### Description

**Aims:** The aim of the Soils course is to give the student the basic knowledge and skills needed to complete the course and program requirements successfully. The student will gain knowledge in the various areas of soil science and develop analytical skills in evaluating soils and soil conditions, and prescribing remedies.

**Competences to develop:** Develop a working knowledge of soils for preparation as a landscape professional. Identify the properties and factors of soils. Analyze soil properties, structures and textures. Apply knowledge of soils to practical use through lab practice and research. Analyze experimental data using lab results. Apply soil management solutions to workplace problems.

**Course content and schedule:**

1. Week: Description of course requirements
2. Week: Soil site description, Soil profiles and horizons, Color and structure, Soil horizon nomenclature, Soil forming factors: Pedon and soil forming processes, Climate and biotic factors, Topography and anthropogenic factors, Parent materials (in case urban soil)
3. Week: Soil texture and mechanical analysis I.
4. Week: Soil texture and mechanical analysis II.
5. Week: Carbonate content and pH-analysis I.
6. Week: Carbonate content and pH-analysis II.
7. Week: Earthworm count measurement in Almagyar-hills, biomass analysis
8. Week: (Autumn holiday)
9. Week: Soil site description, Soil profiles and horizons, Color and structure, Soil horizon nomenclature, Soil forming factors: Pedon and soil forming processes, Climate and biotic factors, Topography factors, Parent materials (in case forest soil)
10. Week: Soil texture and mechanical analysis I.
11. Week: Soil texture and mechanical analysis II.
12. Week: Carbonate content and pH-analysis I.
13. Week: Carbonate content and pH-analysis II.
14. Week: replacement of lab measurements. Evaluation of term marks

**Education management:** laboratory analysis (D. 409. room) and field trips (Eger, Almagyar-domb, Felsőtárkány).

**Assessment:**
- **method of assessment:** reports marks
- **mid-term requirement:** reports
- **oral exam topics (if any):** -
Compulsory reading:

Optional reading:

Supporting (compulsory/optional) digital materials:
biology.krc.karelia.ru:8080/biology/.../Fundamentals%20of%20Soil%20Science%20
www.niordc.ir/uploads%5C86_106_Binder1.pdf

Person in charge of program: Marianna Marschall PhD. (college professor)
Person in charge of the course: Peter Szűcs PhD. (assistant professor)
Instructor: Peter Szűcs PhD. (assistant professor)
Instructor’s office hours: Thursdays, 10.00-11.30
Preferred contact details: szucs.peter@uni-eszterhazy.hu
Online communication method: e-mail, Neptun network
### Course title: Biological Systems I. Biogeography

| Type (lecture/seminar/practice/consultation) and number of contact hours: |
| Evaluation method (end-term exam mark/ term mark / other): |
| Suggested semester: 3 |
| Frequency of availability: odd semesters |
| Language: English |
| Prerequisites (if any): - |

### Description

**Aims:** Distribution of the life on Earth is not random but follows several consistent patterns. The aims of the course are first, to familiarize the students with the most common distribution patterns and second, to interpret the underlying factors resulting in global distribution systems.

**Competences to develop:** Completing this course the students will be able to understand the mechanisms how a particular distribution pattern is formed. This knowledge helps to understand and interpret the most recent global problems in environmental biology like the troubles with the invasive species or biodiversity loss.

**Course content and schedule:** The area and its dynamism: definition of the area, main types and groupings (quantitative and qualitative), area regressions and expansions. How to map an organism’s area. Chorology (species characterized by geographical distributions); the main global chorotypes. Area disjunctions and the underlying causes, time and space scale correlation in area disjunctions.

**Secular scale** (ecological biogeography): Ecological factors affecting distributions; extrinsic (environmental and biotic interactions) and intrinsic factors (dispersion; dynamisms and dispersion methods). Introduced species and their interactions with the local flora/fauna.

**Millennial scale** (post-Pleistocene biogeography): Ice ages and its consequences. Quaternary area fluctuations, area-analytical methods for recognizing Pleistocene refugia in Eurasia and South America. Phylogeography as a tool in reconstruction post Pleistocene area expansions. The origin of North-South and East-West area disjunction in Eurasia.

**Phylogenetic scale** (paleobiogeography): Plate tectonics and biogeography (origin of transatlantic transpacific disjunction, moving species vs. moving continents). Main analytical methods in paleobiogeography (area-cladograms, reduced area-cladograms, component analysis, brooks parsimony analysis).


### Education management:

**Assessment:**

- **method of assessment:** Oral presentation of a chosen topic at the end of the course.
- **mid-term requirement:** -
- **oral exam topics (if any):**
### Biology


Supporting (compulsory/optional) digital materials:

| Person in charge of program: |
| Person in charge of the course: | Csaba Csuzdi |
| Instructor: | Csaba Csuzdi |
| Instructor’s office hours: | Wednesday 9-10 |
| Preferred contact details: | csuzdi.csaba@uni-eszterhazy.hu |
| Online communication method: | e-mail |
Course title: Environmental Technology  
Code: NBT_KR804K2  
Credits: 2

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<td>Suggested semester: 2</td>
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<td>Frequency of availability: even semesters</td>
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<td>Prerequisites (if any): -</td>
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### Description

**Aims:** The main aims of the course are to describe for students with the most frequent and modern environmental technologies and to show the Hungarian peculiarities.

**Competences to develop:** Terminating this course the students will be able to understand the important technologies and methods of environmental technologies. The knowledge helps to understand and interpret the most recent environmental problems and the possible environmental technology solutions.

### Course content and schedule:

1. **1. Week:** Description of course requirements
2. **2. Week:** Definition of environmental technology, further basic concepts. Grouping polluting streams, The main groups of environmental problems, Technological flow charts
3. **3. Week:** Basic concepts related to wastewater treatment (KOI, BOI, BOI₅, TOC, LE, stb.) Grouping of sewage; based on origin. Process of activated sludge wastewater treatment
4. **4. Week:** Devices and treatment of sewage sludge
5. **5. Week:** Devices and process of biogas production
6. **6. Week:** Process of composting, main stages and types
7. **7. Week:** Autumn holiday
8. **8. Week:** The main details of new hungarian waste management statute
9. **9. Week:** Clean technologies
10. **10. Week:** Energy production and consumption, national situations
11. **11. Week:** Flue gas desulphurization technology of coal-fired power plant in Mátra Erőmű Zrt. (Visonta)
12. **11. Week:** Environmental review of the railway track between Csorna and Győr town (a cause study)
13. **12. Week:** Pollutants of transport, environmental technology solutions I.– Road traffic
14. **13. Week:** Pollutants of transport, environmental technology solutions II.– railway, air and water transports
15. **14. Week:** Oral presentation of a chosen topic at the end of the course

### Education management:

**Assessment:**

- **method of assessment:** Oral presentation of a chosen topic at the end of the course.
- **mid-term requirement:** -
Biology

- oral exam topics (if any): -

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<tr>
<td>Person in charge of the course:</td>
<td>Peter Szűcs</td>
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<tr>
<td>Instructor:</td>
<td>Peter Szűcs</td>
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<tr>
<td>Instructor’s office hours:</td>
<td>Mondays 15.30-17.10</td>
</tr>
<tr>
<td>Preferred contact details:</td>
<td><a href="mailto:szucs.peter@uni-eszterhazy.hu">szucs.peter@uni-eszterhazy.hu</a></td>
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<tr>
<td>Online communication method:</td>
<td>e-mail, Neptun network</td>
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**Course title:** Functional biochemistry  
**Code:** NBT_BI187K4  
**Credits:** 4

**Type (lecture/seminar/practice/consultation) and number of contact hours:** 2 hours/week

**Evaluation method (end-term exam mark/ term mark / other):**

**Suggested semester:** 2

**Frequency of availability:** even semesters

**Language:** English

**Prerequisites (if any):**

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**Description**

**Aims:** The aim of the functional biochemistry course is to give the student a detailed insight into different biochemical processes and bioactive molecular families. An advanced knowledge will be gained of the mechanisms of biochemical reactions and the relationships will be explained to physiological processes.

**Competences to develop:** Develop a deep knowledge of advanced biochemical processes using detailed mechanistic background: energy consumption and production, energy storage, detailed analysis and description of different functional biochemical molecules and metabolic processes. Biochemical background of health and different diseases.

**Course content and schedule:**

1. Week: Description of course requirements
3. Week: Enzymes, activities, properties, regulation and physiology.
6. Week: Nutritional oxidation, formation of ATP, the physiological significance.
7. Week: The nucleic acid and ammonia metabolism. Fatty acid synthesis, triglycerides, phospholipids, fatty acids, polyunsaturated fatty acids.
10. Week: Biochemistry of starvation, changes in the metabolic processes, survival and death. Defense against pathogens, the immune system.
11. Week: Avoiding trauma, changes in metabolism, immune response.

**Education management:**

**Assessment:**

- **method of assessment:** final exam
- **mid-term requirement:** -
- **oral exam topics (if any):** -
### Biology

|---------------------|----------------------------------------------------------------------------------------------------------|

**Supporting (compulsory/optional) digital materials:**

**Person in charge of program:** Marianna Marschall PhD. (college professor)

**Person in charge of the course:** Peter Forgo PhD. (college professor)

**Instructor:** Peter Forgo PhD. (college professor)

**Instructor’s office hours:** by appointment

**Preferred contact details:** forgo.peter@uni-eszterhazy.hu

**Online communication method:** e-mail, Neptun network