Vidya Bharati Mahavidyalaya, Amravati

GOEC Basket Science subject

1) Physics

Physics 129/ OE-1

Credits: 02 **Workload (Hrs/Week): 02**

Title of the Course: Space Science (The Wonders of Physics)

Course Objectives:	1. To Introduce Space science. 2. To explain the formation of solar systems. 3. To relate Kepler's and Newton's laws to solar system. 4. To demonstrate formation of stars. 5. To describe origin of galaxies. 5. To apprise the creation of universe			
Course Outcomes:	After completion of the course the students should be able to: 1. Understand the basic concepts to Space. 2. Discuss the laws of solar system. 3. Demonstrate formation of stellar objects. 4. Analyze evolution and origin of galaxies. 5. Demonstrate creation of Universe.			
Unit System	**Contents**	**Workload Allotted**	**Weightage of Marks Allotted**	**Incorporation of Pedagogies**
Unit I	Introduction to space science, Nebular theory of formation of our Solar System .Solar wind and nuclear reaction as the source of energy. Sun and Planets: Brief description about shape size, period of rotation about axis and period of revolution, distance of planets from sun. Kepler's Laws of planetary motion (only Statements)	7 Hrs	7 Marks	• Use images, videos, or models to illustrate the solar system's formation, planetary characteristics, and Kepler's laws. • Encourage comparisons between planets regarding size, distance from the sun, and orbital characteristics to foster a deeper understanding. Engage students with quizzes, discussions, or simulations related to solar system formation and planetary motion laws.
Unit II	Newton's Law of gravitation, determination of mass of earth, determination of mass of planets with respect to earth. Brief description of Asteroids, Satellites and Comets	8 Hrs	8 Marks	• Use images, diagrams, or animations to illustrate Newton's law of gravitation, experimental setups, and characteristics of celestial bodies. • Compare the masses and characteristics of Earth with other planets, asteroids, and comets to demonstrate their diversity. • Engage students in exercises or problems related to gravitational calculations and characteristics of celestial bodies to reinforce understanding.
Unit III	Stellar spectra and structure, Classification of stars: Luminosity of star, variable stars; composite stars (white dwarfs, Neutron stars, black hole, star clusters, supernova and binary stars);	7 Hrs	7 Marks	• Use interactive simulations or software to illustrate stellar spectra, star classifications, and variable star behavior. • Compare the characteristics, formation, and life cycles of different types of stars and stellar phenomena. • Utilize images, animations, or videos to showcase the diverse nature of stars, clusters, and supernovae.
Unit IV	Galaxies and their evolution and origin, Early history of the universe.	8 Hrs	8 Marks	• Use visual aids such as images, diagrams, or animations illustrating galaxy types, cosmic evolution, and the early universe's timeline.

				• Compare different galactic structures, their evolution pathways, and theoretical models explaining the universe's origins. • Encourage discussions on cosmic evolution theories, observational evidence, and ongoing research to engage students in critical thinking and exploration.

Physics 129/ OE-2

Credits: 02 **Workload (Hrs/Week): 02**

Title of the Course: Non-Conventional Energy Sources

Course Objectives:	1. To provide an information of the most important renewable energy resources and the technologies for harnessing these resources within the framework. **2.** To Explore the concepts involved in solar energy, wind energy and ocean energy conversion system by studying its components, types			
Course Outcomes:	After completion of the course the students should be able to: **1.** Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a working knowledge on types of fuel cells. **2.** Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation. **3.** Explore the concepts involved in wind energy conversion system by studying its components, types and performance. **4.** Illustrate ocean energy and explain the operational methods of their utilization. **5.** Acquire the knowledge on Geothermal energy.			
Unit System	**Contents**	**Workload Allotted**	**Weightage of Marks Allotted**	**Incorporation of Pedagogies**
Unit I	Need for Non-conventional energy sources, Types of Non-Conventional energy sources Fuel cells: Definition-Design and Principle of operation Advantages and Disadvantages of fuel cells-Applications of Fuel cells.	8 Hrs	8 Marks	• Present real-world examples showcasing the implementation and success of fuel cell technology. • Engage students with interactive models or simulations illustrating fuel cell operations. • Encourage debates on the feasibility and challenges of adopting fuel cells as a viable energy solution.
Unit II	Solar Energy: Solar radiation and its measurements-Solar energy collectors: Flat Plate and Concentrating Collectors- solar pond -Applications of Solar energy.	7 Hrs	7 Marks	• Conduct experiments or demonstrations showcasing solar radiation measurement techniques and the operation of solar collectors. • Organize visits to solar installations or facilities utilizing solar energy to provide practical insights. • Assign projects where students design and analyze solar energy systems for specific applications.
Unit III	Wind Energy: Nature of wind-Basic components of Wind Energy Conversion System (WECS)-Wind energy collectors: Horizontal and vertical axis rotors-Advantages and Disadvantages of WECS - Applications of wind energy.	7 Hrs	7 Marks	• Utilize simulations or models to demonstrate the functioning of wind turbines and their efficiency. • Organize visits to wind farms or facilities utilizing wind energy to observe real-world applications. • Foster discussions on the societal impact, environmental considerations, and technological advancements in wind energy.

Unit IV	Ocean Energy: Ocean thermal electric conversion (OTEC) methods: Open cycle and Closed cycle Principles of tidal power generation-Advantages and limitations of tidal power generation. Geothermal Energy: Types of Geothermal resources-Applications of Geothermal Energy.	8 Hrs	8 Marks	• Utilize diagrams, animations, or videos to illustrate the principles of OTEC, tidal power generation, and geothermal energy. • Present case studies highlighting successful projects or installations of OTEC, tidal power, or geothermal energy for practical insights.
				• Engage students in discussions about the feasibility, challenges, and potential future advancements in ocean and geothermal energy.

2) Chemistry

Course Category: **GE/OE-1**

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	**I**	**108202**	**Chemistry in Everyday Life**	2	30	2 Hrs	30+20 =50

Course Objectives:	The objectives of the course are: 1. Awareness about various nutrients, appropriate personal care products and household products. 3. Awareness basic medicinal chemistry. 4. Reduce use of harmful chemical products.			
Course Outcomes:	By the end of this course, the students will be able to: 1. choose appropriate personal care product for themselves and others. 2. choose proper food products as per their requirements. 3. recognize nature friendly polymers and dyes. 4. assess the benefits and challenges associated with the use of agrochemicals in modern agriculture. 5. realize basics of medications			
Unit System	**Contents**	**Workload Allotted**	**Weightage of Marks Allotted**	**Incorporation of Pedagogies**
Unit I	**Chemistry of Food & Nutrition** a) Understanding the composition of food. b) Digestion and absorption of nutrients c) Energy production from macronutrients d) Functions of vitamins and minerals	8 Hrs	8 Marks	1. **Interactive Lectures:** Combines elements of traditional lectures with interactive activities to engage students. 2.**Project-Based Learning:** Assign project that involves solving a real-world problem. 3. **Case-Based Learning:** Analyze and discuss real cases to apply theoretical knowledge. 4. **Differentiated Instruction:** Tailor instruction to meet individual student needs, considering learning styles, interests, and readiness. 5. **Inquiry-Based Learning:** Explore topics through questioning, investigation, and research. 6. **Role-Playing:** Act out scenarios.
Unit II	**Chemistry of Personal Care Products** a) pH and its importance in the selection of personal care products b) Role of shampoos and conditioners c) Role of cleansers and moisturizers d) Role of sunscreen and anti-aging products	7 Hrs	7 Marks	
Unit III	**Chemistry of Medicine** a) Common diseases and their causes b) Concept of Analgesics, Antibiotics, Antidepressants, Antihypertensives, Antipyretics and Anticoagulants c) Concept of Bronchodilators, Vaccines, Antacids and Diuretics d) Drug Metabolism-Absorption, distribution, metabolism, and excretion (ADME)	8 Hrs	8 Marks	
Unit IV	**Chemistry of Household Products & Agrochemicals** a) Concept of surfactants and their role in cleaning b) Synthetic and natural polymers c) Synthetic and natural dyes d) Benefits and challenges associated with agrochemical use	7 Hrs	7 Marks	

Course Category: **GE/OE-2**

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	**I**	**108203**	**Pollution & Remedies**	2	30	2 Hrs	30 +20 = 50

Course Objectives:	The objectives of the course are: 1. to aware risks due to pollution. 2. to use appropriate steps to reduce pollution. 3. to aware rules and regulations related to pollution and its control. 4. to gain a holistic understanding of pollution and remedies.
Course Outcomes:	By the end of this course, the students will be able to: 1. recognize difference between polluted environment and clean environment. 2. prevent nearby society from pollution generating activities. 3. evaluate the environmental, social, and economic impacts of pollution. 4. design a pollution prevention plan for a specific industry or community. 5. develop educational materials to raise awareness about pollution and its remedies. 6. propose innovative solutions for reducing pollution and promoting sustainability.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted	Incorporation of Pedagogies
Unit I	**Idea of Pollution** a) Introduction to pollution, classification of pollutants b) Causes of pollution, harmful effects of pollution c) Sustainable ways of living, rules and regulations to mitigate pollution d) Central Pollution Control Board and its work	8 Hrs	8 Marks	1. **Interactive Lectures:** Combines elements of traditional lectures with interactive activities to engage students. 2.**Project-Based Learning:** Assign project that involves solving a real-world problem. 3. **Case-Based Learning:** Analyze and discuss real cases to apply theoretical knowledge. 4. **Differentiated Instruction:** Tailor instruction to meet individual student needs, considering learning styles, interests, and readiness. 5. **Inquiry-Based Learning:** Explore topics through questioning, investigation, and research. 6. **Role-Playing:** Act out scenarios.
Unit II	**Air Pollution, Water Pollution and Soil Pollution** a) Air Pollution: Causes and effects of air pollution; prevention of air pollution b) Water Pollution: Sources and effects of water pollution c) Soil Pollution: Sources and effects of soil pollution d) Activities: Activities to reduce air pollution, water pollution and soil pollution.	7 Hrs	7 Marks	
Unit III	**Noise Pollution, e-Waste Pollution and Plastic Pollution** a) Noise Pollution: causes and effects of noise pollution; prevention of noise pollution. b) e-Waste Pollution: causes and effects of e-waste pollution; prevention of e-waste pollution. c) Plastic Pollution: causes and effects of plastic pollution; prevention of plastic pollution; microplastics. d) Activities: activities to reduce noise pollution, e-waste pollution and plastic pollution	8 Hrs	8 Marks	
Unit IV	**Light Pollution, Radioactive Pollution and Space Pollution** a) Light Pollution: causes and effects of light pollution; prevention of light pollution. b) Radioactive Pollution: causes and effects of radioactive pollution; prevention of radioactive pollution; nuclear weapons; nuclear power plants; Chernobyl disaster. c) Space Pollution: causes and effects of space pollution; prevention of space pollution. d) Activities: activities to reduce light pollution, radioactive pollution and space pollution	7 Hrs	7 Marks	

3) Mathematics

Program: B. Sc.- I (Mathematics) Semester- I

Course Code / Subject: 126202 / Mathematics

The Vertical/ Type of Course: Generic/ Open Elective / Theory 1

Course Name: Foundation of Mathematics

Total Number of Hours / Week: 2 Hrs.

Unit	Content
Unit I	**Number System:** Natural numbers, properties of Natural numbers, Integers, Rational and Irrational numbers, Real numbers, properties of Real numbers. **(07 Hrs.)**
Unit II	**Co- ordinates Systems and Graphs of Equations:** The co-ordinate of a point on a line, Absolute value, co-ordinate of a point in a plane, Distance formula, Midpoint formulas, Graphs of equation, Straight Line, Slope, Equation of a Line, Parallel Lines, Perpendicular Lines. **(08 Hrs.)**
Unit III	**Sets:** Describing a Set, Subsets, Set operations, indexed collections of sets, partitions of sets, Cartesian Product of sets, Numerically equivalent sets. **(07 Hrs.)**
Unit IV	**Relations and Functions:** Relations, properties of Relations, Equivalence Relations, properties of Equivalence Classes, definition of Function, set of all functions from A to B, one to one and onto functions, Bijective functions, Composition of functions, Inverse Functions. **(08 Hrs.)**

Course Outcomes:

After successful completion of this course students will able to:

CO1: Classify Number System and discuss properties of Real numbers.
CO2: Find slopes of line and to write the equations of line.
CO3: Describe sets and perform the basic set operations.
CO4: Define and identify an equivalence relation and classify the functions.

Program: B. Sc.- I (Mathematics) Semester- I

Course Code / Subject: 126203 / Mathematics

The Vertical/ Type of Course: Generic/ Open Elective / Theory - 2

Course Name: Financial Mathematics-I

Total Number of Hours / Week: 2 Hrs.

Unit	Content
Unit I	Fractions, Decimal Numbers, Algebra of Numbers. **(07 Hrs.)**
Unit II	Profit and Loss, Percentages, Averages. **(07 Hrs.)**
Unit III	Ratio and Proportion, Simple and Compound Interest. **(08 Hrs.)**
Unit IV	Data Interpretation, Linear Programming Problem. **(08 Hrs.)**

Course Outcomes:

After successful completion of this course students will able to:

CO1: Solve the problems using the concepts of fractions, decimal numbers and algebra of numbers.
CO2: Analyse the financial problems using the concepts of profit, loss, percentages and averages.
CO3: Evaluate the financial condition based on one's income or expenditure using the concepts of ratio, proportion and interest etc.
CO4: Apply the techniques of LPP to solve real world problems.

4) Botany

GOEC Theory: Plant Health Care

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	107203	Plant Health Care	2	30	2 Hrs	30 (Ext)+20 (Int)

Course Objectives:	1. To Learn about significance of plant health 2. To learn about techniques of plant health care
Course Outcomes:	CO 1: Students will be able to Recognize importance of plant health management. CO 2: Students will be able to classify plant diseases. CO 3: Students will apply knowledge to cure plant diseases and deficiency disorders. CO 4: Students will be able to categorize types of pest and weeds. CO 5: students will be able to plan strategies of integrated pest management. CO 6: Students will be able to develop their own plant pathology lab.

Unit System	Contents	Workload Allotted (Hrs)	Weightage of Marks Allotted	Incorporation of Pedagogies
Unit I	**Plant Health care and Plant Diseases**	8	8	Suitable pedagogical strategies are separately annexed
	1.1 Introduction to Plant health care and its objectives in Home Garden, Kitchen Garden, Horticulture and Agriculture. Definition and concept of Plant disease.			
	1.2 Terminologies in plant Pathology – Host, Pathogen, Pathogenicity, Pathogenesis, Symptoms, Infection, Inoculation, Isolation, Incubation period, Etiology, Susceptibility, Immunity, Hypersensitivity and Resistance.			
	1.3 Classification of Plant Diseases – Based on a) Pathogens, b) Symptoms, c) Mode of transmission of pathogens through seed, soil, air and insects.			
	1.4 Factors affecting plant health.			

Unit II	**Plant nutrients and Diseases**	7	7	
	2.1 Pest-disease: definition, causes of pest outbreak, losses caused by insect pests, Categories of pests: Major pests, minor pests. Symptoms of damage and Management of some pests diseases.			
	2.2 Plant Diseases: Brief account on major types of plant diseases caused by Fungi, Bacteria and Viruses.			
	2.3 Role of Essential Nutrients in plant growth & development, critical nutrients, Critical concentration, nutrient toxicity.			
	2.4 Nutrient deficiencies diseases: 1) stunted growth; 2) chlorosis; 3) interveinal chlorosis; 4) necrosis.			
Unit III	**Methods of Management of Insect pests and diseases.**	8	8	
	3.1 **Chemical Methods:** Brief account and uses of Bactericides, Fungicides, Insecticides and Nematicides**.**			
	3.2 Biological Control: Introduction, biological control of Insect pests and diseases.			
	3.3 Legal (Plant - quarantine): Introduction, domestic quarantine and need of plant Quarantine in India			
	3.4 Weeds – types and classification; invasive species; weed control, common weeds of important medicinal plants.			
Unit IV	**Integrated Plant management**	7	7	
	4.1 Introduction to principles of integrated plant disease management			
	4.2 Scope and importance of integrated pest management (IPM).			
	4.3 Tools of pest management, their description and usage in IPM programs.			
	4.4 Biological and biotechnological approaches in disease management. Crop Resistance: General account of use of resistant varieties			
	4.5 Green pesticides / Botanical Pesticide: Definition, Preparation of pesticide from Neem, Chrysanthemum, and Tobacco. Advantages of use of Botanical pesticide or green pesticide			

GOEC Theory- Kitchen Gardening

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	107204	Kitchen Gardening	2	30	2 Hrs	30 (Ext)+20 (Int)

Course Objectives:	1. To Learn about techniques of Kitchen Gardening 2. To learn about importance and types of vegetable, fruit, and medicinal plant cultivation.
Course Outcomes:	CO 1: Students will be able to illustrate the importance of kitchen gardening and their products. CO 2: Students will be able to understand methods of establishing kitchen gardens. CO 3: Students will apply knowledge to Water, fertilize, prune, maintain, and harvest produce from their home garden. CO 4: Students will be able to categorize fruit and vegetables according to season. CO 5: students will be able to plan crop rotation as per the season. CO 6: Students will be able to develop start their own kitchen garden

Unit System	Contents	Workload Allotted (Hrs.)	Weightage of Marks Allotted	Incorporation of Pedagogies
Unit I	1.1: History and Development of Gardening in India; Case Studies on AID India's Kitchen Garden Project, Adivasi women's kitchen gardening project in Western Ghats	8	8	Suitable pedagogical strategies are separately annexed
	1.2: Introduction to kitchen gardening, Gardening tools, Basic materials & machinery required for kitchen garden.			
	1.3: Current status of vegetables in India, cultivation of vegetables, limitations in vegetable cultivation			
	1.4 Scope of Kitchen Gardening. Kitchen gardening products.			
Unit II	2.1: Preparation of Garden site: Selection, size, place of site, Containers, garden equipment	7	7	
	2.2: Organic Farming Approach for Kitchen Garden Sowing, maintenance and harvest practices for roots and tubers, green leafy and green vegetables			
	2.3: Economic Evaluation of Kitchen Garden in order land, tillage, and production.			
	2.4: Different Operations for Maintaining Kitchen Garden viz- Land preparation, Planting, Weeding, Mulching, Irrigation, Stalking, Fencing, Harvesting, Plant protection			

Unit III	3.1: Classification of vegetables (according to a source of plant parts and season) 1. Tropical vegetables- sweet potato, eggplant, tomato, okra, spinach etc., 2. Subtropical vegetables- Onion, garlic, sweet corn, pumpkin etc., 3. Temperate vegetables- Cabbage, cauliflower, peas, radish, carrot, beet etc.	8	8	
	3.2: **Fruits:** 1. Tropical fruits- Dragon fruit, Passion fruit, Jackfruit, Papaya etc., 2. Subtropical fruits- Banana, mango, guava, pineapple etc., 3. Temperate fruits- Apple, plum, pear, strawberry, grapes, blueberries etc.			
	3.3: Medicinal plants: 1. Aloe Vera, 2. Ashwagandha, 3. Brahmi 4. Tulsi, 5. Turmeric, 6. Shatavari, etc.			
	3.4: Micro-greens production, Hydroponics, Vertical farming, Landscaping, and kitchen garden.			
Unit IV	**Maintenance & Importance**	7	7	
	4.1: **Tips for Maintaining a Kitchen Gardening:** It includes Vertical growth, triangle shaped planting, use of seasonal plants, harvesting period, shade growing, Rainwater harvesting, and Companion plants.			
	4.2: **Importance of organic fertilizers in gardening** Composition of organic fertilizers, Benefits of organic fertilizers.			
	4.3: Types and use of growth regulators in Kitchen gardening, water management, Weed Management, & Nutrient management.			
	4.4: **Importance of kitchen gardening** Kitchen gardening includes the following importance. Recycling of Vegetables and Plant Scraps, Sustainable gardening, Healthier eating, Stress relief, Environmental benefits, financial savings, Fresh Organic Harvest, Nutritious Diet, Purification of Surrounding Air			

5) Zoology

FOR BASKET (GOEC-1):

For Students of SEM-I of the program other than Science & TechnologyFaculty.

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	133203	Economic Zoology	2	30	2 Hrs	30

Course Objectives:	After this course, students will be able to • 1. Deals with animal world that is associated with the economy, health and welfare of humans • 2. Achieving sustainable development. • 3. Economic and rural development with the help of animals
Course Outcomes:	• The course is designed to develop in student a basic understanding of the functioning of an economic aspects of Zoology. • Students will be able to describe and assess ecological role of insects and various methods of pest control. • Students will be able to discuss strategies for Vermicompost, Prawn culture, Pearl culture

Unit	Contents	Workload Allotted	Weightage of Marks Allotted
Unit I	**Vermicompost** 1.1 Introduction of Vermiculture and Vermicomposting. Vermiculture techniques. 1.2 Bedding, Essential parameters for Vermiculture and Management 1.3 Methods of Harvesting (Manual & Mechanical). 1.4 Economic Importance of Vermiculture.	8 Hrs.	8 Marks
Unit II	**Integrated Pest management (IPM)** 2 .1 Categories of insect pests and diseases, IPM: Introduction, history, Importance, concepts. 2.2 Principles and tools of IPM, Economic importance of insect pests. 2.3 Methods of detection of insect pest and diseases. 2.4 Methods of control: Host plant resistance, mechanical, physical, biological and chemical control	7 Hrs.	7 Marks
Unit III	**Prawn culture** 3.1 Introduction to Freshwater Prawn Culture, Life cycle of freshwater prawns 3.2 Prawn Pond Preparation and Management, Prawn Seed Collection and Hatchery Management 3.3 Prawn Feeds and Feeding Management, Nutritional requirements of freshwater prawns.	8 Hrs.	8 Marks
Unit IV	**Pearl Culture** 4.1 Morphology and anatomy of Pearl oyster, the Life cycle of pearl oyster. 4.2 Process of Pearl formation. Natural Process of Pearl formation. 4.3 Chemical composition of Pearls. 4.4 Economic importance of pearls. Pearl oyster culture Techniques of pearl Oyster culture (Fresh water and Marine water) for artificial production of pearls. 4.5 Pearl culture Economy, Diseases and Predators of Pearl oysters Present status, prospects and problems of pearl industry in India.	7 Hrs.	7 Marks

FOR BASKET (GOEC-2):

For Students of SEM-I of the program other than that of Science &Technology Faculty

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	133204	Wildlife Ecotourism	2	30	2 Hrs	30
Course Objectives:	After this course, students will be able to • Learn about to enable tourist to enjoy nature without causing any disturbances • Discuss economic development and wild life conservation • Learn about flow of the people keeps the poachers at bay from killing the valuable animals.						
Course Outcomes:	• Students should acquire the knowledge of ecotourism relating to concept, history, scope, components and principles. • They are getting deep information about types of ecotourism. The course helps to know about wildlife, National parks, sanctuaries and the list of activities carried out for the tourist. • After completing this course students are having a deep knowledge of ecotourism places and wildlife destinations.						

Unit	Contents	Workload Allotted	Weightage of Marks Allotted
Unit I	**Introduction to Ecotourism** 1.1 History and scope of ecotourism 1.2 Components of ecotourism 1.3 Principles and characteristics of ecotourism 1.4 Resources and products of ecotourism 1.5 Commercialization of ecotourism	8 Hrs	8 Marks
Unit II	**Types of Ecotourism** 2.1 Agro-ecotourism (Ethnic and Farm tourism) 2.2 Geo- ecotourism 2.3 Cultural & Pilgrimage tourism 2.4 Island and beach tourism (Mangrove, Back water & Wetland Tourism) 2.5 Wildlife tourism	8 Hrs	8 Marks
Unit III	**Wildlife Tourism Concepts and Range Of Activities** 3.1 Scope and importance of wildlife tourism in India 3.2 General Wildlife Watching and Viewing by Safari, Trekking and Trails 3.3 Important National Parks and Sanctuaries in wildlife tourism 3.4 Visit to special places : Protected areas, Endemism and biodiversity hotspots 3.5 Special Interest Tourism : Bird Watching ,Visiting Zoos and Aquaria–Recreational Fishing	7 Hrs	7 Marks
Unit IV	**Economic aspects, Present scenario & Future prospects in Wildlife Tourism** 4.1 Global Market Size of Wildlife Tourism 4.2 Impacts of Wildlife Tourism–Positive Impacts and Negative Impacts 4.3 Ecotourism industry and its stakeholders 4.4 Ecotourism potential of India 4.5 Economic aspects of ecotourism: special resources, carrying capacity, required investment, role of public sector, employment impact, etc.	7 Hrs	7 Marks

6) Electronics

FOR BASKET (GOEC-1): For Students of Sem-I of the program other than Science & Technology Faculty.

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	113203	CCTV Installation and Maintenance	2	30	2 Hrs	30

Course Objectives:	• To know about security system and its importance. • To understand and interpret electrical/electronic circuits of CCTV. • To provide the knowledge about the various cables. • To provide the knowledge about the various CCTV cameras. • Impart skills required to installation and maintenance of CCTV system.
Course Outcomes:	• Identify electronic components and circuits related to CCTV. • Identify and analyze different cables and their interconnections. • Identify and analyze different cameras and their interconnections • Utilize the knowledge of CCTV software and its installations. • Troubleshooting and maintenance of CCTV systems.

Unit	Contents	Workload Allotted	Weightage of Marks Allotted	Incorporation of Pedagogies
Unit I	**Introducing CCTV** Introduction to Closed Circuit Television (CCTV) Technology, Block diagram of CCTV, Basic components of an analogue CCTV system, Transmission Medium, recording units (DVR), Power supply unit, Assembling a basic analogue CCTV system.	8 Hrs.	8 Marks	• While teaching CCTV Installation and Maintenance, the suitable pedagogical strategies should be adapted. • These strategies include both Troubleshooting and maintenance of CCTV systems. • Process of using CCTV Installation and Maintenance using Both physically and virtual tools.
Unit II	**Cables used in CCTV Installation**Types of Cable, Construction of Coaxial cable, Construction of Ethernet cable, Construction of network cable, Construction of Fiber-optic cable, advantages and disadvantages of the cables.	7 Hrs.	7 Marks	
Unit III	**Types of CCTV Cameras and Installation** Dome Camera, Bullet Type Camera, C-Mount Camera, Day/Night Camera, Infrared/Night Vision CCTV Camera, Varifocal Cameras, Wireless Cameras, Installing the Camera, Checking the Camera Functions.	8 Hrs.	8 Marks	
Unit IV	**Tools and Maintenance** Multimeter: Analogue and Digital, cable stripper, Soldering gun, Desoldering Pump. Installation Software, Connecting to Your Smartphone, Using Web Services, Potential Risk, Watching CCTV camera on Mobile and Laptop.	7 Hrs.	7 Marks	

FOR BASKET (GOEC-2) : For Students of Sem-I of the program other than that of Science & Technology Faculty.

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	113204	E-waste Management	2	30	2 Hrs	30

Course Objectives:	• List the effects of e-waste on environment and health. • Discuss the need and requirements of the e-waste management • Make awareness of e-waste and e-waste management in society.
Course Outcomes:	• Identify the physical and chemical composition of waste • Know about the environmental impacts of e-waste. • Apply various concept learned under e-waste management hierarchy • Distinguished the role of various national and internal act and laws applicable for e-waste management and handling. • Analyze the e – waste management measures proposed under national and global legislations

Unit	Contents	Workload Allotted	Weightage of Marks Allotted	Incorporation of Pedagogies
Unit I	**Introduction to E-Waste Management:** Definition and types of e-waste, Current e-waste scenario in India and the world, Environmental and health hazards of e-waste, Regulatory framework for e-waste management in India, Scope of the course.	7 Hrs	8 Marks	
Unit II	**E-Waste Collection, Segregation and Recycling:** Collection and transportation of e-waste, Segregation of e-waste based on material type, Importance of proper segregation, Hands-on practice on e-waste segregation. Recycling technologies for different types of e-waste, advantages, and limitations of different recycling technologies, Environmental impact of recycling technologies	8 Hrs	8 Marks	
Unit III	**E-Waste Management Strategies:** Extended Producer Responsibility (EPR), Reverse logistics for e- waste management, Innovative e-waste management practices, Importance of public awareness and outreach.	7 Hrs	7 Marks	
Unit IV	**E-Waste Management and Sustainable Development:** The link between e-waste management and sustainable development goals, Role of e-waste management in achieving a circular economy, Business opportunities in e-waste management, Prospects of e-waste management in India.	8 Hrs	7 Marks	

7) Computer Science

GOEC 1

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	109501/ 110501/ 112501/ 123501/ 134501	**Information Communication Technology**	2	30	2 Hrs	30

Course Outcomes :	Students will be able to - 1. Understand the literature of social networks and their properties. 2. Which network is suitable for whom. 3. Develop skills to use various social networking. 4. Learn some GOI digital initiatives in higher education. 5. Apply skills to use online forums, documents, spreadsheets, presentation for communication, collaboration and research. 6. Get acquainted with internet threats and security mechanisms.			
Unit System	**Contents**	**Workload Allotted**	**Weightage of Marks Allotted**	**Incorporation of Pedagogies**
Unit I	**Introduction to Networking:** Introduction, Need of computer communication network, Communication protocol, Types of networks: LAN, MAN, WAN Topology: Ring, Bus, Star, Hybrid, Hierarchical& Mesh.	8 Hrs	8 Marks	The students have a problem understanding the concept of arrays, dealing with the syntax of the language, designing the organization of the program and understanding the concept of flow control such as looping and branching or function calls. 1. To help solve this problem we have divided the various concepts and used different examples in day to day life. 2. The Necessity of Teaching Reform: The final goal of programming teaching is making the students mastering the ability of coding and debugging. 3. Chalk and Board method. 4. Power point presentation with animation. 5. Use of online software to explain the coding and debugging.
Unit II	**Internet:** History, Applications of Internet, Types of Internet Connection: wired and wireless. Internet Protocols: TCP/IP, FTP, HTTP, URL, e-mail address, WWW, Web browsers, Search Engines, Introduction to Social Networking: Twitter, LinkedIn, Facebook, Flickr, Skype, YouTube, WhatsApp.	7 Hrs	7 Marks	
Unit III	**E-mail:** Definition of E-mail, Advantages and disadvantages, User Ids, Login, Passwords, Email Addresses, Domain Names, Mailers, Message Components, message Composition, Mail Managements. G-Suits: Google Drive, Google Documents, Google Spread Sheets, Google Slides and Google Forms.	8 Hrs	8 Marks	
Unit IV	**Internet Securities:** -mail threats and secure E-mails, Viruses and Antivirus Software, Firewalls, Cryptography, Digital Signatures, Copyright issues.	7 Hrs	7 Marks	

GOEC 2

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	109502/ 110502/ 112502/123502/ 134502	**Business Data Processing**	2	30	2 Hrs	30

Course Objectives:	1. Student should understand the Data in Business. 2. Student should process the data in Business. 3. Student should present the data in Business in various forms. 4.			
Course Outcomes:	On competition of the following syllabus the students will be able to - 1. Understand the concepts of Data Processing. 2. Student should process the data in Business. 3. Understand type of files required for Data Processing. 4. Interpret data in Business. 5. Able to present data in graphical forms.			
Unit System	**Contents**	**Workload Allotted**	**Weightage of Marks Allotted**	**Incorporation of Pedagogies**
Unit I	Online Processing, Batch Processing, Real-time Processing, Time-Sharing, Multiprogramming Systems, Multiprocessing Systems, Distributed Data Processing	8 Hrs	8 Marks	1. To help in understanding the various concepts and used different examples in day to day life. 2. Chalk and Board method. 3. Power point presentation with animation. 4. Use of online software to explain the coding and debugging. 5. Use of spreadsheet.
Unit II	Master File, Transaction File, Intermediate files, Back up files, etc	7 Hrs	7 Marks	
Unit III	Word processing: application of word processing, menus and tool bars, word processor: creating, entering, saving and printing the document, editing and formatting text, mail merge and macros	8 Hrs	8 Marks	
Unit IV	Spreadsheet: application, menus and tool bar, preparing tables, charts, sorting, etc., running statistical applications in Excel and Libra Office Calc, creating formulae in spreadsheets.	7 Hrs	7 Marks	

8) B.Tech. Cosmetic

GOEC 1

Syllabus: Beauty Culture - I (Theory) **(2 Credits)**

Mode of Teaching	Classroom Teaching	**Vertical**	Generic/Open Elective
Type of Course	Theory 1	**Course Code**	
Course Name	Beauty Culture –I (Theory)		
Credits	02	**Workload** (Hrs. /Week)	02

Unit I

Skin types, Recognition of skin types, choice of treatment suitable to skin condition and skin types. Skincare in summer &winter season different types of skin blemishes and their treatment

Unit II

Basic types of facial muscles of facial expression, steps during facial like cleaning, Toning, face massage, Steaming. Use of different face packs, Face pack ingredients, advantage of facial

Unit III

Setting masks, Peel off masks, Thermal type paraffin base mask, Non Setting mask, Hot oil mask

Unit IV

Eye care, eye brow, factors affecting eyebrow setting, determination of correct length of eyebrow, application of false eye lashes, methods, contraindications, different methods for eyebrow shaping – Threading, Tweezing Eye lashes & eye brows, tinting-method contraindication

Unit V

Treatment of superfacial hair waxing - Hot wax treatment, cold wax treatment, Leg waxing, hand waxing, under arm waxing; Bleaching - Preparation of paste, Face bleaching, Hand bleaching, Leg bleaching, Precaution during bleaching

GOEC 2

Syllabus: Herbal Cosmetics – I (2 Credits)

Mode of Teaching	Classroom Teaching	**Vertical**	Generic/Open Elective
Type of Course	Theory 2	**Course Code**	
Course Name	**Herbal Cosmetics – I**		
Credits	02	**Workload** (Hrs. /Week)	02

Unit I : Introduction to Herbal Cosmetics and Herbal Ingredients

Definition and scope of herbal cosmetics, History and evolution of herbal cosmetics, Benefits of using herbal cosmetics, Classification of herbal ingredients, Commonly used herbs in cosmetics: Aloe Vera, Neem, Turmeric, etc., Extraction and processing of herbal ingredients, Chemical properties and benefits of herbal ingredients

Unit II : Formulation of Herbal Cosmetics

Principles of formulation, Types of herbal cosmetic products: creams, lotions, shampoos, etc., Carriers and Bases in Cosmetic Formulations, Stability and preservation of herbal products

Unit III: Safety and Regulatory Aspects

Safety assessment of herbal ingredients, Good Manufacturing Practices (GMP), Regulatory frameworks for herbal cosmetics (FDA, EU regulations, etc.), Labelling and packaging requirements for Herbal Products

Unit IV : Quality Control and Assurance

Quality control tests for herbal cosmetics, Handling and storage of herbal products, Advanced analytical techniques for quality control