DETAILED SYLLABUS

M.ARCH (ADVANCE DESIGN)
2016-2017 BATCH

16MARS111	RESEARCH AND FIELD STUDIES -1								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 & field Studies
- To understand the Research application in architectural design.
- To understand the different methods and techniques as relevant to the design profession
- To apply the research concepts in evaluation and appraisal of architectural design projects.
- To Analyse the Various methodologies of Field Survey
- To Develop the skill of preparation of report and Documentation

COURSE OUTCOME:

1. Student will understand the methods of research
2. Student will be able to develop the Skill of field study and experimentation
3. Student will understand the research application in the field of Architectural Design
4. Student will understand about the collection of data and Analyse the data
5. Student will develop the skill of documentation of various Survey and Research
6. 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 the 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,

16MARS112	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
- To Understand the different civilizations in different parts of the world through study of their source,
- To Understand the origin, context, grammar, intent and application in architectural design.
- To Understand the Contemporary design process and relevant case studies
- To Understand & develop the skill of Design thinking as per the Current change in Architectural Style
- To understand the Concept of design Systems by various literature/case studies.

COURSE OUTCOME:

1. Student will be able to understand the various design systems in the Architecture era
2. Student will be able to understand the vernacular architecture and its importance
3. Student will Understand the contemporary design process
4. Student will develop the skill of Design thinking as per the Current situation
5. Student will develop the skill of presentation of his ides by Seminar and presentation
6. 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

16MARS113	EXHIBITION AND SEMINAR -1								SEMESTER-I
Marks	**Internal**	**100**	**External**			**-**	**Total**	**100**	**Exam Hours**	**6**
Instruction Hours /week	**L**	0	**T**	0	**P/S**	3			**Credits**	**2**

COURSE OBJECTIVE:

- To comprehend the importance of Seminars
- To understand the methods of Exhibition
- To Understand the method of presentations in International Seminars
- To Understand the method of presentations in National Seminars
- To Undertake responsibilities to conduct a conference & Seminar
- To refer reputed journals/magazines and gain the skill & Importance of good presentation methods.

COURSE OUTCOME:

1. Student will be able to know the method of Seminar events
2. Student will understand the methods of Presentation in International Seminar
3. Student will understand the methods of Presentation in National Seminar
4. Student will be able to prepare and publish journal Articles
5. Student will be able to develop the skill of writing & Presentation in Seminars
6. Student will develop the Skill of Report Writing & Presentation in Exhibitions

UNIT-I to UNIT V
CONTENT

Organizing and participating in Technical Seminars, Exhibitions, Workshops, Conferences related to architecture and allied fields. Publishing papers and articles in reputed magazines and journals. Preparing, editing and publishing reports, dossiers, documents, magazines and portfolios of master's course work.

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

16MARS114	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 t
- To learn the design aspects and considerations in large scale projects
- To understand the Urban Reformation and Renewal systems through Design
- To Categorize the Physiological and Psychological aspects in advanced level of Design
- To understand the various design systems, guidelines and considerations as undertaken in the research and field studies and apply them in architectural design.
- To understand the future need for the city & design accordingly

COURSE OUTCOME:

1. Student will be able to design complex structures with advanced level planning principles
2. Student will be able to understand the Urban Renewal and urban level design
3. Student will be able to Design large scale projects
4. Student will understand the Physiological and Psychological aspects in advanced level of Design
5. Student will be able to give a wholesome product of design in all aspects
6. 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.

16MARS211	RESEARCH AND FIELD STUDIES - 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 Research & Field Studies in advanced level
- To understand the Research application in architectural design.
- To understand the different methods and techniques as relevant to the design profession
- To apply the research concepts in evaluation and appraisal of architectural design projects.
- To Analyse the Various methodologies of Field Survey in focus area such as Sustainability, housing etc
- To Develop the skill of preparation of report and Documentation in the focus area

COURSE OUTCOME:

1. Student will understand the methods of research
2. Student will be able to develop the Skill of field study and experimentation
3. Student will understand the research application in the field of Architectural Design
4. Student will understand about the collection of data and Analyse the data
5. Student will develop the skill of documentation of various Survey and Research
6. Student will be able to prepare documents, report writing and publish in journals

UNIT-I RESEARCH METHODS – PART -1

Importance, Purpose and Scope of Research methodology & field studies 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 & Filed studies 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.

16MARS212	EXHIBITION AND SEMINAR - II								SEMESTER-II	
Marks	Internal	100	External			-	Total	100	Exam Hours	6
Instruction Hours /week	L	0	T	0	P/S	3	Credits			2

COURSE OBJECTIVE:

- To comprehend the importance of Seminars
- To understand the methods of Exhibition
- To Understand the method of presentations in International Seminars
- To Understand the method of presentations in National Seminars
- To Undertake responsibilities to conduct a conference & Seminar
- To refer reputed journals/magazines and gain the skill & Importance of good presentation methods.

COURSE OUTCOME:

1. Student will be able to know the method of Seminar events
2. Student will understand the methods of Presentation in International Seminar
3. Student will understand the methods of Presentation in National Seminar
4. Student will be able to prepare and publish journal Articles
5. Student will be able to develop the skill of writing & Presentation in Seminars
6. Student will develop the Skill of Report Writing & Presentation in Exhibitions

UNIT-I to UNIT V

CONTENT

Organizing and participating in Technical Seminars, Exhibitions, Workshops, Conferences related to architecture and allied fields. Publishing papers and articles in reputed magazines and journals. Preparing, editing and publishing reports, dossiers, documents, magazines and portfolios of master's course work.

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

16MARS213	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**	**7**

COURSE OBJECTIVE:

- To learn the importance of and undertake the design process at advanced level t
- To learn the design aspects and considerations in large scale projects
- To understand the Urban Reformation and Renewal systems through Design
- To Categorize the Physiological and Psychological aspects in advanced level of Design
- To understand the various design systems, guidelines and considerations as undertaken in the research and field studies and apply them in architectural design.
- To understand the future need for the city & design accordingly

COURSE OUTCOME:

1. Student will be able to design complex structures with advanced level planning principles
2. Student will be able to understand & design as per the Sustainability aspects
3. Student will be able to Design large scale projects
4. Student will understand the Physiological and Psychological aspects in advanced level of Design
5. Student will be able to give a wholesome product of design in all aspects
6. 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.
4. Neufert, P., "Architects' Data", 3rd ed., Blackwell Science. 2000.

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

16MARS311	DISSERTATION -1								SEMESTER-III
Marks	**Internal**	**160**	**External**			**240**	**Total**	**400**	**Exam Hours**	**6**
Instruction Hours /week		**L**	2	**T**	0	**P/S**	10		**Credits**	**7**

COURSE OBJECTIVE:

- To Learn and show advanced understanding and application of the knowledge of Architectural design
- To Understand the Sustainability & housing in general or to any specific focus area through the culmination in a dissertation.
- To develop the skill of Unique research-based application through various Literature study
- To develop knowledge by own experimentation as per the chosen topic
- To do an in- depth study and analysis for a chosen topic of interest
- To present a Wholesome Technical Study report based on Experimentation and Research

COURSE OUTCOME:

1. Student will be able to identify the thrust area of research
2. Student will understand and develop his own dissertation topic with research -oriented study
3. Student will know the basis of experimentation, methods and applications
4. Student will understand the core ideas of Application design through the experimental research
5. Student will be able to analyse and synthesize a defined context with in-depth study and scientific approach
6. Student will be able to provide innovative and practical solutions for the future architecture.

UNIT-I to UNIT - V

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.

16MARS411	DISSERTATION -1I								SEMESTER-IV	
Marks	**Internal**	**320**	**External**				**480**	**Total**	**400**	**Exam Hours**	**6**
Instruction Hours /week		**L**	16	**T**	0	**P/S**	20			**Credits**	**16**

COURSE OBJECTIVE:

- To Learn and show advanced understanding and application of the knowledge of Architectural design
- To Understand the Sustainability & housing in general or to any specific focus area through the culmination in a dissertation.
- To develop the skill of Unique research-based application through various Literature study
- To develop knowledge by own experimentation as per the chosen topic
- To do an in- depth study and analysis for a chosen topic of interest
- To present a Design report based on previous Experimentation and Research

COURSE OUTCOME:

1. Student will be able to identify the thrust area of research
2. Student will understand and develop his own dissertation topic with research -oriented study
3. Student will know the basis of experimentation, methods and applications
4. Student will understand the core ideas of Application design through the experimental research
5. Student will be able to analyse and synthesize a defined context with in-depth study and scientific approach
6. Student will be able to provide innovative and practical solutions for the future architecture by Design

UNIT-I to UNIT - V

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	16MARESS1
Elective2	Building Performance Analysis	16MARESS2
Elective 3	Sustainable Design Strategies	16MARESS3
Elective 4	Sustainable Building Systems	16MARESS4
Elective 5	Sustainable Trends and Theories	16MARESS5
FOCUS AREA: HOUSING DESIGN		
Elective 1	Introduction to Housing Design	16MARESH1
Elective2	Housing Policies and Schemes	16MARESH2
Elective 3	Sustainable Housing	16MARESH3
Elective 4	Community Participation in Housing	16MARESH4
Elective 5	Special Types of Housing	16MARESH5
FOCUS AREA: LANDSCAPE DESIGN		
Elective 1	Introduction to Landscape Design	16MARESL1
Elective2	Plants and Application	16MARESL2
Elective 3	Site Engineering	16MARESL3
Elective 4	Planting Design	16MARESL4
Elective 5	Advanced Landscape Theories	16MARESL5
FOCUS AREA: MEDICAL ARCHITECTURE		
Elective 1	Introduction to Medical Architecture	16MARESM1
Elective2	Medical Systems and Typologies	16MARESM2
Elective 3	Hospital Standards	16MARESM3
Elective 4	Management of Healthcare Facilities	16MARESM4
Elective 5	Special Types of Healthcare	16MARESM5
FOCUS AREA: STRUCTURES IN ARCHITECTURE		
Elective 1	Advanced Concrete Technology	16MARESA1
Elective2	Advanced Structural Analysis I	16MARESA2
Elective 3	Advanced Structural Analysis II	16MARESA3
Elective 4	Design of Concrete Structures	16MARESA4
Elective 5	Steel Structures	16MARESA5
FOCUS AREA: RETAIL AND EXHIBITION DESIGN		
Elective 1	Introduction to Retail and Exhibition Design	16MARESR1
Elective2	Visual Merchandising	16MARESR2
Elective 3	Animation for Design	16MARESR3
Elective 4	Exhibition Construction and Detailing	16MARESR4
Elective 5	Interactive Experience Design	16MARESR5

16MARESS1	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 orient towards the United nations Sustainable Development goals
- To Understand the environmental impact of building as well as to safeguard the environment
- To Understand the Sustainable Design principles in Architecture
- To Understand the Climatic impacts due to urbanization and ways for mitigation.
- To Understand & work for the health & well- being of the building and its occupants.
- To Understand the broad guideline of various green Building Systems

COURSE OUTCOME:

1. Student will understand the fundamentals of sustainable concepts and applications
2. Student will understand the Site planning principles and its applications
3. Student will understand the climate and its impacts in indoor thermal comfort
4. Student will understand the energy usage ratio and the effective steps of conservation and utilization of energy.
5. Student will understand the Green building Rating Systems in a Broader context
6. Student will understand the Effective methods to propose green buildings through Case Studies

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

16MARESS2	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 building through Simulation process
- To learn the simulation techniques with digital applications, and to get quantifiable results by usage of various building simulation analysis software.
- To Understand the Effective methods of Daylighting through Simulation
- To Understand the Effective methods of Reduction of Solar Radiation through Simulation
- To Understand the effects of Indoor thermal comfort through Simulation.
- To Understand the Energy performance Index of a Building

COURSE OUTCOME:

1. Student will understand the effects of indoor comfort through software simulation and analysis
2. Student will be able to achieve a quantitative result of thermal analysis by software simulations
3. Student will be able to effectively use the modelling tools and techniques
4. Student will be able to design a building with good thermal comfort with optimum design solutions
5. Student will be able to give quantitative results of Daylighting and Ventilation of a building
6. 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

16MARESS3	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.
- To focus on passive means, reduction of active methods in building Function
- To gain a broad understanding of hybrid strategies and Mixed mode building
- To Understand in depth the green building Rating Systems all over India & Abroad
- To Understand the Design Aspects of Daylighting techniques for large scale projects
- To Understand the Design Aspects of heating & Ventilation techniques for large scale projects

COURSE OUTCOME:

1. Student will be able to apply the Sustainable design strategies in architecture, Design and environment
2. Student will be able to give design solutions of Thermal comfort for various climatic locations
3. Student will understand the application of Passive, Active and Hybrid Deign strategies.
4. Student will become expertise in terms of green building aspects and applications.
5. Student will understand the in – depth Analysis of Daylighting
6. Student will understand the In- depth analysis of Ventilation technique.

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.

Ralph M. Lebens - Passive Solar Architecture in Europe - 2, Architecture Press, London. 1983.

16MARESS4	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:

- To Understand the low Energy Building Concepts with case studies
- To Understand the Indoor Environmental Quality aspects through survey & Case studies
- To Gain understanding & knowledge about the green Materials
- To learn & provide a comfortable, healthy, and productive environment and landscape with minimal energy and better environmental impact.
- To Gain Understanding about the Smart technologies for the Energy management
- To Gain Understanding & Knowledge about the Energy & Cost Audit

COURSE OUTCOME:

1. Student will be able to gain knowledge and application of low energy building design
2. Student will understand the thermal quality standards and its importance in various countries
3. Student will understand the use of green materials and products for a sustainable future.
4. Student will be able to calculate the energy consumption features and the cost audits.
5. Student will be able to understand the integrated building management systems for a controlled environment.
6. 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

16MARESS5	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 Understand the various Sustainable Policies & mechanisms
- To Gain in-depth knowledge about vernacular & traditional practices
- To Gain knowledge about biomimicry and applications in building design
- To Gain Knowledge about Adaptive reuse & Urban regeneration
- To Understand about Resource Optimisation – Water Efficiency- Operational procedure
- To familiarize with the historic, contemporary and futuristic tends of sustainable building.

COURSE OUTCOME:

1. Student will be able to understand the policy level mechanisms and design process and product accordingly.
2. Student will understand the vernacular / traditional building types and its applications to the modern context by its systems and materials.
3. Student will understand to use the site in an optimum manner and know about the operational and maintenance practices.
4. Student will gain knowledge about biomimicry and its importance in sustainable design
5. Student will gain knowledge about futuristic design systems and new material applications.
6. Student will Understand about the Adaptive Reuse & urban Generation

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

16MARESH1	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:

- To Gain Knowledge about the Housing Typologies all over the world
- To Understand the principles of Community living & Neighbourhood
- To Understand 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.
- To Understand about the Housing Finance

COURSE OUTCOME:

1. Student will be able to gain knowledge about housing typologies
2. Student will understand about the theories and concepts of community and Neighbourhood
3. Student will understand about the emerging trends in housing
4. Student will understand about the housing finance schemes and management
5. Student will understand the relation of housing and real estate management in the global and local scenario.
6. Student will Understand the Basis of Housing Demand all over the world

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

16MARESH2	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
- To gain knowledge about the Central government schemes
- To gain Knowledge about the State Government Schemes

COURSE OUTCOME:

1. Student will learn and gain knowledge the housing schemes and policies
2. Student will gain knowledge about the urban housing scenario
3. Student will gain knowledge about the rural housing scenario
4. Student will gain knowledge about the stakeholders in the housing
5. Student will gain knowledge about the systematic approach for the future housing demand.
6. Student will gain knowledge about the Schemes of Central & State government

UNIT-I HOUSING POLICY IN INDIA

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

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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

16MARESH3	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 Understand about the Site Analysis
- To gain Knowledge about Affordable housing
- To gain Knowledge about Resource Mapping
- To gain Knowledge about advanced level of Building services for housing
- To learn and understand the current interventions in housing sector and propose a sustainable approach towards the housing.
- To learn about High Performance Housing

COURSE OUTCOME:

1. Student will be able to understand the sustainable site planning with site inventory and analysis
2. Student will understand about Affordable housing techniques
3. Student will learn about cost effective techniques in housing.
4. Student will be able to understand the resource mapping
5. Student will be able to understand the advance level building services
6. Student will be able to understand & 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

16MARESH4	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 gain knowledge about the Community participation in Housing
- To gain deep understanding about the Planning Aspects in Housing
- To gain knowledge about the planning process
- To Learn and determine the involvement end users in various stage of housing process across.
- To learn about the community participation for various typologies
- To learn about various best practices in community Housing Through Case studies

COURSE OUTCOME:

1. Student will be able to develop a model for both the end user and the service provider
2. Student will be able to involve in planning in design stages
3. Student will be able to understand the intricacies of Community participation in Housing
4. Student will be able to give design solution for the future community housing
5. Student will gain Knowledge about the best practices in 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 2003

16MARESH5	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 gain Knowledge about the Vernacular housing in Chettinad Region
- To Gain knowledge about the Vernacular housing in Hill region
- To understand the Various techniques involved in the vernacular construction
- To understand about Disaster prone areas an methodologies for housing in those regions
- 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:

1. Student will learn and understand the Vernacular Architecture of various regions of world
2. Student will learn and understand the Vernacular Architecture of various regions of India
3. Student will learn and understand the Vernacular Architecture of various regions of Tamilnadu
4. Student will learn about design aspects and historical methods of construction which can be adopted for a particular context
5. Student will learn and understand the types of housing in disaster prone areas
6. Student will be able to Propose the housing trend for the Future.

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 -2003