ANNA UNIVERSITY, CHENNAI
NON-AUTONOMOUS COLLEGES AFFILIATED TO ANNA UNIVERSITY
M. ARCH ENVIRONMENTAL ARCHITECTURE. FULL-TIME PROGRAMME
REGULATIONS 2021
CHOICE BASED CREDIT SYSTEM
I TO IV SEMESTERS CURRICULA AND I SEMESTER SYLLABUS
SEMESTER I

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	EA4101	Energy, Environment and Sustainable Development	PCC	3	0	0	3	3
2.	EA4102	Thermal Comfort and Passive Design	PCC	3	0	0	3	3
3.	EA4103	Environmental Impact Assessment	PCC	3	0	0	3	3
4.	EA4104	Urban Ecology and Environmental Planning	PCC	3	0	0	3	3
5.		Audit Course I*	AC	2	0	0	2	0
THEORY CUM STUDIO								
6.	EA4121	Predictive Building Modelling Software	PAEC	1	0	3	4	4
STUDIO								
7.	EA4111	Environmental Design Studio - I	PCC	0	0	10	10	10
			TOTAL	**15**	**0**	**13**	**28**	**26**

*** Audit Course is optional**

SEMESTER II
(Prerequisite- Pass in Environmental Design Studio - I)

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	RM4251	Research Methodologies for Built Environment	RMC	3	0	0	3	3
2.	EA4201	Environmental Disturbances, Pollution and Remedies	PCC	3	0	0	3	3
3.	EA4202	Sustainable, Energy Efficient Building Materials and Technologies	PCC	3	0	0	3	3
4.		Audit Course II*	AC	2	0	0	2	0
THEORY CUM STUDIO								
5.	MH4221	Geographical Information Systems for Built Environment	PAEC	1	0	3	4	4
STUDIO								
6.	EA4211	Environmental Design Studio - II	PCC	0	0	10	10	10
			TOTAL	**12**	**0**	**13**	**25**	**23**
PROFESSIONAL ELECTIVE								
7.		Professional Elective I	PEC	X	X	X	3	3
						TOTAL	**28**	**26**

*** Audit Course is optional**

SEMESTER III

(Prerequisite- Pass in Environmental Design Studio -II)

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
THEORY								
1.	EA4301	Life Cycle Assessment of Buildings	PCC	3	0	0	3	3
2.	EA4302	Environmental Laws and Management	PCC	3	0	0	3	3
STUDIO								
3.	EA4311	Dissertation	PCC	0	0	4	4	4
4.	EA4312	Environmental Design Studio - III	PCC	0	0	10	10	10
			TOTAL	**6**	**0**	**14**	**20**	**20**
PROFESSIONAL ELECTIVE								
5.		Professional Elective II	PEC	X	X	X	3	3
6.		Professional Elective III	PEC	X	X	X	3	3
INTERNSHIP TRAINING								
7.	EA4313	Internship Training	PAEC	X	X	X	X	2
							TOTAL	**28**

SEMESTER IV

(Prerequisite- Pass in Environmental Design Studio -III)

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
STUDIO								
1.	EA4411	Thesis Project	PCC	0	0	20	20	20
			TOTAL	**0**	**0**	**20**	**20**	**20**
PROFESSIONAL ELECTIVE								
2.		Professional Elective IV	PEC	X	X	X	3	3
						TOTAL	**23**	**23**

Total No. of Credits: 103

PROFESSIONAL CORE (PCC)

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	EA4101	Energy, Environment and Sustainable Development	PCC	3	0	0	3	3
2.	EA4102	Thermal Comfort and Passive Design	PCC	3	0	0	3	3
3.	EA4103	Environmental Impact Assessment	PCC	3	0	0	3	3
4.	EA4104	Urban Ecology and Environmental Planning	PCC	3	0	0	3	3
5.	EA4111	Environmental Design Studio - I	PCC	0	0	10	10	10
6.	RM4251	Research Methodologies for Built Environment	RMC	3	0	0	3	3
7.	EA4201	Environmental Disturbances, Pollution and Remedies	PCC	3	0	0	3	3
8.	EA4202	Sustainable, Energy Efficient Building Materials and Technologies	PCC	3	0	0	3	3
9.	EA4211	Environmental Design Studio - II	PCC	0	0	10	10	10
10.	EA4301	Life Cycle Assessment of Buildings	PCC	3	0	0	3	3
11.	EA4302	Environmental Laws and Management	PCC	3	0	0	3	3
12.	EA4311	Dissertation	PCC	0	0	4	4	4
13.	EA4312	Environmental Design Studio - III	PCC	0	0	10	10	10
14.	EA4411	Thesis Project	PCC	0	0	20	20	20

PROFESSIONAL ELECTIVE COURSES (PEC)

SEMESTER II, ELECTIVE I

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	EA4001	Sustainability and Energy Conservation in Landscape Architecture	PEC	3	0	0	3	3
2.	MH4071	Environmental Psychology	PEC	3	0	0	3	3
3.	EA4002	Environment Infrastructure	PEC	3	0	0	3	3
4.	EA4003	Building Science and Sustainability	PEC	3	0	0	3	3
5.	MH4073	Soft Skills	PEC	2	0	1	3	3

SEMESTER III, ELECTIVE II & III

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	EA4004	Post Occupancy Evaluation of Buildings	PEC	3	0	0	3	3
2.	EA4005	Design of Energy Efficient and Healthy Buildings	PEC	3	0	0	3	3
3.	EA4006	Carbon Foot Print and Measurement	PEC	3	0	0	3	3
4.	EA4007	Natural Resource Management	PEC	3	0	0	3	3
5.	EA4008	Environmental Management Systems and Auditing	PEC	3	0	0	3	3
6.	MH4074	Psychology of Learning and Development	PEC	3	0	0	3	3

SEMESTER IV, ELECTIVE IV

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	EA4009	Energy, Climate Change and Urban Development	PEC	3	0	0	3	3
2.	EA4010	Theory of Environmental Planning	PEC	3	0	0	3	3
3.	EA4011	Environment, Development and Disaster Management	PEC	3	0	0	3	3
4.	MH4075	Theory of Architectural Education	PEC	3	0	0	3	3

PROFESSIONAL ABILITY ENHANCEMENT COURES (PAEC)

SL. NO.	COURSE CODE	COURSE TITLE	CATE - GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	EA4121	Predictive Building Modelling Software	PAEC	1	0	3	4	4
2.	MH4221	Geographical Information Systems for Built Environment	PAEC	1	0	3	4	4
3.	EA4313	Internship Training	PAEC	X	X	X	X	2

AUDIT COURSES (AC)

Registration for any of these courses is optional to students

SL. NO	COURSE CODE	COURSE TITLE	PERIODS PER WEEK			CREDITS	SEMESTER
			Lecture	Tutorial	Practical		
1.	AX4091	English for Research Paper Writing	2	0	0	0	1/2
2.	AX4092	Disaster Management	2	0	0	0	
3.	AX4093	Constitution of India	2	0	0	0	
4.	AX4094	நற்றமிழ் இலக்கியம்	2	0	0	0	

EA4101 ENERGY, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT L T P/S C
3 0 0 3

OBJECTIVES

- To enable sensitivity with respect to the linkages/ relationship between energy, lifestyle, food chain and sustainability.
- To facilitate understanding of appropriate technologies aiding sustainability.

UNIT I ENERGY SOURCES 08

Introduction to nexus between Energy, Environment and Sustainable Development; Energy transformation from source to services; Energy sources, sun as the source of energy; biological processes; photosynthesis; food chains, classification of energy sources, quality and concentration of energy sources; fossil fuel reserves - estimates, duration; theory of renewability, renewable resources; overview of global/ India's energy scenario.

UNIT II ECOLOGICAL PRINCIPLES 08

Ecological principles, concept of ecosystems, ecosystem theories, energy resources and their inter-linkages, energy flow, the impacts of human activities on energy flow in major man-made ecosystems- agricultural, industrial and urban ecosystems.

UNIT III ENERGY SYSTEMS AND ENVIRONMENT 09

Environmental effects of energy extraction, conversion and use; sources of pollution from energy technologies (both renewable and non-renewable); primary and secondary pollutants; consequence of pollution and population growth; air, water, soil, thermal, noise pollution -cause and effect; pollution control methods, sources and impacts; environmental laws on pollution control. Kyoto Protocol; Conference of Parties (COP); Clean Development Mechanism, Reducing Emissions from Deforestation and Degradation.

UNIT IV GREEN INNOVATION & SUSTAINABILITY 10

Criteria for choosing appropriate green energy technologies, emerging trends process/product innovation-, technological / environmental leap-frogging; Eco/green technologies for addressing the problems of Water, Energy, Health, Agriculture and Biodiversity, eco-restoration/ phyto-remediation, ecological sanitation, renewable energy technologies, industrial ecology, agro ecology and other appropriate green technologies.

UNIT V GREEN ENERGY AND SUSTAINABLE DEVELOPMENT 10

The inseparable linkages of life supporting systems, biodiversity and ecosystem services and their implications for sustainable development; global warming; greenhouse gas emissions, impacts, mitigation and adaptation; future energy Systems- clean/green energy technologies; International agreements/conventions on energy and sustainability - United Nations Framework Convention on Climate Change (UNFCC).

TOTAL: 45 PERIODS

OUTCOMES

- An understanding of the linkages between the ecosystem, food web and sustainability.
- Knowledge about renewable and non-renewable sources of energies and their effects on the environment.

REFERENCES

1. E H Thorndike, Energy & Environment: A Primer for Scientists and Engineers, Addison-Wesley Publishing Company
2. Energy and Environment Set: Mathematics of Decision Making, Loulou, Richard; Waaub, Jean-Philippe; Zaccour, Georges (Eds.), 2005, XVIII, 282 p. ISBN: 978-0 387-25351-0
3. Energy and the Challenge of Sustainability, World Energy assessment, UNDP, N York, 2000.

4. Energy and the Environment, 2nd Edition, John Wiley, 2006, ISBN:9780471172482; Authors: Ristinen, Robert A. Kraushaar, Jack J. AKraushaar, Jack P. Ristinen, Robert A., Publisher: Wiley, Location: New York, 2006.
5. R Wilson & W J Jones, Energy, Ecology and the Environment, Academic Press Inc.

EA4102 THERMAL COMFORT AND PASSIVE DESIGN L T P/S C
3 0 0 3

OBJECTIVES

- To enable exploration of the relationship between architectural form, materials and environmental performance.
- To give knowledge about how this relation should evolve in response to climate and emerging technical capabilities.

UNIT I HUMAN BEHAVIOUR 09

Atmospheric and thermal comfort, building performance, and occupant health, safety, and productivity. Factors responsible, energy systems for human comfort, PPD & PMV analysis

UNIT II NATURAL INFLUENCES 09

Micro and Macro thermal comfort scales – Interpreting Material data through Bio climatic charts Sun path ,Passive strategies ,Solar heat gain ,Solar radiation, Stack effect ,etc.

UNIT III DESIGN ELEMENTS 09

Modifications of Architectural & Landscape Elements – Fenestration, roof, walls, flooring, trees and landscape. Climatic zones and architectural features -Courtyard ,Cross ventilation ,Daylight factor, Walls ,Trombe wall, Buried pipe system ,Wind, Velocity ,Wind tower etc.

UNIT IV BUILDING MATERIALS 09

Properties of building materials related to Climatic zones -Properties of Heat transfer and energy flow, U-value , Appropriate materials. Mass materials/components selection strategy - Photovoltaic-Recycled materials-Utilization of building water conserving installation- Evaporative coolers.

UNIT V HUMAN COMFORT STANDARDS 09

Designing for optimum Day lighting-Ventilation and Thermal Comfort Standards. Acoustics – Manmade influences –Sick Building Syndrome – Indoor Environment and design of Healthy buildings. Adaptive model of thermal comfort and its application to sustainable design of buildings.

TOTAL: 45 PERIODS

OUTCOMES

- Understand Human thermal response to natural elements and the influence of architectural design elements.
- Understand human thermal comfort and the means to achieving the same.

REFERENCES

1. Arvind Krishan, SimosYanas, Nick Baker, S.V. Szokolay, Climate Responsive Architecture, Tata McGraw Hill Pub. Co, 2001
2. Daniel D. Chiras, The Solar House: Passive Heating and Cooling, Chelsea Green Publishing, 2002
3. David Lloyd Jones, Architecture and the Environment: Contemporary Green Buildings, Overlook Hardcover, 1998.
4. Givoni, Climate Considerations in Building and Urban Design, Wiley; 1st edition, 1998. Hawkes Dean and Foster Wayne, Energy Efficient Buildings: Architecture, Engineering, and Environment. W. W. Norton & Company; First American Edition, 2002.
5. O.H Koenisberger, Manual of Tropical housing and climate, Longman Group United Kingdom, 2012.

EA4103 ENVIRONMENTAL IMPACT ASSESSMENT L T P/S C
3 0 0 3

OBJECTIVES

- To give exposure to the need, methodology, documentation and usefulness of environmental impact assessment
- To enable skill development to prepare environmental management plan.

UNIT I INTRODUCTION 07

Historical development of Environmental Impact Assessment (EIA). EIA in Project Cycle. Legal and Regulatory aspects in India – Types and limitations of EIA – Cross sectoral issues and terms of reference in EIA – Public Participation in EIA.EIA process- screening – scoping - setting– analysis – mitigation.

UNIT II COMPONENTS AND METHODS 10

Matrices – Networks – Checklists – Connections and combinations of processes - Cost benefit analysis – Analysis of alternatives – Software packages for EIA – Expert systems in EIA. Prediction tools for EIA – Mathematical modeling for impact prediction – Assessment of impacts – air – water – soil – noise – biological — Cumulative Impact Assessment – Documentation of EIA findings – planning – organization of information and visual display materials – Report preparation. EIA methods in other countries.

UNIT III IMPACT ON SOCIO-ECONOMIC SYSTEMS 08

Definition of social impact assessment. Social impact assessment model and the planning process. Rationale and measurement for SIA variables. Relationship between social impacts and change in community and institutional arrangements. Individual and family level impacts. Communities in transition - neighborhood and community impacts. Selecting, testing and understanding significant social impacts. Mitigation and enhancement in social assessment. Environmental costing of projects.

UNIT IV ENVIRONMENTAL MANAGEMENT PLAN 10

Environmental Management Plan - preparation, implementation and review – Mitigation and Rehabilitation Plans – Policy and guidelines for planning and monitoring programmes – Post project audit – Ethical and Quality aspects of Environmental Impact Assessment.

UNIT V SECTORAL EIA **10**

EIA related to the following sectors - Infrastructure – construction and housing Mining – Industrial - Thermal Power - River valley and Hydroelectric – coastal projects-Nuclear Power, Hill area Development and CRZ. EIA for coastal projects.

TOTAL: 45 PERIODS

OUTCOMES

- An understanding about the significance of environmental impact assessment.
- Skills to prepare environmental management plan.

REFERENCES

1. Canter, L.W., Environmental Impact Assessment, McGraw Hill, New York. 1996.
2. Lawrence, D.P., Environmental Impact Assessment – Practical solutions to recurrent problems, Wiley-Interscience, New Jersey, 2003.
3. Nick Harvey, Beverley Clarke, Environmental Impact Assessment: Procedures and Practices, Oxford University Press, USA, 2012.
4. Petts, J., Handbook of Environmental Impact Assessment, Vol., I and II, Blackwell Science, London, 1999.
5. World Bank –Source book on EIA.

EA4104 URBAN ECOLOGY AND ENVIRONMENTAL PLANNING **L T P/S C**
3 0 0 3

OBJECTIVES

- To enable understanding of the basic concepts of ecology, Urban Ecology, natural systems and environment.
- To bring out awareness of the importance of Environmental planning for sustainability, resource planning and allocation and protection of natural resources and their use for sustainability.
- To enable preparation of plans considering preservation, rehabilitation and environmental policies.

UNIT I INTRODUCTION **09**

Introduction to Urban Eco-systems. Basis of environmental science. Ecology, Ecosystems, Habitat, structure of the ecosystem, major ecosystems, productivity of ecosystems adaptation. Flow of energy, food chain, ecological pyramids, predation, regulatory forces. Components of natural and built environment

UNIT II CONCEPTS AND APPROACHES TO ECOLOGICAL PLANNING **09**

Different types of life supporting services provided by the nature. General concept of urban ecological planning. Impact of urbanization and industrialization on nature. Resiliency and Biodiversity, resources planning and climate resilient urban development.

UNIT III HUMAN INFLUENCE ON ECO- SYSTEM **09**

Examination of critical issues underlying the current and future environmental problems. Human impact on environment. Modification of natural environment – Current conditions of natural resources like land, water, air. Over exploitation of natural resources, agriculture, fishing, mineral resources, energy resource, forest wealth etc.

UNIT IV EFFECTS OF GROWING POPULATION ON ECO-SYSTEMS 10

Population and pollution, Overcrowding, congestions, hygiene and health problems. Sanitation, water supply, solid and fluid waste generation and disposal problem, changing climate of the cities-urban heat island, urban flood, etc. energy and human settlement. Ecological Land Planning: Preservation and protection of ecologically sensitive areas, Rehabilitation of degraded sites, Development of sites/ land in accordance to their environmental properties.

UNIT V GLOBAL ISSUES ON MODERN CITIES 08

Global environmental problems: Global Warming, Ozone Layer Depletion, oceans, fresh water, trans boundary air pollution, biological diversity, Carbon Rating. International treatises, Land pollution, Overview of Government of India's policies, United Nations contribution to address these issues.

TOTAL: 45 PERIODS

OUTCOMES

- Sensitivity towards the need for natural resource management, and sustainable lifestyles.
- Appreciation of the value of ecosystem and the need and methods for conserving the same.

REFERENCES

1. D. D. Khanna, Sustainable development: environmental security, disarmament, and development interface in South Asia, Macmillan India, 1997
2. Francisco A. Comín, Ecological Restoration: A Global Challenge, Cambridge University Press, 2010.
3. John M. Marzluff, Urban Ecology: An International Perspective on the Interaction Between Humans and Nature, Springer, 2008.
4. Marina Alberti, Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems, Springer, 2007
5. P. D. Sharma, Ecology and Environment, Rastogi Publications, 2009
6. Saligram Bhatt, Environment Protection and Sustainable Development, APH Publishing, 2004
7. Tony Fry, Design Futuring: Sustainability, Ethics and New Practice, Berg, 2009 – Architecture.

EA4121 PREDICTIVE BUILDING MODELLING SOFTWARE L T P/S C
1 0 3 4

OBJECTIVES

- To give knowledge and enable skill in modelling techniques and passive strategies for assessing the energy performance, environmental response and impact of built form.

UNIT I PREDICTIVE BUILDING MODELLING 15

Modelling-Simple Modelling, Advanced Modelling. Understanding and familiarizing with Layers and Zones, Objects and Nodes, Element, Types, Object Relationships, Display Options ,Viewing the Model and Operational Modes.

UNIT II SOLAR ANALYSIS 10

Solar Analysis- Shading Analysis, Shading Design. Learning to - Display and animate complex shadows and reflections, Generate interactive sun-path diagrams for instant overshadowing analysis and Calculate the incident solar radiation on any surface and its percentage shading.

UNIT III LIGHTING ANALYSIS 10

Lighting Analysis–Day lighting Analysis, Artificial Lighting Analysis. Learning to work out daylight factors and artificial lighting levels either spatially or at any point.

UNIT IV THERMAL ANALYSIS 10

Thermal Analysis- Thermal Modelling Issues, Basic Thermal Analysis, Advanced Thermal Analysis. Understanding how to calculate monthly heat loads and hourly temperature graphs for any zone.

UNIT V INTEGRATED PASSIVE ENERGY STRATEGIES 15

Cognitive, analytical and simulated modeling and design of buildings. zero net energy (ZNE) building-Traditional buildings-electrical grid - HVAC and lighting-Net Zero Energy Building -Case studies.

TOTAL: 60 PERIODS

OUTCOMES

- Knowledge and ability to use predictive Modelling techniques and passive strategies for assessing the energy performance through different software.

REFERENCES

1. Clarke, Joseph; "Energy Simulation in Building Design", Second Edition Butterworth, 2001.
2. Energy Efficient Buildings in India,The Energy and Resources Institute, TERI, 2009.
3. Kabele, K., “Modeling and analyses of passive solar systems with computer simulation”, in Proc. Renewable energy sources, PP. 39 – 44, Czech Society for Energetics Kromeriz 1998.
4. Manual of the selected software – Ecotect Analysis 2011 ,TAS-version 9.2.1.6, etc
5. MoneefKrarti, Energy Audit of Building Systems- CRC Press, 2000 ESRU,. Building Energy Simulation Environment; User Guide Version 9 Series. “ESRU Manual U 96/1, University of Strathclyde, Energy Systems Research Unit, Glasgow, 1996.
6. Voss, Karsten; Musall, Eike: "Net zero energy buildings - International projects of carbon neutrality in buildings", Munich, 2011.

EA4111 ENVIRONMENTAL DESIGN STUDIO - I L T P/S C
0 0 10 10

OBJECTIVES

- To enable design of small built-up spaces by taking into consideration of various climatic conditions and strategies of environmental design principles.

CONTENT

The building shall be designed to minimize energy use and operating costs without affecting the functionality, accommodation standards, occupant health, safety or comfort. Quantification of the results should be based on theoretical and mathematical principles. Manual quantification is essential for the following aspects.

- Microclimatic analysis - Bio climatic and psychometric analysis of comfort zone (based on eco charts, and graphs)
- Whole building Analysis for Energy performance, (based on heat gain and heat loss calculations etc.,)

- Indoor thermal comfort, (Solar Analysis for optimizing Orientation, Shading and shading analysis, TSI, Thermal neutrality, time lag, Decrement factor etc.,)
- Passive energy conservation measures (performance evaluation of passive strategies like, stack effect, thrombe wall, radiant cooling system etc.,) .
- Indoor lighting levels (based on Day light factor method, lumen method etc.,)
- Air quality analysis (IAQ)
- Analysis on Life cycle assessment/ Embodied energy and carbon foot print
- Site contour analysis, Net perforated area, annual run off calculations.

The project submission should be in the form of Drawings, calculations, models and reports.

TOTAL: 150 PERIODS

OUTCOME

- An ability to design a building with all the due considerations of sustainable planning and design principles.
- Ability to technically quantify the sustainable design concepts

REFERENCES

1. IS:3362-1977, Indian Standard, code of practice For Ventilation Of Residential Building
2. Rea, M., 2000. *The Lighting Handbook*. 9th ed. Illuminating Engineering Society of North America, SP 41 (1987) Handbook On Functional Requirements Of Non-industrial Buildings (Lighting And Ventilation), BIS
3. Steven V szokolay, 2008, Introduction to architectural science. Taylor & Francis group,UK
4. Givoni Baruch, “Passive and Low Energy Cooling of Buildings”, Van Nostrand Reinhold, New Yord, 1994

AUDIT COURSES

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

OBJECTIVES

- Teach how to improve writing skills and level of readability
- Tell about what to write in each section
- Summarize the skills needed when writing a Title
- Infer the skills needed when writing the Conclusion
- Ensure the quality of 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

Clarifying Who Did What, Highlighting Your Findings, Hedging and Criticizing, Paraphrasing and Plagiarism, Sections of a Paper, Abstracts, Introduction

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

OUTCOMES

CO1 –Understand that how to improve your writing skills and level of readability
CO2 – Learn about what to write in each section
CO3 – Understand the skills needed when writing a Title
CO4 – Understand the skills needed when writing the Conclusion
CO5 – Ensure the good quality of paper at very first-time submission

REFERENCES

1. Adrian Wallwork , English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011
2. Day R How to Write and Publish a Scientific Paper, Cambridge University Press 2006
3. Goldbort R Writing for Science, Yale University Press (available on Google Books) 2006
4. Highman N, Handbook of Writing for the Mathematical Sciences, SIAM. Highman's book 1998.

AX4092 **DISASTER MANAGEMENT** **L T P C**
2 0 0 0

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 **6**

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 **6**

Economic Damage, Loss of Human and Animal Life, Destruction Of Ecosystem. Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts.

UNIT III DISASTER PRONE AREAS IN INDIA **6**

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 **6**

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 **6**

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

OUTCOMES

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

1. Goel S. L., Disaster Administration And Management Text And Case Studies",Deep & Deep Publication Pvt. Ltd., New Delhi,2009.
2. NishithaRai, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "'New Royal book Company,2007.
3. Sahni, PardeepEt.Al. ," Disaster Mitigation Experiences And Reflections", Prentice Hall OfIndia, New Delhi,2001.

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

OBJECTIVES

Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional
- Role and entitlement to civil and economic rights as well as the emergence nation hood in the early years of Indian nationalism.
- To 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

Fundamental Rights, Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies, Directive Principles of State Policy, Fundamental 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

District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO, Municipal Corporation. Pachayati raj: Introduction, PRI: Zila Pachayat. Elected officials and their roles, CEO Zila Pachayat: Position and role. Block level: Organizational Hierarchy(Different departments), Village level:Role of Elected and Appointed officials, Importance of grass root democracy.

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.

TOTAL: 30 PERIODS

OUTCOMES

Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization
- of social reforms leading to revolution in India.
- 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.
- Discuss the passage of the Hindu Code Bill of 1956.

SUGGESTED READING

1. The Constitution of India,1950(Bare Act),Government Publication.
2. Dr.S.N.Busi, Dr.B. R.Ambedkar framing of Indian Constitution,1st Edition, 2015.
3. M.P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis,2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

AX4094	நற்றமிழ் இலக்கியம்	L T P C 2 0 0 0

UNIT I சங்க இலக்கியம் 6

1. தமிழின் துவக்க நூல் தொல்காப்பியம்
– எழுத்து, சொல், பொருள்
2. அகநானூறு (82)
- இயற்கை இன்னிசை அரங்கம்
3. குறிஞ்சிப் பாட்டின் மலர்க்காட்சி
4. புறநானூறு (95,195)
- போரை நிறுத்திய ஔவையார்

UNIT II அறநெறித் தமிழ் 6

1. அறநெறி வகுத்த திருவள்ளுவர்
- அறம் வலியுறுத்தல், அன்புடைமை, ஒப்புறவு அறிதல், ஈகை, புகழ்
2. பிற அறநூல்கள் - இலக்கிய மருந்து
– ஏலாதி, சிறுபஞ்சமூலம், திரிகடுகம், ஆசாரக்கோவை
(தூய்மையை வலியுறுத்தும் நூல்)

UNIT III இரட்டைக் காப்பியங்கள் 6

1. கண்ணகியின் புரட்சி
- சிலப்பதிகார வழக்குரை காதை
சமூகசேவை இலக்கியம் மணிமேகலை
- சிறைக்கோட்டம் அறக்கோட்டமாகிய காதை

UNIT IV அருள்நெறித் தமிழ் 6

1. சிறுபாணாற்றுப்படை
- பாரி முல்லைக்குத் தேர் கொடுத்தது, பேகன் மயிலுக்குப் போர்வை கொடுத்தது, அதியமான் ஔவைக்கு நெல்லிக்கனி கொடுத்தது, அரசர் பண்புகள்
2. நற்றிணை
அன்னைக்குரிய புன்னை சிறப்பு
3. திருமந்திரம் (617, 618)
- இயமம் நியமம் விதிகள்

4. தர்மச்சாலையை நிறுவிய வள்ளலார்
5. புறநானூறு
   - சிறுவனே வள்ளலானான்
6. அகநானூறு (4) - வண்டு
   நற்றிணை (11) - நண்டு
   கலித்தொகை (11) - யானை, புறா
   ஐந்தினை 50 (27) - மான்
   ஆகியவை பற்றிய செய்திகள்

UNIT V நவீன தமிழ் இலக்கியம் 6

1. உரைநடைத் தமிழ்,
   - தமிழின் முதல் புதினம்,
   - தமிழின் முதல் சிறுகதை,
   - கட்டுரை இலக்கியம்,
   - பயண இலக்கியம்,
   - நாடகம்,
2. நாட்டு விடுதலை போராட்டமும் தமிழ் இலக்கியமும்,
3. சமுதாய விடுதலையும் தமிழ் இலக்கியமும்,
4. பெண் விடுதலையும் விளிம்பு நிலையினரின் மேம்பாட்டில் தமிழ் இலக்கியமும்,
5. அறிவியல் தமிழ்,
6. இணையத்தில் தமிழ்,
7. சுற்றுச்சூழல் மேம்பாட்டில் தமிழ் இலக்கியம்.

TOTAL : 30 PERIODS

<u>தமிழ் இலக்கிய வெளியீடுகள் / புத்தகங்கள்</u>

1. தமிழ் இணைய கல்விக்கழகம் (Tamil Virtual University)- www.tamilvu.org
2. தமிழ் விக்கிப்பீடியா (Tamil Wikipedia)-https://ta.wikipedia.org
3. தர்மபுர ஆதின வெளியீடு
4. வாழ்வியல் களஞ்சியம் - தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்
5. தமிழ்கலைக் களஞ்சியம் - தமிழ் வளர்ச்சித் துறை (thamilvalarchithurai.com)
6. அறிவியல் களஞ்சியம் - தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்