

**KURUKSHETRA UNIVERSITY**  
**KURUKSHETRA**  
**(“A++” Grade Accredited by NAAC)**

**Scheme of VOC course for**  
**Under-Graduate Programme**  
**(Subject: Natural Resources Management)**

**Under Multiple Entry-Exit, Internship and**  
**CBCS-LOCF in accordance to NEP-2020**  
**w.e.f. 2025-26**

**INSTITUTE OF ENVIRONMENTAL STUDIES,  
KURUKSHETRA UNIVERSITY, KURUKSHETRA**

**Scheme of VOC course Subject: Natural Resources Management for Under-Graduate Programme  
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020  
w.e.f. 2025-26**

| <b>THIRD YEAR: SEMESTER-5/ SEMESTER-6</b> |                     |                    |                              |                |                    |                       |                       |                    |                      |
|---|---------------------|--------------------|------------------------------|----------------|--------------------|-----------------------|-----------------------|--------------------|----------------------|
| <b>Remarks</b>                            | <b>Course</b>       | <b>Paper</b>       | <b>Nomenclature of Paper</b> | <b>Credits</b> | <b>Hours/ Week</b> | <b>Internal marks</b> | <b>External Marks</b> | <b>Total Marks</b> | <b>Exam Duration</b> |
| <b>Scheme A, B &amp; C</b>                | <b>VOC 4 credit</b> | <b>B23-VOC-138</b> | Natural Resources Management | 4              | 5                  | 30                    | 70                    | 100                | 3 hrs.               |
|   |                     |                    |                              |                |                    |                       |                       |                    |                      |

## VOC

|   |  |   |       |
|---|--|---|-------|
| <b>Session: 2025-26</b>   |  |   |       |
| <b>Part A - Introduction</b>  |  |   |       |
| Subject   | Environmental Science  |   |       |
| Semester  | V  |   |       |
| Name of the Course  | <b>Natural Resources Management</b>  |   |       |
| Course Code   | <b>B23-VOC-138</b>   |   |       |
| Course Type:<br>(CC/MCC/MDC/CC-M/DSEC<br>/VOC/DSE/PC/AEC/VAC)   | <b>VOC</b>   |   |       |
| Level of the course (As per<br>Annexure-I)  | 100-199  |   |       |
| Pre-requisite for the course (if<br>any)  | NA   |   |       |
| Course Learning Outcomes (CLO):   | <p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of natural resources and their conservation.</li> <li>2. Learn about the water resources and their management.</li> <li>3. Know about the concept of land and forest resources and their management.</li> <li>4. Become familiar with various energy and mineral resources and their management.</li> </ol> <hr/> <p>5*. Hands on training towards Natural Resources Management</p> |   |       |
| Credits   | Theory   | Practical   | Total |
|   | 3  | 1   | 4     |
| Contact Hours/week  | 3  | 2   | 5     |
| <b>Max. Marks:</b> 70 + 30*<br><b>Internal Assessment Marks:</b> 20 + 10*<br><b>End Term Exam Marks:</b> 50 + 20* |  | <b>Time: Theory:</b> 3 hours<br><b>Practicum:</b> 3 hours |       |

| <b>Part B- Contents of the Course</b>   |  |                      |
|---|--|----------------------|
| <p style="text-align: center;"><b><u>Instructions for Paper- Setter</u></b></p> <p>Total number of questions set will be nine. Questions no. 1 is compulsory covering the entire syllabus. Two questions will be set from each unit. Students have to attempt five questions in all, selecting one question from each unit including the compulsory question. All questions carry equal marks. Final theory exam time allowed will be of 3 hours.</p> |  |                      |
| <b>Unit</b>   | <b>Topics</b>  | <b>Contact Hours</b> |
| I   | Introduction to natural resources and conservation: Types of natural resources, Importance of natural resources, Ecosystem and ecology: plant-land-climate-wildlife interactions. Causes and consequences of resource depletion. Food resources, effect of modern agriculture, world food problems, food security.   | 03 hours/week        |
| II  | Water resources-hydrological cycle, major sources of water, use and depletion of water resources. Status of water resources in India, surface water, groundwater, water resource management practices (rain water harvesting, watershed management; multipurpose water resource management programs etc.)  |                      |
| III   | Land resources: Concept of land resource and land use, land use types, land use classification. Causes, types and effects of land degradation, Forest resources: Introduction and importance (economic, ecosystem service, carbon storage/trade, climatic service). Causes and consequences of forest degradation. Forest management-management policy, strategy and programs. |                      |
| IV  | Energy resources: types, renewable and non-renewable, clean energy and its benefits. Mineral resources: types (metallic and non-metallic minerals) and distribution of mineral resources, importance of mineral resources. Consequences of mineral extraction, Major mineral resources and their status, distribution and extraction. Conservation of mineral resources.       |                      |
| V*  | Practical's<br>1. To study and map different mineral reserves in India/in your country.<br>2. To study and map different soil types in India/in your country.<br>3. To study and map different forest in India/in your country.<br>4. To study and map different water resources in India/in your  | 02 hours/ week       |

|   |   |   |
|---|---|---|
|   | country.<br>5. To plot energy consumption scenario in pi-diagram in Indian context/in your country. |   |
| <b>Suggested Evaluation Methods</b>   |   |   |
| <b>Internal Assessment: 20+10*=30</b><br><b>&gt; Theory</b> <ul style="list-style-type: none"> <li>• Class Participation: 5 marks</li> <li>• Seminar/presentation/assignment/quiz/class test etc.: 5 marks</li> <li>• Mid-Term Exam: 10 marks</li> </ul> <b>&gt; Practicum</b> <ul style="list-style-type: none"> <li>• Class Participation: NA</li> <li>• Demonstration/Viva-voce/Lab records etc.: 10 marks</li> </ul> Mid-Term Exam: NA  |   | <b>End Term Examination:</b><br>Theory: 50 marks<br>(Written examination)<br>Practical: 20 marks<br>(Demonstration/Viva-voce/Lab records etc) |
| <b>Part C-Learning Resources</b>  |   |   |
| <b>Recommended Books/e-resources/LMS:</b> <ol style="list-style-type: none"> <li>1. Basu, M., Xavier, S. (2016). Fundamentals of Environmental Studies, Cambridge University Press, India.</li> <li>2. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). Ecology, Environment and Resource Conservation, S. Chand Publishing, New Delhi.</li> <li>3. Owen, O. S. &amp; Chiras, D. D. (1990). Natural resource conservation: an ecological approach (No. Ed. 5). Macmillan Publishing Company.</li> <li>4. Holechek, J. L., Cole, R. A., Fisher, J. T. &amp; Valdez, R. (2000). Natural resources: ecology, economics, and policy (No. HC85. N37 2003.). Upper Saddle River, NJ: Prentice Hall.</li> <li>5. Owen, O. S. &amp; Chiras, D. D. (1995). Natural resource conservation: management for a sustainable future (No. Ed. 6). Prentice-Hall International, Inc.</li> <li>6. Craig. J.R., Vaughan, D.J. &amp; Skinner. B.J. 1996. Resources of the Earth: Origin, use, and environmental impact (2nd edition). Prentice Hall, New Jersey.</li> <li>7. Klee, G.A. 1991. Conservation of Natural Resources. Prentice Hall Publication.</li> <li>8. Miller, T.G. 2012. Environmental Science. Wadsworth Publishing Co.</li> <li>9. Ramakrishna, P.S., A. N. Purohit, K.G. Saxena, K.S. Rao &amp; R.K. Maikhuri (1996) Conservation and management of biological resources in Himalaya, Oxford &amp; IBH Publishing, New Delhi.</li> </ol> |   |   |

\*Applicable for courses having practical component.

## **ANNEXURE-I**

### **Levels of Courses**

**Levels of Courses:** Courses shall be coded based on the learning outcomes, level of difficulty, and academic rigor. The coding structure is as follows:

**0-99:** Pre-requisite courses required to undertake an introductory course which will be a pass or fail course with no credits. It will replace the existing informal way of offering bridge courses that are conducted in some of the colleges/ universities.

**100-199:** Foundation or introductory courses that are intended for students to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest. These courses may also be prerequisites for courses in the major subject. These courses generally would focus on foundational theories, concepts, perspectives, principles, methods, and procedures of critical thinking in order to provide a broad basis for taking up more advanced courses. These courses seek to equip students with the general education needed for advanced study, expose students to the breadth of different fields of study; provide a foundation for specialized higher-level coursework; acquaint students with the breadth of (inter) disciplinary fields in the arts, humanities, social sciences, and natural sciences, and to the historical and contemporary assumptions and practices of vocational or professional fields; and to lay the foundation for higher level coursework.

**200-299:** Intermediate-level courses including subject-specific courses intended to meet the credit requirements for minor or major areas of learning. These courses can be part of a major and can be pre-requisite courses for advanced-level major courses.

**300-399:** Higher-level courses which are required for majoring in a disciplinary/interdisciplinary area of study for the award of a degree.

**400-499:** Advanced courses which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year Postgraduate theoretical and practical courses.

**500-599:** Courses at first-year Master's degree level for a 2-year Master's degree programme

**600-699:** Courses for second-year of 2-year Master's or 1-year Master's degree programme

**700 -799 & above:** Courses limited to doctoral students