THUNCHATH EZHUTHACHAN MALAYALAM UNIVERSITY

(OBE- 2021 ADMISSION ONWARDS), FOLLOWED BY

TEMU ORDER NO. 1245/2019/GENERAL/P.V. dated 26 February 2021, CREDIT AND SEMESTER SYSTEM, M. A./ M. Sc. PROGRAMME REGULATIONS 2019.

SCHOOL OF ENVIRONMENTAL STUDIES

FACULTY OF ENVIRONMENTAL STUDIES

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PREFACE OF THE PROGRAMME IN MASTER OF ARTS/ SCIENCE IN ENVIRONMENTAL STUDIES

"As long as the last man exists, the history of nature and the history of man will only complement each

-Carl Marx

Mankind, which imitated what was seen in nature, created the arts and embraced scientific teaching, has over time become one of the most influential social creatures on nature. In an interdependent system of living things intertwined like a cyclical chain, man's interventions for his own narrow conquests have long since reached a point where they affect the earth and all living things as a whole. As a result, we are in the midst of a number of factors that are rapidly disappearing from life on Earth, including environmental changes and global warming that are destroying habitats through endangered species. Natural disasters and nuclear/ virus attacks, which are enough to stun the world, have been in the news lately. In fact, it must be assumed that there has never been another time when the conservation of nature has been given so much importance after the creation of mankind.

Gautama Buddha, who came out of the castle to live with nature, and Karl Marx, who observed that human liberation movements could only make sense if they stood with the protection of the environment, and Mahatma Gandhi, who stated that nature exists for the benefit of mankind and not for the sake of mankind, had long been plagued by the effects of exploitation. It has become imperative to mould a generation that knows the inseparable link between nature and man to survive the disasters caused by ignorance about environmental issues. Today, the scientific world and social thinkers are aiming to comprehensively study the interrelationships of human activities, to create living norms and to create awareness about them while minimizing

environmental impact. As part of this, it is shaping up to be an environmental curriculum and a top-notch curriculum in universities, incorporating perspectives in the interdisciplinary fields.

This ecology course aims to build an ecologically conscious society in order to take seriously the ideologies of nature conservation and development that are misunderstood as contradictory. This postgraduate course, which is geared towards incorporating the socio-cultural, economic and ethical perspectives that accompany them, will provide students with insights and practices that will preserve the natural benefits for future generations. The structure of this course puts forward a number of ideas to develop the 'environmental skills' of our small state of Kerala, which is facing many ecological features as well as crises, and to treat them in a principled and realistic manner. Students who study with a meaningful belief in sustainable development and environmental justice should be able to systematically understand Kerala's environmental problems and present sustainable solutions to them.

The course is designed to follow the example of renowned national universities and differentiate between MA and MSc on a single platform. In the first two semesters, M. A. and M. Sc. students share the basics and thoughts of the environment through class activities together. Equations based on environmental knowledge such as energy, development, laws, conservation models, climate change and biodiversity conservation will be discussed here. During the third and fourth semesters, M. Sc students focus on science-based environmental chemistry, environmental geology, environmental pollution, environmental determination strategies, environmental biotechnology, and waste treatment technologies. Students develop an in-depth understanding of environmental history, environmental sociology, environmental philosophy, environmental communication, voluntary organizations and sustainable development. The second year syllabus structure includes practical training in various techniques, field visits, short projects and research projects.

Let us hope that this career-oriented curriculum will lead to the creation of a visionary student body that is aware of nature and lives prudently, spreading environmental awareness in the community.

BOARD OF STUDIES MEMBERS

1. **Dr. Jainy Varghese** (Chairperson, School of Environmental Studies, Thunchath Ezhuthachan Malayalam University)

2. **Dr. P. A. Aziz** (Former Director, Salim Ali Centre for Ornithology and Natural History)

3. **Dr. Jaya D. S.** (Dean, Faculty of Applied Sciences and Technology, Professor, Department of Environmental Sciences, University of Kerala)

4. **Dr. Vidyasagaran** (Professor & Dean (Retd.), College of Forestry, Vellanikkara)

5. **Dr. T. V. Sajeev** (Chief Scientist, Kerala Forest Research Institute, Peechi, Thrissur)

6. **Dr. C. C. Harilal** (Professor, Coordinator, Department of Environmental Sciences, University of Calicut)

7. **Dr. V. Balakrishnan** (Former Member Secretary, Kerala State Biodiversity Board)

8. **Dr. Jyothi Krishnan** (Head, Disaster Management Department, Loyola College)

9. **Dr. Jude Emmanuel** (Environmental Scientist, Directorate of Environment and Climate Change)

10. **Dr. Dhanya R.** (Assistant Professor, School of Environmental Studies, Thunchath Ezhuthachan Malayalam University)

PROGRAMME REGULATIONS

MASTER OF ARTS/ SCIENCE (M. A./ M. Sc.) IN ENVIRONMENTAL STUDIES, OBE, 2021 ADMISSION ONWARDS, FOR SCHOOL OF ENVIRONMENTAL STUDIES

TITLE OF THE PROGRAMME

MASTER OF ARTS/ SCIENCE (M. A./ M. Sc.) IN ENVIRONMENTAL STUDIES

DURATION OF THE PROGRAMME

The course is conducted in a regular mode with a total of four semesters in which each semester having 90 working days distributed over 18 weeks with each week having 5 working days.

ELIGIBILITY FOR ADMISSION

M. A. Environmental Studies

Any degree from a recognised University and should have passed the entrance examination conducted by the University. Admission will be subjected to the approved exam regulations of Thunchath Ezhuthachan Malayalam University. Also the admission process will reflect the orders issued by University Grants Commission and State Government from time to time. Existing reservation rules at the time of admission will also be strictly adhered to.

M. Sc. Environmental Studies

Should have passed Plus Two with Science and obtained a degree in any subject from a recognized university and passed the entrance examination conducted by Thunchath Ezhuthachan Malayalam University. Admission will be subject to the approved exam regulations of Thunchath Ezhuthachan Malayalam University. Also the admission process will reflect the orders issued by University Grants Commission and State Government from time to time. Existing reservation rules at the time of admission will also be strictly adhered to.

ADMISSION PROCEDURE

Merit of entrance examination will be considered for admission. The exam will carry questions related to the aptitude of the candidate towards the discipline of study, language ability and general knowledge.

TEACHING LEARNING STRATEGY

The medium of instruction and learning will be Malayalam. The classroom instructions will be done using modern technology as well as practical training sessions. Fieldwork and laboratory facilities will be used for practical training sessions.

MEDIUM OF INSTRUCTION AND EXAMINATION

The medium of instruction and examination in Thunchath Ezhuthachan Malayalam University is Malayalam language. Encouraging knowledge generation and dissemination through Malayalam language is highly promoted as envisioned by the Thunchath Ezhuthachan Malayalam University.

DISSERTATION AND VIVA

This is intended to be a short research to be conducted throughout the fourth semester, focusing on the environmental issues of Kerala on the basis of proper methodology. The dissertation submission also includes an oral examination led by an external subject expert. 80 marks are provided for dissertation submission and 20 marks for oral examination. The thesis should be not less than 70 pages with illustrations. The selection of research topics will focus on the socio-economic aspects of environmental issues in the MA Environmental Studies Program and the scientific aspects of M.Sc Environmental Studies Program.

INTERNSHIP

This is intended to visitinstitutions (non-governmental organisations, government institutions, universities, research institutions) providing exposure to environmental conservation and related subjects, to participate in the activities and acquire skills related to environmental activities (for a duration of minimum fifteen days). Examination related to this includes an oral examination

led by an external subject expert. 80 marks are provided for submission of internship report and 20 marks for oral examination. The report should be not less than 30 pages with illustrations.

INFRASTRUCTURE

Smart classrooms - 2 (Projector - 2, Computer-2, Wi-Fi and LAN facilities)

Laboratory: 1 (It consists of chemicals, glasswares and equipment needed for basic scientific experiments)

STUDENT ORIENTATION

The main purpose of the course is to develop knowledge in various field/ laboratory on appropriate management strategies for environmental protection and conservation. A paper is specially designed in the third semester to help students gain proficiency in laboratory training. After gaining expertise in the theories of the respective subjects in most of the papers, field based work is made compulsory in the final units to enhance field knowledge. It also facilitates visits to non governmental organisations (NGOs) and research institutes under National and State governments. The course also facilitates opportunities to enhance laboratory knowledge/ field research in final semester project work.

PROGRAMME OUTCOME (PO) OF THUNCHATH EZHUTHACHAN MALAYALAM UNIVERSITY

PO 1: Growth and development of Malayalam language as priority

Inculcate novel thoughts envisioning strategies to elevate the knowledge status of Malayalam. Realise the scope of regional languages for developing a knowledge society. Understand the potential for exchanging knowledge via language and transform Malayalam as a corridor to enable the transfer of global knowledge.

PO 2: Develop critical thinking

Breed a scientific outlook based on rational/ critical approach applicable at individual, social and institutional levels. Endeavour from a University level to inculcate confidence among the general public by demonstrating every knowledge resources by choosing Malayalam as the medium.

PO 3: Involve in self-driven and lifelong learning and research activities

Perceive the evolutions happening in the fields of science and technology. Envisage a society that can actively participate in resolving the societal hindrances that arise from time to time.

PO 4: Embrace the values and ethics

Adherence to enshrined values and ethics in the Indian constitution and act accordingly with fellow beings. Empower the Kerala society to participate in the rebuilding process at different levels.

PROGRAMME SPECIFIC OUTCOME (PSO) OF MASTER OF ARTS (M. A.) IN ENVIRONMENTAL STUDIES

PSO 1: Understand the concepts of ecology, biodiversity conservation, natural resource management, climate change, disaster management, environmental impact assessment, environmental laws and policies.

PSO 2: Apply the principles of sustainable development to address the environmental and developmental issues.

PSO 3: Develop skills for the critical evaluation of environmental issues, environmental movements and its political scenario with reference to Kerala.

PSO 4: Practice environmental ethics to become socially and environmentally responsible citizens.

PSO 5: Develop research aptitude in environmental conservation and management and communication skills to solve environmental issues in the state of Kerala.

PSO 6: Collaborate with governmental and non-governmental organizations to develop sustainable solutions to local environmental problems.

PSO 7: Develop scientific communication and writing skills in Malayalam language.

SEMESTER WISE MAPPING OF
MASTER OF ARTS IN ENVIRONMENTAL STUDIES

OBE PROGRAMME

SEMESTER I

Core/ Elective	Course Code	Course Title	Credit	Internal Marks	External Marks	Internal Evaluation	External Evaluation
Core	MUCC-C 1001	Knowledge Status of Malayalam language	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6106	Ecology: Basic Principles	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6107	Biodiversity Conservation and Management	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6108	Energy and Environment	4	30	70	Seminar Presentation Assignment Mid Semester Exam ·Attendance	End Semester Exam
Core	MUES-C 6109	Sustainable Development: Theory and Practice	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
		Total = 20 Credits					

SEMESTER II

Core/Elective	Course Code	Course Title	Credit	Internal Marks	External Marks	Internal Evaluation	External Evaluation
Core	MUES-C 6211	Environmental Laws and Jurisprudence	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6212	Environmental Impact Assessment and Disaster Management	4	30	70	Seminar Presentation Assignment Mid Semester ExamAttendance	End Semester Exam
Core	MUES-C 6213	Climate and Climate Change	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6214	Natural Resource Management	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6215	Research Methodology	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6216	Field visit/ Study tour report	2	80	20	Field visit report	Viva, Field visit report
		Total = 22 Credits					

SEMESTER III

Core/Elective	Course Code	Course Title	Credit	Internal Marks	External Marks	Internal Evaluation	External Evaluation
Core	MUES-C 6318	Environmental History	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6319	Environmental Sociology	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6320	Environmental Philosophy and Green Politics	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6321	Environmental Economics	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6322	Mini Project/ Practical	2	80	20	Mini Project report	Viva, Mini Project report
Open Elective	MUEVS-OE 6301	Environmental Health and Education (Open elective)	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Open Elective	MU EVS-OE 6302	Environment and society (Open elective)	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
		Total = 22 Credits					

SEMESTER IV

Core/Elective	Course Code	Course Title	Credit	Internal Marks	External Marks	Internal Evaluation	External Evaluation
Elective I	MUES-E 6422-I	Environmental Communication	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Elective I	MUES-E 6423-I	Environmental Communication: Practical	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Elective -II	MUES-E 6422-II	Sustainable Development and Civil Society Organizations	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Elective II	MUES-E 6423-II	Sustainable Development and Civil Society Organizations: Practical	4	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6424	Sustainable Urbanization	2	30	70	Seminar Presentation Assignment Mid Semester Exam Attendance	End Semester Exam
Core	MUES-C 6425	Dissertation	4	80	20	Project Report	Viva, Project Report
Core	MUES-C 6429	Internship	2	80	20	Internship Report	Viva, Internship Report
		Total = 16 Credits					

SEMESTER WISE COURSE OUTCOME,COURSE CONTENT & TAGGING

SEMESTER I

CORE:

MUCC-C 1001 KNOWLEDGE STATUS OF MALAYALAM LANGUAGE

(4 CREDITS)

COURSE OUTCOME (CO):

On successful completion of this course the student will be able to

- **CO 1**: Understand the relationship between Mother tongue and social development
- **CO 2**: Classify the development of Malayalam language in the fields of technology, science, academic and political extents
- **CO 3**: Conduct political analysis based on social justice
- **CO 4**: Create concepts based on language technology
- **CO 5**: Develop capacity to craft language planning for language technology and lexicon
- **CO 6**: Discover the importance of translation in the development of mother tongue

COURSE CONTENT:

നവോത്ഥാനകാലംമുതൽവൈജ്ഞാനികം, വിദ്യാഭ്യാസം, സാങ്കേതികം, രാഷ്ട്രീയംഎന്നീരംഗങ്ങളിൽമലയാളഭാഷനേടുന്നവളർച്ചപരിചയപ്പെടുത്തുന്നതാണ്ഈപേപ്പർ.

യൂണിറ്റ് 1

നവോത്ഥാനവുംമലയാളഭാഷാവബോധവും:– കോളനീകരണവുംമാതൃഭാഷയും. ലോകഭാഷകളിൽമലയാളത്തിന്റെസ്ഥാനം, നവോത്ഥാനവുംകേരളം, മലയാളംഎന്നീസങ്കൽപ്പനങ്ങളുടെവളർച്ചയും – മാതൃഭാഷയ്ക്കുണ്ടിയുള്ളശ്രമങ്ങൾ – മക്തിതങ്ങൾ. ജോർജ്ജ്മാത്തൻ, എ.ആർ. രാജരാജവർമ്മ, പഠനമാധ്യമം, ഐക്യകേരളംഎന്നസങ്കൽപ്പം, ഐക്യകേരളപ്രസ്ഥാനം.

വിശേഷപഠനം

- ജോർജ്ജ്മാത്തൻ, 'ബാലാഭ്യസനത്തെക്കുറിച്ച്ഒരുപ്രസംഗം' (മൂന്നാംഖണ്ഡംമാത്രം) (1867). (ഡോ. സാമുവൽചന്ദനപ്പള്ളി, റവ. ജോർജ്ജ്മാത്തൻ – കൃതികളുംപഠനവും, പു. 435–447).

- മക്തിതങ്ങൾ, 'തമിഴരാജ്യംമുതൽമലയാളരാജ്യനിവാസികളായമുസ്ലിംജനവുംവിദ്യാഭ്യാസവും' (മക്തിതങ്ങളുടെസമ്പൂർണ്ണകൃതികൾ, കേരളഇസ്ലാമിക്മിഷൻ, തിരൂർ 6, 1981).
- എ.ആർ. രാജരാജവർമ്മ, 'നാട്ടുഭാഷാവിദ്യാഭ്യാസം' (എ. ആർ. രാജരാജവർമ്മയുടെതെരഞ്ഞെടുത്തപ്രബന്ധങ്ങൾ, രഞ്ജിമപബ്ലിക്കേഷൻസ്, മാമ്മൂട്, 1987).
- സഹോദരൻഅയ്യപ്പൻ, മലയാളഭാഷയുടെഅഭിവൃദ്ധിമാർഗ്ഗം (1934) (സഹോദരൻഅയ്യപ്പൻ: ജീവിതവുംകൃതികളുംഎം.പി. ഷീജ (എഡി.) മൈത്രിബുക്സ്, തിരുവനന്തപുരം, 2010).
- ഴഗിവാതിങ്കോ, ആഫ്രിക്കൻസാഹിത്യത്തിന്റെഭാഷ (മനസ്സിന്റെഅപകോളനീകരണം).
- തായാട്ട്ശങ്കരൻ, മാനസികമായഅടിമത്തം (ഇന്ത്യൻവിദ്യാഭ്യാസംനൂറ്റാണ്ടുകളിലൂടെ).

യൂണിറ്റ് 2

ഭാഷയുടെമാനകീകരണവുംആധുനികീകരണവും.

വാമൊഴിയിൽനിന്നുവരമൊഴിയിലേക്ക്, മലയാളംഅക്കങ്ങൾ, സാഹിത്യചരിത്രങ്ങൾ, നിഘണ്ടുക്കളുടെവരവ്, പ്രാദേശികഭാഷാഭേദങ്ങളെക്കുറിച്ചുള്ളതിരിച്ചറിവ്, ലക്സിക്കോഗ്രാഫി, അച്ചടി, പത്രം, പത്രഭാഷ, മാധ്യമഭാഷ, ഭാഷാസാങ്കേതികത: മലയാളംടൈപ്പ്റൈറ്റർ, ലിപിയുടെപരിണാമം, ലിപിപരിഷ്കരണകമ്മറ്റികൾ, അച്ചടി: പുതിയലിപി, കമ്പ്യൂട്ടർമലയാളം, മലയാളംസോഫ്റ്റ്വെയർ, അതിനുള്ളശ്രമങ്ങൾ, സ്ഥാപനങ്ങൾ.

വിശേഷപഠനം

ഇ. വി. രാമകൃഷ്ണൻ, 'വർത്തമാനപത്രങ്ങളുടെയുംഅച്ചടിയന്ത്രങ്ങളുടെയുംവ്യാപനത്തോടെമലയാളിയുടെസാഹിത്യസങ്കൽപ്പനങ്ങളിലുംഭാഷാവ്യവഹാരങ്ങളിലുംസംഭവിച്ചമാറ്റങ്ങൾ'

(എം. എൻ. വിജയൻ (എഡി.) നമ്മുടെസാഹിത്യം, നമ്മുടെസമൂഹം, വാല്യം 2

- ടി. ബി. വേണുഗോപാലപ്പണിക്കർ, "മലയാളലിപിപരിഷ്കരണം: ഭൂതവുംഭാവിയും' (ജനപഥം, നവം. 2009).
- സന്തോഷ്തോട്ടുങ്ങൽ; 'യൂനീക്കോഡ്മലയാളത്തിൽ – സംഭവിക്കുന്നതെന്ത്?'
- നിഖിൽനമ്പ്യാർ, വിമൽജോസഫ്, 'മലയാളംഇൻസ്ക്രിപ്ഷൻകീബോർഡ്എങ്ങനെഉപയോഗിക്കാം?' (ജനപഥം, നവം. 2009).
- എം. മുകുന്ദൻ, 'ഒരുസാക്ഷാൽതിയ്യൻമറ്റൊരുതിയ്യനോട്ഇംഗ്ലീഷ്പറയുമോ? (മാതൃഭൂമിആഴ്ചപ്പതിപ്പ്, 2010 ജനു. 24 – 30).

യൂണിറ്റ് 3

വിജ്ഞാനഭാഷ

വിജ്ഞാനഭാഷയെന്നനിലയിൽപത്തൊമ്പതാംനൂറ്റാണ്ടുവരെയുള്ളമലയാളത്തിന്റെവളർച്ച.

വിജ്ഞാനഭാഷയുടെവികാസം, വിജ്ഞാനകോശങ്ങൾ, മലയാളപദകോശത്തിന്റെആധുനികീകരണം.

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യൂണിറ്റ് 4

ഭരണഭാഷ – മലയാളഭാഷയുടെഭരണപരവുംരാഷ്ട്രീയവുമായവികാസം, ഭരണഭാഷയുംജനാധിപത്യവാൽക്കരണവും, ലോകമാതൃഭാഷാദിനം, ഇന്ത്യൻഭരണഘടനയിൽഭാഷകളുടെസ്ഥാനം, മലബാർ, കൊച്ചി, തിരുവിതാംകൂർഎന്നിവിടങ്ങളിലെഭരണമണ്ഡലത്തിൽമലയാളഭാഷയുണ്ടായിരുന്നസ്ഥാനം. ഭരണഭാഷയുള്ളകമ്മീഷൻ, കോമാട്ടിൽഅച്യുതമേനോൻകമ്മീഷൻ. ഔദ്യോഗികഭാഷാപ്രഖ്യാപനം 1969, കോടതിഭാഷ – നരേന്ദ്രൻകമ്മീഷൻ – ഭരണഭാഷാപോത്സാഹനനടപടികൾ – ജില്ലാതാലൂക്ക്തലഔദ്യോഗികഭാഷാസമിതികൾ, ഭാഷയുടെവേണ്ടിയുള്ളപ്രസ്ഥാനങ്ങൾ.

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  (ഔദ്യോഗികഭാഷാസംബന്ധമായികേരളസർക്കാർപുറപ്പെടുവിച്ചപ്രധാനഉത്തരവുകളുംസർക്കുലറുകളും, അനുബന്ധം 1, കേരളസർക്കാർ, 2002)
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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO. 1	Understand the relationship between Mother tongue and social development	2, 4		RE, Un, An	F, C	12	0
CO. 2	Classify the development of Malayalam language in the fields oftechnology, science, academic and political extents	1, 3		Ev, RE, Un, An	F, C	12	0
CO. 3	Conduct political analysis based on social justice	1, 3, 4		An	C	12	0
CO. 4	Create concepts based on language technology	2, 3		An, Ev	C, P	12	0

CO. 5	Develop capacity to craft language planning for language technology and lexicon	3		An, Ap, Ev	C, P	12	0
CO. 6	Discover the importance of translation in the development of mother tongue	1, 3, 4		An, Ap, Ev	C	12	0

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER I

CORE:

MUES-C 6106 Ecology: Basic Principles

(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Describe the basic concept and emergence of ecology.

CO2. Understand the basic structure, function and different types of ecosystems.

CO3. Understand the basic concepts of biogeochemical cycles.

CO4. Understand the basic principles of population ecology.

CO5. Understand the basic concepts of biogeography and new methods of ecosystem restoration.

CO6. Develop the skills to identify the problem that persists in the locally existing food chains**.**

COURSE CONTENT:

Unit 1

Emergence of Ecology: Henry David Thoreau and Natural History, Darwin's Theory of Evolution, Ernst Haeckel's The Politics of Ecology,Gifford Pinchot - Resource Conservation, Aldo Leopold - Land Ethics, Rachel Carson - Silent Spring.**The Science of Ecology**- Contributions of Eugene Odum.An Introduction to Environmental science - Definition, Principles and Importance.

Unit 2

Ecosystem: Ecology:, Ecosystem: Definition, Concept, Structure (Biotic factors, abiotic factors: Light, temperature, rainsall, humidity, atmosphere, height, direction and slope of mountains and valley, soil).Functions-trophic levels in ecosystem, energy flow, food chain, food web, biogeochemical cycles. Global water cycle, carbon cycle, nitrogen cycle, sulphur and phosphorous cycle, mercury cycle. Ecological succession, ecotone, edge effect, niche, ecosystem services.

Different types of ecosystems- Terrestrial ecosystem (Forest, grassland, desert, mountains, islands, coral reefs), aquatic ecosystems-inland ecosystem-lentic:ponds, lakes, wetlands, mangroves. Lotic-streams, rivers). Marine ecosystems. Estuarine ecosystem. Examples with special reference to Kerala.

Unit 3

Population Ecology - Population Density and Related Equilibrium - Variations in Population - Natality - Infant Mortality - Population Structure, Population dispersal, Growth Variations, Population Variation and Cyclical Movements, Population Control, R & K selections, Keystone species. Population dynamics, Migration, and Immigration. Isolation corridors, locality, population interactions, mutualism, symbiosis, parasitism, antibiosis, predation, competition.

Unit 4

Biogeography: Definition, Concept, Structure. Biomes: concepts, classification, distribution. Different types of biomes, characteristics-Tundra, taiga, grassland, deciduous forest biome, highland icy alpine biome, chaparral, savanna. Tropical rain forests. Ecosystem restoration(soil, river, forests).

Unit 5

Practical Training: Identify food webs in different habitats and conduct village visits to study and review the human-based food chain.

Additional classes and discussion on topics suggested by students based on Basic principles of ecology

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO 1	Describe the basic concept and emergence of ecology	PO 2	PSO 1	Re	Co	10	0
CO 2	Understand the basic structure, function and different types of ecosystems.	PO 2	PSO 1	Un	Co	10	0
CO 3	Understand the basic concepts of biogeochemical cycles.	PO 2	PSO 1	Un	Co	10	0
CO 4	Understand the basic principles of population ecology.	PO 2	PSO 1	An	Co	20	0
CO 5	Understand the basic concepts of biogeography and new methods of ecosystem restoration.	PO 2, PO 3	PSO 1	Ev	Co	10	0
CO 6	Develop the skills to identify the problem persist in the locally existing food chains	PO 2	PSO 3	Cr	Pr	15	2

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse

Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER I

CORE:

MUES-C 6107 Biodiversity Conservation and Management

(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1: Understand the basic concepts of biodiversity

CO2: Analyze the importance of biodiversity in sustaining local livelihoods.

CO3: Understand people's participation in biodiversity conservation

CO4: Understanding the causes of biodiversity loss and 'constraints' to conservation measures.

CO5: Practicing field-oriented methods of biodiversity estimation.

CO6: Practice methods used for population data analysis of species.

COURSE CONTENT:

Unit 1

Biodiversity - basic concepts: concepts, dimensions, genetic, species and ecosystem diversity. Biodiversity transformation according to earth's chronology (diversification through geological time scale). Bio-protected areas - biodiversity hotspots, biosphere reserves, national parks, wildlife sanctuaries, community reserves. IUCN bio-protected area categories, UNEP-WCMC, UNESCO-World Heritage Sites.

Unit 2

Biodiversity—services and society: Biodiversity values and services, biodiversity and livelihoods. People's participation in biodiversity conservation- Kerala Biodiversity Board, Biodiversity Management Committee, People's Biodiversity Register (PBR), Joint Forest Management (JFM), National Afforestation Programme (NAP scheme), Compensatory Afforestation Fund Management and Planning Authority (CAMPA), National REDD+ Policy-2014), Ethnoecology, Eco-linguistics, Biodiversity and Ethno-taxonomy, and Agricultural Biodiversity and Sustainability.

Unit 3

Decline in Biodiversity and Conservation: Decline of Flora and Fauna. Threatened species, IUCN classification, species included in the IUCN Red Data Book index, RET species-In the Kerala context, the main causes of threats to biodiversity - habitat destruction, environmental pollution, mining, climate change and invasion of exotic/ invasive species. Evolution of Biodiversity Conservation - Stockholm to Biodiversity Decade (2011-2020). National Forest Policy, National Environment Policy, National Biodiversity Policy.

Unit 4

Measurements of biodiversity: Population Sampling of Flora and Fauna,Necessity of sampling, characteristics of good sampling, determination methods: Observational methods; Direct quadrats, fixed area plots, permanent plots, line transect, Focal Animal Sampling, Visual Encounter Survey, Pollard Walk. Point count method. **Species Dominance:** Dominance, abundance, evenness, diversity indices (Shannon & Weiner, Simpson), Important Value Index. Data analysis using software (Biodiversity Pro, Estimates).

Unit 5

Practical Experience: Field Studies Related to Biodiversity Assessment/Conservation, Biodiversity conservation and management, classes and discussions based on topics suggested by students.

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Understand the basic concepts of biodiversity	PO 2	PSO 1	Un	Co	10	0
CO2	Analyze the importance of biodiversity in sustaining local livelihoods.	PO 2	PSO 1	Un	Co	10	0
CO3	Understand people's participation in biodiversity conservation	PO 2	PSO 3, PSO 4	An	Co	15	0

CO4	Understanding the causes of biodiversity loss and 'constraints' to conservation measures.	PO 2	PSO 3	An	Co	12	0
CO5	Practicing field-oriented methods of biodiversity estimation.	PO 2, PO 4	PSO 5	Ev	Co	10	0
CO6	Practice methods used for population data analysis of species.	PO 2	PSO 5	Ap	Pr	12	3

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER I

CORE:

MUES-C 6108 Energy and Environment

(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Understand the principles of production and use of renewable and non-renewable energy resources.

CO2. Compare the global, national, and local energy use patterns.

CO3. Explain various methods of generating renewable energy.

CO4. Analyze the social and environmental impacts of energy production, transformation and consumption.

CO5. Evaluate the possibility of alternate energy sources at the local level.

CO6. Device sustainable energy conservation methods.

COURSE CONTENT

Unit 1

Energy and Environment: Introduction. Energy - History, Definition, Types of energy, energy forms, major energy sources, energy and society, global energy production and use pattern; energy use pattern in India, Emission of carbon dioxide from developed and developing countries including India, Social and environmental aspects of energy production and energy use patterns.

Unit 2

Non-renewable Energy Resources: Fossil fuels - coal, petroleum and natural gas, Coal beds, Peate, Oil, Oil shale, Tar sands. Thermal power plants, nuclear fuels, Nuclear Power Plants **Renewable Energy Resources:** Solar energy: Technique for harvesting solar energy - thermal conversion, thermo-mechanical conversion, Helio-electric conversion, Photo-voltaic conversion Solar ponds, wind energy, geothermal energy, water energy, ocean energy, biomass energy: biofuels - National and Kerala Scenario.

Unit 3

Socioeconomic and environmental effects on energy production and consumption: Socioeconomic and environmental consequences of renewable and non-renewable energy sources – pollution, habitat destruction and biodiversity loss, global warming, climate change, health issues, and energy crises. Energy and economic crises.

Unit 4.

Alternative energy sources: Green energy–green nuclear fusion energy, hydrogen, fuel cell, and batteries. Smart grids, supercapacitors, and efficient energy storage systems. Energy and nanotechnology, and the role of nanotechnology in energy storage systems. Hybrid fuels, compressed natural gas (CNG), oxygenated fuels, biofuels, gas hydrates, Hybrid fuels, CNG, oxygenated fuels, biofuels, Alternative fuel use patterns:Global, Indian and Kerala scenario.

Unit 5

Energy Conservation Methods: Various energy conservation projects at the national level, energy pricing technique. Energy Efficiency Standards, Energy Audit - Types (Walkthrough Audit, Intermediate Audit, Comprehensive Audit). Energy audit execution and report preparation, recommendation activities, and sustainable energy use practices – energy use control at the household and community levels, green buildings-Leeds certification. The study of indigenous energy conservation activities and sustainable energy consumption practices. Classes and discussion based on topics suggested by students based on energy and environment

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Understand the principles of production and use of renewable and non-renewable energy resources	PO 2	PSO 1	Un	Fa, Co	15	0
CO2	Compare the global, national, and local energy use patterns	PO 2	PSO 2	An	Co, Pr	10	0
CO3	Explain various methods of generating renewable energy	PO 2	PSO 2	An	Co	15	0
CO4	Analyze the social and environmental impacts of energy production, transformation and consumption	PO 2	PSO 3	Ev	Pr	10	0
CO5	Evaluate the possibility of alternate energy sources at the local level	PO 2, PO 3	PSO 1, PSO 2	An	Pr	10	0
CO6	Device sustainable energy conservation methods	PO 3	PSO 2	Cr	Pr	8	4

TERMINOLOGIES USED

CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER I

CORE:
MUES-C 6109 Sustainable Development: Theory and Practice
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Understands the fundamental concepts and governance policies of sustainable development.

CO2. Discuss the existing policies and framework for achieving sustainable development.

CO3. Explain the evolution and current trends of resource utilization in the industrial and energy sector.

CO4. Evaluate the opportunities for sustainable development in cities, lifestyles, communities, and cultures.

CO5. Appraise the Kerala Development Model in the context of Sustainable Development.

CO6. Apply appropriate sustainable development strategies in the context of Kerala

COURSE CONTENT:

Unit 1

Fundamental Principles of Sustainable Development: Sustainable Development: Background and Definition, Importance of Sustainable Development, Necessity of Sustainable Development, Impact of Sustainable Development. Social, Economic, and Environmental Goals of Sustainable Development, Rural-Urban Divide, Rich-Poor Divide, Sustainable Urban Vision for Poverty Eradication and Equality, Environmental Interdependence and Sustainability. Carrying Capacity of the Earth and Sustainable Development, Intergenerational and Intragenerational Equity and Sustainable Development, Climate Change and Sustainable Development.

Unit 2

Sustainable Development - Policies and Governance: Global Initiatives, Brundtland Report, Earth Summit, Johannesburg Summit – 2002, Millennium Development Goals, Sustainable Development Goals, Agenda 2030, Sustainable Development Index (SDG Index), Challenges in Achieving Sustainable Development Goals, Sustainable Development Goals and India, Economic Revitalization for Sustainable Development, National and State Green Initiatives, Environmental Taxation, Decentralization and Sustainable Development, Gross Domestic Product (GDP), Gross National Product (GNP), Human Development Index (HDI).

Unit 3

Sustainability in the Industrial and Energy Sectors: Sustainability of Products, Resource Efficiency, Recycling, Domestic Processing of Waste Materials, Reduction of Industrial Waste, Closed-loop Production Methods, Circular Economy, Corporate Ethics and Triple Bottom Line (Economy, Environment, Society), Transitions and Challenges Towards Sustainable Energy, Alternative Energy Systems, Role of Technology and Innovation in Achieving Sustainable Development.

Unit 4

Sustainable Development and Society: Environmentally Friendly Cities, Decentralized Urbanization and Small Cities, Marginalized Communities and Sustainable Development, Development and Gender Inequality, Indigenous Cultures: Lessons in Sustainability, Lifestyle Changes - Alternative Healthcare, Role of Government and Non-Governmental Organizations in Sustainable Development, Role of Local Self Governments in Sustainable Development.

Unit 5

Sustainable Development in Kerala: Geographical Features of Kerala, Primary Sectors and Sustainability, Western Ghats, Biodiversity Conservation, Restoration of Water Sources (Wetlands, Rivers), Revival of Agriculture, Sustainable Fisheries Development Policy, Revival of Fallow Lands, Sustainability and the Kerala Development Model, Alternative Development Models, Sustainable Energy, Green Transportation, Sustainable Tourism, Creation of Green Job Opportunities in Kerala, Sustainable Rehabilitation of Housing Issues in Kerala, Alternative Construction Practices, Waste Management: Problems and Solutions, Information Technology and Sustainable Development, Classes and discussions based on topics suggested by students with a focus on the theory and practice of sustainable development.

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS

CO1	Understands the fundamental concepts and governance policies of sustainable development	PO 2	PSO 2	Un	Fa	10	0
CO2	Discuss the existing policies and framework for achieving sustainable development	PO 2, PO 3	PSO 1	Un	Co	15	0
CO3	Explain the evolution and current trends of resource utilization in industrial and energy sector	PO 2	PSO 1	An	Pr	10	0
CO4	Evaluate the opportunities for sustainable development in cities, lifestyles, communities, and cultures	PO 3	PSO 2 PSO 4	Ev	Pr	15	0
CO5	Appraise the Kerala Development Model in the context of Sustainable Development	PO 3	PSO 5	Ev	Pr	10	0
CO6	Apply appropriate sustainable development strategies in the context of Kerala	PO 2, PO 3	PSO 2	Ev	Pr	12	0

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

MODEL QUESTION PAPER

UNIVERSITY EMBLEM

THUNCHATH EZHUTHACHAN MALAYALAM UNIVERSITY

NAME OF EXAMINATION MONTH – YEAR

COURSE CODE

PROGRAMME TITLE

COURSE TITLE

TIME: 3HRS **MAXIMUM MARKS: 70**

I.Answer all questions (5X2=10)

(Cognitive Level: Remembering/ Understanding)

1.
2.
3.
4.
5.

II. Answer any six questions not exceeding two pages (6X6=36)

(Cognitive Level: Analyse/ Apply)

6.
7.
8.
9.
10.
11.
12.
13.

III. Answer any two questions not exceeding five pages (2X12=24)

(Cognitive Level: Apply/ Analyse/ Evaluate/ Create)

14.

15.

16.

SEMESTER II

CORE:

MUES-C 6211 Environmental Laws and Jurisprudence
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1: Understand the history and development of the environmental laws in India.

CO2: Analyze the laws related to natural resources and environmental pollution.

CO3: Analyze the importance of laws in environmental cases in India.

CO4: Evaluate the environmental laws and jurisprudence in Kerala.

CO5: Evaluate the practice of laws and justice through National Green Tribunal (NGT), Public Interest Litigation (PIL) and public strikes in Kerala scenario.

CO6: Evaluate environmental Impact Assessment and green accounting.

COURSE CONTENT:

Unit 1

Environmental Laws and Policies: Introduction: Environment and laws, Sources of law, General principles for environmental protection: Public Trust Doctrine, Precautionary Principle, Polluter Pays Principle, Strict Liability, Absolute Liability, Intergenerational and Intragenerational Equity, Common but Differentiated Responsibility, Good Neighborliness Principle, Sustainable Development. Environmental treaties and conventions: Ramsar Convention 1971, Stockholm Conference 1972, Montreal Protocol 1987, Convention on Biological Diversity 1992, Convention on International Trade in Endangered Species (CITES), Earth Summit 1992, Convention to Combat Desertification, Kyoto Protocol 1997, Paris Agreement 2015, Basel Convention 1989, United Nations Convention on the Law of the Sea (UNCLOS)

Unit 2

Indian Legal Framework and Environmental Protection: Indian Legal System: Constitution, laws, and regulations, Tort law, public nuisance, Constitutional provisions for environmental protection: Article 14, Article 19(1)(g), Article 21, Article 32, Article 47, Article 48A, Article

51A(g), Article 226, Article 253. Wildlife (Protection) Act 1972, Forest Conservation Act 1980, Indian Forest Act, Biological Diversity Act 2002, Coastal Regulation Zone (CRZ) Rules, Forest Rights Act 2006, River interlinking and interstate water sharing, National Forest Policy 1988, National Water Policy 2002, National Environment Policy 2006, Public Interest Litigations, National Green Tribunal (NGT), Green Bench.

Unit 3

Pollution Control Laws in India: Water (Prevention and Control of Pollution) Act 1974, Air (Prevention and Control of Pollution) Act 1981, Environment (Protection) Act 1986, Noise Pollution Rules 2000, Waste Management Rules: Solid Waste, Plastic Waste, Electronic Waste, Construction and Demolition Waste, Hazardous Waste, Batteries. Public Liability Insurance Act 1991, Responsibilities of Pollution Control Boards.

Unit 4

Environmental Laws and Policies in Kerala: Laws related to the protection of paddy fields and wetlands, Laws related to sand mining, Laws related to the protection of forests and trees, Laws related to groundwater, Environmental sensitive areas, Protection systems, Role of local self-government institutions in environmental laws within the Kerala context.

Unit 5

Cases Related to Environmental Protection: Trail Smelter Arbitration, Rylands vs. Fletcher, Municipal Council Ratlam vs. Vardichand, L.K. Koolwal vs. Rajasthan, Vellore Citizens Welfare Forum vs. Union of India, M.C. Mehta vs. Kamal Nath, S. Jagannath vs. Union of India, Rural Litigation and Entitlement Kendra vs. Uttar Pradesh, M.C. Mehta vs. Union of India, Oleum Gas Leak Case, Union Carbide Corporation vs. Union of India (Bhopal Gas Tragedy), Narmada Bachao Andolan vs. Union of India, Lafarge Umiam Mining Limited vs. Union of India, T.N. Godavarman Thirumulpad vs. Union of India 2006, B.L. Wadehra vs. Union of India 2001, Classes and discussions based on topics suggested by students, grounded in environmental systems and laws.

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Understand the history and development of the environmental laws in India	PO 4	PSO 1	Un	Fa, Co	10	0
CO2	Analyze the laws related to natural resources and environmental pollution	PO 3	PSO 1, PSO 3	An	Co, Pr	15	0
CO3	Analyze the importance of laws in environmental cases in India	PO 2	PSO 1, PSO 4	An	Pr	15	0
CO4	Evaluate the environmental laws and jurisprudence in Kerala	PO 2	PSO 3,	Ev	Pr	10	0

CO5	Evaluate the practice of laws and justice through National Green Tribunal (NGT), Public Interest Litigation (PIL) and public strikes in Kerala scenario	PO 2, PO 3	PSO 1, PSO 3	Ev	Fa, Pr	12	0
CO6	Evaluate environmental Impact Assessment and green accounting	PO 3	PSO 1, PSO 3	Ev	Co, Pr	10	0

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER II

CORE:

MUES-C 6212 Environmental Impact Assessment and Disaster Management
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1: Explain the basic concepts and methods of Environmental Impact Assessment (EIA) &Life Cycle Assessment (LCA).

CO2: Understand the basic concept of disaster and disaster management.

CO3: Evaluate the environmental clearance process and EIA procedures for developmental projects in India.

CO4: Evaluate the role of government/non-government sectors in disaster management.

CO5: Evaluate the role of laws and policies in disaster management.

CO6: Appraise the role of EIA, LCA & Disaster management in achieving sustainable development.

COURSE CONTENT:

Unit 1

Environmental Impact Assessment (EIA): Introduction, Definition, Goals, Evolution, Advantages, Participants in EIA process, Stages in EIA, Types of EIA. Baseline data in EIA process - environmental data, project data, project alternative data, Characteristics of impacts, impact analysis methods - impact identification (Ad hoc method, checklists, matrices, networks, overlays, quantitative or index method), impact prediction, impact evaluation, impact mitigation cost benefit analysis, Environment Management Plan (EMP), Statement (EIS), Structure of EIA report, Social Impact Assessment, Cumulative Impact Assessment.

Unit 2

Environmental Impact Assessment in India: Procedures and guidelines for environmental clearance, EIA Notification 1994, 2006, amendments, EIA experts, Overview, current procedures and guidelines for environmental clearance, EIA notification, EIA consultants. Case studies for EIA in Kerala scenario - water projects, industries, mining and quarrying, highway construction, tourism, building construction, and energy (water- thermal - atomic - oil - natural gas - solar - power).

Unit 3

Life Cycle Assessment (LCA): Goal and scope, Different stages of life cycle assessment, types (cradle to grave, gate to gate, cradle to cradle, cradle to cradle to gate, etc.), uses of LCA, specialists in LCA, applications of LCA- case studies.

Unit 4

Disaster - Basic Concept: Definitions (disaster, hazard, vulnerability, risk). features of disaster, Cause factors of disaster, Risk assessment -Hazard Identification, Hazard Accounting, Scenario of Exposure, Risk Characterization & Management. Classification of disasters. Classification of disasters. Database of disasters: at the global national and regional level. General status of disasters in Kerala, natural disasters and environmental issues in Kerala.

Unit 5

Disaster Management and Policies: Disaster Management - Definition, stages in Disaster Management Cycle (Prevention, Preparedness, Response and Recovery), Role of Various Departments in the Disaster Management Process (Health, Communication, Insurance, Fire Brigade, Police, Military and Paramilitary Forces, Voluntary Organizations, Local Self-Governing Bodies.Various policies for disaster management: Sendai Framework, Disaster Management Act 2005, National Disaster Management Authority (Origin and Functions), State Disaster Management Authority. The role of advanced technologies such as remote sensing and geographic information system (GIS) in disaster management. Classes and discussion based on topics suggested by students based on environmental impact assessment and disaster management

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Explain the basic concepts and methods of Environmental Impact Assessment (EIA) & Life Cycle Assessment (LCA)	PO 2	PSO 1	Un	Co	15	0
CO2	Understand the basic concept of disaster and disaster management	PO 2	PSO 1	Un	Co	15	0
CO3	Evaluate the environmental clearance process and EIA procedures for developmental projects in India	PO 2	PSO 1	An	Pr	15	0
CO4	Evaluate the role of government/non-government sectors in disaster management	PO 2	PSO 2, PSO 6	Ev	Pr	5	0
CO5	Evaluate the role of laws and policies in disaster management	PO 2	PSO 1, PSO 3	An	Pr	10	0
CO6	Appraise the role of EIA, LCA & Disaster management in achieving sustainable development	PO 2, PO 3	PSO 2	Ev	Pr	12	0

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand

Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER II

CORE:

MUES-C 6213 Climate and Climate Change
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO 1: Understand the scientific concepts and history of climate change.

CO 2: Describe the factors influencing climate change.

CO 3: Examine the environmental, social and economic impacts of climate change on global, national and Kerala scenarios.

CO 4: Appraise the mitigation and adaptation measures for climate change.

CO 5: Compare the global, national and state level initiatives for addressing climate change.

CO 6: Report the impacts of climate change based on field visit.

COURSE CONTENT:

Unit 1

Climate Change: Science and History: Climate change - definition, concepts - day conditions and weather. Climate classification, climatic variability, Measurement of climate change, monitoring and assessment. Causes - Global warming, greenhouse effect, urban islands, ozone layer depletion, air pollution, heat and cold waves, global dimming, use of fossil fuels, global dimming, the use of fossil fuels, the amount of carbon in the atmosphere that resulted from the Industrial Revolution and the Scientific Revolution, El Nino and La Nina - shocks.

Unit 2

Climate change and its Implications: Temperature rise, changes in agriculture and living organisms, Diseases, Sea Level Rise, Changes in the Geographical Distribution of flora and Fauna and Microorganisms, Ice melting, Fluctuations in the amount and duration of rainfall, Socio-Economic and environmental impacts of Climate Change - global, national and Kerala scenario.

Unit 3

Climate Change: Solution Setting: Carbon Management - Carbon Sequestration, Soil carbon Sequestration, ways to increase carbon sequestration- bio-fencing in coastal areas, afforestation, use of Biofuel, Carbon Farming and Carbon Trading. Climate change and disasters - mitigation measures - farming methods, land use, technologies, potential of solar energy, smart grid, hydrogen fuel, green building

Unit 4

Climate Change: Global Initiatives: Global Warming - Sustainable Lessons - Resilient Cities, Global Agreements, Clean Development Mechanism (CDM), Protocols, Programs in collaboration with the United Nations – UNEP, UNSD, UNFCCC, Climate change in Indian Context: National Action Plan on Climate Change (NAPCC), Climate change in Kerala Context, State Action Plan on Climate Change, Local Action Plan on Climate Change, Indian Participation in International Agreements.

Unit 5

Climate change: Practical training: Implications of climate change: Local level review (field visit / review of related studies).

Climate change: Practical training: Implications of climate change – an indigenous-level review (review of field visits/related studies). Classes and discussion based on topics suggested by students based on climate and climate change

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Further Reading

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Understand the scientific concepts and history of climate change	PO 2	PSO 1	Un	Fa, Co	15	0
CO2	Describe the factors influencing climate change	PO 2	PSO 1, PSO 3	Un	Co	15	0
CO3	Examine the environmental, social and economic impacts of climate change on global, national and Kerala scenarios	PO 2	PSO 3	An	Co	10	0
CO4	Appraise the mitigation and adaptation measures for climate change	PO 2, PO 3	PSO 3, PSO 6	Ev	Co, Pr	5	0
CO5	Compare the global, national and state level initiatives for addressing climate change	PO 2	PSO 3, PSO 6	Cr	Pr	10	0
CO6	Report the impacts of climate change based on field visit	PO 2, PO 3	PSO 5, PSO 7	Cr	Pr	10	7

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual

Pr	Procedural
Me	Metacognitive

SEMESTER II

CORE:

MUES-C 62014: Natural Resource Management

(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1: Understand the concepts and approaches of natural resource management, ecosystem services and their conservation.

CO2: Understand the political environment in natural resource management

CO3: Explains the relationship between the concepts of natural resource development and poverty inequality

CO4: Explaining the different types of natural resources

CO5: Understanding international and national resource consumption patterns

CO6: Introducing technology for natural resource management

CO7: Understand the legal framework for resource management

COURSE CONTENT:

Unit 1

Terms and Theory: Habitat - Service and Conservation, Conservation and Importance of Natural Resources in Rural Livelihoods, Relationship between Poverty and the Environment, Political History of Natural Resource Conservation, Changes in Conservation Systems, Political Ecology of Natural Resource Management, and Property Rights.

Unit 2

Different stages of social systems for natural resource management: natural resource sustainability, traditional systems, social changes and traditional systems, cultural relations of production systems, modern systems for natural resource management. Introduction to New Institutional Theory, Writings of Elinor Ostrom - Introduction to Common Property Resources, Common Pool Resources and Open Access Resources.

Natural resource management concepts in environmental finance (Game theory, Free rider), Externalities, discount rates, Habitat service evaluation, Environmental evaluation, Price Spread, Evaluation, Proprietary system and allied production conditions, ownership, importance of property, Institutionalization.

Unit 3

Various features of community based natural resource management: Building resilient institutions, Principles of Sustainability - Natural Resource Management: Gender Marginalization. Modern tools in natural resource planning - Remote sensing (Geographic Information System). Special Studies: (1) Sustainable agriculture and rural development, (2) Income from non-timber forest products, (3) Community based ecotourism.

Unit 4

Ethnoecology: Definition, concept, history, purpose, stages. Traditional Ecological Knowledge, Importance and Value of Traditional Ecological Knowledge Traditional ecological knowledge and natural resource management.Indigenous Intellectual Property Rights Local participation and laws and policies for traditional ecological knowledge.Possibilities of Ecology and Insights from Ethnoecology.

Unit 5

Natural resource management based on the Geographic Information System (in the context of Kerala) - Group projects and training.

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Understand the concepts and approaches of natural resource management, ecosystem services and their conservation.	PO 2	PSO 1	Un	Fa	6	0
CO2	Understand the political environment in natural resource management	PO 2	PSO 3, PSO 4	Un	Fa	6	0

CO3	Explains the relationship between the concepts of natural resource development and poverty inequality	PO 2	PSO 1, PSO 3, PSO 4	Un	Fa	6	0
CO4	Explain the different types of natural resources	PO 2, PO 3	PSO 1	Un	Fa	8	0
CO5	Understanding international and national resource consumption patterns	PO 2, PO 3	PSO 5	An	Co	8	0
CO6	Introducing technology for natural resource management	PO 2	PSO 5	Ev	Co	12	0
CO7	Understand the legal framework for resource management	PO 3	PSO 1, PSO 3	Cr	Pr	15	5

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER II

CORE:
MUES-C 6215: Research Methodology
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Understand the basic concepts, types and stages of research.

CO2. Explain scientific methods of sampling and data collection.

CO3. Understand the basic statistical methods and tools used in science and social science research.

CO4. Develop data analysis and interpretation skill.

CO5. Understand the methods of participatory research.

CO6. Develops skills in writing scientific and research reports.

CO7. Understand the basic concept of research quality indicators and research ethics.

COURSE CONTENT:

Unit 1

Research: Definition, Origin, Meaning, Objectives, Qualities and Criteria for Good Research. Types of research (Theoretical, Applied, Descriptive, Historical, Observational, Experimental, Qualitative, Quantitative).

Unit 2

Different Stages of Research: Formulating research problem, Extensive Literature Survey, Development of working Hypothesis, Preparing Research Design, Determining Sample Design,Sampling Strategies: Probability Sampling (Simple Random Sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling, multi-stage sampling). Non-probability sampling (Convenient sampling, Judgment sampling, Quota sampling, Snowball sampling). Data collection, Execution of the Project, Analysis of data, Generalisations and Interpretations, Preparation of Thesis Writing.

Unit 3

Data Collection and Analysis: Data collection - primary data collection methods (observation, interview, questionnaire, schedule), Secondary data collection, Data Analysis: Editing, coding, classification, tabulation, table, graphs. Familiarising the basic concept of statistical methods used in data analysis (Measures of Central Tendency & Dispersion, Standard Error, measurement of Skewness & Kurtosis, Correlation Analysis, Regression Analysis, ANOVA, Hypothesis

testing- t-test, F-test, Chi-Square test. Basic Concepts of Non Parametric Test - Kruskal-Wallis test, Mann-Whitney U test. Wilcoxon Test). Data analysis using softwares.

Unit 4

Methodology of Participatory Research: Different types of participatory research methods - Rapid Rural Appraisal, Participatory Rural Appraisal, Ethnography, case study, Focus Group Discussion.

Unit 5

Research and Related Components: Footnote, Reference Preparation, Various Models of Reference. Preparation of Research Papers / Research Report (Technical Report, Popular Report) / Synopsis. Differences between Seminars, Symposiums and Workshops. ISSN, ISBN. Research Quality Indicators: Impact Factor, h-index. Research proposal preparation and funding agencies. Research Ethics.Plagiarism.Additional classes and discussion on topics suggested by students based on research methodology.

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Understand the basic concepts, types and stages of research	PO 2	PSO 5	Un	Co	10	0
CO2	Explain scientific methods of sampling and data collection	PO 2	PSO 5	Un	Co	10	0
CO3	Apply basic statistical methods and tools used in science and social science research	PO 2	PSO 5	Ap	Pr	10	0
CO4	Develop data analysis and interpretation skill.	PO 2	PSO 5	Ev	Co, Pr	10	0
CO5	Understand the methods of participatory research.	PO 2, PO 3	PSO 5	Ev	Co	10	0
CO6	Develops skills in writing scientific and research reports.	PO 3	PSO 5, PSO 7	Cr	Pr	12	2
CO7	Understand the basic concept of research quality indicators and research ethics.	PO3	PSO 6	Un	Co	10	0

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural

Me	Metacognitive

SEMESTER II

CORE:
MUSES-C 6216 Filed Visit/Study tour Report
(2 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Discover an integrative approach to environmental issues with a focus on sustainability.

CO2. Examine the real world situations in and around a selected ecosystem.

CO3. Analyze the field data to identify environmental problems and its sustainable solutions

CO4. Apply the concepts of environmental management and its applications in environmental problem solving.

CO5. Appraise the activities of the common public, organizations and institutions in environmental conservation.

CO6. Develop skills to analyze field observations and to write report.

COURSE CONTENT:

Students shall submit a short report based on the field visit/study tour conducted at the places that focus on environmental conservation and studies. (Up to 30 pages with pictures).

Short report - 80 marks

Viva - 20 marks

Total - 100 marks

TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Discover an integrative approach to environmental issues with a focus on sustainability.	PO 3	PSO 3	Un	Pr	1	14
CO2	Examine the real world situations in and around a selected ecosystem.	PO 3	PSO 3	Ap	Pr	1	14
CO3	Analyze the field data to identify environmental problems and its sustainable solutions	PO 3	PSO 2, PSO 3	An	Pr	1	14
CO4	Apply the concepts of environmental management and its applications in environmental problem solving.	PO 3	PSO 3, PSO 5	Ap	Pr	1	14
CO5	Appraise the activities of the common public, organizations and institutions in environmental conservation.	PO 3	PSO 3	Ev	Pr	1	14
CO6	Develop skills to analyze field observations and to write report.	PO 3	PSO 5, PSO 7	Cr	Pr	1	6

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**

Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

MODEL QUESTION PAPER

UNIVERSITY EMBLEM

THUNCHATH EZHUTHACHAN MALAYALAM UNIVERSITY

NAME OF EXAMINATION MONTH – YEAR

COURSE CODE

PROGRAMME TITLE

COURSE TITLE

TIME: 3HRS **MAXIMUM MARKS: 70**

1. .Answer all questions (5X2=10)

(Cognitive Level: Remembering/ Understanding)

1.
2.
3.
4.
5.

II. Answer any six questions not exceeding two pages (6X6=36)

(Cognitive Level: Analyse/ Apply)

6.
7.
8.
9.
10.

11.
12.
13.

VI.Answer any two questions not exceeding five pages (2X12=24)
(Cognitive Level: Apply/ Analyse/ Evaluate/ Create)
14.
15.
16.

SEMESTER III

CORE:
MUES-C 6318 Environmental History
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Explain the historic perspectives related to colonisation, resource utilisation, marginalisation and globalisation.

CO2. Describe the environmental history of India emphasising the resource utilization methods and its impacts during the colonization period.

CO3. Illustrate the value of natural resources and its link to human well beings.

CO4. Discuss the history of forest rights, land use patterns and other developmental activities related to the utilisation of natural resources in Kerala.

CO5. Correlate perspectives of ecological history to resolve contemporary issues in developing natural resource management plans.

COURSE CONTENT:

Unit 1: Methodologies and Concepts

- Emergence of Environmental History
- Environmental History as a Distinct Field of Knowledge
- Methodology
- Reasoning and Scope
- Industrial Scientific Revolutions
- Colonialism

- Environmental Imperialism
- Opium Wars and Arms Industry
- Cold Wars and Political Power Concepts and Exploitation of Natural Resources
- Industrial Commercial Strategies - Forests, Water, Land, Sea, Air
- Indigenous People's Rights and Alienation
- Globalization and Economic Liberalization
- Neocolonialism
- Environmental Awareness and Resistance

Unit 2: The World After Columbus

- Earth Explorations and Invasions
- Extinction and Alienation of Indigenous Peoples
- Colonial Perspectives on the Environment
- Resource Plundering in Colonized Areas
- Land Surveys and Map Making
- Environment and Colonial Perspectives
- Reforms in the Agricultural Sector
- Reforms in the Forest Sector
- Resource Plundering and the Lives of Indigenous Peoples
- History of Recreational Hunting
- Spread of Plants and Animals
- Spread of Diseases
- Columbian Exchange, Environmental Imperialism - Perspectives of Alfred W. Crosby

Unit 3: India During the Colonial Period

- British Interventions in the Agricultural Sector
- Indigenous Rights over Forest Resources and Colonial Laws
- Development of Railways and Environmental Impact
- Expansion of Monoculture Plantations and Colonial Interventions
- Mines
- Shipbuilding and Use of Timber

- Development of Canals and Waterways
- Sundarbans, Himalayas, Ganges Basin, North Eastern Regions, Western Ghats - Colonial Interventions and Environmental Impacts
- Resistance by Tribals, Farmers, and Indigenous Peoples
- Famine Deaths

Unit 4: Environmental Issues in Independent India

- Development Concepts and Policies - Large Dams, Cities, Industries, Architectural Concepts
- Green, White, Blue Revolutions - Agricultural Techniques - Genetic Modifications and Environmental Impacts - Monoculture Techniques - Biotechnology and Research - Chemical Fertilizers and Pesticides - Patents and Farmers - Shift from Subsistence Farming to Profit-Oriented Agriculture
- Resistance Movements - Chipko, Silent Valley, Narmada Bachao Andolan
- Major Disasters and Environmental Impacts - Bhopal Disaster, Uranium Mines in Jadugoda and the Lives of People, Endosulfan Issues in Kasaragod District
- Liberalization, Privatization, Globalization - Commercialization of Basic Resources and Industrial Strategies - Water, Forests, Land - Resistance Movements - Plachimada, Shivganga, Anti-POSCO Movements in Odisha

Unit 5: Visit and report on places related to local environmental history. Classes and discussions based on topics suggested by students related to environmental history.

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Change in Colonial Eastern India. New Delhi: Oxford University Press.

TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Explain the historic perspectives related to colonisation, resource utilisation, marginalisation and globalisation.	PO2	PSO 1, PSO 3	Un	Fa, Co	12	0
CO2	Describe the environmental history of India emphasising the resource utilization methods and its impacts during the colonization period.	PO2	PSO1, PSO3	Un	Fa, Co	12	0

CO3	Illustrate the value of natural resources and its link to human well being	PO2, PO3	PSO1, PSO5	Un	Fa, Co	16	0
CO4	Discuss the history of forest rights, land use patterns and other developmental activities related to the utilisation of natural resources in Kerala.	PO4	PSO1, PSO3	Un	Co	16	0
CO5	Correlate perspectives of ecological history to resolve contemporary issues in developing natural resource management plans.	PO2	PSO4, PSO5	An	Co	16	3

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER III

CORE:

MUES-C 6319 Environmental Sociology
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Understand the concepts and scope of environmental sociology.

CO2. Describe the thoughts of social construction of nature by famous environmental sociologists.

CO3. Discuss the contemporary environmental problems and its impact on society.

CO4. Evaluate the social impacts of climate change related issues.

CO5. Debate the contemporary environmental problems and its socio-political concern.

CO6. Critic the environmental movements in Indian and Kerala scenarios.

CO7. Debate on creating environmentally and socially responsible citizens.

COURSE CONTENT:

Unit 1

Environmental Sociology: Meaning, Nature, Scope and Importance of Environmental Sociology. Sociological Approaches to Environment: Zavestoskis, Dunlap and Catton, Ramachandra Guha, Patrick Giddens and Radha Kamal Mukerjee.

Unit 2

Environment and Society: Eco–System, Nature vs Nurture, Conservation of Nature. Environmental Problems (population growth, land , water, air and solid waste pollution , health, energy, Housing and urban development and rural poverty), ecosystem deterioration and health

Unit 3

Environmental issues: Ozone Depletion, Acid Rain, GreenHouse Effect, Global Warming and Climate change, Development, displacement, Relocation. Social impact assessment of environmental issues.

Unit 4

Contemporary Environmental Concerns: Environment -technology – society, environment and gender, marginalization, Deforestation and Ecological Crises, Climatic Change, Construction of Dams, Problem of Displacement and impact and water crises (social and political concerns).

Unit 5

Environmental Policy and Movements in India: Chipko Movement, Narmada Bachao Andolan, Ganga Bachao Abhiyan. Environmental movements in Kerala. Environmental Education, Environmental Policy and Environmental Laws in India.

References

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Understand the concepts and scope of environmental sociology.	PO2	PSO 3, PSO 4	Un	Co	2	
CO2	Describe the thoughts of social construction of nature by famous environmental sociologists.	PO2	PSO 3, PSO 4	Un	Co	8	
CO3	Discuss the contemporary environmental problems and its impact on society	PO3	PSO 3	Un	Co	16	

CO4	Evaluate the social impacts of climate change related issues	PO3	PSO 1, PSO 3	An	Co	18	
CO5	Debate the contemporary environmental problems and its socio-political concern	PO3	PSO 3	Ev	Co	20	
CO6	Critic the environmental movements in Indian and Kerala scenarios	PO3	PSO 3	Ev	Co	10	
CO7	Debate on creating environmentally and socially responsible citizens.	PO3	PSO 4	Cr	Co	6	

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER III

CORE:

MUES-C 6320 Environmental Philosophy and Green Politics
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Review the different perceptions of naturalists on environment

CO2: Analyse the basic concepts of eco-theology

CO3: Critique the eco-philosophical approaches

CO4: Analyse the origin, perspectives and challenges of green politics

CO5: Discuss environmental aspects in Malayalam literature and folklore in Kerala

CO6: Devise environmental philosophical concepts and environmental criticism

COURSE CONTENT:

Unit 1

A few authentic books on environment - Review

Discussions on the following book make it possible to formulate new perspectives on the environment. Analysis can be done with an emphasis on differences in jurisprudence approaches.

- ·Natural History Walden, Henry David Thoreau
- ·A Sand County Almanac Aldo Leopold
- ·Small is Beautiful-EF. Schumacher
- ·Silent Spring Rachel Carson
- ·One Straw Revolution - Masanobu Fukuoka
- ·The Limits to Growth-Donella H. Meadows et. al
- ·Fissured Land- Ramachandra Guha

Unit 2

Environment - Basic concepts: environment and society, environmental thoughts in primitive society, Ecotheology - religions and the environment (Hinduism, Buddhism, Jainism, Islam, Christianity), and the environment in modern thoughts

Unit 3

Environmental Thoughts: Concepts of Gaia, Gandhiji and environment, deep ecology, Marxism and environment, ecofeminism, Eco fascism

Unit 4

Green Politics: Politics of Climate Change - Anthony Giddens, Corporate Social Responsibility, Environmental Democracy, Centralized - Decentralized Development and Environment Participatory Democracy – Experience from Kerala

Unit 5

Environment and Literature

Environmental Criticism: Definition and Basic Principles, Environmental aesthetics

Malayalam Poetry and Environmental Vision: Kuttipuram Palam - Edassery Govindan Nair. Pashchimaghattam - Sugathakumari, Ezhimala - Sachidanandan, Kochiyile Vrukshangal - K.G. Shankarappilla, Sahyante Makan - Vylopilli

Malayalam stories and Environmental Visio: Bhoomiyude Avakashikal - Vykkom Mohammad Basheerr, Rubber – S.V. Venugopan Nair, Erandakal - P. Valsala

Malayalam novel and environment: Critical rereading based on environmental visions – Vishakanyaka, Neethiyum Charithravum Harithamakumpol - based on novels by Anand. Jaivam - P. Surendran, Enmakaje - Ambikasuthan Mangad

Autobiography, Travelogue, Arts: Autobiographies of Kallen Sudden, 'Kudak Kurippukal by N. Prabhakaran, Kadine Chennu Thodumpol by N. A. Nasir, Environmental relations/connections of Theyyam, Padayani, Kalamezhuth, Mural painting, and other Ritual Arts

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Review the different perceptions of naturalists on environment	PO1, PO2	PSO 4	Un	Co	15	–
CO2	Analyse the basic concepts of eco-theology	PO2	PSO 4	An	Co	10	–
CO3	Criticize the eco-philosophical approaches	PO2, PO4	PSO 4	Ev	Co	15	–
CO4	Analyse the perspectives and challenges of green politics	PO4	PSO 1	An	Co	15	–
CO5	Discuss environmental aspects in Malayalam literature and folklore in Kerala	PO1, PO2	PSO 7	Un	Co	10	–
CO6	Devise environmental philosophical concepts and environmental criticism	PO1, PO2	PSO 7	Cr	Co	10	–

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER III

CORE:

MUES-C 6321 Environmental Economics
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to:

CO 1: Understand the key concepts of environmental economics and their application to analyze environmental issues.

CO 2: Develop skills in valuing environmental goods and services and applying different valuation methods to real-world cases.

CO 3: Apply the principles of cost-benefit analysis of development projects into environmental decision-making.

CO 4: Evaluate the effectiveness of various environmental policy instruments and their implications for sustainable management.

CO 5: Explore the economic principles and challenges related to natural resource economics and conservation.

COURSE CONTENT:

Unit 1: Introduction to Environmental Economics

- Definition and scope of environmental economics, Environmental Economics and Ecological Economics.
- Key economic concepts in environmental analysis (supply and demand, market equilibrium, elasticity of demand and supply)
- Market failures and environmental externalities (negative and positive externalities), Public goods, Freeriding problem, Property rights and Coase Theorem.
- Welfare aspects of Environmental Economics (maximum social welfare, pareto criterion)

Unit 2: Valuation of Environmental Resources

- Need for environmental valuation

- Methods for valuing environmental goods and services (market price approach, revealed preference methods – Hedonic pricing, Travel cost method, property value method, stated preference methods – Contingent Valuation Method)
- Challenges and limitations of valuation methods
- Application of valuation techniques to real-world case studies

Unit 3: Cost-Benefit Analysis and Environmental Policy Instruments

- Principles and applications of cost-benefit analysis (net present value, benefit-cost ratio, sensitivity analysis)
- Discounting and intertemporal decision-making (discount rates, intergenerational equity)
- Incorporating environmental impacts into cost-benefit analysis (valuation of environmental impacts, monetization of non-market goods, environmental impact assessment)
- Environmental policy instruments:
    - Command-and-control regulations: Standards and emission limits, Technology mandates, Liability and enforcement
    - Market-based instruments: Cap and trade system, Pollution taxes (Pigouvian taxes), subsidies and grants
    - Tradable permits and offsets: Offsetting and carbon neutrality
    - Voluntary approaches: Eco-labeling and certification

Unit 4: Natural Resource Economics and Sustainable Development

- Economics of non-renewable resources (exhaustible resource extraction models, Kuznets curve, Hotelling's rule, resource rent and taxation)
- Economics of renewable resources (renewable resource management models, optimal harvesting and conservation, common pool resources and tragedy of the commons)
- Fisheries and forestry economics (sustainable fisheries management, timber harvesting and sustainable forestry)

- Concepts of sustainable development (social, economic, and environmental dimensions, interlinkages between sustainability pillars, Weak sustainability and Strong sustainability notions)

Unit 5: Green Growth and Case Studies

- Economic indicators of sustainability (Genuine Progress Indicator, Ecological Footprint, Human Development Index, Planetary Pressure Adjusted Human Development Index, Environmental Performance Index)
- Green growth strategies and policies (decoupling economic growth from environmental degradation, circular economy, renewable energy transition and low - carbon development)
- Green national accounting
- Case studies and applications (climate change mitigation and adaptation, pollution control and environmental regulation, natural resource management and conservation, policy effectiveness and cost-effectiveness, trade-offs and unintended consequences)
- Energy Audit
- Classes and discussions based on topics suggested by students on the subject of Environmental Economics

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Understand the key concepts of environmental economics and their application to analyze environmental issues.	PO 2	PSO 1, PSO 3	Un	Co	12	

CO2	Develop skills in valuing environmental goods and services and applying different valuation methods to real-world cases.	PO 2	PSO 2, PSO 3	Ap	Co	15	
CO3	Apply the principles of cost-benefit analysis of development projects into environmental decision-making	PO 3	PSO 2, PSO 5	Ap	Pr	15	
CO4	Evaluate the effectiveness of various environmental policy instruments and their implications for sustainable management	PO 3	PSO 1, PSO 2	Ev	Pr	15	
CO5	Evaluate the economic principles and challenges related to natural resource economics and conservation	PO3	PSO 5	Ev	Pr	15	

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER III

CORE:

MUES-C 6322 Mini Project/Practical
(2 CREDITS)

COURSE OUTCOME

On successful completion of this course the student will be able to

CO1. Develop research aptitude/ skills.

CO2. Develop skills to identify local environmental problems and to formulate hypothesis.

CO3. Practice describing, interpreting and communicating environmental issues at an advanced level.

CO4. Develop skills to analyze data and report writing.

CO5. Develop environmental problem solving capacity.

COURSE CONTENT:

Prepare an individual short report based on local issues of environmental relevance.

Short report - 80 marks

Viva - 20 marks

Total - 100 marks

TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Develop research aptitude/ skills.	PO3	PSO 5	Ap	Pr	1	15
CO2	Develop skills to identify local environmental problems and to formulate hypothesis	PO3	PSO 5	Ap	Pr	2	18
CO3	Practice describing, interpreting and communicating environmental issues at an advanced level	PO3	PSO 2, PSO 3, PSO 5	Ap	Pr	2	14
CO4	Develop skills to analyze data and report writing	PO3	PSO 7	Cr	Pr	2	14

CO5	Develop environmental problem solving capacity.	PO3	PSO 5	Cr	Pr	1	15

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER III

OPEN ELECTIVE:
MUEVS-OE 6301 Environmental Health and Education
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Discuss the basic concepts of environmental health and environmental education.

CO2. Explain communicable, contagious and occupational health hazards.

CO3. Explain urbanization and climate change related health hazards.

CO4. Examine Environmental Health Impact Assessment.

CO5. Analyze the role of NGOs in environmental education.

CO6. Discuss the concepts of environmental ethics.

COURSE CONTENT:

Unit 1

Environmental Health: Health - concept, definition (WHO), basic principles, types (physical, mental, spiritual health), sustainable development goals and health, factors influencing health, major health issues (global, national, regional level)

Unit 2

Environmental changes and epidemiological issues – Air borne diseases, Vector borne diseases. Prevalence of zoonotic diseases (NIPAH, KFD, Leptospirosis, Kala Azar, etc), Water-borne diseases, Soil-borne diseases, Food-borne diseases, Food additives, Fluorosis, Arsenicosis. Climate Change and Health, Disasters and Health Issues, Urbanization and Health, Sanitation and Health, ECOSAN – Concept, Objectives and Achievements. Water borne diseases, Soil borne diseases, Food borne diseases, fluorosis, Arsenocosis. Ecological change and diseases, Climate change and Human health: Climate and chronic Respiratory Disease (CRD), Direct and Indirect impacts of climate. Disasters and health effects, Sanitation and health, Urbanization and health. Eco San –: concept, goals and advantages**.**

Unit 3

Occupational Health: Occupational health problems: asbestosis, silicosis, byssinosis, pneumoconiosis, asthma, allergies, anthracosis, siderosis. Occupational Safety and Health Administration (OSHA). Farmers and health problems.

Environmental Health Impact Assessment (EHIA) – Definition and Significance of EHIA, Steps in EHIA, National and State level plans and policies on environmental health.

Unit 4

Environmental Education (EE): History (Bell Grade Agreement, Tbilisi Conference), goals, objectives, principles, environmental awareness strategies: formal and informal education, action plans, environmental organizations and working groups, lifestyle changes and consumerism, Ecomark, ecolabelling, Non-Governmental Voluntary Organizations (NGOs) in environmental education Punk. Environmental education in India, Environmental Information System (ENVIS)

Unit 5

Environmental Ethics: Gaia Concept, disciplines of environmental ethics-Anthropocentrism, biocentrism and ecocentrism, application of ethics to environmental issues, Environmental equity and justice.

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Discuss the basic concepts of environmental health and environmental education	PO2	PSO 1, PSO 3	Un	Co	8	
CO2	Explain communicable, contagious and occupational health hazards	PO2	PSO 1	Un	Co	10	
CO3	Explain urbanisation and climate change related health hazards	PO2	PSO 1, PSO 3	Un	Co	10	
CO4	Examine Environmental Health Impact Assessment	PO3	PSO3	Ap	Pr	15	
CO5	Analyze the role of NGOs in environmental education	PO3	PSO6	An	Co	15	
CO6	Discuss the concepts of environmental ethics	PO3	PSO4	Un	Co	14	

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER III

OPEN ELECTIVE:
MU EVS-OE 6302 Environment and Society
(4 CREDITS)

Course Outcomes:

CO. 1: Understands the concepts and objectives of Environmental Sociology.

CO.2: Describes the thoughts of prominent Environmental Sociologists on the social construction of nature.

CO. 3: Discusses development and environmental issues and their socio-political concerns.

CO. 4: Critically reviews environmental struggles and movements in India and Kerala.

CO. 5: Discusses creating environmentally and socially responsible citizens.

COURSE CONTENT

Unit 1

An Introduction to Ecology: Environment, Components, Interactions, Laws and Limiting Factors, Inter and Intraspecific Relationships, Population Ecology, Natural Resources, Types of Ecosystems.

Unit 2

Cultural Ecology: Concept of Culture, Cultural Ecology, Role of Culture in Human Adaptation. Basic Forms of Human Adaptation to the Environment: Hunting and Gathering; Pastoralism; Shifting Cultivation; Agriculture; Commercial/Industrial Societies. Society, Culture, Environment; Environmental Awareness and Conflicts, Environmental Ethics, Ecophilosophy, Case Studies.

Unit 3

Ethnoecology and Conservation Science: Introduction to Ethnoecology: Traditional Ecological Knowledge, Traditional Technical Knowledge, Traditional Resource Management, Ethnobotany, Ethnozoology, Ethnotaxonomy. Case Studies.

Unit 4

Traditional Ecological Knowledge and Sustainable Development: Traditional Ecological Knowledge and Sustainable Development (Water and Soil Conservation Methods), Traditional Ecological Knowledge and Agriculture (Traditional Varieties, Cultivation, Conservation, Cultivation Methods, Pest and Weed Management, Food Security), Traditional Ecological Knowledge and Traditional Medicine Systems, Biodiversity Conservation, Climate Change, Disaster Management, Case Studies.

Unit 5

Conservation of Traditional Ecological Knowledge: Convention on Biological Diversity 1992, National Biodiversity Authority, People's Biodiversity Register, CSIR - Traditional Knowledge Digital Library (TKDL), Protection and Sustainable Use of Medicinal Plants 1999 (Planning Board, Government of India), United Nations Conference on Trade and Development (2004), World Intellectual Property Organization (WIPO). Policies and Laws: Environmental Protection Act 1986, Biodiversity Act 2002, Wildlife Protection Act 1972, National Forest Policy 1988, Intellectual Property Rights Act.

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TAGGING

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Understands the concepts and objectives of Environmental Sociology.	**PO**2	**PSO** 3	Un	Co	*2	
CO2	Describes the thoughts of prominent Environmental Sociologists on the social construction of nature.	**PO**2	**PSO** 4	Un	Co	8	
CO3	Discusses development and environmental issues and their socio-political concerns.	**PO**3	**PSO** 3	Un	Co	16	
CO4	Critically reviews environmental struggles and movements in India and Kerala.	**PO**3	**PSO** 3	An	Co	18	
CO5	Discusses creating environmentally and socially responsible citizens.	**PO**3	**PSO 4**	Ev	Co	20	

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

MODEL QUESTION PAPER

UNIVERSITY EMBLEM

THUNCHATH EZHUTHACHAN MALAYALAM UNIVERSITY

NAME OF EXAMINATION

MONTH – YEAR

COURSE CODE

PROGRAMME TITLE

COURSE TITLE

TIME: 3HRS **MAXIMUM MARKS: 70**

I.Answer all questions **(5X2=10)**

(Cognitive Level: Remember/ Understand)

1.

2.

3.

4.

5.

II.Answer any six questions not exceeding two pages (6X6=36)

(Cognitive Level: Analyse/ Apply)

6.

7.

8.

9.

10.

11.

12.

13.

III.Answer any two questions not exceeding five pages (2X12=24)

(Cognitive Level: Apply/ Analyse/ Evaluate/ Create)

14.

15.

16.

SEMESTER IV

Elective:
MUES-E 6422-I Environmental Communication
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Explain the basics of environmental communication.

CO2. Describe the role of audio-visual-print media in addressing environmental issues.

CO3. Understand the methods for basic data collection in environmental communication.

CO4. Understand the concepts and theories of environmental communication, methods in environmental awareness and media ethics.

CO5. Understand the basic concepts and techniques in photojournalism.

CO6. Describe the importance and role of photojournalism in environmental communication.

CO7. Appraise the role of new media in environmental communication.

CO8. Appraise the role of cinema, television and animation in environmental communication.

COURSE CONTENT:

Introduction

Today, the media is more interested in nature conservation than just reporting environmental news. Behind this media interest is the recognition given by the horrific experiences of natural disasters and environmental disasters. Concerns such as we have no other home other than this earth has made the journalist an advocate for nature conservation. Today, Environmental journalism has become an activism itself. But hypersensitivity and non-factual analytical methods cast doubt on the position of the media. Deploying specially trained reporters to cover environmental news has become a media requirement today. The aim of environmental communication training is to provide conceptual and practical experiences accordingly.

The first paper dealing with communication in general and environmental communication in particular will cover the history, theory, practice, and communication in the print media. The purpose of the second paper is to understand the history of audio-visual communication in Kerala and to develop the skills to make creative contributions to it through notable programs for audio - visual media.

Environmental documentaries made in Kerala and mentioning the problems of Kerala are also study aids along with the reference books. The evaluation checks in the writing visual areas that are part of papers three and four are intended for practical evaluation.

Learning Objectives

- Understand the history of global and local communication through publishing models in audio-visual and print media.
- Identify the politics of the environment by culturally and critically evaluating the forms of environmental exchange discourse.
- Enable learners to objectively assess environmental issues and form their own position.
- Provide conceptual and practical experience in a variety of media to qualify them for jobs.

Unit 1

Basic concepts of communication

- Definition of Communication.
- Elements of Communication, source, message, medium, recipient, feedback, Noise, communication barrier - communicative, emotional, semantic, contextual.
- Forms of communicative discourse - motivation, description, narration, systematic writings, classification of communication - Verbal, Nonverbal, Formal, Informal.
- Types of Communication - Intra personal communication, Inter Personal communication, Group Communication, Mass Communication
- Mass Communication - Definition, Mass Media - Definition, Types - Traditional, Representative, Electronic

Unit 2

Environmental journalism

- Basic data collection for environmental writing - routes, local geography, local history, and local development concepts.
- Environmental Philosophy - Western and Eastern. Media ethics.
- Environmental Communication - Theories and Concepts: Material Symbolic Discourse, Medioring Human - Nature Relations, Applied Activist Theory, Human ecology, Ecopedagogy, Traditional Ecological Knowledge, Biocide.
- Traditional Ways of Environmental Awareness - Seminars, Workshops, Discussions, Interventions through: Rural Development Programs, Women's Empowerment Programs, Socialization, Environmental Activities in Schools, NGOs, Government Agencies, Popular Science Movements and Media Initiatives.

Unit 3

Environmental photojournalism

- Photography - Familiarity with basic techniques, camera, lens - types, aperture, shutter speed, focal length, f. Stop, angle of view, frame composition, elements of focus in frame composition, digital photography.
- Photojournalism: photo essays, photo features, news photography, photo editing, cropping, photo captions, the role of photojournalism in environmental communication, photo activism, slide shows, photographers creative interventions in environmental

issues, Topics like radiation, Plachimada, endosulfan tragedy, cruelty to elephants, Athirappilly.

- Individual Morality and Social Ethics in PhotoJournalism.

Unit 4

Environmental Broadcasting - Role of New Media

- Ways of Broadcasting - Commercial Broadcasting, Community Radio Broadcasting, Public Broadcasting
- The role and potential of radio and community radio in environmental communication.
- Analysis and study of selected radio programs related to the environment: KV Sarathchandran: The Parable of the Sower (Kannur Station), Hathya (Cochin Station), P. Balan; Puzha Malayalam, Prabhathabheri (Thiruvananthapuram station), Jalakam (Kannur station), Ananthapuri FM.
- Familiarize with various social networking sites. Environmental communication opportunities through new media - online newspapers, blogs, YouTube releases, interactions through Facebook, WhatsApp groups, digital archiving.

Unit 5

Environmental communication in films and television media

- Film Media - Definition, Visual Language, Grammar, Screenplay, Digital Film Production.
- Environmental Philosophy and Approach In Malayalam Cinema, An Analytical Study of Selected Environmental Films In Malayalam (Any Three: Kanchanaseetha, Kummati (G. Aravindan), Oru Cheru Punchiri (MT), Jalamarmaram (TK Rajeevkumar), Negals (Avira Rebecca), Amoeba (Manoj Kana), Ankuram (T, Bhishesh), and large winged birds (Dr. Biju).
- Environmental Documentary Studies

  (Any three: Remnants of a forest system (KR Mohanan), A Pasturing Journey (KR Manoj, Behind the Mist (Babu Kampath), Punarjani (Madhu Eravankara), Eighteenth Year (P. Balan), Chaliyar: The Last Battle (Sarath Chandran, Baburaj), The Lament of the Water (Mohankumar) Between Us and Them (Shiny Jacob Benjamin)

- Application of Animation Technology in Environmental Communication (Printed Rainbow) (Gitanjali Rao) Pachilakoodu (Sajan Sin), Wildfire (KS, Madhu).

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Walter cronkite School of Journalism and Mass Communication

Washingtonpost digital publishing guidelines-Social Media http://www.washingtonpost.com/wp-srv/guidelines/socialmedia.html

TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Explain the basics of environmental communication	PO2	PSO 5	Un	Co	8	0
CO2	Describe role of audio-visual-print media in addressing environmental issues	PO2	PSO 5	Un	Co	8	0

CO3	Understand the methods for basic data collection in environmental communication	PO2	PSO 5	Un	Pr	10	0
CO4	Understand the concepts and theories of environmental communication, methods in environmental awareness and media ethics	PO2	PSO 3, PSO 4	Un	Co	12	0
CO5	Understand the basic concepts and techniques in photojournalism	PO2	PSO 5	Un	Co	8	0
CO6	Describe the importance and role of photojournalism in environmental communication	PO2	PSO 5	Un	Co	8	0
CO7	Appraise the role of new media in environmental communication	PO2	PSO 5	Ev	Co	8	0
CO8	Appraise the role of cinema, television and animation in environmental communication	PO2	PSO 5	Ev	Co	10	0

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural

Me	Metacognitive

SEMESTER IV

ELECTIVE
MUES-E 6423-I Environmental Communication: Practical
(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Identify different environmental communication media.

CO2. Write environmentally relevant articles.

CO3. Create scripts for environmentally relevant radio programmes.

CO4. Prepare photo features based on environmentally relevant themes.

CO5. Develop skills to organize environmental documentary festivals.

CO6. Prepare documentaries based on environmentally relevant themes.

COURSE CONTENT:

Unit 1

- Familiarize with environmental related articles and features
- Environmental writing Workshop
- Prepare and submit an article / feature of not less than 10 pages based on any environmental topic. (20 marks)

Unit 2

- Familiarize with environmental related radio programs
- Radio Workshop
- Submit a script of 10-15 minutes based on any environmental topic. (Group Assignment 20 marks)

Unit 3

- Photo feature exhibition on environmental issues
- Photo Journalism Workshop
- Prepare and submit a photo feature based on an environmental theme (20 marks)

Unit 4

- Organize an environmental documentary film festival.
- Conduct face-to-face interactions, discussions and open forums with directors / critics.

Unit 5

- Prepare and submit a documentary of 10-15 minutes on environment related topics. (Group Work) (40 marks - Documentary - 30 marks, Oral Examination 10 marks)
  Total marks - 100

TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Identify different environmental communication media	PO2	PSO 5	Un	Co	6	
CO2	Write environmentally relevant articles	PO2; PO3	PSO 5, PSO 7	Cr	Pr	1	11
CO3	Create scripts for environmentally relevant radio programmes	PO3	PSO 5, PSO 7	Cr	Pr	5	10
CO4	Prepare photo features based on environmentally relevant themes	PO3	PSO 5	Cr	Pr	3	10
CO5	Develop skills to organize environmental documentary festivals	PO3	PSO 5	Cr	Pr	4	8

CO6	Prepare documentaries based on environmentally relevant themes	PO2	PSO 5, PSO 7	Cr	Pr	1	14

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER IV

ELECTIVE -2

MUES-E 6422-II Sustainable Development and Voluntary Organizations (4 CREDITS)

Introduction

In the present situation where the importance of voluntary organizations is increasing, this paper is taught with the following objective.

1. Achieve a common understanding of different voluntary organizations in sustainable development,. Review the work, role and contribution of civil society organizations in the context of various activities to achieve sustainable development.

2. Record the role of civil society organizations in socio-cultural and political development in the context of development of Kerala

3. Enable students to work in the voluntary organization sector

It was in the 1970s that civil society organization first began to intervene in developmental debates. It is during this period that new discussions on linking environment and development begin. There were many controversial incidents related to this.

It was also an attempt to build a more decentralized, democratic, participatory and sustainable society for civil society organizations. There were also a lot of legislation in this field.

There are many kinds of civil society organizations. They are being set up in many ways. The division of corporate organizations, development organizations and those working for social justice-based development is being carried out in the same way as popular movements. Class room study, project work and working place visits are envisaged for this purpose.

ELECTIVE:

MUES-E 6422-II Civil Society Organisations and Sustainable Development(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1: Evaluate historic and contemporary civil society organisations involved in the field of sustainable development

CO2: Evaluate the role of civil society organisations in natural resources conservation and restorations, sustainable development, development of alternate models, protests against developments that are adversely affecting environment.

CO3: Evaluate relations and cooperation between civil society organisations and Government through Panchayathi Raj Institutions, CSR, funding agencies

CO4: Evaluate the role of civil society organisations in sustainable land use and agriculture, water resources management, biodiversity conservation, non-agricultural livelihood practices, energy and transportation, environmental pollution, climate change, health and education.

CO5: Analyse the historic development of civil society organisations and their interventions in ensuring sustainable development in the social-political – environmental scenario of the state.

CO6: Develop skills required to work with civil society organizations such as preparing project proposals, implementation, and evaluation.

COURSE CONTENT:

Unit 1

Non-Governmental Organizations (NGOs): Introduction, History, Objectives, Classification - Society, Trust, Foundation, Registration, Laws - Indian Trust Act, Society Registration Act, Companies Act, Foreign Contribution Regulation Act 2010 (FCRA), International Level NGOs like WWF, Greenpeace, etc. Corporate Social Responsibility (CSR) and NGOs - Issues and Expectations Arising from CSR Due to NGO Activities. NGOs - Financial Support, Financial Donors (Funding Agencies, Politics in Funding).

Unit 2

NGOs in India - Activities and Contributions: Water Resource Conservation - Tehri Dam, Narmada Bachao Andolan, Nuclear Plants, Thermal Power Plants, Agricultural Protests``\
Environmental Education, Forest Conservation - Chipko Movement, Development Activities - Dams, Mining, Urbanization, Industry, Human Rights, Climate Change, Poverty Alleviation, Health Protection, Women's Empowerment, Social Welfare, Rural Development, and Livelihood Activities.

Unit 3

NGO Activities in Kerala: Nature Conservation - Chaliyar River Protection Committee (CPSS), Keol,.ikjmujnyhbtgrala Sasthra Sahithya Parishad (KSSP), River Protection Committee (PSS), Education: Wayanad Girij Seva Trust, SEEK, MNHS, Forest Conservation - Green Habitat (Mangrove Protection), Environmental Protection Committee, Sustainable Agriculture - LEISA, Permaculture, Waste Management - Niravu, Water Conservation - Anti-Coca Cola Movement, Non-Agricultural Livelihood Activities, Energy Transportation, Housing Construction - COSTFORD, Health, Climate Change, Pollution - Lalore, Vilappilsala Anti-Pollution Struggle, Local Development Institution Activities - Zero Waste Project, NABARD, IRTC, Jalanidhi, Maithri, Peerumede Development Society (PDS), Thanal; Human Rights, Poverty Alleviation, Kudumbashree.

Unit 4

NGOs and Media: Print Media - Newspaper, Visual Media - Television, Cinema, New Media - -[';/Facebook, Instagram, WhatsApp.

Unit 5 Collaboration with NGOs: Preparing Project Proposals, Project Execution, Project Framework, Project Review and Evaluation, Budget Analysis, Policy Formulation, Legal Viability.

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Freshwater Action Network, South Asia (FANSA): www.freshwateraction.net

For land rights, especially of Tribal population in Andhra Pradesh, have a look at the website of the CSO Samata; www.samataindia.org.in

For material on CSOs and education see the website of Eklavya Bhopal: www.eklavya.in

For material on CSOs and habitats, alternative technologies, etc..see the website. of Development Alternatives. New Delhi www.devalt.org

For material on CSOs and housing rights of the poor, see the website of National Forum for Housing Rights (NFHR), New Delhi

For material on CSOs and Irrigation management and water issues see the websites of Society for Promoting Participative Ecosystem management (SOPPECOM): www.soppecom.org: Development Support Centre (DSC): www.dscindia.org: Aga Khan Rural Support Programme (AKRSP): www.akdn.org/ india.asp

For material on CSOs and right to water and sanitation see.http://www.righttowater.info/rights-in-practice/advocacy/campaigns-and-civil society-action/

For material on watershed development, rainfed agriculture, sustainable agriculture, participatory groundwater management.etc..see www.wassan.org/

For material related to forest issues see the website of Kalpavrisksh (www.kalpavriksh.org/)

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Evaluate historic and contemporary civil society organisations involved in the field of sustainable development	PO2	PSO 2, PSO 3, PSO6	An	Co	15	–
CO2	Evaluate the role of civil society organisations in natural resources conservation and restorations, sustainable development, development of alternate models, protests against developments that are adversely affecting environment.	PO2	PSO2, PSO3, PSO6	An	Co	10	–

CO3	Evaluate the role of civil society organisations in sustainable land use and agriculture, water resources management, biodiversity conservation, non-agricultural livelihood practices, energy and transportation, environmental pollution, climate change, health and education.	PO3	PSO2, PSO3, PSO6	Ev	Co	15	–
CO4	Evaluate the role of civil society organisations in sustainable land use and agriculture, water resources management, biodiversity conservation, non-agricultural livelihood practices, energy and transportation, environmental pollution, climate change, health and education.	PO3	PSO2, PSO3, PSO6	Ev	Co	12	–
CO5	Analyse the historic development of civil society organisations and their interventions in ensuring sustainable development in the social-political – environmental scenario of the state.	PO3	PSO 2, PSO6	Ev	Co	12	–

CO6	Develop skills required to work with civil society organizations such as ; preparing project proposal, implementation, and evaluation.	PO3	PSO6, PSO7	Cr	Pr	10	–

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER IV

ELECTIVE -2

MUES-E 6423-II Civil Society Organisations and Sustainable Development: Practical (4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Discuss the functions and activities of CSOs.

CO2. Analyze the roles of CSOs in environmental management.

CO3. Develop skills to prepare an outline of biodiversity conservation activities.

CO4. Evaluate the methodology of proposed project implemented by CSOs.

CO5. Develop skills to prepare project proposals for CSOs.

CO6. Create skills to develop policies for environmental issues in Kerala.

COURSE CONTENT:

Unit 1

Familiarize civil society organizations

Interviews with well-functioning CSOs: Discussions are aimed at CSOs performing well in the state / country. In this way, students will be able to visualize the CSOs, their activities, and their implications. It can be organized in different ways.

1. Students visit the headquarters of three or four civil society organizations operating in the vicinity.

2. Bring the entire student groups to the CSOs working area and engage in activities for two or three days.

3. Introduce students to unique models, experiences (those involved in sustainable development) alternative development methods within and outside Kerala. Allow students to stay for one or two days at the site of alternative development activities. Prior to the visit, students can share insights on the activities of voluntary organizations. After the visit, each student should submit a report coordinating the specific experiences and information they can gather about the overall situation. (Mark 60, Report-40, Viva- 20)

Select any two activities and submit the report to gain practical experience from the following units (2, 3, 4, 5).

Unit 2

Conceive spatial and temporal changes:

Outline preparation

419-II-2 Instruct students to visit an important area in Kerala for biodiversity conservation and to document spatial and temporal activities as a result of the activities that took place there (can be done by groups consisting of two or more students).

(Mark 20)

Or

Unit 3

Project Evaluation:

419-II-3 Develop a suitable methodology with the required data collection (survey, focus group discussion, or communication with the supervising guide). For example, reviewing a tri annual drinking water project undertaken by a civil society organization (can be done in groups).

(Mark 20)

Or

Unit 4

Formulation of policy strategies:

419-II-4 To enable students to outline policies on any of the most serious environmental issues currently facing Kerala. (Can be done in groups) (Mark 20)

Or

Unit 5

Preparation of Comprehensive Project Suggestions:

419-II-5 Prepare an Integrated Rural Development Project lasting five years for a reputed NGO in Kerala. Assume that the Gram Panchayath has a population of at least 30,000. (Can be done in groups).

(Mark 20)

Total marks - 100

TAGGING:

CO	**COURSE OUTCOME**	**PO**	**PSO**	**CL**	**KC**	**THEORY HOURS**	**PRACTICAL/ LAB/FIELD HOURS**
CO1	Discuss the functions and activities of CSOs.	PO3	PSO6	Un	Pr	1	12

CO2	Analyze the roles of CSOs in environmental management.	PO3	PSO6	An	Pr	2	15
CO3	Develop skills to prepare an outline of biodiversity conservation activities	PO3	PSO6	Ap	Pr	1	9
CO4	Evaluate the methodology of proposed project implemented by CSOs	PO3	PSO6	Ev	Pr	1	13
CO5	Develop skills to prepare project proposals for CSOs	PO3	PSO6, PSO 7	Cr	Pr	2	10
CO6	Create skills to develop policies for environmental issues in Kerala.	PO3	PSO6	Cr	Pr	2	10

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER IV

CORE:

MUES-C 6424 Sustainable Urbanisation

(4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1: Understand the ecological history of industrialisation in global and local scenario

CO2: Analyse the impact of urbanisation on natural resources.

CO3: Evaluate the impacts of urbanisation on land use and energy

CO4: Apply the concept of sustainable development in urbanisation

CO5: Evaluate urban planning strategies in India

COURSE CONTENT:

Unit 1

Industrialization and urbanization: The history of industrialization (Europe, North America and eastern countries), the challenges of industrialization (housing, public health, air and water pollution), environmental issues in industrialized states (Maharashtra, Gujarat, Tamil Nadu) and cities (Jamshedpur, Rourkela and Tiruppur), industrialization in Kerala - Mavoor Rayons, Eluru Udyogmandal,

Unit 2

Air, soil, water: uses and impacts: Water - water availability and management – health and the challenges of water pollution, urban floods, water security, and global and national studies. The difference in the chemical, bio-physical properties of soil in cities – land pollution and mitigation – discussions in the global, national and Kerala experience. Air quality- issues in Indian cities, air management strategies, WHO guidelines and studies, national air quality standards, urbanization and climate change.

Unit 3

Land use and energy: Land use changes caused by urbanization and industrialization, land use disputes, dynamics in large cities, rural and urban land use, land management, and blue green strategies. Energy demand in cities, energy security, environmental challenges of energy production, green buildings, and buildings that reduce carbon emissions. Urbanization in Kerala, energy demand, solar energy, The carrying capacity of cities – studies by NEERI on Kochi, environmental challenges of Thiruvananthapuram, Kochi and Kozhikode cities, environmental issues in hilly towns (e.g., Munnar), and new trends in Kerala urbanization.

Unit 4

Sustainable Urban Development: Sustainable Development, Sustainable Development Goals, Sustainable Urbanization and Urban-Linked Sustainable Development Goals. Planned industrial development, open economic zones, special economic zone, industrial corridors, sustainable transportation, cost-effective and environmentally sustainable housing facilities, water and waste water management, renewable energy integration, waste disposal, DMIC and planning, industrial estates, urbanization and biodiversity conservation – plants, animals, birds and microorganisms in the urban environment, international treaties/frameworks, biodiversity conservation in urban areas, relevance of public parks, from urban agriculture to agro-urbanization.

Unit 5

Urban Planning Strategies: Sustainable urban planning strategies, eco-cities, habitable cities, spatial planning approach,Studies from U.K. and Netherlands, RURBAN, PURA and planning in metropolitan cities, studies by the NCR Planning Board, MMRDA Mumbai and a new agenda for urbanization, India's urbanization strategy (sanitation cities, heritage cities - AMRUT smart cities). Urban planning principles and approaches, zoning and land use regulations, spatial planning approach, relevance of cities in combating the effects of climate change (climate resilient urbanization), disaster risk reduction in cities, and the role of smart technology in developing urban infrastructure. Ecocities, habitable cities, studies from UK and Netherlands, planning in RURBAN, PURA and metropolitan cities, studies by the NCR Planning Board, MMRDA Mumbai and the new agenda for urbanization, India's urbanization strategy (sanitation cities, heritage cities – AMRUT smart cities).

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TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Understand the ecological history of industrialisation in global and local scenario	PO2	PSO1, PSO3	Un	Co	12	0
CO2	Analyse the impact of urbanisation on natural resources.	PO1, PO3	PSO1, PSO2	An	Co	15	0
CO3	Evaluate the impacts of urbanisation on land use and energy	PO3	PSO1	Ev	Co	15	0
CO4	Apply the concept of sustainable development in urbanisation	PO2	PSO2	Ap	Co	15	0
CO5	Evaluate urban planning strategies in India (Ev)	PO2	PSO2	Ev	Pr	15	0

TERMINOLOGIES USED

CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER IV

CORE:

MUES-C 6425 Research Project (4 CREDITS)

COURSE OUTCOME:

On successful completion of this course the student will be able to

CO1. Create independent research skills on a focal theme

CO2. Develop skills for critical evaluation and evolving solutions to various environmental problems.

CO3. Develop professional capacity to address environmental issues.

CO4. Develop skills in data collection, synthesis, analysis and interpretation.

CO5. Develop research aptitude in identifying and resolving environmental problems.

COURSE CONTENT:

Students shall conduct research oriented project work emphasizing any environmental issues in Kerala scenario and submit a thesis (up to 70 pages with pictures).

Short report - 80 marks

Viva - 20 marks

Total - 100 marks

TAGGING:

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL / LAB/FIELD HOURS
CO1	Create independent research skills on a focal theme	PO2, PO3	PSO 5, PSO 6	Cr	Pr	5	10
CO2	Develop skills for critical evaluation and evolving solutions to various environmental problems.	PO2, PO3	PSO 3, PSO 5	Cr	Pr	5	10
CO3	Develop professional capacity to address environmental issues.	PO2, PO3	PSO3, PSO5	Cr	,Pr	5	10
CO4	Develop skills in data collection, synthesis, analysis and interpretation.	PO2, PO3	PSO3, PSO5	Cr	Pr	5	10
CO5	Develop research aptitude in identifying and resolving environmental problems.	PO2, PO3, PO4	PSO3, PSO5	Cr	Pr	5	10

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
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Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

SEMESTER IV

CORE
MUSES-C 6429 Internship
(2 Credits)

Course Objectives: On successful completion of this course the students will be able to

CO 1: Develop research interests / skills.

CO 2: Identify and propose solutions to regional environmental issues.

CO 3: Training in describing and interpreting extensive environmental issues.

CO 4: Develop skills in conducting data analysis and writing reports.

CO 5: Develop a plan to solve environmental problems.

Course Content:

The students are required to visit locations/institutions(non-governmental organisations, government institutions, universities, research institutions)providing exposure to environmental conservation and related subjects and complete an internship for a duration of fifteen days related to environmental studies. (Up to 30 pages, including photographs).

Short Report - 80 marks

Viva - 20 marks

Total - 100 marks

TAGGING

CO	COURSE OUTCOME	PO	PSO	CL	KC	THEORY HOURS	PRACTICAL/ LAB/FIELD HOURS
CO1	Develop research interests / skills.	PO 3	PSO 5	Ap	Pr	1	15

CO2	Identify and propose solutions to regional environmental issues.	PO 3	PSO 3, PSO 5	Ap	Pr	2	18
CO3	Training in describing and interpreting extensive environmental issues.	PO 3	PSO 3, PSO 5	Ap	Pr	2	14
CO4	Develop skills in conducting data analysis and writing reports.	PO 3	PSO 7	Cr	Pr	2	14
CO5	Develop a plan to solve environmental problems.	PO 3	PSO 3, PSO 5	Cr	Pr	1	15

TERMINOLOGIES USED	
CO	Course Outcome
PO	Programme Outcome
PSO	Programme Specific Outcome
CL	**Cognitive Level**
Re	Remember
Un	Understand
Ap	Apply
An	Analyse
Ev	Evaluate
Cr	Create
KC	**Knowledge Category**
Fa	Factual
Co	Conceptual
Pr	Procedural
Me	Metacognitive

DISSERTATION MODEL

COVER PAGE

Title (Unicode Font: Meera font size 18, Bold, Centre Aligned)

University Emblem (Centre Aligned)

Name of the Student (Font size 16, Bold, Centre Aligned)

Register Number (Font size 14, Centre Aligned)

Name of the Programme (Font size 16, Centre Aligned)

School (Font size 16, Centre Aligned)

Faculty (Font size 16, Centre Aligned)

University Address (Font size 16, Bold, Centre Aligned)

Month, Year (Font size 14, Centre Aligned)

DECLARATION

I (Name of Student), do hereby declare that this dissertation entitled (……) is a genuine record of the research work done by me under the guidance of (Name and Designation of the Guide) and that no part of the dissertation has been presented earlier for the award of any other degree or recognition in any other university.

Place: Signature

Date: Name of the Student

CERTIFICATE

This is to certify that the dissertation entitled …… is an authentic record of research work carried out by …….(Name of the student) for the degree of ……(Name of the Programme) of Thunchath Ezhuthachan Malayalam University under my guidance and that no part thereof has been presented before for any degree or recognition in any other university.

Signature

Name of the Supervisor

Place:

Date:

Signature

School Director

Signature

External Examiner

ACKNOWLEDGEMENT

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MODEL QUESTION PAPER

UNIVERSITY EMBLEM

THUNCHATH EZHUTHACHAN MALAYALAM UNIVERSITY

NAME OF EXAMINATION

MONTH – YEAR

COURSE CODE

PROGRAMME TITLE

COURSE TITLE

TIME: 3HRS **MAXIMUM MARKS: 70**

I.Answer all questions (5X2=10)

(Cognitive Level: Remember/ Understand)

1.
2.
3.
4.
5.

II.Answer any six questions not exceeding two pages (6X6=36)

(Cognitive Level: Analyse/ Apply)

6.
7.
8.
9.
10.
11.
12.
13.

III.Answer any two questions not exceeding five pages (2X12=24)

(Cognitive Level: Apply/ Analyse/ Evaluate/ Create)

14.
15.
16.