THE COCHIN COLLEGE

Koovapadam, Kochi-2

Affiliated To Mahatma Gandhi University
Re-accredited by NAAC With B+ Grade

Fourth Cycle
NAAC Accreditation 2024

Criterion 1
Curricular Aspects

1.3 - Curriculum Enrichment

Metric No. 1.3.1

Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum.

Courses in Curriculum Addressing Environment and Sustainability

Submitted to

National Assessment and Accreditation Council

Digitally signed by
Mrudula Menon V.
Principal-in-charge
The Cochin College, Kochi-2

Phone: 0484 2224954, 2226449

THE COCHIN COLLEGE

KOCHI - 682 002

(Affiliated to Mahatma Gandhi University and Accredited by NAAC)

Website: www.thecochincollege.edu.in

email: email@thecochincollege.edu.in

Courses in Curriculum Addressing Environment & Sustainability

Sl.No.	Programme	Name of the Course	Description
1	B.A English Language and Literature Model I	Issues that Matter	To sensitize the learners about contemporary issues of concern and to enhance their linguistic skills in English language
2	B.A English Language and Literature Model I	Environmental Science and Human Rights	Empower students to explore environmental issues through critical and creative thinking
3	B.Sc Zoology Model I	General perspectives in science and protist diversity	To provide the basic knowledge of protistan diversity
4	B.Sc Zoology Model I	Animal Diversity-Non Chordata	To understand the Non-Chordate diversity
5	B.Sc Zoology Model I	Animal Diversity-Chordata	To improve the knowledge about chordata
6	B.Sc Zoology Model I	Research Methodology Biophysics and Biostatistics	To provide information about problem-solving method and scientific method
7	B.Sc Zoology Model I	Environmental Biology and Human Rights	To familiarise the interaction between the organism
8	B.Sc Zoology Model I	Cell Biology & Genetics	To understand the genetic basis of life
9	B.Sc Zoology Model I	Evolution Ethology & Zoogeography	To understand the behaviour of organisms and the diversity around us
10	B.Sc Zoology Model I	Human Physiology Biochemistry & Endocrinology	To know more about the controlling and regulating system of life
11	B.Sc Zoology Model I	Developmental Biology	To improve the knowledge of developmental aspects of organisms
12	B.Sc Zoology Model I	Microbiology & Immunology	To provide various aspects of the molecular basis of organisms
13	B.Sc Zoology Model I	Biotechnology Bioinformatics and Molecular Biology	To give technological basis of science
14	B.Sc Zoology Model I	Occupational Zoology (Aquaculture Apiculture Vermiculture & quail farming)	Students are aware of various possibilities of culturing activities
15	B.Sc Zoology Model I	Nutrition Health & Life style management	To provide knowledge about how to maintain good life style
16	M.Sc Zoology	Evolutionary Biology and Ethology	Describes the concept of relatedness and its connection to biological evolution. To expose students to the basics and advances in ethology
17	M.Sc Zoology	Biochemistry	To understand the chemical nature of life and life process
18	M.Sc Zoology	Field Ecology	To provide the knowledge of animal adaptations to a variety of environment
19	M.Sc Zoology	Developmental Biology	To introduce the concepts and process in developmental biology. To expose the learner to the new developments in embryology and its relevance to Man

THE COCHIN COLLEGE Cochin-2

Mrudula Menon V.
Principal-in-Charge
The Cochin College

20	B.Sc. Physics Model I	Mechanics and Properties of Matter	Learn to apply theoretical concepts to solve real-world problems in mechanics including static and dynamic systems.
21	B.Sc. Physics Model I	Optics Laser and Fiber Optics	Learn to use optical sensors and fiber optic technologies for monitoring environmental conditions such as air quality water purity and climate changes
22	B.Sc. Physics Model I	Semiconductor Physics	Learn to design and develop sustainable semiconductor-based technologies such as energy-efficient electronics photovoltaic cells and solid-state lighting
23	B.Sc. Physics Model I	Digital Electronics and Programming	Learn to design and implement digital systems and programming solutions that focus on sustainability and minimal environmental impact
24	B.Sc. Physics Model I	Environmental Physics and Human Rights	Helps the students in acquiring the basic knowledge about environment and the social norms that provides unity with environmental characteristics and create positive attitude about the environment
25	B.Sc. Physics Model I	Nuclear and Particle Physics	Demonstrate various nuclear reactions and nuclear energy production. Students get awareness about huge energy production in a sustainable manner using nuclear reactions
26	B.Sc. Physics Model I	Relativity and Spectroscopy	Develop skills to communicate the environmental and sustainability benefits of relativity and spectroscopy technologies
27	B.Sc. Physics Model I	Solid State Physics	Learn to design and develop new materials with environmentally friendly properties for various applications.
28	M.Sc. Physics	Electrodynamics	Deals with the wave nature of electromagnetic field and its properties; electromagnetic field radiating out of accelerated charges and the impact of relativity in electromagnetism along with confined propagation of electromagnetic wave.
29	M.Sc. Physics	Computational Physics	To help the students to have the basic idea about the techniques used in physics to solve problems with the help of computers when they cannot be solved analytically with pencil and paper since the underlying physical system is very complex.
30	M.Sc. Physics	Nuclear and Particle Physics	Evaluate the environmental impacts of nuclear energy production including life cycle assessments and ecological effects. Understanding and minimizing the environmental impacts of nuclear power plants contributes to sustainable energy practices.
31	B.Sc Chemistry	Chemistry in Everyday Life	To make the students aware about the chemistry behind every daily life usable like paper dyes cosmetics etc and help them able to become chemical professionals giving due concern for the health and safety of consumers and community

THE COCHIN COLLEGE Cochin-2

Mrudula Menon V.
Principal-in-Charge
The Cochin College

32	B.Sc Chemistry	Organic Chemistry I	Studying organic chemistry helps to understand the development of green chemistry principles which aim to reduce or eliminate the use and generation of hazardous substances. This includes the design of safer chemicals and solvents the use of renewable feedstocks and the development of energy-efficient processes.
33	B.Sc Chemistry	Environment Ecology and Human Rights	To familiarize the students with human rights which are the norms that protect all people from professional legal and social abuse. They include civil and political rights such as right to life liberty property freedom of expression pursuit of happiness and equality before the law.
34	B.Sc Chemistry	Physical Chemistry	Physical chemistry plays a crucial role in the development of more efficient energy conversion and storage systems. This includes advances in solar cells batteries fuel cells and supercapacitors. Understanding the physical and chemical properties of materials enables the design of more efficient and sustainable energy technologies.
35	M.Sc Chemistry	Advanced Organic Chemistry	To study the basic principles of green chemistry biosynthesis biomimetic synthesis and their applications.
36	M.Sc Chemistry	Advances in Polymer Science and Technology	Advances in polymer science enable the creation of biodegradable and compostable polymers. These materials can significantly reduce plastic pollution and its impact on ecosystems.
37	M.Sc Chemistry	Medicinal Chemistry	Studying medicinal chemistry involves designing developing and synthesizing pharmaceutical compounds. Advances in medicinal chemistry can lead to the development of drugs that are more effective at lower doses reducing the amount of active pharmaceutical ingredients released into the environment.
38	B.Sc Botany Model II	Methodology of Science and an Introduction to Botany	Familiarises with various research methodology in science and how it applies in finding the advancement of knowledge in plant kingdom.
39	B.Sc Botany Model II	Microbiology Mycology and Plant Pathology	Clear understanding about various microbes and its cultural techniques. In addition it familiarises with various fungi plant diseases and its remedial measures.
40	B.Sc Botany Model II	Phycology and Bryology	Provide an insight to important groups in plant kingdom such as algae and bryophytes.
41	B.Sc Botany Model II	Pteridology Gymnosperms and Paleobotany	Provide an insight to plant groups such as pteridophytes and gymnosperms.
42	B.Sc Botany Model II	Anatomy Reproductive Botany Microtechnique	To acquire basic knowledge about internal structure of plants and its development. It also enables them to develop basic botanic skills including microscopy.

THE COCHIN COLLEGE Cochin-2

Mrudula Menon V.
Principal-in-Charge
The Cochin College

43	B.Sc Botany Model II	Research Methodology Biophysics and Biostatistics	Enables them to inculcate basic research skills including a detailed knowledge about various instruments used in science and technology.
44	B.Sc Botany Model II	Plant Physiology and Biochemistry	To create awareness about biochemical and physiological aspects of plant growth and metabolism.
45	B.Sc Botany Model II	Environmental Sciences and Human Rights	Make the students aware about the extent of the total biodiversity and the importance of their conservation. Creates awareness about sustainable utilization of natural resources their conservation and sustainable development.
46	B.Sc Botany Model II	Horticulture Plant Breeding and Research Project	Make them aware about various agricultural activities including agricultural practices hybridization techniques and other farming techniques.
47	M.Sc Botany	Taxonomy of Angiosperms	To study and understand the identification description and classification of plants. It also helps to identify the importance of plants and its conservation to maintain sustainability.
48	M.Sc Botany	Phycology Bryology Pteridology and Gymnosperms	Provides an insight into the importance of various primitive plant groups and their evolutionary aspects and their conservation strategies.
49	M.Sc Botany	Cell Biology Molecular Biology and Biophysics	Cell biology provides insights into the complex processes that sustain life at the cellular level. Understanding cell biology is essential for addressing environmental challenges such as pollution toxicology and bioremediation.
50	M.Sc Botany	Environmental Science and Conservation Biology	Environmental science involves the study of how living organisms including humans interact with their environment. It focuses on understanding environmental problems such as pollution habitat destruction climate change and biodiversity loss. Conservation biology is a discipline that aims to protect and preserve the Earth's biodiversity by understanding and addressing the factors that threaten species and ecosystems.
51	B.Sc Mathematics	Graph Theory	Understand the potential of graph theory in modeling and optimizing networks that involve the flow of resources such as water energy or waste in ways that minimize environmental impact.
52	B.Sc Mathematics	Basic Logic Sets and Number Theory	Study the mathematical foundations of logic and set theory which are essential for analyzing environmental data and developing algorithms for sustainability solutions.
53	B.Sc Mathematics	Analytic Geometry Trigonometry & Matrices	Analytic geometry and trigonometry are used to model the Earth's surface including geographic features and environmental phenomena such as the spread of pollutants or the effects of climate change.

Mrudula Menon V.
Principal-in-Charge
The Cochin College

54	B.Sc Mathematics	Calculus of Single Variable	Learn to apply calculus to model and analyze environmental systems such as the dynamics of populations pollution levels and the flow of natural resources.
55	B.Sc Mathematics	Calculus of Multivariable	Multivariable calculus extends the principles of calculus to functions of multiple variables. It is used to model and solve complex environmental problems involving multiple interacting factors.
56	B.Sc Mathematics	Theory of Equations and Abstract Algebra	Study the mathematical principles underlying theories of change and equilibrium which are relevant for understanding environmental processes and sustainability.
57	B.Sc Mathematics	Vector Calculus Geometry and Fourier Series	Fourier series are used to analyze periodic environmental phenomena such as seasonal climate patterns and the behavior of ecosystems.
58	M.Sc Mathematics	Algebra I	Abstract algebra helps develop mathematical models and frameworks for understanding complex environmental systems such as the interactions between different species or the dynamics of ecosystems.
59	M.Sc Mathematics	Linear Algebra & Matrix Theory	Linear algebra provides the tools to model and analyze environmental systems that involve large-scale data sets such as climate models and environmental monitoring networks.
60	M.Sc Mathematics	Real Analysis	Real analysis provides the rigorous mathematical foundation needed to model and understand complex environmental phenomena such as climate change and pollution.
61	M.Sc Mathematics	Ordinary Differential Equations	Learn to use ordinary differential equations (ODEs) to model and analyze dynamic environmental systems such as population growth pollution dispersion and resource management.
62	M.Sc Mathematics	Complex Analysis	Complex analysis is used to model and solve problems in fluid dynamics which has applications in environmental engineering such as the design of efficient water distribution systems.
63	B.Com Computer Applications	Office Automation Tools	This course provides students with the essential computer skills to use word processors spreadsheets databases and presentation software in various industries and occupations. In particular these tools can be used to manage and analyze environmental data develop sustainability reports and communicate environmental findings to stakeholders.
64	B.Com Computer Applications	Information Technology for Business	Helps students to be equipped with the latest technologies which are in demand in the current business scenario for good governance and decision making process of an organisation.

THE COCHIN COLLEGE Cochin-2

Mrudula Menon V.
Principal-in-Charge
The Cochin College

65	B.Com Computer Applications	Information Technology for Office	Provides students with essential computer skills to handle various office activities. It familiarises the students with software for word processing database management presentation and accounting in the business world.
66	B.Com Finance	Office Automation Tools	The students get an awareness of how technology can be used in the fields of business especially in the field of finance.
67	B.Com Finance	Financial Accounting	Financial accounting provides a framework for measuring and reporting a company's financial performance. It plays a key role in assessing the financial implications of environmental and sustainability initiatives such as investments in renewable energy or carbon offset projects.
68	B.Com Finance	Managerial Economics	Managerial economics focuses on the decision-making processes of businesses and organizations. It can be used to evaluate the economic viability of environmental projects such as pollution control measures energy conservation strategies and sustainable resource management.
69	B.Com Finance	Human Resource Management	Human resource management (HRM) involves the recruitment development and management of an organization's workforce. HRM can be used to promote sustainability by implementing policies and practices that encourage environmentally responsible behavior among employees and by integrating sustainability goals into an organization's overall strategy.
70	B.Com Finance	Financial Markets & Operations	The knowledge of financial markets and operations can help companies to finance environmentally sustainable projects. Students will learn about green finance a rapidly growing area of finance that focuses on funding sustainable projects and initiatives.

THE COCHIN COLLEGE Cochin-2

Mrudula Menon V.
Principal-in-Charge
The Cochin College