



MasterOnNewTechnologiesUsingServices

Modification guideline for Syllabus

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WS3, Hanoi, 2020, Feburary

Old version

- SYLLABUS COORDINATOR
- GENERAL INFORMATION OF THE SUBJECT
1. Code
 2. Credit
 3. Prerequisite subjects
 4. Language
 5. List of lecturers
 6. Objectives (Knowledge, Skills, Attitude)
 - Knowledge
 - Skills
 - Attitude
 7. Evaluation
 8. Textbook
 9. Summary of the subject
 10. Detail content of the subject
- LECTURER'S SIGNATURE

RED COLOR: Need modifications

PINK COLOR: New

New version

- ~~SYLLABUS COORDINATOR~~
- GENERAL INFORMATION OF THE SUBJECT**
1. Code
 2. Credit
 3. Prerequisite **courses**
 4. **Course** language
 5. **List of lecturers**
 6. Objectives (Knowledge, Skills, Attitude)
 - 6.1. Knowledge
 - 6.2. Skills
 - 6.3. Attitude
 7. Expected learning outcomes (knowledge, skills, attitudes)
 - 7.1. Knowledge
 - 7.2. Skills
 - 7.3. Attitude
 8. Evaluation methods
 9. References
 - 9.1. Required references (at least 03 ref.)
 - 9.2. Additional references
 10. Summary of the **course**
 11. Detail content of the **course**



Old version

New version

Syllabus

GIS & REMOTE SENSING FUNDAMENTALS

SYLLABUS COORDINATORS

Name: LAFFLY Dominique
 Title: Professor
 Tel: +33619204981
 Email: dominique.laffly@gmail.com

Name: NGUYEN Thi Nhat Thanh
 Title: Assoc.Prof., Doctor
 Tel: +84908201880
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Name: LE Thi Minh Phuong
 Title: Doctor
 Tel: +84912911368
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GENERAL INFORMATION OF THE SUBJECT

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:

Name: LAFFLY Dominique
 Title: Professor
 Tel: +33619204981
 Email: dominique.laffly@gmail.com

Name: NGUYEN Thi Nhat Thanh
 Title: Assoc.Prof., Doctor
 Tel: +84908201880
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Name: LE Thi Minh Phuong
 Title: Doctor

COURSE SYLLABUS

GIS & REMOTE SENSING FUNDAMENTALS

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 courses: Mapping, IT, Basic math

4. Course language: English/Vietnamese

5. List of lecturers:

No.	Full name	Title	Institution	Mobile/ Email	Note
1	NGUYEN Thi Nhat Thanh	Assoc.Prof.	VNU	+84908201880/ thanhntn@fimo.edu.vn	Coordinator
2	LAFFLY Dominique	Prof.	UT2	+33619204981/ dominique.laffly@gmail.com	Lecturer
3	LE Thi Minh Phuong	Dr.	HAU	+84912911368/ leminhphuong.dhkt@gmail.com	Lecturer

Old version

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 From Theory to Application, 2nd Edition, John Wiley & Sons, Inc.
2. Báuden Bhatta, 2011, Remote Sensing: Principles and Applications, Education Division.

This is a new part. We expect students to gain knowledge, skill, attitudes mentioned on Section 6 (objectives). Based on Section 6, design the section 7 (outcomes).

New version

	Minh Phuong			leminhphuong.dhkt@gmail.com	
4	BUI Quang Hung	Dr.	VNU	+84904371339/hungbq@fimo.edu.vn	Lecturer

6. Objectives (Knowledge, Skills, Attitude):

6.1. Knowledge

Introduction to the fundamentals of remote sensing and GIS and privileged tools of integrated analysis in environmental science. Introduction of theoretical concepts, quantitative methods and major domains of application.

6.2. Skills

Students should know how to apply the basic knowledge and tools in GIS and remote sensing to develop GIS database and conduct image processing.

6.3. Attitude

Student should actively participate in group discussion and have the spirit to gain knowledge about GIS.

7. Expected learning outcomes (knowledge, skills, attitudes):

7.1. Knowledge

- Being able to understand about fundamentals of Remote sensing and GIS and privileged tools of integrated analysis in environmental science.
- Being able to understand theoretical concepts, quantitative methods and major domains of application.

7.2. Skills

- Being able to apply the basic knowledge and tools for basic application



Old version

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.

New version

Curious on gaining knowledge about GIS and Remote Sensing.

8. Examination methods

8.1. Regular examination (20%)

- Purpose: To check how often students go to class; Examine and evaluate the ability to understand through each lecture
- Examination form: Submit the homework, write report in a group, or have a short presentation.

8.2. Midterm examination (20%)

- Purpose: To evaluate the level of student's academic goals in the mid-or half-final stages.
- Examination form: Test 30 minutes, submit the homework, write group report, or have a short presentation.

8.3. Final examination (60%)

- Purpose: To evaluate students' learning outcome
- Examination form: Writing or personal/group presentation

Take content from Section 7 (old version) and add more information of purpose and examination form



Old version

New version

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

- Examination form: writing of personal/group presentation

9. References

9.1. Required references

1. Dominique Laffly, 2020, TORUS - Toward an Open Resource Using Services: Cloud computing for Environmental Data - Volume A
2. Dominique Laffly, 2020, TORUS - Toward an Open Resource Using Services: Cloud computing for Environmental Data - Volume B

9.2. Additional references

1. Dominique Laffly, 2020, TORUS - Toward an Open Resource Using Services: Cloud computing for Environmental Data - Volume C
2. Paul Bolstad, 2016, GIS Fundamentals: A First Text on Geographic Information Systems, Published by XanEdu Publishing Inc
3. Báuden Bhatta, 2011, Remote Sensing and GIS, published by OUP Higher Education Division.
4. Le Thi Minh Phuong, 2019, Mapping and GIS, Construction Publish

- Divide refs into required refs and additional refs.
- The required refs need to be referred in the section 12.2 of new form which will be explained later



Old version

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

10. Summary of the subject

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

11. Content of the course

SECTION 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

SECTION 2: Remote sensing

Lecture 9. History of aerial photography and remote sensing: From above we see

New version

New version

- Section 12 is new
- 45 hours with students can be divided into Theory, Exercise, Discussion, and Practice/experiment/fieldwork and
- Self-study will be 90 hours

12.1. General schedule

Content	Teaching organization				Self-study	Total
	Class			Practice, experiment, fieldwork		
	Theory	Exercise	Discussion			
Lecture 1	3				6	9
Lecture 2	2		1		6	9
Lecture 3	0	0	0	3	6	9
Lecture 4	1	1	1		6	9
Lecture 5	1	1	1		6	9
Lecture 6	1	1	1		6	9
Lecture 7	1	1	1		6	9
Lecture 8	1	1	1		6	9
Lecture 9	3				6	9
Lecture 10	2		1		6	9
Lecture 11	1	1	1		6	9
Lecture 12	2		1		6	9
Lecture 13	1	1	1		6	9
Lecture 14	2		1		6	9
Lecture 15	2		1		6	9
Total	23	7	12	3	90	135

12.2. Detail teaching schedule

Week	Main content	Student need to do before going to the class	Teaching method	Note
1	Lecture 1: A Brief History of GIS: the tool of integrated geographical analysis	- Read: Ref. 1, Chapter 1 & Ref. 2, Chapter 2	- Self-study (6) Theory (3)	

New version

Lecture 11	1	1	1		6	9
Lecture 12	2		1		6	9
Lecture 13	1	1	1		6	9
Lecture 14	2		1		6	9
Lecture 15	2		1		6	9
Total	24	8	13		90	135

12.2. Detail teaching schedule

Week	Main content	Student need to do before going to the class	Teaching method	Note
	Lecture 1:			
1	the tool of integrated geographical analysis (component and concepts)	- Read: Ref. 1, Chapter 1 & Ref. 2, Chapter 2	- Self-study (6) - Theory (3)	
2	Lecture 2: Geographical and Map projection coordinate system: georeferencing, geospatial data input.	- Read: Ref. 2, Chapter 2	- Self-study (6) - Theory (2) - Discussion (1)	
3	Lecture 3: Attribute data: data input, relationship, statistics, relation and joint	- Read: Ref. 2, Chapter 2, 3 - Submit the homework	- Self-study (6) - Theory (1) - Exercise (1) - Discussion (1)	
4	Lecture 4: Vector spatial data analysis: statistical map, graph theory and	- Read: Ref. 2, Chapter 2, 3 - Submit the	- Self-study (6) - Theory (1) - Exercise (1)	

- Reference in section 9.1 (Required References) need to be shown here
- The form is ref. xx, chapter xx

- Teaching method take from Section 12.1
- E.g. Theory (3), Self-study (6) means study Theory in class in 3 hours and self-study in 6 hours

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14	Land use and land cover change (LULCC)	Chapter 1	- Discussion (1)	
15	Lecture 15: Atmospheric remote sensing	- Read: Ref. 2, Chapter 1	- Theory (2) - Discussion (1)	

- The same for all courses

13. Prerequisites:

- Classroom with projector and board;
- Students must bring all textbooks;

Students must do homework and participate in learning activities under the teacher's instructions

- Students must accumulate enough component points as prescribed;
- Students must participate fully and submit homework required.

- The coordinator information

14. **Contact:** Nguyen Thi Nhat Thanh, VNU-UET, FIMO, Mobile: +84908201880, Email: thanhntn@fimo.edu.vn.

Rector

School of Aerospace and
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Hanoi, *date...* 2020
Compiler/lecturer

- Keep same information of the form

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