

Academic Year/course: 2022/23

28324 - Physical Geography for Land Management II: Climate and Water

Syllabus Information

Academic Year: 2022/23

Subject: 28324 - Physical Geography for Land Management II: Climate and Water

Faculty / School: 103 - Facultad de Filosofía y Letras

Degree: 419 - Degree in Geography and Land Management

ECTS: 6.0

Year: 3

Semester: Second semester

Subject Type: Compulsory

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 methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practical exercises, individual and group tasks, guided tasks, field work, autonomous work and study.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures (24 hours)
- Individual and/or group tasks (18 hours)
- Guided tasks (20 hours)
- Field work (12 hours)
- Autonomous work and study (84 hours)
- Assessment tasks (6 hours)

4.3. Syllabus

The course will address the following topics:

Section 1

- Climate
- Climate data base

- Climate data series: quality control and analyses
 - Reference series
 - Suspicious data and inhomogeneities
 - Reconstruction
- Climate series analyses
 - Daily calendar
 - Trend analyses
 - Cold and heat waves

Section 2

- Hydrological response and flow data
 - Hydrological processes at basin scale
 - Flood generation
 - Flow gauge and measuring systems
 - Flood and geomorphic flow calculation
- Floodplain management
 - Return period
 - Room for the River and the Assessment and Management of Flood Risks Directive (2007/60/EC)
 - Possible flooded area mapping
- Hydromorphological survey and ecological quality of rivers and streams
 - Channel hydromorphological survey
 - River dynamics and evolution
 - Ecological assessment methods for rivers and streams
 - Hydromorphological and ecological principles for river restoration.

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the 'Facultad de Filosofía y Letras' website (<https://fyl.unizar.es/horario-de-clases#overlay-context=horario-de-clases>)

4.5. Bibliography and recommended resources

Applied Climatology

- Fernández, Felipe. Manual de climatología aplicada : clima, medio ambiente y planificación / Felipe Fernández García Madrid : Síntesis, D.L. 199
- Houghton, J.. Global warming: the complete briefing. Cambridge: Cambridge University Press 2010
- Martín Vide, Javier. El tiempo y el clima / Javier Martín Vide Barcelona : Rubes, 2003
- Strangeways, Ian. Measuring global temperatures: analysis and interpretation. Cambridge: Cambridge University Press, 2010
- Strangeways, Ian. Precipitation. Cambridge: Cambridge University Press, 2007.

Applied Hydrology

- Davie, T.. Fundamentals of hydrology. 2008 Abingdon: Routledge
- Malavoi, J.R.. Éléments d'hydromorphologie fluviale / J.R. Malavoi et J.P. Bravard. Vincennes: ONEMA, 2010
- Martín Vide, Juan P.. Ingeniería de ríos / Juan P. Martín Vide . - 1ªed. Barcelona : Edicions UPC, 2002
- Ollero Ojeda, Alfredo. Guía metodológica de buenas prácticas en gestión de inundaciones . Contrato de Río del Matarraña, Zaragoza, 2014
- Sear, D. A. ; Newson, M.D. ; Thorne, C.R.. Guidebook of applied fluvial geomorphology. - 2009 London: Thomas Telford Publishing