

**V Semester**

Environmental Studies			
Course Code:	BESK508	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	2+0+0+0	SEE Marks	50
Total Hours of Pedagogy	30	Total Marks	100
Credits	02	Exam Hours	01
<b>Course objectives:</b> <ul style="list-style-type: none"><li>To create environmental and sustainability awareness among the students.</li><li>To gain knowledge on different types of pollution in the environment, waste management and Environmental legislation.</li></ul>			
<b>Teaching-Learning Process (General Instructions)</b> <p>These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.</p> <ol style="list-style-type: none"><li>Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.</li><li>Environmental awareness program for the in house campus</li><li>Encourage collaborative (Group Learning) Learning in the class.</li><li>Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.</li></ol>			
<b>Module-1</b>			
<b>Module-1: ECOSYSTEM AND SUSTAINABILITY</b> <p>Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.</p> <p>Sustainability: 17 SDGs- History, targets, implementation , Capacity Development</p>			
<b>Teaching-Learning Process</b>	Chalk and talk, PowerPoint presentation and animation tools		
<b>Module-2</b>			
<b>Module 2: NATURAL RESOURCE MANAGEMENT</b> <p>Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.</p> <p>Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining - case studies and Carbon Trading.</p>			
<b>Teaching-Learning Process</b>	Chalk and talk, powerpoint presentation and animation tools		
<b>Module-3</b>			
<b>Module 3: ENVIRONMENTAL POLLUTION &amp; WASTE MANAGEMENT</b> <p><b>Environmental Pollution</b> (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.</p> <p><b>Waste Management:</b> Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.</p>			
<b>Teaching-Learning Process</b>	Chalk and talk, powerpoint presentation and animation tools		
<b>Module-4</b>			

**Module 4: GLOBAL ENVIRONMENTAL ISSUES**

**Global Environmental Concerns** (Concept, policies and case-studies): Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.

**Teaching-Learning Process**

Chalk and talk, powerpoint presentation and animation tools

**Module-5****Module 5: ENVIRONMENTAL LEGISLATION**

**Environmental Legislation** : Water Act 1974, Air Act 1981, Environmental Protection Act 1984, Solid Waste Management Rules-2016, E- Waste management Rule - 2022, Biomedical Waste management- 2016.

**Teaching-Learning Process**

Chalk and talk, power point presentation and animation tools

**Course outcome (Course Skill Set)**

At the end of the course the student will be able to :

- CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,
- CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment as legislation.
- CO3: Apply their ecological knowledge to illustrate and grasp the problem and describe the realities that managers face when dealing with complex issues.

**Assessment Details (both CIE and SEE)**

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

**Continuous Internal Evaluation:**

Three Unit Tests each of **20 Marks (duration 01 hour)**

1. First test at the end of 5<sup>th</sup> week of the semester
2. Second test at the end of the 10<sup>th</sup> week of the semester
3. Third test at the end of the 15<sup>th</sup> week of the semester

Two assignments each of **10 Marks**

4. First assignment at the end of 4<sup>th</sup> week of the semester
5. Second assignment at the end of 9<sup>th</sup> week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

6. At the end of the 13<sup>th</sup> week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

(to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course).

**CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.**

**Semester End Examination:**

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (**duration 01 hours**)

Question paper pattern:

1. The Question paper will have 50 objective questions.

2. Each question will be for 01 marks 3. Students will have to answer all the questions on an OMR Sheet. 4. The Duration of the Exam will be 01 hour
<b>Suggested Learning Resources:</b> <b>Books</b> <ul style="list-style-type: none"> <li>• Environmental studies, Benny Joseph, Tata Mcgraw-Hill 2<sup>nd</sup> edition 2012</li> <li>• Environmental studies, S M Prakash, pristine publishing house, Mangalore 3<sup>rd</sup> edition-2018</li> </ul> <b>Reference Books: -</b> <ul style="list-style-type: none"> <li>• Benny Joseph, Environmental studies, Tata Mcgraw-Hill 2<sup>nd</sup> edition 2009</li> <li>• M.Ayi Reddy Textbook of environmental science and Technology, BS publications 2007</li> <li>• Dr. B.S Chauhan, Environmental studies, university of science press 1<sup>st</sup> edition</li> </ul>
<b>Web links and Video Lectures (e-Resources):</b>
Weblink: <ul style="list-style-type: none"> <li>• <a href="https://sdgs.un.org/goals">https://sdgs.un.org/goals</a></li> </ul> Video Lectures <ul style="list-style-type: none"> <li>• <a href="https://archive.nptel.ac.in/courses/109/105/109105190/">https://archive.nptel.ac.in/courses/109/105/109105190/</a>.</li> </ul>
<b>Activity-Based Learning (Suggested Activities in Class)/ Practical Based learning</b> <ul style="list-style-type: none"> <li>• <b>Field work:</b> Visit to Zero Waste Management Plant / Solid waste management plant.</li> </ul>