Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability and other value framework enshrined in Sustainable Development Goals and National Education Policy – 2020 into the Curriculum

COURSES FOCUS ENVIRONMENT AND SUSTAINABILITY

Programme Name	Course Code	Name of the Course	Activities/Content with a direct bearing on Professional Ethics/ Gender/ Human Values / Environment and Sustainability
B.B.A.	19BB301	Production Management	Factors influencing Plant Location – Plant Layout and its kinds - Store Keeping
B.B.A.	19BB603	Strategic Management	Environmental scanning and analysis
B.Sc. Biochemistry	19EBC51B	Toxicology & Phytomedicine	Environmental Impact of Pesticides.
B.Sc. Computer Science	ECS616B	Advance Computer Technologies	Understand the basic need and ways of Computer Technologies. Understanding the basics of Smart Devices
B.Sc. Computer Science	19ECS52A	Data Communication Networks	Basics of Networks and Internetworks-Known about different transmission medium with error correction and detection-internetworking devices and routing algorithm
B.Sc. Computer Science	19ECS52B	Electronic Commerce	Electronic Payment-various security policies-About the Internet Applications for E-commerce
M.Sc. Computer Science	19EPCS35A	Cyber Forensics	Appropriate Forensic Tools and Techniques are used to extract relevant digital evidence for preserving its integrity.

M.Sc. Computer Science	19EPCS35B	E-Business	Understand the challenges and dynamics of each E-Learning process education and industries help better to Manage Operations
M.Sc. Computer Science	PCS913P	Cloud Computing	To Design & develop backup strategies for cloud data based on features and also to to understand the concept of security and key components of AWS
M.Sc. Computer Science	21PCS912	Basics of Machine Learning	To understand fundamentals of Machine Learning and to utilization Machine Learning in building dynamics of Research Applications
B.Com. Commerce	EPCM705A	Managerial Economics	Helps Students to understand Circular Economy and take Business Decisions in India.
B.A. History	HI102S	Tourism: Concepts and Principles	Eco Tourism, Government Policies and Programme. Elements of Tourism. Tourism Organizations: Objective and role of ITDC,TIDC,ASI,TFCI
B.Sc. Microbiology	19EMB51A	Environmental Microbiology	Microbiology of air –Droplet, droplet nuclei, aerosols - air sanitation - airborne diseases- Microflora of water - lakes, ponds, rivers, ocean, estuary, ground water - Waterborne diseases - Eutrophication, Waste water treatment - primary, secondary (anaerobic and aerobic - trickling, activated sludge, oxidation pond) - Sludge digestion - Disposal - Drinking water treatment - chlorination - Microbiological standards of water,Water pollution – indicators of water pollution – BOD, COD; techniques for the study of water pollution; Composting; Bioremediation - types, importance, advantages and applications, bioleaching, Microbial biofilm

B.Sc. Microbiology	19EMB51B	Algal Technology	Biofuel from algae - *Haematococcus* and *Botryococcus*.
B.Sc. Microbiology	19SMB51A	Bioremediation	Pollution - Types of pollution; Pollutants - Types of pollutants; Acid mine drainage; Bioaccumulation and biomagnifications; Bioremediation - definitions, different strategies, Types of bioremediation, advantages and limitations, Phytoremediation, Bioremediation of soil and effluents; Bioreactors - Advantages and disadvantages; Biodegradation of oil spill in marine environment; Biosorption of heavy metals, Anaerobic bioremediation of Hydrocarbons, Phenols, Chlorinatedphenolic compounds, Polycyclic Aromatic Hydrocarbon (PAH), Dyes and Radioactive wastes.
B.Sc. Microbiology	19SMB51D	Entrepreneurial Microbiology	Chemical fertilizers versus biofertilizers, organic farming
B.Sc. Microbiology	19MB613	SOIL AND AGRICULTURAL MICROBIOLOGY	Soil – physical and chemical properties; soil microorganisms, Role of microbes in soil fertility, Microbial interactions with plants - Mycorrhizae, Rhizosphere, Phyllosphere, Organic matter decomposition - humus formation - Biodegradation of pesticides in the soil, Biogeochemical cycles - carbon, phosphorus, sulphur, Iron and nitrogen cycles; Nitrogen fixation – symbiotic and free living; Biofertilizers - Types (bacterial and algal), Examples and advantages; Biopesticides - types (bacterial, fungal and viral), Examples and advantages,

B.Sc. Microbiology	19MB616	BIOTECHNOLOGY	Biofuel, Biodiesel.
B.Sc. Microbiology	19MBP603	APPLIED MICROBIOLOGY PRACTICAL	Enumeration of bacteria from water sample ,Coliform count in water (MPN Technique) ,Presence/Absence test for coliforms in water ,
B.Sc. Microbiology	20EZ513A	BIOFERTILIZER TECHNOLOGY	Microbial interactions in soil- positive and negative interactions
M.Sc. Applied Microbiology	21PMB14	Microbial Ecology	Atmosphere - Microbiology of air, droplet nuclei, aerosols, enumeration of microorganisms in air, air sanitation, Laboratory hazards, airborne diseases, Interaction of microorganisms with their physical and chemical environments; marine ecosystem - mangroves, estuaries, deep seas and hydrothermal vents; fresh water ecosystem - lakes, rivers, ponds; terrestrial ecosystem - rock and soil, prairie, forest, tundra; extreme environments - hotsprings, glaciers and acid-mine drainage; interaction of microorganisms with plants, animals and microorganisms, Biogeochemical cycles - carbon, nitrogen, sulfur, iron, and phosphorus cycles; adaptation of microorganisms to toxic pollutants; biodegradation of xenobiotics (pesticides, heavy metals, hydrocarbons) – mechanisms, Waste water treatment - primary, secondary (anaerobic and aerobic - trickling, activated sludge, oxidation pond), Sludge digestion, Disposal; Drinking water treatment – chlorination; Microbiological standards of water; Water pollution - indicators of water pollution - BOD – COD - techniques

			for the study of water pollution; Waterborne diseases, Composting – landfills; Bioleaching of metals; Biodeterioration of paint, textile and leather; biofouling; Biofilms; Microbial enhanced oil recovery.
M.Sc. Applied Microbiology	21PMBP11	Lab Course-I	Enumeration of total coliform by MPN method, Enumeration of faecal coliform by MPN method, Membrane filter technique, Biochemical oxygen demand, Nitrogen cycle, ammonification, nitrification, denitrification
M.Sc. Applied Microbiology	21EPM26A	Methods in Biology	Methods of estimating population density of animals and plants, ranging patterns through direct, indirect and remote observations, sampling methods in the study of behavior, habitat characterization-ground and remote sensing methods.
M.Sc. Applied Microbiology	21PMB31	Soil and Agricultural Microbiology	Soil- Chemical and physical properties of soil -Types- Soil as a habitat for microbes - Microflora of various soil types-Influence of soil and environmental factors on soil microflora - Role of microorganisms in soil fertility- Interaction among soil microorganisms- Interaction between plants and microorganisms - Rhizosphere, Phyllosphere, Microorganisms in soil process - Carbon cycle, Nitrogen cycle, Iron cycle, Phosphorus cycle - Nitrogen fixation, Problems associated with chemical pesticides
M.Sc. Applied Microbiology	21PMP33	Lab Course-III	Enumeration of bacteria from soil, Enumeration of fungi from soil, Isolation and enumeration of Azospirillum from soil, Isolation and enumeration of Azotobacter from soil

M.Sc. Applied Microbiology	21PMB41	Microbial Biotechnology	Biotechnological methods for environmental monitoring – Recalcitrant xenobiotics - Biodegradation (hydrocarbons, pesticides, herbicides); Bioremediation – contaminated soils and water; marine oil pollutants; Microbes in mining, Ore leaching.
B.C.A.	CA407A	Internet Technologies	Discuss the features of World wide website, Electronic Payment system and identify various security issues related to Internet and E-commerce
B.C.A.	19GCA52A	Organization Behaviour	Study various types of environments like Social environment, Physical environment, Cultural environment, Political environment and Economical environment that affects human behaviour within an organization.
B.C.A.	19GCA52B	Entrepreneurial Development	Relates with the study of how the environment affects and influences the enterprise.
B.A., B.Sc., B.C.A., B.Com., B.B.A.	VE101A	Value Education	Attitude introduction, attitude formation, social factors, Learning Theory of Attitude Change
B.A., B.Sc., B.C.A., B.Com., B.B.A.	EPD201A	Dynamics of Personality	Physical Environment, familial determinants, cultural factors, pro-social behavior and altruism, ways to enhance mental health
M.Sc. Information Technology	18PIT12	Introduction to Information Technology	Introduction to computers, Computers softwares, Network communications, Network applications.
M.Sc. Information Technology	PIT13	Web Technologies	Understanding the basic concepts of HTML, CSS, JavaScript, ASP.net along with ADO.net

M.Sc. Information Technology	18PIT21	Object Oriented Programming using JAVA	Understanding the OOP concepts, AWT packages, technical relating to RMI and Servlets
M.Sc. Information Technology	18PIT22	Relational Database Management System	RDBMS basics, Query language basics, PL/SQL concepts
M.Sc. Information Technology	18EPIT24	Cloud Computing	Knowledge on basics of cloud computing, developing cloud services, cloud security and challenges.
M.Sc. Information Technology	18EPIT24A	Big Data Analytics	Gaining proficiency in the basics of big data, hadoop architecture, hadoop ecosystem and yarn, basics of Hive, hiveQL and HBASE
M.Sc. Information Technology	EPIT24B	Data Mining	Essentials of Data mining and data warehousing, techniques of data mining, cluster and outlier detection.
M.Sc. Information Technology	19EPIT33	Internet of Things	Understanding the basics of Internet of Things, IOT market perspectives, IOT technologies, state of Art architecture, and knowledge in commercial building automation.
M.Sc. Information Technology	18EPIT33A	Ethical Hacking	Basics knowledge in the bascis of information security, hacking, attacks on information highway, defenses in information highway, concepts of ethical hacking
M.Sc. Information Technology	18EPIT33B	Digital Image Processing	Knowledge on Digital images and techniques, image enhancement ideas, image restoration techniques, degrees of image resolution and compression methods, image representation and recognition.
M.Sc. Information Technology	18EPIT34	Distributed Operating Systems	Understanding the basics of distributed operating systems, inter-process communications, synchronization

			in distributed systems, processor allocation and real time systems, file system and shared memory.
M.Sc. Information Technology	18EPIT34A	Artificial Intelligence	Understanding the essentials of artificial intelligence, heuristic search techniques, using predicate logic, natural language processing, perception and action.
M.Sc. Information Technology	18EPIT34B	Machine Learning	Knowledge about machine intelligence and machine learning applications, strengths and weakness of machine learning approaches, supervised and unsupervised machine learning paradigms.
B.Sc. Physics	18EPPH45	Astronomy and Astrophysics	Helps to understand the Cosmology and the Universe
B.Sc. Physics	19EPH52A	Geophysics	This course is designed to know the information about the Earth and Solar System, the interpretation of Mathematical functions in Geographical fields, the Magnetic field on Earth and the concepts of Seismology.
B.Sc. Physics	19PH614	Astrophysics	All the contents of the course explains the History of Astronomy, Celestial Mechanics, the concepts of Astronomical Instrumentation, acquire knowledge of Stellar Magnitudes, Colors and Structure
B.Sc. Physics	19EPH63B	Energy Physics	Study about the Conventional Energy Sources, learn about the Non-Conventional Energy Source, acquire knowledge of Biomass Energy, be familiar with the Geothermal Energy, apply the knowledge of Energy Storage and impacts of Non-Conventional Energy

B.Sc. Physics	19SSPH52	Physics in Everyday life	This course develops a Scientific thirst among students also helps to understand the concepts of nature
M.Sc. Physics	EPPH24A	Physics of nanomaterials	This course explore the environmental impact of material usage and nanotechnology, stressing the importance of sustainable practices in scientific research and application.
M.Sc. Physics	18EPPH43	Materials Science	The course address the role of physics in developing sustainable technologies and practices to mitigate environmental challenges.
B.Sc. Physics	19PH203	Thermal Physics	This course discuss about the physical processes affecting the environment, such as energy flow, climate change, and pollution.
M.Sc. Physics	18PPH33	Condensed Matter Physics	Describes the materials science applications in renewable energy during lectures on semiconductor physics or crystallography.
B.Sc. Physics	19PH101	Properties of matter	The study of material properties is directly relevant to environmental sustainability. Understanding the properties of materials such as thermal conductivity, strength, and durability is crucial for developing sustainable materials and technologies.
B.Sc. Physics	19PH102	Mechanics	The application of mechanics in the development of sustainable technologies, like wind turbines, solar panels, and energy-efficient transportation systems.
B.Sc. Physics	19PH204	Waves and Oscillations	The principles of waves and oscillations are applied in real-world scenarios, such as disaster management, telecommunications, and medical imaging. Include

			analyses of the societal, environmental, and ethical dimensions of these applications.
B.Sc. Physics	19PH305	Electricity and Magnetism	Analyze the environmental impact of electromagnetic fields (EMFs) from power lines, telecommunications, and other sources.
B.Sc. Physics	19PH509	Optics & Spectroscopy	Optics and spectroscopy have significant applications related to environmental monitoring and sustainability: Spectroscopic techniques are widely used for analyzing air and water quality, detecting pollutants, and monitoring environmental changes
B.Sc. Physics	19PH613	Nuclear & Radiation Physics	The role of nuclear energy in providing low-carbon electricity and its potential benefits for climate change mitigation. Discussions may include the advantages and challenges of nuclear power, including safety, waste management, and environmental impact. Radiation Protection: The study of radiation protection and safety protocols to minimize environmental and health impacts from radiation.
M.Sc. Physics	18EPPH25	Medical Physics	Medical physics involves the use of radiation and imaging technologies that have environmental impacts.
M.Sc. Physics	18EPPH44	Electronic Instrumentation	Consideration of the environmental impact of biomedical devices, including material usage, energy consumption, and disposal.
B.Sc. Biochemistry	19EBC51B	Toxicology & Phytomedicine	Environmental Impact of Pesticides.

B.Com. Commerce	CM409A	Banking Law and Practice	Innovation of Banking Technologies
B.A. Tamil	19ATA305	Sithar Ilakkiyam	Sithargal Aruliya Maruthuvam
B.A. Tamil	17TA407	Kaapiyangal	Seeraa Puranam- Vudumbu Pesiya Padalam, Kamba Ramayanam-Kumbakarnan Vadhai Padalam
B.A. Tamil	19TA407	Samaya Ilakiyam	Veeramamuni- Thembavani- Neer Varam Adaindhadhu
B.A. Tamil	19ATA101	Tamizhaga Varalaarum Makkal Panpaadum	Sindhuveli Agazhvaraichi- Pandaya Thamizharin Ayal Naattu Thoderbugal, Pandaya Thamizharin Vazhkkai Nerigal, Perarusugalin Valarchi -Veezhchi
B.A. Tamil	19TA101	Ikala Ilakiyam	Barathiyar, Barathidasan, Sirukathai Jayakanthan
B.A. Tamil	19ETA512	Natupuraviyal	Pirapu Muthal Irapu Varai, Sagunam, Thalatu
B.A. Tamil	19TA615	Sanga Ilakiyam	Nartinai, Kurinji Patu, Purananooru
B.A. Tamil	19ATA202	Tamizhaga Varalaarum Makkal Panpaadum	Solargal, Pandiyargal, Irubatham Noortandu
M.S.W.	PSW11A	Social Work Profession	Ecology and Environment - Disaster or Crisis Management and Rehabilitation

M.S.W.	19PSW14	Community Organization and Social Action	Community Organization In Emergencies Like Fire, Famine, Flood, Drought, Earthquake And War
M.S.W.	21PSW23	Social Policy and Social Legislation	Policies and Programmes in India: Environment
M.S.W.	EPSW25A	Sociology for Social Works	Environment Issues: Climate Change, protection of water bodies
M.S.W.	EPSW25B	Disaster Management	Types and Effects Of Disaster
M.S.W.	EPSW25C	Environmental Social Work	Introduction To Environment And Environmental Studies, Natural Resources, Biodiversity and its conservation, Social Issues and the Environment from unsustainable to sustainable development
M.S.W.	19PSW31A	Rural And Tribal Community Development	Problems related to agriculture
M.S.W.	22PSW32A	Urban Community Development	Environmental issues
M.S.W.	19PSW42A	Community Development Management	Water shed Management, Waste Land Development
M.S.W.	20PSW42C	Community Health	Environmental Protection Act 1986
M.A. English	PEN31A	Feminist Theory and Practice	All the contents of the course helps to understand feminist theories and get familiar with the major concepts and theories of gender studies. Also to

			Develop a critical understanding of gender inequalities and social injustice. This course relates theory and practice through deep insight that frame a new outlook and skill for a better change in the society.
M.A. English	PEN34A	Subaltern Literature	This course comprehends the problems of marginalized people and how to take care of indigenous people around the world. It helps to perceive complicatedness of Women and how they are suppressed doubly. Inculcates the students to raise their voice for Women and against Gender Discrimination.
M.A. English	EEN512A	Commonwealth Literature	The course contents helps to develop Human character, Emphasize the equal relationship as independent nations.
M.A. English	EN509A	Eco Literature	The course delves into the part of literature that deals with nature and its sources in order to nurture and learn from it.

Principal
Dr. M. ARUMAI SELVAM, M.Sc., M.Phil., Ph.D.,
PRINCIPAL
St. Joseph's College of Arts & Science
(AUTONOMOUS)
CUDDALORE - 607 001.