1. PROGRAMME EDUCATIONAL OBJECTIVES(PEOs):
   i. To provide students with additional knowledge and skills as a conservation architect/ research/ teacher
   ii. To enable students to add value to the process of architectural conservation by incorporating depth in already existing fields of study relevant to architectural conservation.
   iii. To enable students to widen the scope of their professional abilities through additional fields of study that would enhance their knowledge in intellectual, creative, technical, social and environmental realms.
   iv. To enable students to take independent, informed and innovative decisions within the discipline of conservation architecture and contribute to larger society through their future career as a conservation architect, an academician or a research scholar.

2. PROGRAMME OUTCOMES(POs):
   PO Programme Outcomes
   1 An ability to independently carry out research/investigation and development work to solve practical problems
   2 An ability to write and present a substantial technical report/document
   3 Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program
   4 Graduates will demonstrate an all-round skill in design and research in architectural conservation and contribute successfully further to society through their design, or research or teaching.
   5 Graduates will be able to identify additional parameters/ issues within the context of architectural conservation and resolve them using technical expertise in a holistic manner using conservation-based design and execution.
   6 Graduates will be able to resolve issues relating to conservation with due consideration to historical and environmental issues using cutting edge methods and approaches in resolution of conservation related issues.

4. PEO/PO Mapping:

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**TOTAL** 15 | 0 | 13 | 28 | 26

* Audit Course is optional

### SEMESTER II

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### AUDIT COURSES (AC)

Registration for any of these courses is optional to students

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### SUMMARY

Name of the Programme: M. ARCH. (CONSERVATION)

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CO4101 INTRODUCTION TO ARCHITECTURAL CONSERVATION

L T P/S C
3 0 0 3

COURSE OBJECTIVES:
- To introduce heritage conservation in the Indian context
- To inform about Governmental and Non-Governmental agencies that work towards Conservation at various levels in India.
- To enable students to understand the importance of documentation and assessing architectural character.
- To enable students to understand the relationship between craft and conservation
- To create awareness of the various charters and development of UNESCO as the global agency and its role in the field of conservation in India.

UNIT I INTRODUCTION TO CONSERVATION

UNIT II THEORY OF CONSERVATION IN INDIA

UNIT III AGENCIES & POLICIES IN CONSERVATION
Establishment, goals & objectives of Archaeological Survey of India (ASI) - Role and activities of ASI Role of INTACH – Formation, Scope and Principles – Administrative Form -INTACH Charter Central & State Government policies on heritage Conservation - Legislations and legal interventions in Conservation

UNIT IV CASE STUDIES
Case study of projects (single building) by conservation architects/firms/organizations in India, Select Case Studies of ancient heritage sites in India such as Hampi, Qutub complex, Mahabalipuram, etc.

UNIT V ROLE OF UNESCO IN CONSERVATION IN INDIA
Birth and formation of UNESCO – Charters of UNESCO - Listing of World Heritage Monuments in India – Conservation Strategies – Case studies

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1 Relate to the heritage conservation movement in India
CO2 Explain about various governmental agencies and their contributions towards conservation.
CO3 Apply their mind and assess architectural character and importance of documenting heritage
CO4 Analyze the importance of craft in conservation and importance of craft in community.
CO5 Build case studies and understand the role of agencies like UNESCO in architectural conservation

REFERENCES:
2. Pant, Dhirendra Kumar, Care and administration of heritage monuments in India, 725.940954PAN-C1784-1904-2012

CO-P0 MAPPING

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COURSE OBJECTIVES:
- To enable understanding of the scientific approach to cultural studies and cultural theories related to perception and interpretation of built heritage.
- To provide students with various theories of cultural study and discuss various methodologies to study culture
- To enable students to understand the concept of vernacular architecture and various traditional materials associated with them.
- To enable students to develop holistic understanding of conservation by studying the core disciplines of conservation
- To introduce the importance of culture mapping among various social communities of India.

UNIT I INTRODUCTION TO HISTORY & SOCIAL SCIENCES
Understanding the concept and development of society – Core disciplines including social sciences (Anthropology, Sociology, History, Art-History, etc.), Archaeology, Museology and Planning. Synergies between the core disciplines of society in understanding built heritage.

UNIT II STUDY OF CULTURE
Definition of culture - aspects, identity of key factors – theories of cultural study - overlap of culture – Approaches and methodologies of study of culture - interrelation between different cultural parameters

UNIT III ARCHITECTURE AND CULTURE
Architecture as a cultural element – concept of vernacular architecture – elements and characters of vernacular architecture – selected study of Chettinad houses – Agraharam dwellings – Havelis - NaluKettu houses – Goan houses etc.
UNIT IV CULTURAL STUDY AND CONSERVATION

Importance of core disciplines in holistic understanding of conservation - Impacts of core disciplines on Conservation - Understanding various perception and interpretation of heritage - Evolving holistic and integrated habits of thought.

UNIT V CASE STUDY

Culture mapping and study of practices of selected social communities of India.

COURSE OUTCOMES:

Students should be able to

CO1 Relate to the scientific approach to cultural studies and theories related to interpretation of built heritage.

CO2 Explain about various theories about cultural study and their methodologies.

CO3 Apply their mind and assess the importance of vernacular architecture in today’s context.

CO4 Analyze the importance of holistic understanding of conservation from a grass root level.

CO5 Build case studies based on culture mapping across various social communities.

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CO4103 TRADITIONAL KNOWLEDGE SYSTEM L T P/S C 3 0 0 3

COURSE OBJECTIVES:

- To enable students to understand the concept of traditional knowledge and differentiate between that and formal education.
- To provide students with typologies of architecture, evolution of need-based architecture.
- To enable students to understand the concept of traditional crafts and the importance of craftsmen and materials.
- To enable students to develop an understanding for general planning strategies in ancient cities.
- To introduce the importance of gaining knowledge on traditional materials and practices especially in heritage sites.
UNIT I TRADITIONAL KNOWLEDGE SYSTEM 6
Understanding the concept of traditional knowledge – Difference between traditional knowledge and formal education – advantages and disadvantages – need for safeguarding traditional knowledge – examples of traditional knowledge system in various fields.

UNIT II TRADITIONAL ARCHITECTURAL PRACTICE 9

UNIT III ARCHITECTURE & ASSOCIATED CRAFTS 12
Traditional crafts and craftsmen of Indian architecture – traditional knowledge in building sciences and environmental studies - associated craftsmen like artist, carpenter, weavers - select case studies using materials like bamboo, bricks, lime, terracotta, etc.- Indigenous Construction Techniques like Chettinad Plaster, Athangudi Tiles, Madras Terrace Roof, Araish Lohi Lime Plaster.

UNIT IV DEVELOPMENT OF HISTORIC CITIES 12
Historic City, a product of people, place and time – General Planning strategies for city planning in ancient times – religious structures, road network, irrigation channels, occupation-based settlement designs – sustainability of historic cities – selected case studies of Srirangam, Kancheepuram, Hampi, Nalanda, Benares, etc.

UNIT V TRADITIONAL KNOWLEDGE & CONSERVATION 6
Methods of gaining traditional knowledge – importance and ways of documenting traditional practices application process of traditional knowledge in practice – site visit and field work- Risk Management in Heritage Sites

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1 Relate to the concept of traditional knowledge and differentiate between that and formal education.
CO2 Explain the typologies of architecture, evolution of need-based architecture. about cultural study and their methodologies.
CO3 Apply their mind and assess the importance of traditional crafts and the importance of craftsmen and materials.
CO4 Analyze the importance of general planning strategies in ancient cities.
CO5 Build a knowledge bank on traditional materials and practices that can be applied to current projects as well.

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AVg. = (1+1)/2=1, (2+1+1+2+1)/5=1.4, (2+1)/3=1, (1+1+1)/3=1
COURSE OBJECTIVES:

- To enable students to various properties of historic building materials.
- To enable students to understand various types of structural systems that are common in heritage buildings.
- To provide information on various causes of decay in both materials and structural systems.
- To expose students to various methods of assessment and investigations to check on structural stability.
- To enable students to connect traditional structural systems to current context.

UNIT I  HISTORIC BUILDING MATERIALS

Historic building materials - location, formation, physical and chemical properties, types, availability, sourcing, characterization of materials & compatibility of its usage, relationship of strength of materials used to the type of heritage structure, weathering characteristics, workability – select building materials like Lime, Stone, Timber, Brick, Glass, Cement, Concrete, etc.

UNIT II  HISTORIC STRUCTURAL SYSTEMS

Various types of structural systems, Trabeate & arcuate systems, loading patterns, different structural components - arches, domes, vaults, beams, slabs, vertical supports, trusses & foundation with different building materials & loading conditions, their behavior, calculation of stresses & deformations.

UNIT III  CAUSES OF DECAY IN MATERIALS & STRUCTURES

Gravity factor, Natural factors – climatic, natural disasters, botanical, biological & entomological causes of decay, Termite infestation, other causes for weakening of materials, Man-made factors – lack of maintenance strategies, vibration, atmospheric pollution, inappropriate use, etc.

UNIT IV  ASSESSMENT OF MATERIALS & STRUCTURE


UNIT V  CASE STUDIES

Case studies of historical buildings with columnar & trabeate structure to understand materials used for various building components, structural behavioral patterns, methods of assessment, defect analysis & reporting. Case studies of historical buildings with arcuate structure to understand materials used for various building components, structural behavioral patterns, methods of assessment, defect analysis & reporting.

TOTAL: 45 PERIODS
REFERENCES:

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CO4121 DOCUMENTATION TECHNIQUES AND INFORMATION DATA MANAGEMENT

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COURSE OBJECTIVES:
- To impart necessary technical skills and competence required for the preparation of inventories of cultural resource for survey, analysis and documentation.
- To create awareness about the need for a methodical and systematic process for inventory as an essential basis for management and conservation plans.
- To enable students to try their hands out on the field documenting using new methods and tools.
- To give competency in documenting, organizing, storing and managing information in written, oral or visual form using GIS and other tools.

UNIT I DOCUMENTATION


UNIT II DOCUMENTATION TECHNIQUES – MANUAL & DIGITAL

Introduction to methods of physical documentation – hand sketching – measured drawing – colour coding Exercise - Documentation of a live case study including field work Photography – archiving digital data – use of software for measured drawing – 2D and 3D rendering of historic structures for documentation - Communicating documentation including technical skills and competence Exercise - Documentation of a live case study including field work

UNIT III DATA COLLECTION, STORAGE, ORGANIZATION & ANALYSIS

comparison and overlapping of data collected - Data Linking - Data Analysis – Archiving of analyzed Data – System Data Storage – Tools and equipment’s for storage - Compiling and Report generation – Drafting a report and presentation

UNIT IV      DIGITAL IMAGING

Digitizing entities – artifacts, architectural elements, architectural sites, Digitizing details, easel paintings, sculpture, etc., Use of advanced technology in the capture & delivery of certain types of digital images – Digital photography (field visits & photo sessions) – image enhancement techniques, application of filters, image editing & other tools

UNIT V      MODERN DOCUMENTATION & DATA MANAGEMENT TECHNIQUES


TOTAL: 60 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1  Relate to the various technical skills and competence required for the preparation of inventories of our built heritage.
CO2  Explain the various types of methods and processes involved in documenting our heritage
CO3  Apply their mind and assess various methods of documentation on site.
CO4  Analyze the importance of documenting, organizing, storing and managing information in written, oral or visual form using GIS and other tools.
CO5  Build a documentation report based on all techniques and methods taught

REFERENCES:
1. David O’Sullivan and David J. Unwin, 910.285SUL-G, Geographic Information Analysis
2. Eun Sul Lee and Ronald N. Forthofer, 300.727LEE-A, Analyzing Complex Survey Data
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CO4111 CONSERVATION STUDIO I

OBJECTIVES:
- To enable the student to understand the difference between a conservation project and a new design project
- To enable the student to understand the importance of site context and age of the building/site.
- To prepare the student to see the potential of a building in disrepair and analyze the methods it can be rehabilitated with.

CONTENT:
Projects either by individuals or groups shall be worked upon emphasizing on the following:
- Understanding historic buildings/site.
- Demarcation of historic sites and its relationship to surroundings.
- Detailed documentation of the site/structure.
- Understanding the building and composition of building materials.
- Identification of function, use and condition of the buildings/site.
- Statement of Significance of historic buildings/site.
- Maintenance, Management and Conservation of the buildings/site includes planning interventions.

The project contents would include programming for the project, appreciation and identification of heritage value, interpretation and interventions. Exploring various research methods & data collection techniques would be part of the exercise. The tutorials and studio program will help the students in the development of project statement, data analysis and critical inferences for design application.

TOTAL: 150 PERIODS

COURSE OUTCOMES:
CO1 The students should be able to apply themselves as a conservation architect
CO2 The students should be able to analyze the importance of the cultural heritage of the site and building
CO3 The students should be able to build a sustainable heritage proposal for an historic building.

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OBJECTIVES

- To introduce the students to the importance of critical inquiry as a way of gaining knowledge and adding to it through research.
- To expose the students to the various forms of research and research methodologies/processes.
- To introduce various methods of data collection
- To enable architectural report writing techniques
- To engage this understanding in the specific field of architectural research.

UNIT I  INTRODUCTION
Basic research issues and concepts- orientation to research process- types of research: historical, qualitative, co-relational, experimental, simulation and modeling, logical argumentation, case study and mixed methods- illustration using research samples

UNIT II  RESEARCH PROCESS
Elements of Research process: finding a topic- writing an introduction- stating a purpose of study identifying key research questions and hypotheses- reviewing literature- using theory- defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis- illustration using research samples

UNIT III  RESEARCHING AND DATA COLLECTION
Library and archives- Internet: New information and the role of internet; finding and evaluating sources- misuse- test for reliability- ethics
Methods of data collection- From primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling- Problems encountered in collecting data from secondary sources.

UNIT IV  REPORT WRITING
Research writing in general- Components: referencing- writing the bibliography - developing the outline - presentation; etc.

UNIT V  CASE STUDIES
Case studies in the relevant discipline illustrating how good research can be used from project inception to completion- review of research publications.

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to

CO1  Relate to the various technical skills and competence required for the research writing

CO2  The student will develop the skill to identify, decipher and interpret issues relating to architecture based on research enquiry methods.

CO3  Apply the various methods to collect data

CO4  The student will gain knowledge of different methods of conducting research and research writing.

CO5  The student will able to write and understand the research methodology through various case studies.

REFERENCES
1. Iain Borden and Kaaterina Ruedi Ray ; The Dissertation: An Architecture Student's Handbook;Architectural Press; 2006
3. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches;Sage Publications; 2011.
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CO4201 STRENGTHENING AND RETROFITTING HISTORIC STRUCTURES

OBJECTIVES:
- To introduce various interventions in conservation related issues
- The objective is to understand solutions for repair and strengthening of structural system of historic structures and also upgrading them to cater to the contemporary demands and needs.
- To provide rescue measures and techniques to strengthen the historic buildings
- The detailing of appropriate options of intervention will lead to making of an implementable document. Case studies of completed projects shall be evaluated towards quantification and quality.
- To introduce adaptive reuse methods and retrofitting techniques

UNIT I INTRODUCTION

Degrees of Intervention in Historic buildings, Definition of Restoration, Retrofitting & Adaptive re-use, Major issues & challenges faced in India

UNIT II REPAIR & RETROFITTING PROCESS


UNIT III STRENGTHENING & TREATMENTS


Structural repairs - Various advanced techniques of strengthening and retrofitting - Gunite and shotcrete epoxy injection. Repairs to overcome low member strength like deflection, cracking, chemical disruption, weathering, wear, fire, marine exposure, etc. like section enlargement, rust eliminators and polymers coating for rebar’s, etc. Engineered demolition techniques for dilapidated structures-Case studies
UNIT IV  CASE STUDIES
Select case studies of restored/conserved buildings in India to understand the process & details of strengthening & retrofitting heritage structures including financial implications.

UNIT V  ADAPTIVE REUSE
Need for adaptive reuse - Issues to be explored in building adaption - Economic, social, environmental, and assessment models for adaptive reuse - Case studies of buildings with adaptive reuse.

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1 Students will understand various interventions and will enable to choose the appropriate
CO2 The student will develop the skill to identify the issues and recording the damages
CO3 Students will acquire skills to find appropriate remedial measures and solutions for strengthening and retro fitting of structure.
CO4 Assignments will include on site observation and analysis and formulating proposal for remedial measures and solutions for strengthening and retro fitting of a structure.
CO5 Assignment will be in the form of reports, reviews and tutorials with suitable illustrations.

REFERENCES
3. CPWD Analysis of Rates for Delhi-CPWD cpwd.gov.in/deputation/ar1- final.pdf
7. Thorpe, David, Sustainable Home Refurbishment: the Earth scan expert guide to retrofitting homes for efficiency,2010 696THO-S

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CO4202  PROJECT MANAGEMENT IN CONSERVATION

OBJECTIVES:
- The objective is to understand core principles of Project Management
- The focus is on using Project Management tools for effective conduction of conservation projects in particular
- To enable the students to create communication models and methods
- To create awareness on the safety and risk management
- To learn portfolio management through case studies.
UNIT I  INTRODUCTION TO PROJECT MANAGEMENT
Introduction - Project management, Project management versus Traditional management, Different forms of Project Management – Project Phases – Project Life Cycle – Project Management Process through Initiation, Planning, Execution, control and closure within the triple constraints of scope, time and cost with all inputs, tools & techniques and outputs.

UNIT II  CONSERVATION PROJECT PLANNING

UNIT III  COMMUNICATION MANAGEMENT
Project Management plan - The Project Management Configuration Plan - Stakeholder register, Documentation and Communication “Road Map” –Enterprise environmental factors, Organizational process assets. Tools & techniques - Communication requirements analysis, Communication Technology –Communication models and methods: General Guidelines for Effective Communication -Communication Management plan to manage stakeholder engagement -Project Manager’s Checklist& Project documents update

UNIT IV  SAFETY & RISK MANAGEMENT
Identifying risk, preparing for risk identification, risk categories, referring to historical information - Identifying the project risk – Reviewing project documents, brainstorming, analyzing SWOT – Examining the results of risk identification, qualitative and quantitative risk analysis - Safety in construction contracts - Safety record keeping - Safety culture - Safe workers - Safety and first line supervisors, safety and middle managers, top management practices - Company activities and safety- Safety Personnel - Contractual obligation - Project Coordination and Safety Procedures - Workers Compensation

UNIT V  PORTFOLIO MANAGEMENT
Defining and Implementing Project Portfolio Management – Objectives, practices and organizational roles – evolution of PPM - Bridging the Gap between Operations management and Project Management for multiple projects- Importance of Case Study and its relevance – Analysis and references from case study of conservation Project

OUTCOMES:

CO1 The assignments shall be based on legal documents and their reviews.
CO2 Assignment will be in the form of reports, reviews and tutorials with suitable case studies.
CO3 Students shall learn about law for protection of heritage in India.
CO4 Students will learn safety related issues and solutions
CO5 Students will learn to implement project portfolio management

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**MH4221 GEOGRAPHICAL INFORMATION SYSTEMS FOR BUILT ENVIRONMENT**

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**OBJECTIVES**
- To examine the role and application of Geographic Information Systems in environmental design, community charities and other urban design projects.
- To learn database concepts and its management
- To understand spatial data management
- Enable to use Arc GIS tools
- To create land use maps

**UNIT I INTRODUCTION**
6
GIS – Spatial data, non Spatial data, Plan, Map, Scale, Map Projection, GPS, GCP collection, Spectral signature curve, Image processing – Geo coding / Geo referencing, GIS software, Two tier architecture, Three tier architecture, Thin client, Thick client

**UNIT II DATABASE CONCEPTS**
9
Data structures, Databases, Files, Types of Tables, Table operations, Creating a Table, Accessing Records in a Table, Manipulating records in a Table, Modifying Table structure, Reports, Advantages of database, Primary key and data access, Composite primary key, Defining a primary key, Sorting, Indexing, Master Detail relationships, Types of relationships, Foreign key, Deleting, updating and adding records to linked tables, ER Diagram, Data Model – Physical, logical and conceptual.

**UNIT III SPATIAL DATA**
9

**UNIT IV INTRODUCTION TO GIS SOFTWARE**
9
Arc Info – Coverage – Arc, Node, Tics, Add, get, put, Map extent, edit, Topology creation – Clean, Build, Tables – Creating tables, updating tables, join, drop item, Export, Import, overlay, union, intersection, buffer.

**UNIT V MODELLING GIS PROJECTS FOR URBAN AREAS**
12
Preparation of Land use map, Land use suitability analysis, Screen design, Visual Basic application using Map objects.

**TOTAL: 45 PERIODS**
OUTCOMES

CO1 The student will increase the knowledge on GIS and the various characteristics of Data.

CO2 The student will learn database concepts and its application

CO3 The student will learn spatial data management

CO4 The student will learn to apply the software knowledge

CO5 The student will accept the potential of GIS and develop integrated practice of using the GIS application with architecture.

REFERENCES

1. An Introduction to Database Systems – C.J.Date
2. ESRI (1992) Understanding GIS, The Arc Info Methods, ESRI, USA
3. Fundamentals of Data base Management System by Elmasri & Navethi
4. Information systems for Urban Planning – Robert Laurini
5. Modelling our world – ESRI Press

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CO4211 CONSERVATION STUDIO II

OBJECTIVES:
- The objective is to introduce the problems and issues confronting historic core and urban areas.
- The aim of the studio in this semester is to introduce the students to a historic site, historic city or environment which is more complex and larger in scale to the building.
- The exercise shall address issues related to heritage at the urban scale.
- The attempt will be to adopt an integrated approach.

CONTENTS

Projects by either individuals or groups shall be worked upon emphasizing on the following:
- Understanding historic core and its linkage to developing city.
- Demarcation of historic core and its relationship to surroundings.
- Understanding the historic core in terms of built and open spaces, skyline, interface and transitions.
- Identification of function, use and condition of the buildings/site/historic cores.
- Statement of Significance.
- Maintenance, Management and Conservation plan.
- Planning Interventions.

The project shall emphasize on assessment of cultural significance and community participation for conservation and area and city level issues in architectural conservation. Identification of Heritage Zones and their appreciation of architectural vocabulary. Traditional building technology, streets, markets, neighborhoods and their heritage value.

Preparation of conversation plans and management plans as required. Formulation and application of conservation policy and guidelines for historic areas and extensions.

TOTAL: 180 PERIODS
OUTCOMES:
CO1 Students will understand the cultural significance of the historic core
CO2 Students shall study and find solutions to problem and issues confronting historic core/urban areas.
CO3 Students will learn to formulate guidelines and policies.
CO4 The studio shall be progressive work in groups. Deliverables shall include drawings and report. Progressive presentations shall be made for reviews at various stages.

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CO4301 SERVICES IN HISTORIC BUILDINGS

OBJECTIVES:
- The objective is to introduce the students to various fields of services involved in heritage structures.
- The focus on upgrading services with respect to original design and materials while meeting applicable codes and occupant needs.
- To exercise and address issues related to services in historic structures
- The attempt will be to improve the internal environment by installing appropriate building services.
- The focus will be on an integrated approach to services on historic structures.

UNIT I INTRODUCTION TO SERVICES IN HISTORIC STRUCTURES
Need and necessity for services – Permissible interventions – Norms to be followed – Planning of service lines – Service provisions and adaptive reuse – Energy Efficiency in Historic Buildings-Provisions by ASI for service system installations, ducting etc.

UNIT II PLUMBING SERVICES IN HISTORIC STRUCTURES

UNIT III ELECTRICAL, LIGHTING & AIRCONDITIONING SERVICES
Electrical power – DC / AC system, electrical load and emergency power – electrical conductors and raceways – electrical distribution in buildings – power distribution system – standby and alternate power supply system.
UNIT IV  FIRE SAFETY & CONTROL SYSTEMS

UNIT V  INTEGRATED SERVICE PLANNING
Vibrations from mechanical equipment-Pumps & motors - basic practice of vibration isolation & guidelines, wall, floor & ceiling construction AC ducts - Characteristics of duct system noise, noise sources in ducts, Building Codes& Standards, Civil infrastructure services for residential and institutional complexes with planning, design, construction and maintenance of external development works such as water supply, sewerage, solid wastes, roads and storm water drainage, including rain water harvesting methods

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1  Relate to norms and planning of modern services in historic structures.
CO2  Explain the appropriate solutions for integrating various services in historic structures.
CO3  Apply the acquired skills on-site and propose appropriate services.
CO4  Analyze and formulate proposal for integrating the various modern services in heritage structure.
CO5  Build case studies in the form of reports, reviews and tutorials with suitable illustrations.

REFERENCES:
1. Fred hall and Roger Greeno, Building Services Handbook
4. Shri V.K. Jain, Fire Safety in Buildings

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CO4302  CONSERVATION LEGISLATION  L T P/S C
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OBJECTIVES:
- The objective is to understand relationship between laws with the jurisdiction and it’s relationship to conservation practice.
- To understand the extent of legal impacts on society and heritage
- To focus on understanding of local and national legislation and practices related to heritage conservation.
- The attempt will improve understanding of international conservation laws
- To interpret conservation laws and to formulate conservation proposals consistent with them.
UNIT I  CONDITION OF HERITAGE IN INDIA  6
Definition of heritage – types of heritage and their value – classification of heritage assets – their condition – means of safe guarding heritage assets – law and its jurisdiction

UNIT II  NATIONAL LEGISLATION I  9

UNIT III  NATIONAL LEGISLATION II  12

UNIT IV  NATIONAL LEGISLATION III  12
Legal protection under Ancient Monuments and Archaeological Sites and Remains Actof1958 with all its amendments (July 1992notification and The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act,2010) and the corresponding State Acts. Role of Archeological Survey of India, National Monument Authority, etc. in protection of heritage in India.

UNIT V  INTERNATIONAL LEGISLATION  6
Legal systems of protection of heritage across the globe – Listing of monuments by UNESCO – norms and criteria for protection of world heritage - UNESCO intervention in protecting world heritage Case study - Various plans for conservation including, management plan, conservation plan, etc. and its statutory status.

COURSE OUTCOMES:
Students should be able to
CO1 Relate law for protection of heritage in India.
CO2 Explain and understand the role each legislation plays in the society and historic conservation all over the world
CO3 Apply and assess the importance and need of legislation in our country.
CO4 Analyze the importance of various laws pertaining to heritage in a national perspective.
CO5 Build case studies based on legal documents in the form of reports, reviews and presentations.

TOTAL: 45 PERIODS

REFERENCES
1. E.F.N.Ribeiro The Law and the Conservation of Man-made HeritageinIndia,1989 New Delhi: INTACH

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OBJECTIVES:

- To expose the students to the various thrust areas in Architectural Conservation.
- To inculcate the spirit of research in Conservation by providing opportunities to read on various issues.
- To expose the students to the finer details of technical writing.
- To provide a platform for a prelude to the 'Design Thesis'.
- To formulate and reinforce knowledge of research procedures, and strengthen ability to undertake independent theoretical research on areas of enquiry, aspects and topics of relevance in Conservation.

Dissertation is best expressed as 'Design in text'. It offers an opportunity to look at the research component in Conservation in various thrust areas such as history, theory, design and other value based aspects through texts. Students are encouraged to choose any topic of their interest. This may range from analyzing and a critique of the works of an architect, ideologies and philosophies of architects that get transformed spatially, history, typological architecture, sustainability issues and so on. The dissertation must comprise of an aim, the objectives, the scope and limitations of their dissertation, hypothesis (if any), methodology followed by extensive review of literature through references and documentation. The analysis of the work must be substantiated either empirically or through extensive arguments. A dissertation could also be a Thesis preparation course and gives the student scope for independent study and opportunity to explore specific area of interest which will form the basis of his/ her design thesis project in the next semester. The topic will have to be approved at the start of the semester and reviewed periodically by a jury at the end of the semester.

TOTAL: 60 PERIODS

COURSE OUTCOMES:

Students able to

CO1 Relate to theory and practical aspects of major conservation practices and minor disciplines to undertake independent research.

CO2 Explain and develop own dissertation topic with research-oriented study

CO3 Apply and understand the core ideas of Application design through the experimental research

CO4 Analyze and synthesize a defined context with in-depth study and scientific approach.

REFERENCES:


2. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches;


5. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago guides to writing, editing and publishing.

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OBJECTIVES:
- The objective is to introduce the students to the identification of problems and issues confronting heritage at a regional scale.
- To enable the student to understand importance of context and infrastructure needed to sustain urban demands
- To prepare the student to provide potential strategies and opportunities for sustaining the area.

CONTENTS
Projects by either individuals or groups shall be worked upon emphasizing on the following:
- Understanding heritage at a regional scale like-cultural landscape, etc.
- Identification of heritage with acknowledge system approach.
- Demarcation of the heritage are an including revenue boundaries and ownership.
- Statement of Significance.
- Identification of function, use and interdependency within the region.
- Understanding the needs of heritage management and development towards sustainable future.
- Preparation of heritage management strategy.

COURSE OUTCOMES:
CO1  The students shall study and find solutions to problem and issues confronting heritage at regional scale.
CO2  The students should be able to analyze the importance of the cultural landscape of the area.
CO3  The studio shall be progressive working group. Deliverables shall include drawings and report.

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TOTAL: 150 PERIODS

OBJECTIVES:
- To strengthen further the understanding of students to the nuances of conservation practice through Professional Training.
- To facilitate an understanding of the evolution of a conservation project from documentation to execution.
- To enable an orientation that would include the process of identification, documentation, presentation skills, involvement in office discussions, client meetings, development of the drawings, report/ manual writing, site supervision during execution and coordination with the agencies involved in the conservation process.

The Professional training is of minimum 6 weeks training under a conservation architect/ organization (Governmental or NGO) involved in conservation between the II and III Semesters. The choice of Office / Organization must be approved by the Head of the Institute.
At the end of the Professional Training, a portfolio of work done during the period of Training along with certification from the office is to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and the knowledge gained during client meetings, consultant meetings and site meetings. The Head of the office/Organization were the student underwent Professional Training shall award 50% of the marks for the Viva Voce examination.

**COURSE OUTCOMES:**

CO1 Ability to translate skills and knowledge of conservation architect acquired at university into a professional setting.

CO2 Increased skills in performing tasks and ability to communicate in a professional setting.

CO3 Understand the social and ethical role and show skills in using software applications in a professional context.

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**CO4411 THESIS PROJECT**

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**OBJECTIVES:**

- The objective is to develop and acquire more specialized knowledge in the field of conservation through conservation projects or scientific research.
- The Thesis Project is a final culmination of knowledge acquired by students through the course of their sustainability curriculum.
- Theoretical, cognitive, empirical and analytical skills pertaining to architectural sustainability will be tested during the thesis program.
- Students shall consider large scale campus, environmental site planning, conservation, heritage districts etc.

**CONTENTS**

- Thesis is the main academic effort and culmination of all information and techniques learnt in the preceding semesters.
- Selection of thesis topic shall be from any aspect of Conservation whether theoretical, technical, management, operational or intervention.
- It is expected to undertake original work including data collection and primary surveys.
- As part of the studio requirements, it is expected to go through a process of documentation, analysis and synthesis related to the specific topic and related area of work.
- It is required to work under the guidance of a supervisor allotted by the department and complete the requisite work in the course of the semester, ending in a viva-voce exam by a panel of examiners both external and internal.
- Progressive valuation would be done by a panel of external and/or internal jurors during reviews held at intervals during the course of the semester.
Students will submit a detailed proposal on their topic of interest. The Proposal shall be approved by the thesis review committee. The thesis project will be reviewed periodically by the review committee. At the end of the semester, the final thesis will be submitted and presented through a viva voce examination before a jury. Submission and defense of the thesis will be through drawings, reports, study sheets, models and digital presentations and verbal communications in all the reviews and the final viva-voce.

**TOTAL: 300 PERIODS**

**OUTCOMES:**

**CO1**  Students would be able to integrate various contemporary and advanced issues and techniques into the architectural conservation process.

**CO2**  Students would be able to identify and go in depth into specific and appropriate aspects relating to the discipline of conservation and reflect this in the realm of design.

**CO3**  The scope and extent in the thesis works shall be substantial and realizable in application or concept as appropriate to the selected area of work.

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OBJECTIVES:
- The objective of the module is to sensitize students to the significance of cultural influences.
- To become aware of cultural differences and similarities, and to encourage others to interact and communicate efficiently with people of diverse cultural backgrounds.

UNIT I INTRODUCTION 6
Definition of Anthropology & Sociology – Its origin & development - Culture studies – Debate on the need for cultural studies – Popular theories of cultural interference – Cultural influence on lifestyle

UNIT II ANTHROPOLOGY 6
Anthropology as a field of enquiry - nature and scope of anthropology - relationship of anthropology with architecture and other social sciences - Principles and methods of anthropological research - conceptualization of research - formulation of hypothesis, source of data, techniques of data collection - sampling, presentation and interpretation of data - methods of exploration.

UNIT III NATIONAL & INTERNATIONAL CULTURE 9
Concepts and principles of national and international culture – Inter cultural and cross-cultural communication - Individual and collective, Social Interaction & Structure, Culture & community life, Socialization & social processes – Primary and Secondary Relations – material and mental - Culture, Authority, Social Control, conformity and Deviance, Difference and inequality.

UNIT IV CULTURE & ARCHITECTURE 12
Cultural concept: of house, neighborhood and cultural identity of a place - Settlement plans: cultural perspective, villages – tribes and non-tribal rural towns and township and cities - Cultural role of cities and sacred complex, rituals and festivals - Rural and urban Continuum

UNIT V GLOBALISATION 12
Coding and Decoding of verbal and non-verbal communication in its cultural context – Developing skills for inter cultural communication – Understanding relationship between culture and globalization – Understanding process of globalization to international politics including politics of/or heritage - Understanding the relationship between local culture and global citizenship.

OUTCOMES: 
CO1 Students shall be equipped to interact and communicate with people of diverse cultural background.
CO2 Students will understand the relationship of anthropology and architecture
CO3 Students will learn concepts and principles of national and international culture
CO4 The assignments shall include application of skills in primary survey.
CO5 Assignment will be in the form of reports, reviews and tutorials with suitable illustrations.

REFERENCES
1. Barry, Peter Beginning theory: An Introduction to literary and cultural theory, 2011 801.95BAR-B
CO4002

OBJECTIVES:
- The objective is to build understanding for protection and management of Shared Built Heritage.
- To look at SBH from a cultural perspective and approach conservation from a cultural standpoint.
- Its aim is to evolve the scope, scale and meaning of SBH from built environment across the culture.

UNIT I INTRODUCTION
Definition of Shared Built heritage - Defining and recognizing Shared Built heritage/Regions-location, formation, characteristic features– Definitions of Shared Built heritage as understood by other disciplines like UNESCO & ICOMOS.

UNIT II UNDERSTANDING SHARED VALUES
Understanding 'Whose 'heritage? –Cultural boundaries- Shared values- assessment-statement of significance-conflicting memories and association-Shared responsibility-Shared identity

UNIT III COLONIAL SHARED BUILT HERITAGE
European colonization-historical overview- cultural context-British, Scottish, Dutch, Danish, French influences-influence of indigenous knowledge of Indian culture in colonial buildings- symbolism-Case studies from India--revival of shared legacy-Sustainable development and future of SBH in India.

UNIT IV CASE STUDIES: CONSERVATION OF SBH
Assessment of shared values- conservation projects: National & International case studies-policy level interventions-cross cultural reflections on political dominance-urban heritage conservation.

UNIT V CASE STUDIES
Case studies --understanding the issues-interventions-developing various meanings of Shared built heritage through examples.

TOTAL: 45 PERIODS

OUTCOMES:
CO1 Students shall acquire knowledge about Shared Built heritage.
CO2 Students will learn the values and challenges of conserving shared built heritage
CO3 Assignments would include application of concepts towards identification, understanding and mapping of Shared built heritage.
CO4 Assignment will be in the form of reports, drawings and presentations.
CO5 The students shall make progressive presentations for reviews at various stages.
REFERENCES:
2. The Governor's residence in Tranquebar, Edited by Esther Fihl
3. Imperial Converstation, Indo-Britons and the Architecture of South India by Shanti Jayewardene-Pillai, 2007

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CO4003 NATURAL AND DESIGNED LANDSCAPE

OBJECTIVES:
- The objective is to understand the difference between Natural and Designed Landscape.
- It shall elaborate on the need and means to tackle the various issues related to conserving the historic landscapes, as an important aspect of cultural heritage.

UNIT I NATURE & ECOLOGY
Understanding the ecosystem and their functioning — components of ecosystem - natural processes

UNIT II LANDSCAPE & ECOLOGY
Introduction to landscape ecology – formation of various landforms – landforms and landscape process – pattern and structure of landscapes– concepts of patch, corridor and matrix - landscape dynamics and function – topological and chorological process within landscape - concept of landscape metrics – understanding dynamic interaction between landscape structure and function – ecological services of landscape.

UNIT III SITE PLANNING PRINCIPLES
Contours – representation of landforms and landform design, interpolation of contours, slope analysis,uses and function - Earth works – principles of earth work, cut and fill calculations – borrow pit method, average end area method, average spot level method, precautions taken in cut and fill methods in relation to soil conditions, amount of precipitation etc.,

UNIT IV LANDSCAPE DESIGNS OF INDIA
Early traditions and beliefs about landscape and environment in east - Ancient Indian traditions – Symbolic meanings and sacred value of natural landscapes - Open space development and its urban design and planning context - Public park as a major component of urban landscape - Open space development and Close conceptual relationship between Town planning, urban design and landscapearchitecture - Issues in contemporary India, Analysis and understanding of philosophies of contemporary landscape works in India, case studies.
UNIT V LANDSCAPE MANAGEMENT

Landscape management at the regional scale in relation to soil conservation, Land use planning and resource management - water management, forest management, grassland and agricultural management. Management practice related to urban ecology and urban habitats such as urban forests, urban water sheds, regional parks, green belts, Ecological, Economic and administrative issues, management models.

TOTAL: 45 PERIODS

OUTCOMES:
CO1 Students shall develop skills to identify, maintain and manage natural and designed landscapes.
CO2 Students will learn site planning concepts
CO3 Students will learn landscape management models to handle the issues
CO4 The assignments shall include case studies and application of principles for conservation.
CO5 Assignment will be in the form of reports, reviews and tutorials with suitable illustrations.

REFERENCES
5. Rose, Dilyys, ed. And Elliott, Joanna Earth-scan reader in poverty and biodiversity conservation, 2010, ed. 333.9516EAR
6. Trombulak, Stephen C., ed. And Baldwin, Robert F., ed. Landscape-scale conservation planning, 2010 333.72LAN

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CO4004 CULTURAL LANDSCAPES

OBJECTIVES:
- The objective is to build understanding for protection and management of cultural landscapes.
- To look at a region from a cultural perspective and approach conservation from a cultural standpoint.
- Its aim is to evolve the scope, scale and meaning of heritage from buildings to entire regions.

UNIT I INTRODUCTION TO CULTURAL LANDSCAPE

Definition of landscape-ecology - Defining and recognizing Cultural Landscapes/Regions-location, formation, characteristic features-- Definition of cultural landscapes as understood by other disciplines like US National Park Services and UNESCO.
UNIT II CULTURAL GEOGRAPHY
Techniques for assessing the cultural values of a Cultural Landscapes/Region - Demarcating Cultural Landscapes through various parameters like political, physical, natural, linguistic boundaries, etc. - Describing the cultural region through its components – the tangible heritage and the intangible aspects like crafts, traditional skills and local knowledge systems of such zones

UNIT III ASSESSMENT OF CULTURAL LANDSCAPE
Need and use of assessment of cultural landscape –Methods of mapping the Cultural Landscapes– Forests and vegetation – their cultural values - Cultural Geography and regional symbolism - meanings behind cultural landscapes - components that make them unique - Review of contemporary regional boundaries based on standard parameters - cultural boundaries that exist in people’s minds integrated with their lifestyles and culture

UNIT IV PRESERVATION OF CULTURAL LANDSCAPE
Analysis of Cultural Landscapes - Case study – identified in World Heritage List and in India like Braj, Bundelkhand, Kutch, Rock Shelters of Bhimbetka, etc. – cultural restoration of Ganga River.

UNIT V MANAGEMENT OF CULTURAL LANDSCAPE
Management and Conservation of Cultural Landscapes /Regions – preservation strategies – tourism potential – threats to cultural landscapes and the causes – methods to safe guard and promote these landscapes

OUTCOMES:
CO1 Students shall acquire knowledge about cultural landscapes.
CO2 The assignments would include application of concepts towards identification, demarcation and mapping of cultural landscapes.
CO3 Students will learn to assess the cultural landscape
CO4 Assignment will be in the form of reports, drawings and presentations.
CO5 Students will learn to apply the strategies to preserve the cultural landscape

REFERENCES
1. Agnoletti, Mauro, ed., Conservation of Cultural Landscapes, 2006 304.2CON

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CO4005 MUSEUM DESIGN AND MANAGEMENT

OBJECTIVES:
- The objective is to train and develop skills for Museum Design.
- To introduce design and planning aspects of museum
- To develop the ability to create inventories
- To introduce digital interference
- To learn to make management plans
UNIT I INTRODUCTION
Introduction to Museums – Collections and Artifacts – Types of objects – Public and private collections and museums – Characteristics of different display objects like historic, natural, prints, paintings, sculpture etc.

UNIT II PLANNING & DESIGN
Spatial Planning – Classification of spaces into public, private etc. – Hierarchy of spaces – Safety and intrusions prevention - Vertical movement planning – Services including HVAC, Lighting, and IAQ etc. - Adapting an existing structure to set a museum – Case studies

UNIT III ARCHIVING & INVENTORY

UNIT IV DIGITAL INTERFERENCE
Digital tools in museum management – CCTV and other safety equipment’s – Information system – IBMS in museums – Digital Inventory – Information sharing to public through internet – Online information system on the museum

UNIT V MUSEUM MANAGEMENT
Legislations and governance policies of museums in India – Safety Management – Security system – Precaution from natural disasters – Visitor management

TOTAL: 45 PERIODS

OUTCOMES:
CO1 Students will learn the basics of museum
CO2 Students will learn design and planning aspects
CO3 Students will create inventories
CO4 Students will acquire knowledge to use digital tools in museum management
CO5 Assignment will be in the form of are port, site visit report, class reviews and tutorials covering topics mentioned above with suitable illustrations and supportive material.

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CO4006 HISTORY OF WESTERN ARCHITECTURAL CONSERVATION  L T P/S C
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OBJECTIVES:
- The students will learn various early approaches to conservation
- The objective is to introduce personalities, ideologies and various philosophies that helped to formulate the principles of conservation discipline as it exists today abroad.
- Students will learn from case studies
- To be introduced to architectural conservation in the USA
- The students shall be introduced to the various charters and development of UNESCO as the global agency and its role in the field of conservation.

UNIT I EARLY APPROACH TO CONSERVATION  6

UNIT II DEVELOPMENT OF CONSERVATION THEORIES IN EUROPE  12

UNIT III CASE STUDIES  12
Stylistic restoration & conservation movement in Italy - Restoration & conservation in the Papal states of Rome, Restoration & protection in Athens, Restoration of Durham Cathedral, Restoration of Magdeburg Cathedral, Restoration of la Madeleine, Vézelay

UNIT IV ARCHITECTURAL CONSERVATION IN THE USA  9

UNIT V RECENT TRENDS  6
Governmental indulgence in conservation in developed nations of the west – Financial and Administrative policies for conservation in developed countries – International Charters on conservation, International Concern in Cultural Heritage — Formation of International Guidelines - International agencies involved in conservation – Contemporary aspects of heritage and conservation in the age of globalization

TOTAL: 45 PERIODS

OUTCOMES:
CO1 Students shall be introduced to the evolution and principles of conservation in the West.
CO2 Students will be knowing the theories of Europe
CO3 Students will be learn architectural conservation from various examples from USA
CO4 The assignments shall include studies of various charters and roles of various organizations in conservation.
CO5 Assignment will be in the form report, class reviews and tutorials covering topics mentioned
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CO4007 SACRED LANDSCAPES L T P/S C 3 0 0 0 3

OBJECTIVES:
- The objective is to understand the concept of sacred landscapes, understanding and its connection to religion as a way of living.
- To understand the evolution of sacred towns
- To know relationship between pilgrimage route and architecture
- To extend the knowledge through various case studies
- To enable skills to handle tourism related challenges

UNIT I INTRODUCTION 6
Concept of sacred landscape – Connection between religion and sacred landscape - Historic/religious cities as sacred landscape - Components of sacred landscapes including built, forest, water systems, etc. – Analysis of sacred landscape.

UNIT II EVOLUTION OF SACRED TOWN 6
Historic evolution of sacred towns – Religious aspects of geographical features like rivers, mountains, hillocks, tanks – Development and planning strategies of religious towns – Settlement study – Characteristic features of these towns

UNIT III PILGRIMAGE AND ARCHITECTURE 9
Importance of pilgrimage in various religious contexts – Prominent pilgrimage routes in India – Characteristic of landscape in these towns – Architecture associated with travel – Development of settlements based on natural resource availability.

UNIT IV RELIGIOUS TOWN CONSERVATION 12
Over view of urban development of religious towns in India and Tamil Nadu- understanding the character and issues of historic cities – select case studies of towns like Srirangaram, Kumbakonam and Kanchipuram historic districts and heritage precincts.
UNIT V   TOURISM MANAGEMENT

Tourism Planning Methods and Analysis, Transport and other Infrastructure planning in tourism development, Urban and Rural based tourism - Tourism as a system- market, function and external factors, Government and tourism policy and priorities, Role of local community and Tourism promotion.

TOTAL: 45 PERIODS

OUTCOMES:
CO1 Students shall acquire knowledge about uniqueness of sacred landscapes and its importance in Indian context.
CO2 Students will learn the evolution of the sacred towns
CO3 Students will learn the relationship of pilgrimage routes and architecture
CO4 Assignments will include exploration to analyze the sacredness in a landscape and its uniqueness and its connection to historic core.
CO5 Assignment will be in the form of reports, drawings and presentations. The students shall make progressive presentations for reviews at various stages.

REFERENCES
2. Behera,K.S. Lingraja temple of Bhubaneshwar: Art and Cultural Legacy, 2008 726. 1450954133BEH- L
4. Jackson, W.J. Vijayanagara Visions: Religious Experience and Cultural Creativity in a South Indian empire, 2007 954.87JAC-V

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CO4008 WORLD HERITAGE SITES L T P/S C 3 0 0 3

OBJECTIVES:
- The objective is to develop skills in management of World Heritage Sites.
- To introduce the role of UNESCO
- To enable students to understand the management policies
- To make them learn strategies through case studies
- To learn conservation concepts from various case studies from India and abroad.

UNIT I INTRODUCTION
Definition and list of World Heritage Sites - UNESCO World Heritage Convention and its implementation, including the processes of inscription and monitoring of World Heritage properties
UNIT II  ROLE OF UNESCO
Formation of UNESCO – Charters pertaining to WHS – Nomination Criteria – Current state of affairs - theory and practice of conserving natural heritage, i.e. species, ecosystems and biodiversity, and cultural heritage, i.e. monuments, sites and landscapes – Brief discussions on select UNESCOProjects pertaining to conservation

UNIT III  MANAGEMENT POLICIES

UNIT IV  PROTECTION GUIDELINES
Conservation activities of UNESCO – Strategies – Planning of phased conservation – conservation guidelines – Community participation - Case Study Abu Simbel restoration – Ankorwat, Cambodia

UNIT V  CASE STUDIES
Select Case studies from India and abroad

OUTCOMES:
CO1 Students will acquire knowledge about nomination process of World Heritage Site.
CO2 Students will understand the role of UNESCO
CO3 Students will able to understand the management policies and to apply the knowledge
CO4 Students will learn conservation strategies through various case studies
CO5 Assignment shall include preparation of tentative list document for a given site.

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CO4009  SUSTAINABILITY AND CONSERVATION
OBJECTIVES:
- The objective is to develop skills towards understanding the need for conservation of energysystems and water ways.
- The focus will be on traditional systems of water management and contemporary methods of conserving energy.
- It emphasis on the role of sustainability within the historic context at both technical and strategic levels.
• Recognize both the character-defining and inherently sustainable features of a historic building.
• Designing, managing and protecting infrastructure with focus on conservation and sustainability ensuring responsible use of energy and natural resources while protecting the environment for future generations.

UNIT I INTRODUCTION
Aim and purpose of conserving energy and water – Need and objectives – National policies and legislations of the same – Introduction to National and International agencies that works towards conserving energy and water

UNIT II INTRODUCTION TO FORMS OF ENERGY
Definition, classification and types of energy - Current energy requirements, growth in future energy requirements, Review of conventional energy resources: coal, gas and oil reserves and resources, tar sands and oil shale, nuclear energy - Need for conversion to renewable energy - Sources of renewable energy – Case studies on advantages, disadvantages of Solar, Wind, oceanic & geothermal forms of energy.

UNIT III ENERGY CONSERVATION TECHNIQUES
Energy conservation and sustainability, principles of energy systems, energy and global environment, scope for energy conservation in architecture- Various methods of energy conservation in architecture, energy conservation techniques in various climates- hot and humid, hot dry, etc., Energy efficient site planning and development, Energy efficient design detailing.

UNIT IV TRADITIONAL METHODS OF WATER CONSERVATION
Traditional community wisdom regarding water conservation from different climatic zones of the world - Traditional Architecture of wells in Rajasthan, Gujarat, Tamilnadu – Stepped Wells, Baoris, Pushkarnis, Tanks, etc. Design for water conservation – Building and products - Designing building services, plumbing and sanitary design for effective water reuse, recycling, and recharge - Rain water harvesting techniques – Basic Concepts, piping techniques and pit design for groundwater recharge of wells.

UNIT V INTRODUCTION TO ENERGY CONSERVATION
Conservation of the water cycle as a single system – Conserving water supply, sanitation and drainage systems in neighbourhood - Social imperatives, environmental considerations and economic challenges and Technological options for water conservation, recycling, reuse, conservation and treatment - Planning of settlements and large campuses based on principles of sustainable watershed development with water as a priority resource. Reuse of grey water for non-potable uses - Wetlands for natural waste water treatment, use of wetlands for natural storm water and vegetated natural roof tops.

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students able to
CO1 Relate and understand the need and importance of conserving energy and water.
CO2 Explaining how sustainability will ensure responsible use of our energy and natural resources while protecting our environment for generations to come.
CO3 Applying gained technical knowledge about conservation techniques to conserve water and other forms of energy.
CO4 Analyze the rapidly changing pattern of life and scale of activities and understand the various principles of energy systems and sustainability.
CO5 Build and emphasis on minimizing energy consumption, demonstrating energy efficiency, adaptation to future climate change and obtaining materials from sustainable sources and avoiding long transportation.
REFERENCES
1. Ahmed F. Zobaa Handbook of Renewable Energy Technology

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CO4010 LANDSCAPE CONSERVATION L T P/S C 3 0 0 3

OBJECTIVES:
- The objective of this course is to introduce the students to different types of historic landscape planning principles as found in various parts of world
- The subject will focus on ways to conserve the landscape through various traditional and modern means.
- To address the contemporary challenges that face the sustainable use and conservation of historic landscapes to ensure healthy ecosystems for future generations.
- To identify threats and sensitive landscapes including cultural, or historic landscapes.
- To study appropriate cases where approaches and proposed sustainable solutions are present which are critical to the future development of key economic sectors.

UNIT I INTRODUCTION TO HISTORIC LANDSCAPE DESIGNS 6
Introduction to landscape architecture, ecology, ecological balance, landscape conservation - reclamation and restoration of derelict landscapes, environmental impact assessment - Landscape and garden design in history - Japanese, Italian Renaissance and Moghul gardens in India, Study of notable examples, Spatial development in landscape design.

UNIT II EVOLUTION OF MODERN LANDSCAPE DESIGNS 9
Industrialization and urbanization – impacts and development of the concept of public, open spaces, open space development in new towns, parks movement, Open space development and its urban design and planning context, Early industrial towns and the garden city movement, Public park as a major component of urban landscape, the works of F.L.Ohmstead, and other pioneers, Open space development and Close conceptual relationship between Town planning, urban design and landscape architecture, Examples.

UNIT III MODERN MOVEMENTS & CONTEMPROARY CONCEPTS 12
Changing concepts of space and the relationship of architecture to landscape, Study of selected works of modern architects and landscape architects, Post-war development in Europe, The influence of Ian Mcharg on Landscape architecture, The works of Jellicoe, Burle Marx and others, Concept of sustainable landscape development, Cultural landscapes their definition, identification, characteristics, policies, Artistic sensibility in landscape architecture and land art, New development in urban Landscape design.
UNIT IV  SUSTAINABLE PRACTICES IN LANDSCAPE CONSERVATION

Need and concept of sustainability, Brundtland report, World Commission on environment and development, sustainable development, sustainable growth, sustainable economy and sustainable use. Visions of sustainability, Source and ethics of sustainability. Sustainability and Climate Change - Sustainable landscape maintenance and management, Conservation and preservation of ecological fragile areas such as wetlands, creeks etc. - Conservation ordinances

UNIT V  CASE STUDIES

Selected case studies on various types of landscape conservation in India and abroad

TOTAL: 45 PERIODS

COURSE OUTCOMES:

Students should be able to

CO1 Relate and understand various historic landscape designs, principles and their development

CO2 Explain the historic development and growth of various types of landscape planning.

CO3 Identify various methods of landscape conservation and apply specific methods wherever required.

CO4 Analyze historic landscapes, their relationship with heritage structures and make informed land management decisions

CO5 Build strategic and integrated plans which are essential for sustaining indispensable landscapes.

REFERENCES

1. Anne Simon Moffat and Marc Schiller Landscape design that saves energy William Monow andco.,Inc., New York, 1981

2. Geoffrey and Susan Jellico The Landscape of Man Thames and Hudson, 1987


4. O.R.Gray Landscape Planning for Energy Conservation

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CO4011  URBAN CONSERVATION AND PRACTICE

OBJECTIVES:

- To introduce to the students the idea of conservation as enhancing quality of life, as effective planning strategy, as means of particularization of place and as a way to address issues of memory and identity.
- To introduce the students to issues and practices of urban conservation at various levels and scales.
- To give an overview of current status of conservation in India.
To examine the conservation process of maintaining and managing change to a heritage asset in a way that sustains and where appropriate enhances its significance.

To introduce the student to the various norms and planning tools to improve tourism and urban conservation.

UNIT I  INTRODUCTION TO CONSERVATION  5

UNIT II  CONSERVATION IN INDIA  8

UNIT III  CONSERVATION PRACTICE  12
Listing of monuments – documentation of historic structures – assessing architectural character – historic report – guidelines for preservation, rehabilitation and adaptive re-use of historic structures – seismic retrofit and disabled access /services additions to historic buildings – heritage site management.

UNIT IV  URBAN CONSERVATION  12
Over view of urban history of India and Tamil Nadu – understanding the character and issues of historic cities – select case studies of sites like Thanjavur, Kumbakonam, Kanchipuram, Chettinad – historic districts and heritage precincts.

UNIT V  CONSERVATION AND URBAN PLANNING  8
Norms for conservation of heritage buildings and sites as part of Development Regulations - Conservation as a planning tool – financial incentives and planning tools such as TDR, (transferable development right) – Urban conservation and heritage tourism.

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students able to
CO1 Relate, be sensitive as well as be informed to carry forth understanding urban conservation in the realm of practice/research.
CO2 Explain and understand the need and benefits of urban conservation
CO3 Apply the interrelated policies of urban conservation
CO4 Analyze the various case studies and understand the essence of the urban setting and conservation process
CO5 Build knowledge in terms of understanding what norms are applied in specific urban areas or heritage districts.

REFERENCES:
OBJECTIVES:
- The objective is to enhance the knowledge to develop specialization in handling complex management issues.
- To create awareness towards different types of visitors and their needs in finding management solution.
- To understand the process of calculating carrying capacity of Heritage site.
- To introduce the student to visitor management of World Heritage Site
- To understand how tourism and other management issues are solved from examples around the world and India.

UNIT I INTRODUCTION
Managing Heritage Tourism: Concept and Scope - Tourism Impact and problems in India - Common impacts related to visitor use – Visitor Management – Concept of Carrying Capacity – Similarities between carrying capacity and site management planning process – Community based tourism (Or) Understand heritage tourism demand - analyzing the nature of heritage demand - visitor characteristics - visitor typology - their motivations driving to visit heritage sites.

UNIT II VISITOR MANAGEMENT
Identification of different types of visitors - Formal and informal tourists - Pilgrimage and its linkage to cultural tourism - Organization and traditional facilities for visitors - Visitor needs and expectation - Infrastructural requirements - Critical consideration for visitor management

UNIT III CARRYING CAPACITY
Visitors Data - Future projection of visitors to the site - Impact of visitors on Heritage Site - Calculating of threshold of Heritage site towards visitors to the site - Identifying Indicators - Calculating carrying capacity

UNIT IV MANAGING TOURISM AT WORLD HERITAGE SITES
World Heritage Sites in India – Problems and Prospects of Cultural/ Natural Tourism in India – Sustainable tourism Policy and strategy Development – Relationship between World Heritage and Sustainable Tourism - National Tourism Policy, 2002 – Guidelines for Tourism and Visitor Management in Protected Areas – Action plan for sustainable tourism development

UNIT V CASE STUDIES
Select Case studies from India and Abroad (or) International and National Case studies of Sustainable Tourism.

TOTAL: 45 PERIODS
COURSE OUTCOMES:
Students able to
CO1 Relate and acquire knowledge about visitors and finding management solution.
CO2 Explain and understand the need for historical tourism management
CO3 Apply and calculate the carrying capacity for a heritage site.
CO4 Analyze and contextualize the relationship between sustainability and visitor management
CO5 Build and work out infrastructural requirements for visitors

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CO4013 HERITAGE IMPACT ASSESSMENT

OBJECTIVES:
- The objective is to develop skills towards Heritage Impact assessment to assess the impact of development on heritage in various conditions.
- To introduce students to assessment of cumulative impacts and assisting in raising awareness for protection of OUV
- To give an overview of the methodology of Impact Assessment
- To study and understand the principles of Impact Assessment.
- To understand the impact of development on the historic value.

UNIT I INTRODUCTION
Definition of heritage – Factors that impact heritage – Internal and external factors – results of impact

UNIT II METHODOLOGY
UNIT III ASSESSMENT TOOLS
Qualitative and quantitative assessment – OUV for World Heritage Sites – Threats at Regional, National and Global level – means to safe guard at various levels – Monument Management – safety and security

UNIT IV CASE STUDY AND REPORT WRITING
Choosing, analyzing and presentation of a HIA for a structure/site – Collecting data – Investigation of the selected site – HIA report writing

UNIT V GUIDELINES FOR HIA
Programming and guidelines as prescribed by National and International agencies like ASI – ICCROM, ICOMOS - UNESCO

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students able to
CO1 Relate to Heritage Impact Assessment and use it as a tool for evaluating impacts from various factors affecting heritage
CO2 Explain and gain knowledge on the principles and methodology used for the assessment
CO3 Apply the acquired skills towards Heritage Impact Assessment.
CO4 Analyze through case studies and reports of World Heritage Sites
CO5 Build reports, drawings and presentation

REFERENCES
1. ICOMOS, ICOMOS guidelines for cultural world heritage properties, Jan, ICOMOS publication, 2011.

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CO4014 DISASTER MANAGEMENT OF CULTURAL RESOURCES

OBJECTIVES:
- The objective is to train and develop skills for Disaster Management of Cultural resources.
- To introduce the student to the basic understanding of disasters and its relationship with development
- To enhance awareness of Disaster Risk Management organizations and processes in India
- To understand impacts of disaster and processes used to recover from them
- To understand Rehabilitation and Reconstruction
UNIT I INTRODUCTION 6
Introduction to Disaster Management - Analyze the vulnerability of cultural heritage for physical, socio-economic and political risks – Risks to Cultural Resources during disasters.

UNIT II DISASTER MANAGEMENT 6
Natural Hazards and risk preparedness – global, regional and Indian Context and international cooperation - prevention, mitigation and preparedness - Disaster response relief and recovery- Protecting Heritage in times of conflict and other emergencies.

UNIT III DISASTER MITIGATION IN INDIA 9
National Disaster Management System of India – Precaution to prone areas – Disaster assessment and estimation of loss – Techniques and Strategies for mitigating risks to cultural heritage - Agencies for rehabilitation of structural damages and rebuilding of structures – Role of NGOs

UNIT IV POST DISASTER MITIGATION 12
Planning for post-disaster recovery of cultural heritage – Training craftsmen and artisans for rehabilitation of structures in such situations – role of government in the post disaster period

UNIT V CASE STUDY 12
Selected case study of architectural and cultural rehabilitation for structures post natural disasters from India and abroad

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1 Relate and understand the various types of disasters and risks it poses to cultural heritage
CO2 Explain the various precautions and measures taken based on the vulnerability of heritage
CO3 Apply the understanding of disasters and create prior assessments and valuations
CO4 Analyze what can be done for post disaster mitigation measures
CO5 Build case studies in the form of reports, site visit report, class reviews and tutorials covering topics mentioned above with suitable illustrations and supportive material.

REFERENCES

CO-PO MAPPING

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OBJECTIVES:
1. This course discusses the conceptual framework of the critical area of the economics of heritage, and its centrality for heritage resource management and sustainable development.
2. The course covers techniques of cost-benefit analysis and economic viability for individual historic sites and historic housing, urban conservation, cultural landscapes.
3. To understand the role of historic preservation in economic development
4. It seeks to identify a finite number of indicators that can be used to regularly, consistently, meaningfully and credibly measure the economic impact of historic preservation over time.
5. To understand the positive impact of historic preservation on the economy through case studies

UNIT I INTRODUCTION
Economic sustainability for heritage conservation: Basic economic concepts related to heritage, creating bridges between heritage and economics, economic mechanisms for the implementation of heritage conservation from policies to projects.

UNIT II UNDERSTANDING HERITAGE RESOURCES
Concepts of Cultural Capital: Core issues and techniques that determine value embodied in or generated by heritage resources; Types of values of heritage, Measurement and quantification of costs and benefits of heritage conservation in economic terms.

UNIT III EVALUATION OF HERITAGE RESOURCES AND FINANCING
Non-market evaluation techniques for Heritage resources – Travel Cost, Contingent Valuation, Hedonic Pricing, Combined Methods, Choice Modelling - Problems and issues of funding heritage conservation, and Existing programmes for financing

UNIT IV CASE STUDIES: BASED ON ECONOMIC VIABILITY
Assessment of economic viability of conservation projects: National & International case studies

UNIT V CASE STUDIES
Project on valuation of heritage resources – Case studies of innovative conservation financing mechanisms and programmes.

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to
CO1 Relate and understand the importance of economics with respect to heritage
CO2 Explain and gain knowledge of evaluating heritage resources and preservation as an economic tool.
CO3 Applying economic methods to historic preservation, when there is a mix of cultural and economic values embodied in the preservation activity.
CO4 Analyze the effects of historic preservation investment on a regional economy.
CO5 Build case studies in the form of reports, reviews and tutorials with suitable illustrations.

REFERENCES:
3. The Economics and Finance of Cultural Heritage: How to Make Tourist Attractions a Regional Economic Resource by Vincenzo Pacelli
4. Handbook on the Economics of Cultural Heritage by Edited by Ilde Rizzo, Professor of Public Finance, University of Catania, Italy and Anna Mignosa, Assistant Professor of Economics, University of Catania, Italy and Erasmus University Rotterdam, the Netherlands
## CO-PO MAPPING

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AUDIT COURSES

AX4091 ENGLISH FOR RESEARCH PAPER WRITING L T P C 2 0 0 0

OBJECTIVES:
To enable the student to improve writing skills and level of readability
To enable the student to understand what to write in each section
To prepare the student with the skills needed when writing a title
To inculcate the skills needed to write the conclusion.
To enable the student to submit a high-quality paper at very first-time submission

UNIT I INTRODUCTION TO RESEARCH PAPER WRITING 6
Planning and Preparation, Word Order, breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and Vagueness

UNIT II PRESENTATION SKILLS 6

UNIT III TITLE WRITING SKILLS 6
Key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check

UNIT IV RESULT WRITING SKILLS 6
Skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions

UNIT V VERIFICATION SKILLS 6
Useful phrases, checking Plagiarism, how to ensure paper is as good as it could possibly be the first-time submission

TOTAL: 30 PERIODS

COURSE OUTCOMES:
CO1 Relate to the various technical writing skills and high level of reading competence.
CO2 Explain the various types of writings and understand the importance of different sections.
CO3 Apply their mind and assess skills required in choosing an appropriate title.
CO4 Analyze the importance of writing a document/report and explaining the inferences.
CO5 Build a research paper or report from scratch and develop it to something that can be published later

REFERENCES:
AX4092
disaster management

**OBJECTIVES:**
Summarize basics of disaster
- Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response
- Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- Describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations
- Develop the strengths and weaknesses of disaster management approaches

**UNIT I**
**INTRODUCTION**
Disaster: Definition, Factors and Significance; Difference between Hazard And Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.

**UNIT II**
**REPERCUSSIONS OF DISASTERS AND HAZARDS**

**UNIT III**
**DISASTER PRONE AREAS IN INDIA**
Study of Seismic Zones; Areas Prone To Floods and Droughts, Landslides And Avalanches; Areas Prone To Cyclonic and Coastal Hazards with Special Reference To Tsunami; Post-Disaster Diseases and Epidemics

**UNIT IV**
**DISASTER PREPAREDNESS AND MANAGEMENT**
Preparedness: Monitoring Of Phenomena Triggering a Disaster or Hazard; Evaluation of Risk: Application of Remote Sensing, Data from Meteorological And Other Agencies, Media Reports: Governmental and Community Preparedness.
UNIT V  RISK ASSESSMENT
Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques of Risk Assessment, Global Co-Operation in Risk Assessment and Warning, People’s Participation in Risk Assessment. Strategies for Survival
TOTAL : 30 PERIODS

COURSE OUTCOMES:
The students should have the
CO1 Ability to summarize basics of disaster
CO2 Ability to explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
CO3 Ability to illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
CO4 Ability to describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations
CO5 Ability to develop the strengths and weaknesses of disaster management approaches

REFERENCES:
3. Sahni, Pardeep Et.Al., " Disaster Mitigation Experiences And Reflections", Prentice Hall OfIndia, New Delhi,2001

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AX4093  CONSTITUTION OF INDIA  L T P C  2 0 0 0

OBJECTIVES:
The students will be taught to
• Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
• Address the growth of Indian opinion regarding modern Indian intellectuals’ constitutional
• Understand the role and entitlement to civil and economic rights as well as the emergence nation hood in the early years of Indian nationalism
• Address the role of socialism in India after the commencement of the Bolshevik Revolutionin1917and its impact on the initial drafting of the Indian Constitution.
UNIT I  HISTORY OF MAKING OF THE INDIAN CONSTITUTION
History, Drafting Committee, (Composition & Working)

UNIT II  PHILOSOPHY OF THE INDIAN CONSTITUTION
Preamble, Salient Features

UNIT III  CONTOURS OF CONSTITUTIONAL RIGHTS AND DUTIES

UNIT IV  ORGANS OF GOVERNANCE
Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions.

UNIT V  LOCAL ADMINISTRATION

UNIT VI  ELECTION COMMISSION
Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners - Institute and Bodies for the welfare of SC/ST/OBC and women.

COURSE OUTCOMES:
The students should have the ability to
CO1 Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics
CO2 Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India
CO3 Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution

REFERENCES:
1. The Constitution of India,1950(Bare Act),Government Publication.

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<td>புழநித்தர் (95,195) - வண்ணக் குரல்கியின் காலம் பார்வை</td>
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UNIT V  நவீன தமிழ் இலக்கியம்
1. உகரநகடத் தமிழ்,
   - தமிழின் புதினம் திகழக்
   - தமிழின் சிறு கட்டுரை
   - பயண இலக்கியம்
   - நொடகம்
2. நொட்டு விடுதகல பபொரொட்டமும் தமிழ் இலக்கியமும்
3. முதொய விடுதகலயும் தமிழ் இலக்கியமும்
4. தபண விடுதகலயும் விளிம்புநிகலயினரின் பபொரொட்டில் தமிழ் இலக்கியமும்
5. அறிவியல் தமிழ்
6. இகணயத்தில் தமிழ்
7. சுற்றுசூழல் பபொரொட்டில் தமிழ் இலக்கியம்

TOTAL : 30 PERIODS

தமிழ் இதர்கல் வைர்ட்டுநிலையங்கள் / பங்கனல்கள்
1. தமிழ் விங்கடம கல்விக்கழகம் (Tamil Virtual University)- www.tamilvu.org
2. தமிழ் விக்கிப்பீடியொ (Tamil Wikipedia) - https://ta.wikipedia.org
3. கருப்பு அருக்க வளிமுறை
4. மாழ்க்கல் கார்கினம் - தமிழ் பல்கலைக்கழகம், தஞொவூர்
5. தமிழ்கல்வியக்கார்கினம் - தமிழ் வளர்சித்துகற (thamilvalarchithurai.com)
6. அறிவியல் கார்கினம் - தமிழ் பல்கலைக்கழகம், தஞொவூர்