M.ARCH

MASTER OF ARCHITECTURE (ADVANCE DESIGN)

[2 YEAR FULL TIME POST GRADUATE DEGREE PROGRAM]

RECOGNISED BY THE COUNCIL OF ARCHITECTURE, NEW DELHI

REGULATIONS

2020 – 2021 Batch (New Syllabus)

CHOICE BASED CREDIT SYSTEM
(CBCS)

FACULTY OF ARCHITECTURE

KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Established Under Section 3 of UGC Act 1956)

Pollachi Main Road, Eachanari Post, Coimbatore – 641 021. INDIA

Enable | Enlighten | Enrich
KARPAGAM
ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

M.ARCH - REGULATIONS

2020 - 2021 batch (credit system)

These regulations are effective from the academic year 2020 - 2021 and applicable to the Full-Time candidates admitted to M. Arch (Advance Design) during 2020 - 2021 and onwards.

The M.Arch. in Advanced Design Degree program (professional, post-graduate level) aims at producing architecture professionals who will assume major leadership role in shaping the built environment, the quality of which is the major determinant of the quality of life.

The main goal is to inculcate advanced design abilities and understanding in various focus areas of architecture through live ***research - analysis - design*** *based models.*

1. ADMISSION

Candidates seeking admission to the first semester of the four semesters M. Arch (Advance Design) Degree Programme: should have compulsorily passed the B. Arch having secured minimum 50% in aggregate as prescribed by the Council of Architecture, New Delhi.

Preference will be given to candidates who have passed level GATE / CEED examinations in Architecture and Planning / Design respectively or any other equivalent test at graduate level and having a valid score as prescribed by the UGC / MHRD, Govt. of India.

1.2 Lateral Entry Admission

The candidates who possess B. Arch with one year and PG Diploma in Architecture recognized by the Council of Architecture, New Delhi are eligible to apply for admission directly in the third semester of M.Arch. This is at the discretion of the University and subject to the maximum number of students not exceeding the permitted maximum intake in a class as well as satisfying other academic requirements.

1.3 Migration

The University may at its discretion permit M. Arch candidates from other institutions to migrate subject to the maximum number of students not exceeding the permitted maximum intake in a class as well as satisfying other academic requirements.

2. PROGRAMMES OFFERED

2.1 Faculty of Architecture offers M. Arch (Advance Design -2 year Full time) Programme in the branch of study approved by the University and the Council of Architecture, New Delhi.

2.2 **INTAKE**

Total intake is 20 in the current batch as approved by the Council of Architecture, New Delhi.

3. MODE OF STUDY

3.1 **Full-Time:**

In this mode of study, the candidates are required to attend regular classes, to satisfy University attendance and assessment requirements.

4. STRUCTURE OF PROGRAMMES

4.1 Every Programme will have curricula and syllabi consisting of elective, 2studio:

(i) General core courses comprising Research Methodology, Design Systems and Advanced Design Studio.

(ii) Focus Areas in Sustainable Architecture and Housing Design

(iii) Advanced Elective courses for specialization from any of the focus areas.

(iv) Research based course such as Design Research and field studies ,Documentation & Presentation

There shall be a certain minimum number of core courses of elective courses that can be opted by the student. The blend of different courses shall be so designed that the student, at the end of the Programme, would have been trained not only in his / her relevant focus area but also would have developed as a socially conscious human being.

4.2 Each semester curriculum shall normally have a blend of elective, studio and Dissertation courses not exceeding 5 in total per semester.

4.3 The prescribed credits required for the award of the degree shall be within the limits specified below.

PROGRAMME	MANDATORY CREDITS
M. Arch (Advance Design)	**72**

4.4 The **medium of instruction for all Courses, Examinations, Seminars, Presentations and Project /Thesis /Dissertation reports are English.**

5. DURATION OF THE PROGRAMME

5.1 A student is normally expected to complete the M. Arch (Advance Design) Full Time Programme in 4 semesters (two academic years) but in any case, not more than 8 Semesters (four academic years) for all candidates.

5.2 Each semester shall normally consist of 90 working days or 540 hours each. The Dean shall ensure that every teacher imparts instruction as per the number of periods / hours specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught.

5.3 The Dean may arrange additional classes for improvement, special coaching, conduct of model test etc., over and above the specified periods. But for calculation of attendance requirement or writing the end semester examinations by the students 540 hours conducted within the specified academic schedule alone shall be

considered and the overall percentage of attendance shall be calculated accordingly.

5.4 The total period for completion of the Programme reckoned from the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in clause 5.1 irrespective of the period of break of study in order that he/she may be eligible for the award of the degree.

6. REQUIREMENTS FOR COMPLETION OF THE SEMESTER

6.1 Ideally every student is expected to attend all classes and secure 100% attendance. However, to allow for certain unavoidable circumstances, the student is expected to attend at least 75% of the classes and the conduct of the candidate has been satisfactory during the course.

6.2 A candidate who has secured attendance between 65% and 74% (both included), due to medical reasons (Hospitalization / Accident / Specific Illness) or due to participation in University / District / State / National / International level sports or due to participation in Seminar / Conference / Workshop / Training Programme / Voluntary Service / Extension activities or similar programs with prior permission from the Registrar shall be given exemption from prescribed attendance requirements and shall be permitted to appear for the examination on the recommendation of the PG co-coordinator concerned and Dean to condone the lack of attendance. The PG co-coordinator must verify and certify the genuineness of the case before recommending to the Dean.

6.3 A candidate who has secured less than 65% of attendance in any semester will not be permitted to take the regular examination and has to continue the study in the subsequent semester. The candidate has to redo the course by rejoining the semester in which attendance is less than 65% with proper approval of the Registrar.

7. FACULTY ADVISER

To help the students in planning their courses of study and for general advice on the academic Programme, the Dean/Head of the Department will attach a certain number of students to a teacher of the Department who shall function as **Faculty Adviser** for those students throughout their period of study. Such Faculty Advisers shall advise the students and monitor the courses undergone by the students, check the attendance and progress of the students attached to him/her and counsel them periodically. If necessary, the faculty adviser may display the cumulative attendance in the Department notice board and discuss with or inform the Parents/Guardian about the progress of the students.

8. CLASS COMMITTEE

8.1. Every class shall have a class committee consisting of teachers of the class concerned, student representatives [one boy and two girls] and the concerned Dean/Head of the Department. It is to improving the teaching-learning process. The functions of the class committee include

- Solving problems experienced by students in the studios & class room.
- Clarifying the regulations of the degree Programme and the details of rules therein particularly clause 4 and 5 which should be displayed on department Notice-Board.
- Informing the student representatives, the academic schedule including the dates of assessments and the syllabus coverage for each assessment.

- Informing the student representatives, the details of Regulations regarding weightage used for each assessment. In the case of Studio courses (drawing / project work / seminar etc.) the breakup of marks for each / exercise /module of work, should be clearly discussed in the class committee meeting and informed to the students.
- Analyzing the performance of the students of the class after each test and finding the ways and means of solving problems, if any.
- Identifying the weak students, if any and requesting the teachers concerned to provide some additional help or guidance or coaching to such weak students.

8.2 The class committee shall be constituted within the first week of each semester.

8.3 At least 2 student representatives (usually 1 boy and 1 girls) shall be included in the class committee.

8.4 The Chairperson of the Class Committee may convene the meeting of the class committee.

8.5 The Dean may participate in any Class Committee of the institution.

8.6 The PG Coordinator is required to prepare the minutes of every meeting, submit the same to Dean within two days of the meeting and arrange to circulate it among the students and teachers concerned. If there are some points in the minutes requiring action by the Management, the same shall be brought to the notice of the Registrar by the PG Coordinator through the Dean.

8.7 Two or three subsequent meetings may be held in a semester at suitable intervals. During these meetings, the student members representing the entire class, shall meaningfully interact and express the opinions and suggestions of the other students of the class to improve the effectiveness of the teaching-learning process.

9. PROCEDURE FOR AWARDING MARKS FOR INTERNAL ASSESSMENT

9.1 Every teacher is required to maintain an 'ATTENDANCE AND ASSESSMENT RECORD' which consists of attendance marked in each lecture, studio class, the test marks and the record of class work (topic covered), separately for each course. This should be submitted to the PG Coordinator periodically (at least three times in a semester) for checking the syllabus coverage and the records of test marks and attendance. The Dean shall sign with date after due verification. At the end of the semester, the record should be verified by the Dean who will keep this document in safe custody (for five years). Records of attendance and assessment of both current and previous semesters shall be submitted for Inspection to the team appointed by the University/any other approved body.

9.2 Continuous Internal Assessment (CIA): The performance of students in each subject will be continuously assessed by the respective teachers as per the guidelines given below

9.2.1 STUDIO COURSES:

S. No	CATEGORY	MAXIMUM MARKS
1.	Internal Jury (5 Jury x7 marks)	35
2.	Attendance	5
Continuous Internal Assessment: TOTAL		40*

PRACTICAL COURSES:

S. No	CATEGORY	MAXIMUM MARKS
1.	Internal Jury (Exercise/sheet valuation) **	35
2.	Attendance	5
Continuous Internal Assessment: TOTAL		40*

* - proportionate increase for all categories will be based on the total marks allotted for Continuous Internal Assessment for the concerned course.
** - No of Exercise/Sheets depends on subject.

9.2 ATTENDANCE

Marks Distribution for Attendance

S. No.	Attendance %	Marks
1	Between 91 % and 100%	5
3	Between 86 % and 90%	4
4	Between 81 % and 85%	3
5	Between 76 % and 80%	2
6	Less than 75 %	0

10. REQUIREMENTS FOR APPEARING FOR UNIVERSITY EXAMINATION

A candidate shall normally be permitted to appear for the University Examination of any semester commencing from I semester if he/she has satisfied the semester completion and attendance requirements and has registered for examination in all courses of the semester. Registration is mandatory for Semester Examinations as well as Arrears Examinations failing which the candidate will not be permitted to move to the higher semester. A candidate already appeared for subjects in a semester and passed the examination is not entitled to reappear in the same subject or subjects of the semester for improvement of grades / marks.

11. END SEMESTER EXAMINATIONS – Studio

End Semester Examination (ESE): End Semester Examination will be held at the end of each semester for each subject, which consists of 60 marks.

11.2 PATTERN OF ESE QUESTION PAPER: (Studio courses)

The ESE for studio subjects shall be conducted as an examination and/or as a final jury (viva-voce) for marks as per scheme of examination comprising external architect/related professionals with minimum 5 years' experience in practice or teaching.

12. PASSING REQUIREMENTS

12.1 Passing minimum: **The passing minimum for CIA is 50% (i.e. 20 out of 40 marks). The passing minimum for ESE is 50% (i.e. 30 out of 60 marks). The overall passing minimum for every course is**

50% i.e. 50 out of 100 marks (Sum of his/her score in internal and external examination).

12.2 If the candidate fails to secure a pass in a particular Studio course as per clause 12.1, it is mandatory that candidate shall register and reappear for the examination in the subsequent semester as an arrear when examination is conducted in that course. Further the candidate should continue to register and reappear for the examination till a **pass** is secured in End Semester Examination of such arrear subjects.

The Continuous Internal Assessment marks obtained by the candidate in the first appearance shall be retained by the Office of the Controller of Examinations and improved CIA marks may be considered for all subsequent attempts till the candidate secure a pass.

13. AWARD OF LETTER GRADES

13.1 All assessments of a course will be done on absolute marks basis. However, for reporting the performance of a candidate, letter grades, each carrying certain number of points, will be awarded as per the range of total marks (out of 100) obtained by the candidate in each subject as detailed below:

Letter grade	Marks Range	Grade Point	Description
O	91 - 100	10	OUTSTANDING
A+	81-90	9	EXCELLENT
A	71-80	8	VERY GOOD
B+	66-70	7	GOOD
B	61-65	6	ABOVE AVERAGE
C	55-60	5	AVERAGE
P	50-54	4	PASS
RA	<50		REAPPEARANCE
AB		0	ABSENT

13.2 GRADE SHEET

After results are declared, Grade Sheets will be issued to each student which will contain the following details:

i. The list of courses enrolled during the semester and the grade scored.
ii. The Grade Point Average (**GPA**) for the semester and
iii. The Cumulative Grade Point Average (**CGPA**) of all courses enrolled from first semester onwards.

GPA is the ratio of the sum of the products of the number of credits (**C**) of courses enrolled and the points corresponding to the grades (**GP**) corresponding to the grades scored in those courses, taken for all the courses, to the sum of the number of credits of all the courses in the semester to the sum of the credits of all courses registered.

$$\textbf{GPA} = \frac{\textbf{Sum of [C * GP]}}{\textbf{Sum of C}}$$

CGPA will be calculated in a similar manner, considering all the courses enrolled from first semester. **"RA** grade will be excluded for calculating **GPA** and **CGPA**.

13.3 Whenever students, having arrear subjects, appear for the end semester examination during which there are no regular batch of students writing the same subjects, then, the letter grades for the arrears subjects shall be awarded based on the range of marks.

13.4 REVALUATION

Revaluation is not permitted for Studio courses.

14. ELIGIBILITY FOR THE AWARD OF THE DEGREE

A student shall be declared to be eligible for the award of the Degree if he/she has

- Successfully gained the required number of total credits as specified in the Curriculum corresponding to his/her Programme within the stipulated time.
- Successful completion of Dissertation/ Thesis.
- No disciplinary action is pending against him/her.
- The award of the degree must be approved by the Board of Management.

15. CLASSIFICATION OF THE DEGREE AWARDED

15.1 A candidate who qualifies for the award of the Degree having passed the examination in all the courses in his/her first appearance within the specified minimum number of semesters and securing a **CGPA of not less than 8.00** shall be declared to have passed the examination in **First Class with Distinction.** For this purpose, the withdrawal from examination will not be construed as an appearance. Further, the authorized break of study will not be counted for classification.

15.2 A candidate who qualifies for the award of the Degree having passed the examination in all the courses within the specified minimum number of semesters plus one semester (i.e. n+1 semesters), and securing **CGPA of not less than 6.50** shall be declared to have passed the examination in **First Class**. For this purpose, the withdrawal from examination will not be construed as an appearance. Further, the authorized break of study will not be counted for classification.

15.3 All other candidates (not covered in clauses 15.1 and 15.2) who qualify for the award of the degree shall be declared to have passed the examination in **Second Class**.

15.4 A candidate who is absent in semester examination in a course / dissertation after having enrolled for the same shall be considered to have appeared in that examination for classification.

16. PROVISION FOR WITHDRAWAL FROM END-SEMESTER EXAMINATION

16.1 A candidate, may for valid reasons and on prior application, be granted permission to withdraw from appearing for the examination of any one course or consecutive examinations of more than one course in a semester examination.

16.2 Such withdrawal shall be permitted only once during the entire period of study of the degree Programme.

16.3 Withdrawal application is valid only if it is made within 10 days prior to the commencement of the examination in that course or courses and recommended by the Head of the Department and Dean and approved by the Registrar.

16.3.1 Notwithstanding the requirement of mandatory TEN days' notice, applications for withdrawal for special cases under extraordinary conditions will be considered on the merit of the case.

16.4 Withdrawal shall not be construed as an appearance for the eligibility of a candidate for First Class with Distinction. This provision is not applicable to those who seek withdrawal during X semester.

16.5 Withdrawal from the End semester examination is **NOT** applicable to arrears subjects of previous semesters.

16.6 The candidate shall reappear for the withdrawn courses during the examination conducted in the subsequent semester.

17. PROVISION FOR AUTHORISED BREAK OF STUDY

17.1 Break of Study shall be granted only once for valid reasons for a maximum of one year during the entire period of study of the degree Programme. However, in extraordinary situation the candidate may apply for additional break of study not exceeding another one year by paying prescribed fee for break of study. If a candidate intends to temporarily discontinue the Programme in the middle of the semester for valid reasons, and to rejoin the Programme in a subsequent year, permission may be granted based on the merits of the case provided he / she applies to the Registrar, but not later than the last date for registering for the end semester examination of the semester in question, through the Head of the Department and Dean stating the reasons therefore and the probable date of rejoining the Programme.

17.2 The candidate thus permitted to rejoin the Programme after the break shall be governed by the Curriculum and Regulations in force at the time of rejoining. Such candidates may have to do additional courses as per the Regulations in force at that period.

17.3 The authorized break of study (for a maximum of one year) will not be counted for the duration specified for passing all the courses for classification. However, additional break of study granted will be counted for classification.

17.4 The total period for completion of the Programme reckoned from, the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in clause 4.1 irrespective of the period of break of study (vide clause 17.3) in order that he/she may be eligible for the award of the degree.

17.5 If any student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted 'Break of Study' or 'Withdraw'

18. DISSERTATION / THESIS

18.1 As a part of the degree requirement, all candidates must submit a dissertation/thesis in the 3rd and 4th semesters under a faculty guide and/or external guide. This thesis is to be submitted individually by each candidate and is intended to assess individual research, methodology and design skills as a culmination of the knowledge accumulated throughout the course.

This thesis shall be submitted in two stages (evaluated separately and a candidate can proceed to stage II of the Dissertation/Thesis only if he/she passes the stage I successfully) as drawings, reports, models, slides, presentations, walkthroughs etc.

18.2 The topic selection, scope, criteria for evaluation, periodic reviews and all other matters related to the Dissertation/Thesis shall be decided by the Dissertation Committee of the Faculty of Architecture. The decision of the committee must be approved by Vice Chancellor/ Registrar before the commencement of the review process.

18.3 Continuous Internal Assessment (CIA- 160 marks) for Dissertation/Thesis (stage I) shall be held as a Viva-Voce examined by a jury comprising the Dissertation Committee (for 80 marks) and by the Guide (for 80 marks) of the Faculty of Architecture.

18.4 End Semester Examination (ESE-240 marks) for Dissertation/Thesis (stage I) shall be held as a Viva-Voce examined by a jury comprising external architect members (for 120 marks) and by internal members of the Thesis Committee (for 120 marks) of the Faculty of Architecture.

18.5 Continuous Internal Assessment (CIA- 320 marks) for Dissertation/Thesis (stage II) shall be held as a Viva-Voce examined by a jury comprising the Dissertation Committee (for 160 marks) and by the Guide (for 160 marks) of the Faculty of Architecture.

18.6 End Semester Examination (ESE-480 marks) for Dissertation/Thesis (stage II) shall be held as a Viva-Voce examined by a jury comprising external architect members (for 240 marks) and by internal members of the Thesis Committee (for 240 marks) of the Faculty of Architecture. Every Guide shall be an additional member (if not already a member) for evaluation of his/her Dissertation/Thesis student.

18.7 A Dissertation Committee shall be established well before the commencement of the Dissertation/Thesis for overseeing and regulating all aspects of the student's work and shall comprise minimum two faculty members from the concerned department, minimum one external faculty member from academic background and another one external members from practicing background. The PG Coordinator shall be the Convener; and the concerned class tutor of the batch shall be the Coordinator of this committee respectively.

19. ELECTIVES

Electives shall be from any of the focus areas and may be theory, practical or studio or self-study courses and subject to satisfying their course requirement

20. CASE STUDIES AND FIELD VISITS

As part of the degree requirement, all candidates must visit places and buildings of Architectural Interest and pertaining to the focus area as per course requirements, stipulated by the Faculty of Architecture.

21. DISCIPLINE

Every student is required to observe disciplined and decorous behavior both inside and outside the college and not to indulge in any activity which will tend to bring down the prestige of the University. The erring student will be referred to the Disciplinary Committee constituted by the University, to enquire into acts of indiscipline and recommend the University about the disciplinary action to be taken. If a student indulges in malpractice in any of the University / Internal Examination, he / she shall be liable for punitive action as prescribed by the university from time to time.

23. REVISION OF REGULATION AND CURRICULUM

The University may from time to time revise, amend or change the Regulations, Scheme of Examinations and syllabi if found necessary at any stage of the course

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

M.ARCH (Advance Design) - CURRICULUM
2020-2021 batch (New syllabus)

PROGRAMME EDUCATIONAL OBJECTIES (PEOs):

Master of Architecture curriculum is designed to prepare the graduates having knowledge and Skillful aptitude

I. To become a successful Professional
II. To imbibe and implant a strong foundation in Advanced design skills and technical aspects with research-oriented thinking and implementation
III. To learn the critical thinking process with the application of theoretical aspects and parameters for a quantifiable result.
IV. To Expertise the architectural and technical knowledge with field study and experimentation.
V. To bring out various ideas in advanced level for the society in future.

PROGRAMME OUTCOME (PO):

1. Ability to gain deep knowledge and understanding of Advanced Level Architectural design, Building science and simulation, digital applications, housing design.
2. Ability to Research, understand, analyse, synthesize and review the process of design outcome and publish as a report.
3. Ability to review the new technological developments in the profession of architecture and construction.
4. Ability to understand real life situation with enhanced approach towards the Architectural practice.

PROGRAMME SPECIFIC OUTCOME (PSO):

5. Ability to understand the overall design parameters with advanced level of analytical thought process and to give a quantifiable product based on research.

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOME:

A broad relation between the Programme objectives and the outcome is given in the following table

PEO	PO1	PO2	PO3	PO4	PSO5
I			□	□	□
II	□		□		□
III	□	□			□
IV	□	□			□
V	□				□

M.ARCH (ADVANCE DESIGN) - CURRICULUM
2020-2021 batch (New syllabus)
Choice Based Credit System

Subject Legend:
ART – Theory -0, ARP – Practical-1, ARS – Studio-2, ARE Elective-3,
L- Lecture, T- Theory, P/S- Practical /Studio C- Credits
Abbreviation: CIA – Continuous Internal Assessment; ESE – End Semester Exam
Exam Hours: Theory (T)-3 Hrs Practical (P)-6 Hrs Studio(S) - 6 Hrs

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P/S		CIA	ESE	Total
								40	60	100
SEMESTER - I										
20MARS111	Research Methodology I	I, II, III	2,4,5	1	-	2	**2**	40	60	100
20MARS112	Design Systems	II, III	1,3,5	2	-	4	**4**	80	120	200
20MARS113	Design Research & Field Studies	I, IV	2,4,5	1	-	2	**2**	40	60	100
20MARS114	Advanced Design Studio I	I, IV, V	3,4,5	3	-	9	**8**	160	240	400
20MARES*	Advanced Elective I	II, III, V	2,3, 4,5	2	-	4	**4**	80	120	200
	Semester Total			**08**	**-**	**22**	**20**	**400**	**600**	**1000**
*20MARESS1 - Introduction to Sustainable Architecture 20MARESH1 - Introduction to Housing Design										
SEMESTER – II										
20MARS211	Research Methodology II	I, II, III	2,4,5	1	-	2	**2**	40	60	100
20MARS212	Documentation & Presentation	I, IV	2,4,5	1	-	2	**2**	40	60	100
20MARS213	Advanced Design Studio II	I, IV, V	3,4,5	3	-	9	**8**	160	240	400
20MARES*	Advanced Elective II	II, III, V	2,3,4 ,5	2	-	4	**4**	80	120	200
20MARES**	Advanced Elective III	II, III, V	2,3,4 ,5	2	-	4	**4**	80	120	200
	Semester Total			**08**	**-**	**22**	**20**	**400**	**600**	**1000**
*20MARESS2 - Building Performance Analysis 20MARESH2 - Housing Policies and Schemes **20MARESS3 - Sustainable Design Strategies 20MARESH3 - Sustainable Housing										

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P/ S		CIA	ESE	Total
								40	60	100
SEMESTER - III										
20MARS311	Dissertation I	I, III, IV, V	1,2,3, 4	3	-	9	**8**	160	240	400
20MARES*	Advanced Elective IV	II, III, V	2,3,4	2	-	4	**4**	80	120	200
20MARES**	Advanced Elective V	II, III, V	2,3,4	2	-	4	**4**	80	120	200
Semester Total				**07**	**-**	**17**	**16**	**320**	**480**	**800**
*20MARESS4 - Sustainable Building Systems 20MARESH4 - Community Participation in Housing				**20MARESS5- Sustainable Trends and Theories 20MARESH5 - Special Types of Housing						
SEMESTER – IV										
20MARS411	Dissertation II	I, II, III, IV, V	1,2,3 ,4	6	-	20	**16**	320	480	800
Semester Total				**6**	**-**	**20**	**16**	**320**	**480**	**800**

Credit Details :

Studio Courses	-	28 credits
Dissertation course	-	24 credits
Elective Courses	-	20 credits
Total	**-**	**72 credits**

Total Marks :

Semester	Total Credits	Marks
Semester- I	20	1000
Semester- II	20	1000
Semester- III	16	800
Semester- IV	16	800
Total	**72**	**3600**

20MARS111	RESEARCH METHODOLOGY - I								SEMESTER-I
Marks	Internal	40	External		60	Total	100	Exam Hours	6
Instruction Hours /week	L	1	T	0	P/S	2		Credits	2

COURSE OBJECTIVE:

- To learn the importance of research methodology and understand its application in architectural design.
- To understand the different methods and techniques as relevant to the design profession and apply them in evaluation and appraisal of architectural design projects.

COURSE OUTCOME:

- Student will understand the methods of research
- Student will understand about the collection of data and Analyse the data
- Student will be able to prepare documents, report writing and publish in journals

UNIT-I INTRODUCTION TO RESEARCH

Importance, Purpose and Scope of Research and Field Studies. Application in architecture in terms of design, technology, environment, economic and behavioral areas.

UNIT-II RESEACRH OBJECTIVES AND METHODOLOGY

Sequence and Methods of Research. Identification of Problem, Hypothesis Formulation, Objectives and Methodology.

UNIT-III APPLICATION OF RESEARCH

Understanding and Applying Qualitative, Analytical, Interpretative, Correlational, Quasi- Experimental, Experimental, Simulation and Modelling techniques in Architectural Design.

UNIT-IV FIELD STUDIES

Pilot Studies, Field Surveys and Collection of Samples - Physical, Architectural, Environmental, Organizational. Preparation and Analysis of Data Sheets and Questionnaires.

UNIT-V ANALYSIS, PREPARATION AND DOCUMENTATION

Preparation and Analysis of Data Sheets and Questionnaires. Arriving at conclusions from the Research at Field Studies. Report Writing and Publications.

SUGGESTED READINGS:

1.Knight, A. and Ruddock., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2.Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.
3.Gibbs, J.P., " Urban Research Methods", (rev) Von Nostrand. 1988.
4 Kothari, C. R., and Gaurav Garg. *Research Methodology: Methods and Techniques*. New Delhi: New Age International (P) Limited, Publishers, 2019.

20MARS112	DESIGN SYSTEMS								SEMESTER-I
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4	Credits			4

COURSE OBJECTIVE:

- To understand various design systems dveloped by different civilizations in different parts of the world through study of their source, origin, context, grammar, intent and application in architectural design. Undertaking relevant literature/case studies.

COURSE OUTCOME:

- Student will be able to understand the various design systems in the Architecture era
- Student will be able to understand the vernacular architecture and its importance
- Student will be able to envision the futuristic architecture

UNIT-I HISTORIC DESIGN SYSTEMS

Pragmatic, Iconic, Analogic and Canonic systems. Relationship between mathematics and architecture and hierarchies of geometry in design. Design systems through the middle ages to the renaissance period.

UNIT-II VERNACULAR DESIGN SYSTEMS

Vernacular architecture of the world and relevance of the climate in which they have evolved. Enduring nature of the vernacular in contemporary times, De-coding vernacular narratives regarding the cultures they represent.

UNIT-III CONTEMPORARY DESIGN SYSTEMS

Evolution of design systems since the modern period following industrial revolution to the advent of the digital age and representation of design.

UNIT-IV FUTURISTIC DESIGN SYSTEMS

Evolution of futuristic ideas since the 1960s in the field of design. Emerging areas of programming, expert systems and 3-D printing in design. New materials, technologies and bio mimicry- oriented design evolutions of future.

UNIT – V SEMINAR

Seminar on all the design systems -vernacular architecture – futuristic ideas and discussions

SUGGESTED READINGS:

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997
2. Bernard Rudofsky, 'Architecture without Architects', MoMA, 1964.
3.Geoffrey Broadbent - Design in Architecture - Architecture and the human sciences - John Wiley & Sons, New York, 1981
4.Francis D.K. Ching et al; A global history of Architecture; John Wiley's sons, 2nd edition 2010
5.Weber.W & Yannas.S, 'Lessons from Vernacular Architecture', Routledge, 2014.
6. Vernacular Architecture – contemporary traditions – Aishwarya Tipnis – TERI

20MARS113	DESIGN RESEARCH AND FIELD STUDIES								SEMESTER-I
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	2			**Credits**	**2**

COURSE OBJECTIVE:

- To comprehend the importance of research in design, field survey/study, analysis of results as the basis of research.
- To undertake field study of the core subject and learn from research-based publications of reputed journals/magazines. Importance of good presentation methods.

COURSE OUTCOME:

- Student will be able to collect data and information as per the context
- Student will be able to format all the data into types and to prepare and publish
- Student will be able to critically find solutions with the analytical skills of research

UNIT-I DESIGN RESEARCH

Design as an area for research. Theorising on causal relationships and factors, the scientific method, behavioural methods. Approaches to the design, and research problem – need and importance of study.

UNIT-II FORMATION OF RESEARCH

Formation of design hypothesis and concepts, and their relevance. Understanding ideas of creativity in design. Behavioural basis for design and research.

UNIT-III DATA COLLECTION

Data - types, collection methods, comprehension. Literature study – previous publication, information sources - Areas of the research - frame work and methodology of study, outcome of the results. Field study – by means of survey/questionnaire – by equipment/instruments, etc. – Manual readings/reports. Compilation of data – organizing the collected data – analysis, inference, conclusions. Types of analytical methods.

UNIT-IV REPORT WRITING

Reports - authentication of sources. Document styles, formats – figures, charts, tables.

UNIT-V EDITING AND PUBLISHING

Publication of papers / articles in reputed magazines/journals. Preparing, editing and publishing reports, dossiers, documents, and portfolio of masters' course work, off/on-line dissemination of information in media - web, blogs, etc.

SUGGESTED READINGS:

1. Knight, A. and Ruddock,L., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2. Groat, L. and Wang D., "Architectural Research Methods" second edition, John Wiley & Sons. 2013.
3. Gibbs, J. P., "Urban Research Methods", (rev.ed.) Von Nostrand. 1988.
4. Booth, Wayne C., Gregroy G. Colomb, and Joseph M. Williams. 2008. The Craft of Research, 3rd edition. Chicago: University of Chicago Press.
5. Zeisel, J., "Inquiry by Design", Revised edition. New York: Norton, 2006.
6. Joo-Hwa Bay and Boon- Lay ong.,"Tropical Sustainable Architecture", Elsevier Ltd,2006.

20MARS114	ADVANCED DESIGN STUDIO-I								SEMESTER-I
Marks	**Internal**	**160**	**External**			**240**	**Total**	**400**	**Exam Hours**	**6**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	9			**Credits**	**8**

COURSE OBJECTIVE:

- To learn the importance of and undertake the design process at advanced level through large scale projects
- To understand the various design systems, guidelines and considerations as undertaken in the research and field studies and apply them in architectural design.

COURSE OUTCOME:

- Student will be able to design complex structures with advanced level planning principles incorporating the recent technologies.
- Student will be able to give a wholesome product of design to the urban scale
- Student can give futuristic proposals for the urban Architecture

UNIT-I to UNIT - V

CONTENT:

Design of advanced and complex built environments having strong linkages with the urban scale and focusing on architectural, spatial, landscape, environmental, structure, services and technology features.
Examples: Campus Design, Urban Centers, Mixed Use Development etc.

SUGGESTED READINGS:

1.Agkathidis, A., Hudert, M. and Schillig, G.,"Form Defining strategies: Experimenting Architectural Design", Wasmuth International. 2007.
2. Ching, F.D.K., "Architecture: Form, Space and Order", 3rd ed., John Wiley & Sons. 2007.
3. Morgan, C.L., "Jean Nouvel - The Elements of Architecture", Thames and Hudson. 1998.Neufert, P., "Architects' Data", 3rd ed., Blackwell Science. 2000.

20MARS211	RESEARCH METHODOLGY - II								SEMESTER-II
Marks	Internal	40	External			60	Total	100	Exam Hours	6
Instruction Hours /week		L	1	T	0	P/S	2		Credits	2

COURSE OBJECTIVE:

- To learn the importance of and undertake research and field studies and understand it application in architectural design.
- To understand existing methods and techniques from literature and field studies as relevant to the design profession and apply them in evaluation and appraisal of architectural design projects.
- To carry out and undertake studies related to the focus area.

COURSE OUTCOME:

- Student will understand the methods of research and the research applications
- Student will understand about the collection, synthesis and compilation of data
- Student will be able to prepare documents, report writing and publish in journals
- Student will understand and apply the various research techniques
- Student will be able to arrive at conclusions/inference from the research and field studies.

UNIT-I RESEARCH METHODS – PART -1

Importance, Purpose and Scope of Research methodology specific to the focus area. Understanding and Applying Qualitative, Analytical, Interpretative research in Architectural Design

UNIT-II RESEARCH METHODS – PART -2

Importance, Purpose and Scope of Research methodology specific to the focus area. Understanding and Applying Quasi- Experimental, Experimental, Simulation and Modelling techniques in the focus area of Architectural Design.

UNIT-III FIELD STUDIES AND EXPERIMENT

Focus area and specialization specific Pilot Studies, Field Surveys and Collection of Samples - Physical, Architectural, Environmental, and Organizational

UNIT-IV FIELD STUDY ANLAYSIS

Preparation and Analysis of Data Sheets and Questionnaires. Preparation and Analysis of Data Sheets and Questionnaires. Arriving at conclusions from the Research at Field Studies.

UNIT-V PROJECT REPORT

Arriving at conclusions from the Research at Field Studies. Report Writing and Publications.

SUGGESTED READINGS:

1.Knight, A. and Ruddock,L., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2.Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.
3.Gibbs, J.P., " Urban Research Methods", (rev.ed.) Von Nostrand. 1988.
4.Kothari, C.R., "Research Methodology- Methods and Techniques", New Age International. 2004.
5.Khanzode, V.V., "Research Methodology -Techniques and Trends", APH Publishing. 1995.
Books and Magazines/Journals specific to the focus area.

20MARS212	DOCUMENTATION AND PRESENTATION								SEMESTER-II
Marks	Internal	40	External			60	Total	100	Exam Hours	6
Instruction Hours /week		L	1	T	0	P/S	2		Credits	2

COURSE OBJECTIVE:

- To understand importance of data collection and documentation methos; develop skills of formal learning through participation in seminars, workshops and conferences.
- To undertake research-based publications in reputed magazines /journals as outcomes of the courses. Broad groundwork for dissertation/thesis.

COURSE OUTCOME:

- Student will be able to review the literature and analyse every aspect of the study
- Student will be able to organize formal seminars
- Student will be able to present with technical ideas and analysis
- Student will be able to do paper presentation in journals, magazines and write review

UNIT-I DESIGN RESEARCH PROCESS

Importance of design and research processes to understand/identify issues and factors of significance.

UNIT-II LITERATURE REVIEW ANALYSIS

Literature review and sources of information; analysis of documents and data; scope and limitations of design and research. Documentation of differing data and information

UNIT-III PRESENTATION TECHNIQUES

Effective presentation techniques of oral / written material and information, for professionals in the design field.

UNIT-IV PRESENTATION AND SEMINAR

Paper Presentation - organizing & participating in technical seminars, exhibitions, workshops, conferences related to architecture & allied fields. Publication and dissemination of analysis/inferences from experiments/surveys.

UNIT-V PUBLICATION

Preparing and publication of technical papers /articles in reputed journals /magazines. Preparing, editing and publishing reports, dossiers, documents, magazines and portfolios of masters' course work. On/off-line dissemination of information in media - web, blogs, etc.; familiarity with information systems and current media/methods.

SUGGESTED READINGS:

1. Knight, A. and Ruddock,L., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2. Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.
3. Gibbs, J.P.," Urban Research Methods", (rev.ed.) Von Nostrand. 1988.
4. Denzin, N. K., and Lincoln, Y. S. eds. 2000. Handbook of Qualitative Research. 2nd ed. Thousand Oaks, California: Sage Publications.
5. Creswell, J. W., "Research Design: Qualitative, Quantitative, and Mixed Methods Approaches". Thousand Oaks, Sage. 2009.
6. Related journals

20MARS213	ADVANCED DESIGN STUDIO- II								SEMESTER-II
Marks	**Internal**	**160**	**External**			**240**	**Total**	**400**	**Exam Hours**	**6**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	9			**Credits**	**8**

COURSE OBJECTIVE:

- To learn the importance of and undertake the design process at advanced level through large scale projects. To understand the various design systems, guidelines and considerations as undertaken in the research and field studies and apply them in architectural design.

COURSE OUTCOME:

- Student will be able to design complex structures the recent technologies.
- Student will be able to present his ideas with advanced level design
- Student will be able to apply the theoretical methods and give appropriate design solutions accordingly.

CONTENT:

Design of advanced and complex built environments having strong linkages with the urban scale and focusing on architectural, spatial, landscape, environmental, structure, services and technology features.
Examples: Campus Design, Urban Centers, Mixed Use Development etc.

SUGGESTED READINGS:

1. Agkathidis, A., Hudert, M. and Schillig, G., "Form Defining Strategies: Experimenting Architectural Design", Wasmuth International. 2007.
2. Ching, F.D.K., "Architecture: Form, Space and Order", 3rd ed., John Wiley & Sons. 2007.
3. Morgan, C.L., "Jean Nouvel - The Elements of Architecture", Thames and Hudson. 1998.
4. Neufert, P., "Architects' Data", 3rd ed., Blackwell Science. 2000.

Any other books, documents and standards relevant to the focus area.

20MARS311	DISSERTATION-I								SEMESTER-III
Marks	**Internal**	**160**	**External**			**240**	**Total**	**400**	**Exam Hours**	**6**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	9	**Credits**			**8**

COURSE OBJECTIVE:

- To Learn and show advanced understanding and application of the knowledge of Architectural design systems, Sustainability and housing in general and specific to the focus area through the culmination in a dissertation.
- To do an in- depth study and analysis for a chosen topic of interest

COURSE OUTCOME:

- Student will be able to identify the thrust area of research
- Student will understand and develop his own dissertation topic with research -oriented study
- Student will know the basis of experimentation, methods and applications
- Student will be able to analyse and synthesize a defined context with in-depth study and scientific approach
- Student will be able to provide innovative and practical solutions for the future architecture.

CONTENT:

Identification of Dissertation Topic and Area, Hypothesis Formulation, Objectives and Methodology. Importance, Purpose and Scope of the Dissertation in architecture in terms of design, technology, environment, economic and behavioral areas.

Related Research, Literature and Field Studies. Submission of the above in report form.

SUGGESTED READINGS:

1. Knight, A. and Ruddock,L., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2. Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.
3. Kothari, C.R., "Research Methodology- Methods and Techniques", New Age International. 2004.
4. Wayne C Booth, Joseph M Williams, Gregory G. Colomb, 'The Craft of Research', 2nd Edition, University of Chicago Press, 2008.
5. Ranjith Kumar, 'Research Methodology- A Step by Step Guide for Beginners', Sage Publications, 2005.
6. John W Creswell, 'Research Design: Qualitative, Quantitative and Mixed Methods Approaches', Sage Publications, 2002.

20MARS411	DISSERTATION-II								SEMESTER-IV
Marks	**Internal**	**320**	**External**			**480**	**Total**	**800**	**Exam Hours**	**6**
Instruction Hours /week		**L**	6	**T**	0	**P/S**	20		**Credits**	**16**

COURSE OBJECTIVE:

- To show advanced understanding and application of the knowledge of design systems in general and specific to the focus area through the culmination in a dissertation.

COURSE OUTCOME:

- Student will be able to identify the thrust area of research
- Student will understand and develop his own dissertation topic with research -oriented study
- Student will know the basis of experimentation, methods and applications
- Student will be able to analyse and synthesize a defined context with in- depth study and scientific approach
- Student will be able to provide innovative and practical solutions for the future architecture.

CONTENT:

Identification of Dissertation Topic and Area, Hypothesis Formulation, Objectives and Methodology. Importance, Purpose and Scope of the Dissertation in architecture in terms of design, technology, environment, economic and behavioral areas.

Related Research, Literature and Field Studies. Submission of the above in report form.

SUGGESTED READINGS:

1. Knight, A. and Ruddock,L., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2. Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.
3. Kothari, C.R., "Research Methodology- Methods and Techniques", New Age International. 2004.
4. Wayne C Booth, Joseph M Williams, Gregory G. Colomb, 'The Craft of Research', 2nd Edition, University of Chicago Press, 2008.
5. Ranjith Kumar, 'Research Methodology- A Step by Step Guide for Beginners', Sage Publications, 2005.
6. John W Creswell, 'Research Design: Qualitative, Quantitative and Mixed Methods Approaches', Sage Publications, 2002

LIST OF ELECTIVES		
FOCUS AREA: SUSTAINABLE ARCHITECTURE		
Elective 1	Introduction to Sustainable Architecture	20MARESS1
Elective2	Building Performance Analysis	20MARESS2
Elective 3	Sustainable Design Strategies	20MARESS3
Elective 4	Sustainable Building Systems	20MARESS4
Elective 5	Sustainable Trends and Theories	20MARESS5
FOCUS AREA: HOUSING DESIGN		
Elective 1	Introduction to Housing Design	20MARESH1
Elective2	Housing Policies and Schemes	20MARESH2
Elective 3	Sustainable Housing	20MARESH3
Elective 4	Community Participation in Housing	20MARESH4
Elective 5	Special Types of Housing	20MARESH5

20MARESS1	INTRODUCTION TO SUSTAINABLE ARCHITECTURE								SEMESTER-I
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4			Credits	4

COURSE OBJECTIVE:

- To understand th principles of sustainable architecture.
- To understand the environmental impact of building as well as to safeguard the environment and the well-being of the building and its occupants.

COURSE OUTCOME:

- Student will understand the fundamentals of sustainable concepts and applications
- Student will understand the Site planning principles and its applications
- Student will understand the climate and its impacts in indoor thermal comfort
- Student will understand the energy usage ratio and the effective steps of conservation and utilization of energy.

UNIT-I INTRODUCTION TO SUSTAINABILITY

Sustainable Design Concepts and Strategies - Energy and Environment in Architecture, Green building systems, Energy efficiency. Relevant Literature/Case studies.

UNIT-II SUSTAINABLE DESIGN PRINCIPLES

Sustainable Design Principles - Site planning, Resources, Built form, Climate responsiveness, Energy usage, Occupant behaviour and comfort. Relevant Literature/Case studies.

UNIT-III CLIMATE AND BULT ENVIRONMENT

Climate and Built Form - Overview of Passive techniques for Day lighting, Ventilation, Solar Control and Thermal Comfort. Modelling methods and simulation for assessing building performance. Relevant Literature/Case studies.

UNIT-IV ENERGY AND ITS IMPACTS

Zero Energy and Zero Waste - Methods to achieve zero energy and zero waste in buildings, life cycle assessments and energy audits, renewable energy technologies, integrated energy design. Relevant Literature/Case studies and codes such as ECBC.

UNIT-V GREEN BUILDING SYSTEMS

Green buildings systems - GRIHA, LEED, BREEAM, GREEN STAR. Comparative Studies and analysis, relevance to India.

SUGGESTED READINGS:

1.Mili Majunder, Teri - Energy - Efficient Bldg in India - Thomson Press, New Delhi. 2001.
2.Arvind Krishnan & Others - Climate Responsive Architecture, Tata Mcgraw -Hill New Delhi. 2001.
3.Ralph M. Lebens - Passive Solar Architecture in Europe - 2, Architecture Press, London. 1983.
4.Charles. J. Kibert, 'Sustainable Construction' John Wiley and sons Inc, USA. 2004.
5.N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi. 2006
6.GRIHA manuals, TERI press
7.Norbert Lechner, "Heating, Cooling, Lighting", John wiley and sons
8. Mark Dekay and G.Z. Brown, "Sun, Wind and Light- Architectural Design Strategies",,John Wiley and Sons
9. Szokolay, Koenigsberger," Manual of Tropical Housing and building" 2014

20MARESS2	BUILDING PERFORMANCE ANALYSIS								SEMESTER-II
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	4			**Credits**	**4**

COURSE OBJECTIVE:

- To understand the principles of sustainable architecture.
- To understand the environmental impact of building as well as to safeguard the environment and the well-being of the building and its occupants.
- The course is designed to learn the simulation techniques with digital applications, and to get quantifiable results by usage of various building simulation analysis software.

COURSE OUTCOME:

- Student will understand the effects of indoor comfort through software simulation and analysis
- Student will be able to achieve a quantitative result of thermal analysis by software simulations
- Student will be able to effectively use the modelling tools and techniques
- Student will be able to design a building with good thermal comfort with optimum design solutions
- Student will be able to give quantitative results of Daylighting and Ventilation of a building
- Student will be able to give an energy performance index of a building.

UNIT-I BUILDING PERFORMANCE-DATA FILES

Building Performance Analysis - Design Optimization and Visualization using Building Information Modelling. - use of Epw file – TMY data extraction – IMD files

UNIT-II DAYLIGHTING, IRRADIATION AND WIND ANALYSIS

Building Performance Analysis - Daylighting, Shading and Ventilation.

UNIT-III ENERGY ANALYSIS

Building Performance Analysis - Whole building energy analysis.

UNIT-IV MODELLING TOOLS

Building Performance Analysis - Modelling Tools and Techniques.

UNIT-V SIMULATION TOOLS

Building Performance Analysis - Simulation Tools and Techniques.

Suggested software: CLIMATE CONSULTANT, HEED, SBEED, OPAQUE, ECOTECT, SKETCHUP – OPEN STUDIO, OPTIVENT, ENERGY PLUS, DAYSIM -RADIANCE, COOLVENT, RHINO-GRASSHOPPER-LADY BUG, DIVA, DRAGONFLY, SEFAIRA, IES-VE,VELUX and recent software.

SUGGESTED READINGS:

1. Autodesk Manuals for BIM tools such as CAD, REVIT, ECOTECT
2. Rhino tutorials
3. Sefaira tutorials
4. Climate consultant Tutorials
5. IES tutorials
6. Computational fluid Dynamics – Tutorials
7. Open Studio – Tutorials

20MARESS3	SUSTAINABLE DESIGN STRATEGIES								SEMESTER-II
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4			Credits	4

COURSE OBJECTIVE:

- To understand the sustainable strategies and its principles in the design. The focus is on passive means, reduction of active methods, understanding hybrid strategies and Mixed mode building

COURSE OUTCOME:

- Student will be able to apply the Sustainable design strategies in architecture, Design and environment
- Student will be able to give design solutions of Thermal comfort for various climatic locations
- Student will understand the application of Passive, Active and Hybrid Deign strategies.
- Student will become expertise in terms of green building aspects and applications.

UNIT-I DAYLIGHTING AND VENTILATION STRATEGIES

Sustainable Strategies - Day lighting -WWR – Daylight Factor, Daylight levels – ERC, SC, IRC, Visible light Transmittance – Code compliance – Indian Standards – Lighting Standards. Ventilation – Fenestrations- Methods and calculations – Orientation strategies- Wing walls – Permeable buildings – Stack- Chimney – Cross ventilation etc

UNIT-II SOLAR CONTROL AND SHADING STRATEGIES

Sustainable Strategies - Solar Control -Sun Path – Shading concepts – radiation control – Heat balance – thermal properties of materials- Heat Dissipation – Albedo effect etc. Thermal Comfort – ASHRAE standards, Adaptive comfort model, Operative temperature, Tropical Summer Index, Comfort indices – Shading methods for Indoor thermal Comfort etc

UNIT-III STRATEGIES ASSESMENT BY SIMULATION

Sustainable Strategies - Modelling methods and simulation for assessing building performance – Simulation software – Daylight, Irradiation, Mean radiant temperature calculations etc

UNIT-IV GREEN BUILDING SYSTEM AND RATING- APPLICATIONS

Sustainable Strategies - Green buildings systems such as GRIHA, LEED, ECBC, BREEAM, and GREEN STAR. - Rating systems and applications in Residential, Commercial and Industrial buildings etc

UNIT-V CASE STUDY AND COMPARITIVE STUDIES

Sustainable Strategies - Comparative Studies of the different Case studies of buildings with rating systems and their analysis with relevance to India.

SUGGESTED READINGS:

1. GRIHA, LEED, BREEAM and GREEN STAR manuals.
2. Mark dekay and G. Z. Brown, "Sun Wind and light – Architectural Design Strategies ", John wiley and sons, New York.2013
3. Norbert Lechner, 'Heating, cooling and Lighting ',2011
4. Edward Allen, "How Buildings Work-The Natural Order of Architecture", Oxford University Press
5. Mili Majunder, Teri - Energy - Efficient Bldg in India - Thomson Press, New Delhi. 2001.
6. Arvind Krishnan & Others - Climate Responsive Architecture, Tata Mcgraw -Hill New Delhi. 2001.
7. Ralph M. Lebens - Passive Solar Architecture in Europe - 2, Architecture Press, London. 1983.

20MARESS4	SUSTAINABLE BUILDING SYSTEMS								SEMESTER-III
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	4			**Credits**	**4**

COURSE OBJECTIVE:

- This course integrates elements of architecture with construction management while embracing, the concepts of engineering sustainability as related to energy and materials usage and the effect on the environment.
- The course focuses on the design and operation of buildings to provide a comfortable, healthy, and productive environment and landscape with minimal energy and better environmental impact.

COURSE OUTCOME:

- Student will be able to gain knowledge and application of low energy building design
- Student will understand the thermal quality standards and its importance in various countries
- Student will understand the use of green materials and products for a sustainable future.
- Student will be able to calculate the energy consumption features and the cost audits.
- Student will be able to understand the integrated building management systems for a controlled environment.
- Student will be able to understand the energy and cost audits

UNIT-I LOW ENERGY BUILDING

Sustainable Building - Low energy building design and operation. -types of energy – consumption- renewable/ non-renewable-Hybrid design strategies-

UNIT-II INDOOR ENVIRONMENTAL QUALITY

Indoor Environment - Quality and Standards, Indoor Air Quality-indoor thermal comfort- levels – activity analysis- carbon emissions etc

UNIT-III GREEN MATERIALS

Building Systems - Green Materials and green Products- Manufacture- reuse- reduce-recycled materilas

UNIT-IV SMART TECHNOLOGIES

Building Systems – Smart Materials and systems- Integrated buildings- Energy saving – Automations

UNIT-V ENERGY AND COST AUDITS

Building Services - Energy and Cost audits.

SUGGESTED READINGS:

1. Mili Majunder, Teri - Energy - Efficient Bldg in India - Thomson Press, New Delhi. 2001.
2. Charles. J. Kibert, 'Sustainable Construction' John Wiley and sons Inc, USA. 2004.
   N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi. 2006

20MARESS5	SUSTAINABLE TRENDS AND THEORIES								SEMESTER-III
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	4			**Credits**	**4**

COURSE OBJECTIVE:

- To familiarize with the historic, contemporary and futuristic tends of sustainable building.
- To understand the various strategies used and to analyze them for their suitability and performance.

COURSE OUTCOME:

Student will be able to understand the policy level mechanisms and design process and product accordingly.

- Student will understand the vernacular / traditional building types and its applications to the modern context by its systems and materials.
- Student will understand to use the site in an optimum manner and know about the operational and maintenance practices.
- Student will gain knowledge about biomimicry and its importance in sustainable design
- Student will gain knowledge about futuristic design systems and new material applications.

UNIT-I POLICY AND REGULATORY MECHANISMS

Sustainable Design: Policies and regulatory mechanisms, Design practices

UNIT-II VERNACULAR AND TRADITIONAL PRACTICES

Sustainable Trends: Vernacular ways of sustainable building, Preservation of the regional and cultural identity, documentation and continuity of vernacular/traditional ways of building and detailing

UNIT-III RESOURSE OPTIMISATION

Sustainable Trends: Contemporary ideas and trends, Optimization Of site potential, Minimization of energy consumption, Protection and conservation of water resources, Use of environmentally friendly materials and products, Provision of a healthy and convenient indoor climate, Optimization of operational and maintenance practices

UNIT-IV DIGITAL APPLICATIONS AND FUTURISTC APPROACH

Sustainable Trends: Futuristic thoughts and approaches, New materials and technologies, Application of digital technologies

UNIT-V ADAPTIVE REUSE AND URBAN REGENERATION

Sustainable Theories: Biomimicry, Adaptive Reuse, Urban regeneration

SUGGESTED READINGS:

1. Eco-Tech: Sustainable Architecture and High Technology by Slessor© - Thames and Hudson 1997
2. Sustainable Architecture: Low tech houses by Mostaedi (A) – Carles Broto 2002
3. Eco-design: A manual for Ecological Design by Yeang(K) – Wiley Academy 2006
4. O.H. Koenigsberger and others (2014), Manual of Tropical Housing and Building –Part I - Climate design, Orient Longman, Madras, India,
5. "Sun wind and light"- Mark Dekay, G. Z. Brown, Feb 2014

20MARESH1	INTRODUCTION TO HOUSING DESIGN								SEMESTER-I
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	4			**Credits**	**4**

COURSE OBJECTIVE:

- Understanding the social, economic, environmental, and psychological implications of housing process and products.
- The goal is to familiarize with housing as a process and a product in the context of the individual, the family, and the community. To introduce various stakeholders involved in the housing scenario.

COURSE OUTCOME:

- Student will be able to gain knowledge about housing typologies
- Student will understand about the theories and concepts of community and Neighbourhood
- Student will understand about the emerging trends in housing
- Student will understand about the housing finance schemes and management
- Student will understand the relation of housing and real estate management in the global and local scenario.

UNIT-I HOUSING TYPOLGY

Housing typologies - Identification of stakeholders, roles responsibilities of various stakeholders, classification of various typologies.

UNIT-II COMMUNITY AND NEIGHBOURHOOD

Community and neighborhood - Theories and concepts, Understanding the scale of housing.

UNIT-III CONTEMPORARY HOUSING

Architectural styles and preferences - Trends in contemporary housing types, greater role for the architect in housing.

UNIT-IV HOUSING FINANCE

Housing finance - Economic consideration and feasibility studies. Various housing financial institutions

UNIT-V HOUSING AND REAL ESTATE

Housing markets - Real estate scenario, Land availability & Acquisition, suburban and rural trends.

SUGGESTED READINGS:

1. Merrill, J.L. (Ed.). Introduction to Housing. Upper Saddle River, NJ:Pearson Prentice Hall. 2006
2. Joseph DeChiara, Julius Panero. Time-Saver Standards for Interior Design and Space Planning, McGraw-Hill Education, 2001
3. Robert E. Stevens, Philip K. Sherwood. How to prepare a feasibility study Prentice-Hall, 1982
4. Susan S. Fainstein, Scott Campbell, Readings in Planning Theory, Wiley, 2011

Doris Kohn, J. D. von Pischke, "Housing Finance in Emerging Markets: Connecting Low-Income Groups to Markets"Springer

20MARESH2	HOUSING POLICIES AND SCHEMES								SEMESTER-II
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4	Credits			4

COURSE OBJECTIVE:

- To learn about the housing schemes and policies
- To learn about the urban housing scenario
- To learn about the rural housing scenario
- To explore about the stakeholders in the housing

COURSE OUTCOME:

- Student will learn and gain knowledge the housing schemes and policies
- Student will gain knowledge about the urban housing scenario
- Student will gain knowledge about the rural housing scenario
- Student will gain knowledge about the stakeholders in the housing
- Student will gain knowledge about the systematic approach for the future housing demand.

UNIT-I HOUSING POLICY IN INDIA

Housing Policy in the India - Government policies on housing, Government Agencies in housing sector, Classification of housing Stock

.

UNIT-II CENTRAL GOVERNMENT SCHEMES

Central Government Schemes - Identification and review of schemes with housing component.

UNIT-III STATE GOVERNMENT SCHEMES

State government Schemes - Identification and review of schemes with housing component.

UNIT-IV URBAN HOUSING

Urban housing Scenario - Housing scenario, Housing typology, Housing Stock & shortage, Demand and supply, emerging trends.

UNIT-V RURAL HOUSING

Rural Housing Scenario - Housing scenario, Housing typology, Housing Stock & shortage, Demand and supply, emerging trends.

SUGGESTED READINGS:

1.National Urban Housing and habitat policy, 2007
2.http://www.tnhb.gov.in/dept.aspx
3.http://mhupa.gov.in/policies/
4.http://nhb.org.in/Urban_Housing/HousingjDolicies.php

20MARESH3	SUSTAINABLE HOUSING								SEMESTER-II
Marks	Internal	80	External		120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4		Credits	4

COURSE OBJECTIVE:

- To learn and understand the current interventions in housing sector and propose a sustainable approach towards the housing**.**

COURSE OUTCOME:

- Student will be able to understand the sustainable site planning with site inventory and analysis
- Student will be able to understand the resource mapping
- Student will be able to understand the advance level building services
- Student will be able to design high performance houses

UNIT-I SITE ANALYSIS

How Site and climate related issues affect the design parameters and decisions. -Site Inventory and Analysis- Location, Access- Circulation, Traffic, Climate, Sensory – Analysis

UNIT-II AFFORDABLE HOUSING

Exploring the social and economic choices, options and decision of housing, various technologies available.

UNIT-III RESOURCE MAPPING

Identifying the resources (construct techniques & technology, Manpower & Material) predominant in that area. Understanding the Availability and Cost implication of the resources.

UNIT-IV BUILDING SERVICES

An in depth understanding of building system, how houses work as a system.

UNIT- V HIGH PERFORMANCE HOUSING

Exploring the science and technology required to build high performance houses.

SUGGESTED READINGS:

1.Thomas Russ, Site Planning and Design Handbook, Second Edition, McGraw-Hill Education, 2009

2.Joseph De Chiara, Julius Panero Time-Saver Standards for Interior Design and Space Planning, McGraw-Hill Education, 2001.

3.Clayton Bennett Greening Your Home: Sustainable options for every system in your house McGraw-Hill Professional 2008

4.Global Green USA, "Blueprint for Greening Affordable Housing" Island Press. 2007

5.Jessica Kellner Housing Reclaimed: Sustainable Homes for Next to Nothing New Society Publishers 2011

20MARESH4	COMMUNITY PARTICIPATION IN HOUSING								SEMESTER-III
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4			Credits	4

COURSE OBJECTIVE:

- To Learn and determine the involvement end users in various stage of housing process across.
- To learn about the community participation for various typologies

COURSE OUTCOME:

- Student will be able to develop a model for both the end user and the service provider
- Student will be able to involve in planning in design stages
- Student will be able to understand the intricacies of Community participation in Housing
- Student will be able to give design solution for the future community housing

UNIT-I COMMUNITY PARTICIPATION PLANNING

Awareness and importance of Community participation, Planning and design stages - Zoning studies, spatial analysis, customs & cultural practices and user -based studies

UNIT-II PLANNING ASPECTS

People-based planning - Identifying & incorporating Aspiration, Needs & Affordability, incorporating special needs of the elderly and children, concept of better living. Degrees of customizations

UNIT-III PLANNING PROCESS

Familiarization with development and planning process of various agencies (Public, Private (Multifamily), Private (single family), Co-operative, NGO), view on community participation, organizational structure, Project and product brief, Identification of beneficiaries.

UNIT-IV COMMUNITY PARTICIPATION MODELS AND CASE STUDIES

Existing models of community participation across various typologies, best practices, Case studies.

UNIT-V TYPOLOGY

Developing models for community participation for various typologies and stages.

SUGGESTED READINGS:

1.Sylvia J.T. Jansen, Henny C.C.H. Coolen and Roland W. Goetgeluk, "The Measurement and Analysis of Housing Preference and Choice" Springer 2011

2.Andrew Beer, Debbie Faulkner, Chris Paris, Terry Clower - Housing transitions through the life course: Aspirations, needs and policy 2011

3.Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.

4.Merrill, J.L. (Ed.). Introduction to Housing. Upper Saddle River, NJ:Pearson Prentice Hall. 2006

5.Juilenne Hanson, Decoding Homes and Houses Cambridge University Press 20

20MARESH5	SPECIAL TYPES OF HOUSING								SEMESTER-III
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	4	Credits			4

COURSE OBJECTIVE:

- To learn about the influences of social, economic and environmental factors in housing
- Exploring housing typologies which tends to lean more on a aspect more than the rest.

COURSE OUTCOME:

- Student will learn and understand the Vernacular Architecture of various regions of world
- Student will learn and understand the Vernacular Architecture of various regions of India
- Student will learn and understand the Vernacular Architecture of various regions of Tamilnadu
- Student will learn about design aspects and historical methods of construction which can be adopted for a particular context
- Student will learn and understand the types of housing in disaster prone areas

UNIT-I VERNACULAR- CHETTINAD REGION

Vernacular Architecture - Typology 1 - Chettinad region - Social factor influencing Architectural features, Location characteristics, Climatic consideration.

UNIT-II VERNACULAR-HILL REGION

Vernacular Architecture - Typology 2 - Hill region - Social factor influencing Architectural features, Location characteristics, Climatic consideration.

UNIT-III VERNACULAR – DESERT REGION

Vernacular Architecture - Typology 3 - Desert region - Social factor influencing Architectural features, Location characteristics, Climatic consideration.

UNIT-IV HOUSING – DISASTER PRONE AREAS

Housing in Disaster prone areas - Classification of Disaster, Disaster Management Cycle, Housing interventions.

UNIT-V HOUSING – FUTURE CONCEPTS

Future concepts - Development trends, Product categories, material trends, People preferences

SUGGESTED READINGS:

1. Richard Hyde, Bioclimatic Housing: Innovative Designs for Warmer Climates, Earthscan
2. Willie Webber, Simos Yannas (ed.) Lessons from vernacular Architecture, Earthscan
3. Ilay Cooper, Traditional Buildings of India, Thames and Hudson, 1998
4. Monisha Bharadwaj, India Style, Bay Soma Publishing -200