DEPARTMENT OF

ARCHITECTURE

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY

PERIYAR MANIAMMAI
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University)
Established Under Sec. 3 of UGC Act, 1956 • NAAC Accredited
think • innovate • transform

MINUTES OF THIRD BOARD OF STUDIES

CURRICULUM & SYLLABUS

FOR

M.Arch

Master of Architecture

(General Architecture)

(Based on Outcome Based Education)

(I - IV Semester)

REGULATIONS – 2019

TABLE OF CONTENTS

MEMBERS OF THE BOARD OF STUDIES

Sl.No.	Name	Designation	Membership
1.	Ar.N.Ramesh Babu	Associate Professor & Head Dept. of Architecture, PMIST	Chairperson
2.	Dr. C.V.Subramanian	Dean, Faculty of Architecture and Planning, PMIST	Invitee
3.	Prof.N.Joseph Fernando	Professor , Dept. of Architecture, PMIST	Member
4.	Ar.V.S.Kavitha	Associate Professor, Dept. of Architecture, PMIST	Member
5.	Ar.G.Rajaa	Associate Professor, Dept. of Architecture, PMIST	Member
6.	Ar. K.Jasmine Vidhya	Associate Professor , Dept. of Architecture, PMIST	Member
7.	Ar.N.Janaki	Assistant Professor, Dept. of Architecture, PMIST	Member
8.	Ar. P.Gopala krishnan	Associate Professor, Department of Architecture NIT, Trichy.	Special Invitee Representing Academia
9.	Ar.Keiser Arul Anand	Practising Architect, Thanjavur.	External Member Representing Industry

The current Masters in Architecture (M.Arch) Curriculum is undergoing its **Third Board of studies on 31.08.2019** to tune the syllabus towards Outcome based Education and meet the CoA recommendations and in turn the suggestions provided will be implemented in Regulations 2019-20.

To produce Architects in par with International standards and to accommodate the recent trends, it is felt that there is a need to modify the present curriculum with appropriate inclusions and deletions which will enhance the competency of the Architects. With the above perspective the Vision and Mission of the department is framed in line with that of the University. The objective of the BoS is set to ensure the expected outcome of the programme and the curriculum refinement is done by the members in consultation with the faculty members and competent authorities of our University.

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE AND TECHNOLOGY

Our University is committed to the following Vision, Mission and core values, which guide us in carrying out our Architecture Department mission and realizing our vision:

INSTITUTION VISION	
To be a University of global dynamism with excellence in knowledge and innovation ensuring social responsibility for creating an egalitarian society.	
INSTITUTION MISSION	
UM1	Offering well balanced programmes with scholarly faculty and state-of-art facilities to impart high level of knowledge.
UM2	Providing student - centered education and foster their growth in critical thinking, creativity, entrepreneurship, problem solving and collaborative work.
UM3	Involving progressive and meaningful research with concern for sustainable development.
UM4	Enabling the students to acquire the skills for global competencies.
UM5	Inculcating Universal values, Self-respect, Gender equality, Dignity and Ethics.

INSTITUTION CORE VALUES

- **Student – centric vocation**
- **Academic excellence**
- **Social Justice, equity, equality, diversity, empowerment, sustainability**
- **Skills and use of technology for global competency.**
- **Continual improvement**
- **Leadership qualities.**
- **Societal needs**
- **Learning, a life – long process**
- **Team work**
- **Entrepreneurship for men and women**
- **Rural development**
- **Basic, Societal, and applied research on Energy, Environment, and Empowerment.**

DEPARTMENT OF ARCHITECTURE

DEPARTMENT VISION	
To be a unique department in creating eminent architects with excellent creativity and sound technical knowledge, competent enough for adapting the changing trends and culture of mankind and in turn applying them for the societal needs with environmental consciousness.	
DEPARTMENT MISSION	
DM1	To produce Undergraduate, Postgraduate and Research scholars in Architecture at par with current global demands and trends.
DM2	To inspire and provide challenging ambience to evolve as leaders to advance in the field of Architecture.
DM3	To provide a platform for innovation, critical thinking and research in the field of architecture and allied disciplines
DM4	To serve as a reliable, highly capable resource for the profession, academia, and the society.

Department Vision and Mission Definition Process

The development of vision and mission of the department is carried out as per the following steps.

Step: I	Brainstorming carried out at different levels
	First level - Department faculty by the HOD
	Second level – Current students by the faculty
	Third level - Employers, alumni and academia and industry experts
Step: II	Benchmarking with other Universities: Understanding the Vision and Mission
Step: III	Validation by the Board of studies and then Academic Council
Step: IV	Wide publicity in the department and institution

The University Vision is split up into small elements and verifies its compliance with Department Vision

UNIVERSITY VISION	DEPARTMENT VISION
global dynamism	creating eminent architects
excellence in knowledge and innovation	excellent creativity and sound technical knowledge, competent enough for adapting the changing trends and culture of mankind
ensuring social responsibility **Creating an egalitarian society**	Applying them for the societal needs with environmental consciousness.

To accomplish the vision stated, well-structured mission is established with consultation with administrators, faculty members and other officials.

UNIVERSITY MISSION	DEPARTEMNT MISSION
to impart high level of knowledge	par with current global demands and trends.
student - centered education and foster their growth in critical thinking, creativity, entrepreneurship, problem solving and collaborative work.	A platform for innovation, critical thinking
progressive and meaningful research	research in the field of architecture and allied disciplines
Skills for global competencies.	To evolve as leaders to advance in the field of Architecture.
Inculcating Universal values, Self-respect, Gender equality, Dignity and Ethics.	To serve as a reliable, highly capable resource for society, the profession, academia, and the society.

Table: 1 Mapping of University Mission (UM) and Department Mission (DM)

	UM 1	UM 2	UM 3	UM 4	UM 5
DM 1	3	3	1	3	2
DM 2	3	3	1	1	1
DM 3	1	3	3	3	1
DM 4	2	1	2	2	3
	9	**10**	**7**	**9**	**7**

1-Low 2- Medium 3 – High

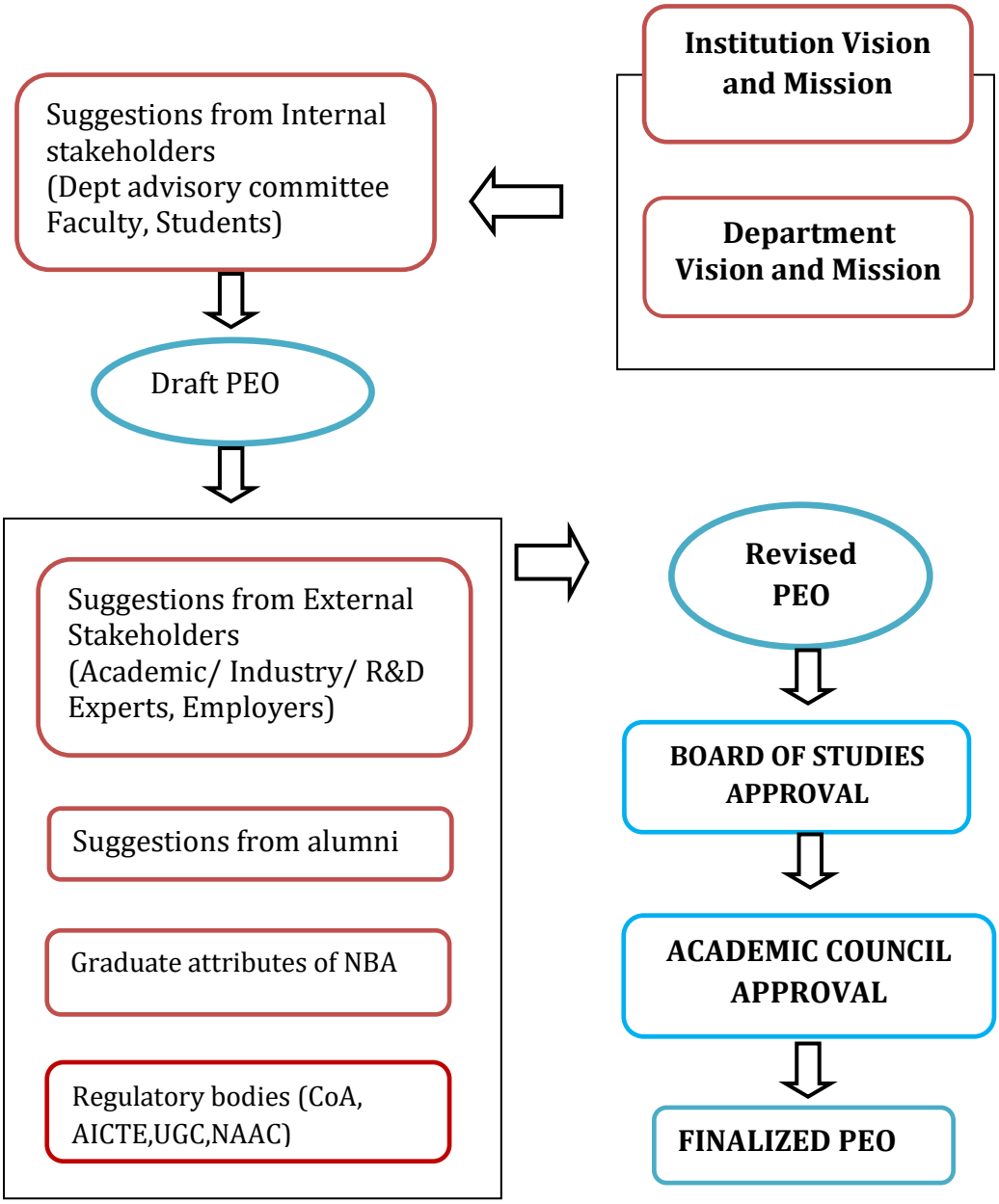
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Based on the mission of the department, the programme educational objectives is formulated as

PEO1	A successful professional to lead and coordinate the project team consisting of professionals from different disciplines in the design and execution of projects irrespective of the scale at locally and globally
PEO2	Able to understand the societal and individual's spatial needs and requirements with respect to the context, their culture and tradition and to come up with innovative unique and aesthetical design solutions.
PEO3	An environmentally and socially responsible person, able to design an optimum solution in terms of human, materials and energy resource utilization and take conscious efforts to transfer the essence of the past to the present and the future through his creations.
PEO4	Prepared for continued education in architecture or entry into architectural field, research or the building industries.

PEO PROCESS ESTABLISHMENT

After a series of discussion with the faculty of the Department of Architecture the set of PEOs are drafted. This will help us to assess the graduates few years after graduation.



The framework for the review and revision of the PEOs at the departmental level involving all the faculty members comprised the following broad stages.

1. Using the key words and phrases extracted from the Mission Statement of the institution and department to identify attributes to gauge graduates.
2. Capturing the distinction between the educational objective and the student outcomes.
3. Formulating each objective to be measurable.

The program educational objectives for the M.Arch program describe accomplishments that graduates are expected to attain within three years after graduation. Graduates might have applied their expertise to contemporary problem solving, be engaged professionally, and have continued to learn and adapt, and have contributed to their organizations through leadership and teamwork.

Mapping of Program Educational Objectives (PEOs) with Department Mission (DM)

	DM 1	DM 2	DM3	DM 4
PEO 1	3	3	2	2
PEO 2	3	2	1	3
PEO 3	2	3	3	3
PEO 4	1	1	3	2
	9	**9**	**9**	**10**

1- Low 2 – Medium 3-High

The development of vision, mission and programme educational objectives is tuned in line with the global and national standards and it is assured that the department vision and mission will facilitate in meeting the vision and mission of the University.

The Program Educational Objectives shall cover both technical and professional aspects of the expected achieve-Achievement in terms of technical skills required in the profession for which the program prepares students

- Achievements in terms of professional, ethical, and Communicational aspects required by the profession for which the program prepares students (team work, ethical behavior, effective communication, etc.)
- Achievements in terms of management and leadership skills (project managers, directors, CTOs, CEOs, etc.)
- Achievements in terms of life-long learning and continuous education (certifications, conferences and workshops attendance, etc.)
- Achievements in terms of advanced and graduate studies pursuing (graduate studies, research careers, etc.)
- Other aspects could be considered when defining educational objectives such as the ability to engage in entrepreneurship activities

SUMMARY OF THE FEED BACKS OBTAINED

Total number of feedbacks collected: 20

In that the following important observations were made,

1. Syllabus has to orient more on application
2. Industrial participation has to be encouraged for Services in High Rise Building to understand the practical pros and cons.
3. Design problem sheet has to concentrate on bringing out a design which holds outcomes from all the subject application of the semester.
4. Contemporary practices in urban fabric have to be included.
5. Studying a conserved building and analysis of the same has to be included.
6. Environmental psychology concepts have to be included, which has to lead into environmental behavioral concepts of design.

Based on the stakeholders‟ input and the attainment results from stakeholder survey, PEO statements and targets were revised.

PROGRAMME OUTCOME (PO)

At the time of graduation, competency of the student is measured through the attainment of programme outcomes. The quantification of programme outcomes attainment is measured through the assessment of established course outcomes for each subject.

PROGRAM OUTCOMES	
PO 1	Ability to understand and frame the design requirements considering the diverse points of view to reach well-reasoned conclusions based on the relevant criteria and standard.
PO 2	Ability to Demonstrate all round skill in design and research.
PO 3	Ability to use digital tools to simulate, analyze and convey essential design ideas at each stage of the design process.
PO 4	Understanding of the architect's responsibility to work in the public interest, conserve heritage aspects and to improve the quality of life for urban built environment.
PO 5	Ability to incorporate technological developments in assembly of materials, systems, and components appropriate for a building design.
PO 6	Ability to analyze Contemporary Theories and Trends in research and design process.
PO 7	Work collaboratively with teams of architects and various interdisciplinary design teams involved in the building industry, incorporating the financial implications, negotiating contracts, selecting service consultants.
PO 8	Ability to design sustainable urban built environment to provide healthful environments and reduce the environmental impacts.
PO 9	Sensitive enough to strictly adhere to the code of conduct prescribed by the competent authority to practice the profession in the country with respect to building codes and regulations, safety aspects and upheld the value of the profession at its highest.
PO 10	Ability to contribute further to society through their design/research/ teaching
PROGRAM SPECIFIC OUTCOME	
PSO1	Understand the concept of energy in buildings and the impact of energy crisis in building industry and ability to design energy efficient buildings.
PSO2	Understand the planning aspects from the macro to micro level and ability to develop a planning, urban design proposal.

GRADUATE ATTRIBUTES

1. **Knowledge base on architecture:** Possess knowledge on advanced architectural theories and sciences.
2. **Design analysis and solution:** Identify, formulate, analyze and provide architectural design solution.
3. **Investigation skills:** Conduct investigation of complex issues, skills to conduct investigation, interpret the observed the data to provide appropriate solution.
4. **Architectural communication Skills:** Convey design ideas through drawings and reports by manual and digital tools.
5. **Modern tool usage:** Skills to operate and work with the data manipulation, analytical tools.
6. **Architect and society:** Sensitive towards the culture, heritage and betterment of the society while planning and executing the project.
7. **Project & Finance Management:** Manage the diverse range of projects considering the available resources, technology and time frame.
8. **Environment and sustainability:** Possess knowledge on sustainable development principles and sensitive enough to safeguard the environment.
9. **Professional Practice & Ethics:** Upheld ethical values, standards while working as individual and group in the professional practice.
10. **Lifelong learning:** Update the required technical skills to upgrade the competency level in the fast pacing challenging environment.

Table : 3 Mapping of Program Educational Objectives (PEOs) with Program Outcomes (POs)

PO →	1	2	3	4	5	6	7	8	9	10	PSO1	PSO 2
PEO 1	1	1	1	1	2	1	3	1	1	1	3	3
PEO 2	3	3	1	3	2	3	2	2	1	1	3	2
PEO 3	2	3	2	3	3	2	1	3	3	3	3	3
PEO 4	1	1	3	1	3	2	2	2	2	3	1	1
	7	**8**	**7**	**8**	**10**	**8**	**8**	**8**	**7**	**7**	**10**	**9**

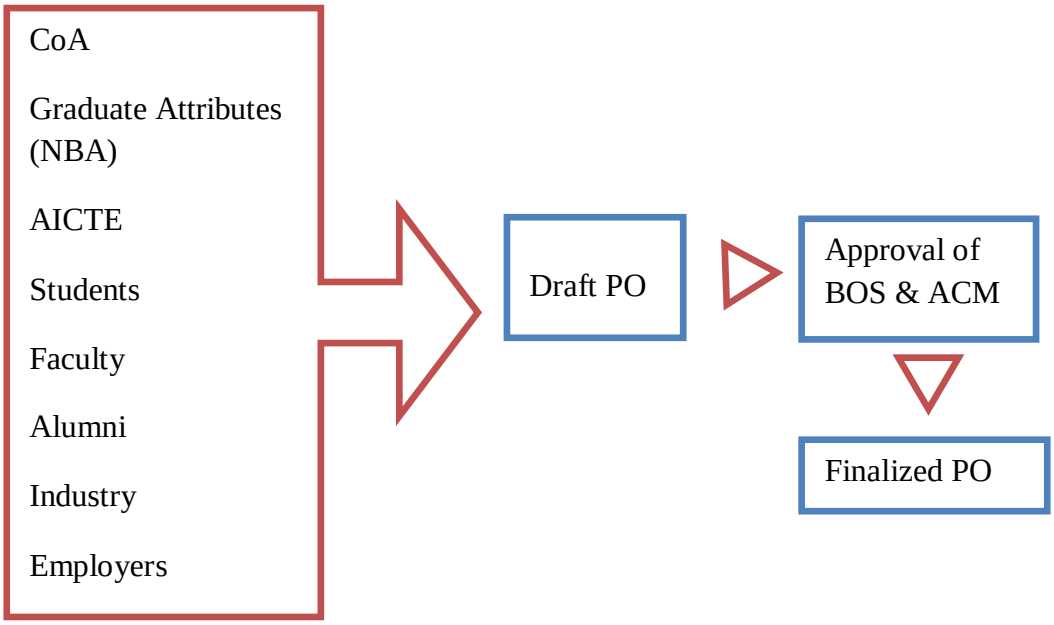
1 - Low 2 – Medium 3 - High

Table :4 Mapping of Program Outcomes (POs) with Graduate Attributes (GAs)

	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10
PO1	3	1	2	1	2	2	1	1	1	1
PO2	1	3	1	2	1	1	1	1	2	1
PO3	2	1	3	1	1	2	2	3	2	2
PO4	1	1	1	3	1	1	2	1	1	1
PO5	3	3	2	1	3	1	2	1	1	1
PO6	1	1	2	1	1	3	1	1	3	1
PO7	2	1	1	2	2	1	3	1	2	2
PO8	1	1	3	1	3	2	1	3	1	1
PO 9	1	2	2	1	2	1	2	1	3	1
PO10	1	2	1	1	1	3	1	1	2	3
PSO1	2	1	2	1	2	2	1	3	1	2
PSO2	1	1	1	2	3	1	2	1	2	1

1- Slightly 2 – Supportive 3 - Highly related

PO PROCESS ESTABILSHMENT



CURRICULUM DEVELOPMENT

The Architecture curriculum is drawn to define the role of Architects to meet the global challenges and equip them in designing and developing a project and to provide sustainable solutions for PRACTICAL problems of society. In addition to their technical competencies, students must possess engagement skills, sustained learning and adapting, leadership, teamwork with good command in the communication skills.

The faculty members have been allotted for developing the courses and its outcomes as given below. They in turn conducted frequent discussions with each other and with students in drafting the course content.

The curriculum development is ensured that students receive integrated, coherent learning experiences that contribute towards their personal, academic and professional learning and development.

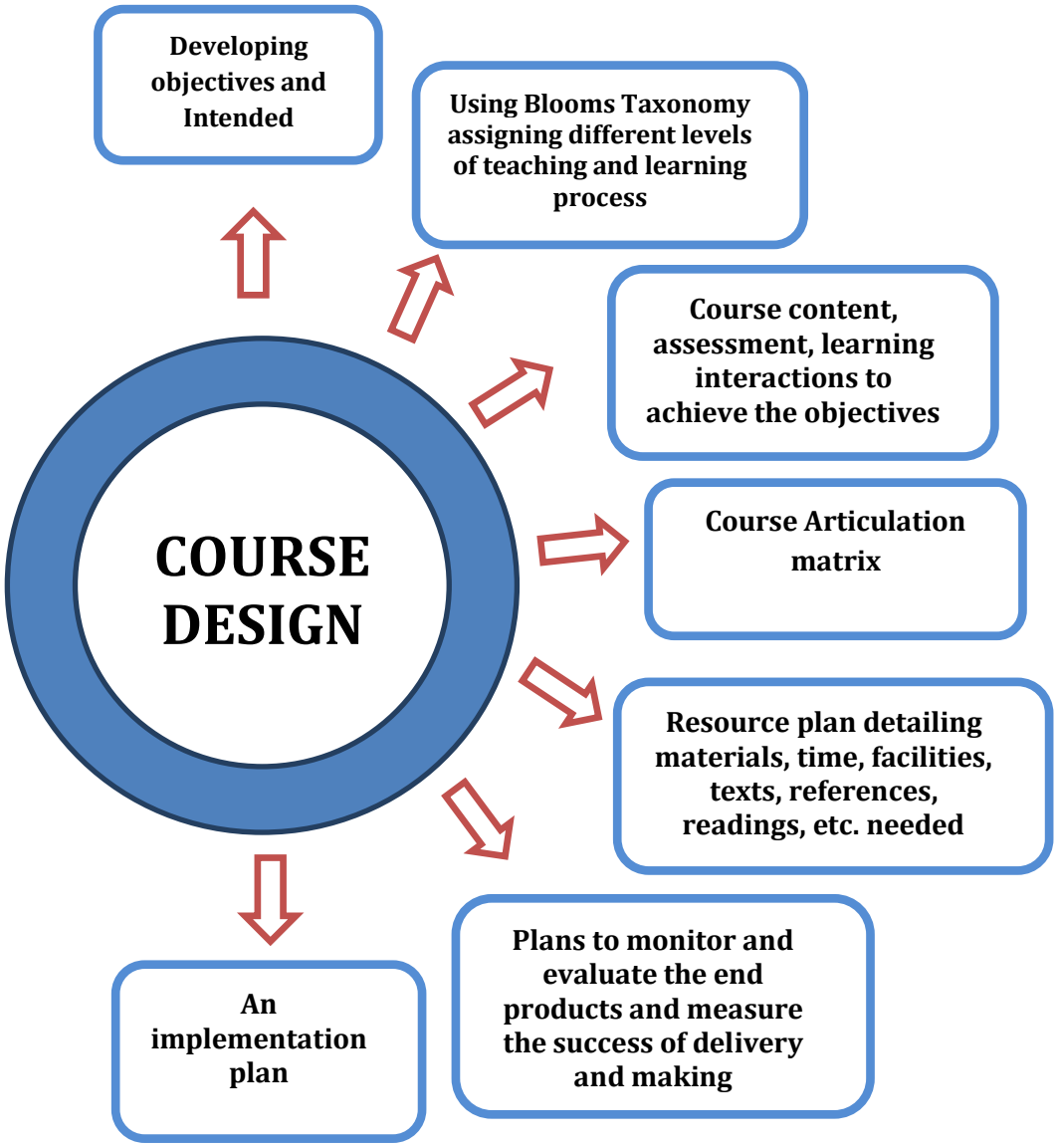
Courses and topics were designed and developed within a framework which comprises a specified curriculum, specified assessment arrangements, and clearly identified educational aims and learning outcomes.

Faculty members assigned for course development

S.No	Course Name	Staff In charge
1.	Emerging Practices in Housing	Ar.K.Jasmine Vidhya
2.	Appropriate Materials and Technology for Sustainable Architecture	Ar.S.Subramanian
3.	Advanced Studies in Regional and Vernacular Architecture	Prof. Joseph N Fernando
4.	Services in High rise Buildings	Ar.N.Rameshbabu
5.	Architectural Design Studio –I (Housing)	Ar.K.Jasmine Vidhya
6.	Contemporary Theories and Trends	Prof. Joseph N Fernando
7.	Research Methodology	Dr.C.V.Subramanian
8.	Digital Design Process in Architecture	Ar. E .Uma mouthiga.
9.	Building Management Systems	Ar.N.Rameshbabu
10.	Architectural Design studio II –(large scale projects such as campus, airport)	Ar.J.Mullai
11.	Sustainable Landscape Design	Ar.N.Janaki
12.	Heritage Conservation Planning	Ar.G.Rajaa
13.	Urban Design Practices	Prof. Joseph N Fernando
14.	Dissertation	Ar.K.Jasmine Vidhya
15.	Architectural Design Studio –III (Urban Planning& Design Studio -Urban Design, Conservation, Environmental Planning, Landscaping,)	Ar.K.Edhaya
16.	Thesis	Ar.N.Rameshbabu
17.	Advanced Materials and Construction Technology	Ar.S.Subramanian
18.	Architecture and Critical Theory	Prof. Joseph N Fernando
19.	Environment and Behavior	Dr.C.V.Subramanian
20.	Energy Simulation and Modeling	Ar.B.Sudha

COURSE DEVELOPMENT

The following elements were developed by the faculty involved after interaction and discussions.



In aligning programme outcome and graduate attributes, course offered to the degree programme are finalized based on the standard template finalized by the university.

Distribution of Subjects to be included as per CoA, UGC and NAAC

S.No	Category	Symbol
1.	Professional Core Courses	PC
2.	Building Science and Applied Engineering	BS & AE
3.	Professional Electives	PE
4.	Open Electives	OE
5.	Professional Ability Enhancement Compulsory Courses	PAECC
6.	Skill Enhancement Courses	SEC
7.	Mandatory Courses (UGC Mandatory)	MC
8.	Non-credit Course	ELS
9.	NCC/NSS/YRC/RRC/Sports	

SUMMARY OF CREDITS

Category	I	II	III	IV	As suggested By CoA Model curriculum
PC	**9**	**6**	**9**		**24**
BS & AE	**3**	**3**			**6**
PE		**3**	**3**		**6**
OE					**0**
PAECC	**8**	**8**	**11**	**14**	**41**
SEC		**3**			**3**
MC					
ELS					
Total	**20**	**23**	**23**	**14**	**80**

REGULATIONS – 2019

M. Arch – Curriculum

(Applicable to the students admitted from the Academic year 2019-20)

SEMESTER – I							
Sl.No	**Code No.**	**COURSE TITLE**	**L**	**T**	**P**	**H**	**C**
1.	YAR101	Emerging Practices in Housing	3	0	0	3	3
2.	YAR102	Appropriate Materials and Technology for Sustainable Architecture	3	0	0	3	3
3.	YAR 103	Advanced Studies in Regional and Vernacular Architecture	3	0	0	3	3
4.	YAR104	Services in High rise Buildings	3	0	0	3	3
		STUDIO					
5.	YAR105	Architectural Design Studio –I (Housing)	0	0	16	16	8
		SUB TOTAL	**12**	**0**	**16**	**28**	**20**

SEMESTER – II							
Sl.No.	**Code No.**	**COURSE TITLE**	**L**	**T**	**P**	**H**	**C**
1.	YAR201	Contemporary Theories and Trends	3	0	0	3	3
2.	YAR202	Research Methodology	3	0	0	3	3
3.	YAR203	Elective I	3	0	0	3	3
		THEORY CUM STUDIO					
4.	YAR204	Digital Design Process in Architecture	2	0	2	4	3
5.	YAR205	Building Management Systems	2	0	2	4	3
		STUDIO					
6.	YAR206	Architectural Design studio II –(large scale projects such as campus, airport)	-	-	16	16	8
		SUB TOTAL	**13**	**-**	**20**	**33**	**23**

SEMESTER – III							
Sl. No	**Code No.**	**COURSE TITLE**	**L**	**T**	**P**	**H**	**C**
1.	YAR301	Sustainable Landscape Design	3	0	0	3	3
2.	YAR302	Heritage Conservation Planning	3	0	0	3	3
3.	YAR303	Urban Design Practices	3	0	0	3	3
		THEORY CUM STUDIO					
4.	YAR304	Elective II	2	0	2	4	3
		STUDIO					
5.	YAR305	Dissertation	-	-	6	6	3
6.	YAR306	Architectural Design Studio –III (Urban Planning& Design Studio -Urban Design, Conservation, Environmental Planning, Landscaping,)	-	-	16	16	8
		SUB TOTAL	**11**	**-**	**24**	**35**	**23**

SEMESTER– IV							
Sl.No	**Code No.**	**COURSE TITLE**	**L**	**T**	**P**	**H**	**C**
1.	YAR401	Thesis	-	-	35	35	14
		SUB TOTAL	**-**	**-**	**35**	**35**	**14**

Total no. of credits: 80

List of Electives Elective-I							
Sl. No	**Code No.**	**COURSE TITLE**	**L**	**T**	**P**	**H**	**C**
1.	YAR203 A	Advanced Materials and Construction Technology	3	0	0	3	3
2.	YAR203 B	Architecture and Critical Theory	3	0	0	3	3
		Elective-II					
3.	YAR304A	Environment and Behavior	2	0	2	4	3
4.	YAR304B	Energy Simulation and Modeling	2	0	2	4	3

Note:

L - Lecture **T- Tutorial** **P – Practical** **C-Credit**

YAR101 EMERGING PRACTICES IN HOUSING	3 – 0 – 0 - 3

Course Objectives:

This course will examine the redefinition of contemporary housing within the contexts of multicultural cities due to globalization.

Course Outcome:		Domain	Level
On the successful completion of the course, students will be able to			
CO1	**Understand** the problems in housing from industrial era and solution found to resolve the problems by the contemporary architects	**Cognitive**	**Knowledge**
CO2	**Understand** the latest development, issues and design strategies governing the Housing in National and international level	**Cognitive**	**Understanding**
CO3	**Analyze** the current housing problems and **create** housing standards	**Affective**	**Analyzing and create**
CO4	Getting **knowledge** about housing demands and future of mass hosing.	**Cognitive**	**Understand**
CO5	**Understand** the design standards considering the diverse points of view and **Apply** it in design based on the relevant criteria	**Cognitive Psychomotor**	**Knowledge Application**

SUBCODE	SUB NAME	L	T	P	C
YAR 101	**EMERGING PRACTICES IN HOUSING**	**3**	**0**	**0**	**3**
C:P:A	**2.1:0.3:0.6**	**L**	**T**	**P**	**H**
		3	**0**	**0**	**3**

UNIT – I	INTRODUCTION	10

Introduction to this building type, from its industrial beginnings in London and Paris to New York City's Lower East Side and the 20th-century designs of Le Corbusier, Antonio Sant'Elia, and Mies van der Rohe to mention a few.

Investigation of contemporary life and its influence on space and architecture- Globalization and influences on economy- Alternate housing solutions: Commune, Co Housing, Cooperatives, etc.

UNIT–II	SINGLE FAMILY, MULTI FAMILY HOUSING	10

Review of latest developments in single family and multifamily housing by examining the works of Wiel Arets, Shigeru Ban, Ben van Berkel, Kees Christiaanse, Philippe Gazeau, Frank O. Gehry, Steven Holl, Hans Kollhoff, Jean Nouvel.

UNIT–III	**HIGH DENSITY HOUSING**	**6**
	Issues and concerns- Review of the current state of high density houses - the perspectives and future developments through a study of a few international projects	
UNIT–IV	**NEW FORMS OF LIVING AND HOUSING IN THE DIGITAL ERA**	**10**
.	Hyper Housing- Multi cultural Housing- lab rooms and cyber homes- Network housing- hybrid buildings- individual sheltered residences; residence cities and bio homes for senior citizens.	
UNIT–V	**DEFINITION OF HOUSING IN THE INDIAN CONTEXT**	**9**
	Design strategies in the context of Indian metropolitan cities will be explored through a studio exercise	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	**0**	**0**	**45**

REFERENCES

1. Manuel Gausa and Jaime Salazar; Housing+ Single Family Housing; Birkhauser- Publishers for Architecture; 2005
2. Vincente Guallart; Sociopolis: Project for a city of the Future; ACTAR; 2004
3. Jingmin ZHOU; Urban housing Forms; Architectural Press; 2005
4. Adrienne Schmitz; Multifamily Housing Development Handbook; Urban Land Institute; 2001
5. Carles Bronto; Innovative Public Housing; Gingko Press; 2005

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	3	1	0	3	0	3	0	0	0	1	2	2
CO2	3	3	1	3	1	3	0	0	1	1	2	2
CO3	3	3	1	3	1	3	1	2	1	1	2	2
CO4	3	2	1	3	3	3	1	2	2	1	2	2
CO5	3	2	1	3	3	3	1	2	2	1	2	2
Total	12	11	4	15	8	15	3	6	6	5	10	10
Scaled Value	3	3	1	3	2	3	1	2	2	1	2	2

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 102 – APPROPRIATE TECHNOLOGIES AND SUSTAINABLE CONSTRUCTION	3 – 0 – 0 – 3

Course Objectives:

1. The course is designed to enable the students to learn sustainable construction methods and appropriate technologies to achieve sustainable development.

Course Outcome		Domain	Level
CO1	***Understand*** the various aspects of sustainability	Cognitive	Knowledge
CO2	***Demonstrate*** the knowledge on design principles related to sustainable construction	Cognitive	comprehension
CO3	***Learn*** sustainable construction practices	Cognitive	Knowledge Application
CO4	***Select*** the suitable construction materials and methods to achieve sustainable design.	Affective	Application
CO5	***Analyze*** the given condition and arrive a appropriate sustainable construction solution with a case study report.	Affective	Application

SUBCODE	SUB NAME	L	T	P	C
YAR 102	APPROPRIATE TECHNOLOGIES AND SUSTAINABLE CONSTRUCTION	3	0	0	3
C:P:A	1.8:0.0:1.2	L	T	P	H
		3	0	0	3
UNIT – I	INTRODUCTION				8
	Architecture and the survival of the planet- Assessing patterns of consumption and their alternatives- Various definitions of sustainability;. sustainability aspects of habitat design; sustainable buildings: principles, approaches and characteristics; Natural building movement –codes and regulations-LEED, GRIHA, etc.,				
UNIT – II	SUSTAINABLE DESIGN PRINCIPLES				15
	Principle 1: Conserving energy; Principle 2: Working with Climate; Principle 3: minimizing new resources; Principle 4: respect for users; Principle 5: respect for site; Principle 6: holism- Illustrated with examples				
UNIT – III	SUSTAINABLE CONSTRUCTION PRACTICES				4
	Design issues relating to sustainable development with respect to site and ecology, community and culture, health and well being Design issues relating to sustainable development with respect to materials, energy, and water				

UNIT – IV	**SYSTEMS MATERIALS AND APPLICATIONS**	**10**
	Building technologies, traditional vs. modern; materials ; Adobe- Cob- Rammed Earth- Modular contained earth- light clay- Straw bale- bamboo-earthen finishes, etc vs. modern materials like Fly ash bricks, hollow bricks, Aerated concrete blocks, reinforced polystyrene walls, Foam concrete; their sustainability; adaptability to climate; engineering considerations, and construction methods; Waste as a resource; Portable architecture, Applications through specific case studies	
UNIT – V	**CASE STUDIES FROM THE CONTEMPORARY SCENARIO**	**8**
	Ranging from small dwellings to large commercial buildings, drawn from a range of countries to demonstrate best sustainable design	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

TEXT

1. Sustainable Building design manual vol 1and 2 by TERI

REFERENCES

1. Vale Brenda and Robert; Green Architecture: Design for a sustainable future; Thames and Hudson;1996
2. Lynne Elizabeth and Cassandra Adams; Alternative Construction: Contemporary Natural Building Methods
3. Paola Sassi: Strategies for sustainable architecture by Taylor & Francis 2006
4. Kuppusami ayengar : sustainable architecture Design an overview: Routledge 2015
5. Portable Architecture- and unpredictable surroundings; Page One Publishing Pvt. Ltd.; 2005
6. Steve Goodhew: Sustainable construction processes- a resource text ; wiley Blackwell 2016

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	1	1	0	1	1	1	1	3	2	1	3	3
CO2	2	2	2	2	2	1	1	3	2	1	3	3
CO3	2	2	2	2	2	1	1	3	3	2	2	2
CO4	2	2	1	1	3	1	1	3	2	1	3	3
CO5	1	1	1	1	3	1	1	3	2	1	3	3
Total	8	8	6	7	11	5	5	15	11	6	14	14
Scaled Value	2	2	2	2	3	1	1	3	3	2	3	3

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR103 – ADVANCED STUDIES IN REGIONAL AND VERNACULAR ARCHITECTURE

3 – 0 – 0 – 3

Course Objectives:

The course is designed to study the various vernacular architecture forms in the various regions.

Course Outcome		Domain	Level
CO1	***Exposed*** to an overview of the various approaches and concepts to the study of vernacular architecture.	Cognitive	Understand
CO2	***Understand*** the study of Indian vernacular architecture as a process and also to provide an overview of various approaches and concepts	Cognitive	Knowledge
CO3	***Aware*** of Indian vernacular architecture as a process and not a product	Cognitive	Comprehension
CO4	***Analyze*** a settlement and understand its vernacular approach	Affective	Application
CO5	***Discuss*** the suitability of vernacular concepts in present concept	Affective	Application

SUBCODE	SUB NAME	L	T	P	C
YAR103	**ADVANCED STUDIES IN REGIONAL AND VERNACULAR ARCHITECTURE**	**3**	**0**	**0**	**3**
C:P:A	**1.8:0:1.2**	**L**	**T**	**P**	**H**
		3	**0**	**0**	**3**
UNIT – I	**INTRODUCTION**				**5**
	Brief introduction to vernacular architecture in global context – concepts and approaches in the study of vernacular architecture.				
UNIT – II	**VERNACULAR ARCHITECTURE IN INDIAN CONTEXT**				**8**
	The different vernacular architectural styles in India with examples. Northern region – Kashmir Architecture , Eastern region – Bengal Architecture, Western Region – Gujarat and kutch architecture, Rajasthan havelis, Southern Region – Kerala and Chettinadu Architecture.				
UNIT – III	**CONCEPTS AND PRINCIPLES IN VERNACULAR STYLE**				**12**
	Study and understand the concepts and principles of Indian vernacular styles in terms of climate response, materials and indigenous construction techniques followed.				
UNIT – IV	**CASE STUDY OF AN IDENTIFIED SETTLEMENT**				**15**
	Detailed study of a traditional settlement and analyzing in terms of the above discussed concepts and principles.				

UNIT – V	SUITABILITY IN PRESENT CONTEXT	5
	Discussion on the Suitability of the vernacular concepts in present context with examples.	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

REFERENCES

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.
2. Amos Rappoport, House, Form & Culture, Prentice Hall Inc. 1969.
3. V.S.Praman, Havali - Wooden Houses & Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.
4. Kullrishan Jain & Minakshi Jain - Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad, 1992.
5. G.H.R. Tillotsum - The tradition of Indian Architecture Continuity, Controversy - Change since 1850, Oxford University Press, Delhi, 1989.
6. Carmen Kagal, VISTARA - The Architecture of India, Pub: The Festival of India, 1986.

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	1	0	2	1	0	0	1	2	2	1	0
CO2	1	1	0	2	1	0	0	1	2	2	1	0
CO3	1	1	0	2	1	0	0	1	2	2	2	1
CO4	1	1	0	2	1	0	0	1	2	2	2	1
CO5	1	1	1	2	1	1	0	1	2	2	2	1
Total	6	5	1	10	5	1	0	5	10	10	8	3
Scaled Value	2	1	1	2	1	1	0	1	2	2	2	1

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR104 – SERVICES IN HIGH RISE BUILDINGS 3 – 0 – 0 – 3

Course Objectives:

The course is designed to enable the students to learn

Course Outcome		Domain	Level
CO1	***Outline*** the issues in high rise buildings and introduction to Automation.	Cognitive	Understanding
CO2	***Illustrate*** the concepts of water supply and waste distribution in high rise buildings	Cognitive	Understanding
CO3	***Summarize*** the various HVAC, Electrical and mechanical systems in high rise buildings.	Cognitive	Knowledge
CO4	***Categorize*** the types of vertical transportation systems and its application in high rise buildings	Affective	Analyzing
CO5	***Summarize*** the various safety systems in high rise buildings	Cognitive	Understanding

SUBCODE	SUB NAME	L	T	P	C
YAR104	SERVICES IN HIGH RISE BUILDINGS	3	0	0	3
C:P:A =	2.4:0:0.6	L	T	P	H
		3	0	0	3
UNIT – I	**INTRODUCTION**				**5**
	General introduction to Services in both horizontal spread and vertical rise layouts- Standards of high Rise buildings- Aspects and Integration of services- Relative costs- Concepts of Intelligence Architecture and Building Automation				
UNIT – II	**WATER SUPPLY AND WASTE DISPOSAL**				**10**
	Water storage and distribution systems in high rise buildings - Planning and Design- Selection of pumps, Pressure release valves (PRV) and Boosters, Hydraulics in high rise plumbing – water behaviour in stack, ventilation. Sovent system –aerator and deaerator, water management systems – concept of sustainable urban drainage systems (SUDS) – Sewage collection systems, recycling of water and Rain water harvesting Solid waste disposal – Core configuration in high rise buildings, Recycling concepts, management and integration with urban level.				

UNIT – III	**HVAC, ELECTRICAL AND MECHANICAL SYSTEMS**	**10**
	HVAC and Mechanical Ventilation systems- outlining of Design process, Building organization and Decision making in high rise buildings HVAC –Types of systems - Direct refrigerant systems, all Air systems, air and Water systems, all Water systems, District heating and cooling systems, Mechanical ventilation systems. Electrical Management - load and distribution- Planning and Design for energy efficiency- Automation.	
UNIT – IV	**VERTICAL TRANSPORTATION SYSTEMS**	**10**
	Types of elevators- based on operative mechanism and functions, MRL, Over speed governors, Limitations and Challenges in high rise elevator systems. Twin lifts, Destination dispatch system, Intelligence in elevators, Design Factors in planning high rise elevator systems. Planning of Escalators – components and safety principles, integration with automation.	
UNIT – V	**SAFETY SYSTEMS**	**10**
	Safety – Lightening protection factors, techniques in high rise buildings. Passive fire safety –Fire lift concepts, compartmentalization, Smoke management - Staircase pressurization, Evacuation management – zonal evacuation, Means of egress, Refuge spaces. Active fire safety – detection and suppression systems, mechanical systems –pumps, hydrants, control panels and automation - Planning and Design, Fire fighting systems management – Control panel linkage with Fire detection, alarm systems and communication.	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	**0**	**0**	**45**

TEXT

1. Mechanical and Electrical Equipment for buildings, Benjamin Stein, John.S.Reynolds, Walter.T.Grondzik, Alison.G.Kwok, 10th edition, John Wiley and Sons, London, 2006.

REFERENCES

1. A.F.C. Sherratt, Airconditioning and Energy Conservation, The Architectural Press, London, 1980.
2. National Building Code.
3. Handbook for Building Engineers in Metric systems, NBC, New Delhi, 1968.
4. . Philips Lighting in Architectural Design, McGraw-Hill, New York, 1964.
5. William H.Severns and Julian R.Fellows, Air-conditioning and Refrigeration, John Wiley and Sons, London, 1988.

Mapping of COs with Pos												
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PSO1**	**PSO2**
CO-1					3							
CO-2					3		2	2				
CO-3					3		2				3	
CO-4					3		2				1	
CO-5					3		2					
Total					15		8	2			4	
Scaled to 0,1,2,3 scale					**3**		**2**	**1**			**1**	

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

YAR 105 – ARCHITECTURAL DESIGN STUDIO – I (Housing) **0 – 0 –16 – 8**

Course Objectives:

1. To identify and address the issues of Housing in both urban and rural context.
2. To inculcate the importance of services integration and construction in spatial planning in the context of design of spread or vertical rise housing projects buildings.

Course Outcome		Domain	Level
CO1	**Understand** the impact of globalization, real estate development, legal issues involved, policy and infrastructure development	Cognitive	Understand
CO2	Critical **Analysis** of housing standards	Affective	Evaluate
CO3	***Integrating*** of standards of various housing typologies ***Produce*** designs to resolve the housing problems	Psychomotor	Apply
CO4	**Design** sustainable urban built environment to provide healthful environments and reduce the environmental impacts.	Psychomotor	Apply

SUBCODE	**SUB NAME**	**L**	**T**	**P**	**C**
YAR105	**ARCHITECTURAL DESIGN STUDIO – I** (Housing)	**0**	**0**	**16**	**8**
C:P:A =	**2:2:4**	**L**	**T**	**P**	**H**
		0	**0**	**16**	**16**

UNIT – I	**DESIGN STUDIO**	**240**
	To identify and address the issues of Housing in both urban and rural context through precedent studies; literature review; case studies, etc,. The objective also includes the study of the impact of globalization, real estate development, legal issues involved, policy and infrastructure development The design problem shall include the horizontal spread or vertical rise housing projects including by critically analyzing the standards, services, legal issues involved, the principles and concepts in the present trend and the current technological development.	

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
0	**0**	**240**	**240**

TEXT

1. Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. - 2002
2. De Chiara Callender, Time Saver Standard for Building Types, McGraw-Hills Co., 1973.

REFERENCES

1. National Building Code and Bureau of Indian standard publications

Mapping of Cos with Pos:												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	3	1	1	0	1	2	2	2	2	2	2
CO2	2	3	2	1	1	0	2	2	2	3	2	2
CO3	2	3	3	1	1	0	2	2	2	3	2	2
CO4	2	3	3	1	2	0	2	3	2	3	2	2
Total	8	12	9	4	4	1	8	9	8	11	8	8
Scaled Value	2	3	2	1	1	1	2	2	2	3	2	2

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 201 – CONTEMPORARY THEORIES AND TRENDS 3 –0 – 0 – 3

Course Objectives:

- To introduce the context for the critiques of modern architecture and the evolution of new approaches.
- To study in detail the different post modern directions in architecture
- To understand the history of architecture in India from the end of colonial rule to the contemporary period- architectural debates associated with nation, establishment of modern architecture and subsequent quest for Indians.

Course Outcome		Domain	Level
CO1	**Understand** the Architectural theories and principles in new trend in Architecture	Cognitive	Knowledge
CO2	**Understand** the Structural expressionism in High Tech Architecture.	Cognitive	Knowledge
CO3	**Understand** the Alternate practices in new Trends	Cognitive	Knowledge
CO4	**Understand** the post modernism in Regional context	Cognitive	Knowledge
CO5	**Understand** the impact of sustainability at global level	Cognitive	Knowledge

SUBCODE	SUB NAME	L	T	P	C
YAR201	CONTEMPORARY THEORIES AND TRENDS	3	0	0	3
C:P:A	3.0:0.0:0	L	T	P	H
		3	0	0	3
UNIT – I	CRITIQUE OF POST MODERNISM				10
	Architectural theory, principles and analysis in new trend in Architecture				
UNIT – II	HIGH TECH ARCHITECTURE				10
	High tech Architecture –Structural expressionism in late modernism, Definition and Projects of High Tech Architects Renzo Piono, Richard Rogers, Norman Foster, Sandiago Calatrova,				
UNIT – III	ALTERNATE PRACTICES IN CONTEMPORARY ARCHITECTURE				10
	New trends in Architecture Practices Works of Peter Zumtar- Minimalistic Architecture, Conceptual Architecture – Toyo Ito, Adaptive Reuse : Shigro ben- Paper Architecture, Pablo Errazuriz –Container Architecture				

UNIT – IV	**REGIONALISM IN SOUTH EAST ASIA**	**8**
	Impact in post modernism in Regional context, works of Kengo kuma, Sou fugimoto Kazuyo sejimo, Rafiq Azam, Hafeez contractor, Christopher Benninger, Raj Rewal, Rahul Mehrotra	
UNIT – V	**THE IMPACT OF SUSTAINABILITY AT THE GLOBAL LEVEL**	**7**
	Principles and works in (i) Solar Architecture (Ex. William Lumpkins – Balcomb house) (ii) Post Modern green architecture (1980 and after) (iii)Eco-Technology : Ex. Projects of Kenyang, and Norman Foster (iv) Green urbanism : Ex. Foster and postrnan Abu Dhabi project	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	**0**	**0**	**45**

TEXT

1.A Critical History of Contempory Architecture from 1960 – 2010, Edited by ELIE G.Haddad & David Rifkind. Pub: Ashgate Publishing Ltd., England

REFERENCES

1. Paul Allan Johnson. Theory of Architecture, Routledge 2000.
2. Kenneth Frampton. Modern Architecture since 1900.
3. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000.
4. Bryan Lauson- How Designers Think, Architectural Press Ltd., London 1980.
5. Tom Health- Method in Architecture, John Wiley & Sons, New York, 1984.
6. Christopher Alexander, Pattern Language, Oxford University Press.

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	3	1	1	0	3	0	1	1	2	1	1
CO2	2	3	2	1	1	3	0	1	2	2	1	1
CO3	2	3	3	1	1	3	0	1	2	2	1	1
CO4	2	3	3	1	2	3	0	1	1	2	1	1
CO5	2	2	2	2	2	3	2	1	2	2	1	1
Total	10	14	11	6	6	15	2	5	6	10	5	5
Scaled Value	2	3	3	2	2	3	1	1	2	2	1	1

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR202– RESEARCH METHODOLOGY 3 – 0 – 0 – 3

Course Objectives:

1.The course is designed to enable the students to learn the research study, data collection, analysis, research writing and presentation for research.

Course Outcome		Domain	Level
CO1	***Understand*** the concepts & Issues in Research through samples	Cognitive	Knowledge
CO2	***Understand the research process*** through Data collection, analysis and frame of questioner.	Cognitive	Knowledge
CO3	**Understand** the data collection from secondary data using Digital and Manual documentation	Affective	Knowledge Application
CO4	**Demonstrate** the research writing from the samples	Affective	Application
CO5	**Demonstrate** the case study paper writing and presentation	Affective	Application

SUBCODE	SUB NAME	L	P	S	C
YAR202	**RESEARCH METHODOLOGY**	**3**	**0**	**0**	**3**
C:P:A =	**1.2:0.0:1.8**	**L**	**T**	**P**	**H**
		3	**0**	**0**	**3**
UNIT – I	**INTRODUCTION**				**9**
	Basic research issues and concepts- orientation to research process- types of research: historical, qualitative, co-relational, experimental, simulation and modeling, logical argumentation, case study and mixed methods- illustration using research samples.				
UNIT – II	**RESEARCH PROCESS**				**9**
	Elements of Research process: finding a topic- writing an introduction- stating a purpose of study- identifying key research questions and hypotheses- reviewing literature- using theory- defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis- illustration using research samples.				
UNIT – III	**RESEARCHING AND DATA COLLECTION**				**9**
	Library and archives- Internet: New information and the role of internet; finding and evaluating sources- misuse- test for reliability- ethics Methods of data collection- From primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling- Problems encountered in collecting data from secondary sources				

UNIT – IV	**REPORT WRITING**	**6**
	Research writing in general- Components: referencing- writing the bibliography- developing the outline- presentation; book review writing etc	
UNIT – V	**CASE STUDIES**	**12**
	Case studies illustrating how good research can be used from project inception to completion- review of research publications	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	**0**	**0**	**45**

TEXT

1. 1 Linda Groat and David Wang; Architectural Research Methods;15
2. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research,

REFERENCES

3. 2nd Edition; Chicago guides to writing, editing and publishing;
4. Iain Borden and Kaaterina Ruedi; The Dissertation: An Architecture Student's
5. Handbook; Architectural Press; 2000
6. Ranjith Kumar; Research Mehodology- A step by step guide for beginners; Sage
7. Publications; 2005
8. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods
9. Approaches; Sage Publications; 2002
10. Amos Rapoport; House, form and culture;
11. Christopher Alexander; Pattern Language
12. Diagram Diaries; Peter Eisenman;

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	1	3	1	0	1	3	0	0	0	3	0	0
CO2	0	3	1	0	0	3	0	0	0	3	0	0
CO3	0	3	1	0	0	3	0	0	0	3	0	0
CO4	0	3	1	0	1	3	0	0	0	3	0	0
CO5	0	3	1	0	1	3	0	0	0	3	0	0
Total	1	15	5	0	3	15	0	0	0	15	0	0
Scaled Value	1	3	1	0	1	3	0	0	0	3	0	0

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR204 – DIGITAL DESIGN PROCESS IN ARCHITECTURE 2 – 0 – 2 - 3

Course Objectives:

To understand the theories and process of contemporary Architecture and the ways of creating Digital outputs using computer applications and usage.

Course Outcome		Domain	Level
CO1	***Understand*** the various concepts and theories of digital architecture	Cognitive	Knowledge
CO2	***Understand*** ideas of contemporary digital architects and their design process	Cognitive	Comprehension
CO3	Able to apply the theories and ***Design*** using digital media	Psychomotor	Create
CO4	***Gain knowledge*** on digital design software and scripting methodologies	Cognitive	Application

SUBCODE	SUB NAME	L	T	P	C
YAR204	DIGITAL DESIGN PROCESS IN ARCHITECTURE	2	0	2	3
C:P:A	2.25:0.75:0	L	T	P	H
		2	0	2	4
UNIT – I	INTRODUCTION				06
	Contemporary theories in Digital Architecture Evolution of Digital Architecture – Driving forces behind Digital Architecture – Digital Output and its process.				
UNIT – II	SOLIDS, SURFACES & VIRTUAL MEDIA				06
	Works of Zvihecker – Shape Grammar – Hyper Surfaces – Interactive Architecture – Virtual Architecture. Design Assignment based on the above concepts				
UNIT – III	GENETIC ALGORITHM				15
	Fractal theory – Voronoi patterns – Cellular Automata-Linden Mayor systems – Basic Concepts and its application. Design Assignment based on any of the above concepts				
UNIT – IV	IDEAS AND WORKS OF CONTEMPORARY ARCHITECTS				9
	Greg Lynn, Reiser + Umemotto , Lars spuybroek/NOX Architects, UN Studio, Diller Scofidio, Dominique Perrault, Aranda Lasch, Herzog and De Meuron, Neil Denari, Michael Hasmeyer.				
UNIT – V	BIOMIMICS				9
	Concept of Biomimics - Biomimicry and its application – Project based on Biomimics – Evolution of Biomimics in Architecture – Design Assignment based on Biomimics (either Digital or Manual) Lab Classes in Scripting and Rhino + Grasshopper				

LECTURE	TUTORIAL	PRACTICAL	TOTAL
60	0	0	60

REFERENCES

1. Animate from – Greg Lyres
2. Chaos making of new science – James Gleict
3. The self made taps by: Patters formed in Nahre - Philip Ball.
4. Finding forms :Tourrds an Architecture of the Minimal – Frei otto and Bodo Rasch.
5. Godel, Escher and Bach : An external Golden Baid – Douglar R.Hoftstader.
6. Emergence Staner Johnson
7. The Autopoiesis of Architecture – Patrick Schumacher

Mapping of COs with Pos

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	3	-	1	2	-	-	-	-	-	-
CO-2	1	-	2	-	-	3	-	-	-	-	-	-
CO-3	-	-	1	-	-	3	-	-	-	-	-	-
CO-4	-	-	3	-	-	1	-	-	-	-	-	-
Total	1		9	-	1	9	-	-	-	-	-	-
Scaled to 0,1,2,3 scale	**1**		**2**		**1**	**2**						

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

YAR205 – BUILDING MANAGEMENT SYSTEM 2 – 0 – 2 – 3

Course Objectives:

1. **The course is designed to enable the students to learn**

Course Outcome		Domain	Level
CO1	***Illustrate*** the basics of building management systems, scope and its importance.	Cognitive	Understanding
CO2	***Outline*** the basics of Digital Controllers.	Cognitive	Understanding
CO3	***Categorize*** all the aspects of BMS and its role in advanced building services.	Affective	Analyzing
CO4	***Outline*** the security aspects of BMS and its application in buildings	Affective	Evaluating
CO5	***Summarize*** the various technological advancements, Intelligent managements at urban level.	Cognitive	Understanding

SUBCODE	SUB NAME	L	T	P	C
YAR205	**BUILDING MANAGEMENT SYSTEMS**	**2**	**0**	**2**	**3**
C:P:A =	**2.6:0:0.4**	**L**	**T**	**P**	**H**
		2	**0**	**2**	**4**
UNIT – I	**INTRODUCTION**				**05**
	Introduction to Basics of Building Management Systems (BMS), Integrated Building Management Systems (IBMS) and Building Automation System (BAS). Scope and Importance of Building Management Systems. Introduction to Facilities Management (FM) Building Information Modeling (BIM), Management Information systems (MIS). Internet of things (IoT) and Big data. Introduction to Maintenance systems - Predictive Maintenance (PdM) , Corrective Maintenance and preventive maintenance.				
UNIT – II	**DIGITAL CONTROLLERS**				**15**
	Data forms, Micro computers, Memory, processors, Input unit and output unit- Analog and Digital. Digital control systems (DCS) - Direct digital control, SCADA, PLC ,Terminal controls and PID Sensors and Actuators-Types and functions -Pneumatic control systems, electric control systems.. Communication Protocols - Occupancy, Open protocols Vs Proprietary systems, BACnet, LonWorks, Modbus, PROFIBUS and EIB/KNX, XML, SOAP. Fully Integrated system Vs Standalone operations. Internet Protocols –WAN, TCP,UDP,IP, LAN,WAN, convergence networks and total integration based on IP.				

UNIT – III	**SERVICE ASPECTS OF BUILDING MANAGEMENT SYSTEM**	**15**
	HVAC management –Central plant control and optimization, Sequencing of Chillers, Cooling towers, Control of CAV, VAV, AHU, ventilation systems. Lighting management –Components of lighting control systems, standalone lighting control protocols, Digital Addressable Lighting Interface (DALI) Electrical systems management, Plumbing- Integration of services – water pump monitoring & control. Energy Management and Control Systems (EMCS), Building Energy Management systems (BEMS), BMS towards energy efficiency, sustainability and green practices.	
UNIT – IV	**SECURITY SYSTEMS AND INTEGRATION OF SYSTEMS**	**15**
	Security systems- CCTV systems, Access control and Alarm systems -Intruder Alarm, Perimeter protection systems. Integration of Systems - IBMS, Safety and Security systems management, innovative integration concepts.	
UNIT – V	**INTELLIGENT MANAGEMENT SYSTEMS AT URBAN LEVEL**	**10**
	BMS Future cities, Intelligent/Smart cities, Smart grids, Demand driven distribution, District cooling and Heating, Wireless Building Technology, Intelligent wireless street lighting system, Intelligent Traffic Management systems, Intelligent guidance systems.	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
30	**0**	**30**	**60**

TEXT

1. 1. Smart Buildings Systems for Architects,Owners and Builders -By James M Sinopoli.

REFERENCES

1. Intelligent Buildings and Building Automation - By Shengwei Wang.
2. Introduction to Building Management - By D. Coles, G. Bailey, R E Calvert.
3. Building Energy Management Systems: Application to Low-Energy HVAC and Natural Ventilation Control- By G. J. Levermore.
4. smart grid home- By Quentin Wells

Mapping of COs with Pos												
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PSO1**	**PSO2**
CO-1					3						1	
CO-2					3						1	
CO-3					3						1	
CO-4					3							
CO-5					3						2	
Total					15						5	
Scaled to 0,1,2,3 scale					**3**						**1**	

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

YAR 206 – ARCHITECTURAL DESIGN STUDIO – II **0 – 0 –16 – 8**

Course Objectives:

1. To understand the standards of designing large scale projects like airport, urban recreation centers etc
2. To inculcate the importance of services integration and construction in spatial planning in the context of design of spread or vertical rise building projects.

Course Outcome		Domain	Level
CO1	Understand the optimal designing, balancing the basics of architectural design with emerging new technical and planning parameters.	Cognitive	Understand
CO2	Critical Analysis of relevant standards and create buildings as positive additions to the city	Affective	Evaluate
CO3	**Understand** the emerging technical areas and **Application** of building management system	Cognitive Psychomotor	Apply
CO4	**Design** sustainable urban built environment to provide healthful environments and reduce the environmental impacts.	Psychomotor	Apply

SUBCODE	**SUB NAME**	**L**	**T**	**P**	**C**
YAR206	**ARCHITECTURAL DESIGN STUDIO – II**	**0**	**0**	**16**	**8**
C:P:A =	**3.0:2.0:3.0**	**L**	**T**	**P**	**H**
		0	**0**	**16**	**16**
UNIT – I	**DESIGN STUDIO**				**240**
	Large scale projects such as campus design, airport, and civic centre, urban recreational centers, mixed use high rise development. Application of building management system, services details are to be incorporated in the detailed design drawings.				

LECTURE	TUTORIAL	PRACTICAL	TOTAL
0	**0**	**240**	**240**

TEXT

1.Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. - 2002

2. De Chiara Callender, Time Saver Standard for Building Types, McGraw-Hills Co., 1973.

REFERENCES

1. National Building Code and Bureau of Indian standard publications

Mapping of Cos with Pos:												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	3	1	1	0	1	2	2	2	2	2	2
CO2	2	3	2	1	1	0	2	2	2	3	2	2
CO3	2	3	3	1	1	0	2	2	2	3	2	2
CO4	2	3	3	1	2	0	2	3	2	3	2	2
Total	8	12	9	4	4	1	8	9	8	11	8	8
Scaled Value	2	3	2	1	1	1	2	2	2	3	2	2

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 301 – SUSTAINABLE URBAN LANDSCAPE 3 – 0 – 0 – 3

Course Objectives:

To understand the role of ecosystem and evolution of landscape design towards sustainability.

Course Outcome		Domain	Level
CO1	***Understand*** the ecosystem and its role in landscape.	Cognitive	Knowledge
CO2	***Understand*** and ***Analyze*** the characteristics of plants and its application in design.	Cognitive Affective	Knowledge comprehensive application
CO3	***Analyze*** the culture and history of landscape and their interpretation.	Affective	Knowledge Application
CO4	***Understand*** and ***Analyze*** the impact of urbanization in landscape	Cognitive Affective	Knowledge Application

SUBCODE	SUB NAME	L	T	P	C
YAR301	**SUSTAINABLE URBAN LANDSCAPE**	**3**	**0**	**0**	**3**
C:P:A =	**1.5:0:1.5**	**L**	**T**	**P**	**H**
		3	**0**	**0**	**3**
UNIT – I	**ECOLOGY AND LANDSCAPE**				**6**
	Concept of Ecosystem: General Structure and Function (Ecological Terms) - Energy flow, Primary & Secondary Production – Types of Biogeochemical cycles; Carbon cycle – carbon emission, Global water cycles, nitrogen cycle bioaccumulation and biomagnifications and – Analysis and evaluation. Concept of ecosystem services.- Types of Ecosystems Environmental Impact Assessment (EIA) and the Environmental Impact Statement: Theory and Practice. Illustrative examples from India to demonstrate the degree of effectiveness. The role of Environmental Legislation and the Ministry of Environment and Forests Evolution of landscape planning based on ecosystem – concepts and projects of McHarg, Carl Steinite, Warren Manning, Augus Hills, Phil Lewis – Izank Zonneveld, Ervin Zube - landscape planning models.				
UNIT – II	**PLANTS AND DESIGN**				**10**
	Planting as a design element for structuring the landscape. Structural and visual characteristics of plants. Principles of visual composition. Plant association. Sustainable design –The role of plant material in environmental improvement, (e.g. soil conservation, modification of microclimate). Sustainable landscape maintenance and management, Sustainable planning and city form. Sustainable urban landscape, landscape sustainability at the national and regional level(LEEDS, BREAM) Ecological and Botanical considerations in landscape design. Plant data sheet. Planting for wildlife, land rehabilitation, the role of planting in water shed management. Design concepts and its construction methods of terrace garden, vertical garden / sky garden. Urban forestry development and management in present scenario.				

UNIT – III	**CULTURAL AND HISTORIC LANDSCAPE**	**10**
	Early traditions and beliefs about landscape and environment in east. Ancient Indian traditions – Vedic, Jainism, Buddhism and later Hindu movements. Symbolic meanings and sacred value of natural landscapes. Transfer of concepts through Buddhism to China –Chinese landscape development – gardens of China – Pre Buddhist Japanese landscapes – impact of China on Japanese gardens – Japanese gardens. Nomadic culture of central Asia – advent of Islam – concept of Paradise as a garden – spread of Islamic traditions to the West and East. Eastern expression of Islam – Samarkhand and Mughal India – Tomb and pleasure garden – Mughal concepts of site planning. Western expression of Islam – Spain Alhambra and General life, Granada.	
UNIT – IV	**CONTEMPORARY LANDSCAPE**	**10**
	Development of the enclosed garden in the Middle ages. Renaissance – Italy, France and England, Romanticism. Industrialization and urbanization – impacts and development of the concept of public open spaces, open space development in new towns, parks movement. Open space development and its urban design and planning context, Early industrial towns and the garden city movement. Open space development and Close conceptual relationship between Town planning, urban design and landscape architecture. Study of selected works of modern landscape architects. Frederick Law Olmsted, Martha Schwartz, Burle Marx, Ravindra Bhan and other pioneers.	
UNIT – V	**CASE STUDY**	**9**
	Analysis and understanding of philosophies of Contemporary landscape architect works in India and abroad.eco tourism projects, landscape in civic spaces, landscape projects at urban level.	

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**0**	**0**	**45**

TEXT

1. Nick Robinson, The Planting Design Hand book, Gower Pub., 1998

REFERENCES

1. Geoffrey and Susan Jellico, The landscape of Man, Thames & Hudson Publication, 1995

2. Robert Holden, New landscape Design, Lawrence king publishing, UK, 2003

3. Penelope Hill, Contemporary history of garden design, Birkhauser publishers, 2004

4. Elizabeth Barlow Rogers, Landscape Design – A Cultural &Architectural History, Hary & Abram inc. publishers, 2001.

5. Phillip Pregill & Nancy Volkman, Landscapes in History, Van Nostrand publishers, 1993.

6. Jonas Lehrman, Earthly Paradise- Garden and courtyard in Islam, Thames and Hudson,1980.

7. G.B.Tobey, A history of American Landscape architecture, American Elsevier Publishing Co.,NY, 1973.

8. Pieluigi Nicholin, Francesco Repishti, Dictionary of today's landscape designers, Skira Editores P.A, 2003.

Mapping of Cos with Pos												
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PSO1**	**PSO2**
CO-1	2	2	-	2	-	-	-	3	-	-	2	1
CO-2	1	1	-	2	2	1	-	1	-	-	1	2
CO-3	-	-	-	2	-	2	-	-	-	-	-	-
CO-4	-	-	-	-	-	2	-	2	-	-	-	2
Total	3	3	-	6	2	5	-	6	-	-	3	5
Scaled to 0,1,2,3 scale	**1**	**1**	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**1**	**1**

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

YAR302 HERITAGE CONSERVATION PLANNING	3 – 0 – 0 – 3

Course Objectives:

- To introduce the idea of conservation as enhancing quality of life, as effective planning strategy, as means of particularization of place and as a way to address issues of memory and identity.
- To give an overview of current status of conservation in India and introduce issues and practices of urban conservation at various levels and scales..

Course Outcome:		Domain	Level
On the successful completion of the course, students will be able to			
CO1	**Understand** the need and benefits of urban conservation.	**Cognitive**	**Understand**
CO2	Sensitize as well as informed to carry forth this **understanding** in the realm of practice/ research.	**Cognitive** **Affective**	**Understand** **Analyze**
CO3	**Understand** the conservation issues and practices of urban conservation at various levels and scales	**Cognitive** **Affective**	**Understand** **Analyze**
CO4	**Understanding** of the architect's responsibility to work conserve heritage aspects and to **improve** the quality of life for urban built environment.	**Psychomotor**	**Application**

SUBCODE	SUB NAME	L	T	P	C
YAR 302	HERITAGE CONSERVATION PLANNING	3	0	0	3
C:P:A	1.5:0.75:0.75	L	T	P	H
		3	0	0	3

UNIT – I	INTRODUCTION TO CONSERVATION	6

Understanding Heritage-Types of Heritage- Heritage conservation : Need, Debate and purpose- Defining Conservation, Preservation and Adaptive reuse- Distinction between Architectural and Urban Conservation- International agencies like ICCROM, UNESCO AND their role in Conservation..

UNIT–II	PROCEDURE FOR CONSERVATION	10

Procedure for listing of structures for conservation. Inventories, inspection, documentation; degree of intervention for prevention of deterioration, prevention of existing state, consolidation of the fabric, restoration, rehabilitation, reproduction, reconstruction, etc. – To study the structural elements of buildings such as beams, arches and domes; walls, piers and columns, foundation etc. - Causes of decay in buildings by natural and human factors, The role of conservation Architect and his team.

UNIT–III	**STRUCTURAL CONSERVATION**	**6**

Listing of monuments – documentation of historic structures – assessing architectural character – historic report – guidelines for preservation, rehabilitation and adaptive re-use of historic structures – seismic retrofit and disabled access /services additions to historic buildings – heritage site management.

UNIT–IV	**LEGISLATION AND INSTITUTIONS**	**10**

. Special legislation – central and state. New Concepts and emerging trends in Conservation. Methods and procedures adopted by agencies such as UNDP, UNESCO, ICOMOS, ICCROM, ASI, INTACH

UNIT–V	**CASE – STUDIES**	**9**

Case studies of Conservation projects in Indian and International context. Appraisal of conservation project in view of the above issues - Success and failure – reasons for it.

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**0**	**0**	**45**

REFERENCES

1. Conservation and Development in Historic Towns and Cities. - Pamela Ward - Orid Press. Ltd.
2. Planning for Conservation - Kain Roger, - St.Martin N-Y 1981
3. Recycling Cities – Cutler and Cutter – Canni, Massachussets, 1976.
4. Character of Towns an Approach to Conservation - Worsket Roy, Architectural Press – London.
5. Guidelines for Conservation by INTACH
6. Conservation of Historic buildings, Sir Bernard M Feilden , - Architectural Press, 1982.
7. Gerald Glenn, "Presentation & Rehabilitation", (1996), ASTM International.
8. A History of Architectural Conservation, (1'st Pub.1999, Reprint 2005) –Elsevier Butterworth, Oxford, UK.

Mapping of Cos with Pos:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	1	3	0	3	1	1	0	1	0	3	1	1
CO2	1	3	0	3	1	1	0	1	0	3	1	1
CO3	1	3	1	3	1	1	0	1	0	3	1	1
CO4	1	3	1	3	1	1	0	1	0	3	1	1
Total	4	15	2	12	4	4	0	4	0	15	4	4
Scaled Value	1	3	1	3	1	1	0	1	0	3	1	1

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR303 –	URBAN DESIGN PRACTICES	3 – 0 – 0 – 3

Course Objectives:

The course is designed to study the various vernacular architecture forms in the various regions.

Course Outcome		Domain	Level
CO1	To ***understand*** the theories and elements of Urban Design	Cognitive	Understand
CO2	To ***understand*** the application of methodologies adopted in urban design.	Cognitive	Knowledge
CO3	***Gaining knowledge*** of application in urban renewal and development through case studies.	Cognitive	Comprehension

SUBCODE	SUB NAME	L	T	P	C
YAR303	URBAN DESIGN PRACTICES	3	0	0	3
C:P:A	3:0:0	L	T	P	H
		3	0	0	3
UNIT – I	**INTRODUCTION TO URBAN DESIGN THEORY**				**10**
	Urban design heritage of western world and of India. The roots of our modern urban design and planning concepts.				
UNIT – II	**ELEMENTS OF URBAN DESIGN**				**9**
	Urban form as determined by the inter-play of masses, voids, building typology, scale. Form of squares, streets, vistas & focal points, image of the city & its components. To make city comprehensible, humane and to give proper scale. To treat urban spaces & masses and applying latest techniques				
UNIT – III	**URBAN DESIGN METHODOLOGIES**				**9**
	To understand the activities of city centre, its traffic pattern along with activity pattern and its organization tackling grey areas in the city, tackling the traffic & parking and creating activity hubs. Methods of urban design surveys, documentation and representation. Cognitive mapping – contemporary and traditional, architectural expressions.				
UNIT – IV	**URBAN RENEWAL & DEVELOPMENT**				**8**
	Historic overview of urban renewal, Development strategies for regeneration of inner city areas, recycling, renewal, etc. Case studies of urban renewal. Adaptive reuse and Brown Field projects in India and abroad. Infrastructure up gradation, economic regeneration, financing and management of urban renewal schemes. Institutional framework for urban conservation and renewal strategies in India				
UNIT – V	**CASE STUDIES**				**9**
	Implementation of urban design schemes. Development control regulations and their application. Legal & administrative aspects, policies, charters, case studies of proposals for urban design projects from India & Abroad.				

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	45	0	0	45

REFERENCES

1. Jon Lang, "Urban design" – a typology pf procedures & products 2005, Glsevier, North America.8
2. Gcoffrey Broadbent, "Emerging concepts in Urban Space Design-(1995), Jayker & ravels.
3. Cliff Monghtin, "UD-Street & Square," (2003), Architectural Press.
4. Jonathan Barnett, "Designing cities without designing building", (1982), Harper & Row, New York.
5. Edmond Bacon, "Design of cities", (1976), revised edition, Viking Penguin Inc; U.S.A.
6. Paul D. Spreiregan AIA, Urban design: the architecture of town and cities, Mc Graw-Hill Book Company, New York.

Mapping of COs with Pos

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	1	1	2	1	1	2	2	1	2	1	1
CO-2	2	1	1	2	1	1	2	2	1	2	1	1
CO-3	2	2	1	2	1	1	2	2	1	2	1	1
Total	6	4	3	6	3	3	6	6	3	6	3	3
Scaled to 0,1,2,3 scale	**2**	**1**	**1**	**2**	**1**	**1**	**2**	**2**	**1**	**2**	**1**	**1**

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

YAR 305–DISSERTATION **0 – 0 –6 – 4**

Course Objectives:

- To expose the students to the various thrust areas in architecture.
- To inculcate the spirit of research in architecture by providing opportunities to read on various issues.
- To expose the students to the finer details of technical writing.
- To provide a platform for a prelude to the 'Design Thesis'.

Course Outcome		**Domain**	**Level**
On the successful completion of the course, students will be able to			
CO1	***Undertake*** the research systematically in a chosen topic.	Cognitive	Knowledge
CO2	***Analyses*** and interpret the information obtained from the study.	Cognitive	Analysis
CO3	***Organize*** the collected information graphically	Cognitive	Application
CO4	**understanding** leading to formation of thesis ideas	Cognitive	Application
CO5	***Develop*** a report of the analyzed information with the logical reasoning and conclusion.	Psychomotor	Evaluate

SUBCODE	**SUB NAME**	**L**	**T**	**P**	**C**
YAR305	**DISSERTATION**	**0**	**0**	**6**	**4**
C:P:A =	**3.2:0.8:0**	**L**	**T**	**P**	**H**
		0	**0**	**6**	**6**
UNIT – I	**TOPICS OF STUDY**				
	The main areas of study and research can include advanced architectural design, including contemporary design processes, urban design, environmental design, conservation and heritage precincts, housing etc. However, the specific thrust should be architectural design of built environment. Preparation of presentation drawings and reports are part of the requirements for submission. **METHOD OF SUBMISSION** The Dissertation shall be submitted in the form of drawings, project report, CDs and reports.				

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
0	**0**	**75**	**75**

Mapping of Cos with Pos:												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	3	1	1	1	1	2	2	2	2	2	2
CO2	2	3	2	1	1	1	2	2	2	3	2	2
CO3	2	3	3	1	1	1	2	2	2	3	2	2
CO4	2	3	3	1	2	1	2	3	2	3	2	2
Total	8	12	9	4	5	4	8	9	8	11	8	8
Scaled Value	2	3	2	1	1	1	2	2	2	3	2	2

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High

YAR 306 – ARCHITECTURAL DESIGN STUDIO – III **0 – 0 –16 – 8**

Course Objectives:

- To understand the standards of designing large scale projects like airport, urban recreation centers etc
- To inculcate the importance of services integration and construction in spatial planning in the context of design of spread or vertical rise building projects.

Course Outcome		Domain	Level
CO1	**Understand** the optimal designing, balancing the basics of architectural design with emerging new technical and planning parameters.	Cognitive	Understand
CO2	Critical **Analysis** of relevant standards and create buildings as positive additions to the city	Affective	Evaluate
CO3	**Understand** the legislation and regulations and apply the same for the inner city development, historic precinct development with the conservation and landscaping details	Cognitive Psychomotor	Apply
CO4	**Design** sustainable urban built environment to provide healthful environments and reduce the environmental impacts.	Psychomotor	Apply

SUBCODE	SUB NAME	L	T	P	C
YAR306	**ARCHITECTURAL DESIGN STUDIO – III**	**0**	**0**	**16**	**8**
C:P:A =	**4:2.66:1.33**	**L**	**T**	**P**	**H**
		0	**0**	**16**	**16**

UNIT – I **DESIGN STUDIO** **240**

Large scale architectural design projects with the scope includes urban design and landscape issues.

Projects such as neighborhood development, redevelopment, urban renewal projects, study documentation, analysis and proposal for inner city development, historic precinct development with the conservation and landscaping details

LECTURE	TUTORIAL	PRACTICAL	TOTAL
0	**0**	**240**	**240**

TEXT

1.Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. - 2002

2. De Chiara Callender, Time Saver Standard for Building Types, McGraw-Hills Co., 1973.

REFERENCES

3. National Building Code and Bureau of Indian standard publications

Mapping of Cos with Pos:												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	3	1	1	0	1	2	2	2	2	2	2
CO2	2	3	2	1	1	0	2	2	2	3	2	2
CO3	2	3	3	1	1	0	2	2	2	3	2	2
CO4	2	3	3	1	2	0	2	3	2	3	2	2
Total	8	12	9	4	4	1	8	9	8	11	8	8
Scaled Value	2	3	2	1	1	1	2	2	2	3	2	2

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

XAR401 – THESIS	0 – 0 – 0 – 14

Course Objectives:

- To integrate the knowledge gained in the previous semesters with respect to issues/ tools of architectural design at a more advanced level.
- To understand and identify issues appropriate to a particular project or area of architecture, through independent thinking as well as to design in a manner appropriate to the project context.

Course Outcome		Domain	Level
On the successful completion of the course, students will be able to			
CO1	***Formulate*** design project independently by identifying the issues at individual building level and urban level.	*Cognitive*	illustrate
CO2	***Determine*** the requirements and other relevant information for chosen projects.	*Cognitive*	*Infer*
CO3	***Plan*** Undertake a study, analyze and identify the issues in chosen area of interest	*Cognitive*	Analyze
CO4	***Integrate*** various contemporary/ advanced issues and techniques into the architectural design process.	*Psychomotor*	Create
CO5	***Identify*** and go in depth into specific and appropriate aspects relating to the discipline of architecture and reflect this in the realm of design.	*Psychomotor*	Create

SUBCODE	SUB NAME	L	T	P	C
XAR1001	**THESIS**	**0**	**0**	**35**	**14**
C:P:A =	**8.4:5.6:0**	**L**	**T**	**P**	**H**
		0	**0**	**35**	**35**
UNIT – I	**TOPICS OF STUDY**				
	THESIS BY DESIGN The design thesis is an independent topic explored and defined by the student in the previous semester. Students continue to take forward the thesis areas, leading to the development of a clear design proposal to be supervised by a faculty team and evaluated by an external jury. The tutorial will assist the students to strengthen the theoretical base of the thesis and analyze relevant successful design demonstrations through case studies. **THESIS BY RESEARCH** The thesis by research is an independent research on a topic defined by a student, to be				

	completed in the form of a comprehensive report under the supervision of an advisor and evaluated by an external jury. The tutorial will assist the student in research methodologies, conducting of surveys, identifying case studies etc. Types of research: descriptive vs Analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical research Introduction to urban research, Research design methodology, Descriptive research, Explanatory research, diagnostic, experimental research.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
0	**0**	**35**	**525**

TEXT

As per requirement of Topic and as suggested by the supervisor of Thesis

REFERENCES

As per requirement of Topic and as suggested by the supervisor of Thesis

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	3	1	1	0	1	2	2	2	2	2	2
CO2	2	3	2	1	1	1	2	2	2	3	2	2
CO3	2	3	3	1	1	1	2	2	2	3	2	2
CO4	2	3	3	1	2	1	2	3	2	3	2	2
CO5	2	2	2	2	2	2	2	2	2	2	2	2
Total	10	14	11	6	6	6	10	11	10	13	10	10
Scaled Value	2	3	3	2	2	2	2	3	2	3	2	2

$1 - 5 \rightarrow 1$, $6 - 10 \rightarrow 2$, $11 - 15 \rightarrow 3$ - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 203-A ADVANCED MATERIALS AND CONSTRUCTION TECHNOLOGY 3 0 0 3

Course Objectives:

1. The course is designed to enable the students to learn advanced materials and construction technology suitable for planning and construction..

Course Outcome		Domain	Level
CO1	***Understand*** the various modern materials and its application	Cognitive	Knowledge
CO2	***Demonstrate*** the knowledge on structural systems in tall buildings and other advanced structures	Cognitive	comprehension
CO3	***Learn*** the techniques of Prefab and precast construction and modular coordination	Cognitive	Knowledge Application
CO4	***Work*** with various safety practices adopted in construction sites	Affective	Knowledge Application
CO5	***Analyze*** the case study examples of a tall building wrt to its structural systems and service cores	Affective	Application

SUBCODE	SUB NAME	L	T	P	C
YAR203A	**ADVANCED MATERIALS AND CONSTRUCTION TECHNOLOGY**	**3**	**0**	**0**	**3**
C:P:A =	**1.8:0.0:1.2**	**L**	**T**	**P**	**H**
		3	**0**	**0**	**3**
UNIT – I	**MODERN MATERIALS**				**6**
	Modern materials in usage like Dry wall applications, sandwiched wall panels, materials using industrial wastes, polymer based materials, wooden composite, FRP, FRC, etc, modern cladding materials like high performance laminates, zinc, copper composite panels; Nano materials and smart materials in architectural applications.				
UNIT – II	**ADVANCE CONTRUCTION METHODS**				**12**
	Tall buildings structural systems – Rigid frames – Braced frames – Shear wall – Buildings Wall frame buildings – Tubular buildings – Tube-in tube buildings – Outrigger braced system – Types – single, double & multilayered grids – two way & three way space grids, connectors, Grids – Domes - various forms. Examples of tensile membrane structures – types of pneumatic structures. - Definition, Replicating natural manufacturing methods as in the production of chemical compounds by plants and animals; glass, theory, aerodynamic structures etc.				

UNIT – III	**PREFABRICATION AND CONTRUCTION TECHNOLOGY**	**12**
	Modular co-ordination, standardization and tolerances-system of prefabrication. Pre-cast concrete manufacturing techniques, Moulds –construction design, maintenance and repair. Pre-casting techniques - Planning, analysis and design considerations - Handling techniques -Transportation Storage and erection of structures. Joints -Curing techniques including accelerated curing such as steam curing, hot air blowing etc., - Test on precast elements - skeletal and large panel constructions - Industrial structures. Pre-cast and pre-fabricating technology for low cost and mass housing schemes. portable architecture, case study examples.	
UNIT – IV	**SAFETY PRACTICES IN CONSTRUCTION**	**6**
	Construction accidents - Construction Safety Management: - Environmental issues in construction - occupational and safety hazard assessment. Safety Programmes - Job-site assessment - Safety in hand tools- Safety in grinding- Hoisting apparatus and conveyors- Safety in the use of mobile cranes-Manual handling-, Demolition techniques-Safety in demolition work- Trusses, girders and beams- First- aid- Fire hazards and preventing methods-Interesting experiences at the construction site against the fire accidents - earthquake resistant design of buildings.	
UNIT – V	**CASE STUDIES FROM THE CONTEMPORARY SCENARIO**	**9**
	Case study analysis of a Tall building with respect to their structural systems services and construction methods	

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**0**	**0**	**45**

TEXT

1. Mehmet Halis Günel and Hüseyin Emre Ilgin: Tall building structural system and Aerodynamic form; Routledge

REFERENCES

1. Andrew Charleson ; Structure as architecture ; Routledge.
2 Hand Book on Construction Safety Practices, SP 70, BIS 2001.
3. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.
4 John Fernandez, Material Architecture, Architectural Press, UK.
5.. Rodney Howes, Infrastructure for the built environment, Butterworth Heineman.
6; Peurifoy, R.L., Ledbette. W.B., Construction Planning, Equipment and Methods, McGraw Hill

Mapping of Cos with Pos:												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	1	0	2	1	0	0	1	2	2	1	0
CO2	1	1	0	2	1	0	0	1	2	2	1	0
CO3	1	1	0	2	1	0	0	1	2	2	2	1
CO4	1	1	0	2	1	0	0	1	2	2	2	1
CO5	1	1	1	2	1	1	0	1	2	2	2	1
Total	6	5	1	10	5	1	0	5	10	10	8	3
Scaled Value		1	1	2	1	1	0	1	2	2	2	1

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 203B – ARCHITECTURE AND CRITICAL THEORY 3 – 0 – 0 – 3

Course Objectives:

1. The course is designed to enable the students to learn different architectural theories and be able address various issues

Course Outcome		Domain	Level
CO1	***Understand*** the difference between theories and practices in architecture.	Cognitive	Knowledge
CO2	***Understand*** the evolution of form as an influencing factor in built environment	Cognitive	comprehension
CO3	***Gain*** knowledge on various tools to evaluate modernity	Cognitive	comprehension
CO4	***Recognizing*** the aesthetics in architecture in various typologies.	Cognitive	Knowledge
CO5	***Analyze*** the different issues in architecture	Affective	Application

SUBCODE	SUB NAME	L	T	P	C
YAR203B	**ARCHITECTURE AND CRITICAL THEORY**	**3**	**0**	**0**	**3**
C:P:A	**2.4:0:0.6**	**L**	**T**	**P**	**H**
		3	**0**	**0**	**3**
UNIT – I	**INTRODUCTION**				**6**
	Architectural Theory and practice- Relation between theory and practice. Traditions in/of architectural theory. Critical Theory. Qualities and challenges of critical theory.				
UNIT – II	**POWER AND BUILT ENVIRONMENT**				**10**
	Forms of power. Power and knowledge. Panopticon. Colonialism as a form of dominance. Colonialism in India. Production of Indo-Saracen architecture. Ideas of segregation, control and surveillance in colonial towns. Discussing New Delhi as a part of imperial vision. Idea of Ghetto, surveillance and control in contemporary cities.				
UNIT – III	**ENCOUNTERING MODERNISM/MODERNITY**				**10**
	Phenomenology and architecture. Architecture and sense of place. Fragmentation and Nihilism as conditions of modern society. Counter claims. Encountering the idea of functionalism - Semiotic and Deconstruction as a critical tool. Architecture of Resistance. The idea of critical regionalism.				
UNIT – IV	**SPECTACLE AND ARCHITECTURE**				**10**
	Society of spectacle. Spectacle as a form of seduction. Debating anesthetization of architectural issues. Critiquing learning from Las Vegas. World in a shopping wall. Thematic environments. Theme parks and privatization of public spaces. Visual regime in architecture. Media and architecture.				

UNIT – V	ISSUES IN ARCHITECTURE	9
	Gender and space. Heritage and politics of memory. City as contested geography. Technology and Architecture.	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

REFERENCES

1. Neil Leach (ed) Rethinking Architecture, Routledge 2000
2. Paul Allan Johnson. Theory of Architecture, Routledge 2000
3. Michael Hays (ed) Architectural Theory since 1960,MIT Press, 2000
4. Anthony king, Urban Development in Colonialism
5. Nazzar Al Sayaad (ed) Forms of Dominance,
6. Lawrence vale. Architecture and Nationalism and identity,
7) Anil Lomba, Colonialism, 2000
8) Thomas Metcalf Imperial vision, Oxford
9) Neil Leach, Aesthetics and Anesthetics,
10) Guy Debord. Society of Spectacle.

Mapping of Cos with Pos:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	1	0	2	1	0	0	1	2	2	1	0
CO2	1	1	0	2	1	0	0	1	2	2	1	0
CO3	1	1	0	2	1	0	0	1	2	2	2	1
CO4	1	1	0	2	1	0	0	1	2	2	2	1
CO5	1	1	1	2	1	1	0	1	2	2	2	1
Total	6	5	1	10	5	1	0	5	10	10	8	3
Scaled Value	2	1	1	2	1	1	0	1	2	2	2	1

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 304A ENVIRONMENT AND BEHAVIOR **2 – 0 – 2 – 3**

Course Objectives:

1. The course is designed to understand about the behavior in relation to the environment and the concepts applied to the environmental psychology.

Course Outcome		Domain	Level
CO1	***Understand*** the various aspects of Environmental Behavior and it's relationship with environment.	Cognitive	Knowledge
CO2	***Demonstrate*** the knowledge on Environmental Psychology, Environment and Behavior relationship.	Cognitive	comprehension
CO3	***Work*** with different approaches related to Environment and Behavior and Environment psychology.	Affective	Knowledge Application
CO4	***Select*** the space and understand about the Environment and Behavior with relation to different approaches.	Affective	Application
CO5	***Analyze*** the given condition by the surroundings and psychological approach.	Affective	Application

SUBCODE	SUB NAME	L	T	P	C
YAR304A	**ENVIRONMENT AND BEHAVIOR**	**2**	**0**	**2**	**3**
C:P:A	**1.2:0:1.8**	**L**	**T**	**P**	**H**
		2	**0**	**2**	**4**
UNIT – I	**UNDERSTANDING OF ENVIRONMENTAL BEHAVIOR**				**10**
	Definition of environmental Behavior, Relationship between people and environment. Impacts of people on environment. Environment Perception and cognition. Environmental perception and cognition. Spatial cognition, cognitive maps, Behavior Problems.				
UNIT – II	**ENVIRONMENT-BEHAVIOR RELATIONSHIP**				**10**
	Introduction to theories of Environment-Behavior relationship. The nature and function of theories. Arousal approach, Simulation approach, Adaptation level, Behavior constraint and Environmental stress approach.				
UNIT – III	**ENVIRONMENTAL PSYCHOLOGY**				**10**
	Barker's ecological psychology approach. Biological, Psychodynamic, Behavioral, Cognitive and Humanistic approach towards psychology through environment. Influence of physical and social features of large-scale, environments on human behavior and well-Being.				

UNIT – IV	**ENVIRONMENT AND BUILT ENVIRONEMNT**	**15**
	Environment and Behavior studies related to Noise, Weather, Climate, Territoriality, Disasters, Crowding. Issues related to built environment such as design of residential , institution, work, learning and leisure environments.	
UNIT – V	**CASE STUDY**	**15**
	Literature case study and live case study of an Environment and study about the Environmental Behavior compare with the psychology.	

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
30	**0**	**30**	**60**

TEXT

REFERENCES

1.Morgan,T.,&Clifford, "Introduction to psychology", Tata McGraw – Hill publications New York, 1983.

2. Kayem,S.M., "Psychology in relation to design " Dowden , Hutchinson and Ross,1973

3. Hall, E.T.,"The Hidden Dimension" New York , Doubleday,1996.

4.Bell,A.Paul,Greene,C.Thomas, Fisher,D.Jeffrey, Baum Andrew, "Environmnetal Psychology" Harcourt Brace college Publishers, New York , 1996

Mapping of Cos with Pos:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	1	0	2	1	0	1	1	2	2	3	3
CO2	1	1	0	2	1	0	1	1	2	2	3	3
CO3	1	1	0	2	1	0	1	1	2	2	3	2
CO4	1	1	0	2	1	0	1	1	2	2	3	2
CO5	1	1	1	2	1	1	1	1	2	2	3	2
Total	6	5	1	10	5	1	5	5	10	10	15	12
Scaled Value	2	1	1	2	1	1	1	1	2	2	3	3

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

YAR 304B ENERGY SIMULATION AND MODELLING 2-0-2-3

Course Objectives:

1. The course is designed to enable the students to learn about the energy, understanding of energy softwares and analysis of building by using energy simulation modelling softwares.

Course Outcome		Domain	Level
CO1	***Understand*** the various aspects of Energy and it's forms of energy.	Cognitive	Knowledge
CO2	***Demonstrate*** the knowledge on solar, sun angles and it's impact in the design.	Cognitive	comprehension
CO3	***Work*** with various simulation software's and building analyses through the software's.	Affective	Knowledge Application
CO4	***Select*** the suitable simulation software in order to achieve proper analysis result.	Affective	Application
CO5	***Analyze*** the given condition by using simulation software's for various factors in the building.	Affective	Application

SUBCODE	SUB NAME	L	S	P	C
YAR304B	ENERGY SIMULATION AND MODELLING	2	0	2	3
C:P:A	1.2:0:1.8	L	T	P	H
		2	0	2	4
UNIT – I	**INTRODUCTION TO ENERGY**				**10**
	Definition and units of energy, power, Forms of energy, Conservation of energy, second law of thermodynamics, Energy flow diagram to the earth. Origin of fossil fuels, time scale of fossil fuels, Renewable Energy Resources, Role of energy in economic development and social transformation.				
UNIT – II	**INTRODUCTION TO SOLAR ENERGY**				**10**
	Solar Spectrum, Solar Time and angles, day length, angle of incidence on tilted surface; Sun path diagram; Shadow angle protractor; Solar Radiation: Extraterrestrial Radiation; Effect of earth atmosphere; Estimation of solar radiation on horizontal and tilted surfaces; Measurement of Solar radiation, Analysis of Indian solar radiation data and applications.				
UNIT – III	**INTRODUCTION TO ENERGY MODELLING**				**10**
	Definition of energy modeling, Answers that energy modeling provide, Building modeling tools: Daylighting/ lighting modeling, Computational fluid dynamics(CFD), Building component analysis, HVAC analysis, Building thermal analysis, Whole building energy simulation programs.				

UNIT – IV	**INTERFACES AND SOFTWARE PACKAGES**	**15**
	Introduction to interfaces of energy modeling software packages, DOE2, ENERGY PLUS, ECOTECT, CLIMATE CONSULTANT, HEED, BERS, GREEN BUILDING STUDIO.	
UNIT – V	**CASE STUDY**	**15**
	Literature case study and live case study, Energy modeling of a residential building.	

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
30	**0**	**30**	**60**

REFERENCES

1. Eddy Krygiel., Bradley Nies, Green BIM Wily publishing, Canada, 2008.
2. Advanced Energy Design Guide For Small Office Buildings, American Society of Heating Refrigerating and Airconditioning, USA 2004.
3. Davies, Morris Grenfell, Building Heat Transfer, Wiley, 2008.
4. Underwood, Chris, Modelling Methods For Energy In Buildings, WileyBlackwell, 2008.
5. International Energy Conservation Code 2003, International Code Council.
6. Baker, Nick, Energy And Environment In Architecture, Taylor & Francis, 2000.
7. Dobbelsteen, Andy van den, Smart Building In A Changing Climate, Island Press, 2009.

Mapping of Cos with Pos:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PSO1**	**PSO2**
CO1	2	1	0	2	1	0	1	1	2	2	3	3
CO2	1	1	0	2	1	0	1	1	2	2	3	3
CO3	1	1	0	2	1	0	1	1	2	2	3	2
CO4	1	1	0	2	1	0	1	1	2	2	3	2
CO5	1	1	1	2	1	1	1	1	2	2	3	2
Total	6	5	1	10	5	1	5	5	10	10	15	12
Scaled Value	2	1	1	2	1	1	1	1	2	2	3	3

1 – 5 → 1, 6 – 10 → 2, 11 – 15 → 3 - No Relation, 1 - Low Relation, 2- Medium Relation, 3 –High Relation.

	C	P	A	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	L:T:P:C
YAR101	√	√	√	3	3	1	3	2	3	1	2	2	1	2	2	**3:0:0:3**
YAR102	√		√	2	2	2	2	3	1	1	3	3	2	3	3	**3:0:0:3**
YAR103	√		√	2	1	1	2	1	1	0	1	2	2	2	1	**3:0:0:3**
YAR104				**0**	**0**	**0**	**0**	**3**	**0**	**2**	**1**	**0**	**0**	**1**	**0**	**3:0:0:3**
YAR105	√	√	√	2	3	2	1	1	1	2	2	2	3	2	2	**0:0:16:8**
YAR201	√			2	3	3	2	2	3	1	1	2	2	1	1	**3:0:0:3**
YAR 202	√	√		1	3	1	0	1	3	0	0	0	3	0	0	**3:0:0:3**
YAR 203	√		√	2	1	1	2	1	1	0	1	2	2	2	1	**3:0:0:3**
YAR204	√	√		1	0	2	0	1	2	0	0	0	0	0	0	**2:0:2:3**
YAR205	√			0	0	0	0	3	0	0	0	0	0	1	0	**2:0:2:3**
YAR206	√	√	√	2	3	2	1	1	1	2	2	2	3	2	2	**0:0:16:8**
YAR301	√		√	1	1	0	2	1	1	0	2	0	0	1	1	**3:0:0:3**
YAR302	√	√	√	1	3	1	3	1	1	0	1	0	3	1	1	**3:0:0:3**
YAR303	√	√		2	1	1	2	1	1	1	1	2	2	3	3	**3:0:0:3**
YAR304	√		√	2	1	1	2	1	1	1	1	2	2	3	3	**2:0:2:3**
YAR305	√	√		2	3	2	1	1	1	2	2	2	3	2	2	**2:0:2:3**
YAR306	√	√	√	2	3	2	1	1	1	2	2	2	3	2	2	**0:0:16:8**
YAR401	√	√		2	3	3	2	2	2	2	3	2	3	2	2	**0:0:35:14**

Summary of the credits and hours

Semester	Total Credits	Total Hours / Week	No. of courses
I	20	28	5
II	23	33	6
III	23	35	6
IV	14	35	1
I - IV	**80 Credits**	-	18

The salient features of this curriculum are as follows.

1. For M.Arch. programme 80credits are considered and mandatory credits are not mentioned in CoA.
2. The average load per semester is about 20 credits.
3. The Dissertation the 3rd Semester with 3 credits and 14 credits for Thesis in the 4th Semester.
4. The credit distribution is followed as per the guidelines given by CoA/AICTE/UGC

Course type	Credits				Contact Hours			
	L	T	P	Total	L	T	P	Total
Theory course	3	0	0	3	3	0	0	3
Theory + Studio course	2	0	2	3	2	0	2	4
Studio course	0	0	16	8	0	0	16	16
	0	0	6	6	0	0	6	6

Note: Evaluation and Assessment must be done for all non credit courses.

1. Apart from academic workload, the following academic sessions must be included in the time table to maintain 35 hours / week.
   Counseling – 1 hour, Academic mentor – 1 hour, Library – 1 hour.
3. The course teacher should maintain records for Models, Sheet submissions