



# **SUBJECT DATASHEET**

## **GEOINFORMATICS**

### **BMEEOFTMKG1**

# I. SUBJECT DESCRIPTION

## 1. SUBJECT DATA

### Subject name

GEOINFORMATICS

### ID (subject code)

BMEEOFTMKG1

### Type of subject

Contact lessons

### Course types and lessons

| <i>Type</i> | <i>Lessons</i> |
|-------------|----------------|
| Lecture     | 2              |
| Practice    | 0              |
| Laboratory  | 1              |

### Type of assessment

mid-term  
grade

### Number of credits

4

### Subject Coordinator

| <i>Name</i> | <i>Position</i> | <i>Contact details</i> |
|-------------|-----------------|------------------------|
|-------------|-----------------|------------------------|

|                  |                     |                         |
|------------------|---------------------|-------------------------|
| Dr. Szabó György | associate professor | szabo.gyorgy@emk.bme.hu |
|------------------|---------------------|-------------------------|

### Educational organisational unit for the subject

External department

### Subject website

<https://edu.gtk.bme.hu>

### Language of the subject

magyar - HU

### Curricular role of the subject, recommended number of terms

Programme: **Master of Regional and Environmental Economic Studies**

Subject Role: **Compulsory**

Recommended semester: **2**

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Programme: **Regional and Environmental Economic Studies part-time programme, autumn start**

Subject Role: **Compulsory**

Recommended semester: **1**

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Programme: **Regional and Environmental Economic Studies part-time programme, spring start**

Subject Role: **Compulsory**

Recommended semester: **2**

### Direct prerequisites

**Strong** None

**Weak** None

**Parallel** None

**Exclusion** None

### Validity of the Subject Description

Approved by the Faculty Board of the Faculty of Economic and Social Sciences. Valid from September 1, 2019

## 2. OBJECTIVES AND LEARNING OUTCOMES

### Objectives

The objectives for this course include both content and skills of geoinformatics to modeling and analysis of the natural and built phenomena of the environment. Upon completion of this course, students will understand the structure of and be able to design and execute basic GIS analysis projects. In practice, students will be able to collect and assess location based geographic data, organize and store that data, perform basic analysis functions on that data and design effective models to represent built-up and natural environmental phenomena. The course will cover the whole GIS production process from data acquisition to editing, analysis, and visualization. The course itself is divided into two equally important parts: lectures, which introduce the theory of geoinformatics, and lab exercises, which help you to familiarize yourself with many aspects of the standardized GIS software environment. The lectures discuss concepts, data, tools, and major aspects of assignments. The laboratory sessions introduce the geospatial data and software tools needed for accomplishing the assignments.

### Academic results

#### Knowledge

1. knows the elements of geoinformatics theory,
2. the key principles of location based environmental analysis,
3. knows the procedures on location based intelligence and the ways of their description,
4. knows the basic steps of digital representation of built-up and natural environment,
5. knows the basic spatial data capturing, spatial analysis and visualization technic,

#### Skills

1. create the structural model of our urban and rural environment,
2. define spatial indicators to analyze the complex interaction between the nature, infrastructure, society and culture,

#### Attitude

1. open to use geospatial tools,
2. makes effort to perform relevant decision support analysis.

#### Independence and responsibility

1. individually capable of modelling space related phenomena and realizing the dependencies,
2. individually capable of performing basic spatial analysis,
3. individually capable of using heterogeneous spatial data bases,
4. uses systematized thinking approach.

### Teaching methodology

Lectures and written communication, use of ICT tools and techniques. In-class discussions, calculations and analyses.

### Materials supporting learning

- Az előadások prezentációinak anyaga, amely a megfelelő időpontban a hallgatók által hozzáférhetővé válik.
- Slideshows of the lectures which will be distributed at appropriate times throughout the semester.
- Az aktuális irodalmi lista az első órán kerül ismertetésre.
- The current literature list will be distributed in the first lesson.

## II. SUBJECT REQUIREMENTS

### TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

#### General Rules

Assessment of the learning outcomes described under 2.2. shall be based on mid-term grading.

#### Performance assessment methods

Detailed description of assessments during the term: Students shall submit three lab assignments and one complex project reflecting their knowledge and skills.

#### Percentage of performance assessments, conducted during the study period, within the rating

- Lab practice: 30%
- written assignment: 70%
- total: 100%

#### Percentage of exam elements within the rating

#### Conditions for obtaining a signature, validity of the signature

#### Issuing grades

|              |        |
|--------------|--------|
| Excellent    | 90-100 |
| Very good    | 80-89  |
| Good         | 70-79  |
| Satisfactory | 60-69  |
| Pass         | 50-59  |
| Fail         | < 50   |

#### Retake and late completion

Retakes and make-ups are regulated by the university's Code on Education and Examination. (1) Of the three lab assessments, cannot be retake. (2) These may be made up for or improved on one count, during the make up period. In case of re-submission or late submission, the new score will overwrite any previous scores obtained. (3) Should the student fail to obtain a passing grade as specified in (2), they may once again re-submit one written assignment, which will be evaluated for a fee.

#### Coursework required for the completion of the subject

42

68

10

120

#### Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by dr. Lógó Emma, Vice Dean for Education. Valid from September 1, 2019.

# III. COURSE CURRICULUM

## THEMATIC UNITS AND FURTHER DETAILS

### Topics covered during the term

Subject includes the topics detailed in the course syllabus to ensure learning outcomes listed under 2.2. can be achieved. Timing of the topics may be affected by calendar or other circumstances in each semester.

- 1 Introduction, Global Overview of GIS Techniques
- 2 Geographic Data Modeling
- 3 GIS applications, case studies
- 4 Practical introduction to the used GIS software
- 5 Project proposal for the semester project, Managing GIS
- 6 GIS data collection technologies, spatial data creation
- 7 Earth observation, Global- , Regional-, National Spatial Data Infrastructure
- 8 The GeoWEB, World, EU, HU data sources
- 9 Visualization, Cartography and map production
- 10 Spatial analysis : Society, Economy, Infrastructure, Environment
- 11 Spatial analysis : 3D terrain modeling
- 12 Spatial analysis : Land use, Land cover monitoring
- 13 Complex spatial analysis, decision support
- 14 Semester project presentation

### Additional lecturers

Mostafizur Rahman PhD hallgató – PhD Student

### Approval and validity of subject requirements

Part I-III of the Subject Form is to be approved by the Head of Department named under 1.8.