

Academic Year/course: 2022/23

## 60424 - Fundamentals of Remote Sensing

### Syllabus Information

**Academic Year:** 2022/23

**Subject:** 60424 - Fundamentals of Remote Sensing

**Faculty / School:** 103 - Facultad de Filosofía y Letras

**Degree:** 352 - Master's in Geographic Information Science and Technology for Land Management: Geographic Information Systems and Remote Sensing

**ECTS:** 2.0

**Year:** 1

**Semester:** Annual

**Subject Type:** Optional

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The course has a predominantly theoretical and theoretical-practical orientation, thus teaching and learning activities are developed using the lecture approach. With the teacher's support, the analysis and practical discussion of satellite images is addressed, but without involving the use of specific software by the student. In this context it is of great significance both autonomous work (reading comprehension and study of the literature, visualization and interpretation of satellite images...) and a collaborative attitude in practice sessions, as well as the effectiveness of tutorials as a tool for autonomous learning.

- Lectures: 16 hours
- Interactive, individual or group activities: 4 hours
- Study: 28 hours
- Assessment: 2 hours

#### 4.2. Learning tasks

The course includes the following learning tasks:

- Lectures and practice sessions (16 hours): lecture (12 hours), interactive-practical activities (4 hours).
- Guided tasks to strengthen the critical learning of the competencies: 4 hours
- Study: 28 hours
- Assessment in the form of a written exam: 2 hours

#### 4.3. Syllabus

The course will address the following topics:

1. General presentation (objectives, syllabus and agenda, assessment).

2. General literature and Internet resources in remote sensing.
3. Conceptual framework of remote sensing.
4. Physical principles of remote sensing.
5. Remote sensing systems, resolution of a sensor system.
6. Visual enhancement and interpretation of mono- and multi- band (RGB composites).
7. Spectral signatures (introduction).
8. Remote sensing applications (introduction).

#### 4.4. Course planning and calendar

This course (20 hours) is taught during the first month of the academic year, prior to the course "Introduction to geographic information technologies", where the use of dedicated software for remote sensing image processing is introduced.

For this course, the only assessment activity is a written exam, which takes place in the first exam period (February) of the three official periods.

#### 4.5. Bibliography and recommended resources

- BB** Campbell, James B. Introduction to remote sensing / James B. Campbell. 3rd ed London [etc.] : Taylor & Francis, 2008.
- BB** Chuvieco Salinero, Emilio. Fundamentals of satellite remote sensing / Emilio Chuvieco. 2ª ed. Boca Raton: CRC, 2009.
- BB** Chuvieco Salinero, Emilio. Teledetección ambiental : la observación de la Tierra desde el espacio / Emilio Chuvieco. Madrid: RA-MA, D.L. 1995.
- BB** Gibson, Paul J. Introductory remote sensing: digital image processing and applications / Paul J. Gibson and Clare H. Atkinson. London: Longman, 1998.
- BB** Gibson, Paul. Introductory remote sensing, principles and concepts / Paul J. Gibson; with contributions to the text by development by John Keating. [London]: Routledge, 2000.
- BB** Lillesand, Thomas M. Remote sensing and image interpretation / Thomas M. Lillesand, Ralph W. Kiefer, Jonathan V. Choudry. Wiley, cop. 2008.
- BB** Sabins, Floyd F. Remote sensing : principles and interpretation / Floyd F. Sabins. 3rd ed. New York: W.H. Freeman, 1996.
- BC** Chuvieco Salinero, Emilio. Fundamentos de teledetección espacial / Emilio Chuvieco. 3a. ed. rev. Madrid: Rialp, D.L. 1995.
- BC** Curran, Paul J. Principles of remote sensing / Paul J. Curran. London: Longman, 1985.
- BC** Girard, Michel C. Télédétection appliquée: zones tempérées et intertropicales / Michel C. Girard, Collete M. Giarard; Manson, 1989.
- BC** Jensen, J.R. Introductory digital image processing: a remote sensing perspective / J. R. Jensen. 3th. ed. Englewood Cliffs, N.J.: Prentice-Hall, 1997.
- BC** People and pixels: linking remote sensing and social science / D. Liverman, E.F. Moran, P.C. Stern (eds.). Washington: Academy Press, 1998. [(PDF disponible en <http://nap.edu>).]
- BC** Pinilla Ruiz, Carlos. Elementos de teledetección / Carlos Pinilla Ruiz. Madrid: RA-MA, D.L. 1995.
- BC** Remote sensing. Course book. [1] / Courseteam J.J.M. Leinders... [et al.]. Heerlen: Open Universiteit, 1989.
- BC** Scanvic, Jean-Yves. Teledetección aplicada: cartografía, geología estructural, exploración minera, medio ambiente, Gregorio Ochoa y Angel Valverde]. Madrid: Paraninfo, 1989.
- BC** Sobrino, José A. Teledetección / José A. Sobrino (ed.). Valencia: AECl, D.L.2000.