**SYLLABUS:**

**ECOLOGY OF URBAN WOODY PLANTS**

Course name: Ecology of urban woody plants

Number of credits: 4.8ECTS/3 MCTS

Period: Spring semester

| Host institution | Mongolian University of Life Sciences, School of Agroecology |
| --- | --- |
| Lecturer | Burenjargal Otgonsuren, Odongerel Sangidorj |
| Level | MSc course |
| Course type | Elective course |
| Course duration | 8 weeks |
| New/Revised | A newly developed |
| E-course link |  |

### Summary

Students will provide …...

The Master course covers urban woody plants and air pollution and their relation, carbon sequestration by urban trees, soil and impact on soil quality, woody plants and water relation, water regulation service, urban woody plants and their relation on light, benefits of urban green space on improving the urban climate, heat island and the role of urban greening, role of urban forests in residents health, value and assessment of urban forests.

### Target student audiences

Master students majoring in landscape architecture

### Prerequisites

Required courses (or equivalents): Landscape architecture ecology

### Aims and objectives

The course aims to provide knowledge about woody plant ecology in urban area and urban green zone forest ecology particular reference to the responses of woody plants to urban environmental factors and to woody plant life strategies and methods to identify and analyze affecting factors.

**The authentic tasks**

The authentic tasks are…

Two hour lecture is followed by a practical session.

### General learning outcomes:

By the end of the course, successful students will:

| **Knowledge** | The course provides the students with the knowledge of:   * Knowledge of urban woody plant species and their environment * Knowledge of the factors influencing the growth of urban woody plants * Knowledge of urban woody plant ecosystem services |
| --- | --- |
| Application | * employ hypotheses based on scholarly reading, formulate and test hypotheses through experimental work in urban woody plant ecology |
| Analysis | * develop critical thinking, analysis, and writing skills as they apply to urban woody plant ecology |
| Synthesis | * describe literature through discussion with classmates; explain topics in through oral presentation |
| **Competences** | The course will help students acquire competences, such as:   * Identify urban environmental factors affecting urban woody plant growth * Ecological analysis of urban woody plant environment * Defining and assessing urban forest effects and values |

### Overview of sessions and teaching methods

A combination of different teaching technics is being used, such as: lectures, seminars, lab works, discussions, individual tasks, reports, surveys, case studies, etc. Classroom lessons. Optional field excursions are also proposed.

### Course workload

The table below summarizes course workload distribution:

| Activities | Learning outcomes | Assessment | Workload  (hours) |
| --- | --- | --- | --- |
| **In-class activities-36 hours** | | | | |
| Lectures | Understanding theories, concepts, methodology and tools | Class participation | 22 |
| Moderated in-class discussions | Understanding various policy and management contexts and common problems in communication in urban greening | Class participation and preparedness for discussions | 4 |
| In-class assignments, field assignment | Understanding various policy and management contexts and common problems in communication in urban greening | Class participation and preparedness for assignments | 2 |
| Reading and discussion of assigned papers for seminars and preparation for lectures | Familiarity with and ability to critically and creatively discuss key concepts, tools and methods as presented in the literature | Class participation, creative and active contribution to discussion | 4 |
| Group presentation | Ability to interpret data, to analyze audience, and to use the concepts, tools, and methods for communicating the urban greening plan | Quality of group assignments and individual presentations | 2 |
| **Independent work-108 hours** | | | | |
| Group work:   * Contribution to the group case-study projects * Contribution to the preparation and delivery of individual presentation * Contribution to the web-application | Ability to interpret data, to analyze audience, and to use the concepts, tools, and methods for communicating information to all participants  Plan and develop an urban greening plan, be aware of information visualization tools and methods | Quality of group assignments and individual presentations | 36 |
| Course group assignment | Ability to conceptualize and frame an urban greening problem, find related literature and data, interpret data, use the concepts, tools and methods covered in the course, and draw policy/management relevant conclusions | Quality of developed urban greening plan and their presentation | 36 |
| Group presentation | Ability to interpret data, to analyze audience, and to use the concepts, tools, and methods for communicating the urban greening plan | Quality of group assignments and individual presentations | 36 |
| **Total** |  |  | **144** |

### Grading

The students’ performance will be based on the following:

| Assessment | 1. Quizzes (30%)  There will be five quizzes in practical sessions that will be worth 5% (x2) and 10% (x2) each. Quizzes will be short-answer written quizzes of 20 minutes in duration. Written feedback will be provided in the following practical.  2. Discussion (40%)  There will be an oral discussion of a scientific paper chosen by the student and presented through a power point presentation, followed by few questions about the topics discussed during the course. Assessment criteria are based on presentation quality and content understanding, knowledge of the main concepts given during the course.  3. Final Exam (30%)  A hour exam in the end of semester exam period that will draw on material from both lectures and practicals. | | | | |
| --- | --- | --- | --- | --- | --- |
| Evaluation  EU system | A (8,5 – 10)  B (7,0 – 8,4)  C (5,5 - 6,9)  D (4,0 – 5,4) | Evaluation  MN system | 95-100  90-94  85-89  80-84  75-79  70-74  65-69  60-64  0-59 | A  A-  B  B-  C  C-  D  D-  F | 4.0  3.6  3.1  2.7  2.3  1.9  1.4  1.0  0.0 |

### Course schedule

| Week | In-class  hours | Topic | Type |
| --- | --- | --- | --- |
| 1 | 2 | * Introduction. Urban woody plants and their environment | Lecture |
| 2 | 2 | * Urban Trees and Their Relation to Air Pollution | Lecture |
| 2 | * Urban Trees and Their Relation to Air Pollution | Seminar |
| 3 | 2 | * Carbon Sequestration by Urban Trees | Lecture |
| 2 | * Carbon Sequestration by Urban Trees | Seminar |
| 4 | 2 | * Urban woody plants-soil relation and impact on soil quality | Lecture |
| 2 | * Urban woody plants-soil relation and impact on soil quality | Seminar |
| 5 | 2 | * Urban woody plants -water relation and water regulation service | Lecture |
| 6 | 2 | * Urban woody plants and their relation to light | Lecture |
| 2 | * Urban woody plants and their relation to light | Seminar |
| 7 | 2 | * Benefits of Urban Green Space for Improving Urban Climate. | Lecture |
| 8 | 2 | * The Urban Heat Island and the Role of Urban Greening | Lecture |
| 2 | * The Urban Heat Island and the Role of Urban Greening | Seminar |
| 9 | 2 | * Recreational Use of Urban Green Infrastructure | Lecture |
| 10 | 2 | * The Role and Value of Urban Forests in Promoting Human Health | Lecture |
| 2 | * The Role and Value of Urban Forests in Promoting Human Health | Seminar |
| 11 | 2 | * Assessment and value of urban forest | Lecture |
| 2 | * Assessment and value of urban forest | Seminar |
| Lecture 22  Seminar 14 | | | |

### Course assignments/tests

Course assignments will consist of a multi-part project:

* Assignment 1: Urban woody plants-soil relation and impact on soil quality.

*Instructions: This will entail a more self-organizing activity for the students. Students will learn about the urban woody plants-soil relation and impact on soil quality. This will involve conducting desktop surveys, gathering information, analyzing, and making a presentation. Students will develop and submit at least 5 pages of the draft management plan prior to class 5, and it will be discussed during class 5.*

* Assignment 2: The Role and Value of Urban Forests in Promoting Human Health

*Instructions: This will entail a more self-organizing activity for the students. Students will be able to The Role and Value of Urban Forests in Promoting Human Health. This will involve conducting desktop surveys, gathering information, analyzing, and making a presentation. Students will develop and submit at least 5-6 pages of the draft management plan prior to class 5, and it will be discussed during class 11.*

### Literature

**Compulsory:**

1. David Pearlmutter Carlo et al. “The Urban Forest” 2017
2. Margaret M et al. “Ecology, Planning, and Management of Urban Forests” 2008

**Recommended:**

1. Journal of Urban greening and Urban forestry

<https://www.sciencedirect.com/journal/urban-forestry-and-urban-greening>