



<b>Semester: III/ IV</b>					
<b>ENVIRONMENT &amp; SUSTAINABILITY</b>					
<b>Category: BASKET COURSES - GROUP A</b>					
<b>(Theory)</b>					
<b>(Common to all Programs)</b>					
<b>Course Code</b>	<b>:</b>	<b>CV232TA</b>		<b>CIE</b>	<b>:</b> <b>100 Marks</b>
<b>Credits: L:T:P</b>	<b>:</b>	<b>3:0:0</b>		<b>SEE</b>	<b>:</b> <b>100 Marks</b>
<b>Total Hours</b>	<b>:</b>	<b>42L</b>		<b>SEE Duration</b>	<b>:</b> <b>3.00 Hours</b>
<b>Unit-I</b>					<b>10 Hrs</b>
<b>ENVIRONMENT AND BIODIVERSITY</b>					
Definition, scope and importance of environment – need for public awareness. Eco-system and Energy flow– ecological succession. Types of biodiversity: genetic, species and ecosystem diversity– values of biodiversity, threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity.					
<b>ENVIRONMENTAL POLLUTION</b>					
Causes, Effects and Preventive measures of Water, Soil, Air and Noise Pollutions. Solid, Hazardous and E-Waste management.					
Occupational Health and Safety Management system (OHSMS). Environmental protection, Environmental protection acts.					
<b>Unit – II</b>					<b>08 Hrs</b>
<b>RENEWABLE SOURCES OF ENERGY</b>					
Energy management and conservation, New Energy Sources: Need of new sources. Different types of new energy sources.					
Energy Cycles, carbon cycle, emission and sequestration, Green Engineering: Sustainable urbanization- Socioeconomical and technological change.					
Applications of - Hydrogen energy, Ocean energy resources, Tidal energy conversion. Concept, origin and power plants of geothermal energy.					
<b>Unit –III</b>					<b>08 Hrs</b>
<b>SUSTAINABILITY AND MANAGEMENT</b>					
Introduction to Environmental Economics, Environmental Audit, Development, GDP, Sustainability - concept, needs and challenges-economic, social and aspects of sustainability - from unsustainability to sustainability-millennium development goals and protocols.					
Linear vs. cyclical resource management systems, need for systems thinking and design of cyclical systems, circular economy, industrial ecology, green technology. Specifically apply these concepts to: Water Resources, Energy Resources, Food Resources, Land & Forests, Waste management.					
<b>Unit –IV</b>					<b>08 Hrs</b>
<b>Sustainable Development Goals</b> - targets, indicators and intervention areas Climate change - Global, Regional and local environmental issues and possible solutions. Concept of Carbon Credit, Carbon Footprint. Environmental management in industry.					
<b>SUSTAINABILITY PRACTICES</b>					
Zero waste and R concept, Circular economy, ISO 14000 Series, Material Life cycle assessment. Environmental Impact Assessment. Sustainable habitat: Green buildings, Green materials, Energy efficiency, Sustainable transports.					
<b>Unit –V</b>					<b>08 Hrs</b>



**Corporate Social Responsibility (CSR)** - Meaning & Definition of CSR, History & evolution of CSR. Concept of Charity, Corporate philanthropy, Corporate Citizenship, CSR-an overlapping concept. Concept of sustainability & Stakeholder Management. Relation between CSR and Corporate governance; environmental aspect of CSR; Chronological evolution of CSR in India. Sustainability Reporting: Flavor of GRI, Dow Jones Sustainability Index, CEPI. Investor interest in Sustainability.

<b>Course Outcomes: After completing the course, the students will be able to:</b>	
<b>CO1</b>	Understand the basic elements of Environment and its Biodiversity.
<b>CO2</b>	Explain the various types of pollution and requirement for sustainable strategy for present scenario.
<b>CO3</b>	Evaluate the different concepts of sustainability and its significance for welfare of all life forms.
<b>CO4</b>	Recognize the role of Corporate social responsibility in conserving the Environment.

<b>Reference Books</b>	
1.	'Environmental Science and Engineering', Benny Joseph, Tata McGraw-Hill, New Delhi, 2016. ISBN-13 - 978-9387432352
2.	'Introduction to Environmental Engineering and Science', Gilbert M.Masters, Wendell P Ela, 3 <sup>rd</sup> edition, Pearson Education, 2006. ISBN-13 - 978-0132339346.
3.	Environment Impact Assessment Guidelines, Notification of Government of India, 2006.
4.	A Handbook of Corporate Governance and Social Responsibility (Corporate Social Responsibility), David Crowther and Guler Aras, Gower Publishing Ltd, ISBN - 13 - 978-0566088179.

<b>RUBRIC FOR THE CONTINUOUS INTERNAL EVALUATION (THEORY)</b>		
#	COMPONENTS	MARKS
1.	<b>QUIZZES:</b> Quizzes will be conducted in online/offline mode. TWO QUIZZES will be conducted & Each Quiz will be evaluated for 10 Marks. <b>THE SUM OF TWO QUIZZES WILL BE THE FINAL QUIZ MARKS.</b>	<b>20</b>
2.	<b>TESTS:</b> Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). TWO tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. <b>FINAL TEST MARKS WILL BE REDUCED TO 40 MARKS</b>	<b>40</b>
3.	<b>EXPERIENTIAL LEARNING:</b> Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning (10), Program specific requirements (10), Video based seminar/presentation/demonstration (20) <b>Phase 2 will be done in the exhibition mode (Demo/Prototype/any outcome). ADDING UPTO 40 MARKS.</b>	<b>40</b>
<b>MAXIMUM MARKS FOR THE CIE THEORY</b>		<b>100</b>



<b>RUBRIC FOR SEMESTER END EXAMINATION (THEORY)</b>		
<b>Q. NO.</b>	<b>CONTENTS</b>	<b>MARKS</b>
<b>PART A</b>		
1	Objective type questions covering entire syllabus	20
<b>PART B</b> (Maximum of TWO Sub-divisions only)		
2	Unit 1 : (Compulsory)	16
3 & 4	Unit 2 : Question 3 or 4	16
5 & 6	Unit 3 : Question 5 or 6	16
7 & 8	Unit 4 : Question 7 or 8	16
9 & 10	Unit 5: Question 9 or 10	16
<b>TOTAL</b>		<b>100</b>