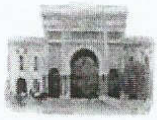
# T.R.
# İSTANBUL UNIVERSITY
# FACULTY OF FORESTRY
# CURRICULUM FORM
## Syllabus



**Number** :
**Department** : FORESTRY ENGINEERING, UNDERGRADUATE PROGRAM,(FORMAL EDUCATION)
**Academic Year** : 2015 - 2016

**Date :** 9042015

| **Course Name :** | SOIL BIOGEOCHEMISTRY | | | | | **Course Code :** | E120M |
|---|---|---|---|---|---|---|---|
| **Semester** | **Theory** | **Practice** | **Lab** | **Credit** | **ECTS** | **Course Language** | **Course Type** |
| 3 | 3 | 0 | 0 | 3 | 6 | English | Elective |

| | | | |
|---|---|---|---|
| **Admission Requirements :** | No prerequisite is essential. | | |
| **Compulsory Attendance :** | **Theory** | **Practice** | **Lab** |
| | 70% | 0% | 0% |
| **Course Teacher(s) :** | Doç. Dr. HÜSEYİN BARIŞ TECİMEN | | |
| **Course Content :** | Major chemical, biological, and geological processes that occur within and between terrestrial systems. An introduction to the field of biogeochemistry and biogeochemical processes through the study of important microbial/biological/chemical transformations in specific ecosystems. The organic and inorganic reactant chemical and biochemical agents, the soil's chemical environment formed under the current plant community conditions. | | |
| **Course Learning Outcomes :** | The people taking this course will gain the ability to understand soil development and the cycling of C, N and P in terrestrial ecosystems. They will learn about the processes occurring in wetlands (specifically C, N and S cycling), targeting the important redox reactions and how they play a role in elemental cycles. The transport and cycling of elements in rivers and their transformation in estuaries will provide a means to link terrestrial and marine processes. Specifically we will address oceanic circulation and its impact on global climate as well as marine biogeochemical cycling. The mechanistic understanding of the processes occurring in specific ecosystems will be used to investigate how they form major global biogeochemical cycles that provide the energy and nutrients necessary for life. After forming a base for students to extend their understanding of these cycles to develop a global perspective of biogeochemistry then the course will focus on global cycles with an eye to perturbations of these cycles. Recent anthropogenic influences and how they have impacted global cycles (e.g. water, carbon, nitrogen, phosphorus) will be a focal point of discussion in this class. | | |
| **Teaching and Learning Methods :** | Group studies, oral presentation, documentary examination, in-class discussions. | | |
| **Continuous Improvement in the Context of the courses (questionnaires, interviews, and so on.) Front Shown Measurement and Evaluation Tools and Objectives :** | Quize exams, questionnaires and interviews will be done during the course. | | |
| **Contribution of Learning Outcomes on Program Competency :** | Understanding the properties of the forest system and how these properties change when silvicultural techniques are implemented to meet management objectives is essential for natural resource, recreation, and wildlife management specialists. | | |

| **Assessment System** | **Number** | **Contribution (%)** |
|---|---|---|
| Assignments | 0 | 0 |
| Presentation | 0 | 0 |
| Mid-term Examinations (including time for preparation) | 1 | 20 |
| Project | 0 | 0 |
| Clinical Practice | 0 | 0 |
| Laboratory | 0 | 0 |
| Field Work | 0 | 0 |
| Other Applications | 0 | 0 |
| Quiz | 0 | 0 |
| Term Paper/ Project | 0 | 0 |
| Portfolio Study | 0 | 0 |
| Reports | 0 | 0 |
| Learning Diary | 0 | 0 |
| Thesis/ Project | 0 | 0 |
| Seminar | 2 | 10 |
| Other | 0 | 0 |
| Final Exam | 1 | 70 |
| Total | 4 | 100 |
| The Weight of the In-Term Assignments in the Final Grade | 1 | 30 |
| The Weight of the End of Term Exam in the Final Grade | 1 | 70 |
| Total | 4 | 100 |

| | |
|---|---|
| **Continuous Improvement in the Context of the courses (questionnaires, interviews, and so on.) Front Shown Measurement and Evaluation Tools and Objectives :** | Quize exams, questionnaires and interviews will be done during the course. |

**ECTS**

| Activities | Number | Time | Credit Workload |
|---|---|---|---|
| Class Hours | 0 | 0 | 0 |
| Working Hours out of Class | 1 | 3 | 10 |
| Assignments | 0 | 0 | 0 |
| Presentation | 0 | 0 | 0 |
| Mid-term Examinations (including time for preparation) | 1 | 20 | 40 |
| Project | 0 | 0 | 0 |
| Clinical Practice | 0 | 0 | 0 |
| Laboratory | 0 | 0 | 0 |
| Field Work | 0 | 0 | 0 |
| Other Applications | 0 | 0 | 0 |
| Final Examinations (including preparatory year) | 1 | 70 | 70 |
| Quiz | 2 | 15 | 30 |
| Term Paper/ Project | 0 | 0 | 0 |
| Portfolio Study | 0 | 0 | 0 |
| Reports | 0 | 0 | 0 |
| Learning Diary | 0 | 0 | 0 |
| Thesis/ Project | 0 | 0 | 0 |
| Seminar | 0 | 0 | 0 |
| Other | 0 | 0 | 0 |
| Total Workload | | | 150 |
| Total Workload / 25 | | | 6 |
| ECTS Credit of Course | | | 6 |

**Weekly Course Contents**

| Week | Theoretical Topics |
|---|---|
| 1 | Theoretical descriptions for the lecture terms |
| 2 | Major chemical, biological, and geological processes that occur within and between terrestrial ecosystems |
| 3 | Introduction to the field of biogeochemistry and biogeochemical processes |
| 4 | Important microbial/biological/chemical transformations in specific ecosystems |
| 5 | The organic and inorganic reactant chemical and biochemical agents |
| 6 | Soil-plant-microorganisms interactions at a given soil patch for forest, meadow and disturbed land ecosystems |
| 7 | The chemistry of soils relevant and determinant on the chemical reactions |
| 8 | Physical properties of the soils are influential on plant and microbial activities |
| 9 | Soils at varying ecosystem types as an environment for the soil microbial populations |
| 10 | Functional drivers relevant to geographical position of the biome and their effect directions |
| 11 | The living organisms and their functions on soil within their relations with each other |
| 12 | The relationship between soil composition and biogeochemical cycles of the elements |
| 13 | Responses of biogeochemical processes in agricultural, forest, and wetland soils to changes in land use, biodiversity |
| 14 | Responses of biogeochemical processes in agricultural, forest, and wetland soils to nutrient supply, plant stressors, and climate change |

| Week | Practice Topics |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |

**Relationship of Proficiency Program with Course Learning Outcomes**

| No | Program Competencies | Point |
|---|---|---|
| 1 | Adequate knowledge in mathematics, science and forest engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems. | 3 |
| 2 | Ability to identify, formulate, and solve complex problems in forest engineering; ability to select and apply proper analysis and modeling methods for this purpose. | 5 |

| | | |
|---|---|---|
| 3 | Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. | 5 |
| 4 | Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively. | 2 |
| 5 | Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems. | 2 |
| 6 | Ability to find knowledge and searching reference for this purpose, Ability to use databases and other references. | 2 |
| 7 | Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually. | 5 |
| 8 | Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language. | 1 |
| 9 | Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself. | 4 |
| 10 | Awareness of professional and ethical responsibility. | 4 |
| 11 | Information about business life practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development. | 5 |
| 12 | Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety; awareness of the legal consequences of engineering solutions. | 5 |
| ***Contribution Level: 1 low, 5 high.*** | | |
| **Contribution of Learning Outcomes on Program Competency :** | | |