Your Dreams Our Goal

POORNIMA UNIVERSITY

Member of Association of Indian Universities & Approved by UGC (Govt. of India) under 2(f) & 12(B)

FACULTY OF PLANNING & ARCHITECTURE

DEPARTMENT OF PLANNING & ARCHITECTURE

SCHEME & SYLLABUS BOOKLET

SCHEME & SYLLABUS
BATCH: 2022 – 27

INDEX

Disclaimer: The scheme, syllabus and other materials published in this booklet may be changed or modified as per the requirement after approval of competent authority. The decision taken by the management of Poornima University will be final and abiding to all.

Student Details

Name of Student:

Name of Program:

Semester: Year: Batch:

Faculty of:

VISION

To create knowledge based society with scientific temper, team spirit and dignity of labor to face global competitive challenges.

MISSION

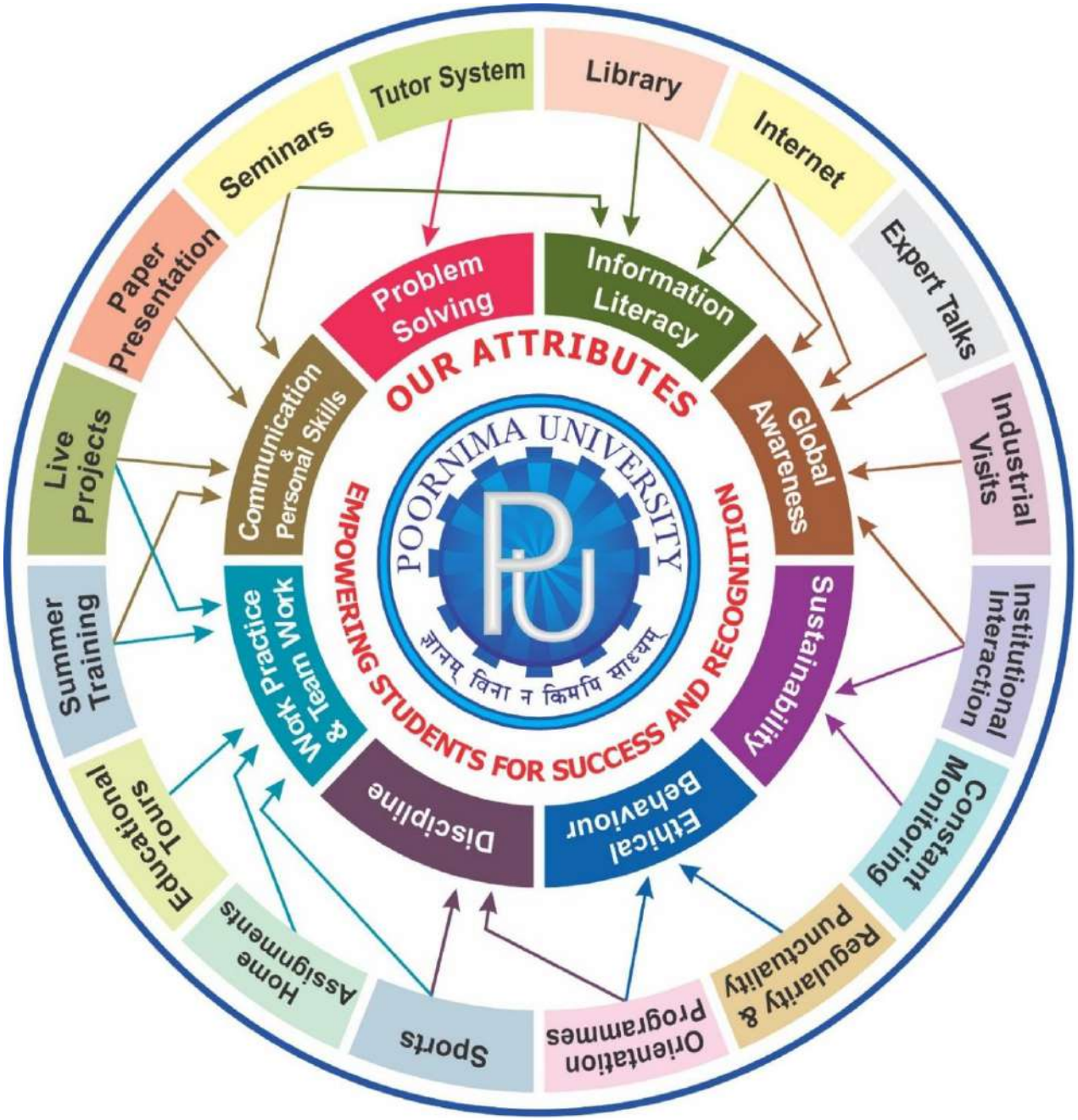
To evolve and develop skill based systems for effective delivery of knowledge so as to equip young professionals with dedication and commitment to excellence in all spheres of life.

QUALITY POLICY

To provide Quality Education through Faculty development, updating of facilities and continual improvement meeting University norms and keeping stake holders satisfied.

KNOWLEDGE WHEEL

At Poornima, the academic atmosphere is a rare blend of modern technical as well as soft skills and traditional systems of learning processes.



About Program and Program Outcomes (PO):

Title of the Program: Bachelors of Architecture (B.Arch.)

Nature of the Program: B.Arch. is a five year full-time program.

Program Outcomes (PO) :

Architecture Graduates will be able to:

PO-1 Architectural and Urban Planning Knowledge- Demonstrate the knowledge of fundamentals of architecture, design & planning principles, theory of design, planning theories, architectural drawings, building science and building structures to the solution of complex design problems.

PO-2 Construction, its techniques and materials: Identify, review, evaluate and illustrate the details of various constructions, its details & techniques available using the plethora of construction materials available.

PO-3 Building Services: Utilize the various building services like power systems, rainwater harvesting systems, water supply distribution, HVAC, vertical transportation, building automation systems, fire extinguishing systems, building acoustic systems, illumination, mechanical systems along with the fundamentals in the conception as well as completion of design projects.

PO-4 Architectural tools & software's: Identify the latest rendering, visual effects, graphic design, presentation tools, 3-d Printer and mediums along with the latest computer software's such as Auto-Cad, Revit, Sketch up, 3D's Max, Lumion, ArcGIS, Coral Draw, Photoshop & other supporting tools for the visualization and actual realization of design projects.

PO-5 Design Thinking & Creative Problem Solving - To demonstrate creative problem solving skills including design thinking, critical assessment and developing user centric, innovative design and planning solutions.

PO-6 Professional & Communication Skills-To comprehend, design & write effective reports & documentations; give and receive clear instructions; demonstrate effective and convincing communication and presentation skills on architectural issues with architecture fraternity for the interest of society at large.

PO-7 Project & Finance management: To demonstrate the understanding of HR, Finance, contract and construction management for the profession individually as well as a team member.

PO-8 Entrepreneurship and Employability –After completion of this program the students will be conscious of the professional as well as managerial activities of architectural practices shall be able to undertake projects with appropriate management control and control on cost & time & perform standard proficiencies, in harmony with the scope of local practice of architecture in particular.

PO-9 Individual &Team work- Demonstrate appropriate interpersonal skills to work effectively as an individual, as a member or as a team leader of a multidisciplinary/interdisciplinary team setting.

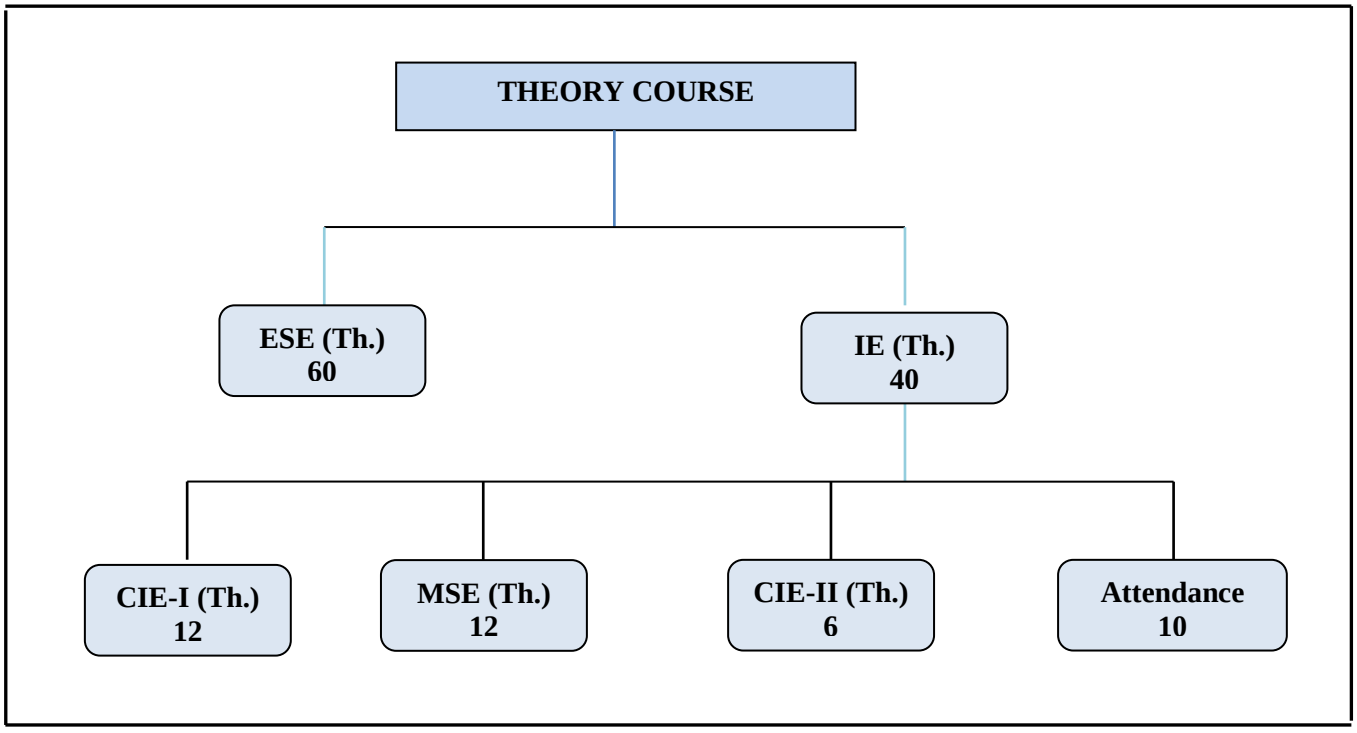
PO-10 Environment & Sustainability - Be committed to the needs and demands of the society and to demonstrate consciousness of cultural and environmental issues relevant to professional architectural practice and contribute to sustainable development.

PO-11 Receptiveness–Be competent and receptive to new ideas, knowledge and infusing a sense of scientific research in the architectural works undertaken. Recognize the need for continuous learning and upgrade their architectural knowledge and the technical competencies.

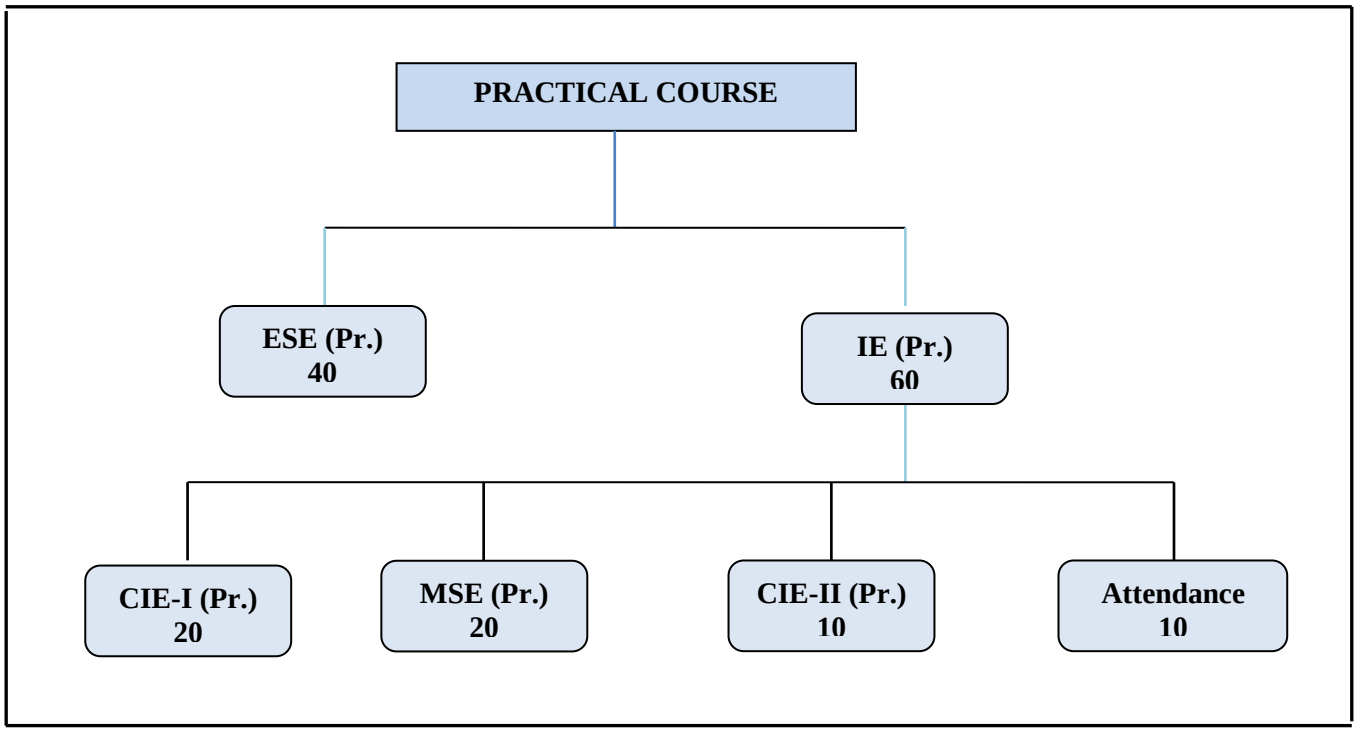
PO-12 Professional Ethics: Be committed to professional ethics, responsibilities, and economic, environmental, societal and political norms.

Examination System:

A. Marks Distribution of Theory Course:



B. Marks Distribution of Practical Course :



Th. : Theory, **Pr.** : Practical, **ESE:** End Semester Examination, **MSE:** Mid Semester Examination, **CIE:** Continuous Internal Evaluation.

Marks Distribution of Attendance:

Guidelines for Marks Distribution of Attendance Component		
S No.	**Total Course Attendance (TCA) range in Percentage**	**Marks allotted (out of 10)**
1	95% ≤ TCA	10
2	90% ≤ TCA < 95%	9
3	85% ≤ TCA < 90%	8
4	80% ≤ TCA < 85%	7
5	70% ≤ TCA < 80%	6
6	60% ≤ TCA < 70%	5
7	50% ≤ TCA < 60%	4
8	40% ≤ TCA < 50%	3
9	30% ≤ TCA < 40%	2
10	20% ≤ TCA < 30%	1
11	TCA < 20%	0

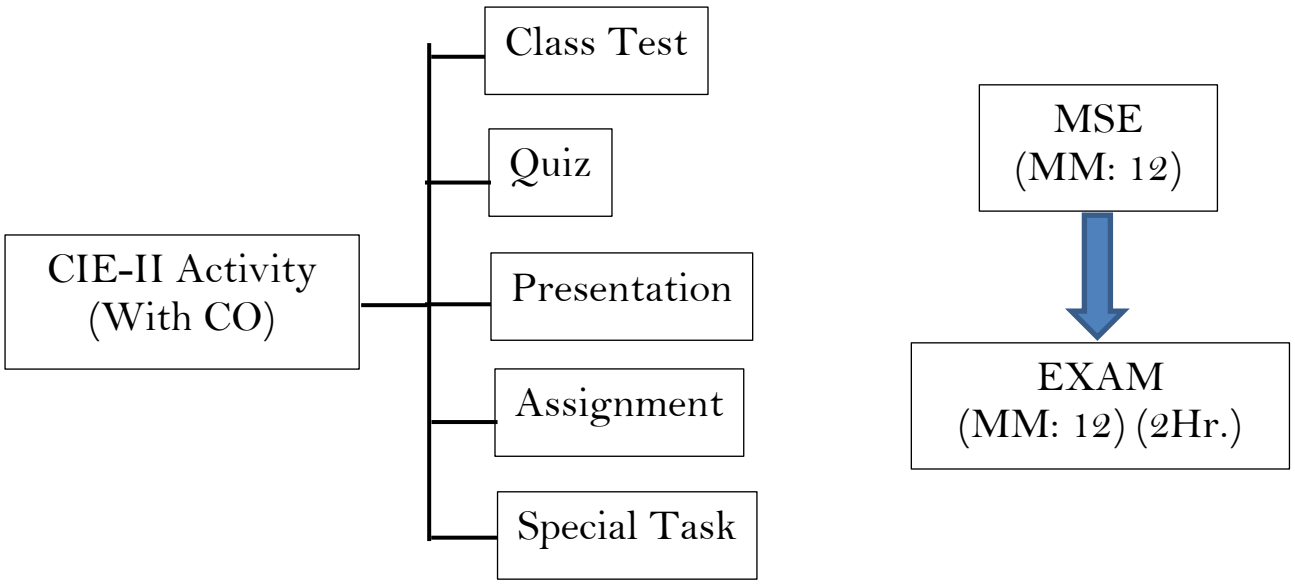
CO Wise Marks Distribution:

	Theory Subject		**Practical/ Studio Subject**	
	Maximum Marks	**CO to be Covered**	**CO to be Covered**	**Maximum Marks**
CIE-I (Class Test)	12 (6 + 6)	1 & 2	1 & 2	20 (10 + 10)
MSE	12 (6 + 6)	3 & 4	3 & 4	20 (10 + 10)
CIE-II (Activity/ Assignment)	6 (6)	5	5	10 (10)
Attendance	10	-	-	10
ESE	60	-	-	40
TOTAL	100	-	-	100

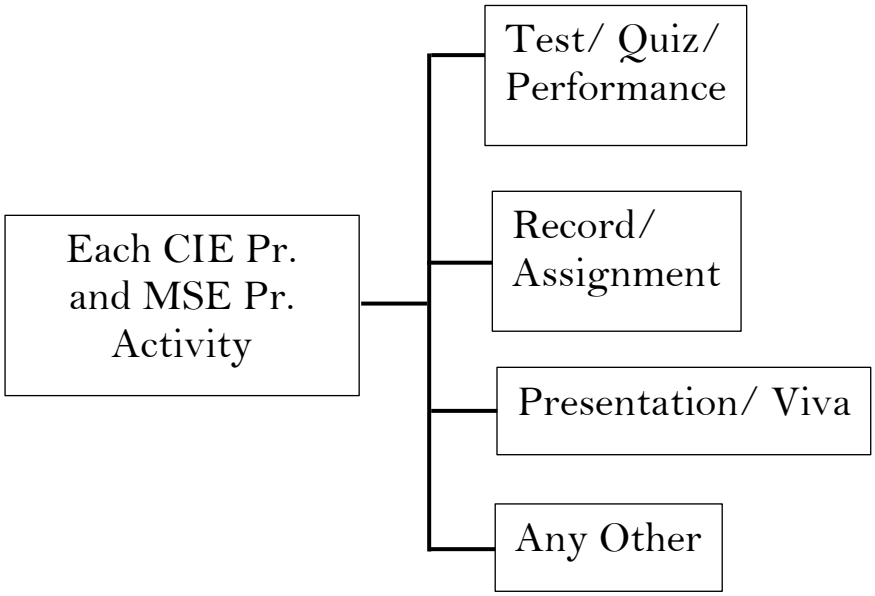
Minimum Passing Percentage in All Exams:

S. No.	Program	Minimum Passing Percentage in All Exam	
		ESE Component	**Total Component**
1	Course Work for Ph. D Registration	----------	**50 %**
2	B. Arch.	45 %	**50 %**
3	MBA, MHA, MPH, MCA, M. Tech., M. Plan. and M. Des.	40 %	40 %
4	B. Tech., B. Des., BCA, B.Sc., BVA, B. Voc., BBA, B.Com., B.A. and Diploma	35 %	40 %
5	B. Sc. (Hospitality & Hotel Administration)	35 %	40 % (Theory) & 50 % (Practical)

Break-up of Internal Exam (Theory):



Break-up of Internal Exam (Practical):



Assessment & Grade Point Average: SGPA, CGPA:

SGPA Calculation

$$\mathbf{SGPA} = \frac{C_1G_1 + C_2G_2 + \cdots\ldots\ldots\ldots\ldots C_nG_n}{C_1 + C_2 + \cdots\ldots\ldots\ldots\ldots C_n}$$

$\mathbf{SGPA} = \frac{\sum_i C_i \times G_i}{\sum_i C_i}$	Where (as per teaching Scheme & Syllabus) : C_i is the number of Credits of Courses i, G_i is the Grade Point for the Course i and i = 1, 2…….n n = number of courses in a programme in the Semester

CGPA Calculation

$$\mathbf{CGPA} = \frac{C_1G_1 + C_2G_2 + \cdots\ldots\ldots\ldots\ldots C_nG_n}{C_1 + C_2 + \cdots\ldots\ldots\ldots\ldots C_n}$$

$\mathbf{CGPA} = \frac{\sum_i C_i \times G_i}{\sum_i C_i}$	Where (as per teaching Scheme & Syllabus) : C_i is the number of Credits of Courses i, G_i is the Grade Point for the Course i and i = 1, 2…….n n = number of courses in a programme of all the Semester up to which CGPA is computed.

Grading Table:

Grading Table-A: For B.Arch. and course work for Ph.D. Registration

Academic Performance	Grade	Grade Point	Marks Range (in %)
Outstanding	A+	10	$90 \leq x \leq 100$
Excellent	A	9	$80 \leq x < 90$
Very good	B+	8	$70 \leq x < 80$
Good	B	7	$60 \leq x < 70$
Average	C	6	$50 \leq x < 60$
Fail	F	0	$x<50$

Grading Table-B: For all courses except B.Arch. and course work for Ph.D. Registration

Academic Performance	Grade	Grade Point	Marks Range (in %)
Outstanding	A+	10	$90 \leq x \leq 100$
Excellent	A	9	$80 \leq x < 90$
Very good	B+	8	$70 \leq x < 80$
Good	B	7	$60 \leq x < 70$
Average	C	6	$50 \leq x < 60$
Satisfactory	D	5	$40 \leq x < 50$
Fail	F	0	$x<40$

Calculation of SGPA $SGPA = \frac{\sum_i C_i \times G_i}{\sum_i C_i}$

$$SGPA = \frac{C_1G_1 + C_2G_2 + \ldots\ldots\ldots + C_nG_n}{C_1 + C_2 + \ldots\ldots + C_n}$$

Calculation of CGPA $CGPA = \frac{\sum_i C_i \times G_i}{\sum_i C_i}$

$$CGPA = \frac{C_1G_1 + C_2G_2 + \ldots\ldots\ldots + C_nG_n}{C_1 + C_2 + \ldots\ldots + C_n}$$

where (as per teaching scheme & syllabus): C_i is the number of credits of subject i,
G_i is the Grade Point for the subject I and i = 1 to n, n = number of subjects in a course in the semester

Award of Class:

CGPA	Equivalent Division
7.50 ≤ CGPA	First Division with Distinction
6.50 ≤ CGPA < 7.50	First Division
5.50 ≤ CGPA < 6.50	Second Division
4.50 ≤ CGPA < 5.50	Pass Class

The multiplication factor for conversion of CGPA to percentage is Equivalent % of Marks = (CGPA-0.5) x 10.

For Example if CGPA = 5.5 then % is (5.5-0.5) x 10 = 50%.

Attached Items:

Open Elective Booklet	Annexure-1
Soft Skills Booklet	Annexure-2
Value Added Course Booklet	Annexure-3

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year I Semester I								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorial (T)	Practical (P)	IE	ESE	Total	
A.	**University Core Courses**							
BULCHU1101	Environmental Studies	2	0	0	40	60	100	**2**
B.	**Department Core Courses**							
B.1	**Theory**							
BARCAR1101	History of Architecture – I	2	0	0	40	60	100	**2**
BARCAR1102	Architectural Structures – I	2	0	0	40	60	100	**2**
B.2	**Practical**							
BARCAR1201	Architectural Design – I	0	1	5	60	40	100	**6**
BARCAR1202	Architectural Building Construction & Materials – I	0	2	2	60	40	100	**3**
BARCAR1203	Arts Studio & Workshop – I	0	2	2	60	40	100	**3**
BARCAR1204	Architectural Geometry & Drawing – I	0	2	2	60	40	100	**3**
BARCAR1205	Presentation & Skills – I	0	1	2	60	40	100	**2**
C.	**Department Elective**							
	NIL							
D.	**Open Elective**							
	NIL							
E.	**Humanities and Social Sciences including Management courses (AECC)**							
	NIL							
F.	**Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere**							
BULCHU1201	Foundation English	0	0	2	60	40	100	**1**
BULCHU1202	Communication skills – I	0	0	2	60	40	100	**1**
G.	**Discipline, Value Added Courses & Social Outreach**							
BARCAR1601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	**50**	-	**50**	**1**
	Talent Enrichment Program (TEP) - I	-	-	2				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	**06**	**08**	**19**				
	Total Teaching Hours	**33**						**26**

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year I Semester II								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	**University Core Courses**							
	Nil							
B.	**Department Core Courses**							
B.1	**Theory**							
BARCAR2101	History of Architecture – II	2	0	0	40	60	100	**2**
BARCAR2102	Architectural Structures – II	2	0	0	40	60	100	**2**
BARCAR2103	Climatology Study	2	0	0	40	60	100	**2**
B.2	**Practical**							
BARCAR2201	Architectural Design – II	0	1	5	60	40	100	**6**
BARCAR2202	Architectural Building Construction & Materials – II	0	2	2	60	40	100	**3**
BARCAR2203	Arts Studio & Workshop – II	0	2	2	60	40	100	**3**
BARCAR2204	Architectural Geometry & Drawing – II	0	2	2	60	40	100	**3**
BARCAR2205	Presentation Skills – II	0	1	2	60	40	100	**2**
C.	**Department Elective**							
	Nil							
D.	**Open Elective**							
	As per Annexure 1	2	0	0	40	60	100	**2**
E.	**Humanities and Social Sciences including Management courses (AECC)**							
	NIL							
F.	**Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere**							
BULCHU2201	Language Lab	0	0	2	60	40	100	**1**
BULCHU2202	Communication Skills-II	0	0	2	60	40	100	**1**
G.	**Discipline, Value Added Courses & Social Outreach**							
BARCAR2601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	**50**	-	**50**	**1**
	Talent Enrichment Program (TEP) - II	-	-	-				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	**08**	**08**	**17**				
	Total Teaching Hours	**33**						**28**

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year II Semester III								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
BARCAR3101	History of Architecture – III	2	0	0	40	60	100	2
BARCAR3102	Architectural Structures – III	2	0	0	40	60	100	2
BARCAR3103	Surveying & Site Planning	2	0	0	40	60	100	2
B.2	Practical							
BARCAR3201	Architectural Design – III	0	1	7	60	40	100	8
BARCAR3202	Architectural Building Construction & Materials – III	0	2	2	60	40	100	3
BARCAR3203	Arts Studio & Workshop – III	0	2	2	60	40	100	3
BARCAR3204	Building Services Studio-I	0	1	2	60	40	100	2
BARCAR3205	Computer Application-I	0	1	2	60	40	100	2
C.	Department Elective							
	Nil							
D.	Open Elective							
	As per Annexure 1	2	0	0	40	60	100	2
E.	Humanities and Social Sciences including Management courses (AECC)							
	NIL							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
BULCHU3201	Human Value and Professional Ethics	0	0	2	60	40	100	1
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR3601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	1
	Talent Enrichment Program (TEP) - III	1	-	-				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	09	07	17				
	Total Teaching Hours	33						28

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year II Semester IV								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
BARCAR4101	History of Architecture – IV	2	0	0	40	60	100	2
BARCAR4102	Architectural Structures – IV	2	0	0	40	60	100	2
BARCAR4103	Building Regulation & Bye Laws	2	0	0	40	60	100	2
B.2	Practical							
BARCAR4201	Architectural Design – IV	0	1	7	60	40	100	8
BARCAR4202	Architectural Building Construction & Materials – IV	0	2	2	60	40	100	3
BARCAR4203	Arts Studio & Workshop – IV	0	2	2	60	40	100	3
BARCAR4204	Building Services Studio-II	0	1	2	60	40	100	2
BARCAR4205	Computer Application-II	0	1	2	60	40	100	2
C.	Department Elective							
	Nil							
D.	Open Elective							
	As per Annexure 1	2	0	0	40	60	100	2
E.	Humanities and Social Sciences including Management courses (AECC)							
	Nil							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
BULCHU4201	Leadership and Management Skills	0	0	2	60	40	100	1
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR4601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	1
	Talent Enrichment Program (TEP) - IV	1	-	-				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	09	07	17				
	Total Teaching Hours	33						28

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year III Semester V								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
BARCAR5101	History of Architecture – V	2	0	0	40	60	100	2
BARCAR5102	Architectural Structures – V	2	0	0	40	60	100	2
BARCAR5103	Quantity Surveying & Specification	2	0	0	40	60	100	2
B.2	Practical							
BARCAR5201	Architectural Design – V	0	1	7	60	40	100	8
BARCAR5202	Architectural Building Construction & Materials – V	0	2	2	60	40	100	3
BARCAR5203	Working Drawing- I	0	2	2	60	40	100	3
BARCAR5204	Building Services Studio-III	0	1	2	60	40	100	2
C.	Department Elective							
BAREAR5311	Interior Design	0	1	2	60	40	100	2
BAREAR5312	Furniture Design							
BAREAR5313	Product Design							
D.	Open Elective							
	As per Annexure 1	2	0	0	40	60	100	2
E.	Humanities and Social Sciences including Management courses (AECC)							
	Nil							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
BULCHU5201	Professionals Skills-I	0	0	2	60	40	100	1
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR5601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	1
	Talent Enrichment Program (TEP) - IV	1	-	-				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	09	07	17				
	Total Teaching Hours	33						28

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year III Semester VI								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
BARCAR6101	Project Management	2	0	0	40	60	100	2
BARCAR6102	Architectural Structures – VI	2	0	0	40	60	100	2
BARCAR6103	Building Economics	2	0	0	40	60	100	2
B.2	Practical							
BARCAR6201	Architectural Design – VI	0	1	7	60	40	100	8
BARCAR6202	Architectural Building Construction & Materials – VI	0	2	2	60	40	100	3
BARCAR6203	Working Drawing- II	0	2	2	60	40	100	3
BARCAR6204	Building Services Studio-IV	0	1	2	60	40	100	2
C.	Department Elective							
BAREAR6311	Vernacular Architecture	0	1	2	60	40	100	2
BAREAR6312	Contemporary Processes in Architecture							
BAREAR6313	Theory of Design							
D.	Open Elective							
	As per Annexure 1	2	0	0	40	60	100	2
E.	Humanities and Social Sciences including Management courses (AECC)							
	Nil							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
BULCHU6201	Professionals Skills – II	0	0	2	60	40	100	1
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR6601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	1
	Talent Enrichment Program (TEP) - IV	1	-	-				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	09	07	17				
	Total Teaching Hours	33						28

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year IV Semester VII								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
BARCAR7101	Professional Practice	2	0	0	40	60	100	2
BARCAR7102	Research Methodology	2	0	0	40	60	100	2
B.2	Practical							
BARCAR7201	Architectural Design – VII	0	1	7	60	40	100	8
BARCAR7202	Landscape & Site Planning	0	2	2	60	40	100	3
BARCAR7203	Housing & Settlement Planning	0	2	2	60	40	100	3
BARCAR7204	Portfolio development & Presentation	0	1	2	60	40	100	2
C.	Department Elective							
BAREAR7311	Green Building & Ratings Systems	0	1	2	60	40	100	2
BAREAR7312	Building Performance & Compliance							
BAREAR7313	Sustainable Cities & Communities							
BAREAR7321	Selling & Negotiating Skills	0	1	2	60	40	100	2
BAREAR7322	Internet Marketing							
BAREAR7323	Use of Social Media Marketing							
D.	Open Elective							
	As per Annexure 1	2	0	0	40	60	100	2
E.	Humanities and Social Sciences including Management courses (AECC)							
	Nil							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
	NIL							
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR7601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	1
	Talent Enrichment Program (TEP) - IV	-	-	1				
	Library / MOOC / Online Certification Courses	-	-	1				
	Total	06	08	19				
	Total Teaching Hours	33						27

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year IV Semester VIII								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
	Nil							
B.2	Practical							
	Nil							
C.	Department Elective							
	Nil							
D.	Open Elective							
	Nil							
E.	Humanities and Social Sciences including Management courses (AECC)							
	Nil							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
BARCAR8501	Practical Training (Internship) & its Seminar.	-	-	-	60	40	100	20
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR8601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	-	-	-	1
	Talent Enrichment Program (TEP) - IV	-	-	-				
	Library / MOOC / Online Certification Courses	-	-	-				
	Total	-	-	-				
	Total Teaching Hours	-						21

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year V Semester IX								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	**University Core Courses**							
	Nil							
B.	**Department Core Courses**							
B.1	**Theory**							
BARCAR9101	Finance Management in Architecture	2	0	0	40	60	100	**2**
B.2	**Practical**							
BARCAR9201	Building Information Management	0	2	2	40	60	100	**3**
BARCAR9202	Architectural Design – VIII	0	2	8	60	40	100	**10**
BARCAR9203	Dissertation	0	4	4	60	40	100	**6**
C.	**Department Elective**							
BAREAR9311	Disaster Mitigation & Management	0	1	2	60	40	100	**2**
BAREAR9312	Earthquake Resistant Architecture							
BAREAR9313	Buildings Systems Integration & Management							
D.	**Open Elective**							
	Nil							
E.	**Humanities and Social Sciences including Management courses (AECC)**							
	Nil							
F.	**Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere**							
BARCAR9501	Pre Thesis Seminar	0	0	4	60	40	100	**2**
G.	**Discipline, Value Added Courses & Social Outreach**							
BARCAR9601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	**1**
	Talent Enrichment Program (TEP) - IV	-	-	1				
	Library / MOOC / Online Certification Courses	-	-	1				
	Total	**02**	**09**	**22**				
	Total Teaching Hours	**33**						**26**

POORNIMA UNIVERSITY								
Faculty of Planning and Architecture								
Batch: 2022-27								
Name of Program								
B.Arch.								
Teaching Scheme for Year V Semester X								
Course Code	Course Name	Teaching Scheme (Hrs per Week)			Marks Distribution			Credits
		Lecture (L)	Tutorials (T)	Practical (P)	IE	ESE	Total	
A.	University Core Courses							
	Nil							
B.	Department Core Courses							
B.1	Theory							
BARCAR0101	Entrepreneurship Skills for Architects	2	-	-	40	60	100	2
B.2	Practical							
BARCAR0201	Architectural Design Thesis	0	4	16	60	40	100	12
C.	Department Elective							
BAREAR0311	Architectural Journalism	0	1	2	60	40	100	2
BAREAR0312	Architectural Conservation							
BAREAR0321	Sustainable Development & Architecture	0	1	2	60	40	100	2
BAREAR0322	Climate Responsive Architecture							
D.	Open Elective							
	Nil							
E.	Humanities and Social Sciences including Management courses (AECC)							
	Nil							
F.	Skill Enhancement Courses (SEC) OR Project work, Seminar and Internship in Industry or Elsewhere							
G.	Discipline, Value Added Courses & Social Outreach							
BARCAR0601	Non – syllabus project/ Industrial Visit/ CRT	-	-	-	50	-	50	1
	Talent Enrichment Program (TEP) - IV	-	-	1				
	Library / MOOC / Online Certification Courses	-	-	1				
	Total	02	06	22				
	Total Teaching Hours	30						19

SYLLABUS
I Semester

A. COURSE OUTCOMES

Students will be able to:

- Understand the scope of environmental studies and explain the concept of ecology, ecosystem and biodiversity.
- Implement innovative ideas of controlling different categories of Environmental Pollution.
- Explain different environmental issues together with various Environmental Acts, regulations and International Agreements.
- Summarize social issues related to population, resettlement and rehabilitation of project affected persons and demonstrate disaster management with special reference to floods, earthquakes, cyclones, landslides.
- Determine the local environmental assets with simple ecosystems and identify local flora and fauna.

B. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to Environmental Studies	5
2.	Environmental Pollution and its Control	5
3.	Environmental Policies and Practices	5
4.	Human Communities and the Environment	5
5.	Field Work	4

C. DETAILED SYLLABUS

UNIT	UNIT DETAILS
1.	**Introduction to Environmental studies**
	• Introduction of Unit • Multidisciplinary nature of environmental studies • Concept of sustainability and sustainable development. • Ecosystem: Structure and function of ecosystem • Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies • Case studies of the following ecosystems: Forest ecosystem, Grassland ecosystem, Desert ecosystem • Aquatic ecosystems • Biodiversity and Conservation • Conclusion & Real Life Application
2.	**Environmental Pollution and its Control**
	• Introduction of Unit • Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution • Nuclear hazards and human health risks • Solid waste management: Control measures of urban and industrial waste. • Pollution case studies • Conclusion & Real Life Application
3.	**Environmental Policies & Practices**

	• Introduction of Unit • Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture • Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies. • Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. • International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD) • Conclusion & Real Life Application
4.	**Human Communities and the Environment**
	• Introduction of Unit • Human population growth: Impacts on environment, human health and welfare. • Resettlement and rehabilitation of project affected persons; case studies. • Disaster management: floods, earthquake, cyclones and landslides. • Conclusion & Real Life Application
5.	**Field Work**
	• Introduction of Unit • Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc. • Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. • Study of common plants, insects, birds and basic principles of identification. • Study of simple ecosystems-pond, river, Delhi Ridge, etc. • Conclusion & Real Life Application

D. RECOMMENDED STUDY MATERIAL:

S. No	Reference Book	Author	Edition	Publication
1	**Environmental Studies**	ErachBarucha	Latest	UGC
2	Environmental Studies	Benny Joseph	Latest	Tata McgrawHill
3	Environmental Studies	R. Rajagopalan	Latest	Oxford University Press
4	Principles of Environmental Science and Engineering	P. Venugoplan Rao	Latest	Prentice Hall of India.
5	Environmental Science and Engineering	Meenakshi	Latest	Prentice Hall India.

BARCAR1101 HISTORY OF ARCHITECTURE – I 2 Credits [LTP: 2-0-0]

A. OBJECTIVE

Study of the history of architecture is a very important aspect. It deals with the development from ancient to medieval to modern. It gives an idea about the technology, society, culture, materials used etc. in the ancient time, then in the modern era.

B. COURSE OUTCOME

- To illustrate art & architecture of ancient civilizations.
- To appraise the pre- historical built structures based on geographical location, social, cultural and its connection with nature.
- To be able to analyze the prehistoric structure of Indian art & architecture based on social, cultural, historical and geographical elements.
- To be able to compare the Indian art & Architecture with western art and architecture based on social, cultural historical & geographical elements.
- To design/ create a model using the design principles based on prehistoric art and architecture.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Art & Architecture	2
2	Pre historic/ Primitive Architecture	2
3	Ancient River valley civilizations (Nile & Indus Valley)	8
4	Aryan & Vedic Civilization	6
5	Historic Architectural Design Principles	6

D. DETAILED SYLLABUS

Unit	Contents
1.	**Art and Architecture**
	I A- Introduction to ancient civilizations, art, culture, society and architecture. Evolution of society and culture as seen in present. Understanding the relationship of culture and built spaces, impact of customs and tradition on lifestyles.
2.	**Prehistoric / Primitive Architecture**
	II A-Primitive people, shelters, settlements, burial systems, megaliths and memorials. E.g.: Oval huts near Nice, Dolmen tomb, Gallery grave, Passage grave, Cairns, Tumulus, Houses at Catal Huyuk, Stonehenge etc. a) Underlying values of relationships between man, nature and society b) Earlier attempts of man for shelter during the pre-historic period c) Settlement's location- river banks, valleys, fertile land d) Underlying values of relationships between man, nature and society
3.	**Ancient River Valley Civilizations- Nile & Indus Valley Civilization**
	III A- Indus Valley Civilization: Town Planning, Trade and Commerce; Mohenjo-Daro and Harappa. Great Bath, granaries, grid iron planning, drainage system, mud brick houses. **III B-** Egyptian Valley Civilization; Pyramids, Mastabas, Trabeated style construction, Egyptian temples, Obelisks a) Introduction to unit. b) Historic, Social, Cultural Geographical factors affecting architecture and design.

	c)Design elements and features of art and architecture d)Conclusion and Summary of Unit.
4.	**Aryan and Vedic civilization**
	IV A- Early Iron Age Civilization in India: the coming of the Aryans and Vedic Age; Epic Age; development of Hinduism Religious and Caste systems, Wooden Origins of Indian Architecture: Forest Dwellings, Kutiya and Grama. Town forms by planning pattern (Dandaka, Nandyavartha etc.), typical Vedic village, shelter types by shape and material used, Torana and Sacred railings. a) Introduction to unit. b) Historic, Social, Cultural Geographical factors affecting architecture and design. c)Design elements and features of art and architecture in India d)Conclusion and Summary of Unit.
5.	**Historic architectural design principles**
	V A- a) Introduction to principles of design b) Elements of all principles of design studied from historical examples

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Models based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions/Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	History of Architecture	Bannister Fletcher	20th Edition	CBS
2.	The Architecture of India (Islamic)	Grover's	1981	Vikas Publishing House Pvt. Ltd., New Delhi,
3.	Indian Architecture (Islamic period)	Brown, Percy	Latest	DB Taraporevala Sons & Co, Mumbai

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	OPEN LEARN	https://www.open.edu/openlearn/history-the-arts/history-art/art-and-architecture?track=1	Podcast/ audio/video	3-06-2020

ii) Journals

Sr. N	Name of Journal	Reference Link	Volume/pp/ Impact Factor	Date of Publication	Date referred
1	Research Gate		2.314	Publication	

iii) Other resources

Sr. N	Name of the resource	link for the Resource	Date of creation	Date referred
1	You tube: Consortium for Educational Communication (cec)	https://www.youtube.com/watch?v=TUNTfaanF-k		3-06-2020

BARCAR1102 ARCHITECTURAL STRUCTURES –I 2 Credits [LTP: 2-0-0]

A. OBJECTIVE

To understand basic building support systems& to inculcate awareness of the principles used in various building systems.

B. COURSE OUTCOME

- To be able to gain knowledge of basic structures
- To learn the various terms and technologies applicable in architectural structures
- To enable student to understand the architectural building science
- To design structures as per the fundamentals of architecture & design through conceptualization
- Develop an understanding and realization of architectural projects and their structures

C. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Forces	5
2	Centroid & moment of inertia	5
3	Simple stresses & strains	4
4	Loads & its types	4
5	Columns	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Force**
	I A- Concept of force, graphical representation, Coplanar and non-coplanar forces, concurrent and non-concurrent forces, composition and analytical resolution of coplanar forces, numerical problems. **I B -** Application of forces on building and its components
2.	**Centroid & moment of inertia**
	II A - Centre of gravity, moments of inertia, parallel axis theorem, perpendicular axis theorem, product of inertia, numerical problems. **II B-** Application of moment of inertia
3.	**Simple stresses & strains**
	III A- Stress and strain, tensile, compressive and shear stresses. Hooks law, modulus of elasticity and their relationship, linear and lateral strains, poisons ratio, compression **III B-** Application of tensile and compressive stresses on building materials like brick, stone, concrete and their effect on structure. Tension test of mild steel.
4.	**Loads & its types**
	IV A- Types of Loads – dead, live, wind, impact, earthquake, concentrated, uniformly distributed, varying loads, Condition of statistical Equilibrium of forces, Concept of beams and various support conditions, determination of support reactions. **IV B-** Application of various Loads on a building and its components.
5.	**Material Testing**
	V A- Various field and laboratory tests on building materials as per their characteristics and usage; Bricks, Sand, Aggregate, Lime, Cement, Water, Stone, RCC, Steel, Rammed Earth, Adobe & Stabilized Earth Blocks. **V B-** Application of various building materials

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS: (Market Surveys, Seminars & Report)

- Understanding of Basics of structures like beam, column. Numerical on forces, moments, centroid, moment of inertia, stresses, load on column & beam and their calculations.
- Physical models for understanding the column and beam structure.
- Site visits of buildings for understanding of functioning of structural elements.
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement

F. RECOMMENDED STUDY MATERIAL

S. N.	Book	Author	Edition	Publication
1	Strength of Materials	R.S. Khurmi		S. Chand Publishing House
2	Engineering mechanics	D.S. Bisht		Jhunjunwala
3	Engineering mechanics	D.S. Kumar		S K Kataria and Sons
4	Strength of Materials	S Ramamurthan		Dhanpat Rai Publication

A. OBJECTIVE

- Introduce and initiate design thinking in students using design vocabulary, principles & elements of design by working on exploratory 2D & 3D design exercises.
- Explore the inter relation between form, space& function and their relation with quality of spaces.

B. COURSE OUTCOME

- Define the elements of design and their interdependence using various exploratory 2D and 3D exercises.
- Demonstrate the usage of space defining elements of design in arts and architecture using exploratory design exercises in 2D & 3 D.
- Choose the principles of design and study of form by doing various designing exercises.
- Interpret understanding the quality of space by doing various 3D exercises.
- Develop designs based on the understanding of anthropometrics and translating it in the form of drawing.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Elements of design - point/ line/ plane/volumes	14
2	Introduction to elements of design	12
3	Study of form	14
4	Study of form and space	16
5	Anthropometrics	16

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**I A- Elements of design - point/ line/ plane/volumes.** a) Point: position and size of a point. b) Line: length, direction, position and thickness of the line. c) Plane: Shape, proportion, orientation and position of a plane (2-D and 3-D) d) Volume: shape, proportion, orientation and position of the volume (2D and 3-D). **I B** Application of the elements of design and their interdependence using various exploratory 2D and 3D exercises.
2.	**II A** Introduction to elements of design: axis/symmetry/ Hierarchy/Repetition/Rhythm/ transformation, etc. Space defining elements – horizontal, vertical, opening in space defining elements, spatial relationship, spatial organization. **II B** Application of the elements of design in arts and architecture using exploratory design exercised using various 2D and 3D exercises.
3.	**Study of form** **III A-** principles of design: shape/ size/color/texture/position/ orientation/scale/proportion/position of planes/corners/edges and linear elements. **III B**- Understanding the principles of design by doing various designing exercises.
4.	**Study of form and space** **IV A- Quality of space**: form/color/texture/pattern/sound/ Proportion /scale /definition/degree of enclosure / view/ outlook/ light /golden ratio. Properties of enclosure: shape/surface/edges/dimensions/ configuration/openings.

	Spatial organizations, clustering/ configuration. From study: Additive/ subtractive/ transformation. **IV B** understanding the quality of space by various 3D exercises.
5.	**Anthropometrics** **V A-** a) Human scale and Posture b) Functional spaces/ Ergonomics/ sleeping/ cooking/ entertainment/parking/storage, etc. c) Standards with respect to human scale. **V B** - Understanding anthropometrics' by doing real-time exercises and translating it in the drawing.

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- Elements of Design: Point/ Line/ Plane/ Volume.
- Point: Position and Size of a Point.
- Line: Length, Direction, Position and Thickness of a Line.
- Plane: Shape, Proportion, Orientation and Position of a Plane (2D & 3D).
- Volume: Shape, Proportion, Orientation and Position of a Volume (2D & 3D).
- Building Study in 2D and 3D, analyzing element of design.

F. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Books	Author	Edition	Publication
1.	Arch. Form, Space, And Order	Francis D. K . Ching		
2.	A Visual Dictionary of Architecture	Francis D. K. Ching		

BARCAR1202	ARCHITECTURAL BUILDING CONSTRUCTION & MATERIAL – I	3 Credits [LTP: 0-2-2]

A. OBJECTIVE

The construction studio work should demonstrate the inter dependence of the building materials, elements to form complete building envelop. Study the basics and construction details of laying, fixing of stone and brick used in foundations, walls, openings, roofing, and floorings along with their principles of construction and architectural details.

B. COURSE OUTCOME

- Classify various construction materials, their characteristics, procurement, processing and storage.
- Demonstrate the understanding of various types of building construction materials based on loading patterns.
- Choose systems of construction using the properties of traditional building construction materials like mud and earth.
- Appraise the traditional building binding construction materials, the different forms of traditional and modern construction systems using lime.
- Combine the various traditional building construction materials and systems in a built structure.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to materials used in civil construction	12
2	Introduction to build components of a structure	12
3	Traditional Building Binding and Structural Materials – Mud & Earth	12
4	Traditional Building Binding Materials – Lime	12
5	Traditional & Conventional Structural Building Materials – Brick	12

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Introduction to materials used in civil construction.**
	I A- Bricks, Sand, Aggregate, Lime, Cement, Water, Stone and reinforcement Steel Properties of materials, procurement of raw materials, processing and storage. **I B-** Application of above-mentioned materials in construction industry. Various types and forms of brick, stone and reinforcement steel used in civil construction
2.	**Introduction to build components of a structure**
	II A- Overview of types of building construction systems based on loading patterns – Load Bearing structures, Framed structures and composite structures. Structural components of a built form, their nomenclature and their depiction in the form of construction drawings. **II B-** Sub structure – Foundation systems, footings, retaining wall systems Superstructure – Wall systems, Column Beam systems, Roofing systems
3.	**Traditional Building Binding and Structural Materials – Mud & Earth**
	III A- The nature of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of mud used for binding material in masonry. Different forms of mud construction of past and contemporary innovative systems of mud construction, their nomenclature and their representations & construction

	drawings **III B-** Mud construction systems – Cob, Rammed Earth, Adobe & Stabilized Earth Blocks, Wattle & Daub
4.	**Traditional Building Binding Materials – Lime**
	IV A- The nature & types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of lime used for binding material in masonry and ornamentation of buildings. Different forms of lime construction of past and cotemporary innovative systems of lime construction , their nomenclature and their representations & construction drawings **IV B-** Lime construction systems – Processing of lime of construction. Use of lime for masonry, flooring, plaster, wall finishes and stucco renderings
5.	**Traditional & Conventional Structural Building Materials – Brick**
	V A- The nature &types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of the materials used for structural units in masonry. Different forms of Brick used in construction of past and cotemporary innovative development in Bricks Masonry , their nomenclature and their representations & construction drawings **V B-** Brick Masonry Bonds – Header Bond, Stretcher Bond, English Bond, English Garden Bond, Flemish Bond, Flemish Garden Bond, Rat Trap Bond, Dutch Bond. Along with Right angled junctions, Cross junctions and piers.

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- Preparation of drawings, Site reports and other exercises covering the above.
- Model making and PowerPoint presentations.
- Workshops for brick bonds,
- Visit to brick Kilns, cement factory.
- Market surveys for product properties, installation details, etc.

F. RECOMMENDED STUDY MATERIAL

S. No	Reference Books	Author	Edition	Publication
1.	Building construction	B.C.Punmia	10th	Laxmi publication
2.	Building construction	S.C.Rangwala	29th	Charatar publication
3.	A Text Book of Building Construction	S.P.Arora, S.P.Bindra	5th	Dhanpat Rai publication
4.	Building Construction Illustrated	Francis D. K . Ching	3rd edition	
5.	Building Constructions (1 to 4 vol.)	Mckay, W.B.		

A. OBJECTIVE

To introduce to the students the fundamentals of design and development of design vocabulary, to nurture design thinking and enable them to apply the same thought process in developing compositions.

B. COURSE OUTCOME

- To define the basic composition, elements and principles of drawings and the tools used
- To illustrate the study of anthropometry through the study and sketches of various Automobiles
- To apply the basics of photography and sketching still life objects using principles of light and shadows
- To inspect the characteristics, applications and visual effects of various colors
- To appraise the influence of art history and visual effects of colors on humans using various works of famous artists

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Drawing & Basics	15
2	Sketching	15
3	Photography	5
4	Color Fundamentals	15
5	Influence of art history	10

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Drawing & Basics**
	I A- a) Introduction to the basic formal concepts in the two – dimensional arts b) The principles of aesthetic organization: line, shape, form, color, texture, harmony, balance etc. c) Brief knowledge of Anatomy for learning human proportions & scale.
2.	**Outdoor Sketching**
	II A- a) Outdoor sketching of buildings, building elements, buildings in landscapes, trees & pencils, pen & ink b) Line drawing in various contexts c) Draw existing objects, in pencil, color pencils, glass marking, Derwent and charcoal
3.	**Photography**
	III A- a) Study of the fundamentals of still photography and the camera b) Lens types, aperture and exposure, shutter speed, depth of field, focus, light conditions, light compensation c) Using camera to enhance visual perception for expressing volume, depth, positive and negative spaces. d) Comparative assessment of traditional SLR and digital photography
4.	**Color Fundamentals**
	IV A- a) Perception of color and light b) Hue, value, intensity, tints, tones and shades c) Warm and cool colors, Complimentary and split complimentary d) Triad, tetradic, analogous, monochromatic colors

5.	**Art of Composition and representation**
	V A- a) To learn the art of composition, color balance, aesthetic, light control, proportions, scaling and perspective. b) Presentation to life and works of well-known craftsmen and fine arts

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Sheets based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	Rendering with pen and ink	Robert W. Gill	Enlarged edition, 1984	Thames Hudson Ltd. United Kingdom
2.	Art fundamental (Theory and practice)	Cover and others	12th edition	McGraw – Hill Education Europe
3.	Color in sketching and rendering	Guptill, Arthur L.	5th edition	Reinhold Publishing Corp., New York 1949

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	Coursera	https://www.coursera.org/learn/fundamentals-of-graphic-design?specialization=graphic-design	Podcast/ audio/ video	2-07-2020

ii) Journals

Sr. N	Name of Journal	Reference Link	Volume/ pp/ Impact Factor	Date of Publication	Date referred
1	Research Gate	https://www.researchgate.net/publication/275155264_Principles_and_elements_of_visual_design_A_review_of_the_literature_on_visual_design_of_instructional_materials		Publication	2-07-2020

BARCAR1204	ARCHITECTURAL GEOMETRY & DRAWING – I	3 Credits [LTP: 0-2-2]

A. OBJECTIVE

To familiarize the students with basic knowledge of orthographic projections of simple geometrical forms to be able to represent basic ideas through 2D & 3D designs. Also, to understand and learn basic techniques of drafting and lettering.

B. COURSE OUTCOME

- Understand the basics of drawings and tools to be able to use them to depict the basic architectural designs
- Develop a habit of hand drawings with different outcomes in terms of drawing lines, grids, dots, free hand
- Analyze and develop a style of lettering with various styles to be used in formal drawings/ presentations, etc.
- Creating scaled drawings of planes, prism, pyramid, cylinder & cone, and intersections of the same
- Create one point and two-point perspective of simple objects or study models solids & planes and their projections

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours
1	Familiarization of drawing material and equipment's	5
2	Free hand drawings	5
3	Lettering, fonts and scale	10
4	Plane geometry	20
5	Plane, solid, section and intersection	20

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Familiarization of drawing material and equipment's**
	I A- Basic introduction, Stationary and tools, **I B-** How to use drawing instruments
2.	**Free hand drawings**
	II A- Lines, Types of lines, Basic introduction of lines, Construction of lines, how to divide a line, Curves , Introduction of curve, to find center of an arch, Construction of ogee curve or reverse , curve, Objects, Basic introduction, Types of objects **II B-** Application of free hand drawings, lines, curves and arches
3.	**Lettering, fonts and scale**
	IIIA- Introduction of lettering, Types of lettering, Single –stroke letters, Upper case and lower-case letters, Introduction of fonts, Types of fonts , Scale, Scale on drawings, Types of scale, Plane scale, diagonal scale, comparative scale **III B-** Application of scales in architectural drawings
4.	**Plane geometry**
	IV A- Principles of plane geometry, Plane and their types, Principles, Orthographic projection of a point and line, Principles of projections , Method of projections, Quadrant, First angle projection, third angle projection, Orthographic projection of a point, Orthographic projection of a line **IV B-** How to use planes and projection methods to represent design drawings
5.	**Plane, solid, section and intersection**

	V A- Orthographic projection of a plane, Types of planes, Traces of planes, Projection of oblique plane, Orthographic projection of solids, Types of solids, Projection of solid in simple position, Projection of solid with inclination, Section of solids, Section of prism, Section of pyramid, Section of cylinder, Section of cone, Intersection of solids, Method of determining the line of intersection, Intersection of two prisms, Intersection of cylinder and cone **V B-** Use of projections of solids in architectural drawings.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Introduction of lettering, Types of lettering, Orthographic projection of a point, Orthographic projection of a line, Orthographic projection of solids, Types of solids, Projection of solid, etc.
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	Engineering Drawing, 50th Ed.	Bhatt N.D	50th ED	
2.	Architectural Drawing	Dernie, David		LAURENCE KING
3.	Design Drawing, 2nd Ed.	Ching, Francis D. K.	2nd Ed.	JOHN Wiley
4	Architectural graphics, 5th Ed.	Ching, Francis D. K.	5th Ed.	John Wiley & Sons,

A. OBJECTIVE:

- To spread awareness & to teach the basics of computers in the field of architecture.
- To teach the basics of office management software's.
- To understand fundamental and technical aspects of Communication using English as the base language & applications in the day-to-day life as well as professional life. This will include activities like: Role play, Storytelling, Debates, Two-minute presentation

B. COURSE OUTCOME

- Demonstrate the usage of Basic English grammar like nouns, verbs, adverse and components of effective communication using various tools of effective speech.
- Apply effective communication skills, comprehend and write reports, design documentation
- Demonstrate the usage of Basic English grammar like nouns, verbs, adverbs and components of effective communication using various tools of effective speech.
- Apply effective communication skills, comprehend and write reports, design documentation,
- Utilize effective communication skills, comprehend, design documentation, to make visual and verbal presentations as well as in the form of an article.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Fundamentals of Presentations	6
2	The Listening Comprehension	9
3	Reading and Language Comprehension	9
4	Introduction to computers	6
5	MS Office	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Fundamentals of Presentations**
	a) Body language b) Expressions c) Perpetration
2	**The Listening Comprehension**
	a) Listening process and types of listening b) Listening and understanding recorded, structured talks and classroom lectures c) Notes making and guessing meaning of words from the context d) Barriers to listening- Language, cultural, Psychological & Physical
3	**Reading and Language Comprehension**
	a) Efficient and inefficient reading b) Prediction techniques- skimming, scanning and intensive reading skills c) Reading instructions, graphic information, and interpretation d) Reading scientific and technical texts e) Use of library- role of bibliography, table of contents, index etc.- use of pocket dictionary
4	**Introduction to computers**

	a) An Overview of computer, Characteristics of computer, Computer Generations, Classification of Computers, b) Introduction to computer components, Software Components, Hardware components, Storage Devices, Data Organization c) Computer network- Need, Scope and benefit of CN concepts, Network Types (Overview), Networking devices, Comparison between internet, Ethernet and intranet d) Computer software concepts- Introduction to computer software and its types, System Software, General Purpose Software (introduction), Application Software
5	**MS Office**
	a) MS Word- Introduction to MS Word, Page Layout and Paragraph, Tables, Mail Merge, Introduction to Mail Merge, Working with Mail Merge b) MS PowerPoint - Introduction to MS Power Point, Slide Management, Navigation schemes, Applying and modifying designs, Graphics & Multimedia, Creating presentation for the web c) MS Excel- Introduction to MS Excel, Formatting worksheet & printing worksheet, Charts Terminology, Working with Macros

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- Summary of technical papers, articles, classroom lectures
- Group discussions based on the general awareness
- Leave applications, letter for site visit permissions
- Oral presentation on topic of personnel preferences
- Summarizing Exercises using MS Office along with exercises

F. RECOMMENDED STUDY MATERIAL

S.No	Reference Book	Author	Edition	Publication
1.	Effective Technical Communication	M. Ashraf Rizvi	2005	Tata McGraw-Hill
2.	Study reading- A SUBJECT in reading skills for academic purposes	Eric H.Glenddings& Beverly Holmstrom	1992	Cambridge University Press
3.	Grammar of the Modern English Language	Sukhdev Singh & Balbir Singh	2012	Foundation Books, New Delhi

SYLLABUS
II Semester

A. OBJECTIVE

Study of history of architecture is a very important aspect. It deals with the development from ancient to medieval to modern. It gives an idea about the technology, society, culture, materials used etc. in the ancient time, then in the modern era.

B. COURSE OUTCOME

- Acquire concepts of progression of Art & Architecture of different river valley civilizations and its impact on human settlements.
- Utilize visual and verbal vocabularies of Indian Architecture. To gain knowledge of the development of architectural form, with reference to technology style and character in the Indus valley civilization, Vedic period, manifestation of Buddhist and Hindu Temple architecture in various parts of the country.
- Acquire basic concepts regarding the historical and architectural development in ancient India as this is an integrated expression of art, culture, vernacular material, techniques and town planning developed during the time of Indus Valley Civilization.
- Understand the town planning concepts of Mauryan period and the diverse artistic and architectural expressions with regard to Vedic and Buddhist Architecture in India.
- Analyze the diversity of Indian Temple Architecture Styles, forts, cities, etc. including the buildings viewed as architectural masterpieces and their urban settings.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Art & Architecture	2
2	Art & Architecture in India	5
3	Indus Valley Civilization:	5
4	Vedic and Buddhist Architecture in India:	6
5	Temple Architecture:	6

D. DETAILED SYLLABUS

Unit	Contents
1.	**West Asiatic Architecture**
	IA. Sumerian, Babylonian, Assyrian and Persian Architecture: Ziggurats and town planning aspects. a) Introduction of Unit b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples. **IB** – Understanding social, cultural, geographical, political and climate of place and period.
2.	**Indo Aryan (Nagara) Architecture**
	a) Introduction of Unit b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples c) Development of fortification, walled towns, settlement patterns and the causative factors. Role of Shilpasasthras in settlement planning. D) Study of worshipping places in Indo Aryan / Nagara style, design of buttressed shikharas, rock-cut and structural examples of temples.

3.	**Buddhist & Jain Architecture in India**
	Beginning of Buddhist and Jain Architecture; philosophy and teachings; the Hinayana and Mahayana Sects and their contribution to the development of architecture in India. Ashokan School, Buddhist Rock Cut Architecture: The Chaityas and Viharas at Ajanta and Ellora; the Stupa: Form and Evolution; Buddhist Architecture in Gahdhara. a) Introduction to Unit b) Early Buddhist & Jain Architecture: Rock Cut Architecture, Viharas, Chaityas etc. c) Buddhist & Jain Architecture: Buildings in Brick, Stupas. d) Conclusion and Summary of Unit.
4.	**Dravidian Architecture**
	a) Development of fortification, walled towns, settlement patterns and the causative factors. b) Role of Shilpasasthras in settlement planning. Study of worshipping places in Dravidian style (Chola, Chalukyas, Pallavas, Satavahana, Hoysala, Vijayanagara etc.), design of Gopuram and Shikharas
5.	**Vesara style of Temple Architecture**
	a) Introduction to Unit. b) Unique features of Vesara style of temple Architecture c) Temple examples of Chalukyas, Rashtrakutas and Hoysalas d) Conclusion and Summary of Unit

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement
- Essays/ Sketches/ Models based on individual exercises.
- Skits/ Role Play/ Slide Presentations based on individual exercises.

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	History of Architecture	Bannister Fletcher	20th Edition	CBS
2.	The Architecture of India (Islamic)	Grover's	1981	Vikas Publishing House Pvt. Ltd., New Delhi,
3.	Indian Architecture (Islamic period)	Brown, Percy	Latest	DB Taraporevala Sons & Co, Mumbai

A. OBJECTIVE

Developing Material Skills in students to Analyze and Understand Fundamentals and Working of various parts of different Structural Systems

B. COURSE OUTCOME

- To understand the beams for flow of loads through structure
- Analyze the concept of bending with reference to structure and its components
- Evaluate the structural behavior under several pressure conditions caused by different loadings conditions on structure.
- Application of various structural systems based on the design & the building structure requirements.
- Create and design various structural systems.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Analysis of Beams	4
2	Bending of Beams	4
3	Shear Stresses in Beam Sections	4
4	Analysis of Trusses	6
5	Slopes and deflections in determinate beams	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Analysis of Beams**
	I A- Shear force and bending moment diagrams in case of simply supported beams, cantilevers and beams with overhangs due to concentrated loads and UDL. Concept of UVL (without numerical) **I B-** Application of various beams in a structure
2	**Bending of Beams**
	II A- Theory of Simple Bending, Bending Equation and Its Derivation, Section Modulus, Distribution of Normal Stress Due to Bending. **II B-** Concept of bending with reference to structure and its components.
3	**Shear Stresses in Beam Sections**
	III A- Composite beams, shear stress distribution in rectangular, circular, T and I Sections. **III B-** Application of various sections
4	**Analysis of Trusses**
	IV A- Pin-jointed plane frames, determination of forces in the members by method of joints &method of sections. **IV B-** Application of various trusses
5	**Slopes and deflections in determinate beams**
	V A- Determinacy and indeterminacy**,** static and kinematic indeterminacy of beams Slopes and deflections in determinate beams by moment area method and the conjugate beam method **V B-** Concept of determinacy & indeterminacy

E. MODEL EXCERCISES/ASSIGNMENTS/PROJECTS

- Analysis of Beams, Bending of Beams, Shear Stress distribution in Beam Sections, Analysis of Trusses.
- Site visits of different types buildings and castings of beams.
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

S. N.	Book	Author	Edition	Publication
1	Strength of Materials	R.S. Khurmi		S.Chand Publishing House
2	Engineering Mechanics	D.S. Kumar		S K Kataria and Sons
3	Strength of Materials	Ramamurthan		Dhanpat Rai Publication
4	Strength of Materials	Gere & Timoshenko		Tata McGraw Hill Publication

A. OBJECTIVE

Study of climatology is very important as it deals with many factors that one has to keep in mind while designing the building. Climatology gives an idea about the solar techniques, wind energy, the orientation of the building, shape, form, landscaping, design criteria, temperature etc.

B. COURSE OUTCOME

- Outline the elements of climate & the macro and micro climatic factors affecting it.
- Identify the heat balance systems, thermal comfort & its indices, solar & psychometric charts & their applications in building designs.
- Examine the various thermal processes in buildings along with the heat flow, storage & transfer of various building materials & elements.
- Appraise the active & passive means of climate control, day lighting and ventilation in buildings.
- Combine the climatological site analysis in site planning of any design project and design evolution in various climatic zones

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit
1.	Introduction to climate	2
2.	Effect of climate on man	4
3.	Thermal Processes in Buildings	4
4.	Day lighting and Ventilation	6
5.	Application in Different Climatic Zones	8

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Introduction to climate**
	I A- a) Introduction to Unit b) Elements of climate like solar radiation, terrestrial radiation, temperature, humidity, wind, cloud, precipitation etc. and their measurement c) Factors affecting climate of macro and micro-level **I B-** Visit to meteorological station
2.	**Effect of climate on man**
	II A- a) Introduction to Unit b) Body heat balances and thermal comfort c) Basic understanding of thermal indices, solar chart and psychometric chart. d) Conclusion and Summary of Unit **II B-** Making solar chart and sciography exercises.
3.	**Thermal Processes in Buildings**
	III A- a) Introduction to Unit b) Heat flow, heat transfer, heat storage and time lag of various building materials and elements. c) Study of conduction, convection and radiation in buildings **III B-** Exercise as per unit on building.
4.	**Day lighting and Ventilation**
	IV A- a) Introduction to Unit b) Day lighting, air movement and ventilation

	c) Active and passive means of climate control d) Conclusion and Summary of Unit **IV B-** Exercise on climate control elements of building.
5.	**Applications in Different Climatic Zones**
	V A- a) Introduction to Unit b) Data, climatologically site analysis and its application in site planning and design evolution in climatic zones c) Conclusion and Summary of Unit **V B-** Taking exercises as per design brief of students.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS

- Assignments based on Elements of climate, Effect of climate on man, Day lighting and Ventilation, Thermal Processes in Buildings, Applications in Different Climatic Zones, etc.
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

S. No	Reference Book	Author	Edition	Publication
1.	Climate Responsive Design: A Study of Buildings in Moderate and Hot Humid Climates	Richard Hyde	2000	Taylor & Francis
2.	Climate Responsive Architecture	Arvind Krishan	1999	Tata McGraw Hill
3.	Design Primer for Hot Climates	Allan Konya and Maritz Vandenberg	2011	Archi media Press Limited

A. OBJECTIVE

To make the students aware of Design Process and Methodology identified by the project brief. The exercises to be designed so as to apply the basic design process along with site conditions & climatologically considerations.

B. COURSE OUTCOME

- Understanding of the design process, the various stages of design.
- Interpret, and present information and data collected through various studies. Understanding the importance of spatial planning within the constraints of Development Regulations in urban areas
- Examine the design problems and evolve architectural programs to address it.
- Appraise the plan and design at the site level involving multiple units. Recognize the relationship between user, activity, and space.
- Develop design focusing on form generation and sensitively design open spaces in correlation to build form and space

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Design Process	5
2	Pre-Design Studies	15
3	Project Brief	10
4	Site Analysis/ Zoning/ Bubble Diagram and Circulation Diagram/ Site Planning	15
5	Concept Drawing and Design/ Plans/ Sections/ Elevation/ Views and Models	15

D. DETAILED SYLLABUS

UNIT NO.	CONTENT
1.	**Introduction to Design Process:** **I A-** Lecture on basic design process including user needs, program analysis, area analysis, market survey, site analysis etc. **I B-** Discussion based on the existing exercise and the understanding of students.
2.	**Pre-Design Studies:** **II A-** Case Studies/ Standards/ Anthropometrics/ Literature Studies/ Bye-Laws. **II B-** Discussing various laws relevant to exercise.
3.	**Project Brief:** **III A-** Understanding Project Brief/ Drawing of Spaces & Area/ Requirement and how to read a project brief. **III B-** Exercises based on project brief.
4.	Site Analysis/ Zoning/ Bubble Diagram and Circulation Diagram/ Site Planning **IV A-** Formulation of design through elements and principles of architectural design. **IV B-** Applications of Ordering principal such as axis, symmetry, hierarchy, datum, rhythms, repetition, visual perception proximity, repetition, simplest and largest figure, continuity and closure, figure and ground relationship

5.	**V A-** Concept Drawing and Design/ Plans/ Sections/ Elevation/ Views and Models **V B-** Design exercises of small scale with architectural drawing.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

Single unit space such as cafeteria, prayer hall, ticket counters/reception offices, security offices, Kiosks, booths, Information cells etc

F. RECOMMENDED STUDY MATERIAL:

S. No.	Book	Author	Edition	Publication
1.	Pattern Language	Christopher Alexander		
2.	Principles of Sociology	Tabussum, Henna		
3.	Architecture Elements, Materials, Form	Prina		
4.	FORM, SPACE, AND ORDER	Francis D.K. Ching		

BARCAR2202	ARCHITECTURAL BUILDING CONSTRUCTION & MATERIALS – II	3 Credits [LTP: 0-2-2]

A. OBJECTIVE

To demonstrate the basics of few elements of the building envelop. Study of details of construction, laying, fixing of stone and brick. The details of basic elements like foundation, staircases, lintels, arches & details of wooden joints, flooring, openings & roofing systems. This also discusses the basic physical & chemical properties of binding materials like- lime, cement, concrete

B. COURSE OUTCOME

- Demonstrate the details of construction, laying, fixing of stone and brick.
- Construct the techniques and tips of RCC structures.
- Distinguish the knowledge of the aforesaid materials- details of joinery in timber and study of various basic elements like foundation, walls, roofs/floors and openings along with their principles of construction and architectural details.
- Appraise the basic physical & chemical properties of binding materials like- Iron and steel, cement, and concrete.
- Design and detail using all the material in the building

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Traditional & Conventional Structural Building Materials –Stone	10
2	Conventional Structural Building Materials – Reinforced Cement Concrete (RCC)	15
3	Conventional Structural Building Materials – Timber	10
4	Conventional Structural Building Materials – Iron & Steel	15
5	Conventional Building Binding Materials – Cement	10

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Traditional & Conventional Structural Building Materials –Stone**
	I A- The nature & types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of the materials used for structural units in masonry. Different forms of Stone used in construction of past and cotemporary innovative development in Stone Masonry. **II B-** Stone Masonry – Rubble and Ashlar, dry stone masonry. Along with Right angled junctions, Cross junctions and piers. Composite Masonry – Stone & Brick
2.	**Conventional Structural Building Materials – Reinforced Cement Concrete (RCC)**
	II A- The nature & types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of the materials used for RCC. Different forms of RCC used in construction of past and cotemporary innovative development in RCC. **II B-** RCC – Structural Framed structure, Reinforcement details in RCC built components- Pad Footings, Raft foundations, Columns, Shear walls, Flat roofing Slabs, coffered slabs, Pitched roofing slabs, staircase slabs, cantilevered projections.

3.	**Conventional Structural Building Materials – Timber**
	III A- The nature & types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of the materials used for construction. Different forms of Timber used in construction of past and cotemporary innovative development in Timber. **III B-** Timber – Structural Framed structure, Timber wall systems, timber trusses and roofing systems, timber flooring systems, timber staircases.
4.	**Conventional Structural Building Materials – Iron & Steel**
	IV A- The nature & types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of the materials used for construction. Different forms of Iron& Steel used in construction of past and cotemporary innovative development in Iron & Steel. **IV B-** Cast Iron – Elements used in construction and Ornamentation Mild Steel – Column & beam structure, Roof trusses, Flat roofs, wall systems, Pre-engineered buildings
5.	**Conventional Building Binding Materials – Cement**
	V A- The nature & types of material, visual and textural properties, Source of raw material, Processing of material, Properties and characteristics of cement used for binding material in masonry and ornamentation of buildings. Different forms of cement construction of past and contemporary innovations in cement. **V B-** Cement construction systems – Processing of cement for construction. Use of cement for masonry, flooring, plaster, wall finishes and stucco renderings

E. MODEL ASSIGNMENTS (Market Surveys, Seminars & Report)

- Preparation of drawings, Site reports and other exercises covering the above.
- Model making with PowerPoint presentations.

F. RECOMMENDED STUDY MATERIALS

S.No	Reference Books	Author	Edition	Publication
1.	Building construction	B.C.Punmia	10th	Laxmi publication
2.	Building construction	S.C.Rangwala	29th	Charatar publication
3.	A Text Book of Building Construction	S.P.Arora, S.P.Bindra	5th	Dhanpat Rai publication
4.	BUILDING CONSTRUCTION ILLUSTRATED	FRANCIS D. K .CHING	3rd edition	
5.	Building Constructions (1to 4 vol.)	Mckay, W.B.		

A. OBJECTIVE

To acquaint the students with the different mediums and methods of craftsmanship through line contemplates and site outlining. Additionally, incorporates material taking care of workshops including metal, wood and so on.

B. COURSE OUTCOMES

- To demonstrate a grip-on understanding of handling the major tools and different rendering technique's application, in order to enhance the visual manifestation of architectural buildings & related elements.
- To build the skills and develop understanding of handling and application of assorted visual art mediums for varied design idea presentations.
- To categorize the idea collection to identify the one which express design idea the most
- To explain and re-model the products in 3-d forms for better interrelation of on same design on paper and it's physical form.
- To adapt the language of visual perception in true sense by working on life size products that can illustrate the comprehension of design and its scale and proportion with respect to various utility platforms.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Rendering- I	8
2	Medium Application- I	10
3	Model Making	10
4	Doodling & Dress Designing	10
5	Application of Mediums in Semester Courses	10

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Rendering- I**
	I A- -Need of Rendering, Types of renderings on different types of drawings, principles of composition of drawings, views, rule of thirds, Rendering with different mediums- Composition and Presentation Techniques on an Architectural Drawings Introduction to rendering, rendering techniques &it's implementation: Graphite &rotring pens
2.	**Medium Application- I**
	II A- a) Developing skills in manual presentation techniques b) Use of various media of presentation: Color pencils/ charcoal/ Water color c) Incorporating photography skills
3.	**Model Making**
	III A- a) Developing understanding of various material & technique b) Demonstrating techniques of making models of building materials like mount board, BioPak (compressed thermocol) etc.
4.	**Doodling & Dress Designing**
	IV A- a) Idea exploration, concept development b) Hands on exercise on product development
5.	**Application of Mediums in Semester Courses**

	V A- a) Parallel Course identification and analysis of assignment to be utilized b) Hands on exercise

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ Sheets based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	Rendering with pen and ink	Robert W. Gill	Enlarged edition, 1984	Thames Hudson Ltd. United Kingdom
2.	Art fundamental (Theory and practice)	Ocvirk and others	12th edition	McGraw – Hill Education Europe
3.	Colour in sketching and rendering	Guptill,Arthur L.	5th edition	Reinhold Publishing Corp., New York 1949

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	Coursera	https://www.coursera.org/learn/sustainable-fashion#about	Podcast/ audio/video	2-07-2020

ii) Journals

Sr. N	Name of Journal	Reference Link	Volume/pp /Impact Factor	Date of Publication	Date referred
1	Research Gate			Publication	2-07-2020

BARCAR2204	ARCHITECTURAL GEOMETRY & DRAWING - II	3 Credits [LTP: 0-2-2]

A. OBJECTIVE

To familiarize the students with learning techniques & skills in representing different objects through 3D geometry and developing visualization of 3-D, for using in the design solutions.

B. COURSE OUTCOMES

- To develop an understanding of solids & planes and their projections. It also includes the sections of prism, pyramid, cylinder & cone, and intersections of the same.
- To develop the surface of simple objects and with reference of the model of the previous exercise, the development of surface of the model finalized.
- To analyze the sciography of simple objects or study models at different times of the day
- To create one point and two-point perspective of simple objects or study models.
- To understand the graphical presentation and rendering of the simple objects, symbols and model.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Intersection of solids	8
2	Development of surfaces	8
3	Sciography of simple geometric forms	12
4	Perspective	12
5	Graphical presentation and rendering	8

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Intersection of solids**
	Intersection of solids, Method of determining the line of intersection, Intersection of two prisms, Intersection of cylinder and cone
2.	**Development of surfaces**
	Basic introduction, Methods of development, Developments of lateral surfaces of right solids
3.	**Sciography of simple geometric forms**
	Basic introduction of Sciography, Method of drawing Sciography of simple geometric forms, Method of drawing Sciography of building blocks
4.	**Perspective**
	Principle of perspective projections, Perspective elements, one point, two point and three-point perspective, plotting perspective of building form, Plotting
5.	**Graphical presentation and rendering**
	Basic introduction of graphic presentation, use of graphic presentation in architecture, Rendering of architectural drawing with pencil, pen and ink

E. MODEL ASSIGNMENTS (Market Surveys, Seminars & Report)

Assignments, surveys, report and seminar based on Intersection of solids, Method of determining the line of intersection, principle of perspective projections, Perspective elements, One point, two point and three-point perspective, etc.

F. RECOMMENDED STUDY MATERIAL:

S.No	Reference Books	Author	Edition	Publication
1.	Engineering material	N.D.Bhatt, V.M. Panchal	50th	Chartar Publishing House
2.	Architectural Drawing	Rendow Yee	1997	John Willey & Sons, New York
3.	Engineering Drawing	P.S. Gill	2006	S.K. Kataria& Sons, New Delhi
4.	Architectural Graphics	Francis D.K. Ching	2002	

A. OBJECTIVE

To make students aware of the role of advanced computer applications in the field of architecture as well as communication skills. The exercises will include corporate grooming, etiquettes, and effective communication & leadership skills.

B. COURSE OUTCOMES

- Interpret effective verbal communication in terms of architectural and general presentations, leadership skills, etc.
- Utilize the interpolation skills for learning professional communication skills i.e., business emails, letters, applications, etc.
- Classify various corporate grooming and etiquettes w.r.t professionalism, appearance, body language, social verses workplace situations, etc.
- Appraise the software skill - AutoCAD & implementation of the same on Architecture Design subject.
- Render a design project - Photoshop for rendering purpose & implementation of the same on Architecture Design subject.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Verbal communication	6
2	Professional writing	6
3	Introduction to Auto CAD	9
4	Introduction to Adobe Suite	9
5	Introduction to Rendering software's	6

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Verbal communication -** **I B-** Interpolation skills, leadership skills for architects
2	**Professional writing-** **II B-** Telephone etiquettes and business emails , letters & applications
3	**Introduction to Auto CAD** **III A-**How this software plays an important role for an architect, basic fundamentals for these software Basic introduction of Auto CAD To use AutoCAD to make plans, sections and elevations by projecting lines and usage of layers in AutoCAD **III B-** Exercise for drafting plans in AutoCAD, Exercise for drafting plans and elevations in AutoCAD, Exercise for drafting sections in AutoCAD
4	**Introduction to Adobe Suite** **IV A-** Basic introduction of tools in Adobe Suite **IV B –** Hands on training on Adobe Illustrator tools for rendering, coloring and shading, etc.
5	**Introduction to Rendering software's** **V A-** Basic introduction of Photoshop How to use tools for rendering, coloring and shading, etc. use of effects in the drawings **V B-** Exercises on rendering software's

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Interviews/ job shadowing of professionals
- Workshops related corporate grooming
- Role plays in real time situations
- Presentations in form of movies, skits, music, street plays etc.
- Special Lectures by professionals.

F. RECOMMENDED STUDY MATERIAL

S.No	Reference Book	Author	Edition	Publication
1.	Life skills; A facilitator's guide for teenagers (www.unicef.org/eapro/life_skills_a_facilitators _guide_for_teenager.pdf)	Cai Cai, MPP Harvard		UNICEF
2.	Business Etiquette: A guide for the Indian professionals	Sheetal kakkar Mehra	2012	Collins Business
3.	Personality development and soft skills	Barun K. Mitra	2016	Oxford press
4.	Presentations (20-minute manager)	HBR	2014	Harvard Business Review press

SYLLABUS
III Semester

A. OBJECTIVE

Study of history of architecture is a very important aspect. It deals with the development from ancient to medieval to modern. It gives an idea about the technology, society, culture, materials used etc. in the ancient time, then in the modern era.

B. COURSE OUTCOMES

- Classify the diversity of Islamic Architecture in India, Mosques, Tombs, Forts, Cities, etc. and its influence through numerous regional adaptations.
- Develop an appreciation of the architectural vocabulary which are unique to the era of Mughal Architecture including the buildings viewed as architectural masterpieces
- Appreciate the unique features of Egyptian Architecture.
- Gain knowledge on the significance and principles of Greek Architecture.
- Comprehend the evolution and characteristics of Roman Architecture.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Islamic Architecture	2
2	Mughal Architecture	2
3	Provincial Style Architecture	8
4	Early Christian Architecture	6
5	Greek &Roman Architecture	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Islamic Architecture:**
	a) Introduction to Unit: Evolution of Islamic Architecture in India. b) Islamic Way of Building: Pillars of Islam, Reflection of belief system in Built forms , Salient features of the Mosque c) Delhi Sultanate: Slave Dynasty, Khilji Dynasty, Tughlaq Dynasty, Sayyid Dynasty and Lodhi Dynasty. d) Conclusion and Summary of Unit
2.	**Mughal Architecture:**
	a)Introduction to Unit b)Early Mughal era – and Babar's dream of Paradise Garden c) High Mughal era- Yamuna Riverfront development with the concept of paradise gardens, tombs, rauza etc. Salient features of Humanyun's Tomb, Taj Mahal, Red fort Agra and Shahjahanabad, and various prominent structures ofFathepur Sikri d)Conclusion and Summary of Unit
3.	**Provincial style Architecture**
	The Provincial Style of architecture encompasses the trends and developments noticed in different provincial capitals in India. Study about the variation of styles in different provinces. Punjab (1150-1325 A.D.), Bengal (1203-1573 A.D.),Gujarat (1300-1572 A.D.),Jaunpur (1376-1479 A.D.),Deccan (1347-1617 A.D.),Bijapur (1490-1656 A.D.),Kashmir (1410 onwards).
4.	**Early Christian Architecture**
	Study of Architectural character, evolution of Church form, building typologies, and buildingelements, polymath architecture, Baptisteries, early Basilican churches; settlement planning, and fortification systems.

5.	**Greek& Roman Architecture**
	Study of principles of design, proportion, Optical corrections and Classical Orders. Building types viz., Temples, Sanctuaries, Thermae, Amphitheatres, Circus, Aqueducts etc. Study of planning principles adopted, Agora, Forum and their effect on settlement planning. a) Introduction of Unit b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples with reference to social cultural, geographical political and climate of place and period. c) Classical orders, public buildings, characteristics d) Conclusion and Summary of Unit

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Essays/ Sketches/ Models/ Skits/ Role Play/ Slide Presentations based on Individual exercises.
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr. No.	Reference Book	Author	Edition	Publication
1	History of Architecture	Bannister Fletcher	20th Edition	CBS
2	The Architecture of India (Islamic)	Grover's	1981	Vikas Publishing House Pvt. Ltd., New Delhi,
3	Indian Architecture (Islamic period)	Brown, Percy	Latest	DB Taraporevala Sons & Co, Mumbai

A. COURSE OUTCOMES

- To understand the behavior of soil in different conditions & climatic zones where the structure will take place above the soil.
- To pre-identify the soil support to the structure above it and analysis of structure stability.
- To be able to classify and choose the most suitable type of soil for any particular structure.
- To decide the bearing capacity of soil which will help in finalizing the type of foundation and its best possible design elements.
- To calculate the overall strength of soil and durability of structure and how it can be improved.

B. OUTLINE OF THE COURSE

Unit	Title of the Unit	Time required for the Unit (Hours)
1	Introduction of Soil	5
2	Properties of Soil	5
3	Classification of Soil	4
4	Soil Bearing Capacity	4
5	Retaining Wall	6

C. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Introduction of Soil**
	IA) Soil and soil-mass constituents, water content, specific gravity, void ratio, porosity, degree of saturation, air void and air content, unit weights, density index etc. Inter-relationships of the above. IB) tutorial based on the same
2	**Properties of Soil**
	IIA) Determination of index properties of soil: water content, specific gravity, particle size distribution, sieve and sedimentation analysis, consistency limits, void ratio and density index. IIB) tutorial based on the same
3	**Classification of Soil**
	IIIA) Classification of soil for general engineering purposes: particle size, textural, H.R.B. Unified and I.S. Classification systems. IIIB) tutorial based on the same
4	**Foundation**
	IVA) Types of foundation: Shallow & deep; Common types of foundations. Introduction to pile and well Foundations. Design of raft foundation & combined footing. IVB) tutorial based on the same.
5	**Soil Bearing Capacity**
	VA) Terminology related to bearing capacity, Terzaghi theory for bearing capacity, Rankine's method for minimum depth of foundation. Plate load and penetration tests for determining bearing capacity. VB) tutorial based on the same

D. LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

- Numerical on slopes and deflections in determinate beams, introduction of theory of Geotechnology, numerical on soil properties &Soil Bearing Capacity.
- Site visits of geotech lab, different types building foundations.
- Essays/ Sketches/ Models/ Skits/ Role Play/ Slide Presentations based on Individual exercises.
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

E. RECOMMENDED STUDY MATERIAL:

S. N.	Reference Book	Author	Edition	Publication
1	Soil Mechanics & Foundation Engineering	Arora K.R	Latest	Standard Publishers, Delhi
2	Soil Engineering in Theory & Practice	Alam Singh	Latest	CBS Publishers,Delhi
3	Soil Mechanics and Foundations	B. C. Punmia, Ashok Kumar Jain	Latest	Laxmi Pant Publication

A. OBJECTIVE

To make students understand and learn about and basics of surveying and leveling and its application in the art and science of Site Planning, Site Analysis and designing buildings.

B. COURSE OUTCOME

- To learn the basic terms, techniques and applications of site surveying.
- To use the tools and instruments of surveying in the most appropriate manner.
- To learn about the different types of surveying methods and their applications.
- To develop deep understanding of contours and how they are important in the design process.
- To apply the learnings from surveying subject and apply them in practical field.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Chain Survey & Site Planning	5
2	Compass Survey	4
3	Site Analysis : Theodolite	6
4	Plane Table Survey	4
5	Site Contours	5

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Chain Survey & Site Planning**
	IA- Chain Surveying: Principles of chain surveying, Study of instruments used in chain surveying, base line, tie line, Offsets, Obstacles in chain surveying, Errors in chaining. IB- Site Analysis, Preparation of plans and implementation of chain survey on given site.
2	**Compass Survey**
	IIA- Compass Surveying: Study of prismatic compass; Compass traversing – open and closed traverses, Bearing and its designation, Errors in compass surveying, plotting adjustment of closing error in compass traverse. IIB - Determining various angles between different building blocks of various sites.
3	**Site Analysis : Theodolite**
	IIIA- Theodolite survey: Study of instrument, Temporary adjustment of theodolite, Measurement of horizontal angle by repetition and reiteration methods, Measurement of vertical angle, Introduction to 'Total Station'. IIIB- Site Analysis, Preparation of plans and implementation of Theodolite survey on given site.
4	**Plane Table Survey**
	IVA- Elements of plane table survey working operations, method of plane table survey, intersection, traversing and resection. IV B- Elementary surveying of area by plane table surveying.
5	**Site Contours**
	VA - Basic ideas on plotting of longitudinal and cross sections, Contouring – Contour interval – Characteristics, uses of contours VB – Determining contours of site plans.

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Standardization of pace length; to estimate horizontal distance by pacing; study of metric chain and long-distance measurement by a chain.
- Chain survey , compass surveying, contour survey of given site
- Introduction and use of Total Station.
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

S. N.	Reference Book	Author	Edition	Publication
1	Surveying	B.C. Punamia, Ashok Jain	1994	Lakshmi Publication
2	Surveying and Leveling, Vol. I and II	S. K. Duggal,	Latest	Tata Mc Graw-Hill
3	Surveying, Vol. I & II	Arora, K.R.	Latest	Standard Book House, Delhi
4	Surveying and leveling	Rangwala	2005	Charotar Publishing House
5	Surveying - Volume 1 & 2	Punmia	2005	Firewall Media

BARCAR3201 ARCHITECTURAL DESIGN –III (INCLUDING MEASURED DRAWING CAMP) 8 Credits[LTP:0-1-7]

A. OVERVIEW AND OBJECTIVES:

To give the students a clear understanding on the basis of basic architectural design process through small to medium design projects. Help student formulate design through methods of inquiry that seeks to clarify the relationship between human behavior and physical environment.

Principles in Design and Buildings and Site; design parameters with respect to climatic sustainability, functional, aesthetic and basic structural aspect.

To give the students an introductory view of measured architecture drawing, research and report drafting for a conservation/ heritage project.

B. COURSE OUTCOME

- Compare all the dynamics involved within the design problem introduced.
- Organize, and present information and data collected through studies
- Comprehensively categorize and infer the built environment through the study.
- Appraise the importance of spatial planning within the constraints of Development Regulations in urban areas.
- Design buildings as a response to both tangible factors such as geography and intangible factors such as culture.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Basic architectural design Process	16
2	Learning from Literature & Case studies	16
3	Optimization in Architectural Design	24
4	Learning the basic drawings representing design	16
5	Basics of Measured Drawing and documentation	24

D. DETAILED SYLLABUS

Unit No.	Content
1.	a) To give the students a clear understanding on the basis of basic architectural design process through small to medium design projects. Help student formulate design through methods of inquiry that seeks to clarify the relationship between human behavior and physical environment. b) Principles in Design and Buildings and Site; design parameters with respect to climatic sustainability, functional, aesthetic and basic structural aspect. c) To give the students an introductory view of measured architecture drawing, research and report drafting for a conservation/ heritage project.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

Project: Residence/ Small Scale Community Projects/ Small Scale Institutional Projects/ Small Scale Hospitality Projects.

F. RECOMMENDED STUDY MATERIAL:

S. No.	Book	Author	Edition	Publication

1.	Graphic Thinking for Architects and Planners	Paul Lassau		
2.	Poetics in Architecture : Theory of Design	Anthony Antoniadis		
3.	Architecture : Form Space and Order	Francis D. K. Ching		
4.	Pattern Language	Christopher Alexander		
5.	Sharpen your team skills & creativity	British Council Library		
6.	Design Source Book	BNCA Library		

BARCAR3202 ARCHITECTURAL BUILDING CONSTRUCTION & MATERIALS – III 3 Credits [LTP: 0-2-2]

A. OBJECTIVE

The construction studio work should demonstrate the inter dependence of the building materials and elements and their understanding to form complete building envelop. Study of details of construction, laying, fixing of stone and brick .Study of various basic and simple elements of buildings in the aforesaid materials- R.C.C .footings, isolated, with their connections with superstructure along with Damp proof SUBJECT, Simple R.C.C .frame with beams and columns, Flat R.C.C .roof with water proofing details study of different R.C.C . roof forms and its connection with structure, R.C.C .flooring, mosaic flooring & cement tile flooring, interlocking paving blocks in ground and upper floors, Staircases in R.C.C .with different types and earthquake resistant construction.

B. COURSE OUTCOME

- Understand the basic components of a building with its construction details such as Foundation Footing, Wall section, Roofs in RCC and Study design parameters for structural elements in different site and soil conditions
- Gain knowledge of properties and construction methods of RCC and be able to design and detail structural and non-structural components of simple buildings using RCC
- Understand different options for design of RCC framed structural and non-structural elements like slabs, roofing, flooring, staircase and their utility for different design complexities, spans and building typology.
- Study construction details and constructions techniques through site visits, market surveys and produce detail construction drawing set of building components.
- Integrate knowledge of properties and construction methods of RCC in the design of earthquake resistant framed structure.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Foundation	12
2	Superstructure	12
3	Roofing & Flooring	12
4	Staircase	12
5	Earthquake Resistant RCC framed Structure	12

D. DETAILED SYLLABUS

UNIT	UNIT DETAILS
1	**Foundation**
	a) Introduction to Unit, b) Construction details of RCC footing, isolated and combined with their connections with superstructure along with damp proof SUBJECT, c) Construction detailing of RCC Retaining walls, d) Conclusion & Summary of Unit,
2	**Superstructure**
	a) Introduction to Unit, b) Construction detailing of Simple RCC frame with beam and column, Construction details of Shear Walls and RCC walls, c) Conclusion & Summary of Unit,
3	**Roofing & Flooring**

	a) Introduction to Unit, b) Construction details of Flat RCC roof with water proofing details and study of different RCC roof forms and its connection with structure, c) Constructing Detailing of RCC and PCC paving and industrial flooring, d) Conclusion & Summary of Unit,
4	**Staircase**
	a) Introduction to Unit, b) Construction details of waist slab, folded plates, central beam and cantilevered RCC staircases, c) Conclusion & Summary of Unit,
5	**Earthquake Resistant RCC framed Structure**
	a) Introduction to Earthquake Resistant Masonry, stone, wooden and steel Construction, b) Construction details of earthquake resistant brick and stone masonry and additional provisions made to it, c) Dry stone masonry, d) Construction details of earthquake resistant column and beam design, shear walls etc .Special construction details followed for earthquake resistant steel structures, e) Conclusion & Summary of Unit,

E. EXERCISES :

- Preparation of drawings, Site reports and other exercises covering the above.
- Model making with PowerPoint presentations.

F. RECOMMENDED STUDY MATERIAL

S.N.	Reference Book	Author	Edition	Publication
1.	Building Construction	B.C.Punmia		Laxmi Publication
2.	Building Construction	Sushil kumar		A.K .Jain
3.	Building Construction	S.C.Rangwala		Charatar Publishing House
4.	Building Construction	S.P.Arora, S.P.Bindra		Dhanpat Rai Publication
5.	Explanatory Handbook on Codes for Earthquake Engineering, IS -1893 -1975 & IS -4326 -1976, Bureau of Indian Standards.			
6.	Construction Technology	Roy chudley and Roger Greeno	Fourth edition	Pearson Education Limited

A. OBJECTIVE

To involve students in a progression of activities which take a gander at realistic and conceptual portrayals of art and also involving them in a progression of activities which will assist them with exploring different avenues regarding structure and volume.

B. COURSE OUTCOME

- To illustrate a grip-on handling the major tools and different rendering technique's application, in order to enhance the visual manifestation of architectural buildings & related elements
- To experiment with different mediums for development of creative side of students in an artistic approach
- To discover the language of visual perception in true sense by working on life size products that can illustrate the comprehension of design and its scale and proportion with respect to various utility platforms.
- To assess significant craftsman's strategies and speculations and have the option to evaluate the characteristics of centerpieces and design in their chronicled and social settings.
- To formulate an arrangement of works that exhibits their composition, rendering techniques and presentation skills.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Rendering & Presentation Techniques – II	12
2	Medium Application – II	12
3	Model Making	12
4	Studio Design Exercise	12
5	Introduction to unexplored medium	12

D. DETAILED SYLLABUS

Unit	Contents
1.	**Rendering & Presentation Techniques-II**
	I A-Need of Rendering, Types of renderings on different types of drawings, principles of composition of drawings, views, rule of thirds, Rendering with different mediums- Composition and Presentation Techniques on an Architectural Drawings
2.	**Medium Application-II**
	II A- Introduction & application of different mediums- glass marking, photo colors, soft pastels, uniball and marker pens, Basic differences between mediums, application limitations and scope Outdoor exercises for composition and rendering activities.
3.	**Model Making**
	III A- a) Introduction to Architectural Models- Types of models, usability of models and other relevant details. b) Various Techniques of model making and outcomes c) 3D model making, laser cut machines, CNC cut models, Hot wire machine cut models d) Use of all possible materials for model making like paper, compress thermocol, mount board, cardboard, discarded material, recycled material, in architectural model making.

4.	**Studio Design Exercise**
	IV A- a) Parallel Course identification and analysis of assignment to be utilized b) Hands on exercise
5.	**Introduction to unexplored medium**
	V A – The student needs to explore an unexplored or unexperienced medium **V B** – The Studio design exercise or any parallel assignment needs to be done in this medium

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Sheets based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	Rendering with pen and ink	Robert W. Gill	Enlarged edition, 1984	Thames Hudson Ltd. United Kingdom
2.	Art fundamental (Theory and practice)	Ocvirk and others	12th edition	McGraw – Hill Education Europe
3.	Color in sketching and rendering	Guptill,Arthur L.	5th edition	Reinhold Publishing Corp., New York 1949
4.	Los Logos			Dei Gestalten Verlag
5.	The Power of Limits	GyorgyDoczi		Shambhala

G. RECOMMENDED ONLINE STUDY MATERIAL:

i. MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	Coursera	https://www.coursera.org/learn/typography?specialization=graphic-design	Podcast/ audio/video	2-07-2020

ii. Journals

Sr. N	Name of Journal	Reference Link	Volume/pp/ Impact Factor	Date of Publication	Date referred
1	Research Gate	https://www.arch2o.com/architecture-model-complete-guide/		Publication	2-07-2020

BARCAR3204 BUILDING SERVICES STUDIO – I 2 Credits [LTP: 0-1-2]

A. OBJECTIVE:

- To involve students in a series of exercises which look at graphic and abstract representations of art.
- Involving them in a series of exercises which will help them experiment with form and volume.

B. COURSE OUTCOMES

- Classify the various terms and terminologies related to water supply in simple, multistoried and complex buildings.
- Compare the supply requirements and distribution based on function, type, location and verticality in various types of buildings.
- Determine the best practices used in waste disposal and sanitation and apply them in real life situations.
- Identify the design and complexity related to an architectural project starting from supply requirements to designing the pipelines, valves, drains and tanks etc. and ending on the final disposal of waste.
- Name the various term and technicalities.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Supply of Water	8
2	Distribution	6
3	Refuse	6
4	Sanitation	8
5	Sanitation Fittings and Fixtures	8

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Supply of Water**
	I A-a)Supply of water to different types of buildings; b) Sources of water, modes and methods of conveyance of water, fixtures and appliances. **I B-** Detailed study on water supply in buildings -Group Submission (PPT)
2	**Distribution**
	II A-a)Distribution of water, methods of distribution, different distribution systems and their principles of layout, b) Design of water distribution system in a campus, and in a building, overhead and underground water storage tanks. **II B-** Advanced study of layout and distribution system in water supply**.** **(**Graphical Sheets**)**
3	**Refuse**
	III A-a)Refuse; different forms of refuse, garbage, sludge, toilet waste and storm water collection and disposal system, b) Requirements for various building types. **III B-**Identification of types of refuse, garbage, sludge solid waste and water disposal system-Group Submission (PPT)
4	**Sanitation**
	IV A-a)Sanitation; manholes, grease chambers, etc. Traps, ventilation of drains,

	b) Principles of design of drainage lines, drainage layouts for building premises, Longitude sections of drains. c) Drainage in non-municipal area – soak wells, septic tanks. **IV B-**Sanitation layout plans of floors-schematic and graphical presentation with calculation**(**CAD drafted Sheets**)**
5	**Sanitation, Fittings & Fixtures**
	V A-a)Sanitation, Fittings & Fixtures; water closets, flushing valves, flushing tanks, basins and its accessories, rain water, drainage pipes, spouts, sizing of rain water pipes system of rain water at ground level, storm water drainage. **V B-**Study of different sanitary fittings and fixtures**. (**Reports**)**

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Study of IS Codes. Visit to construction site and documentation. Market survey to study water supply and drainage products.
- MCQs mandatory for all units,
- Seminar presentations of minimum two units,
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Book	Author	Edition	Publication
1	Plumbing Design and Practice	S. G. Deolalikar	2015	Mc Graw Hill Publication
2	Water Supply & Sanitation	Charanjeet Shah	2002	Galgotia Publishing Co., New Delhi
3	Building Services Handbook	Fred Hall & Roger Greeno	8th edition (2015)	Routledge
4	Building Services Engineering	David V. Chadderton	2012	Taylor & Francis Group
5	National Building Code 2016	BIS	2016	Bureau of Indian Standards
6	Uniform Plumbing Code – India	IAPMO	2014	International Association of Plumbing
7	A Guide to Good Plumbing Practices	IPA	2015	Indian Plumbing Association
8	Water Supply & Sanitary Engineering	S.C. Ranwala		Chartar Publishing House Anand (Gujarat)
9	Water Supply & Engineering	Santosh Kr. Garg		
10	Water Supply & Sanitation	Charanjeet Shah	2002	Galgotia Publishing Co., New Delhi

A. OBJECTIVE

To make students aware of the role and importance of Computers in the field of Architecture.

B. COURSE OUTCOMES

- CO1.Acknowledge the importance of software applications in the field.
- CO2.Classify the usage of various Computer Application tools and software's.
- CO3.Appraise/gauge the applications of the software in the field.
- CO4.Discuss the skills both graphically and technically to produce composed design/technical sheets in academics as well as later in the field.
- CO5. Develop drawings and details based on the designs and planning.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	AutoCAD 3D	6
2	AutoCAD 3D	8
3	Introduction to Sketch up	6
4	Sketch up Modelling	8
5	Sketch Up Advanced	8

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**AutoCAD 3D** I A- Importing 2D CAD drawings to 3D CAD I B- Creating base file.
2	**AutoCAD 3D** II A-Using tools to create buildings with basic elements like doors, windows, roof, etc. and updating the 3D model. Creating site objects, boundary walls, urban elements, landscape furniture, etc. II B- Developing complete building on AutoCAD 3D
3	**Introduction to Sketch up** III A- Introduction to the software, commands, shortcuts and their application in Architecture. Importing drawing from CAD, selecting scale and units, creating base for modelling, using tools for basic modelling i.e., creating 3D box. Use of commands like assembly, group etc. for ease of modelling. III B- Creating base file
4	**Sketch up Modelling** IV A- Using tools to extract building elements like doors, windows, roof, etc. and updating the 3D model. Creating site objects, boundary walls, urban elements, landscape furniture, etc. IV B- Developing complete building with elements
5	**Sketch Up Advanced** V A- Placing objects from creating models and interiors and modifying properties of elements. Development of natural terrain, importing terrain from Google earth and generating real time contours, placing building and site in actual location for uploading. V B- Developing base file for undulating site

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Importing CAD drawing and converting it into 3D form, creating building elements and adding site elements.
- Making presentation drawings

F. RECOMMENDED STUDY MATERIAL

Sr. No.	Book	Author	Publication
1	Online Tutorials – Sketchup	SketchUp Website	Google
2	Architectural Design with SketchUp: 3D Modeling, Extensions, BIM, Rendering, Making, and Scripting	Alexander C Shreyer	John Wiley and Sons
3	The SketchUp Workflow for Architecture: Modeling Buildings, Visualizing Design, and Creating Construction Documents with SketchUp Pro and LayOut	Michael Brightman	John Wiley and Sons
4	Google SketchUp for Site Design: A Guide to Modeling Site Plans, Terrain and Architecture	Daniel Tal	John Wiley and Sons
5	Sketchup for Architects	Earl Rustia Miranda	Create space Independent Publishing Platform

SYLLABUS
IV Semester

A. OBJECTIVE:

Study of history of architecture is a very important aspect. It deals with the development from ancient to medieval to modern. It gives an idea about the technology, society, culture, materials used etc. in the ancient time, then in the modern era.

B. COURSE OUTCOMES

- To appreciate the unique architectural style developed during the Egyptian Period.
- To identify the development of different styles of architecture in West Asia and its impact across the world.
- To acquire knowledge on the evolution, significance, principles and characteristics of Greek and Roman Architecture.
- To apprehend the evolution and characteristics of Christian and Romanesque Architecture and to study its influence on the built form.
- To analyze and appreciate the unique features of Byzantine and Gothic Architecture.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Early Christian Architecture	4
2	Romanesque Architecture	8
3	Byzantine Architecture	4
4	Gothic Architecture	4
5	Renaissance & Baroque Architecture	8

D. DETAILED SYLLABUS

UNIT	UNIT DETAILS
1	**Early Christian Architecture (313AD-800AD)**
	Study of Architectural character, evolution and transformation of Church form, building typologies and building elements viz., Pointed arch, church towers etc. and their influence on the church form; Influence of structural elements on the built form and the resultant settlement planning. Basilica churches of Rome.
2	**Romanesque Architecture (9^{th}-15^{th} century)**
	IA.–Romanesque Architecture development after the collapse of Roman Empire in Europe countries. Ribs and Panel Vaulting, Pisa Cathedral, Leaning tower of Pisa, The Abbey Church, Cluny a) Introduction of Unit b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples . IIB – Understanding social, cultural, geographical, political and climate of place and period.
3	**Byzantine Architecture**
	IA. - a) Introduction of Unit. b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples . IIB – Understanding social, cultural, geographical, political and climate of place and period.
4	**Gothic Architecture(12^{th} -16^{th}century)**
	IA. Early Gothic style. Structural elements like Pendentive, Flying buttress, Stained glass etc. Notre Dame, Paris, King's College Chapel, Cambridge a) Introduction of Unit

	b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples . IIB – Understanding social, cultural, geographical, political and climate of place and period.
5	**Renaissance & Baroque Architecture**
	IA. - a) Introduction of Unit b) Study of evolution of design concept, philosophy, construction techniques, materials, town planning and structural solution with the help of selected examples . IIB – Understanding social, cultural, geographical, political and climate of place and period.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs mandatory for all units,
- Seminar presentations of minimum two units,
- Report writing of any 1 topic as per subject requirement**.**
- Essays/ Sketches/ Models/
- Skits/ Role Play based on Individual Exercises.
- Slide Presentations based on Individual Exercises

.

F. RECOMMENDED STUDY MATERIAL:

Sr. No.	Reference Book	Author	Edition	Publication
1	History of Architecture	Sir. Bannister Fletcher	20th Edition	CBS
2	History of Architecture: Setting and Rituals	Spiro Coston		

A. OBJECTIVE

Study about Structures is a very important aspect of construction industry. Without the knowledge of this subject, it would be impossible to predict the behavior of structure. When the structure is subjected to variety of loadings, it deals with the behavioral study of material and effect of forces on the structure, i.e., analysis of structure.

B. COURSE OUTCOMES

- To gain knowledge about RCC and its working
- To understand the design philosophies in RCC and usage of IS codes.
- To analyze the design loads using the building codes on singly &doubly reinforced and flanged beams.
- To structurally design a singly& doubly reinforced and flanged beam.
- To analyze the design loads using the building codes and structurally design a RCC slab.

C. OUTLINE OF THE COURSE

Unit	Title of the Unit	Time required for the Unit (Hours)
1	Materials for RCC	10
2	Design Philosophies	12
3	Design of singly reinforced beam	12
4	Doubly reinforced beam & Flange beam	14
5	RCC Slab Design	16

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Materials for RCC**
	a) Cement:-Types of cements & their properties; b) Types of aggregates & their properties, Grade of concrete, proportioning of ingredients, c) Water content its quality for concrete, water/cement ratio and its role, d) Properties of fresh concrete including workability, air content, Flow ability, Segregation and bleeding e) Introduction to admixtures f) Steel: - Necessity of reinforcement; characteristics of reinforcing material; elastic theory for reinforced concrete design; assumptions made.
2	**Design Philosophies**
	a) Introduction to various related IS codes. b) Design Philosophies: Working stress, ultimate strength and limit states of design. c) Design concept of factor of safety. d) Limit state of serviceability for deflection, control of deflection as per IS 456:2000.Conclusion and Summary of Unit
3	**Design of singly reinforced beam**
	Analysis and Design of singly reinforced rectangular beam section for flexure and shear using Limit State Method
4	**Doubly reinforced beam & Flange beam**
	Analysis and design of doubly reinforced rectangular beams for flexure and shear using Limit State Method.
5	**RCC Slab Design**
	Analysis and design of one way and two-way slabs using LSM & Detailing of reinforcement.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Theory of concrete, ingredients of concrete like cement, aggregate admixtures various types & test on ingredients. Entire process of concrete from mixing to placing. Site visits on concrete plant. & Concrete lab, site casting and placing.
- Introduction and study of IS 456:2000 R.C.C. code of practice IS 800:2007 steel code of practice.& IS 875:1987 all parts for load calculations.

F. RECOMMENDED STUDY MATERIAL:

Sr. No.	Reference Book	Author	Edition	Publication
1	Strength of Materials	R.S. Khurmi	Latest	S.Chand Publishing House
2	Strength of Materials	D.S. Kumar	Latest	
3	Strength of Materials	Ramamurthan	Latest	Dhanpat Rai Publication

BARCAR4103 BUILDING REGULATIONS AND BYE LAWS 2 Credits [LTP: 2-0-0]

A. OBJECTIVE

To familiarize the byelaws and regulation related to on-site construction in India. To acquaint students about legal perspective of building designing and processes involved to solve typical problems arising out of different processes.

B. COURSE OUTCOMES

- To outline the Indian framework of Building Regulations
- To identify difference between various regulations and its application.
- To inspect the building codes and its application in building.
- To explain regulations related to fire protection.
- To elaborate the various services-based regulations for a building.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time required for the Unit
1	Indian framework of Building Regulations	2
2	Building Regulations and Bye-Laws	2
3	National Building Code	8
4	Regulations for Fire Protection	6
5	Regulations for Services, Light & Ventilation	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Indian Framework of Building Regulations**
	• I A- Terminologies related to Code, standard, Bye-laws, Bill, Act, Regulations, Ordinance, Legislation and Law. • -Normative and Legal framework of Building codes, regulations, bye-laws and guidelines - Building permit & approval process from various authorities for completion • I B- Hands on exercise by taking a case of building for understanding the process.
2	**Bye-laws & Building Regulations**
	• Classification of land uses, buildings and permissible uses • Regulations, Standard and codes for various building types and land uses • Fire safety and other building service requirements
3	**National Building Code**
	• Chapters of NBC • Their salient features and applications in building design
4	**Regulations for Fire protection**
	• Material specifications • Design strategies • Techniques and technology used • Firefighting provisions
5	**Regulations for Services, Light & Ventilation**
	• Minimum sizes and setbacks • Opening size requirements • Proportions and sizes of spaces

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Models based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions/Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1	National Building Codes			Bureau of Indian Standards
2	Unified Building Byelaws			Jaipur Development Authority, GoR

A. OBJECTIVE

To provide an introduction to the codes and bye-laws applicable to building projects; to get a legal perspective of the design and building processes; to solve typical problems arising out of different situations in design and building processes.

B. COURSE OUTCOMES

- CO1.To enhance Empathy and Design thinking in relation with to multi-functional spaces, climatology, structural study, application of materials and site planning
- CO2.To emphasize the study of codes, standards, byelaws, policies, architectural styles for Research and Analysis and project planning. Inferences to be translated into conceptualization of the design.
- CO3.Ideation, Innovation and experimentation in the planning of spaces, materials, technology and their interrelation with open spaces. Introduction to sustainable solutions, user need assessment and area program formulation leading to detail design
- CO4.Transfer of conceptual ideas into drawings, detailed design in considerations with all norms and services and application of specific design details in consideration with the concept
- CO5. Presentation of the overall major and minor design problem through drawings, presentations, walkthroughs, models, rendered as approved and appreciated by the faculty members

C. DETAILED SYLLABUS

UNIT	CONTENT
NA	a) To understand the co-relation of visual aesthetics, climatology, seismic response, complex structural study in designing and spaces. b) To understand the impact of Climatic Design Parameter with respect to Human Comfort and energy conservation and application of Building Materials, in various Climate Zones. c) To understand the complexity of site planning in various topographies; especially a Contour Site (Sloping Site). e) To understand the multi-functional, multi-usable spaces.

D. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

Project: Community Centre (Youth Centers, Clubs)/ Medium- Scale Projects (Recreational Spaces/ Commercial Spaces). Large Scale Institutions (Residential Schools)

E. RECOMMENDED STUDY MATERIAL:

Sr. No.	REFERENCE BOOK	AUTHOR	EDITION	PUBLICATION
1	Time Saver Standards for Architectural Design	Martin Zelnik and Julius Panero	Latest	--
2	Neuferts architect's data	Ernst Neuferts	Latest	--
3	Time-Saver Standards for Interior Design and Space Planning	Martin Zelnik and Julius Panero	Latest	--
4	Campus design in India	Kanvinde& Miller		

5	Campus Planning	Richard Dober		
6	Urban Design- The Architecture of Towns and Cities	Paul Sprereingen		
7	Exterior design in Architecture	AshiharaToshinibu		
8	Modern Language of Architecture	Bruno Zevi		
9	Modern Movements in Architecture	Charles Jencks		
10	Language of Post – Modern Architecture	Charles Jencks		
11	Complexities and Contradictions in Architecture	Robert Venturi		
12	Architectural Composition.	Rob Krier		
13	Pattern Language	Christopher Alexander		
14	Town Design	Fredrick Gibberd Alexander		

BARCAR4202	ARCHITECTURAL BUILDING CONSTRUCTION & MATERIALS - IV	3 Credits [LTP: 0-2-2]

A. OVERVIEW AND OBJECTIVES

The construction studio work should demonstrate the inter dependence of the building materials and elements and their understanding to form complete building envelop**.** Study of details of construction, laying, fixing of stone and brick **.**Study of various basic and simple elements of buildings in the aforesaid materials- Grillage foundation, Structure: Steel columns and beams structure, Structural floor & steel trusses structures, with riveted and welded joints **.** Roof Covering in G**.**I**.**, Asbestos and Fiber sheets etc **.**Flooring: Industrial flooring **.**Staircase: Metal staircase**.**

B. COURSE OUTCOMES

- Demonstrate the details of construction, laying, fixing of stone and brick
- Construct the techniques and tips of RCC structures
- Distinguish the knowledge of the aforesaid materials- details of joinery in timber and study of various basic elements like foundation, walls, roofs/floors and openings along with their principles of construction and architectural details
- Appraise the basic physical & chemical properties of binding materials like- Iron and steel, cement, and concrete
- Design and detail using all the material in the building

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time required for the Unit
1	Foundation	12
2	Structure	12
3	Types of doors and windows in Aluminum and Steel	12
4	Flooring & Roof covering	12
5	Staircase	12

D. DETAILED SYLLABUS

UNIT	UNIT DETAILS
1	**Foundation**
	a) Introduction of Unit, b) Construction details of Grillage foundation, **c)** Conclusion and Summary of Unit,
2	**Structure**
	a) Introduction of Unit, b) Construction details of Steel columns and beam's structure, Structural floor & steel trusses structures, with riveted and welded joints**.** **c)** Conclusion and Summary of Unit,
3	**Types of doors and windows in Aluminum and Steel**
	a) Introduction to metal doors and windows, b) Types of aluminum and steel doors and window as per use, **c)** Aluminum and steel construction,
4	**Flooring & Roof covering**
	a) Introduction of Unit, b) Construction details of Industrial Flooring and other forms of steel flooring, c) Construction details of steel trusses, types of trusses and spans achieved, d) Roof Covering materials in G**.**I**.**, Asbestos and Fiber sheets etc **.** **e)** Conclusion and Summary of Unit,

5	Staircase
	a) Introduction of Unit, b) Construction detailing of various types of Metal Staircase and circular staircases, **c)** Conclusion and Summary of Unit,

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Preparation of drawings, Site reports and other exercises covering the above**.**
- Model making with PowerPoint presentations.

F. RECOMMENDED STUDY MATERIAL

S .N.	Reference Book	Author	Edition	Publication
1	Building Construction	B.C.Punmia	Latest	Laxmi Publication
2	Building Construction	Sushil kumar	Latest	A.K .Jain
3	Building Construction	S.C.Rangwala	Latest	Charatar Publishing House
4	Building Construction	S.P .Arora, S.P .Bindra	Latest	Dhanpat Rai Publication
5	Building Construction	W.B . Maccay	Latest	
6	Metal Doors, windows & Ventilator Steel & Aluminum			Bureau of Indian Standard, New Delhi

A. OBJECTIVE

Introducing students to fundamental techniques of Visual representation and to equip with the basic principles of representation and enhancing the skills in developing a graphical language of architecture

B. COURSE OUTCOMES

- To demonstrate the ability to observe, analyze and understand the visual information received from the world around
- To experiment with murals and sculptures etc, one of the major art forms, for development of creative side of students in an artistic approach
- To discover knowledge in various communications prevailing in life and the role of Graphic Design in communication
- To assess various aspects of design process, conceptualization and visualization of the design
- To formulate an arrangement of works that exhibits their composition, rendering techniques, presentation skills.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Mural	15
2	Sculpture	15
3	Visual Graphics Presentation Techniques	5
4	Design Campaign	15
5	Rendering and Presentation of Architecture Design	10

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Mural**
	I A- a) Introduction to murals and sculptures b) Identify the space-Human relation c) Provide a meaning through the design possibilities d) Creatively think and provide solutions via murals, etc. e) Make a mural design
2	**Sculpture**
	II A- a) Introduction to sculptures b) Identify the space-Human relation through objects c) Understand materials and their workability d) Creatively think and provide solutions via sculptures e) Create a mini sculpture
3	**Visual Graphics Presentation Techniques**
	III A- a) Introduction to Graphic Design b) Design a symbol or a logo with specific objective c) Take up design problems in designing Visiting cards, Letter Heads, Envelop Design etc
4	**Design Campaign**

	IV A- a) Design Campaign requirements b) Create a campaign with all the requirements for a self-created brand. Design all related stationary b) Sheets, cards, logos, graphics, text, visual communication tools, etc.
5	**Rendering and Presentation of Architecture Design**
	V A- a) Studio design exercise presentation b) Sheet layouts, line & shape, tone & texture, figure & ground, Color & value, lettering & art lettering, dimensioning, shading, symbols & scale

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Sheets based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. No.	Reference Book	Author	Edition	Publication
1	Rendering with pen and ink	Robert W. Gill	Enlarged edition, 1984	Thames Hudson Ltd. United Kingdom
2	Art fundamental (Theory and practice)	Ocvirk and others	12th edition	McGraw – Hill Education Europe
3	Model Making: Conceive, Create and Convince	Arjan Karssen		Thames & Hudson
4	Architectural Renderings	Schillaci, Fabio		
5	Color in Sketching and Rendering	Guptill, Arthur L.		
6	Graphic Design as Communication	Malcolm Barnard / Routledge		
7	Design for Communication: Conceptual Graphic Design Basics	Elizabeth Resnick / John Wiley & Sons		

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	**Coursera**	**https://www.coursera.org/learn/brand-new-brand#syllabus**	**Podcast/ audio/video**	**2-07-2020**

ii) Journals

Sr. N	Name of Journal	Reference Link	Volume/pp/ Impact Factor	Date of Publication	Date referred
1	**Research Gate**	**https://books.google.co.in/books?hl=en&lr=&id=LxxWFJzSgpIC&oi=fnd&pg=PR5&dq=resea**		**Publication**	**2-07-2020**

		rch+on+logo+design&ots=iY4RmSKcQg&sig=X_OoOBOUHp_ahLGtZSXRs0Jnp4A#v=onepage&q=research%20on%20logo%20design&f=false			

A. OBJECTIVE

To study water supply and sanitation in building design**.**

B. COURSE OUTCOME

- Classify the various terms and terminologies related to water supply in simple, multistoried and complex buildings.
- Compare the supply requirements and distribution based on function, type, location and verticality in various types of buildings.
- Determine the best practices used in waste disposal and sanitation and apply them in real life situations.
- Identify the design and complexity related to an architectural project starting from supply requirements to designing the pipelines, valves, drains and tanks etc. and ending on the final disposal of waste.
- Name the various term and technicalities.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Units
1	Supply of Water	6 Hours
2	Distribution	9 Hours
3	Refuse	6 Hours
4	Sanitation	9 Hours
5	Sanitation, Fittings & Fixtures	6 Hours

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Electrical Distribution**
	I Aa) Power Systems- Electrical generation-renewal & non-renewable sources, b) Electricity requirements & distribution c) Distribution planning & optimization- Internal distribution and supply, House wiring, Protective devices, d) Tariffs, Types of layouts-schematic and graphical, I B- Detailed study on electrical resources and generation-Group Submission (PPT)
2	**Mains and Sub Distribution,**
	II A-a)Network for electrical mains and sub distribution, b) Switches, controls, MCB, Fuses, Connectors and other distribution equipment's. II B- Advanced study of layout and distribution system in water supply. (Graphical Sheets)
3	**Layout System**
	III A-a) Layout System for lighting, fans, telephones. B) Network diagrams, load calculation. III B- Electrical layout plans of floors-schematic and graphical presentation with load calculation (CAD drafted Sheets)
4	**Service Systems**
	IV A-a) Introduction to mechanical vertical transportation systems – Lifts, escalators, elevators b) Minimum standards for grouping of lifts, return time and travel time, c) Design of lift banks for carrying capacity and travel time, installation

	requirements. IV B-Study of different components and standards of lifts, escalators, elevators. (Reports)
5	**Earthing and Lightening protection**
	V A-a) Earthing techniques and installation in buildings, V B-Study of different types of earthing systems and installations. (Reports)

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Study of IS Codes**.** Visit to construction site and documentation**.** Market survey to study electrical components and electrical products**.**
- MCQs mandatory for all units,
- Seminar presentations of minimum two units,
- Report writing of any 1 topic as per subject requirement**.**

F. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Book	Author	Edition	Publication
1	Electrical Wiring, Estimation	S.L. Uppal	2005	Khanna Publishers, New Delhi
2	Electrical illustration, Estimation & Costing	J.B. Gupta	2005	S.K. Kataria& Sons, Delhi
3	House Wiring Hand Book			International Copper Promotion Council (India), Power
4	Guide for Electrical Layout in Residential Building		IS4648-1968	Bureau of India Standards, Delhi

A. OBJECTIVE

To make students aware of the role and importance of Computers in the field of Architecture

B. COURSE OUTCOMES

- Illustrate the transformation of 2D shapes to 3D form seamlessly by learning 3D tools in AutoCAD
- Develop 3D forms in AutoCAD and combine them to form complete built structures
- Discover different software's catering to 3D design and development
- Distinguish the different commands and applying tips and tricks applicable in coral draw
- Build a complete posters/ brochure, visiting card & envelope in CorelDraw

C. DETAILED SYLLABUS

S.NO.	TOPIC DETAILS
1	Revit Foundation I A- Application and advantages, UI, Ribbons, Tabs etc. Site Work, Material manager and Edit Properties. I B- Preparing base file
2	Revit Fundamental II A- Creating building elements, Wall Profile, Grid, Modify & Filter commands and Paint & Split Surface. II B- Developing building model
3	Revit Advanced III A- Massing and Components in place. Revit family – creating, editing and applying. III B- Creating Revit family
4	Rendering in Revit and Sheet Composition IV A- Camera & Views, Rendering – Software & Cloud. Dimensioning (Annotate), Model Text, Decals, Sheet Composition, Export to CAD and Schedules. IV B- Prepare presentation base file
5	Rendering with Lumion and V Ray V A- Introduction to Lumion – its UI, viewports, settings, lighting and commands, Import Revit models in V Ray & Lumion, Rendering of Revit model in Lumion and V ray using different settings. V B- Creating rendered drawings

D. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Importing CAD drawing and converting it into 3D form, creating building elements and adding site elements in Revit Project.
- Making presentation drawings by generating views and importing Revit model in Lumion & V Ray and rendering using different sets of settings

E. RECOMMENDED STUDY MATERIAL

Sr. No	Book	Author	Edition	Publication
1	Online Tutorials – Autodesk Revit	Autodesk		Autodesk

		Website		
2	Autodesk Revit Architecture 2016 Essentials: Autodesk Official Press	Ryan Duell, Tobias Hathorn and Tessa ReistHathorn	1st	Sybex
3	Mastering Autodesk Revit Architecture 2016: Autodesk Official Press	James Vandezande, Eddy Krygiel and Brendan Dillon	1st	Sybex
4	Revit - Family Standards and Best Practices Version 2.0	Shawn Zirbes	2nd	Integrated Content Solutions
5	Exploring Autodesk Revit 2017 For Architecture	Prof. Sham Tickoo	13th	BPB Publications
6	Online Tutorials – Lumion	Lumion Website		Lumion 3D
7	Getting Started with Lumion 3D	Ciro Cardoso		Packt Publishing Limited
8	Lumion 3D Cookbook	Ciro Cardoso		Packt Publishing Limited
9	Online Tutorials – V Ray	V Ray Website		V Ray
10	Photography & Rendering with V-Ray	Ciro Sannino	1st	GC edizioni

SYLLABUS
V Semester

A. OBJECTIVE

Study of history of architecture is a very important aspect. It deals with the development from ancient to medieval to modern. It gives an idea about the technology, society, culture, materials used etc. in the ancient time, then in the modern era.

B. COURSE OUTCOMES

- Summarize the influence on architecture in India during the colonial period and its fusion with regional architecture.
- Appreciate the emergence of modern architecture, its significance and influences on the world architecture.
- Comprehend the criticism towards modern architecture and the resulting architectural styles that emerged after modernism.
- Analyze the contributing factors for the fundamental transformation of design development of different architectural movements across the world.
- Appreciate the development of post-Independence architecture in India with works of Indian and International master architects.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Colonial Architecture in India	4
2	Modern Architecture	4
3	Post Modern Architecture	6
4	Movements in Architecture	6
5	Post-Independence Architecture in India	6

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Colonial Architecture in India:**
	a) British Colonial, Dutch Colonial, French Colonial and Portuguese Colonial Architecture in India b)Planning and Design of New Delhi by Sir Edwin Lutyens, Mumbai Kala Ghoda Precinct.
2.	**Modern Architecture**
	a) International Exhibitions b) Works of Alvar Aalto, Eero Saarinen, Le Corbusier, Louis Kahn, Frank Lloyd Wright, Robert Venturi, Phillip Johnson, Charles Moore Graves, I.M. Pei, Santiago Calatrava.
3.	**Post Modern Architecture:**
	a) Works of Zaha Hadid, Norman Foster, Renzo Piano, Rem Koolhas, Frank O Gehry, Alvar Aalto b) International & Indian Examples of Post-Modern Architecture
4.	**Movements in Architecture:**
	a) Arts and Crafts Movement. b) Classicism and Neo Classicism. c) Art Nouveau Movement. d) Constructivism and De-constructivism. f) Art Deco and De Stijl.
5.	**Post-Independence Architecture in India:**

	Works of Le Corbusier, Louis Kahn, B.V. Doshi, Stein Doshi Bhalla, Charles Correa, U.C. Jain, Raj Rewal, Anant Raje, A.P Kanvinde, Christopher Benninger.

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- Analytical and illustrative exercises of above topics in the form of papers and seminars.
- Essays/ Sketches/ Models/ Skits/ Role Play/ Slide Presentations based on Individual Exercises

F. RECOMMENDED STUDY MATERIAL:

S. N	Reference Book	Author	Edition	Publication
1.	History of Architecture	Sir Banister Fletcher	20th Edition	CBS Publisher & Distributor
2.	Critical History: Modern Architecture	Kenneth Frampton	4th Edition	Thames & Hudson World of Art
3.	History of Western Architecture	David Walker	2005	Laurence King Publishing

A. OBJECTIVE

Design of R.C.C. construction. (The teaching program should lay relatively emphasis on the conceptual understanding rather than design calculations).

B. COURSE OUTCOME

- To develop knowledge of RCC beams and their behavior with respect to different loading conditions for analyzing and designing
- To be able to differentiate among various kinds of foundations and their applications according to need and purpose
- To be able to design isolated column footing using LSM as per IS 456:2000
- To develop an understanding for retaining walls and their purpose. Also, to analyze and design cantilever retaining walls along with their structural behavior and stability analysis
- To understand new technologies for designing structural members and can wisely choose and compare RCC and pre stressed structures along with its concept methods and system in pre stressing

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Design of R.C.C. Columns	14
2	Introduction of RCC Foundation	12
3	Design of foundation	12
4	Foundation – Grillage Foundation	24
5	Pre-stressing	12

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Design of R.C.C. Columns**
	Short and long columns, their structural behavior. Analysis and design of axially loaded short columns, using LSM. Analysis of uniaxially eccentrically loaded short columns.
2	**Introduction of RCC Foundation**
	Types of foundation: Shallow foundation-isolated footing ,combined footing, spread footing ,Strap Footing, Mat/Raft Foundation. Deep foundation-Pile foundation, well foundation, caisson foundation Purpose, depth of foundation, Sequence of construction activity and co-ordination, site clearance, marking, foundation plan
3	**Design of foundation**
	Design of Isolated column footing using LSM
4	**Foundation – Grillage Foundation**
	Concept of Grillage foundation, design of Grillage Foundation with Numerical.
5	**Prestressing**
	Concepts of Prestressing & Material properties, Method and systems in pre-stressing, Losses in prestressing,Comparison of RCC and pre-stressing.

E. RECOMMENDED STUDY MATERIAL:

S. N	Reference Book	Author	Edition	Publication
1	Design of RCC Structures (Limit State)	Ramarmutham	2004	Oxford & IBH Publishing Co. P. Ltd., New Delhi
2	Design of R.C.C. Structures	B.C. Punmia		Laxmi publications
3	IS Codes			Bureau of Indian Standard, New Delhi

BARCAR5103	QUANTITY SURVEYING, ESTIMATION & SPECIFICATIONS	2 Credits [LTP: 2-0-0]

A. OBJECTIVE

Basic understanding of preparing estimates and tender document for design of building

B. COURSE OUTCOME

- Classify the basics of estimation and different relevant terms associated with it
- Identify the agencies involved in running and controlling the economic activities related to buildings and understand their role in the process.
- Determine the public and private sector financing and understanding the processes for both the types.
- Choose how the financial institutes help in improving the infrastructure sector and the benefits transferred to citizens.
- Illustrate the life cycle costing and financial activities at national and international level.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time required for the Unit
1.	Introduction and Methods of Estimation	6 Hours
2.	Components of Estimation	4 Hours
3.	Specifications	6 Hours
4.	Schedule of Rates	4 Hours
5.	Types of Tenders and their Applications	4 Hours

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Introduction and Methods of Estimation**
	• Procedure of estimation • Data requirement • Types of estimation
2	**Components of Estimation**
	• Composition of Rate percentage • Distribution of material and labor • Tools plants and contractors' profit
3	**Specifications**
	• Significance of specification in building cost • Approximate & detailed estimate • Abstract of estimates • Bills of estimate bills of quantities • Contingencies taking of quantities for principal building & electric works
4	**Schedule of Rates**
	• Analysis of Rate of Principal Civil works • Item rates • Labor wages • PWD schedule rates
5	**Types of Tenders and their Applications**
	• Types of Tender documentation • Mode of measurement • General & detailed specifications

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

Preparing estimate and tender document for a building. Studying tender document of Government projects and private projects

F. RECOMMENDED STUDY MATERIAL

S. N	Reference Book	Author	Edition	Publication
1	Estimating, Costing and Valuation	S.C. Rangwala	2005	Chartar Publishing House, Anand (Gujrat)
2	Estimating & Costing Engineering Theory and Practice	B.N. Dutta	2016	UBS Publishers, New Delhi
3	Handbook of method of measurement of Building Work	BIS	2005	Bureou of Indian Standards – Distributor Pvt. Ltd. New Delhi

BARCAR5201 ARCHITECTURAL DESIGN – V (INCLUDING EDUCATIONAL TOUR) 8 Credits [LTP: 0-1-7]

A. OBJECTIVE:

- To introduce to students, the design of a building with complexities related to multi-functional spaces, services, structures and large-scale site planning;
- To accommodate more than one Building Plan on the site.
- To help students evolve the integrated understanding of the complex relationship between form, function and space;
- To initiate the concepts and implementation of campus planning, services in MEP, HVAC and structures, site planning, landscaping, pedestrian and vehicular movement and segregation for Large Scale Buildings

B. COURSE OUTCOMES

- Demonstrate the complex relationship between user experience and built environment in large scale campus design
- Interpret, and present information and data collected through studies
- integration of building services in multilevel planning in the design of service intensive buildings
- Appraise the importance of spatial planning within the constraints of Development Regulations in urban areas
- Develop design focusing on form generation and appropriate structural system

C. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

Large Scale Institutional Projects (Colleges/ Central Library/ Hospitals/ Commercial Complexes/ Malls/ Museums).

D. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Book	Author	Edition	Publication
1.	Time Saver Standards for Architectural Design	Martin Zelnik and Julius Panero	Latest	--
2.	Neuferts architect's data	Ernst Neuferts	Latest	--
3.	Architecture – Form, Space & Order	Francis D.K. Ching		
4.	Time-Saver Standards for Interior Design and Space Planning	Martin Zelnik and Julius Panero	Latest	--
5.	Campus design in India	Kanvinde& Miller		
6.	Campus Planning	Richard Dober		
7.	Urban Design- The Architecture of Towns and Cities	Paul Sprereingen		
8.	Exterior design in Architecture	AshiharaToshinibu		
9.	Modern Language of Architecture	Bruno Zevi		
10.	Modern Movements in Architecture	Charles Jencks		
11.	Language of Post – Modern Architecture	Charles Jencks		
12.	Complexities and Contradictions in Architecture	Robert Venturi		
13.	Architectural Composition.	Rob Krier		
14.	Pattern Language	Christopher Alexander		

BARCAR5202	ARCHITECTURAL BUILDING CONSTRUCTION& MATERIALS – V	3 Credits [LTP: 0-2-2]

A. OBJECTIVE

This course introduces the technique of embroidery for value addition and create awareness about the different embroideries of India and to understand the origin of technique and design reference to colors , motifs , layout of different embroideries

B. COURSE OUTCOME

- Demonstrate the details of construction, laying, fixing of stone and brick.
- Construct the techniques and tips of RCC structures.
- Distinguish the knowledge of the aforesaid materials- details of joinery in timber and study of various basic elements like foundation, walls, roofs/floors and openings along with their principles of construction and architectural details.
- Appraise the basic physical & chemical properties of binding materials like- Iron and steel, cement, and concrete.
- Design and detail using all the material in the building.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Wall Finishes	10
2	Floor Finishes	16
3	False Ceiling	10
4	Water Proofing	10
5	Partitions	14

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Wall Finishes**
	a) Introduction of Unit, b) Details of application of wall finishes, c) Application of plaster, putty, veneer, laminates, aluminum, d) Conclusion and Summary of Unit,
2	**Floor Finishes**
	a) Introduction of Unit, b) Typical details of application of floor finishes, c) stones,)inlay work(, vinyl floor, wooden flooring, d) file flooring, cement concrete block flooring, e) Glass flooring etc. f) Conclusion and Summary of Unit,
3	**False Ceiling**
	a) Introduction of Unit, b) Typical details, c) various types of false ceiling, d) Application of various types of materials in false ceiling. e) Conclusion and Summary of Unit,
4	**Water Proofing**

	a) Introduction of Unit, b) Typical details of terrace water proofing, c) treatment of parapet wall cost between parapet walls on roof, d) Damp proof SUBJECT at plinth level. e) Conclusion and Summary of Unit,
5	**Partitions**
	a) Introduction of Unit, b) Types of partitions, typical details, c) Fixtures of various details in partitions and its specifications. d) Conclusion and Summary of Unit,

E. MODEL EXCERCISES/ASSIGNMENTS/PROJECTS

- Preparation of drawings, Site reports and other exercises covering the above.
- Model making with PowerPoint presentations.
- Study of I.S .Codes, Seminars and preparation of reports .Visit to construction site

F. RECOMMENDED STUDY MATERIAL

S .N	Reference Book	Author	Edition	Publication
1	Architectural Graphic Standards	Ramsay Sleeper	2007	John Willey & Sons,
2	Building Construction	W.B .Mackay	2005	Orient Longman, Mumbai
3	Hand Book son Building Construction Practices		2004	Bureau of Indian Standards, New Delhi

A. OBJECTIVE:

- To prepare basic working drawings for a given building Design.
- To incorporate the knowledge of construction, finishes and services for designing details and preparing working drawings
- To document the entire set of working drawings with the aim of presenting the same for securing placement for practical training

B. COURSE OUTCOME

- Demonstrate the details of construction, laying, fixing of stone and brick.
- Construct the techniques and tips of RCC structures.
- Distinguish the knowledge of the aforesaid materials- details of joinery in timber and study of various basic elements like foundation, walls, roofs/floors and openings along with their principles of construction and architectural details.
- Appraise the basic physical & chemical properties of binding materials like- Iron and steel, cement, and concrete.
- Design and detail using all the material in the building.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Designing of 3BHK residence	10
2	Preparation of structural drawings	10
3	Preparation of elevation(s) and sectional details	10
4	Preparation of submission drawings & details	10
5	Preparation of other drawings & details	20

D. DETAILED SYLLABUS

SR. NO.	TOPIC
PROJECT 1	
1	**DESIGNING OF 3BHK RESIDENCE**
	I A. ***Introduction to assignment 1***- Preparation of submission drawing of a residence **I B.** Design of a 3bhk residence in provided site Drafting of plans – floor, terrace & location; sections and elevations of 3BHK
2	**PREPARATION OF STRUCTURAL DRAWINGS**
	II A. ***Introduction to assignment 2***- Preparation of structural plans & details. **II B**. Column and grid placement in the final plans Drafting/conversion of floor plans to working plans
3	**PREPARATION OF ELEVATION(S) AND SECTIONAL DETAILS**
	III A. ***Introduction to assignment 3***- Demonstration of working elevations and sections **III B**. Drafting/conversion of sections & elevations to working drawings Drafting of detailed drawing – Plans, Elevations and Sections & detailing of Staircase.
4	**PREPARATION OF SUBMISSION DRAWINGS & DETAILS**
	IV A. ***Introduction to assignment 4***- Lecture on formatting of submission

	drawings Location Plans, Floor Plans, Elevations, Sections Lecture on detailed drawings **IV El**evations, site plan, area calculations, & opening schedules Compiling/formatting of submission drawing
5	**PREPARATION OF OTHER DRAWINGS & DETAILS**
	V B. *Introduction to assignment 5*- Drafting of detailed drawing – Plans, Elevations, Sections and Details of Boundary wall Drafting of detailed drawing – Plans, Elevations, Sections and Details of Washroom(s) Drafting of detailed drawing – Plans, Elevations, Sections and Details of Kitchen
PROJECT 2 –Design (Major) Project of Current Semester	
	VI B. *Introduction to assignment 6*- Preparation of current semester Design drawings according to exercise done under Project 1 ● Column and grid placement in the final plans ● Drafting/conversion of floor plans to working plans
	● Drafting/conversion of sections & elevations to working drawings
	● Compiling/formatting of submission drawing including location plan, floor plans, sections, elevations, site plan, area calculations, & opening schedules

E. MODEL EXCERCISES/ASSIGNMENTS/PROJECTS

PROJECT 1

Major project could start from designing a residence in a given site using local byelaws. This design then should be converted to working drawing. In doing so, the students will understand the importance of often ignored building elements like staircase, boundary, etc. Also, they would get a better idea of how complex designs are constructed and what all modifications are to be done in design to ensure its practicality. There should be an emphasis on modifying the design according to its working drawing requirements. The final output will be in the form of corporate/submission and detail drawings.

PROJECT 2

Minor project could be the current semester's design project (major). As the design will be completed by the ninth week of semester, the students can directly start with converting the drawings into working drawings.

F. RECOMMENDED STUDY MATERIAL

S.N.	Book	Author	Edition	Publication
1.	Working Drawing Handbook	Keith Syles	1998	Architectural Press Oxford
2.	Arch. Drawing and Light Construction	Edward J. Muller, James G. Gausett	1999	Grav – Prentice Hall, New Jersey
3.	Unified Building Regulation, Rajasthan		2017	Jaipur Development Authority
4.	Working Drawing Manual (P/L Custom Scoring Survey)	Fred A. Stitt	1998	McGraw-Hill Education
5.	The Professional Practice of Architectural Working Drawings	Osamu A. Wakita, Richard M. Linde & Nagy R. Bakhoum	4th edition (2011)	John Wiley & Sons

BARCAR5204	BUILDING SERVICE STUDIO – III (ACOUSTICS)	2 Credits [LTP: 0-1-2]

A. OBJECTIVE

To Study about Acoustics, the science of sound. Acoustics is an essential component of user experience of the building and creation of appropriate ambience in accordance with building use.

B. COURSE OUTCOMES:

- To understand the fundamentals and terminology used in acoustical treatment of buildings and its surrounding.
- To gain detailed and technical definition of components of acoustics. To learn and adopt various terminologies like RT, echo, noise rating, etc. and their values for different materials along with their application
- To understand the concept of noise and how it affects any interior/exterior space along with understanding the means and methods of reducing it to the maximum possible extant
- To gain knowledge of various acoustical materials and their properties, also help to understand the market trends and new materials
- To apply the knowledge gained in practical examples for achieving maximum efficiency of acoustics

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to acoustics	6
2.	Basic definitions	9
3.	Noise	6
4.	Acoustical materials	6
5.	Acoustical design process	9

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**INTRODUCTION TO ACOUSTICS**
	I A-a)Introduction to acoustics b) Physics of sound, behavior of sound in an enclosed space. c) Criteria for acoustic environment- location of building, geometry and shape, **I B-** Identification of Acoustics terminology, components and typology of acoustical treatments.(PPT)
2.	**BASIC DEFINITIONS**
	II A- a) Basic definitions b) Basic understanding of echo, reverberation time, sound absorption coefficient, Noise rating curves. **II B-**Detailed study of the calculations of reverberation time, frequency, etc.(Report-class assignments)
3.	**NOISE**
	III A-a) Noise b) Noise- physiological and psychological effects, transmission loss, flanking of sound, c) Structure borne sound and noise from different mechanical equipment's, d) Noise control techniques and their applications,

	III B-Detailed study of types of noise and noise effect on human and its surroundings.(Report-class assignments)
4.	**ACOUSTICAL MATERIALS**
	IV a) Acoustical Materials b) Selection of acoustic materials, construction details and fixing. **IV B- Advanced** study of acoustical treatments, material specifications and study with case studies and market surveys**. (**Graphical Sheets**)**
5.	**ACOUSTICAL DESIGN PROCESS,**
	V A-a) Acoustical design process) Predictions of acoustical conditions, b) Approach to designing enclosure for predetermined acoustical responses, corrective of existing deficient enclosures, c) Introduction to sound reinforcing system- amplification and distribution.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Assignments based on acoustical theory, acoustical treatment, laws, noise proofing, material specification and lighting designs.
- MCQs mandatory for all units,
- Seminar presentations of minimum two units,
- Report writing of any 1 topic as per subject requirement

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1	National Building Codes	----------	2005	Bureau of Indian Standards
2	National Building Codes Part-VIII – Building Services	----------	2005	Bureau of Indian Standards
3	Architectural Acoustics	David Egan	2007	J Ross Publishing
4	Acoustics in Building Design	M. A. Siraskar	1979	Sangam Books Ltd
5	Auditorium Acoustics and Architectural Design	Michael Barron	2009	Taylor and Francis
6	Environmental Acoustics	Leslie L Doelle	1972	McGraw Hill Higher Education

A. OBJECTIVES

The subject orient students about the basic aspects of Interior design studio, and primary aspects attributed to it.

B. OUTCOMES:

- Explain the elements of Interior design and its effect on space planning.
- Assume the various types of false ceilings, lighting, plumbing and flooring, their specifications and methods of installation/application.
- Design furniture according to anthropometrics study, analyses the use of different materials and produce detailed construction drawings.
- Appraise the design guidelines for interior landscaping, landscape elements, indoor plants and their use.
- Compare the knowledge of different wall finishes materials, their application, material options and specifications to formulate interior project estimates.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Interior Design and Space planning	9
2	False Ceiling & Lighting, Plumbing, Flooring details	6
3	Furniture Detailing with Respect to Anthropometry	6
4	Introduction to Interior Landscape	6
5	Wall Finishes, Furnishings and material study	9

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**IA. Introduction to Interior Design and Space planning** Introduction to the unit, Elements of interior design, Apply the Principles of Space planning in interior spaces, Understanding the spatial relationships. **I.B Interior layout of the different spaces with proper functionality –** Design of a small interior space eg. Kitchen, Toilet, Study Room, Conference Room etc.
2.	**IIA. False Ceiling & Lighting,** • Introduction to false ceiling, types of false ceiling materials and construction details. • Understanding the importance of lighting and electrification with respect to furniture and false ceiling layouts, uses of various lighting fixtures. • Finishing material details • Types of lighting fixtures in the ceiling. **IIB. Plumbing -** Plumbing fixtures and detailing. **IIC. Flooring details** • Types of Interior flooring materials with respect to their use in interior spaces. • Construction details of flooring materials. • Put into practice of the latest material and finishes available in market in the above list.
3.	**IIIA. Furniture Detailing with Respect to Anthropometry** • Study of anthropometry in interior spaces. • Applying the design parameters for preparing the detailed drawing for any given

	piece of furniture. • Understanding the basic design parameters and guideline for different spaces in a residence. • Construction detailing of the different materials for furniture. **IIIB. Understanding the furniture works of Great Masters –** Ludwig Mies Van Der Rohe, Frank Gehry,Alvar Alto, Frank Llyod Wright
4.	**IVA. Introduction to Interior Landscape -** Definition and importance of interior landscape in a space. **IVB. Interior Landscape and its use-** • Definition, classification of plants, indoor plants and their functions, layout & components, • Various interior landscaping elements- water bodies - pools, fountains, cascades Plants, rocks, artifacts, paving & lighting. • Design guidelines- plant texture & colour, plant height, plant spacing
5.	**VA. Wall Finishes, Furnishings and material study** • Types of wall finishes, their applications • Furnishing materials and their applications • Various materials available in market and their prices **VB. Making estimates for the designed projects**

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Market survey for latest materials available in market

F. RECOMMENDED STUDY MATERIAL

S. N	Reference Book	Author	Publication
1	An introduction to Art, Craft, Technique, Science & Profession of Interior Design	A Kasu	
2	Spatial strategies for interior design	Ian Higgins	
3	Building systems for interior designers	Corky Binggeli	
4	Interior Design Principles and Practice	M. Pratap Rao	
5	Interior design illustrated	D.K. Ching	

- Analyzing interiors of existing building

A. OBJECTIVE

The subject orient students about the basic aspects of product design studio, and primary aspects attributed to it.

B. COURSE OUTCOME:

- Explain the elements of furniture design and its effect on space planning.
- Assume the various types of false ceilings, lighting, plumbing and flooring, their specifications and methods of installation/application.
- Design furniture according to anthropometrics study, analyses the use of different materials and produce detailed construction drawings.
- Appraise the design guidelines for furniture landscaping, landscape elements, indoor plants and their use.
- Combine the knowledge of different wall finishes materials, their application, material options and specifications to formulate furniture project estimates to create a design project.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Furniture design	6
2	False Ceiling & Lighting, Designing of a product	6
3	Aspects of Product Design	9
4	Product Design	9
5	Design of Industrial Products. Element design for the differently abled	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**IA. Introduction to Furniture design** An brief introduction to Product Designing – Various elements – History of Product Design – Definition of Product Design, understanding of Product Design - Purpose of Product Design – Role of Product Designers. **I.B Designing of a product –** Design of a small product eg. Calendar, Cup, coaster, etc
2.	**IIA. False Ceiling & Lighting,** • Definition of human factors, Application of human factors data. • Human activities, their nature and effects. • Man-machine system and physical environment. • Human performance and system reliability. • Information input and processing. Human control systems. • Applied anthropometry – Human response to climate. **II.B Designing of a product –** Design of a small product eg. Calendar, Cup, coaster, etc
3.	**IIIA. Aspects of Product Design** • Visual, Auditory, Tactual, Olfactory human mechanisms, Physical space and arrangement. • Visual display, process of seeing, visual discrimination, quantitative and

	qualitative visual display, • Alphanumeric and related displays , • Visual codes and symbols. **III.B Designing of a product –** Design of a small product eg. Calendar, Cup, coaster, etc
4.	**IVA.** Product Design • Form, Colour, Symbols, User specific criteria, Material, Technology and recyclability, • Packaging. Multiple Utility oriented approach to Product Design. **III.B Designing of a product - Design of Household elements, tools and devices.**
5.	**VA. Design of Industrial Products. Element design for the differently abled**

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Market surveys for latest materials available in market
- Analyzing interiors of existing buildings

F. RECOMMENDED STUDY MATERIAL

S. N	Reference Book	Author	Publication
1	An introduction to Art, Craft, Technique, Science & Profession of Interior Design	A Kasu	
2	Handbook of Speciality Elements in Architecture McGrawhill Co., USA, 1982	Andrew Alpern	
3	Saver Standards for Interior Design		
4	An invitation to Design,	Helen Marie Evans	
5	Interior design illustrated	D.K. Ching	

A. OBJECTIVE

To provide knowledge of product design and applying various techniques using innovative material to create products that are based on anthropological studies (universal design) integrating manufacturing and marketing processes.

B. COURSE OUTCOME

- To understand and apply the elements of Interior Design & its impact on the interior layout and understand the spatial relationships according to the function of the space by applying principles of space planning in an interior layout
- To acquire knowledge about anthropometrics of a given space
- To develop understanding and be able to design a chosen furniture by analyzing the different materials and produce detailed drawings
- To evaluate the importance of clients, brief and innovation in design.
- To design a product considering universal design.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours
1	Introduction to Product Design	6
2	Anthropology & Product design	6
3	Aspects of Product Design	9
4	Product Design	9
5	Industrial product design. Element design for differently abled	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Introduction to Product Design**
	I A- Introduction to Product Design, Importance, Definitions, History, Elements, Relevance, Role of Product designers **I B- Designing a daily use small product. Eg: Calendar, cup, stationary organizer, coasters, etc.**
2	**Anthropology & Product design**
	II A - Human factors influencing product design and its application - Anthropology, activities, nature, behavior and effects - Physical environment, relationship between man and machine - Information processing and Control system in Humans - Application of anthropometry in response to environment **II B- Designing a daily use object applying human activities eg: Chair, table etc.**
3	**Aspects of Product Design**
	III A- Understanding Human sensory system and its mechanism, Arrangement of physical space - Visual sensory, processing, qualitative and quantitative aspects - Alphanumeric, symbols & codes. **III B- Design a visual sensory based product**
4	**Product Design**
	IV A- Design principles and elements applying specific criteria based on requirements or client brief, - Using innovative Material and construction technology and environment friendly

	- Flexible, versatile and user-friendly product designing **IV B- Designing a Multi utility product.**
5	**Industrial product design. Element design for differently abled**
	V A- Introduction to Industrial design - Introduction to universal design in product - Understanding design for differently abled **V B- Designing Industrial design product considering universal design.**

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Seminar presentations (Student works open for all) / Multimedia presentations/PPT's
- Market surveys for latest materials available in market
- Analyzing interiors of existing buildings
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1	An introduction to Art, Craft, Technique, Science & Profession of Interior Design	A Kasu		
2	Handbook of Speciality elements in Architecture	McGrawhill Co. USA	1982	
3	Time Saver standards for Interior Design			
4	An invitation to Design	Helen Maric Evans		
5	Interior design illustrated	D.K. Ching		

SYLLABUS
VI Semester

A. OBJECTIVE

To develop an understanding of management of construction and various aspects of it

B. COURSE OUTCOME:

- Classify the user needs and how they translate into program and manifestation in design in terms of space, materials and construction methodology
- Build design decision-making process through appropriate technical documentation in a manner that is client centered, sustainable, aesthetic and socially responsible.
- Identify architectural elements like courtyards, arches etc. and their use appropriately by designing spaces with different functions and concept.
- Assess various services, structure and fire related provisions required while designing a building.
- Develop design thinking that is open to consideration of alternative perspectives by analyzing and evaluating ideas and information gathered through applied research.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Construction Management	4
2	Scheduling Procedures And Techniques	6
3	Project Network Analysis	6
4	Project Network Analysis	4
5	Project Cost Analysis	4

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Introduction to Construction Management** **I A-** a) Construction management: Relevance in industry functions and scope. b) Project management functions, planning process. Responsibilities of a construction manager – Project management- Concept, Objectives, Planning, Scheduling, Controlling c) Suitability of architect as construction / project manager
2	**Scheduling Procedures and Techniques** II A- a) Basic Concepts in the Development of Construction Plans b) Choice of Technology and Construction Method c) Defining project activities and precedence relationships among activities d) Methods of Activity Duration Estimation e) Project work breakdown, Modelling and analyzing networks
3	**Project Network Analysis** III A- a) Work scheduling process. Bar charts and Mile stone charts. b) Relevance Of Construction Schedules- PERT & CRT c) The Critical Path Method (CPM) - scheduling, activity float, critical path identification and schedules. III B- Preparing scheduling process, activity float, critical path identification and schedules.
4	**Project Network Analysis** IV A- a) Network analysis fundamentals, CPM Network analysis procedure. b) Program evaluation review Techniques (event, activity, dummy network rules, graphical guidelines for network – PERT network).

	IV B- Network analysis and event, activity, dummy network rules, graphical network – PERT network
5	**Project Cost Analysis** V A- a)PERT - network, time estimates, probability distribution, critical path, slack and probability of achieving completion date. V B- Estimating time and probability distribution, critical path, slack and probability of achieving completion date in PERT.

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Exercises based on defining the activities of a small residential project and the durations for the same.
- Preparation of bar charts, Gantt chart for a construction project.
- CPM network technology usage in any live project.
- PERT networking.

F. RECOMMENDED STUDY MATERIAL:

S. N.	Reference Book	Author	Edition	Publication
1.	Construction Project Management.	Chitkara, K.K	1998	Tata McGraw Hills Publishing Co. Ltd. New Delhi
2.	Scheduling Construction projects	Willis., E.M	1986	John Wiley and Sons
3.	Project Management with CPM ", PERT and Precedence Diagramming	Moder.J., C.Phillips and Davis	1983	Van Nostrand Reinhold Co.
4.	Building, Planning, Designing and Scheduling	Gurcharan Singh	2009	Standard Publications
5.	Project Management for Architects and Civil Engineers	Mukhopadhya y,S.P	1981	Firma KLM Pvt. Ltd., Calcutta

A. OBJECTIVE

Understanding correlation between function, structure, material, construction and services

B. COURSE OUTCOME:

- To learn about the structural design of steel connections
- To gain knowledge of compound section of beam & its design
- To understand the importance and functions of grillage foundation and be able to produce its structural design
- To prepare elementary design for compression member & buckling analysis
- To instill the concept of understanding gantry girder & plate girder and carry out the wind analysis of roof trusses for stability

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Design of steel Connections	6
2	Design of Beams	4
3	Foundation – Isolated footing shallow Foundation	4
4	Design of Compression member	6
5	Plate Girder and Gantry Girder and Roof Trusses	4

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Design of steel Connections**
	Types of Steel, Types of Bolts, Types of Connections ,Design of Axially Loaded Bolted Connection, Welded Connection with Numerical.
2	**Design of Beams**
	Design of beams: simple and compound sections, main and subsidiary beams and their connections. Laterally supported beam design
3	**Foundation – Isolated footing shallow Foundation**
	Concept of Isolated footing shallow Foundation, design of Isolated footing shallow Foundation with Numerical.
4	**Design of Compression member**
	Types of buckling. Column buckling curves, Imperfection factor, Buckling curves for different cross sections. Design of compression member; Axially loaded compression members.
5	**Plate Girder And Gantry Girder and Roof Trusses**
	Design Steps of Plate Girder and Gantry Girder Without Numerical Wind loads & calculation of wind load on structures.

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

Design of public buildings such as multistory apartment, commercial building, multiplex, etc.

F. RECOMMENDED STUDY MATERIAL:

S.N.	Reference Book	Author	Edition	Publication
1.	Design of Steel Structure (Vol. I)	Prof. R. Chandra	2005	Standard Publisher & Distributors, Delhi
2.	Design of Steel Structure	Negi	2004	Tata McGraw Hills

				Publishing Co. Ltd. New Delhi
3.	Design of Steel Structure	S.K. Duggal	2004	Tata McGraw Hills Publishing Co. Ltd. New Delhi
4.	Design of Steel Structure	S.S. Bhavikatti	Latest	I.K. International

A. OBJECTIVE

To develop an Economic base for Architecture

B. COURSE OUTCOME:

- Demonstrate the concept of Economics, demand & supply and production distribution.
- Identify the principles of money, banking, credits & cost indices on Banking scenario
- Classify the inflation & inflationary pressures and mixed economy
- Examine the private and public housing development and feasibility report.
- Estimate the life cycle cost and feasibility studies.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time required for the Unit
1	General building economic concepts	6
2	General factors influencing building economics	4
3	Role of Financial Institution	4
4	Economics of Private and public housing	6
5	Influence at National & International Level	4

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**General building economic concepts**
	a) General economic concepts b) Demand and supply consumption c) Production distribution and its relevance to economics
2	**General factors influencing building economics**
	a) Money, banking and bank credits b) Cost and cost indices
3	**Role of Financial Institution**
	a) Inflation and inflationary pressures b) Mixed economy
4	**Economics of Private and public housing**
	a) Economics of private and public housing development b) Financing of projects c) Economic feasibility report etc. with special reference to India
5	**Influence at National & International Level**
	a) Life Cycle Costing b) Feasibility Studies – average rate of return, internal rate of return, discounting methods, etc.

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

Seminars and preparing paper

F. RECOMMENDED STUDY MATERIAL

S. N.	Reference Book	Author	Edition	Publication
1	Building Economics for Architects	Thorbjoern Mann	1992	John Wiley and Sons
2	Economics in One Lesson: The Shortest and Surest Way to Understand Basic Economics	Henry Hazlitt	1988	RHUS

3	General Awareness Basic Banking & Financial Issues	Gautam Majumdar	2012	Upkaar Publications
4	The Indian Financial System: Markets, Institutions and Services	Bharathi V Pathak	2007	Pearson Education
5	Housing Finance and the Urban Poor	Peer Smats	2004	Rawat Publications
6	Financing Patterns for Infrastructure Projects	Amareshwar Mishra and R. K. Mishra	2013	Academic Foundation
7	Project Finance in Theory and Practice: Designing, Structuring and Financing Private and Public Projects	Gatti	2nd Edition (2012)	Elsevier Publications

A. OBJECTIVE

Understanding correlation between function, structure, material, construction and service

B. COURSE OUTCOME:

- Demonstrate the learning of Form oriented Design with interrelated disciplines of architecture.
- Develop the techniques involved during the process of design evolution w.r.t. site context & Building byelaws.
- Defend the architectural design process and comprehend architecture as impacted by the elements of a space through the more extensive ramifications of design choices.
- Develop the students to equip themselves, with Professional Competency and Capabilities to incorporate, detail design & execute by using this acquired knowledge.
- Develop the design ideas into presentable 2-D and 3-D drawings, presentations, models, views, etc. to the end users (in case of live projects)

C. DETAILED SYLLABUS

UNIT NO.	CONTENTS:
NA	• To clarify the Design Process in progressively complex spaces and buildings. • To understand the urban context of a project and its inter-relationship to site, climate, social structure, culture, architecture, built typologies, construction technologies, Urban Fabric, Economy, Structural and Services Complexities etc. • To understand and bring to design implementation issues such as sustainability, earthquake, disaster management, barrier free environment etc.

D. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

Large Scale Institutional Projects (Management Institute/ Design Institute/ Medium Scale Hospitality and Health Care Facilities/ Auditorium/ Theatre Complexes/ Artist's Village/ Shopping Arcades).

E. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Book	Author	Edition	Publication
1.	Town Planning,	AbirBandopadhyay		
2.	Urban Housing Forms			Architectural Press
3.	Forms En Formations	Christian Darles		
4.	Time Saver Standards for Architectural Design	Martin Zelnik and Julius Panero	Latest	--
5.	Neuferts architect's data	Ernst Neuferts	Latest	--
6.	Architecture – Form, Space & Order	Francis D.K. Ching		
7.	Time-Saver Standards for Interior Design and Space Planning	Martin Zelnik and Julius Panero	Latest	--
8.	Campus design in India	Kanvinde & Miller		

9.	Campus Planning	Richard Dober		
10.	Urban Design- The Architecture of Towns and Cities	Paul Sprereingen		
11.	Exterior design in Architecture	AshiharaToshinibu		
12.	Modern Language of Architecture	Bruno Zevi		
13.	Modern Movements in Architecture	Charles Jencks		
14.	Language of Post – Modern Architecture	Charles Jencks		
15.	Complexities and Contradictions in Architecture	Robert Venturi		
16.	Architectural Composition.	Rob Krier		
17.	Pattern Language	Christopher Alexander		
18.	Town Design	Fredrick Gibberd Alexander		

BARCAR6202	ARCHITECTURAL BUILDING CONSTRUCTION & MATERIALS - VI	3 Credits [LTP: 0-2-2]

A. OBJECTIVE

Prefabrication Technology and cost-effective building material

B. COURSE OUTCOME

- Demonstrate the details of construction, laying, fixing of stone and brick
- Construct the techniques and tips of RCC structures
- Distinguish the knowledge of the aforesaid materials- details of joinery in timber and study of various basic elements like foundation, walls, roofs/floors and openings along with their principles of construction and architectural details
- Appraise the basic physical & chemical properties of binding materials like- Iron and steel, cement, and concrete
- Design and detail using all the material in the building.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Units
1	Ferro cement	6 Hours
2	Precast Construction	9 Hours
3	Pre-stressed Construction	6 Hours
4	Structural Glazing & Aluminum Composite Panels	9 Hours
5	Cost Effective Building Material	6 Hours

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Ferro Cement**
	● Introduction to Ferro cement ● Properties of Ferro cement ● Comparison between RCC and Ferro cement ● Casting and manufacturing of ferro cement sections ● Ferro cement products ● Merits, demerits and Application in construction industry ● Conclusion of unit
2.	**Precast Construction**
	● Introduction to Precast construction ● Market forms of Precast products and their properties ● Comparative analysis between RCC Precast and Cast in situ construction system ● Casting and manufacturing of Precast RCC sections ● Merits, demerits and Application in construction industry ● Conclusion of unit
3.	**Pre-stressed Construction**
	● Introduction to Pre-stressed construction ● Concept of prestressing, types-post and pre tensioning ● Comparative analysis between RCC Pres-stressed and regular construction system ● Casting and manufacturing of Precast pre-tensioned RCC sections ● Merits, demerits and Application in construction industry ● Conclusion of unit

4.	**Structural Glazing & Aluminum Composite Panels**
	● Introduction to glazing materials and ACP's ● Composition of glazing materials, types and available market forms ● Composition of Aluminum Composite panels, types and available market forms ● Manufacturing process of ACP's ● Merits, demerits and Application in construction industry ● Conclusion of unit
5.	**Cost Effective Building Material**
	● Introduction to unit ● Concept of Alternate Building Materials, Fly Ash, Stabilized Earth Blocks ● Need for search of Cost-Effective material ● Characteristic requirements of a cost-effective material ● Conclusion to unit

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

Study of IS codes, seminars and preparation of reports and visit to construction site

F. RECOMMENDED STUDY MATERIAL:

S. N.	Reference Book	Author	Edition	Publication
1.	Handbook on Building Construction			Bureau of Indian Standards, New Delhi
2.	Practical Handbook on Building Construction	M.K. Gupta		
3.	Hand Book on Construction, Reinforcement & Detailing			Bureau of Indian Standards, New Delhi
4.	Building Construction	J.C. Mackay	2005	Orient Longman, Mumbai
5.	The Construction of Building	R. Barry	2004	Affiliated East & West Press, New Delhi

A. OBJECTIVE:

- To prepare basic working drawings for a given building Design.
- To incorporate the knowledge of construction, finishes and services for designing details and preparing working drawings
- To document the entire set of working drawings with the aim of presenting the same for securing placement for practical training

B. COURSE OUTCOME

- Demonstrate the importance of working drawings to advance level of drawings & details for a given building Design.
- Identify the working details of structural layout with necessary details based on the structure of the building typology.
- Classify the relation between Architectural drawings and detailed service drawing including electrical & plumbing layout along with schedules.
- Compare the interior finishes and specifications for preparing working drawings.
- Develop and convert the design intent into a set of good for construction drawings.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	3BHK residence (Continued from V semester)	10
2	Preparation of structural drawings	10
3	Preparation of service drawings	15
4	Preparation of other drawings	15
5	Preparation of BOQ	10

D. DETAILED SYLLABUS

SR. NO.	CONTENT
PROJECT 1	
1	**3BHK RESIDENCE (Continued from V semester)**
	IA. ***Introduction to assignment 1*****- Introduction about site layout and development** **II B.** - Preparation of Centre Line plan - Trench/Excavation and footing Plan with details
2	**PREPARATION OF STRUCTURAL DRAWINGS**
	II A. ***Introduction to assignment 2*****- Introduction about Column Beam layout.** **II B.** – Preparation of Column Layout drawing and details - Beam and Slab Drawing and details - Shuttering Plan and details
3	**PREPARATION OF SERVICE DRAWINGS**
	III A. ***Introduction to assignment 3*****- Preparation of Supporting Drawing.** **III B.** Preparation of Door Window Schedule and Details - Electrical Layout of all floors - Plumbing and Drainage Plan of All floors and terrace
4	**PREPARATION OF OTHER DRAWINGS**
	IV A. ***Introduction to assignment 4*****-** For any single space or room in the project, the following set of drawings need to be produced: **IV B. -** Flooring detail (Any single space or room) - False Ceiling detail, Wall finishes drawing, Specification's sheet

5	**PREPARATION OF BOQ**
PROJECT 2 – MAJOR DESIGN PROJECT OF V SEMESTER (Continued from V semester)	
6	Structural Drawings – excavation, footing, column, beam and slab
7	**Service Drawings – Electrical and Plumbing**
8	Detail Drawings – Flooring & details, Wall Finish & details, False Ceiling & details and Specifications (of any single space or room in the project)

E. MODEL EXCERCISES/ASSIGNMENTS/PROJECTS

S. No	Exercise/Assignment/Project
1	**PROJECT 1 (Continued from V semester)**
	Major project should be continued from previous semester working drawing. This would give them an idea of continuity of projects and their interrelation. Also, this would ensure them an ideal working drawing set for a complete project. The final output will be in the form of a complete working drawing set for a 3BHK residence.
2	**PROJECT 2 (Continued from V semester)**
	Minor project should be continued from previous semester's design project.

F. RECOMMENDED STUDY MATERIAL

S. No.	Book	Author	Edition	Publication
1.	Working Drawing Handbook	Keith Syles	1998	Architectural Press Oxford
2.	Arch. Drawing and Light Construction	Edward J. Muller, James G. Gausett	1999	Grav – Prentice Hall, New Jersey
3.	Unified Building Regulation, Rajasthan	Jaipur Development Authority	2017	Jaipur Development Authority
	Working Drawing Manual (P/L Custom Scoring Survey)	Fred A. Stitt	1998	McGraw-Hill Education
4.	The Professional Practice of Architectural Working Drawings	Osamu A. Wakita, Richard M. Linde and Nagy R. Bakhoum	4th edition (2011)	John Wiley & Sons
5.	Architectural Working Drawings	Ralph W. Liebing	3rd edition (1990)	John Wiley & Sons
6.	Detail in Contemporary Residential Architecture 2	David Phillips and Megumi Yamashita	2014	Laurence King Publishing
7.	Architectural Detailing: Function, Constructability, Aesthetics	Edward Allen and Patrick Rand	3rd edition (2016)	John Wiley & Sons
8.	Construction Drawings and Details for Interiors	Rosemary Kilmer and W. Otie Kilmer	3rd edition (2016)	John Wiley & Sons

A. OBJECTIVE:

To Study about the science of illumination, lighting schemes and science of lighting .Lighting is an essential components of user experience of the building and creation of appropriate ambience in accordance with building use.

B. COURSE OUTCOME

- To understand the importance of light, its properties, types and application in architecture
- To learn and adopt the ingress of day-lighting in design by manipulating various building elements
- To understand the concept of artificial lighting and its needs along with learning about its types, fittings, installation schemes, and supplementary lighting concept
- To gain knowledge of various materials related to electrical supply and their properties
- To apply the knowledge gained about lighting in practical examples for achieving maximum efficiency

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Light	6
2	Day-lighting	9
3	Artificial Lighting	6
4	Principles of electrical installation in buildings	9
5	Illumination design process	6

D. DETAILED SYLLABUS

UNIT	CONTENT
1	**Introduction to Light**
	I A-Electromagnetic radiation, Visual task requirements, Units of Light, Light, Vision and Buildings, Standards of Lighting and Visual comfort. **I B-**understand the definition and basics of light.(PPT)
2	**Day-lighting**
	II A-The sky as a source of light, Daylight factor, Lighting - Windows, Room proportions and other building elements, Daylight penetration, Calculation of daylight factor. **II B-**Detailed study of the day lighting, its sources, affecting factors etc.(Report-class assignments)
3	**Artificial Lighting**
	III A-Artificial lighting - requirements. Types of electrical lamps. Electrical fittings / equipment used in buildings. Design of general lighting schemes. Study of lighting systems used in different types of buildings. Preparation of lighting layout for different types of spaces / buildings. Supplementary artificial lighting for buildings. **III B-**Detailed study of artificial lighting, lighting scheme and its related component study.(Report-class assignments)
4	**Principles of electrical installation in buildings**
	IV A- Distribution, Circuits and elements of building wiring systems. Safety methods and measures to be adopted, study of relevant I.S. Codes. Electrical load estimation, branch circuit design and electrical wiring design for different types of buildings.

	IV B- study of practical execution of electrical fittings with help of drawings**.** **(**Drawings- CAD drafted sheets**)**
5	**Illumination design process,**
	V A-a) Design for lighting, b) Classification of lighting, **V B-** layout preparation and load calculation of lighting in different spaces**.(**CAD drafted sheets**)**

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Assignments based on lights, lighting diagram, lighting designs, their fundamentals etc.
- MCQs mandatory for all units.
- Seminar presentations of minimum two units,
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1	National Building Codes		2005	Bureau of Indian Standards
2	National Building Codes Part-VIII –Building Services		2005	Bureau of Indian Standards

A. OBJECTIVE

To understand vernacular architecture as distinct from other historical & modern styles of architecture to appreciate that it is site responsive and an outcome of indigenous techniques and various social, economic and mythical values of the society.

B. COURSE OUTCOME

- Understand the concept of Vernacular Architecture of Indian Vernacular Architecture in detail.
- Interpretation of vernacular architecture in terms of its Functional aspects, Cultural aspects, Climatic considerations, Construction methods and techniques, Materials.
- Reinterpretation of vernacular architecture in Modern construction.
- Study of Architects who worked on contemporary vernacular architecture & their projects.
- Learn to Design for different climatic conditions vernacular architecture in relation with climate types, emphasis on vernacular arch in Indian Context

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to vernacular architecture	9
2	Vernacular architecture around the World	3
3	Vernacular architecture in India	9
4	Vernacular architecture of Rajasthan	9
5	Influence on modern architecture	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**INTRODUCTION TO VERNACULAR ARCHITECTURE**
	Factors contributed to its evolution with examples Approaches and concepts to the study of Vernacular architecture The advantages of studying it and possible application today. Introduction to Kutcha architecture and Pucca architecture
2	**VERNACULAR ARCHITECTURE AROUND THE WORLD**
	Factors that contributed to their evolution. Few Examples for the same. Factors influencing the planning aspects, materials of construction & constructional details of the above. Religious practices, beliefs, culture & climatic factors influencing the planning of the above.
3	**VERNACULAR ARCHITECTURE IN INDIA**
	Planning aspects, Materials used, Constructional details, Climatic factors influencing the planning of Kashmir – Typical Kutcha houses, mosque, Dhoongas(Boathouses), Ladakhi houses, bridges Himachal Pradesh – Kinnaur houses Bengal – Bangla (Rural house form), AatChala houses – change from Bangla to Bungalow, Kutcha & Pucca architecture of Bengal. Nagaland – Naga houses & Naga village, Khasi houses Pol houses of Ahmedabad - Primitive forms, Symbolism, Colour, Folk art etc in the architecture of the deserts of

	Kutch & Gujarat state. Kerala – Nair houses (Tarawads), Kerala Muslim houses (Mappilah houses), Temples, Palaces and theaters – Thattchushastra. TamilNadu – Toda Huts, Chettinad Houses (Chettiars) & Palaces
4	**VERNACULAR ARCHITECTURE OF RAJASTHAN**
	Factors influencing the planning aspects, materials of construction & constructional details of the following: Jat houses for farming caste, Bhungas(Circular Huts) Havelis(Pukka houses) of Rajasthan etc Settlement planning strategies, regional and occupation wise variation.
5	**INFLUENCE ON MODERN ARCHITECTURE**
	Examples from the works of Frank LLyod Wright, Green Broken & Hasan Fatthy. GeofferyBawa, Laurrie Baker, SuhasiniIyer, Satprem Maini, Chitra Vishwanathan, Revathi Kamath, Anupama Kundu, etc. Possible applications of vernacular architectural techniques today.

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Study of basic elements and factors that influence vernacular architecture through examples.
- Case study of various vernacular styles in India.
- Case study and site study of vernacular architecture design and planning aspects of Rajasthan
- Examples of vernacular architectural elements in the development of modern architecture.

F. RECOMMENDED STUDY MATERIAL:

S. N.	Reference Book	Author	Edition	Publication
1	Havelis: A Living Tradition of Rajasthan	Shikha Jain	2004	Surbhi publications
2	Encyclopedia of vernacular architecture of the world	Paul Oliver	1997	Cambridge University press, U.K
3	The painted towns of Shekhawati	Ilay Cooper	1994	Mapin India
4	Vernacular traditions: contemporary architecture	Aishwarya Tipnis	2012	TERI Publications

BARCAR6312	CONTEMPORARY PROCESSES IN ARCHITECTURE	2 Credits [LTP: 0-1-2]

A. OBJECTIVE:

To study the works of contemporary architects who have created modern examples of architecture and have shown the path ahead by practicing concepts of varied styles.

B. COURSE OUTCOME

- Classify the user needs and how they translate into program and manifestation in design in terms of space, materials and construction methodology
- Build design decision-making process through appropriate technical documentation in a manner that is client centered, sustainable, aesthetic and socially responsible.
- Identify architectural elements like courtyards, arches etc. and their use appropriately by designing spaces with different functions and concept.
- Assess various services, structure and fire related provisions required while designing a building
- Develop design thinking that is open to consideration of alternative perspectives by analyzing and evaluating ideas and information gathered through applied research.

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to contemporary processes in architecture	9
2	Aspects of digital architecture	3
3	Contemporary processes	9
4	Geometries and surfaces	9
5	Works of architects	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**INTRODUCTION TO CONTEMPORARY PROCESSES IN ARCHITECTURE**
	• Investigation of contemporary theories of media and their influence on the perception of space and architecture • Technology and Art • Technology and Architecture • Technology as Rhetoric • Digital Technology and Architecture
2	**ASPECTS OF DIGITAL ARCHITECTURE**
	• Design and Computation • Difference between Digital Process and Non-Digital Process • Architecture and Cyber Space • Qualities of the new space • Issues of Aesthetics and Authorship of Design • Increased Automatism and its influence
3	**CONTEMPORARY PROCESSES**
	• Emerging phenomena such as increasing formal and functional abstractions • Diagrams, Diagrammatic Reasoning, Design process • Animation and Design • Digital Hybrid

4	**GEOMETRIES AND SURFACES**
	• Fractal Geometry • Shape Grammar • Hyper Surface • Liquid Architecture • Responsive Architecture
5	**WORKS OF ARCHITECTS**
	• Greg Lynn • Reiser + Umemotto • Lars Spuybroek / NOX Architects • UN studio, Diller Scofidio • Dominique Perrault, Decoi • Marcos Novak, Foreign Office Architects, Asymptote • Herzog and de Meuron, Neil Denari

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Assignments and Practice exercises, Seminar
- Examples of contemporary architecture

F. REFERENCE BOOKS

S. N.	Reference Book	Author	Edition	Publication
1	Work of Architecture in the Age of Mechanical Reproduction, Differences		1997	MIT Press
2	Vision Unfolding, Architecture in the Age of Electronic Media	Peter Eisenman	1992	
3	the Logic of Architecture: Design, Computation and Cognition	William J Mitchell	1995	MIT Press
4	"Contemporary Process in Architecture"	Ali Rahim	2000	John Wiley and Sons

BARCAR6313 THEORY OF DESIGN 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

The main objective of the course is understanding the theoretical concepts in Architecture. Introduction of theoretical paradigm, methodologies and mode of enquiries. Promote creative thinking,Exposure to different approaches of design process and hence enhance the students design capacity through a multi-dimensional approach to problem solving.

B. COURSE OUTCOME:

- To understand the theoretical aspect of thinking and the concept of creativity
- To apply the techniques in design problem solving
- To inspect the design process, its theories and strategies.
- To appraise the interrelationship of creativity and design through various case studies.
- To elaborate design process as an experience

C. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Thinking	9
2	Techniques of Creative Thinking	3
3	Design Process	9
4	Interrelation of Creativity and Design	9
5	Design as an experience	6

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Introduction to Thinking**
	a) Theories of thinking, b) Process of thinking and various types of thinking like convergent, divergent thinking, directive thinking. **c)** Concept of "creativity"
2.	**Techniques of Creative Thinking**
	a) Importance and need of creative thinking b) Various creative thinking techniques like brainstorming ,checklists, mind mapping and exercises on problem solving c) Importance and Role of creativity in design process
3.	**Design Process**
	a) Understanding the design process b) Understanding the different types of theories such as linear, cyclic etc. c) Stages in design process: concept, scheme, design development, analysis d) Strategies to design problem solving e) Design Ideas and concepts with examples
4.	**Interrelation of Creativity and Design**
	a) Understanding the application of creativity in different fields such as industrial design, product design etc. b) Understand the process of creativity through case studies of various architects such as Zaha Hadid, Philip Johnson, Robert Venturi etc.
5.	**Design as an experience**

	a) Themes that have informed 20th century architecture and urbanism: History and historicism, b) Type and typology, The nature of the site, the constructed site, Tectonic and the constructed object, Modernism, Structuralism, Deconstruction, Phenomenology, Post Modernism,

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizzes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Models based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1	Architectural Theories of Design	Salvan, George S.	1999	Goodwill Trading Co.
2	Yes is More	Bjarke Ingles	2009	TASCHEN
3	Architecture: Form, Space & Order	Francis D.K. Ching	2014	Wiley

SYLLABUS
VII Semester

A. OBJECTIVES:

Understanding architectural practice with special concern to Legal Framework and Professional Ethics. To critically look into the project and office management practice emphasizing on professional services and professional ethics as well as project responsibilities during design and construction.

B. COURSE OUTCOME:

- To understand the duties and liabilities of an Architect and laws governing their legal responsibilities
- To appraise the Architects Registration Act 1972, legal provisions of the act , Council of Architecture and the Architectural competitions
- To be able to analyses the duties and liabilities of an Architect and laws governing their legal responsibilities
- To be able to evaluate the components of Tender document and Contract document, type of Contracts, termination of contract and Arbitration
- To be able to create a draft of the tender report, detail project report.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Basics of Office Management & Accounting in Architect's office	2
2	Architects Registration Act 1972 and Architectural Competitions.	2
3	Duties and liabilities in profession	8
4	Tendering procedures for Architectural Consultancy	6
5	Components of a tender document & Contracts	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Basics of Office Management & Accounting in Architect's office**
	a. The architect and his office, relationship with clients, consultants and contractors b. Human relation and personnel management c. Brief idea about accounting and book keeping d. Business correspondence e. Information storage and retrieval systems.
2.	**Architects Registration Act 1972 and Architectural Competitions.**
	a. Introduction to Architects Registration Act 1972, registration of Architects b. The legal provisions within the act and constitution of Council of Architecture c. Architect's Services and scale of normal and partial fees d. Code relation to Architectural Competition e. Copy-rights of drawings.
3.	**Duties and liabilities in profession**
	a. Legal responsibility of architect to Employer; Government bodies and local bodies; b. Express and implied authority of the Architect;

	c. Architect's relationship with the client and the contractor; d. Duration of liability; e. Consumer Protection Act 1986.
4.	**Tendering procedures for Architectural Consultancy**
	a. Brief understanding of Types of tenders and tenders document, tender draft notices and invitation of tenders b. Procedure for opening and selection of tenders. c. Notice Inviting Tender; Expression of Interest (EOI) and Request for Proposal (RFP) d. Technical and Financial Bid e. Procedure for opening and selection of tenders, pre-bid meetings f. Work order, contracts, agreements and memorandum of understanding (MOU) g. Consortium of professionals
5.	**Components of a tender document & Contracts**
	a. Terminologies: Earnest Money, Security Deposit, Retention Money, Mobilization Fund, Bank Guarantee. b. Schedule of Quantities, Variation and extras c. Defects after completion d. Certificates and payments, Insurance and fire Insurance, Liquidate damage e. Contract, Type of contracts and contract documents f. Termination of the contract. g. Arbitration clause. Arbitration, Conciliation and Mediation. Arbitration proceedings

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Student presentations on various aspects of professional practice
- Interview of practicing professionals

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Professional Practice	Roshan Namavati	1993	Laxmi Book Depot, Mumbai
2.	Handbook of Professional Practice	Compiled by Indian Institute of Architects	1988	Architects Publsihing Corporation, Mumbai
3.	Architectural Practice in India	Madhav Deobhakta	2007	Council of Architecture, New Delhi -
4.	The Architect in Practice	Wills, Arthur	1974	Crossby Lockwood Staples, London

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) Other resources

Sr. N	Name of the resource	link for the Resource	Date referred
1	The Architecture Student's Handbook of Professional Practice	https://b-ok.asia/book/3517625/76e109	3-06-2020
2	The Professional Practice of Architectural Working Drawings	https://b-ok.asia/book/2709261/dbdad4	

A. OBJECTIVES:

To appreciate the process of research and make the students aware of its potential in the field of architecture

B. COURSE OUTCOME:

- Classify the various types of Researches, characteristics, types of research designs, Steps involved in research, ethics of research
- Distinguish between the various systems of inquiry and quality of research
- Evaluate the systems of research paper writing and various styles of referencing.
- Evaluate the systems of research paper writing and various styles of referencing.
- Develop a research statement for any academic project i.e. thesis, dissertation, documentation of design projects

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Architectural Research- Scope and Types	4
2	Scientific Methods of Research	4
3	Research Framework	4
4	Report writing	6
5	Final Research Paper	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Architectural Research- Scope and Types**
	Research in architecture – its nature, purpose and scope. Basic and applied research. Technical and behavioral – oriented research.
2.	**Scientific Methods of Research**
	Science and scientific method – various steps in scientific method: hypothesis, research design, data collection & analysis, conclusion and implications with special reference to architectural research.
3.	**Research Framework**
	Methods of conducting research. Selection of topics and its relevance. Identification and formulation of problem. Compiling and analyzing existing research database. Research design, research instruments and analysis. Presentation of results. Evaluation of findings, conclusions and recommendations.
4.	**Report writing**
	Techniques of research – report writing.
5.	**Final Research paper**
	To create a research paper Get it published and corrected from author

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Draft research paper for understanding the process
- Development of synopsis for dissertation and thesis project

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Research Methods in Behavioral Sciences	R. S. Dwivedi	2001	Macmillan, New Delhi
2	Research Methods Process of Inquiry	Anthon Graziano	1989	Harper Collins Publishing, New York
3	Architectural Research Methods	Linda Groat & David Wang	2002	Wiley Publication, New York
4	Research Methodology: Methods & Techniques	C.R. Kothari	1990	Vishwa Prakashan, New Delhi
5	The Practice of Social Research	E. Babbie	1983	Belmont Wadsworth Publishing Co.
6	Methods of Architectural Programming	H. Sanoff	1977	Dowden Hutchinson and Ross.

A. OBJECTIVES:

Understanding buildings in urban context and providing for appropriate solutions.

B. COURSE OUTCOME:

- Plan critical/ philosophical/ ideological positions relating to specific design situations in the current scenario by enabling an understanding of urban context as a continuous experience involving the interrelated disciplines of architecture and design
- Utilize the process of researching and analyzing the design process involved in the existing design forms in various parts of the country considering climate, the methods adopted by famous architects and experts and its results, and drawing inferences from the studies conducted in order to open the mind for newer innovations and alternatives
- Identify architectural design decisions in the context of the site and environment conditions by applying various techniques and develop the final design from the conceptual theme
- Appraise inclusivity into the architectural design process and understand architecture as influenced by the dynamics of a space through the wider implication of design decisions and their interdependency with larger processes of society
- Design buildings as contributing to transforming the urban fabric with ability to take creative, critical and informed decisions in the context of significant projects that could shape society in positive ways

C. DETAILED SYLLABUS

Unit No.	Contents:
1.	• To expose students to full- fledged architectural projects with holistic approach and design program, covering a detailed Pre-Design research including Site Investigation, Program Formulation and Design Demonstration; • To introduce the area of Large-Scale Group Housing and Vertical Development.

D. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Township/ Multi-use Commercial Complex, Mixed- use High Rise Buildings, Large Scale: Health Care, Hospitality Facility, University etc. Small Scale Industrial Projects with sufficient Housing Components.

E. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Book	Author	Edition	Publication
1.	Town Planning	Abir Bandopadhyay		
2.	Urban Housing Forms			Architectural Press
3.	Forms En Formations	Christian Darles		
4.	Time Saver Standards for Architectural Design	Martin Zelnik and Julius Panero	Latest	--
5.	Neuferts architect's data	Ernst Neuferts	Latest	--
6.	Architecture – Form, Space & Order	Francis D.K. Ching		

7.	Time-Saver Standards for Interior Design and Space Planning	Martin Zelnik and Julius Panero	Latest	--
8.	Campus design in India	Kanvinde& Miller		
9.	Campus Planning	Richard Dober		
10.	Urban Design- The Architecture of Towns and Cities	Paul Sprereingen		
11.	Exterior design in Architecture	AshiharaToshinibu		
12.	Modern Language of Architecture	Bruno Zevi		
13.	Modern Movements in Architecture	Charles Jencks		
14.	Language of Post – Modern Architecture	Charles Jencks		
15.	Complexities and Contradictions in Architecture	Robert Venturi		
16.	Architectural Composition.	Rob Krier		
17.	Pattern Language	Christopher Alexander		
18.	Town Design	Fredrick Gibberd Alexander		

A. OBJECTIVES:

To convey the understanding and Design Capability of Landscape Design as a part/ whole in Context with Architectural Design.

B. COURSE OUTCOME:

- Interpret the elements and principles of landscape, its history and flora applicable in landscape design and site planning
- Identify the principles of design elements of history and characteristics of flora and fauna in the concept development of landscape design
- investigate the construction techniques, site elements and contextual application of landscape design with respect to its architecture and site design
- Appraise the appropriate elements, principles and techniques applicable in site planning and landscape design in an architectural or planning project
- Design landscape design for an architectural or planning project where the elements of design, principles, history, flora are applied with justified implementation of construction techniques, site analysis and visual elements of landscape design

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Landscape Design Theory	8
2	History of Landscape Architecture	8
3	Flora and Fauna	8
4	Construction Techniques, Site Analysis and Visual Landscape	12
5	Landscape Design	24

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Introduction to Landscape Design Theory:**
	IA - Introduction to Landscape & its relevance to architecture. **IB** - Elements and Principles of landscape design and their relation to built environment.
2.	**History of Landscape Architecture:**
	IIA - Study and understand different Garden Typologies: Egyptian/Persian/English/ Chinese/ Mughal/ Japanese/ Italian/19th& 20thCentaury Gardens etc. **IIB** - To study and understand the various Contemporary Gardens (Examples: Healing/ Sensory etc.). **IIC** - To understand and analyze the applications of History of Landscape Architecture and implementation in Design Field.
3.	**Flora and Fauna:**
	3A - Plant Characteristics: The structure, color, form and foliage of various trees and shrubs and climbers and ground covers. **3B** - Study and identification of Indian plants and trees etc. **3C** - Plant propagation.
4.	**Construction Techniques, Site Analysis and Visual Landscape:**
	4A - Construction techniques – Details of pavements, grass laying, outdoor furniture. **4B**–(a) Site Analysis and Site Planning (Campus/ Commercial/ Residential etc.). (b) Site Zoning and Site Development.

	(c) Cognitive Study: Residential Layout, Commercial Campus etc. (Material/ Layout/ Plant Palette/ Soil etc.) **4C** - Analysis and implementation of Landscape in Context of Architectural Design.
5.	**Landscape Design:**
	5A - Studio Design Exercise (Campus/ Commercial/ Residential etc.).

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- Cognitive Study.
- Student Seminars.

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Form and Fabric in Landscape Architecture	Katherine Dee		
2.	Drawing for Landscape architects	Sabrina Wilk		
3.	Landscape Design	Hannebaum		
4.	Detail In Contemporary Landscape Architecture			
5.	Placing nature culture and landscape ecology	Nassauer		
6.	Jungle Trees of Central India	Pradip Krishen		Penguin India
7.	Trees of Delhi: A Field Guide	Pradip Krishen		Pengun India

BARCAR7203 HOUSING & NEIGHBOURHOOD PLANNING 3 Credits [LTP: 0-2-2]

A. OBJECTIVES:

Study about Housing as a major element of architecture and the demands and influences in the housing development resulting into efficient neighborhood planning. The subject deals with making students aware about the standard parameters for housing.

B. COURSE OUTCOME:

- To develop an understanding of the Housing Scenario and key issues governing the housing sector in India
- To appreciate the socio-economic aspects of Housing
- To acquire knowledge about Housing Standards and various Housing schemes
- To understand the design process in design development and awareness of bylaws
- To gain insight about the concept of neighborhood planning, role of housing agencies and housing finance mechanism in India

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Housing (Urban & Rural) and Agencies	12
2	Socio-Economic Factors	12
3	Housing Typologies	12
4	Housing Design Process	12
5	Neighborhood Planning Process & Government Action Schemes for Housing	12

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Housing (Urban & Rural) and Agencies**
	a. Introduction to housing in early settlements b. Urbanization and Need for Housing c. Urban & Rural Housing; d. National Housing policy & Five Year Plans
2.	**Socio-Economic Factors**
	a. Social Factors influencing design b. Affordability & economic factors c. Housing concepts d. Slum up-gradation e. Site & services f. Housing Surveys &Neighborhood Analysis g. Cooperative Housing and Staff Housing
3.	**Housing Typologies**
	a. Different types of housing and housing standards b. Town-ships c. Affordable Housing Schemes
4.	**Housing Design Process**
	a. Different stages in project development b. Housing layout design method c. Design as a result of bye-laws
5.	**Neighborhood Planning Process & Government Action Schemes for Housing**

	a. Concept of Neighborhood b. Various models of efficient Neighborhoods c. Major Housing programs d. Housing Agencies and their contribution to housing development e. Housing Finance and major housing finance agencies at National and State level f. Government Action Plans

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Comparative study of various Government Schemes and programmes on housing
- Case study of best practices and models to study
- Seminars and presentations on various topics covered in the syllabus

F. RECOMMENDED STUDY MATERIAL:

S.N.	Reference Book	Author	Edition	Publication
1.	ITPI Reader volume on Housing	Thomas K. Pullose	2002	Institute of Town Planners India, New Delhi
2.	Housing & Urbanization	Charles Correa	1999	Urban Design Institute
3.	Population and Housing Problems in India Vol I & II	S.D. Maurya		
4.	Urban Patterns	Arthur Gallion		John Wiley & Sons
5.	Habitat Asia	Dr. Misra Dr. B.S. Bhooshan	1979	Concept Publishing House, New Delhi
6.	Innovative Approaches to Housing for the Poor	Thomas K. Pullose		

G. RECOMMENDED ONLINE STUDY MATERIAL:

ii) MOOCS

Sr. N	MOOCs Platform / Journal	Reference / Link	Mode/	Date referred
1	NPTEL Swayam	Housing Policy and Planning https://onlinecourses.nptel.ac.in/noc20_ar14/preview	Videos	14-09-2020

iii) Journals

Sr. N	Name of Journal	Reference Link	Volume /pp/ Impact Factor	Date of Publication	Date referred
1	Science Direct IIMB management Review	https://www.sciencedirect.com/science/article/pii/S0970389615000336		19th May 2015	
2	International Journal of Engineering Research & technology(IJERT)	https://www.ijert.org/research/affordable-housing-in-india-IJERTV6IS060375.pdf	IJERTV6IS060375	June 2017	Vol 6,Issue 6
`3	Other journals	www.researchgate.net, www.elsevier.com www.arcjournals.org			

BARCAR7204	PORTFOLIO DEVELOPMENT & PRESENTATION	2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

To engage students in activities related to content and development of professional portfolio and resume by facilitating reflective learning process. To assist students in professional communication as per co-negotiated criteria under professional ethics.

B. COURSE OUTCOME:

- To understand the reflective learning theory to develop and articulate your learning philosophy congruent with current educational practice;
- To apply the learning philosophies and consider the influence of organizational compliance on self-ownership of the content and structure of a professional resume;
- To critically explore and analyze the purpose of a professional portfolio, possible content, and the methods available for creating a record of reflective practice;
- To design a professional portfolio by reflecting on, and record the ways in which a could be used to inform and support reflective practice, e.g., performance review, personal growth and professional development processes.
- To demonstrate the professional skills through communication by evaluating and applying cognitively acquired skills.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to Resume & CV	2
2	Resume making	4
3	Introduction to Portfolio design	4
4	Portfolio designing	8
5	Professional communication	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Introduction to Resume & CV**
	I A- Understanding Bio data, Resume & Curriculum Vitae, Difference between Bio data, Resume & CV **I B - Hands on practise for Resume & CV design**
2	**Resume making**
	II A - Essential components of a Resume, Composition and designing of Resume **II B - Designing resume for professional training**
3	**Introduction to Portfolio design**
	III A- Introduction to Professional Portfolio **IIIB - Hands on practise for Portfolio**
4	**Portfolio designing**
	IV A - Essential components of a Portfolio - Composition and designing of Portfolio **IVB - Designing Portfolio for professional training**
5	**Professional communication**
	V A - Introduction to Professional Communication - Process of applying for Architect's office online - Professional ethics for personal interview **V B - Mock Interviews and communication to Architect's office**

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Presentation by 5th yearites for sharing experiences of practical training and importance of CV & Portfolio.
- Resume and Portfolio designing and communication in Architecture offices
- Mock interviews with professionals

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
	Creating portfolios for success in school, work and life.	Kimeldorf, M. 1994		Minneapolis, MN: Free Spirit Publishing, Inc.
	Your career and life plan portfolio (2nd Ed.)	JIST. (2003)		Indianapolis, IN: JIST Publishing, Inc

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	Effective-business-communication	https://www.coursera.org/specializations/effective-business-communication	Video	31-08-2020
2	Communication-skills	https://www.coursera.org/learn/wharton-communication-skills	Video	31-08-2020
3	Creative-thinking-techniques-and-tools-for-success	https://www.coursera.org/learn/creative-thinking-techniques-and-tools-for-success	Video	31-08-2020

BAREAR7311 GREEN BUILDINGS & RATING SYSTEMS 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

To study and analyze the salient aspects of sustainability and the need of study in the present context of contemporary world and challenges.

B. COURSE OUTCOME:

- Identify the appropriate materials for constructing a green building
- Plan for Energy and Resource Conservation in Green Buildings
- Devise systems to incorporate sustainable & recyclable strategies
- Carefully design the buildings using climatic factors
- Plan for effective green building rating system

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Concepts of sustainability	6
2	Sustainable planning & Design	6
3	Sustainable Building Materials and Construction	6
4	Recycling and Reuse	6
5	Case Studies and Rating systems	12

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Concepts of sustainability**
	IA • Introduction to Sustainability, Definition of sustainable development, its back ground • Sustainable Development Goals (SDG), Millennium development Goal(MDG) • Sustainable Aspects- Energy, Water, Environmental etc. • Concept of Sustainability - Principles of conservation -synergy with nature • Bioregionalism - community basis shelter technology within bioregional patterns and scales IB • A group discussion/hand on exercise on sustainable development.
2.	**Sustainable planning & Design**
	IIA • Introduction to Sustainable planning & design. • Sustainable approach to site planning and design - site inventories- relationships between site factors Development impacts from one area of the site on the other areas • Model ecosystem of the site, phasing of development - limits of change • Design facility within social and environmental thresholds IIB • A hand on exercise on sustainable master planning with block model.
3.	**Sustainable Building Materials and Construction**
	IIIA • Introduction to Sustainable & Futuristic building materials & construction technologies. • Properties, Uses and Examples of -Primary, secondary and Tertiary Sustainable

	Materials, • Principles to improve the energy efficiency - siting and vernacular design, shade, ventilation, earth shelter, thermal inertia and air lock entrances. • Techniques of sustainable construction - technologies, methods of effectiveness, and design synthesis • Alternative materials and construction methods. IIIB • PPT presentation/video lecture on futuristic material & construction.
4.	**Recycling and Reuse**
	IVA • Pre building, Building, Post building stages - Architectural Reuse, Waste prevention, • Construction and Demolition recycling- Conservation of natural and building resources- • Energy and material savings • Types of wastes • Elimination of waste and minimize pollution- various Decomposing methods • Innovative reuse of various wastes IVB • A case study/site visit of recycling, segregation & landfill site/plant.
5.	**Case Studies and Rating systems**
	VA • lecture on how to do and what to do on cases study & rating system VB • Sustainable Development Case Studies: illustrated examples of the planning, development, and construction. • Indian systems – GRIHA, LEED, IGBC & Gem (Assocham) case study.

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Audit exercises to identify sustainability of existing paces
- Seminars and presentation on sustainable materials and construction technologies
- Study of best practices case studies
- Designing of a completely sustainable building prototype for public domain
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Integrated approach to sustainable Development	B.C.Bose		Rajat Publications, Delhi
2	Environmental control systems Heating, Cooling, Lighting	Fuller Moore		McGraw Hill, Newyork.
3	Sustainable practices in built environment	Caring A.Langston, Grace K.C.Ding	2nd Edition	Butterworth-Heinmann Linacre House Jordanhill Oxford
4	Sustainable Building Design Manual Vol I & II			TERI, New Delhi
5	GRIHA Manual			TERI, New Delhi

BAREAR7312 BUILDING PERFORMANCE & COMPLIANCE 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

The subject is designed to give overview of different sources of renewable energies. It lays emphasis on basic understanding of energy sciences, its importance, utility and conversion into various forms.

B. COURSE OUTCOME:

- Classify the various terms and terminologies related to water supply in simple, multistoried and complex buildings.
- Compare the supply requirements and distribution based on function, type, location and verticality in various types of buildings
- Determine the best practices used in waste disposal and sanitation and apply them in real life situations.
- Identify the design and complexity related to an architectural project starting from supply requirements to designing the pipelines, valves, drains and tanks etc. and ending on the final disposal of waste.
- Name the various term and technicalities.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Overview of conventional energy systems	9
2	Introduction to Solar Energy	6
3	Solar hot water system	6
4	Wind Energy	6
5	Overview of Other sources of Renewable energy	9

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Overview of conventional energy systems**
	IA • Introduction to energy system. • Current energy requirements, growth in future energy requirements, • Review of conventional energy resources- Coal, gas and oil reserves and resources, • Nuclear energy Option. IB • A group discussion on energy system.
2.	**Introduction to Solar Energy**
	IIA • Introduction to solar power system & energy • Basic theory of Solar &thermal collectors- flat plate collectors, concentrating collectors. • Solar thermal power generation systems. • Solar Photovoltaic: Principle of photovoltaic conversion of solar energy, types of solar cells and fabrication. • Application of Solar PV & solar energy at different mode: battery charger, domestic lighting, street lighting, water pumping, power generation schemes. IIB • Site visit/case study on solar power plant.

3.	**Solar hot water system**
	IIIA • Introduction to solar hot water system. • Types of solar hot water system. • Commercial use of solar hot water system. • Understanding & calculation the conservation of energy by the solar hot water system. • Different use and application of solar hot water system. IIIB • Site visit/case study on solar hot water system plant.
4.	**Wind Energy**
	IVA • Introduction to wind energy • Atmospheric circulations, classification, factors influencing wind, • wind shear, turbulence, • wind speed monitoring, • Betz limit, • WECS: classification, characteristics, and applications. IVB • Group discussion/ a hand on exercise on wind energy system.
5.	**Overview of Other sources of Renewable energy**
	VA • Introduction to Other sources of Renewable energy • Ocean Energy & Hydropower • Nuclear fission and fusion • Geothermal Energy VB • Case study/literature study on worldwide example on other sources of renewable energy

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Comparative study for checking efficiency of one system of renewable energy production with another
- Study of best practices case studies
- Designing of a building prototype for public domain driven by renewable energy
- Audit exercise of existing spaces to convert them into renewable energy driven spaces
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr	Reference Book	Author	ED.	Publication
1.	Solar Photovoltaics: Fundamental Applications and Technologies	C. S. Solanki	2009	Prentice Hall of India
2	Wind Energy Conversion Systems	L.L. Freris	1990	Prentice Hall
3	Solar Energy: principles of Thermal Collection and Storage	S.P. Sukhatme	1984	Tata McGraw-Hil
4	Principles of Solar Engineering	D. Y. Goswami, F. Kreith and J. F. Kreider	2000	Taylor and Francis, Philadelphia

A. OBJECTIVES:

This SUBJECT centers on issues surrounding the integration of Passive Design principles, into conceptual and practical Building design. The learning's from the subject will enable students to design efficient building in the concept of "greener" building.

B. OUTCOMES:

- Understand the concepts of Sustainable architecture design
- Demonstrate the use of sustainable development in design
- Identify and apply the Techniques of sustainable construction - technologies, methods of effectiveness, and design synthesis
- Appraise the dynamics involved in the process of designing and green architecture and various international rating systems for sustainability
- Design a project considering Universal design concepts

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	**Overview of conventional energy systems**	6
2	**Introduction to Solar Energy**	9
3	**Solar hot water system**	9
4	**Wind Energy**	6
5	**Overview of Other sources of Renewable energy**	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Introduction to passive building designs & Environmental impact of building materials**
	IA ➢ Introduction to passive building designs ➢ Life cycle costing of building materials ➢ Embodied energy in building materials ➢ Renewable materials & recycled materials ➢ Impact of Construction on environment IB ➢ A hand on exercise on life cycle costing & impact of construction on environment
2.	**Solar Passive Heating**
	IIA ➢ Introduction to passive heating technics ➢ Heating cycle ➢ Solar Geometry & Shading ➢ Solar Gains IIB ➢ A small design exercise/case study on solar passive heating technology.
3.	**Solar Passive Cooling**
	IIIA

	➢ Introduction to passive cooling technics ➢ Natural Ventilation ➢ Air circulation routes ➢ Evaporative cooling ➢ Solar Cooling ➢ Ground Cooling IIIB ➢ A small design exercise/case study on solar passive cooling technology.
4.	**Lighting and day lighting**
	IVA ➢ Factors affecting daylight in buildings; room shapes; window shape, size and position; ➢ Daylight factors; ➢ Daylight distribution and uniformity; ➢ Combination of artificial and day lighting IVB ➢ Guest lecture or workshop on day lighting simulation software.
5.	**Assessment of Building Energy Performance**
	VA ➢ Energy storage and restitution ➢ Energy Efficiency standards for Building Design in India ➢ Indian energy rating systems – GRIHA rating by GRIHA and LEED India rating by IGBC ➢ Summary & conclusion of unit VB ➢ Guest lecture or workshop on energy simulation software.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Seminars and presentation on solar passive techniques and systems
- Study of best practices case studies
- Designing of a building prototype for public domain for display of solar passive systems
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

S. N	Reference Book	Author	Edition
1.	Passive Building Design	N.K. Bansal	
2	Passive design building technologies applied in Belo Horizonte, Brazil	Angela Negromonte Scheibe	
3	Green Building illustrated	D.K. Ching	
4	Green Building Materials	SPIEGEL	3rd edition
5	Solar Energy for Building	Keith Robertson & Andreas Athienitis	
6	Thermal Analysis and Design of Passive Solar Buildings	A. K. Athienitis and Mat Santamouris	

G. RECOMMENDED ONLINE STUDY MATERIAL:

Other resources

Sr. N	Name of the resource	link for the Resource	Date of creation	Date referred
1	Architecture Sustainable Building Design	https://b-ok.asia/book/561981/c51e00		
2	A Handbook of Sustainable Building Design and Engineering	https://b-ok.asia/book/2077935/a14ab9		

A. OBJECTIVES:

This intensive and practical course is designed to explain the various Selling and Negotiation techniques. In this course you'll understand what your preferred way of selling and negotiation is, and shall be able to achieve your objective to meet your clients' needs.

B. OUTCOMES:

- Demonstrate the Nature & Role of Selling and Types of Selling
- Evaluate the Attributes of a Good Salesperson
- Demonstrate the Personal Selling Skills applied in the market
- Demonstrate the meaning of Negotiation Skills and its methods
- Analyse the Different Phases of Negotiation

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to sales and negotiations	6
2	Preparing the skills	9
3	Communicating with the client	9
4	Proposal	6
5	Bargaining and Finishing the Deal	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Introduction to sales and negotiations**
	• Assessment of your current sales and negotiation strengths and improvement areas • What is negotiation? • Knowing when to negotiate • Why do Negotiations break down? • How successful are you in Sales & Negotiation? • Legal aspects in Sales & Negotiation
2.	**Preparing the skills**
	• The Preparation Stage • The importance of preparation • Why we need to prepare • What to prepare • Preparing a range of objectives • Constants and variables • Researching the other party
3.	**Communicating with the client**
	• Rapport building • Opening the negotiation • Questioning techniques • Listening skills • Controlling emotions • Art of persuasion and emotional Intelligence

	• Influencing and assertiveness skills • Spotting the signs - non-verbal communication and voice clues
4.	**Proposal**
	• Stating your opening position • Responding to offers • Adjournments • Administering Contracts and Role of Negotiations
5.	**Bargaining and Finishing the Deal**
	• Making concessions - the techniques • Closing techniques • Confirming agreement

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Seminars and presentation
- Study of best practices case studies
- Seminar presentations of minimum two units
- Report writing of any 1 topic as per subject requirement

F. RECOMMENDED STUDY MATERIAL:

S.N	Reference Book	Author	Edition
1.	Fundamentals of Selling	Charles Futrell	10th edition
2	Negotiation	Lewicki, Saunders,Barry	6th edition

A. OBJECTIVES:

To introduce setting up of a start-up or business as an architect by inculcating creative cognitive and non-cognitive skills. To understand relevance of internet marketing and ways to successfully develop business integrating digital media and marketing content.

B. OUTCOMES:

- To understand the field of internet marketing and it's relevance to architecture.
- To apply knowledge digital marketing in content writing for Search engine optimization and creating Google Adwords account.
- To evaluate social media marketing platforms and creating profiles for wider and faster reach to clients.
- To analyse and create business accounts on various platforms like LinkedIn, Youtube, etc.
- To evaluate and develop business plan in context of E-marketing considering budgeting.

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to the course	2
2	SEO and Google AdWords	2
3	Social Media Marketing	8
4	Business Accounts	6
5	E-marketing and Budgeting	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Introduction to the course**
	I A- Introduction to the Course and Work plan - Introduction of the internet/digital marketing - Internet vs. Real Marketing - Internet Marketing Channels - Creating initial marketing plan - Content management
2	**SEO and Google AdWords**
	II A - What are SEOs and Google AdWords - SEO Optimization - Writing the SEO content - Google AdWords- creating accounts - Google AdWords- types **II B- Hands on exercise on SEO content and Google account**
3	**Social Media Marketing**
	III A- Introduction of Social Media Marketing - Making a Facebook page - Visual identity of a Facebook page - Types of publications - Business opportunities and Instagram options - Optimization of Instagram profiles - Integrating Instagram with a Web Site and other social networks - Keeping up with post

	III B- Hands on exercise on Social media marketing
4	**Business Accounts**
	IV A- Business tools on LinkedIn - Creating campaigns on LinkedIn - Analyzing visitation on LinkedIn - Creating business accounts on YouTube - YouTube Advertising - YouTube Analytics **IV B- Hands on exercise on LinkedIn and Youtube accounts**
5	**E-marketing and Budgeting**
	V A- E-mail marketing Introduction - E-mail marketing planning - E-mail marketing campaign analysis - Keeping up with conversions - Digital Marketing Budgeting - resource planning - cost estimating - cost budgeting - cost control **V B- Hands on exercise on E-campaign and budgeting**

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Seminars and presentation
- Study of best practices case studies
- Seminar presentations of minimum two units
- Report writing of any 1 topic as per subject requirement

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1	Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation	Ryan, D. Kogan Page Limited.	2014	
2	The Beginner's Guide to Digital Marketing	Digital Marketer	2015	
3	Epic Content Marketing	Pulizzi,J. Mcgraw Hill Education	2014	

A. OBJECTIVES:

- To understand the difference between traditional marketing and social media marketing and define the functionality of various social media platforms.
- To understand various tangible benefits associated with using social media marketing and its advantages for reaching out to more people and businesses.
- To develop social media marketing goals and objectives and its benefits of using social media marketing tools.
- To have a clear understanding of content creation and microblogging.

B. OUTCOMES:

- Define an understanding of social media, various channels through which it operates, and its role in marketing strategy.
- Applying principles of consumer and social psychology to develop social media content and campaigns that engage consumers.
- Student will be able to analyses different ways of marketing to develop effective approaches for propagating ideas, messages, products, and behaviors across social networks.
- The student will be able to determine the impact of a social media campaign in terms of a specific marketing objective.
- Developing models of social media campaigning that can be used by Architects and Designers

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to social media	2
2	Social media marketing overview	2
3	Content Marketing &Microblogging	8
4	Content Creation & Video Marketing	6
5	Historic architectural design principles	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Introduction to Social Media**
	a) Introduction to social media b) Evolution/Growth of Social Media c) Role of Social Media d) Goals and Strategies
2.	**Social media marketing overview**
	a) Social Channels as part of the broader marketing plan b) Identifying Goals for Social Media Marketing c) Rules of engagement target audiences
3.	**Content Marketing &Microblogging**
	a) Introduction to Content Marketing b) Importance of Content marketing

	c) Understanding Microblogging as Content d) Microblogging as Marketing Channel
4.	**Content Creation & Video Marketing**
	a) Different Types of Content Creation b) Role of Content Creation in Social Media Marketing c) Video Marketing through different Platforms
5.	**Historic architectural design principles**
	a) Different Planning Approaches for Social Media Marketing b) Social Networks

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs / Quizes / Google Form
- Seminar presentations (Student works open for all) / Multimedia presentations/ PPT's
- Report writing / written assignment/ Google classroom.
- Essays/ / Models based on individual exercises.
- Skits/ Role Play/ Sketches
- Group Discussions / Flipped Classrooms

F. RECOMMENDED STUDY MATERIAL:

Sr. N	Reference Book	Author	Edition	Publication
1.	The Art of Social Media	Guy Kawasaki	2014	Paperback Publications
2.	The Essential Social Media Marketing Handbook	Gail Z Martin	2018	

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) MOOCS

Sr. N	MOOCs Platform/ Journal	Reference / Link	Mode/	Date referred
1	OPENLEARN	https://www.coursera.org/specializations/social-media-marketing	Podcast/ audio/video	03-09-2020

ii) Journals

Sr. N	Name of Journal	Reference Link	Volume/pp/ Impact Factor	Date of Publication	Date referred
1	Journal of Digital & Social Media Marketing	https://www.henrystewartpublications.com/jdsm	Vol. 06	Publication	03-06-2020

iii) Other resources

Sr. N	Name of the resource	link for the Resource	Date of creation	Date referred
1	YouTube	https://www.youtube.com/watch?v=-tdFvJLw2UQ		04-09-2020

SYLLABUS
VIII Semester

BARCAR8501 PRACTICAL TRAINING (INTERNSHIP) & ITS SEMINAR 20 Credits [LTP: 0-0-0]

A. OBJECTIVES:

To expose student to Architectural practice, construction and execution

B. OUTCOMES:

- Determine the importance of practical training, the aspects and criteria associated with it and to realize the minimum eligibility requirements for selecting the office.
- Illustrate the learnings & exposure gained during the training into the day to day working.
- Classify the learnings and knowledge gained during the training and use them in architecture field & academics in the most appropriate manner.
- Appraise the outcomes gained from the training & their usage in the field as well as academics.
- Design a portfolio of works done during the training period containing the drawings, quantities, est details, photographs, analysis & other documents and use them in the future academics and field.

C. DETAILED SYLLABUS

UNIT	CONTENT
1.	Student shall work for a period of 100 working days in an office of Architect approved by the institution. He shall be submitting monthly work report, critical appraisal of built projects, field documentation of architectural details and site supervision of built projects.

SYLLABUS
IX Semester

BARCAR9101	FINANCE MANAGEMENT IN ARCHITECTURE	2 Credits [LTP: 2-0-0]

A. OBJECTIVES:

To make the students aware of the effect of economics on architectural considerations, and to familiarize the students to various economic concepts that come within the purview of architecture.

B. OUTCOMES:

- Familiarizing with the general building economic concepts
- Relate and outline factors influencing building economics
- Understanding the role of Financial Institution
- Assessing Economics of private and public housing development, financing of projects, economic feasibility report etc. with special reference to India
- Develop an understanding - relationship of world economy, national economy, regional economy to a project

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	General Economics	4
2	Theory of Demand	6
3	Project Economics	6
4	Capital, Interest and Profits	4
5	Economic Analyses of Projects Cost	4

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**General Economics**
	Micro Economics: The market, demand and supply, choice, budget, consumer satisfaction, monopoly and oligopoly, choice of production technology and returns, profit maximization and cost minimization, production welfare and public good. Macro Economics: GNP, NNP, demand and supply, inflation, interest rate, employment, saving and investment, monitory and fiscal systems and policies
2.	**Theory of Demand**
	Utility analysis of demand, basic assumptions of marginal utility analysis, law of diminishing marginal utility, consumer's equilibrium, Demand.
3.	**Project Economics**
	Economics of the basic inputs into building construction projects - land, labor, capital and Material. Labor intensive v/s capital intensive projects. Financing for projects, sources of capital, Agencies and Institutions influencing project economics, public private participation.
4.	**Capital, Interest and Profits**
	Profits Basic concepts of Interest and Capital, prices and rentals on investment, Capital v/s Financial assets, IRRS on Investment, IRR and Interest rates, (PV) Present Value of assets, PV of Perpetuities, general formula for PV, Nominal & Real Investments.
5.	**Economic Analyses of Projects Cost**

	Control, Cash - Flow Analyses, Cost – Projection, Cost – Benefit, Feasibility, Estate Investments & returns, Valuation, Law relating to properties & Buildings

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Seminars and presentation on solar passive techniques and systems
- Study of best practices case studies
- Designing of a building prototype for public domain for display of solar passive systems
- MCQs mandatory for all units
- Seminar presentations of minimum two units.
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

S.N	Reference Book	Author	Edition
1.	Building Economy: Design Production and Organisation a synoptic view,	Stone, P. A. (1976)	
2	Economics (2010)	Chaudhuri, S. and Sen, A	
3	Modern Economic Theory., S. Chand Publications	Dewett, K. K. (2009).	
4	Cost Planning of Buildings. BSP Professional Books	Ferry, J. D. and Brahdon, S. P. (1994)..	3rd edition
5	Economics: a core text	Nobbs, J. and Hopkins, I.	4 th
6	Economics: theory and applications. Taiwan McGraw-Hill.	Teck, H. and Hian, O. (1998).	

BARCAR9201 BUILDING INFORMATION MANAGEMENT 3 Credits [LTP: 0-2-2]

A. OBJECTIVES:

To addresses the principles of building information modelling to develop the key concepts of BIM it's interrelations with digital design, detailing, and construction.

B. OUTCOMES:

- Extend the knowledge of Solar radiation, terrestrial radiation, temperature, humidity, wind, cloud, precipitation etc. factors affecting climate of macro and micro-level. Measurement and quantification.
- Identify effects of climate on man
- Analysis of climate and climatic zones
- Determine the effects of climate on building envelope
- Develop a design solution keeping in mind climate as a factor

C. OUTLINE OF THE COURSE

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Introduction to BIM	4
2	Application of BIM Software	8
3	Model Design Project on BIM software	20
4	Site Planning- On BIM Software	12
5	Introduction to Tools	4

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Introduction to BIM**
	• Introduction to fundamentals of Building Information Modelling • Introduction to Building information modelling software and their application in Industry for the preparation of two and three dimensional architectural, Structural and Mechanical drawings, Energy Modelling and Construction Project Planning.
2.	**Application of BIM Software**
	• Introduction to software like, Revit (Architecture, Structure, MEP), ECotect-11 and Navis work, Excel and MS Office. • Understanding the applications of all above software in the preparation of architectural drawings
3.	**Model Design Project on BIM Software**
	• Preparing detailed architectural drawing for a small design project on BIM software including: • Modelling Building Elements: modelling exterior and interior walls, creating floors and roofs, Adding doors, windows, footings, columns, and beams. • Building Envelope: modelling wall types and design features, working with doors, windows, and wall openings, creating roofs with different shapes and slopes. • Curtain Systems: designing curtain grid patterns, adjusting grids and

	mullions, creating and using curtain panels types. • Interiors and Circulation: creating stairs and ramps, customizing stair shapes, modeling elevators.
4.	**Site Planning- On BIM Software**
	• Preparation of site planning drawings on BIM software including: • Site features and analysis • Conceptual Massing
5	**Introduction to Tools**
	• Introduction to BIM ancillary software like Navisworks, BIM360, etc. • Working with these software and integrating the prepared model in them • Generating results and reports

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Development of architectural drawings on BIM software
- Preparation of assignment for the theoretical concepts of BIM

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	BIM Handbook: A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers	Chuck Eastman, Paul Teicholz, RafaelSacks, KathleenListon	2011	Wiley Publication, New Jersy
2	Building Information Modeling for Dummies	Stefan Mordue, Paul Swaddle, David Philp	2016	John Wiley and sons Ltd., West Sussex

A. OBJECTIVES:

Resolution of project to integrate complexity of urban dimensions and architectural language.

B. OUTCOMES:

- Plan critical/ philosophical/ ideological positions relating to specific design situations in the current scenario by enabling an understanding of urban context as a continuous experience involving the interrelated disciplines of architecture and design
- Utilize the process of researching and analyzing the design process involved in the existing design forms in various parts of the country considering climate, the methods adopted by famous architects and experts and its results, and drawing inferences from the studies conducted in order to open the mind for newer innovations and alternatives
- Identify architectural design decisions in the context of the site and environment conditions by applying various techniques and develop the final design from the conceptual theme
- Appraise inclusivity into the architectural design process and understand architecture as influenced by the dynamics of a space through the wider implication of design decisions and their interdependency with larger processes of society
- Design buildings as contributing to transforming the urban fabric with ability to take creative, critical and informed decisions in the context of significant projects that could shape society in positive ways

C. DETAILED SYLLABUS

UNIT	CONTENT
NA	a) To expose students to full- fledged architectural projects with holistic approach and design program, covering a detailed Pre-Design research including Site Investigation, Programme Formulation and Design Demonstration; b) Introduce Urban Design Projects with Architectural emphasis; c) Make students aware of Social responsibility. d) Introduction to projects with varying degree of structural site and service complexities.

D. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Group Housing Schemes, Transportation Hubs/ Interchanges like Bus Terminus/ Airports/ Museums/ Art Galleries/ Stadium/ Police Headquarters/ Central Jail/ High Court/ T.V. Studios/ Low Cost Designs/ Sustainable Design Projects/ Science Centers/ Pre-Fabric Large Span Structures etc.

E. RECOMMENDED STUDY MATERIAL:

S. No.	Reference Book	Author	Edition	Publication
1.	Town Planning	Abir Bandopadhyay		
2.	Urban Housing Forms			Architectural Press
3.	Forms and Formations	Christian Darles		

4.	Time Saver Standards for Architectural Design	Martin Zelnik and Julius Panero	Latest	--
5.	Neuferts architects data	Ernst Neuferts	Latest	--
6.	Architecture – Form, Space & Order	Francis D.K. Ching		
7.	Time-Saver Standards for Interior Design and Space Planning	Martin Zelnik Julius Paner	Latest	--
8.	Campus design in India	Kanvinde& Miller		
9.	Campus Planning	Richard Dober		
10.	Urban Design- The Architecture of Towns and Cities	Paul Sprereingen		
11.	Exterior design in Architecture	AshiharaToshinibu		
12.	Modern Language of Architecture	Bruno Zevi		
13.	Modern Movements in Architecture	Charles Jencks		
14.	Language of Post – Modern Architecture	Charles Jencks		
15.	Complexities and Contradictions in Architecture	Robert Venturi		
16.	Architectural Composition.	Rob Krier		
17.	Pattern Language	Christopher Alexander		
18.	Town Design	Fredrick Gibberd Alexander		

A. OBJECTIVES:

- To do a research study related to the field of Architecture.
- To provide the students an opportunity to undertake research work on a topic of their choice.

B. OUTCOMES:

- Identify a relevant topic of importance in the field of architecture and justify its need by critical analysis of the pros and cons associated with it
- Develop the design principles and elements derived by the background study of the topic in the form of a synopsis containing the aim, objectives, limitations and methodology of the dissertation study
- Evaluate the data extracted from the literature review of the dissertation topic and conclude with inferences which shall be directly applicable to the final study
- Assemble the data collected and compound them in the form of a relevant study which can later be converted to a report form
- Implement the critical analysis of pros and cons of the topic, design principles and elements, outcomes of the synopsis and data extracted from the literature review in the form of a study report and provide conclusion and inferences which are imperative for the justification of topic chosen

C. DETAILED SYLLABUS

UNIT	CONTENT
NA	Each student is required to conduct a non-design study on topic selected by the student and approved by the department. The study shall be conducted under the guidance of teacher or external expert in the department. This Dissertation should lead to a design problem to be taken up as a Thesis Topic.

BAREAR9311 DISASTER MITIGATION & MANAGEMENT 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

To understand the Disaster, its implications and mitigation in Architecture industry

B. OUTCOMES:

- To understand the Disaster, its implications and mitigation in Architecture industry
- To appraise the disaster relief measures and also apply technologies to reduce further loss
- To be able to analyse about the zones and their proneness to disaster as well as learning about preparedness and mitigation of such disasters
- To Evaluate between manmade and natural disasters and understand the initiation of each one and means & methods to prevent them, if possible
- To design temporary structures to provide relief in disaster affected areas and permanent structures to withstand the disasters effect as per NBC and similar codes

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Understanding Disaster	6
2	Natural Disasters	6
3	Preparedness and Mitigation	9
4	Disaster Resistant Structures Designing	6
5	Disaster Management	9

D. DETAILED SYLLABUS

UNIT	CONTENTS
A.	**Understanding Disaster**
	IA. ***An overview about Disaster and Zones***- • Hazard, Disaster, Risk, Vulnerability. • Disaster – an over view; Disaster – the Indian Perspective; • Typology of disasters and increased understanding. **IB.** ***Assignment on understanding about Disaster.***
B.	**Natural and Man Made Disasters**
	II A. ***Introduction about Disaster and its types and problems***- • Natural hazards and Disasters -Earthquake, cyclone, floods, droughts, landslides, lightning. • Causes, hazardous effects, mitigation measures. • Man induced hazards & disasters:- soil erosion-causes, conservation measures; nuclear explosion • Environmental problems, corrective measures; fire mitigation measures; terrorism. **II B.** ***Assignment on understanding about Hazards and problems.***
C.	**Preparedness and Mitigation**
	III A. ***Introduction about Disaster Preparedness and mitigation***- • Preparedness and mitigation - Preparing hazard zone maps, • Predictability/ forecasting &warning,

	• Community preparedness, retrofitting, • Population reduction in vulnerable areas, • Awareness, Capacity building. **III B. - *Assignment on understanding about Disaster Preparedness and mitigation.***
D.	**Disaster Resistant Structures Designing**
	IV A. *Introduction about Disaster resistance structure*- • Introduction to Earthquake, • Cyclone, Tsunami, Flood and Fire resistant Structures. • Designing of Earthquake and fire resistant structures. • Standards for emergency escapes as per National Building Codes. **IV B. - *Assignment on understanding about Disaster resistance structure.***
E.	**Disaster Management**
	V A. *Introduction about Disaster relief measures and application of technologies*- • Disaster Management- role of various agencies; • Community health and casualty management; • Relief measures; Post disaster- Recovery, Reconstructionand Rehabilitation. • Remote- sensing and GIS applications in real time disaster monitoring. **V B. - *Assignment on understanding about Disaster relief measures and application of technologies.***

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- MCQs mandatory for all units
- Seminar presentations of minimum two units. -
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Disaster management & Risk reduction	Vishwambhar Prasad Sati		
2.	Disaster management	RaisiDangi		
3.	National programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM)	Compiled by Ministry of Home Affairs (MHA)	2004	National Disaster Management Division ,GoI, New Delhi
4.	Handbook on Seismic retrofit of Buildings	AmarnathChakrabarti, DevdasMenon		

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) Other resources

Sr. N	Name of the resource	link for the Resource	Date of creation	Date referred
1	Disaster Management and Preparedness	https://b-ok.asia/book/684269/90d02b		3-06-2020
2	Disaster Management Handbook (Public Administration and Public	https://b-ok.asia/book/735534/956be7		

	Policy)			
3	Natural Disasters: Prevention, Risk Factors and Management	https://b-ok.asia/book/2372503/9bc276		
4	Natural Disaster Management in the Asia-Pacific: Policy and Governance	https://b-ok.asia/book/2488100/5f2467?dsource=recommend		

BAREAR9312 EARTHQUAKE RESISTANT ARCHITECTURE 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

To provide knowledge about design of buildings for protecting them from earthquakes and similar disasters

B. OUTCOMES:

- Learning different types of foundations and superstructures and materials used in their construction
- Explaining the construction techniques through drawings
- Identify appropriate materials and techniques to be used for flooring and roofing
- Assessing Earthquake resistant Construction and techniques to be adapted
- Creating a structure using various techniques in construction

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Introduction to Subject	6
2	Theory of Vibration	6
3	Building Design	9
4	Faults and Corrective measures	6
5	Design Provisions	9

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Introduction to Subject**
	• Building safety from natural hazards: an introduction • Cyclones, Floods, Landslides, Tsunami, Earthquake, Fire – causes and remedial measures • Elementary Seismology – occurrence in the world, plate tectonics, plate boundaries, seismic waves, magnitude, intensity, seismological instruments
2.	**Theory of Vibration**
	• Introduction to Theory of Vibration – Single degree of freedom systems, period, frequency, resonance, damping, response spectrum, seismic design philosophy, ductility, base shear calculation by seismic coefficient method
3.	**Building Design**
	• Site planning, building forms, horizontal and vertical irregularities, mass and stiffness irregularities, soft storey effects • Architectural design concepts for earthquake resistance, shear walls, redundancy, setbacks, torsion, pounding
4.	**Faults and Corrective measures**
	• Behavior of ground, buildings, power plants, services in the past earthquakes, types of failure, liquefaction, social and economic consequences of earthquakes, concepts of repair and seismic strengthening, methods of retrofitting, seismic base isolation, construction quality control
5.	**Design Provisions**
	• Seismic detailing provisions – RCC structures, masonry and adobe

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- MCQs mandatory for all units
- Seminar presentations of minimum two units. -
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Earthquake resistant design of structure	Pankaj Agarwal and Manish Shrikhande		Prentice-Hall, India
3.	National programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM)	Compiled by Ministry of Home Affairs (MHA)	2004	National Disaster Management Division ,GoI, New Delhi

BAREAR9313 BUILDING SYSTEMS INTEGRATION AND MANAGEMENT 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

This course aims to develop a fundamental understanding of the relationship between the façade, building performance (energy consumption) and indoor thermal and visual comfort.

B. OUTCOMES:

- Classify the various terms and terminologies related to water supply in simple, multistoried and complex buildings.
- Compare the supply requirements and distribution based on function, type, location and verticality in various types of buildings.
- Determine the best practices used in waste disposal and sanitation and apply them in real life situations.
- Identify the design and complexity related to an architectural project starting from supply requirements to designing the pipelines, valves, drains and tanks etc. and ending on the final disposal of waste.
- Name the various term and technicalities.

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Facade Construction and Detailing	6
2	Energy, Environment and Envelope	6
3	Modelling and Analysis	9
4	Facade Technology	6
5	Performance	9

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Facade Construction and Detailing**
	• Introduction • Facade construction
2.	**Energy, Environment and Envelope**
	• Introduction • Energy, environment and envelope integration
3.	**Modelling and Analysis**
	• Software's for modelling and analysis • Building modelling • Building analysis
4.	**Facade Technology**
	• Types • Methods of integration with built structure • evaluation
5.	**Performance**
	• Parameters of performance evaluation • Results & Application

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- MCQs mandatory for all units
- Seminar presentations of minimum two units. -
- Report writing of any 1 topic as per subject requirement.

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Architectural Detailing: Function, Constructability, Aesthetics	Edward Allen, Patrick Rand	3rd Edition, 2016	John Wiley & Sons, Inc.
2.	The Architect's Studio Companion: Rules of Thumb for Preliminary Design	Edward Allen, Joseph Iano	5th Edition, 2011	John Wiley & Sons, Inc.
3.	Integrated Buildings: The Systems Basis of Architecture	Leonard R. Bachman	2002	John Wiley & Sons, Inc.

A. OBJECTIVES:

To prepare for thesis project of tenth semester.

B. OUTCOMES:

- The student will undertake the study guided by thesis guide in subject area in the topic selected for the thesis project.
- Students will be to able to understand the procedure for the preparation for thesis (all the work that needs to be done before thesis starts)
- Student will be able to write synopsis in a proper manner.
- Students will be able to start thesis report in starting of X semester itself and submission on time with proper formatting.
- Submission of any 3 topics selected by each student (compulsory) in a presentation (synopsis) format and finalization of thesis topics in the end of session.

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Introduction of thesis	8
2	Synopsis Writing	8
3	Case studies	12
4	Thesis guidelines and report writing	8
5	Finalization of Thesis topic	12

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Introduction of thesis**
	• Introduction of thesis in X sem • Importance of thesis • How to proceed - from choosing a project to submission (synopsis, introduction to site, case studies, site analysis, design development, submission).
2.	**Synopsis Writing**
	• Introduction of synopsis • How to write it • Sequence of synopsis writing • Synopsis format and its submission.
3.	**Case studies**
	• Case studies to be chosen • How to do its analysis
4.	**Thesis guidelines and report writing**
	• Introduction of thesis report • How to write & compile thesis report • Thesis format (fonts, formatting, style, heads & subheads, referencing etc) • Thesis submission

5.	**Finalization of Thesis topic**
	• Introduction of thesis topic • Value and importance of thesis projects (selection process/way of thesis topic)

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- Seminar presentations
- Report writing

SYLLABUS
X Semester

BARCAR0101	ENTREPRENEURSHIP SKILLS FOR ARCHITECTS	2 Credits [LTP: 2-0-0]

A. OBJECTIVES:

To introduce set up for business as an architect, to develop the creative and leadership skills for the same and to develop the confidence and skills in preparing business plans and to propose and sell ideas to potential clients and investors.

B. OUTCOMES:

- Discuss the development of the field of organizational behavior and explain the micro and macro approaches
- Analyze and compare different models used to explain individual behavior related to motivation and rewards
- Identify the various leadership styles and the role of leaders in a decision making process.
- Explain organizational culture and describe its dimensions and to examine various organizational designs
- Discuss the implementation of organizational change.

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Introduction to Course	4
2	Account Management	4
3	Business and Company Law	4
4	Communication	6
5	Case Study	6

D. DETAILED SYLLABUS

UNIT	CONTENT
1.	**Introduction to Course**
	• Introduction Skill of an entrepreneur – Leadership, Initiative, Motivation • Management of Time, People and Resources • Interpersonal relationship skills required in an organization
2.	**Account Management**
	• Introduction to Accountancy for Business • Introduction to financial, cost and management accountancy • Basic records: balance sheet, profit and loss account • Measurement of income • Valuation of assets • Preparation of income sheet and balance sheet
3.	**Business and Company Law**
	• Meaning of Company • Companies Act • Types of companies, articles, and memorandum of association, prospects, powers, duties and liabilities of directors • Definition of Contract, types and elements of a contract, breach of contract

	and its remedies • Quasi contract • Contract of Agency
4.	**Communication**
	• Work place communication • Strategies for writing: e-mails, report, minutes, annual report, status report, survey report, proposal, memorandum, profile of organization, responding to enquiries, complaints, applications • Oral presentation aspects
5.	**Case Study**
	• Case Analysis Report and presentation of any one successful architect's office • Presentations on successful and strategic business models in collaboration with Industry

E. MODEL EXERCISES/ ASSIGNMENTS/ PROJECTS:

- MCQs mandatory for all units
- Seminar presentations of minimum two units
- Report writing of any 1 topic as per subject requirement

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Financial Accounting: A Managerial Perspective	Narayanaswamy .R	2nd edition - 2005	Prentice Hall India Pvt., Ltd., New Delhi
2.	Management Accounting	Don R Hansen	7th Edition, 2007	Cengage Learning, Delhi
3.	Elements of Mercantile Law	Kapoor N.D	28th Edition, 2007	Sultan chand and company, New Delhi
4.	Legal aspects of Business.	Akhileshwa Pathak	1st Edition, 1996	Tata McGraw Hill, New Delhi

A. OBJECTIVES:

Individual design project approved by department.

B. OUTCOMES:

- Interpret architectural detailing required for executing a research project.
- Assume various architectural components in thesis project
- Demonstrate competency in reading and producing architectural drawings with ideas using techniques and conventions of architectural representation
- Appraise critical thinking and social responsibility
- Develop a specific application into thesis project responding to a specific or typical program consisting a design solution.

C. DETAILED SYLLABUS

UNIT	CONTENTS
1.	Large scale project having complexity of urban and architectural resolutions. Culmination of all the skills acquired of architecture. Individual understanding of architectural theory, philosophy and architectural style. Student shall engage in study, documentation, analysis and design process of the project. The theoretical part to be put together in the form of a report and the design solution to be presented in hard/soft copy with a model.

A. OBJECTIVES:

The subject focuses on developing the writing ability of a student, to reach out to common mass to demonstrate the best of architectural world.

B. OUTCOMES:

- Aware about Architectural Journalism
- Make use of Architectural writing, Documentation and Page Composition
- Examine Book Reviews , Articles, Architectural writing and Documentation
- Criticize architectural works in a proper written manner
- Create review and work on electronic media

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Structure of Architectural Journals	6
2	Architectural Criticism	6
3	Descriptive Architectural Writing	9
4	Photo Journalism & Book Reviews	9
5	Page Composition & Electronic Media	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1	**Structure of Architectural Journals**
	a) Structure and contents of an architectural journal, b) Understanding the relevance of each part and its relevance in the journal. c) General process behind making of a journal.
2	**Architectural Criticism**
	a) Analysis of recent historical and contemporary examples of written and journalistic criticism of b including selected writings by Indian and overseas critics; b) Discursive techniques, c) Analysis of major critical themes, d) Thematic categories in architectural writing over the past three centuries.
3	**Descriptive Architectural Writing**
	a) Architectural Description of a building; b) Contents of description, Path of narration for an Architectural Description. Different perspectives of describing a building. Editing Write-ups
4	**Photo Journalism & Book Reviews**
	Photo Journalism with respect to Architecture, need and purpose. Writing of a book review, standards layouts of writing
5	**Page Composition & Electronic Media**
	Composition of a page - text and Graphics. Font size and style, display of information and referencing techniques. Designing of a page. Digital Publications, blogs, websites, facebook pages, other promotional electronic media.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Written Description of a building most conversed with.
- Study of various forms of technical architectural writing and critical comparison
- Creating newspaper/ magazine articles for photographing and writing about a building physically accessible to students

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Architectural Criticism and Journalism	Mohammad al-Asad	2007	Umberto Allemandi
2	Writing In(to) Architecture	Sylvia Chan		East Slope Publishing Ltd., Hong Kong

G. RECOMMENDED ONLINE STUDY MATERIAL:

i) Other resources

Sr. N	Name of the resource	link for the Resource	Date of creation	Date referred
1	Challenges to the Epistemology of Journalism: The Architecture of the Contemporary Mediascape	https://b-ok.asia/book/2363251/974e61		

A. OBJECTIVES:

To develop understanding of the significance of historic buildings, cities and the knowledge systems embodied in it.

B. OUTCOMES:

- Elaborate the concepts of conservation and preservation of buildings and its components
- Demonstrate the use of various conservation and preservation techniques learnt
- Understanding assessment and mapping the factors of deterioration
- Appraise the dynamics involved in the process
- Propose and conclude a project considering its architectural conservation

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Introduction to Conservation	6
2	Documentation & Mapping	9
3	Conservation Concepts	6
4	Conservation Techniques	6
5	Design Approach in Historic Context	9

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Introduction to Conservation**
	a) Definitions for the heritage components of built heritage; b) An overview of national and international approaches from UNESCO, ICOMOS, ICCROM, A.S.I., GETTY foundation, INTACH, WMF, international charters, Civic bodies etc.; c) Search for an Indian approach; d) Legal Status of Heritage in India. e) National Conservations Policy of ASI.
2.	**Documentation & Mapping**
	a) Listing of monuments and recording techniques, b) Documentation techniques for buildings and other intangible heritage components; c) Understanding assessment and mapping the factors of deterioration;
3.	**Conservation Concepts**
	a) Prevailing practices in conservation, b) Concepts of restoration, retrofitting, rehabilitation, consolidation, preservation, revitalization etc c) Adaptive reuse;
4.	**Conservation Techniques**
	a) Conservation of Built Heritage using traditional materials and techniques; b) Approach and methodology for appropriate repairs
5.	**Design Approach in Historic Context**
	a) Approaches in designing in the historic context, b) Interpretation with examples in India and abroad; c) Concepts of heritage zones, d) Identification and delineation criteria for historic urban fabrics;

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Pilot study and proposal for a section of historical precincts
- Case study of various best practices

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Guidelines for Conservation: A technical Manual	Bernanrd Feilden	1989	INTACH, New Delhi
2	ICOMOS Charters, (Venice Charter, Burra Charter, Nara Declaration)			ICOMOS
3	Management Guidelines for World Cultural heritage Sites.	Bernanrd Feilden & Jukka Jokilehto	1998	ICCROM, Rome
4	Conservation Manual	Sir John Marshall	1923	Archaeological Survey of India
5	National Conservation Policy		2013	Archaeological Survey of India

BARCAR0321	SUSTAINABLE DEVELOPMENT & ARCHITECTURE	2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

To develop understanding of the significance of sustainability in design.

B. OUTCOMES:

- Understand the concepts of sustainability
- Apply the concepts in planning in design
- Analyze the application through the medium of materials and construction techniques
- Evaluate the concept and application of recycling and reuse
- Create sustainability outputs with the help of case studies and rating systems

C. OUTLINE OF THE SUBJECT:

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1	Concepts of sustainability	6
2	Sustainable planning & Design	9
3	Sustainable Building Materials and Construction	6
4	Recycling and Reuse	6
5	Case Studies and Rating systems	9

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Concepts of sustainability**
	a. Introduction to Unit b. Energy and Global environment, Energy use and Climate change – Its impact, Types of Energy systems, c. Concept of Sustainability - Principles of conservation -synergy with nature d. Bioregionalism - community basis shelter technology within bioregional patterns and scales e. Ethical- environmental degradation f. Summary & conclusion of unit
2.	**Sustainable planning & Design**
	a. Introduction to Unit b. Introduction to Sustainable Development c. Sustainable approach to site planning and design - site inventories- relationships between site factors Development impacts from one area of the site on the other areas d. Model ecosystem of the site, phasing of development - limits of change e. Design facility within social and environmental thresholds f. Summary & conclusion of unit
3.	**Sustainable Building Materials and Construction**
	a. Introduction to Unit b. Properties, Uses and Examples of -Primary, secondary and Tertiary Sustainable Materials, c. Principles to improve the energy efficiency - siting and vernacular design, shade, ventilation, earth shelter, thermal inertia and air lock entrances. d. Techniques of sustainable construction - technologies, methods of effectiveness, and design synthesis e. Alternative materials and construction methods:

	f. Use of local materials and on site growth of food, fuel and building materials g. Summary & conclusion of unit
4.	**Recycling and Reuse**
	a. Pre building, Building, Post building stages - Architectural Reuse, Waste prevention, b. Construction and Demolition recycling- Conservation of natural and building resources- c. Energy and material savings d. Types of wastes e. Elimination of waste and minimize pollution- various Decomposing methods f. Innovative reuse of various wastes
5.	**Case Studies and Rating systems**
	a. Sustainable Development Case Studies: illustrated examples of the planning, development, and construction. b. Green architecture and various international rating systems for sustainability- EAM (UK), CASBEE (Japan), LEED (US), Green Star (Australia), etc. – c. Indian systems – TERI GRIHA rating, LEED India rating, IGBC

E. MODEL EXCERCISES/ ASSIGNMENTS/ PROJECTS:

- Audit exercises to identify sustainability of existing paces
- Seminars and presentation on sustainable materials and construction technologies
- Study of best practices case studies
- Designing of a completely sustainable building prototype for public domain

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Integrated approach to sustainable Development	B.C.Bose		Rajat Publications, Delhi
2	Environmental control systems Heating, Cooling, Lighting	Fuller Moore		McGraw Hill, Newyork.
3	Sustainable practices in built environment	Caring A.Langston, Grace K.C.Ding	2nd Edition	Butterworth-Heinmann Linacre House Jordanhill Oxford
4	Sustainable Building Design Manual Vol I & II			TERI, New Delhi
5	GRIHA Manual (Vol 1-5)			TERI, New Delhi

BARCAR0322 CLIMATE RESPONSIVE ARCHITECTURE 2 Credits [LTP: 0-1-2]

A. OBJECTIVES:

To acquaint students with the role of energy in climate-based design as a significant determinant of built form to understand climate responsive architecture.

B. OUTCOMES:

- Extend the knowledge of Solar radiation, terrestrial radiation, temperature, humidity, wind, cloud, precipitation etc. factors affecting climate of macro and micro-level. Measurement and quantification.
- Identify effects of climate on man
- Analysis of climate and climatic zones
- Determine the effects of climate on building envelope
- Develop a design solution keeping in mind climate as a factor

C. OUTLINE OF THE SUBJECT:

Unit	Title of the unit	Time Required for the Unit (Hours)
1	Orientation and Application of Climatic Principles	6
2	Climate Responsive Building Projects & Building Simulation Software	9
3	Role of Energy in climate responsive architecture	6
4	Energy Building Code, Guidelines and Building Envelope	9
5	Building Rating Systems in India	6

D. DETAILED SYLLABUS

UNIT	CONTENTS
1.	**Orientation and Application of Climatic Principles**
	Siting of buildings with respect of sun, wind and view Climatic design of indigenous shelters in response to different climatic zones in India Use of landscape elements, evaporative cooling, ground cooling, cavity walls, topography Ventilation of roof spaces and controlled ventilation
2.	**Climate Responsive Building Projects & Building Simulation Software**
	Example of climate-responsive building-projects from India and abroad. Introduction to climatic design analysis and building simulation software.
3.	**Role of Energy in climate responsive architecture**
	Types, availability and reserves of conventional and non-conventional energy sources. Energy Conservation in building Indian Energy Conservation Act 2001 Features Energy Star Rating of buildings and Equipment Bureau of Energy Efficiency Energy Conservation Building Code (ECBC)
4.	**Energy Building Code, Guidelines and Building Envelope**
	Thermal Insulation, Heating, Ventilation and Air Conditioning System, Building Lighting Design: Lighting levels, light efficient

	options, CFL LEDs, Fixtures, Day lighting timers Building Energy Management.
5.	**Building Rating Systems in India**
	Introduction to Building rating systems in India. Detailed study on LEED and GRIHA (Green Rating for Integrated Habitat Assessment). Case study national and international examples.

E. MODEL EXERCISE/ ASSIGNMENTS/ PROJECTS:

- Seminar Presentation of various climate responsive buildings by the students
- Written assignment on the various energy related acts
- Analysis of small design project using building simulation software

F. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Edition	Publication
1.	Climate Responsive Architecture	Arvind Krishan	2011	Wiley Publication, New Jersy
2	Indian Energy Conservation Act 2001			Government of India
3	Energy Conservation Building Code Manual			Government of India
4	GRIHA Manuals		2011	The Energy and Resources Institute (TERI)
5	Energy-efficient Buildings in India		2001	The Energy and Resources Institute (TERI)
6	Renewable Energy Sources and Their Environmental Impact	Shahid A. Abbasi, Naseema Abbasi	2004	PHI Learning Pvt. Ltd.

*****