

## 28337 - Methods for Paleoenvironmental Reconstruction

### Syllabus Information

**Academic Year:** 2019/20

**Subject:** 28337 - Methods for Paleoenvironmental Reconstruction

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

**Degree:** 419 - Degree in Geography and Land Management

**ECTS:** 6.0

**Year:** 3

**Semester:** First semester

**Subject Type:** Optional

**Module:** ---

### 1.General information

#### 1.1.Aims of the course

#### 1.2.Context and importance of this course in the degree

#### 1.3.Recommendations to take this course

### 2.Learning goals

#### 2.1.Competences

#### 2.2.Learning goals

#### 2.3.Importance of learning goals

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

#### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

### 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.

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.** Usually, after a presentation of the conceptual and methodological aspects of the syllabus, the teacher introduces interactive, individual or group activities. Diverse teaching and learning skills are put into practice to encourage the participation of students like class discussion, brainstorming, forums, etc. The students have in the *Anillo Digital Docente* (Moodle Site) a repository of the lecture notes used in class as well as other forms of course-specific complementary materials (recommended readings, web pages links, graphic and cartographic resources, etc.).
- **Practice sessions.** These sessions will take place in the assigned classroom or, punctually, in the computer classroom. At the beginning of every session the necessary information will be facilitated to the student to carry out the tasks to be worked on during the session. Among the activities that are programmed we can stand out: photointerpretation and elaboration of geomorphological cartography; reading, analysis and commentary of different documents, etc.

- **Field work.** This session will serve to examine on the field some of the contents developed in the theoretical and practical activities (dating methods, interpretation of deposits of Quaternary age, etc.).
- **Guided tasks.** They are implemented to help the students to carry out the assignments and exercises that they must solve individually and also as a help to solve doubts related to the theoretical and practical course contents.

### 4.3.Syllabus

The course will address the following topics:

- Topic 1. The Quaternary: introductory aspects.
- Topic 2. Chronology of the Quaternary.
- Topic 3. The pre-Quaternary context: climate changes generating factors.
- Topic 4. Climate changes indicators.
- Topic 5. Organisms and fossil record during the Quaternary.
- Topic 6. Pleistocene: the glacial-interglacial cycles.
- Topic 7. Holocene: climate variability.

### 4.4.Course planning and calendar

The course "*Métodos para la reconstrucción de paleoambientes*" is divided into 7 topics. The first and second topics are introductory; they run during the first four weeks of the semester. The topics 3-5 are taught during the middle part of the semester. The topics 6 and 7 are explained during the final month of the course.

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

Basic bibliography:

- BRADLEY, R.S. (1999): *Paleoclimatology. Reconstructing climates of the Quaternary*, Academic Press, London, 613 pp.
- EHLERS, J., HUGHES, P. y GIBBARD, P.L. (2015): *The Ice Age*, Wiley-Blackwell, London, 560 pp.

Recommended bibliography:

- BRADLEY, R.S. (1985): *Quaternary paleoclimatology. Methods of paleoclimatic reconstruction*, Allen & Unwin, London, 472 pp.
- BRYANT, E. (1997): *Climate process & change*, Cambridge University Press, Cambridge, 209 pp.
- BUDYKO, M.I. (1982): *The Earth's Climate: Past and Future*, Academic Press, London, 307 pp.
- CELA, C.J. y AYALA, F.J. (2013): *Evolución humana*, Alianza Editorial, Madrid, 802 pp.
- CROWLEY, T.J. y NORTH, G.R. (1991): *Paleoclimatology*, Oxford University Press, Oxford, 339 pp.
- EHLERS, J. (1996): *Quaternary and glacial geology*, Wiley, London, 578 pp.
- GUTIÉRREZ ELORZA, M. (2001): *Geomorfología climática*, Omega, Barcelona, 664 pp.
- HUGGET, R.J. (1991): *Climate, Earth Processes and Earth History*, Springer Verlag, Berlín, 281 pp.
- LAMB, H.H. (1982): *Climate History and the Modern World*, Methuen, London, 344 pp.
- LAMB, H.H. (1988): *Weather, climate and human affairs*, Routledge, London, 364 pp.
- LOWE, J.J. y WALKER, M.J.C. (1997): *Reconstructing Quaternary Environments*, Longman, London, 446 pp.
- MAGNY, M. (1995): *Une histoire du climat. Des derniers mammouths au siècle de l'automobile*, Editions Errance, Paris, 176 pp.
- MARTÍN CHIVELET, J. (1999): *Cambios climáticos. Una aproximación al sistema Tierra*, Mundo Vivo-Libertarias, Madrid, 324 pp.
- PUGH, D. (2005): *Changing sea levels. Effects of tides, weather and climate*, Cambridge University Press, Cambridge, 265 pp.
- REGUANT, S. (2005): *Historia de la Tierra y de la Vida*, Ariel, Barcelona, 355 pp.
- RISER, J.A.M. (2002): *Quaternary geology and the environments*, Springer, New York, 290 pp.
- STANLEY, S.M. (1989): *Earth and Life through Time*, Freeman, New York, 689 pp.
- STANLEY, S.M. (2005): *Earth System History*, Freeman, New York, 567 pp.
- URIARTE, A. (2003): *Historia del clima de la Tierra*, Servicio Central de Publicaciones del Gobierno Vasco, Vitoria, 306 pp.
- VEGA, G., BERNABEU, J. y CHAPA, T. (2006): *La prehistoria*, Editorial Síntesis, Madrid, 271 pp.
- VÁZQUEZ ABELEDO, M. (1998): *La historia del Sol y el cambio climático*, McGraw Hill, Madrid, 488 pp.
- WALKER, M. (2005): *Quaternary dating methods*, Wiley, London, 286 pp.

- WILLIAMS, M.A., DUNKERLEY, D.L., De DECKKER, P., KERSHAW, A.P. y STOKES, T. (1993): *Quaternary Environments*, Edward Arnold, New York, 329 pp.