



SZKOŁA GŁÓWNA  
GOSPODARSTWA  
WIEJSKIEGO

## Environmental Hazard Assessment

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Civil Engineering		<b>Didactic cycle</b> 2023/24	
<b>Speciality</b> -		<b>Subject code</b> BISCES_D.41HS.63e0cd65c0f01.23	
<b>Organizational unit</b> Faculty of Civil and Environmental Engineering		<b>Lecture languages</b> english	
<b>Study level</b> second cycle (post-engineering degree)		<b>Mandatory</b> Obligatory subjects	
<b>Study form</b> full-time studies		<b>Block</b> Humanities and social subjects	
<b>Education profile</b> General academic		<b>Disciplines</b> Civil engineering, surveying and transportation	
<b>Coordinator</b>	Magdalena Vaverková		
<b>Teacher</b>	Magdalena Vaverková		
<b>Period</b> Semester 1	<b>Examination</b> Pass with grade	<b>Number of ECTS points</b> 3	
	<b>Activities and hours</b> Lecture: 15 Auditorium exercises: 30		

## Goals

Code	Goal
C1	This course is designed to provide an overview of assessing risks posing threats to the natural environment.
C2	This course introduces the principles of environmental toxicology and risk assessment.
C3	The course will include risk assessment issues related to exposure to contaminated sites, air quality, water pollutant sources, waste management hazard and projects undergoing Environmental Assessment.
C4	The intent is to make this course hands on and practical so that you are able to participate as a team member conducting human health and ecological risk assessment upon its completion. T
C5	The course will be based on actual undertakings of risk assessment projects.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	elements of Environmental Risk Assessment.	CE_K4_W04_inz	Project, Case, Assessment of speeches during classes
W2	the scientific method and be able to analyze hazardous events objectively.	CE_K4_W08_inz	Case, Assessment of speeches during classes
<b>Skills - Student can:</b>			
U1	to learn principles of relate to hazards.	CE_K4_U12	Project, Case, Assessment of speeches during classes
U2	participate as a team member conducting human health and ecological risk assessment upon its completion.	CE_K4_U15	Project, Case, Assessment of speeches during classes
<b>Social competences - Student is ready to:</b>			
K1	act consciously and understands the non-technical aspects and effects of engineering activities, including its environmental impact and related responsibility for decisions taken.	CE_K4_K05	Project, Case, Assessment of speeches during classes

## Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Introduction: Environmental Contaminants, Sources of Environmental hazards, Environmental and ecological risks, Risk assessment in different disciplines.	W1, W2, U1, U2, K1	Lecture
2.	Elements of Environmental Risk Assessment: Hazard identification, Fate and behaviour of toxics and persistent substances in the environment.	W1, W2, U1, U2, K1	Lecture

3.	Hazard assessment and consequences of waste management: LCA, Environmental Hazard Assessment and consequences of landfilling, recycling, incineration, composting.	W1, W2, U1, U2, K1	Lecture
4.	Hazard of everyday products: EcoDesign, how to avoid environmental hazard of everyday products?	W1, W2, U1, U2, K1	Lecture
5.	Hazardous of construction materials: LCA, EcoDesign, how to avoid environmental hazard of hazardous of construction materials?	W1, W2, U1, U2, K1	Lecture
6.	Application: Case studies on risk assessment and management for Hazardous chemical storage, Chemical industries, Tanneries, Textile industries, Mineral processing and Petrochemical plants, Hazardous waste disposal facilities, Nuclear power plants, Contaminated site remediation, Case histories on Bhopal, Chernobyl, Seveso etc	W1, W2, U1, U2, K1	Lecture
7.	Improving skills by conducting discussions and student projects using modern methods of permanent learning and management - Mind mapping (creating mind maps), case model - Rich Picture technique. The use of methods allowing for a wider view of the problem, starting a team discussion, presenting the problem situation from different perspectives.	W1, W2, U1, U2, K1	Auditorium exercises

### Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Problem lecture, Discussion, Presentation, Problem solving, Teamwork
Auditorium exercises	Problem lecture, Conversation lecture

Activities	Examination method	Percentage
Lecture	Assessment of speeches during classes	50%
Auditorium exercises	Case	25%
Auditorium exercises	Project	25%

Activities	Credit conditions
Lecture	Project base learning: students will get a project to work out in groups of 4 to 6 students; all tools and data students will need to work out the project will be given on the conventional lecture.
Auditorium exercises	Project base learning: students will get a project to work out in groups of 4 to 6 students; all tools and data students will need to work out the project will be given on the conventional lecture.

## Literature

### Obligatory

1. CUNNINGHAM, W P., CUNNINGHAM, M A., SAIGO, B W. 2005, Environmental science: a global concern, Boston, McGraw-Hill
2. BENEDICT AND MCMAHON, 2006, Green Infrastructure: Linking Landscapes and Communities. Chapter 1: Why Green Infrastructure?

### Optional

1. VAVERKOVÁ, M.D. ADAMCOVÁ, D., 2015, Environmental Conservation, Mendel University in Brno, ISBN:978-80-7509-293-9
2. CHRISTENSEN, T.H. (ed.) (2011) Solid Waste Technology and Management. Wiley, Chichester, West Sussex, UK
3. CUNNINGHAM, W P., CUNNINGHAM, M A., SAIGO, B W. 2005, Environmental science: a global concern, Boston, McGraw-Hill
4. BENEDICT AND MCMAHON, 2006, Green Infrastructure: Linking Landscapes and Communities. Chapter 1: Why Green Infrastructure?
5. HILL, DARRYL C. (2004) Construction Safety Management and Engineering. American Society of Safety Engineers, Des Plaines, Illinois.6. SARTÉ, S.B. 2010. Sustainable Infrastructure: The Guide to Green Engineering and Design. Chapter 2: Sustainable Infrastructure Frameworks

## Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Auditorium exercises	30
Conducting literature research	5
Preparing a report	5
Preparation for the exam	15
Preparation for remote work	5
<b>Student workload</b>	<b>Hours</b> 75
<b>Number of ECTS points</b>	<b>ECTS</b> 3

\* hour means 45 minutes

## Effects

Code	Content
CE_K4_K05	The graduate is ready to correctly identify and resolve dilemmas related to the practice of the profession.
CE_K4_U12	The graduate is able to skillfully present issues related to construction in the form of oral presentations or supported by multimedia presentations.
CE_K4_U15	The graduate is able to cooperate and lead a team.
CE_K4_W04_inz	The graduate knows and understands building materials properties and the principles of industrial production and the technology of manufacturing products and building elements.
CE_K4_W08_inz	The graduate knows and understands the rules of applying legal regulations in the construction industry, standards and guidelines for the design, implementation and operation of buildings.