Digital Earth - BMEEOFTMF51

I. Subject Specification

1. Basic Data

1.1 Title

Digital Earth

1.2 Code

BMEEOFTMF51

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	2
Seminar	1

1.5 Evaluation

Exam

1.6 Credits

5

1.7 Coordinator

name	Dr. Kugler Zsófia
academic rank	Associate professor
email	kugler.zsofia@emk.bme.hu

1.8 Department

Department of Photogrammetry and Geoinformatics

1.9 Website

https://epito.bme.hu/BMEEOFTMF51
https://edu.epito.bme.hu/course/view.php?id=3492

1.10 Language of instruction

english

1.11 Curriculum requirements

Compulsory in the Land Surveying and Geoinformatics (MSc) programme

1.12 Prerequisites

1.13 Effective date

1 September 2022

2. Objectives and learning outcomes

2.1 Objectives

The main objective of the course is to get students familiar with advanced techniques of GIS and remote sensing to model man-made or natural environmental and social challenges. Based on their previous knowledge and overview on the fundamentals and applications students will extend their knowledge on the advanced methods, latest trends and developments.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. Knowledge on digital representation of man-made, natural and social environmental
2. Advanced knowledge on GIS and remote sensing and modelling techniques
3. Knowledge on technical details on GIS and remote sensing modelling tools.
4. Knowledge on processing methods and end results.of GIS and remote sensing
5. Knowledge on the advanced use of GIS and remote sensing techniques.

B. Skills

1. Able to represent Earth processes with GIS and remote sensing techniques.
2. Aquires GIS and remote sensing data and uses common databases
3. Selects and applies the optimal processing solutions for the given problem setting
4. Able to apply common and standardied GIS and remote sensing processing steps.
5. Able to give a verbal summary of the processing and the outcomes

C. Attitudes

1. Cooperates with the teacher and student fellows during the lectures
2. Shows a positive attitude towards precise and errorless work.
3. Arrives in time for the lessons not delayed.
4. During prectical lessons expects a normal amount of instructions from the teacher

D. Autonomy and Responsibility

1. Able to absolve home work and practical work during lessons independelty.
2. Accepts critiques and approves opinions on her/his work from both lecturer and student fellows.

3. When asked is cooperation with stunted fellows during lectures.

2.3 Methods

Theoretical and computer practices in computer laboratory under lecturer supervision and guidance.

2.4 Course outline

Hét	**Előadások és gyakorlatok témaköre**
1.	Overview and summary of GIS and remote sensing fundamentals and basic concept
2.	Digital representation of environmental problems in GIS and remote sensing environment.
3.	GIS decision support systems. Uncertainties.
4.	Advanced remote sensing data processing in development environment. Dataaquisiton, data read
5.	Advanced remote sensing data processing in development environment. Data visualization.
6.	Advanced remote sensing data processing in development environment. Multispectral data analysis
7.	Advanced remote sensing data processing in development environment. Data classification
8.	Consultation
9.	Presentation of HW 1
10.	Advanced techniques in GIS data visualization. WebMapping, Local and national databasis.
11.	ESRI Story Maps
12.	Consultation
13.	Presentation of HW 2
14.	Summary

The above programme is tentative and subject to changes due to calendar variations and other reasons specific to the actual semester. Consult the effective detailed course schedule of the course on the subject website.

2.5 Study materials

- Longley P A, Goodchild M F, Maguire D J, Rhind D W (2011): Geographic Information
- Lillesand, T. M., Kiefer, R. W. and Chipman, J. W. (2008, 6th ed.) Remote Sensing and Image Interpretation, John Wiley, New York.
- John A. Richards (2013) Remote Sensing Digital Image Analysis: An Introduction , Spinger

2.6 Other information

Compulsory attendance of 70% of lectures.
According to lecturer’s approval, own laptop can be used

2.7 Consultation

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This Subject Datasheet is valid for:

2024/2025 semester I

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The assessment of the learning outcomes specified in clause 2.2 above and the evaluation of student performance occurs via 2 midterm home work. Home work results are to be presented during the lesson 9 and lesson 13. Written exam is taken during the exam period.

3.2 Assessment methods

Teljesítményértékelés neve (típus)	Jele	Értékelt tanulási eredmények
1. midterm home work presentation	HW 1	A.1-A.5; B.1-B.5; C.1-C.4; D.1-D.3
2. midterm home work presentation	HW 2	A.1-A.5; B.1-B.5; C.1-C.4; D.1-D.3
Attitude during the lessons	A	A.5; B.1-B.5; C.1-C.4; D.1-D.3
Written exam	E	A.1-A.5; B.1-B.5

The dates of deadlines of assignments/homework can be found in the detailed course schedule on the subject's website.

3.3 Evaluation system

Jele	Részarány
HW1	15%
HW2	15%
Attitude	10%
Sum during lectures	**40%**
Exam	60%
Total sum	**100%**

3.4 Requirements and validity of signature

Minimum of 20% from 40% has to be obtained during lectures from HW1 HW2 and Attitude.

3.5 Grading system

Érdemjegy	Pontszám (P)
jeles (5)	80<=P
jó (4)	70<=P<80%
közepes (3)	60<=P<70%
elégséges (2)	50<=P<60%
elégtelen (1)	P<50%

3.6 Retake and repeat

Delayed home work – with penalty fee applied – latest at 16.00 of the last day of the regular period of the semester.
Attitude during the lessons can not be substituted nor retaken.

3.7 Estimated workload

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Tevékenység	**Óra/félév**
contact hours	14×3=42
preparation for practical lessons	14×2=28
preparation of home work	40
reading of lesson material	10
exam preparation	40
Sum	**160**

3.8 Effective date

1 September 2022

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