

## I. Subject Specification

### 1. Basic Data

#### 1.1 Title

Geoinformatics

#### 1.2 Code

BMEEOFTAT43

#### 1.3 Type

Module with associated contact hours

#### 1.4 Contact hours

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

#### 1.5 Evaluation

Midterm grade

#### 1.6 Credits

3

#### 1.7 Coordinator

name	Dr. György Szabó
academic rank	Associate professor
email	<a href="mailto:szabo.gyorgy@emk.bme.hu">szabo.gyorgy@emk.bme.hu</a>

#### 1.8 Department

Department of Photogrammetry and Geoinformatics

#### 1.9 Website

<https://epito.bme.hu/BMEEOFTAT43>

<https://fiek2.mywire.org/course/view.php?id=354>

#### 1.10 Language of instruction

english

### 1.11 Curriculum requirements

Compulsory in the Civil Engineering (BSc) programme

### 1.12 Prerequisites

The course will start at basic level of Geographic Information System (GIS). Previous knowledge in GIS is not mandatory but some sort of knowledge in GPS, modern methods of location based technology, and the elementary knowledge of databases would help to understand the various topics in this course. This course requires technical experience with the Windows operating system, operating and using computer/laptop efficiently.

### 1.13 Effective date

1 September 2017

## 2. Objectives and learning outcomes

### 2.1 Objectives

The main objective for this course is to help students become familiar with the basics of mapping, its components and main applications. Next objective is to deliver expected knowledge and skills as well as the expertise and independence necessary for managing small scale projects in Geographic Information Systems. 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.

### 2.2 Learning outcomes

Upon successful completion of this subject, the student:

#### A. Knowledge

1. knows the GIS fields,
2. knows the actions on location based intelligence and the ways of their description,
3. knows the basic steps of digital representation of built-up and natural environment,
4. knows the basic spatial data capturing, spatial analysis and visualization technic
5. Acquire, manipulate, save the data sources in a GIS
6. Become familiar with specific functionality to the GIS

#### B. Skills

1. able to create the structural model of our urban and rural environment,
2. capable of defining spatial indicators to analyze the complex interaction between the nature, infrastructure, society and culture,
3. able to do spatial analysis
4. can interpret the result of spatial analysis

#### C. Attitudes

1. Enthusiasm to learn and apply GIS in relevant field
2. Sould have desire to use GIS tools
3. Developing critical thinking ability,
4. Makes effort to perform relevant decision support analysis.

#### D. Autonomy 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.

### 2.3 Methods

In this course, we 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 GIScience, 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.

### 2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Introduction, Global Overview of GIS Techniques and Applications
2.	Geographic Data Modeling
3.	Georeferencing, Projections
4.	GIS Software
5.	Project proposal for a multi-week project
6.	GIS data collection I.
7.	GIS data collection II.
8.	Geographic data bases
9.	The GeoWEB
10.	Visualization, Cartography and map production
11.	Spatial data analysis
12.	Managing GIS
13.	Final Test
14.	Consultation, Test retake

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

The textbook of the course:

- Longley, P. A., Goodchild, M., Maguire, D. J. and Rhind, D. W. *Geographic Information Systems and Science*, Third Edition, Wiley

Other resources:

- PPT Lecture notes for every lecture, Downloadable materials, tutorials, SW

### 2.6 Other information

### 2.7 Consultation

The instructors are available for consultation during their office hours, as advertised on the department website. Special appointments can be requested via e-mail from the lecturer

This Subject Datasheet is valid for:

2023/2024 semester I

**II. Subject requirements**

Assessment and evaluation of the learning outcomes

## 3.1 General rules

## 3.2 Assessment methods

<b>Evaluation form</b>	<b>Abbreviation</b>	<b>Assessed learning outcomes</b>
Final Test	FT1	A.1-A.6; B.1
1-6. Lab Practice	L1-L6	A.1-A.4; B.1-B.4; C.1-C.4; D.1-D.4

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

## 3.3 Evaluation system

<b>Abbreviation</b>	<b>Score</b>
FT	52%
L1-L6	48%
<b>Sum</b>	<b>100%</b>

## 3.4 Requirements and validity of signature

No signature can be achieved.

## 3.5 Grading system

<b>Grade</b>	<b>Points (P)</b>
excellent (5)	$80 \leq P$
good (4)	$70 \leq P < 80\%$
satisfactory (3)	$60 \leq P < 70\%$
passed (2)	$50 \leq P < 60\%$
failed (1)	$P < 50\%$

## 3.6 Retake and repeat

- The midterm test can be repeated – once without fee – at a previously determined date given in the course schedule.
- If the first repetition is also unsatisfactory (failed), then the test can be repeated once more on the repetition week by paying a fee.

## 3.7 Estimated workload

<b>Activity</b>	<b>Hours/semester</b>

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contact hours	14×3=42
preparation for the lectures	30
home studying of the written material	18
<b>Sum</b>	<b>90</b>

3.8 Effective date

1 September 2017

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