Paints, varnishes and distempers, emulsions, cement base paints. Constituents of oil paints, characteristics of good paints, types of paints and process of painting different surfaces.	2
IIA	<b>RCC RETAINING WALL;</b> Designing and stability of RCC retaining and breast wall.	8
IIB	<b>MATERIAL: Polishes:</b> Types of varnish, methods of applying varnish and fresh polish and melamine finish. Grouts and anchors, repairs and protective coatings, bonding agents	2
IIIA	<b>ALTERNATIVES TO RCC:</b> <b>Precast and Prefab components</b> Masonry blocks, hollow blocks, jallis, shelving units, hollow clay blocks roofing techniques (filler slab), Expansion joints – Necessity, location and detailing Ferro cement elements, Bamboo Joineries & Construction details, polishes, finishes	16
IIIB	<b>MATERIAL: Water proofing:</b> sealants and water proofing and weather proofing compounds, weather proofing compounds,	1
IVA	<b>ALTERNATIVES TO RCC:</b> <b>Bamboo</b> Bamboo Joineries & Construction details, polishes, finishes, Bamboo as a structural material for columns	8
IVB	<b>MATERIAL: flooring types &amp; finishes :</b> Flooring types, Paving and interlocking tiles, adhesives for fixing floor finishes, and joint filers	1
<b>TOTAL</b>		<b>64</b>

**Text Book:**

1. *Building construction*; Mackay, W.B. ; *Building construction*; 1<sup>st</sup> Ed.; 2005; Donhead; London.
2. *Building Construction*; Kumar, Sushil; 19<sup>th</sup> Ed.; 2001; Standard Publishers Distributors; Delhi.

**Reference Books: :**

1. Chudley, R; *Construction technology*; 2<sup>nd</sup> Ed.; 1987; ELBS; Harlow.
2. Barry, R; *Construction of building*; 4<sup>th</sup> Ed.; 1999; East West Press; New Delhi.

**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques.
- Be oriented to various textures, workability of materials along with their strength and durability.
- Develop their sense on RCC Roofs, RCC Retaining walls, Alternatives to RCC, Precast Components.

**SYLLABUS (IV SEMESTER)****Paper III /Subject Name: History of Architecture III****Subject Code: ARC132C404****L-T-P/S-C: 2-0-0-2****Credit Units: 02****Scheme of Evaluation: (T/P/TP/S):T****Course Objective:**

- To provide an understanding of the evolution of Islamic and Colonial Architecture in India in their various stylistic modes characterized by technology, ornamentation and planning practices.

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Imperial Style:</b> Slave, Khilji, Tughlaq, Sayyid & Lodi dynasties. Eg. Quwaat-Ul-Islam Mosque, Qutb-Minar, Enlargement of Quwaat-Ul-Islam Mosque by Iltutmish, Tomb of Iltutmish, Enlargement of Qutub complex by Ala-Ud-din Khilji, Alai Darwaza, Tomb of Ghaias-Ud-in Tughlaq, Khirki Masjid, Delhi, Tomb of Feroz Shah Tughlaq, Shish Gumbad & Tomb of Mubarak Shah Sayyid.	8
II.	<b>Provincial Style:</b> Ahmedabad, Jaunpur, Bengal and Bijapur Eg. Atala masjid Jaunpur, Jami Masjid, Jaunpur, Jami Masjid, Biapur, Ibrahim Rauza, Bijapur. Gol Gumbaz, Bijapur, Adin Masjid, Pandua, Eklakhi tomb, Pandua, Dakhil Darwaza, Gaur, Jami Masjid Ahmedabad	8
III.	<b>Mughal Period:</b> Monumental buildings in the regime of Humayun, Akbar, Jehangir, Shahjahan & Aurangzib. Eg. Humayan's tomb, Fatehpur Sikri (layout, Jami Masjid, Buland Darwaza Tomb of Salim Chisti Diwane Khas) Akbar's Mausoleum Taj Mahal.	8
IV	<b>Arrival of British:</b> Early colonial period, monumental buildings executed in the regime of East India Company up to middle of 19th century. Eg. St. Paul's Cathedral, Calcutta & Bombay Town Hall. Later colonial period – Contribution of Edwin Lutyens and Herbert Baker to the layout and architecture of New Delhi.	8
<b>TOTAL</b>		32

**Text Book:**

- "History of Architecture in India" by Tadgel Christopher.

**Reference Books:**

- Brown, Percy "Indian Architecture – Islamic period".

**Course Outcomes: The students will**

- Understand the Evolution of Islamic & Colonial Architecture of India.
- Have a profound overview on the contents of Imperial Style, Provincial Style, Mughal Period, and Arrival of British.

**SYLLABUS (IV SEMESTER)****PaperV /Subject Name: Computer Application II****Subject Code: ARC132S417****L-T-P/S-C: 0-0-4-2****Credit Units: 02****Scheme of Evaluation: (T/P/TP/S):P****Objective:**

- To familiarize students with drawing aids and equipment along with learning to computerise design drawings.
- To orient students to the digital tools.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>AutoCAD Revision and Advance:</b> Introduction to the interface, Digital drawings tools, drawing lines and shapes, modifying lines and shapes, drawing with accuracy and speed tools and commands. Page setup. Drawing and Modifying objects, properties, Units, dimensions, lines and pen weight. Blocks, array. Presentation, hatching and rendering, texts, Layers, planes , views and viewports Import/export, layout , xref, print setup and plotting(with a specific project submission)	16
II	<b>Introduction to photoshop (advance):</b> Photoshop Digital Rendering Techniques	16
III	<b>Introduction to SketchUp/Revit;</b> Basic tools, Visualisation, shortcuts of SketchUp	16
IV	<b>Problem Solving with detailed modelling</b> Creating Plans, Elevation, Section and 3d models using AutoCAD, Photoshop, SketchUp / Revit	16
<b>Total</b>		64

**Text Books:**

1. *Up and Running with AutoCAD 2015: 2D & 3D Drawing and Modelling*, Gindis, E; 1<sup>st</sup> Ed.; 2014; Elsevier; London.
2. *Digital Drawing for Designers: A Visual Guide to AutoCAD 2012*; Seidler, D. R.; 1<sup>st</sup> Ed.; 2007; Fairchild Publications; London.

**Reference Books:**

1. Smith, B. L.; *3ds Max 2008 Architectural Visualization Beginner to Intermediate*; 1<sup>st</sup> ed.; 2007; 3DATS; China.
2. Moss, Elise; *Autodesk AutoCAD Architecture 2016 Fundamentals*; 1<sup>st</sup> Ed.; 2011; SDC Publications; London.
3. Omura, George & Benton, Brian C; *Mastering AutoCAD 2016 and AutoCAD LT 2016*; 1<sup>st</sup> Ed.; 2017; John Wiley & Sons; London.

**Course Outcomes: The students will learn**

- To develop techniques of computerize architectural representation
- To comprehend an object or space and represent it graphically and digitally
- To understand the importance of design tools – AutoCAD, Photoshop, Sketchup, Revit.
- To develop sense on AutoCAD Revision and Advance, Introduction to photoshop (advance), Introduction to SketchUp/Revit, Problem Solving with detailed Modelling.

**SYLLABUS (IV SEMESTER)**

Paper VI /Subject Name: DSE1 (Landscape Architecture)

Subject Code: ARC132D413

L-T-P/S-C: 2-0-1-4

Credit Units: 03

Scheme of Evaluation: (T/P/TP/S):TP

**Objective:**

- To introduce students to the discipline of landscape architecture and its relevance to Architecture.
- To gain an insight into the changing relationship of human with nature.
- This course shall have a direct application in the design studio of the same semester as well as subsequent semesters for site planning and landscape design of the respective design assignments.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Introduction to Landscape &amp; Landscape Architecture</b> <ul style="list-style-type: none"> <li>• Landscape – its meaning, Experience of a landscape, Aesthetics &amp; Imagery of a landscape, Relationships of humans and nature; how the Scales and Conception of landscapes evolve over time, Sense of place in a Landscape.</li> <li>• Landscape Architecture – definition, related terminologies and Scope.</li> </ul>	16
II	<b>Elements of Landscape Architecture &amp; their application in Design</b> <ul style="list-style-type: none"> <li>• Natural elements of landscape architecture (<i>landforms, water, vegetation</i>), Natural systems.</li> <li>• Man-made elements, modifications in natural systems with man-made elements, co-existence of natural and man-made elements.</li> <li>• Principles of Design incorporating these landscape elements.</li> <li>• Documentation – <i>Field identification of common Indian trees, plants, shrubs etc.</i></li> </ul>	16
III	<b>Historical Overview of Site Planning and Landscape Architecture</b> <ul style="list-style-type: none"> <li>• Study of Historical Landscape Gardens – <i>Chinese &amp; Japanese, Persian &amp; Mughal, English, Italian, French and Renaissance gardens.</i></li> <li>• Study of 19th &amp; 20th Century noted Landscape Arch. Projects (<i>Garden of Versailles, Stowe, Central Park, Copacabana Promenade, Sunder Nursery etc.</i>) by renowned Landscape Architects – <i>Lancelot Brown, André Le Nôtre, Frederick Law Olmstead, Geoffrey Jellicoe, Gertrude Jekyll, Roberto Burle Marx, Martha Schwartz, Dan Kiley, Mohammad Shaheer, Kishore Pradhan, Prabhakar Bhagawat, Lawrence Halprin, Michael Van Valkenburg etc.</i></li> </ul>	16
IV	<b>Site Analysis &amp; Site Planning</b> <ul style="list-style-type: none"> <li>• Site Analysis – definition, its need and stages/ layers, Site Inventory – <i>Topography, Vegetation, Soil, Hydrology, Climate etc.</i></li> <li>• Principles of Site Planning, Design Issues in planning process, Siting of buildings, integrating the built and open spaces etc.</li> <li>• Comprehensive Site development, materials, street, site furniture etc.</li> <li>• Design Studio on Site Plan with Landscape Design (Neighbourhood Scale) <b>OR Studio component of the Semester may be integrated with Architectural Design of the current semester.</b></li> </ul>	16
<b>Total</b>		64

**Text Books:**

1. *Landscape Architecture*: Simmonds J.O.; 5 edition (1 March 2013), McGraw-Hill Education.
2. *The Experience of Landscape*: Appleton (1996), Wiley.
3. *Introduction to Landscape Architecture*: Laurie Michael, 2nd Revised edition (1 February 1986), Elsevier Science Ltd.
4. *Landscape Architecture in India – A Reader*: Mohammad Shaheer (1 January 2013), LA, Journal of Landscape Architecture.
5. *Form and Fabric in Landscape Architecture – A Visual Introduction*: Catherine Dee (2001), Spon Press.
6. *Site Planning*: Kevin Lynch, Gary Hack (1962), MIT Press.

**Reference Books:**

1. Krishen Pradip; *Jungle Trees of Central India*; Penguin Random House India Pvt. Ltd, 2013.
2. Krishen Pradip; *Trees of Delhi*; Penguin Books India Pvt Ltd, 2006.
3. Grant W. Reid; *Landscape Graphics*; Whitney Library of Design, Watson Guptill Publications, New York, 2002.
4. Charles W Harris and Nicholas T. Dine; *Time Saver Standards for Landscape Architecture*; 2<sup>nd</sup> Edition, McGraw – Hill, International Edition, Arch. Series, 1988.

**Course Outcomes:**

The students will learn –

1. The natural and man-made components that generate the decisions in the planning of any site.

- To develop a skill of integrated design of open and built spaces.

<b>SYLLABUS (IV SEMESTER)</b>
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<b>Paper VII/Subject Name: Theory of structures-IV</b>
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<b>Subject Code: ARC132M405</b>
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<b>L-T-P/S-C: 3-0-0-3</b>
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<b>Credit Units: 03</b>
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<b>Scheme of Evaluation: (T/P/TP/S):T</b>
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**Objective:**

- To introduce students to Beams, portal frames, concrete workability.

**Detailed Syllabus:**

Modules	Course content	Periods
I	<b>Beam Deflection:</b> Application of Deflection of simply Supported and cantilever beams by double integration Method. Application of Analysis of fixed beams with u. d. 1. &. Concentrated loads. Moment Distribution for Continuous beams Without settlement & portal frames (Single storey)without sway. Application of Three hinged circular arch. Study of IS 875- Part-I & Part- II	9
II	<b>Cement and Aggregates:</b> Types & grades of Cements, testing of cements Introduction to IS 456-2000. Aggregates; Coarse & fine, characteristics & effect on its strength; particle shape & texture, size & grading; Moisture contents in aggregates, bulking of sand. Requirement of water for concrete;	9
III	<b>Concrete:</b> Batching & mixing of concrete, workability- slump of concrete w/c ratio, voids & permeability. Conveyance of Concrete, placing & compacting, curing, compressive strength of concrete, testing of concrete. Relation of durability & cover of concrete.(repeated in building construction)	9
IV	<b>Introduction to RCC Design:</b> Introduction to Limit State Design, Introduction to IS 456:2000. Brief understanding of Working Stress Method, Ultimate Load Method Concepts of Characteristic Load, Characteristic Strength, Factors of Safety, Load Combinations, Stress-Strain relationships of materials for design consideration etc.	9
<b>TOTAL</b>		<b>36</b>

**Text Books:**

- Analysis of structures I and II*, Ramamrutham

**Reference Books:**

- Ramamrutham; *Reinforced Concrete Design of structures*;
- Subramanian; *Structural analysis*.

**Course Outcomes: The students will learn**

- The importance of reinforced framed structures.
- To develop their ideas of Beam Deflection, Cement and Aggregates, Concrete and Introduction to RCC Design.

**SYLLABUS (IV SEMESTER)****Paper VIII /Subject Name: Building Services II****Subject Code: ARC132M416****L-T-P/S-C: 2-0-1-3****Credit Units: 03****Scheme of Evaluation: (T/P/TP/S):TP****Course Objective:**

To develop concepts of design, installation, operation and monitoring of the electrical services in buildings.

**Prerequisites: NIL****Detailed Syllabus:**

Modules	Topics (if applicable) & Course Contents	Periods
I.	<b>Light:</b> Principles of light – Electromagnetic radiation, waves, nature of vision, measurement of lighting. Principles of illumination: definitions, Visual tasks, Factors affecting visual tasks Units of light, definitions of flux, solid angle, luminous intensity –utilization factor – depreciation factor- MSCP – MHCP, brightness, glare. Electric light sources: brief description, characteristics and application of different types of lamps, methods of mounting and lighting control Luminaries classification/ - Lumen method for design – Room reflectance/ Glare-manufacturer’s data on luminaries/luminaries cost	16
II.	<b>Lighting in buildings:</b> Light and its sources, lighting criteria, the visual field , day light prediction methods Artificial lighting , lighting levels for various activities , Calculation for lighting levels.	16
III.	<b>Electrical system and fittings:</b> Laws of electrical circuits: Ohms and Kirchhoff’s Laws, Basics of electricity – Single/Three phase supply. Earthing for safety – types of earthing – ISI specifications, Electrical wiring systems in domestic and commercial buildings. Conduits, Types of wiring Diagram for connection. Bus way, Bus Bars, lighting track and conduits (Aluminium metallic, non metallic) arrangements. Power handling, equipment, switch board, distribution board, mains, fuse, meter, circuit breaker etc. panel boards. Lighting conductors : Electronic and Communication systems, Electrical Installations in Buildings.	16
IV	<b>Electrical layout in buildings:</b> Main and distribution boards – transformers – switch gears – substations – space requirement and Layout of the same in building types. Planning and layout of installations within a building complex. Different meters and protection units. Different type of loads and their individual protections. Selection of cable/wire sizes; potential sources of fire hazards and precautions. Emergency supply-standby (generators, invertors) & UPS. A specific design problem on this aspect.	16
<b>TOTAL</b>		64

**Text Book:**

6. Ambrose, E.P.; *Electric Heating*; 1<sup>st</sup> Ed.; 1968; John Wiley & Sons; New York.
7. Philips, Derek; *Lighting in Architectural Design*; 1<sup>st</sup> Ed.; 1964; McGraw Hill; New York.
8. Hopkenson, R.G. & Kay, J.D.; *The lighting of Buildings*; 1<sup>st</sup> Ed.; 1969; Faber & Faber; London



**Reference Books:**

1. Elevators, Escalators , Moving Walkways – Manufactures catalogues
2. *National Building Code.*
3. *Electrical systems.*
4. Handbook of building Engineers in metric systems; 1968; New Delhi
5. *National Building Code.*

**Course Outcomes: The students will**

- The importance, significance and applications of different methods of illumination and electrical wiring and fittings as an important part of construction and architecture.
- Be able to develop their sense on Light, Lighting in Buildings, Electrical system and fittings and Electrical Layout in Buildings.