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|--|---------|--|-----|--------|-----|----------------|------------|---------------------------------|------|----|--|
| 科目ナンバリング   |         | U-LAS61 10016 LE80   |     |        |     |                |            |                                 |      |    |  |
| 授業科目名<br><英訳>  |         | Sustainable Forest Environment-E2<br>Sustainable Forest Environment-E2 |     |        |     | 担当者所属<br>職名・氏名 |            | 農学研究科 特定助教 KOCH, Michael Conrad |      |    |  |
| 群  | 統合科学科目群 |  |     | 分野(分類) |     | 環境             |            |                                 | 使用言語 | 英語 |  |
| 旧群   |         | 単位数  | 2単位 | 週コマ数   | 1コマ | 授業形態           | 講義（対面授業科目） |                                 |      |    |  |
| 開講年度・<br>開講期   | 2024・前期 |  | 曜時限 | 金2     |     | 配当学年           | 主として1・2年生  | 対象学生                            | 全学向  |    |  |
| 【授業の概要・目的】   |         |  |     |        |     |                |            |                                 |      |    |  |
| <p>"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.</p> <p>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.</p> |         |  |     |        |     |                |            |                                 |      |    |  |
| 【到達目標】   |         |  |     |        |     |                |            |                                 |      |    |  |
| <p>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.</p>  |         |  |     |        |     |                |            |                                 |      |    |  |
| 【授業計画と内容】  |         |  |     |        |     |                |            |                                 |      |    |  |
| <p>The following topics and sub-topics will be covered in this course.</p> <ol style="list-style-type: none"> <li>1. Introduction - Forests and the global ecosystem</li> <li>2. Silviculture basics<br/>Silviculture, layers of a forest, ecological succession</li> <li>3. Forest soils<br/>Soil formation, classification of soils, organic matter</li> <li>4. Water and Nitrogen cycles in forests<br/>Soil-water potential, Evapotranspiration in forests, Nitrogen cycle</li> <li>5. Ecological energetics<br/>Biogeochemical efficiency of forests, Carbon balance in forests, Energy transfer between trophic levels</li> <li>6. Forest biodiversity<br/>Biodiversity: reasons, measure and importance</li> <li>7. Natural threats to forest ecosystems</li> <li>8. Ecological footprint<br/>Ecological footprint v/s biocapacity, National footprint accounts, footprint calculator</li> <li>9. Silvicultural Management - I</li> </ol>   |         |  |     |        |     |                |            |                                 |      |    |  |
| Sustainable Forest Environment-E2(2)へ続く  |         |  |     |        |     |                |            |                                 |      |    |  |

## Sustainable Forest Environment-E2(2)

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

### 【履修要件】

特になし

### 【成績評価の方法・観点】

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%)

### 【教科書】

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.

### 【参考書等】

( 参考書 )

授業中に紹介する

### 【授業外学修（予習・復習）等】

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.

### 【その他（オフィスアワー等）】

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