

Syllabus

GIS & REMOTE SENSING FUNDAMENTALS

SYLLABUS COORDINATORS

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GENERAL INFORMATION OF THE SUBJECT

1. Code:

2. Credit: 03

- Credit hours (Theory lecture/Practice lecture/Self-learning): 45

- **Lecture hours (Theory lecture/Practice lecture/Self-learning): 135**

3. Prerequisite subjects: Mapping, IT, basic math

4. Language: English/Vietnamese

5. List of lecturers:

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6. Objectives (Knowledge, Skills, Attitude):

- **Knowledge:** Introduction to the fundamentals of remote sensing and GIS, privileged tools of integrated analysis in environmental science. Presentation of theoretical concepts, quantitative methods mobilized and major domains of application.
- **Skills:** Know how to apply the basic knowledge about GIS and Remote sensing; build GIS database; image processing
- **Attitude:** active participation in group discussion, have the spirit to gain knowledge about GIS

7. Evaluation:

- Attendant: 10%
- Mid-term exam: 40%

- Final exam: 50%

8. Textbook: (*author, name, publisher, year*):

1. Paul Bolstad, 2016, GIS Fundamentals: A First Text on Geographic Information Systems, Published by XanEdu Publishing Inc
2. Báuden Bhatta, 2011, Remote Sensing and GIS, published by OUP Higher Education Division.
3. Le Thi Minh Phuong, 2019, Mapping and GIS, Construction Publish

9. Summary of the subject: (*about 120 words*):

This subject provides basic knowledge of GIS and remote sensing. The subject is divided into 3 main parts, the first part introduces basic concepts of GIS, the components and functions of GIS. Beside that, the subject also to show how to build up a GIS database (spatial data and attribute data). GIS software also introduce here and typical applications of GIS. The second part introduces the concept of the remote sensing, remote sensing platforms and sensors and how to enhancement, transform, filter and classification image. And the third part is the application of GIS and remote sensing in environmental sustainability

10. Detail content of the subject: (*chapters, sections, subsections*):

- Chapter 1: Geographic information system
 - Lecture 1: a Brief History of GIS: the tool of integrated geographical analysis (component and concepts)
 - Lecture 2: Geographical and Map projection coordinate system; georeferencing and geocoding ; GNSS input
 - Lecture 3: Attribute data: data input, relationship, statistics, relation and joint
 - Lecture 4: Vector spatial data analysis: statistical map, graph theory and topology
 - Lecture 5: Raster spatial data analysis
 - Lecture 6: Vectorial multiscale analysis
 - Lecture 7: 3D analysis and data visualization
 - Lecture 8: Geographical PDF, layout and GIS report

- Chapter 2: Remote sensing

Lecture 1: History of aerial photography and remote sensing: From above we see the Earth better

Lecture 2: Physics of remote sensing

Lecture 3: Image quality:

Lecture 4: Sensors and application domain: land, water, atmosphere

Lecture 5: Remote sensing mathematical analysis

Lecture 6: Land use and land cover change (LULCC)

Lecture 7: Atmospheric remote sensing

LECTURE SIGNS

All lecturers participants.