Course number	U-LAS61 10016 LE80				
Course title (and course title in English)	Sustainable Forest Environment-E2 Sustainable Forest Environment-E2		Instructor's name, job title, and department of affiliation	Graduate School of Agriculture Program-Specific Assistant Professor,SHARMA, Vikas	
Group	Interdisciplinary Sciences		Field(Classification)	Environmental Sciences	
Language of instruction	English		Old group		Number of credits	2
Number of weekly time blocks	1	Class style	Lecture (Face-to-face course)	Year/semesters	2025 • First semester
Days and periods	Fri.2	Target year	Mainly 1st & 2nd year students	Eligible students	For all majors

[Overview and purpose of the course]

"Forest sustainable management and their use of resources are key to combating climate change, and to contributing to the prosperity and well-being of current and future generations" - The UN. Along with carbon sequestration, forests play a major role in the hydrological cycle, maintain biodiversity, provide food, raw material for shelter and means for recreation. Following this ethos, this course provides an introduction to forestry science and management. The course can be divided into three parts related to (i) understanding of the critical role forests play on earth, (ii) threats faced by forests ecosystems, and (iii) methods, tools and management for forest sustainability.

Understanding the interactions in a forest ecosystem is critical for the sustainable exploitation and management of forest resources. Stricter environmental laws today mandate Environmental Impact Assessment (EIA) of any state significant project in forest areas e.g. mining, dams and road projects. Understanding and mitigating the negative impacts, like the possible extinction of downstream fish species after the construction of a dam, become important issues for such projects. Students interested in a career in consultancy in EIA and forestry in general will find the concepts of this course helpful.

[Course objectives]

Upon successful completion of this course, students will be able (1) to understand scientific methods for characterizing the physical and living environment in forests and understand the interactions between these components, (2) to explain the concepts of sustainability for tackling forest environmental issues, and (3) to develop tools and frameworks for sustainable management of forests.

[Course schedule and contents)]

The following topics and sub-topics will be covered in this course.

1. Introduction - Forests and the global ecosystem
2. Silviculture basics
Silviculture, layers of a forest, ecological succession
3. Forest soils
Soil formation, classification of soils, organic matter
4. Water and Nitrogen cycles in forests
Soil-water potential, Evapotranspiration in forests, Nitrogen cycle
5. Ecological energetics
Biogeochemical efficiency of forests, Carbon balance in forests, Energy transfer between trophic levels

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6. Forest biodiversity
Biodiversity: reasons, measure and importance
7. Natural threats to forest ecosystems
8. Ecological footprint
Ecological footprint v/s biocapacity, National footprint accounts, footprint calculator
9. Silvicultural Management - I
Forest stands, regeneration, silvicultural systems
10. Silvicultural Management - II
Clear felling, shelterwood system and selection system
11. Logging and sustained yield
Logging and optimal rotation age
12. Environmental Impact Assessment - I
Framework to handle environmental impact of state significant infrastructure
13. Environmental Impact Assessment - II
Tutorial using a real world case-study of EIA
14. Revision and self-learning week
15. Examination
16. Feedback

[Course requirements]

None

[Evaluation methods and policy]

Students' evaluation will be based on
(1) applying knowledge through answering mini-quizzes (20%);
(2) developing scientific communication skills through writing summary reports of book chapters, research papers and oral presentation (30%);
(3) writing a short essay of a case study using critical & problem-solving skills (10%);
(4) final examination (40%)

[Textbooks]

There is no official textbook for this course. The content of the course is an assembly of selected topics from various textbooks, references, online sources and libraries.

[References, etc.]

（References, etc.）
Introduced during class

[Study outside of class (preparation and review)]

Students are encouraged to read and review reading materials before classes. Outcome of the reading will be assigned as a class performance, which accounts for the final grade.

[Other information (office hours, etc.)]

After class, student consultation will be arranged with prior notice.