



Newman College Thodupuzha

Affiliated to Mahatma Gandhi University
Reaccredited by NAAC with A grade (Cycle 3, CGPA 3.32)

Email: principal@newmancollege.ac.in

website: www.newmancollege.ac.in

Phone: 04862-222686   

Criterion I

Curricular

Aspects

1.2

Academic Flexibility

1.2.1

**Curriculum of Certificate / Value added course with
Assessment Procedure**

2019-2020

Submitted to



National Assessment and Accreditation Council



Curriculum for Certificate/Value added programs with Assessment procedure

List of Courses for 2019-2020

Sl. No	Name of the course	Number of students completed the course	Refer page no
1	Value added Course in Environmental Sustainability	61	3
2	Certificate Course in Research Praxis	51	6
3	Value added Course in English for daily use	62	9
4	Value added Course in Functional English	64	14
5	Certificate Course in Front Office Management	60	16
6	Certificate Course in Rangakala	46	18
7	Value added Course: DTP in Malayalam	46	20
8	Certificate Course on Fundamentals of Microbial Techniques	28	22
9	Add on Course on Plant Tissue Culture	21	24
10	Certificate Course on Mathematics in Real Life	32	26
11	Value added Course on Electronic Equipment Maintenance	25	28
12	Certificate Course on Apiculture	30	30
13	Certificate Course on Event Management	130	34
14	Certificate Course on Fundamentals of Tourism	130	37
15	Certificate Course on Business Ethics	128	39
16	Certificate Course in Women and Law	100	41
17	Value added Course in Yoga and Meditation	35	43
18	Value added Course in Basics of Video Editing	39	45
19	Value added Course in Ecology and Society	64	46

**1.Value added Course in Environmental Sustainability
Curriculum with Assessment Procedure**



*Postgraduate Department of Economics
Newman College, Thodupuzha*

Value added Course on Environmental Sustainability

2019-20

Syllabus

Course Title: Value added Course on Environmental Sustainability

Duration: 30 hours

Code: ECOVACES01

Course Description:

This course provides students with a comprehensive understanding of environmental sustainability. Students will learn about the key concepts of sustainability, such as the triple bottom line, sustainable development, and circular economy. The course will also cover a variety of environmental sustainability challenges, such as climate change, pollution, and resource depletion. Students will also learn about sustainable solutions to these challenges, such as renewable energy, energy efficiency, and waste reduction.

Course outcome:

Upon completion of this course, students will be able to:

Define and explain key environmental sustainability concepts

Analyze the environmental impacts of human activities

Identify and evaluate sustainable solutions to environmental problems

Develop and implement sustainable practices in their own lives and communities

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Course Outline

Module 1: Introduction to Environmental Sustainability (6 hours)

The triple bottom line

Sustainable development

Circular economy

Module 2: Environmental Sustainability Challenges (6 hours)

Climate change

Pollution

Resource depletion

Module 3: Sustainable Solutions (6 hours)

Renewable energy

Energy efficiency

Waste reduction

Other sustainable solutions

Module 4: Sustainable Practices (6 hours)

Sustainable living

Sustainable businesses

Sustainable communities

Module 5: Case Studies in Environmental Sustainability (6 hours)

Case study 1: The Green Belt Movement

Case study 2: The B Corporation movement

Case study 3: The Transition Town movement

Case study 4: The Zero Waste movement

Case study 5: The Sustainable Development Goals

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Assessment:

Students will be assessed on their understanding of the course on the basis of assignment and written exam

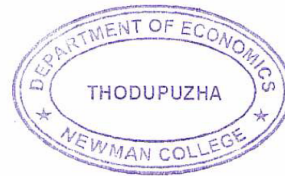
Written exam 80 marks, Assignment 20 marks

Reading List

Sustainable Development: Principles, Practices, and Perspectives by Dr. T.V. Ramachandra

Environmental Sustainability: A Comprehensive Approach" by Judith A. DeMelo and Alan R. DeMelo

Environmental Justice: A Framework for Action by Dr. Vandana Shiva



A handwritten signature in blue ink, appearing to read "Jenni K Alex".

Dr. Jenni K Alex
Head of the Department

2. Certificate Course on Research Praxis Curriculum with Assessment Procedure

Course Outcomes

By the end of the course, students should be able to:

1. Demonstrate an understanding of the research process and its key components.
2. Formulate clear research questions and objectives.
3. Select and apply appropriate research methodologies to address research questions.
4. Collect, analyze, and interpret research data using relevant tools and techniques.
5. Present research findings effectively through oral and written communication.
6. Apply critical thinking skills to evaluate and analyze research findings.
7. Demonstrate ethical conduct in research practices.

Syllabus for Research Praxis.

Module 1: Introduction to Research

- Overview of the research process
- Importance of research in various fields
- Ethical considerations in research
- Formulating research questions and objectives

Module 2: Research Design and Methodology

- Understanding different research designs (quantitative, qualitative, mixed methods)
- Selecting appropriate research methodologies

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

- Developing a research plan
- Sampling techniques and sample size determination

Module 3: Data Collection Methods

- Primary data collection methods (surveys, interviews, observations)
- Secondary data collection methods (literature review, data mining)
- Developing research instruments (questionnaires, interview guides)
- Pre-testing and refining research instruments

Module 4: Data Analysis and Interpretation

- Introduction to data analysis software (e.g., SPSS, NVivo)
- Quantitative data analysis techniques (descriptive statistics, inferential statistics)
- Qualitative data analysis techniques (coding, thematic analysis)
- Interpreting research findings and drawing conclusions

Module 5: Research Reporting and Presentation

- Organizing and structuring research reports
- Writing an effective literature review
- Presenting research findings through oral presentations
- Visual representation of data (tables, charts, graphs)

Module 6: Critical Thinking and Problem-Solving in Research

- Developing critical thinking skills in the research context
- Evaluating research methodologies and sources of information
- Identifying limitations and addressing research challenges
- Enhancing problem-solving skills in research projects

Module 7: Ethical Conduct in Research

- Understanding research ethics and responsible conduct of research
- Protecting human subjects and maintaining confidentiality
- Proper citation and referencing of sources
- Data handling and storage best practices

Module 8: Research Proposal and Project

- Formulating a research proposal based on chosen research topic
- Conducting research according to the proposed plan
- Analyzing data and interpreting research findings
- Presenting the research project through a final report and presentation



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Assessment and Evaluation

Mode of assessment: Course end examination

Marks: 40

Minimum marks for pass: 16

Number of students Passed: 51



**3. Value Added Course in English for Daily Use
Curriculum with Assessment Procedure**



NEWMAN COLLEGE, THODUPUZHA

NAAC Accredited 'A' Grade Institution

**(Affiliated to Mahatma Gandhi University,
Kottayam)**

VALUE ADDED COURSE IN ENGLISH FOR DAILY USE

(Academic Year: 2019-20)

Curriculum and Syllabus

Co-ordinated by

Postgraduate & Research Department of English

Curriculum and Syllabus of English for Daily Use

Course Title: English for Daily Use

Course Description:

The English for Daily Use course is designed to develop students' practical English language skills for everyday situations. The course focuses on enhancing communication abilities in various contexts, such as personal interactions, social settings, and everyday tasks. Students will engage in activities that promote listening, speaking, reading, and writing skills to build confidence and proficiency in English for daily use.

Syllabus of English for Daily Use.**Module 1: Introduction to Everyday Communication**

Greetings and introductions

Making small talk and socializing

Expressing likes, dislikes, and preferences

Asking for and giving personal information

Module 2: Everyday Conversations

Making requests and asking for assistance

Giving directions and understanding instructions

Making suggestions and recommendations

Expressing opinions and agreement/disagreement

Module 3: Practical Vocabulary and Language Structures

Common vocabulary for everyday objects, activities, and places

Basic sentence structures and grammar for daily communication

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Expressing time, dates, and schedules

Describing people, places, and events

Module 4: Reading and Comprehension

Understanding signs, notices, and labels

Reading short texts for practical information

Identifying main ideas and key details

Developing reading strategies for everyday texts

Module 5: Writing for Daily Purposes

Writing personal messages and emails

Taking notes and writing reminders

Formulating simple requests and inquiries

Writing short informal texts (e.g., invitations, thank-you notes)

Module 6: Cultural Awareness and Sensitivity

Understanding cultural norms and customs in English-speaking countries

Adapting communication to different cultural contexts

Recognizing and respecting cultural differences in daily interactions

Developing intercultural communication skills

Module 7: Speaking Skills for Daily Communication

Practising pronunciation and intonation

Developing fluency and coherence in spoken English

Engaging in conversations and discussions on everyday topics

Delivering short presentations and describing experiences

Course Objectives:

Develop listening skills to understand and respond appropriately in daily conversations.

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Enhance speaking skills for effective communication in personal and social settings.

Improve reading comprehension skills to understand everyday texts.

Build vocabulary and acquire language structures commonly used in daily life.

Develop writing skills such as personal messages, emails, and notes for practical purposes.

Cultivate cultural awareness and sensitivity in English language use.

Enhance confidence and fluency in using English for daily communication.

Course Outcomes:

By the end of the course, students should be able to:

Understand and respond appropriately to daily conversations and spoken English.

Engage in conversations confidently and express ideas effectively in personal and social settings.

Read and comprehend everyday texts, such as signs, notices, emails, and short passages.

Expand vocabulary and use common language structures in daily life situations.

Write simple personal messages, emails, notes, and short informal texts.

Demonstrate cultural sensitivity and adapt communication to diverse cultural contexts.

Develop fluency and confidence in using English for daily communication needs.

Learning Outcomes:

Upon successful completion of the course, students will be able to:

Demonstrate listening skills to comprehend and respond appropriately in daily conversations.

Engage in spoken English confidently, expressing ideas and opinions in personal and social settings.

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

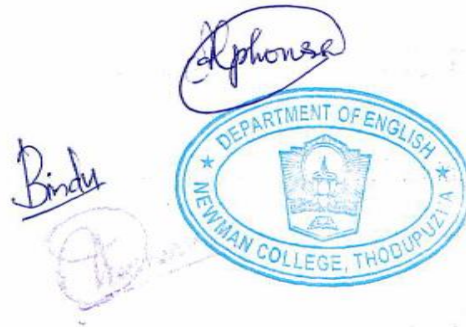
Assessment and Evaluation

Mode of assessment: Course end examination

Marks: 40

Minimum marks for pass: 16

Number of students Passed: 56



4. Value Added Course in Functional English

Curriculum with Assessment Procedure

Course Outcomes: By the end of the course, students should be able to:

1. Read and comprehend a variety of texts, including articles, essays, and reports.
2. Write clear and well-structured paragraphs and essays for different purposes.
3. Engage in spoken communication effectively, demonstrating fluency and appropriate language use.
4. Demonstrate active listening skills to understand spoken language in different contexts.
5. Expand vocabulary and use functional language skills in real-life situations.
6. Analyze and evaluate texts critically, identifying main ideas, arguments, and biases.
7. Demonstrate cultural sensitivity and awareness in English language use.
8. Conduct research using appropriate information literacy skills.

Curriculum and Syllabus for Functional English

The curriculum and syllabus for Functional English can vary depending on the educational institution and the specific goals of the course. However, here is a general outline of topics that are typically covered in a Functional English curriculum:

1. Reading Comprehension:

- Developing reading skills, such as skimming, scanning, and critical reading.
- Understanding different types of texts, such as articles, essays, reports, and literary texts.
- Building vocabulary and improving word recognition.
- Identifying main ideas, supporting details, and inferences in a text.

2. Writing Skills:

- Developing writing skills for different purposes, such as informative, persuasive, and descriptive writing.
- Crafting well-structured paragraphs and essays.
- Improving grammar, punctuation, and sentence structure.
- Enhancing spelling and vocabulary.
- Understanding and applying the writing process, including pre-writing, drafting, revising, and editing.

3. Speaking and Listening:

- Enhancing spoken communication skills, such as pronunciation, intonation, and fluency.
- Engaging in conversations and discussions on various topics.
- Developing listening skills, including comprehension of spoken language and note-taking.

4. Functional Grammar:

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

- Understanding and applying grammar rules and structures in context.
- Parts of speech, verb tenses, sentence structure, subject-verb agreement, and pronouns.
- Using grammatical structures effectively in speaking and writing.

5. Vocabulary Development:

- Building a strong vocabulary through word analysis, context clues, and word formation.
- Acquiring essential words and phrases related to specific functional areas (e.g., workplace, travel, social interactions).

6. Functional Language Skills:

- Developing language skills necessary for real-life situations, such as making requests, giving instructions, making introductions, and participating in interviews.
- Exploring idiomatic expressions, phrasal verbs, and common conversational phrases.

Assessment and Evaluation

Mode of assessment: Course end examination

Marks: 40

Minimum marks for pass: 16

Number of students Passed: 64

Course Coordinator



Thomson

Alphonsa

**5. Certificate Course on Front Office Management
Curriculum with Assessment Procedure**

Course Outcome:

1. Learn to manage a Front office efficiently
2. Enable them to be a capable manager by the end of the course.
3. To acquire Front Office management skills
4. To create the Front office data base



A blue circular stamp from the Department of Communicative English, Newman College, Thodupuzha, with the PIN code 685 535. Below the stamp is a handwritten signature in blue ink, which reads "P.A. John".

Syllabus

Module 1 (10 hrs)

Front Office Management: Required Skill set Introduction

Module 2 (5 hrs)

Fundamentals of Front Office Operations

Module 3 (5 hrs)

Handling Reception

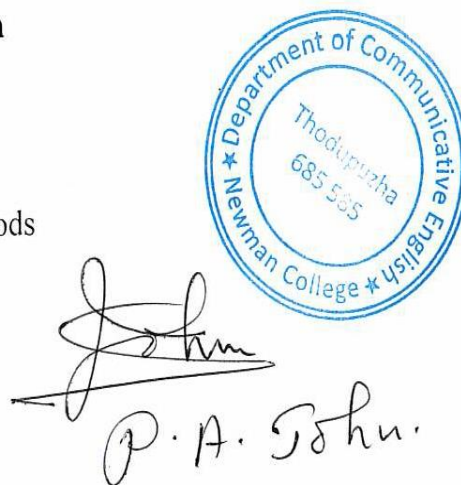
Module 4 (10 hrs)

Front Office Supervisory Skills
Managing Front Office

Assignment: Seminar Presentation

Reference Texts:-

Front Office Management by Woods



A blue circular stamp from the Department of Communicative English, Newman College, Thodupuzha, with the PIN code 685 535. Below the stamp is a handwritten signature in blue ink, which reads "P.A. John".

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Assessment and evaluation:

Assignment (15%)

Attendance (5%)

Final Examination (80%)

Pass mark minimum - 40



John
P. A. John.

6. Certificate Course on Rangakala
Curriculum with Assessment Procedure

Newman College Thodupuzha

Department Of Malayalam

Certificate Course Syllabus (2019-2020)

രംഗകല (Rangakala)

(For U G Malayalam Students)

Time Schedule: 30 hrs.

Learning Objectives: To understand the social relevance, art values, Literary values, musical elements and stage settings of performing arts.

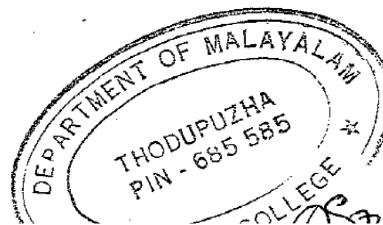
Module I : Folk art forms of Kerala – Recreational arts, ritual art forms – poorakkali, parichamuttukali, mudiyattam, thiruvathirakali, margamkali, oppana.

Module II : Classic art forms Kerala - Stage And Acting Rules- koodiyattam , kadhakali, thullal.

Module III : Traditional and folk plays of Kerala – history –vellari nadakam, porattunadakam, kakkarissi nadakam, chavittu nadakam

References

1. Nadodivijaneeyam , M.V.Vishnunamboothiri , D.C.Books.
2. Folklore ,Raghvan Payyanadu , State language institute
3. Folklorinu oru padyapadhathi , Raghvan Payyanadu , State language institute.
4. Folklore padanagal , Aju K.Narayanan, Sahithya pravarthaka saharana sagam.



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Course outcome: Identify the various arts forms.

Assessment and evaluation:



Theory

- Mode of assessment : course end examination
- Mark : 50
- Minimum mark or pass : 20

Name and Signature of Course Coordinator

Name and Signature of Principal



**7. Value Added Course on DTP- Malayalam
Curriculum with Assessment Procedure**

Newman College Thodupuzha

Department Of Malayalam

Value added Course – Syllabus (2019-2020)

DTP – Malayalam

(For U G Malayalam Students)

Time Schedule: 30 hrs.

Objectives - To improve the computerised skills of DTP Malayalam & English of U G Malayalam students.

Module I

Basics in DTP- Key words- Main Keys- Software's –ISM, Unicode Microsoft word, Excel, Power point Publisher.

Module II

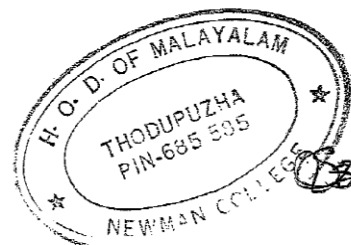
Typing in English, Malayalam, Keys of Malayalam Typing, Microsoft word, Page layout, size, orientation, Margining, Insert a Table, Pictures, Shapes, Smart Art, Chart, Header & Footer, Page Number, Word Art

Module III

PageMaker, Microsoft Excel & PowerPoint, Design, Animation, Sound & Video Insert in, Excel- Formula, Data, Excel- Spread sheet, PageMaker, Micro soft publisher, Brusher, Greeting cards.

References

1. DTP Training Guide- Prof. Satish Jain, BPB Publications
2. Comdex -9- in 1DTP course Kit- Viks Gupta, Dream tech Press
3. Rapidex DTP Course – Shirish Chavan, Cloudtail India
4. Dynamic Memory Computer Course – Davinder Singh Minhas, Diamond Books.



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Course outcome :

To improve the computerized skills of DTP Malayalam & English of U G Malayalam students

Assessment and evaluation:

Theory

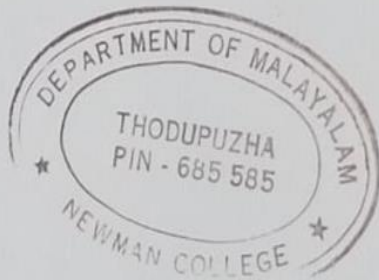
- Mode of Assesment : Course end examination
- Mark : 50
- Minimum marks or pass : 20

Dr.Sr.Bincy C J

Name and Signature of Course Coordinator

Dr.Thomson Joseph

Name and signature of Principal



8. Certificate Course on Fundamentals of microbial techniques Curriculum with Assessment Procedure

Course outcome:

On completion of the course, the students will be able to

- Identify various microscopy techniques and basic safety and handling protocol in a microbiology laboratory
- Execute sterilization, disinfection and bacterial cultivation

5. SYLLABUS

Course Name: FUNDAMENTALS OF MICROBIAL TECHNIQUES

Course code: CCBMT01

(Theory: 16 hrs; Practical: 14 hrs; Total 30 hrs)

THEORY (16 hrs)

Module 1: Introduction to Microbial techniques (2 hrs).

Module 2: Setting up of microbiology lab and biosafety levels (4 hrs).

Module 3: Media preparation- Nutrient broth, nutrient agar, Blood agar, Chocolate agar, Mac Conkey medium, Mueller Hinton Agar (MHA). Plating techniques: spread and pour; streak; colony counting (6 hrs)

Module 4: Simple and differential staining of bacteria; cell viability test (4 hrs).

PRACTICAL (14 hrs)

1. Sterilisation techniques- autoclave, chemical sterilisation.
2. Preparation of culture media – nutrient broth, nutrient agar
3. Preparation of agar slants and plates
4. Streak plate and spread plate technique.
5. Culture bacteria in artificial medium.
6. Grams staining
7. Working and application of Laminar air flow
8. Viability test

References

1. Prescott's Microbiology By Joanne Witley and Linda Sherwood and Christopher J. Woolverton. ISBN10: 1259281590
2. Michael J. Pelczar, Jr, E.C.S. Chan, Noel R. Krieg (1993) Microbiology (Fifth Edition), Tata McGraw – Hill Publishing Company Ltd, NewDelhi.
3. A.J. Sallé. Fundamental Principles of Bacteriology (TMH Edition) Tata McGraw – Hill Publishing Co. Ltd, New Delhi – 110008.
4. I E Alcamo. Fundamentals of Microbiology (IV Edn). The Benjamin cummings publishing co, Inc.

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Assessment and evaluation:

Theory

- Mode of assessment: Course end examination
- Weightage: 50%
- Marks: 50
- Minimum marks or pass: 20

Practical

- Mode of assessment: Continuous internal assessment based on lab involvement
- Weightage: 50%
- Marks: 50
- Minimum marks or pass: 20

Name and Signature of Course Coordinator


Dr. Anju T.R.


Name and Signature of HoD





Head, Department of Botany
Newman College, Thodupuzha
Kerala, India-685505

Name and signature of Principal


DR. THOMSON JOSEPH
PRINCIPAL-IN-CHARGE
NEWMAN COLLEGE
THODUPUZHA

9. UGC Sponsored career oriented Add on Course on Plant Tissue Culture (Started in 2018-19)

Curriculum with Assessment Procedure

Course outcome:

On completion of the course, the students will be able

- Identify the basics and application of Plant Tissue culture
- Isolate explants and inoculate it aseptically
- Perform Plant Tissue culture

PLANT TISSUE CULTURE

CERTIFICATE COURSE

Paper I. Fundamentals of Plant Tissue Culture: 3 credits

Paper II. Applications of Plant Tissue Culture: 3 credits

Paper III – Practical: 6 credits

Paper IV - Field Work, Project, Training: 8 credits

Paper I – Fundamentals of plant tissue culture 3 credits

1. Introduction and historical background of Plant Tissue Culture.
2. General Laboratory Techniques.-Maintenance of Laboratory.-Laboratory Space.-Culture Room Culture vessels and washing
3. Equipment - Principle and working - pH meter, Hot air oven, Autoclave, LAF, Rotary Shaker.
4. Sterilization techniques- Dry heat sterilization, Wet Heat sterilization and Surface sterilization of explants-Surface sterilants -different Methods.
5. Media preparation, Composition of Nutrient Media, Role of components, Method of preparation of Stock solution, preparation of Growth regulators. Calculations
6. Inoculation -Laminar Air Flow, Procedure of inoculation
7. Incubation -Maintenance of inoculation record, subculture and temperature control, Humidity
8. Hardening Techniques.

Paper II. Applications of Plant Tissue Culture - 3 credits

1. Callus culture, suspension culture- choice of explants subculture Estimation of growth of cells in culture.
2. Regeneration -Shoot regeneration, Somatic embryogenesis.
3. Brief study of - Anther culture, Ovary culture, Meristem culture, Embryo culture, Protoplast culture, hybridization.
4. Somaclonal variation - genetic basis of somaclonal variation.
5. Synthetic seeds - Preparation and Importance.

Paper III practical - 6 credits

1. Preparation of Standard tissue culture media -MS and White's. Preparation of Stock solution, Preparation of hormones, cotton plugs.
2. Method of preparation of Media, Sterilization of media.
3. Collection of explants Sterilization, inoculation of explants-leaf; root, shoot, anther, ovary and embryo.

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

4. Preparation of synthetic seeds
5. Maintenance of cultures, Sub culturing at periodical intervals.
6. Hardening of rooted plantlets.

Paper IV field work, project, and training - 8 credits

Collection of plant Material with medicinal and economic importance. Establishment in field,
Selection of explants, contamination free cultures.

Reference

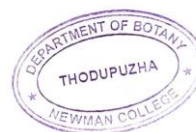
1. Kalyan Kumar De., (1992) An introduction to plant tissue culture. New Central Agency Calcutta.
2. Razdan M K 1993 an Introduction to plant Tissue culture. Oxford IBH Publi. Co. Ltd.
ReinertJand Baja YPS. 1989 applied and fundamental aspects of Plant cell tissue and organ culture NarosePubli. House, New Delhi.

Assessment and evaluation:

Theory and Practical (Paper I, II, III)

- Mode of assessment:
Continual assessment: Test papers (I and II); Seminar/ viva; Assignments;
Attendance
Written assessment: Written examination at the end of course
- Weightage:
 - ✓ Continual assessment – 50%
 - Test paper I – 10 marks
 - Test paper II – 10 marks
 - Seminar/ viva – 10 marks
 - Assignments- 10 marks

Mallay



10. Certificate Course on Mathematics in Real life

Curriculum with Assessment Procedure

Outcome of the course:

1. Apply mathematical techniques in practical situations.
2. Improvement of scientific temper by thinking problems in more logical and critical ways.
3. Apply mathematical concepts and principles to perform computations.

Syllabus:

Module 1 (10 hours)

Type of numbers, HCF and LCM of integers, Fractions, VBODMAS rule, squares and square roots, ratio and proportion, percentage, profit and loss.

Module 2 (10 hours)


Permutations and combinations , Trigonometry, heights and distances, Logical and analytical reasoning.

Module 3 (10 Hours)

Area and perimeter of polygons, Elementary Algebra, monomial, binomial, polynomial
Differentiation – Product rule , Quotient rule.

References

M. TYRA, & K. KUNDAN, CONCEPTS OF ARITHMETIC, BSC PUBLISHING COMPANY PVT.LTD. C- 37, GANESH NAGAR, PANDAV NAGAR COMPLEX, DELHI – 110092


Nancy Jacob



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Assessment and evaluation:

Mode of assessment: End examination

Weightage: 50%

Marks: 50

Minimum marks or pass: 20

Name and Signature of Course Coordinator

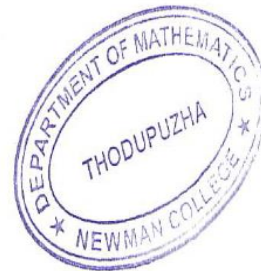


Mrs Nancy Jacob

Name and Signature of HoD



Mrs Nancy Jacob



Name and signature of Principal

Dr Thomson Joseph



11. Value Added Course on Electronic Equipment Maintenance Curriculum with Assessment Procedure

ELECTRONIC EQUIPMENT MAINTENANCE

DEPARTMENT OF PHYSICS, NEWMAN COLLEGE, THODUPUZHA

Career Oriented Add On Course

Syllabus

Paper I: Basic Principles of Electronics – 15 hr

1. Resistors : General information: Symbol, colour code. Types, Variable resistors and measurement of resistance using multimeter.
2. Inductor : General information: Symbol, Types, Chokes Inductance measurement
3. Transformers : General information Principle. Types, and Design of main transformer
4. Capacitors : General information: Symbols, Colour codes, Types - Fixed and variable capacitors, measurement of capacitance
5. Diodes, Transistors and IC : General information: Symbols, Types and applications
6. Measuring Devices : Thermometer, Barometer, Multimeter, LCR meter, Voltmeter, Ammeter, Galvanometer, Signal generator CRO
7. Microphones and Loudspeakers : Principles, Types and Application areas
8. Swatches. Cables and Electrical fittings : Bulbs, Tubes, Plugs - Testing of connections, Bread Board, Soldering

Paper II : Principles of Electronic and Electrical Devices - 15 hr

1. Computers - Familiarization of input and output devices and connections
2. TV Receivers - Types, Receiver sections, Receiver power supplies, TV Receiver Antenna
- 3 TV Applications - Broadcasting, Cable TV. Closed circuit TV. Theatre TV, Picture Phone, Teleconferencing
4. Telephones - Receiver, Pulse dialling, Tone dialling, Troubleshooting, Modem, STD, ISD, EPABX Intercom, Fax, EMail
5. Power consumption - General information. Methods to reduce power consumption - Bulbs and Tubes.

Paper III: Maintenance of Electrical and Electronic Household Devices – 15 hr

1. Troubleshooting and maintenance of Refrigerator, Mixer Grinder, Fan, Motor, Iron box safety precautions
2. Wiring – General information about house wiring, Phases, Two way switch, Master switch
3. Troubleshooting and maintenance of microwave oven
4. Different Types of Lamps -Filament Lamp. Fluorescent Lamp. Sodium Lamp, Mercury Lamp, UV and IR Lamps, Halogen Lamps, CFL Lamps -Their domestic and industrial applications. Basic Principle and working of lux meters Modern Methods of lighting-Stages, rooms and auditorium. Light Sensors.
5. Various Types of Stabilizers, inverters, UPS and its working

Paper IV- Project Training - 15 hr

- 1 Component identification, Checking and measurement of different parameters using multimeter (Resistors, Capacitors, Diodes, Transistors, Inductors)
2. Soldering Practice

ELECTRONIC EQUIPMENT MAINTENANCE**DEPARTMENT OF PHYSICS, NEWMAN COLLEGE, THODUPUZHA**

3. Electrical fittings - Bulbs, Tubes, Plugs Testing of connections
4. Computers-Familiarization of input and output devices and connections
5. Wiring-General information about house wiring, Phases, Two way switch, Master switch
6. Microprocessor 8085-Addition, Subtraction, Multiplication, Division, Data Transfer, Illumination Techniques-Domestic Applications
7. Project work – Designing and assembly of electronic circuits

Course Outcome

- Students will be able to analyze and construct basic analog and digital circuits.
- Students will be able to leverage this knowledge to build and produce electronic products completely themselves.
- Students will learn how to use basic electronics lab equipment such as oscilloscopes, power supplies, signal generators, and more.
- Students will learn hands on techniques such as circuit construction with solderless breadboards, wire wrapping, and soldering.
- Students will learn basic computer systems, Peripheral systems and their connections.
- Understand the basics of house wiring, including information about phases, two-way switches, and master switches.
- Students will learn the maintenance and troubleshooting of electrical and electronic household devices, including understanding common issues and implementing appropriate solutions.

Reference

1. "Electronic Devices and Circuits" by Salivahanan, N. Suresh Kumar, and A. Vallavaraj
2. Integrated Electronics: Analog and Digital Circuits and Systems" by Jacob Millman and Christos C. Halkias:
3. "Principles of Electronics" by V.K. Mehta and Rohit Mehta:
4. Basic Electrical and Electronics Engineering" by R.K. Rajput:
5. A Course in Electrical and Electronic Measurements and Instrumentation" by A.K. Sawhney:

Assessment & Evaluation:**Paper I-weightage 25%****Written Exam****Mode of Assessment: Course end Examination****Weightage: 50 %****Max. Marks: 50****Practical****Mode of Assessment: Continual evaluation**

Dr. Beena Mary John

Name and Signature of
Course Coordinator

12. Certificate Course on Apiculture

Curriculum with Assessment Procedure

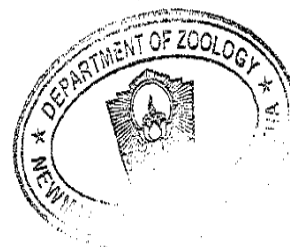
Course outcome

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

1. Participants will gain a thorough understanding of the biology and behavior of honeybees, including their anatomy, life cycle, caste system, communication, and pollination process.
2. Participants will develop the skills required for effective hive management, including selecting and placing beehives, managing hives throughout the year, preventing swarming, and maintaining optimal hive conditions.
3. Participants will learn various methods and techniques for honey production and harvesting, including identifying nectar sources, honey extraction, filtering, bottling, and packaging.
4. Participants will be equipped with the knowledge and skills to identify common bee diseases and pests, diagnose their causes, and implement appropriate treatments and preventive measures to maintain healthy bee colonies.
5. Participants will understand the key aspects of starting and managing a successful beekeeping enterprise, including market analysis, pricing strategies, branding, packaging, sales channels, and distribution networks.
6. Participants will learn about sustainable beekeeping principles, organic beekeeping methods, conservation practices, and beekeeping regulations, enabling them to implement environmentally friendly and responsible apiculture practices.
7. Participants will gain hands-on experience through field visits to operational apiaries, hands-on hive management, honey extraction demonstrations, and exposure to beekeeping equipment, reinforcing theoretical knowledge and building practical skills.

Assessment and Evaluation:

Theory



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Mode of assessment: Course End examination

Weightage: 80%

Marks: 80

Minimum marks or pass: 40

Practical

Mode of assessment: Continuous internal assessment based on lab/Field involvement

Weightage: 20%

Marks: 20

Minimum marks or pass: 10

SYLLABUS

Module 1: Introduction to Apiculture

- Introduction to beekeeping and its importance
- History and development of apiculture
- Beekeeping equipment and tools
- Safety measures in beekeeping

Module 2: Bee Biology and Behavior

- Anatomy and physiology of honeybees
- Life cycle and caste system of honeybees
- Communication and behavior of honeybees
- Pollination and its significance

Module 3: Hive Management

- Types of beehives and their pros and cons
- Hive placement and apiary site selection
- Beekeeping seasons and annual hive management cycle
- Swarm prevention and control techniques

Module 4: Queen Rearing and Bee Breeding

- Introduction to queen rearing and its importance
- Queen rearing techniques: grafting, cell punch, etc.
- Bee breeding programs and selective breeding
- Evaluating and selecting queen bees

Module 5: Honey Production and Harvesting

- Nectar sources and honeydew collection
- Honey extraction methods and equipment
- Filtering, bottling, and packaging honey
- Value-added honey products

Module 6: Bee Health and Disease Management

- Common bee diseases and pests
- Identifying and diagnosing bee diseases
- Integrated Pest Management (IPM) in apiculture
- Treatments and preventive measures

Module 7: Pollination Services

- Importance of bees in pollination
- Commercial pollination services

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

- Pollination contracts and agreements
- Managing colonies for pollination

Module 8: Business and Marketing in Apiculture

- Starting a beekeeping enterprise
- Market analysis and customer segmentation
- Pricing, branding, and packaging strategies
- Sales channels and distribution networks

Module 9: Sustainable Beekeeping Practices

- Sustainable beekeeping principles
- Organic beekeeping methods
- Conservation and habitat management
- Beekeeping regulations and certifications

Module 10: Practical Training

- Field visits to operational apiaries
- Hands-on hive management and inspection
- Honey extraction and processing demonstrations
- Hands-on experience with beekeeping equipment

Reference

1. Sammataro, D., & Avitabile, A. (2011). *The Beekeeper's Handbook*. Comstock Publishing Associates.
2. Jones, R., & Sweeney-Lynch, S. (2010). *The Beekeeper's Bible: Bees, Honey, Recipes & Other Home Uses*. Stewart, Tabori & Chang.
3. Caron, D. M. (2013). *Honey Bee Biology and Beekeeping*. Wicwas Press.
4. Flottum, K. (2014). *The Backyard Beekeeper: An Absolute Beginner's Guide to Keeping Bees in Your Yard and Garden*. Quarry Books.
5. Bush, M. (2013). *The Practical Beekeeper: Beekeeping Naturally*. X-Star Publishing Company.
6. Blackiston, H. (2017). *Beekeeping For Dummies*. For Dummies.
7. Graham, J. M. (Ed.). (1992). *The Hive and the Honey Bee: A New Book on Beekeeping*. Dadant & Sons.
8. Bonney, R. E. (1993). *Beekeeping: A Practical Guide*. Storey Publishing.
9. Conrad, R. (2007). *Natural Beekeeping: Organic Approaches to Modern Apiculture*. Chelsea Green Publishing.



Jisha Jacob 

Head of the department
Department of Zoology
Newman College
Thodupuzha



13. Certificate Course on Event Management

Curriculum with Assessment Procedure

DEPARTMENT OF COMMERCE FINANCE AND TAXATION(SF),
NEWMAN COLLEGE THODUPUZHA
CERTIFICATE COURSE –

EVENT MANAGEMENT

Course Title : EventManagement

Course Code : CC1EM07

Instructional Hours : 35 hours

Course Description:

The course enables the students to acquire an understanding about the event management. It is intended to study the management techniques and strategies required for successful planning, promotion, implementation and evaluation of special events and thereby equip the students with managerial skills for the success of special events.

Course objective:

The aim of this course is to provide an understanding of the techniques and strategies required to plan and implement successful special events.

Course Outcomes:

- To study the concept and significance of event management
- To enable the students to understand the event process
- To identify the emerging trends in event management
- To understand the applications of technology in event management

SYLLABUS

Module I

Events - History and evolution, event management - Nature, scope, types, significance, Trade shows, Conventions and Visitors Bureaus, Meeting planners and types, Host facilities – Facilities provided in the host facilities, Responsibilities of Meeting planners



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Module II

Initiation and Planning – setting goals and objectives – Announcing the project, selecting the project team, Defining communication channels and Resource specification, The Planning process, Planning tools, Execution and Implementation – Gantt Charts, Run sheets, Control, communication channels, Organizing Events, Planning Check lists, Monitoring and Evaluation, Managing Human resources, Event Management Team, Skills and Qualities required, Theme based Events, Outdoor and Indoor events, Resources required, Essentials for a successfulevent - Monitoring, Evaluation and Feedback

(15 hours)

Module III

Event Marketing and Promotion – process of event marketing, Marketing Mix, Pricing Promotion,

The economics of conferences and conventions, Promotional strategies used in Marketing of event

Business, Financial Management: Raising Funds, Investment, Fund Flow Management and Working Capital Decisions. Pricing strategies, Promotion and Marketing

(10 hours)

Assessment and Evaluation:

Final exam was conducted at the end of the program

Exam contained objective and descriptive questions

Maximum marks for the final exam - 100.

Grads were allotted based on the following scale

85% and above : A+

80% – 84% : A

75% -- 79% : B+

70% -- 74% : B

65% --69% : C+

60% --64% : C

Less than 60% : D



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Reference:

1. Goldblatt, Joe. Special Events: Creating and Sustaining a New World for Celebration. Wiley Global Education, 2013
2. Etzion, Opher, Peter Niblett, and David C. Luckham. Event processing in action. Greenwich: Manning, 2011.
3. Robertson, Martin. Events and festivals: current trends and issues. Routledge, 2013.



Signature of course co-ordinator



Signature of HOD

14. Certificate Course on Fundamentals of Tourism

Curriculum with Assessment Procedure

Syllabus

Module I: Introduction to Tourism Industry

Meaning and Definition of Tourism- Nature and Scope- Historical Perspective of Tourism Industry in India- Growth of Indian Tourism- Ministry of Tourism (GOI)-Aims and Functions.

Module II: Types of Tourism

Pilgrimage- Cultural-Folklore-Farm-Eco-Business- Adventure Rural- Cuisine- Monsoon-Community-Based Tourism- Sports Tourism- Health Tourism- Responsible Tourism -Main Characteristics and Activities Involved.

Module III: Tourism Products

Meaning and Concept- Components- Art and Architecture -Archaeological Sites-Monuments- Forts and Palaces Museums-Traditions and Festivals Nature-Based Tourism-Wild-Life - Sanctuaries-National Parks- Hill-Resorts- Desert Safari- Indian Beaches and Backwaters- Indian Folk- Culture-Customs- and Costumes.

Module IV: Tourism Planning and Development

General concepts of Planning- Major Types of Planning-Need for Tourism Planning-Different Types of Tourism Planning-Ten Main Steps or Phases in the Planning Process- Sustainability and Sustainable Tourism Development

Module V: Impact of Tourism

Meaning, Positive and Negative Impacts of Tourism: - Social, Cultural, Economic and Environmental. Tourism Economic Multiplier- Employment Multiplier- The WTO Conference- The Manila Declaration

Learning Outcomes:

- Knowledge about types and forms of tourism products
- Better understanding about the impact of tourism
- Helps to understand fundamentals of tourism

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

References:

- Bhatya, A.K., Tourism Development Principles and Practices, Kalyani publishers West Bengal.
- Kamra, K.K., & Mohinder Chand Basics of Tourism, Sterling Publication, New Delhi.
- 3. Ratandeeep Singh, Dynamics of Modern Tourism –Kanishka Publication New Delhi


Head of the
Department




Course Co-ordinators

Course outcome:

On completion of the course, the students will be able to

- Knowledge about types and forms of tourism products
- Better understanding about the impact of tourism
- Help to understand fundamentals of tourism

Assessment and evaluation:

Theory

- * Mode of assessment: Course end examination
- * Weightage: 50%
- * Marks: 50
- * Minimum marks or pass: 20

Practical

- * Mode of assessment: Continuous internal assessment based on lab involvement
- * Weightage: 50%
- * Marks: 50
- * Minimum marks or pass: 20



Name and Signature of HoD
Sachin Jacob

15. Certificate Course on Business Ethics

Curriculum with Assessment Procedure

Course Outcomes:

- To develop ethical leadership skills and practices
- To design ethical programs designed to accomplish specific objectives in organization
- Understand the definition of ethics and the importance and role of ethical behavior in the business industry.

Syllabus

Unit I

Introduction to Business Ethics - Principles of Personal Ethics - Principles of Professional Ethics Meaning and Concept of Business Ethics- Distinction between Values and Ethics - Morality and Spirituality.

Unit II

Business Approaches to Business Ethics - Ethical Standards in Business - Ethical Foundations of Business - Significance of Ethics and Values in Business - Theories of Business Ethics - Normative Theories and Ethical Theories.

Unit III

Ethical Decision Making and Consumer Protection - Ethical Models- Cross-holder Conflicts and Competition- Moral Philosophy-Kohlberg's Model.

Unit IV

Corporate Values and Ethical Decision Making Framework for Ethical Decision Making - Ethical Decision Making Process- Ethics and Consumer Duties and Responsibilities of Consumer- Consumer Protection Act, 1986 an overview.

Unit V

Corporate Governance and Ethics -Meaning and Concept of Corporate Governance- Importance of Corporate Governance - Reasons for the Growth and Demand for Corporate Governance - Corporate Governance and Ethics - Codes of Ethics- Ethics Committees- Corporate Laws and Business Ethics Corporate Culture and Ethical Issue.

References :

1. Gupta, Ananda Das, Business Ethics, Springer India, New Delhi
2. Fernando, A.C., Business Ethics and Corporate Governance, Pearson, New Delhi


Head of the department




Course co-ordinator

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Assessment and evaluation:

- Mode of Assessment : Course end examination
- Mark : 50
- Minimum marks or pass : 20

Chandranjaly V.C

Name and Signature of Course Coordinator



Sobha Thomas

Name and Signature of HoD

Dijal

Name and signature of Principal

**16. Certificate Course in Women and Law
Curriculum with Assessment Procedure**

**NEWMAN COLLEGE, THODUPUZHA
CURRICULUM AND SYLLABUS**

**Certificate Course in
Women and Law**

2019-20

Course code: WWLCT19

Co-ordinated by

Women Cell

NEWMAN COLLEGE, THODUPUZHA



Course Title: Certificate Course in Women and Law

Course Code: WML101

Course Duration: 30 hours

Course Objectives:

- To provide students with a comprehensive understanding of the legal rights of women in India.
- To develop students' skills in identifying and responding to crimes against women.
- To enable students to understand the legal aspects of marriage, divorce, child custody, and maintenance.
- To equip students with the knowledge and skills to understand the legal aspects of inheritance, property rights, and gender and land rights.

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Course Outcome:

Upon completion of this course, students will be able to:

- Define and explain key concepts related to women and law.
- Analyze the impact of laws and policies on women's lives.
- Apply their knowledge of the law to advocate for the rights of women.
- Develop and implement strategies to address gender discrimination and inequality.

Course Syllabus:

Module 1: Introduction to Women and Law (6 hours) The history of women and law- The different types of women and law-The impact of women and law on society

Module 2: Constitutional and Legal Rights of Women (6 hours) - The Constitution of India and women's rights - Other laws that protect women's rights - How to access women's legal rights

Module 3: Women and Crime (6 hours)- Crimes against women - Violence against women - Women and the criminal justice system

Module 4: Women and Family Law (6 hours) - Marriage and divorce - Child custody and maintenance - Domestic violence

Module 5: Women and Property Law (6 hours) – Inheritance - Property rights - Gender and land rights

Suggested Readings:

Women and Law: An Introduction by Leela Visaria and Brinda Karat

Gender Justice and the Law by Ratna Kapur

Law and Feminism in India by Veena Das

Women's Rights in India: Law and Policy by Indira Jaising

Gender and Law: A Reader by Patricia J. Williams



17. Value added course in Yoga and Meditation

Curriculum with Assessment Procedure

Department of Zoology
Newman College, Thodupuzha



Value added Course on Yoga and Meditation

Curriculum

Course Title: Value added Course on Yoga and Meditation

Duration: 30 hours

Code: VCZYT01

Course Description:

This course provides students with a comprehensive introduction to yoga and meditation. Students will learn the basic principles and practices of yoga, including asanas (postures), pranayama (breathing exercises), and dhyana (meditation). The course will also cover the benefits of yoga and meditation for physical and mental health.

Course Objectives:

- Understand the basic principles and practices of yoga
- Perform basic yoga asanas (postures)
- Practice basic pranayama (breathing exercises)
- Practice basic dhyana (meditation)
- Understand the benefits of yoga and meditation for physical and mental health

Course Outline:

Module 1: Introduction to Yoga -The history and philosophy of yoga- The different types of yoga-The benefits of yoga for physical and mental health.

(6 hours)

Module 2: Yoga Asanas -Basic yoga postures - How to perform yoga postures safely and effectively - Sequences of yoga postures for different purposes

(6 hours)

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Module 3: Yoga Pranayama- Basic yoga breathing exercises - How to practice pranayama safely and effectively - Pranayama for different purposes

(6 hours)

Module 4: Yoga Dhyana (Meditation) -Basic meditation techniques - How to practice meditation effectively - Meditation for different purposes

(6 hours)

Module 5: Benefits of Yoga and Meditation - The scientific evidence for the benefits of yoga and meditation - Yoga and meditation for specific health conditions- Yoga and meditation for stress management and mental well-being

(6 hours)

Assessment:

Students will be assessed on their understanding of the course material through a combination of assignments, quizzes, and exams.

Assignments

Students will complete a variety of assignments throughout the course, such as:

Writing exercises on the principles and practices of yoga and meditation

Creating yoga sequences and meditation routines

Keeping a yoga or meditation journal

Quizzes/MCQs

Students will take short quizzes at the end of each module to assess their understanding of the material covered.

Exams

Students will take a comprehensive exam at the end of the course to assess their overall understanding of the material.

Grading - Assignments: 30% - Quizzes: 30% - Exam: 40%

Materials:

Yoga mat

Meditation cushion

Comfortable clothing



18. Value added Course in Basics of Video Editing Curriculum with Assessment Procedure

VALUE ADDED COURSE 2019-2020

Syllabus

Name of the course: Basics of video editing

Course Code: BVE007

Duration of the Course: 30 Hrs

Course Objective

The objective of this course is to provide introduction to video editing using tools and techniques prevalent in the industry.

Course outcome

The students will understand the basic editing tools and techniques of video recordings in preparation for the mastering of a television program, motion picture or web application

Course Outline:

Module 1-10hrs

Basics of Video and standards

Module 2-15hrs

Video Editing – Media Management -Working in the video -Effects & transition -Animation - Titles

Module 3-05hrs

Special Effects

Assignment: A three minute video based on the theme provided by the teacher.

Reference Texts:-

**The Technique of Film and Video Editing* By Ken Dancyger

**Film and Video Editing* By Roger Crittenden

Syllabus set by: Curriculum Review Committee, Department of Communicative English

Prof.P. A. John (HOD), Romy Thomas, Athira Sathish (co-ordinator)

John - P. A.

John



19. Value added Course in Ecology and Society

Curriculum with Assessment Procedure

Postgraduate Department of Commerce
Newman College, Thodupuzha

Value added Course on Ecology and Society
2019-20

Course Title: Value added Course on Ecology and Society

Duration: 30 hours

Code: ES0119

Course Description:

This course students will learn about the fundamental concepts of ecology, such as ecosystems, biodiversity, and food webs. They will also learn about the impact of human activities on the environment, such as climate change, pollution, and deforestation. The course will also cover a variety of social issues related to the environment, such as environmental justice, sustainability, and conservation.

Course Objectives:

The objective of this value-added course on Ecology and Society is to provide students with a comprehensive understanding of the complex relationship between humans and the environment. Students will learn about the fundamental concepts of ecology, such as ecosystems, biodiversity, and food webs. They will also learn about the impact of human activities on the environment, such as climate change, pollution, and deforestation. The course will also cover a variety of social issues related to the environment, such as environmental justice, sustainability, and conservation.

Course Outcome:

The course is designed to help students develop the knowledge and skills they need to think critically about the relationship between ecology and society. Students will learn to analyze the impact of human activities on the environment, and they will develop proposals for sustainable solutions to environmental problems. The course will also help students to develop their communication skills, so that they can effectively communicate about ecological and social issues with a variety of audiences.

Course Outline

Module 1: Introduction to Ecology (6 hours)

The different types of ecosystems

Biodiversity and food webs



Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Syllabus

Energy flow and nutrient cycling

Module 2: Human Impact on the Environment (6 hours)

Climate change

Pollution

Deforestation

Other human impacts on the environment

Module 3: Social Issues Related to the Environment (6 hours)

Environmental justice

Sustainability

Conservation

Other social issues related to the environment

Module 4: Sustainable Solutions to Environmental Problems (6 hours)

Renewable energy

Resource efficiency

Waste reduction

Other sustainable solutions to environmental problems

Module 5: Case Studies in Ecology and Society (6 hours)

Case study 1: The Amazon rainforest

Case study 2: The Great Barrier Reef

Case study 3: The Arctic

Case study 4: The Niger Delta

Case study 5: The Maldives

Assessment

Assessment of students for the course will be done by internal assessment by way of assignment and examination for theory. Total marks for the course will be 100 marks with 80 marks for theory paper and 20 marks for assignment/case study analysis.

Criterion 1

1.2.1 Curriculum for Certificate/Value added programs with Assessment procedure

Syllabus

Assignments

Writing essays on ecological and social issues

Creating presentations on sustainable solutions to environmental problems

Conducting case studies on the relationship between ecology and society in specific communities or regions

References:

Ecology and Environment by P.D. Sharma

Environmental Science: A Study of Interrelationships by Dr. P.K. Mishra

Environmental Science: Principles and Applications by Dr. S.K. Agarwal

Social Ecology: A Study of Human Relationships with Nature by Dr. R.K. Saprú

Sustainable Development: Principles, Practices, and Perspectives by Dr. T.V. Ramachandra

