



## Course Teaching Guide (and online adendum)

<b>Course</b>	GEOINFORMATICS		
<b>Subject area</b>			
<b>Module</b>	OPTATIVE		
<b>Degree</b>	Master Ingeniería de Montes		
<b>Curriculum</b>	3-309-572	<b>Code</b>	54285
<b>When taught</b>	1 <sup>st</sup> Quarter	<b>Type/Category</b>	ELECTIVE
<b>Level/Cycle</b>	MASTER DEGREE	<b>Year</b>	1º/2º
<b>ECTS Credits</b>	6 ECTS		
<b>Language of instruction</b>	English		
<b>Lecturer/s in charge</b>	Dr. José A. Reque course responsable Dr. Rodrigo Gómez Conejo (invited professor) (rodrigo.comez@cesefor.com) Dr. David Alfonso Nafria García (invited profesor) (nafgarda@itacyl.es)		
<b>Contact details (e-mail, telephone no....)</b>	José Reque Phone: 979-108422 / Building E (Office 206)		
<b>Tutorial hours</b>	See at <a href="http://www.uva.es">www.uva.es</a> > Masteres > Título correspondiente > Tutorías		
<b>Department</b>	Producción Vegetal y Recursos Forestales		



## 1. Situation /Relevance of the Course

### 1.1 Contextualisation

The disciplines concerned with the collection, distribution, storage, analysis, processing, presentation of geographic data or geographic information have become of common use among foresters. These disciplines, frequently named Geomatics, are in constant growth and improvement and an update knowledge is required. The course covers the main products, tools involved in the collection, assessment, integration and management of informatic geographic data.

### 1.2 Relation with other subject areas

This course is closely related with

51977	ORDENACIÓN DEL TERRITORIO
51978	AUDITORÍA AMBIENTAL
51980	RESTAURACIÓN HIDROLÓGICA
51999	MÉTODOS CUANTITATIVOS EN GESTIÓN FORESTAL

### 1.3 Pre-requirements

None

## 2. Skills

### 2.1 General

Following the Dublin Descriptors, students of this course must:

- i) have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Bachelor's level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context;
- ii) can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;
- iii) have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;
- iv) can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;
- v) have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

### 2.2 Specific

With this course, students will acquire the following specific skills:

E11 Capacidad para buscar, seleccionar, generar y manejar bases de datos adecuadas para obtener información relevante para los problemas de la gestión forestal/ Ability to search, select, generate and manage adequate databases to obtain information relevant to forest management problems.

E12 Capacidad para la comprensión y desarrollo de aplicaciones relacionadas con la gestión de datos de sistemas forestales/Ability to understand and develop applications related to the management of data from forest systems.

## 3. Aims

Students will be able to design, manage and apply techniques on (i) Geographical Information Systems, (ii) Geomatics and (iii) Thematic forest cartography, maps and graphic representation



#### 4. Thematic blocks<sup>1</sup>

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##### Block 1:

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Work load in ECTS credits:

##### a. Contextualisation and justification

See course context

##### b. Learning objectives

See course objectives

##### c. Content

- Review of cartographic principles
- Introduction GIS principles
- Non professional GIS
- Professional GIS
- Review of QGIS foundations
- Vectorial geoprocesses and research tools applied in operational forestry
- Raster processes a calculations applied in operational forestry
- Graphic representation
- Online publishing of GIS projects
- Satelite positioning
- GNSS, precision and improvement

##### **CASE STUDIES**

- Systematic sampling of forest stands
- Forest stands maps
- GNSS

##### d. Method of teaching

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A combination of theory, problems, and seminars jointly with independent study and group study will be used. Practical sessions are conducted using either GIS software, R statistical software and specialized LIDAR software.

##### e. Work plan

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Classes will take place during the first 5 weeks of the first semester according with published schedule. Classroom will be determined yearly. Depending on the year, invited speakers could deliver invited seminars.

##### f. Assessment

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Course requirements include active participation (20%), the presentation of a class summary (20%), a class project (30%) and a final exam (30%).



## g Didactic resources

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### g.1 Basic references

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- Bivand, R., Pebesma, E., Gómez-Rubio, V. 2013. Applied Spatial Data Analysis with R Second Edition Springer 405 pages
- Hastie, T., Tibshirani, R. 2015 An introduction to statistical learning with applications in R. Springer 426 pag. <http://statweb.stanford.edu/~tibs/ElemStatLearn/>
- Wiegand, T. and Moloney, K. 2014. Handbook of spatial point pattern analysis in Ecology. CRC Press, 510 pages

### g.2 Complementary references

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- Jones, O., Maillardet, R., Robinson, A. (2009). Introduction to scientific programming and simulation using R. CRC Press, 453 p.

### g.3 Other online resources (píldoras de conocimiento, blogs, videos, revistas digitales, cursos masivos (MOOC), ...)

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## h. Resources needed

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No special resources needed

## i. Timing

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Workload in ECTS	Period
6 ECTS	first 5 weeks of the first semester

## 5. Didactic methods

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Lectures, field trips, writing assessment and on field discussions.

## 6. Table of student's dedication to the course

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ONSITE ACTIVITIES	HOURS	OFFSITE ACTIVITIES	HOURS
Theory	20	Individual study	60
Practical work (Problems,...)	10	Group study	30
Labs	20		
Field trips			
Seminars	8		
Groups meetings			
Evaluation	2		
<b>Total onsite</b>	<b>60</b>	<b>Total offsite</b>	<b>90</b>
		<b>TOTAL</b>	<b>150</b>

### 7. System characteristic of the evaluation

INSTRUMENT/PROCEDURE	WEIGHT IN THE FINAL MARK/GRADE	REMARKS
Activity dossier	10 %	
Class projects	50 %	
Active participation in the course	10 %	
Final exam	30 %	Theory questions (test and short questions) and problems resolution

#### GRADING CRITERIA

- **First call (*Convocatoria ordinaria*):**  
The final grade will be the sum of the partial grades weighted according to the previous table. It is compulsory to obtain at least a 5 in the exam.
- **Second call (*Convocatoria ordinaria*):**  
Students can present the Project (for the first time or with improvements) and must take the exam again. The final grade will be the sum of the partial grades weighted according to the previous table. It is compulsory to obtain at least a 5 in the exam.

### 8. Important remarks

Activities will be onsite. In case of university lockdown see below the addenda.

Plagiarism is not allowed. Students failing in plagiarism will get a 0 (zero) in the call and the University will be informed for academic punishment.



## Course Teaching Guide Adendum

### A4. Contents and thematic blocks

#### Block 1:

Workload in ECTS credits: 6

#### c. Contents online

Same as in the face to face schema.

#### d. Online method of teaching

A combination of synchronous remote classes and seminars. Asynchronous class videos and commented presentation will be available at the ecampus (<https://campusvirtual.uva.es/>), forum will be extensively used for communication with students

#### e. Work plan

Classes will take place during the first 5 weeks of the first semester according with published schedule. Classroom to be determined yearly.

#### f. Online assessment

Same as in the face to face schema. Exam will be online

#### i. Timing

Workload in ECTS	Period
6 ECTS	First 10 weeks of the first semester if needed by the health situation

### 6. Table of student's dedication to the course

ONSITE ACTIVITIES	HOURS	OFFSITE ACTIVITIES	HOURS
Theory	16	Individual study	60
Practical work (Problems,...)	22	Group study	30
Labs			
Field trips	10		
Seminars	10		
Groups meetings			
Evaluation	2		
<b>Total onsite</b>	<b>60</b>	<b>Total offsite</b>	<b>90</b>
		<b>TOTAL</b>	<b>150</b>



## **A5. Didactic methods and methodological principles**

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Online lectures and seminars, reading and video watching assignments, writing assessment and remote discussions.

**A6. Table of student's dedication**

REMOTE and ONLINE ACTIVITIES	HOURS	OFFSITE ACTIVITIES	HOURS
Theory	16	Individual study	60
Practical work (Problems, ...)	22	Group study	30
Labs			
Readings and videos	10		
Seminars	10		
Groups meetings			
Evaluation	2		
<b>Total onsite</b>	<b>60</b>	<b>Total offsite</b>	<b>90</b>
		<b>TOTAL</b>	<b>150</b>

**A7. System characteristic of the evaluation**

Criterio: cuando más del 50% de los días lectivos del cuatrimestre transcurran en situación de contingencia, se asumirán como criterios de evaluación los indicados en la adenda.

INSTRUMENT/PROCEDURE	WEIGHT IN THE FINAL GRADE	OBSERVACIONES
Project proposal	10%	
Class project:	50%	
Active participation in the course	20%	Different activities will be included in ecampus (moodle)
Online Final exam	20%	Theory questions (test and short questions) and problems resolution

**GRADING CRITERIA**

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- First call (Convocatoria ordinaria):**  
 The final grade will be the sum of the partial grades weighted according to the previous table. It is compulsory to obtain at least a 5 in the exam.
- Second call (Convocatoria ordinaria):**  
 Students can present the Project (for the first time or with improvements) and must take the exam again. The final grade will be the sum of the partial grades weighted according to the previous table. It is compulsory to obtain at least a 5 in the exam.