26400 - Stratigraphic Analysis

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	296 - Degree in Geology
ECTS	6.0
Course	1
Period	Second semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

Learning of this course has been organized as follows:

The course consists of theory, laboratory and field classes. Being a fundamental subject in Geology, basic knowledge is transmited through participative theory classes. This basic knowledgment is adquired through successive learning steps and is complemented through lab and field activities. These practical classes are important as a way to check the level of comprehension and aplication of concepts, principles, methods and techniques used in Stratigraphy that has been

achieved by students. In addition, tutorials by teachers are a relevant complementary activity through which students can find out and complete information of the course.

5.2.Learning activities

The course has the following parts:

1. Lectures (30h)

2. Laboratory classes (17h)

3. Field work (4 days)

4. Personal work (at home): Analysis of data, exercises and study time (73h)

5. Examination: 6 h

5.3.Program

LECTURES (30 h)

PART 1. CONCEPT, OBJECTIVES, PRINCIPLES AND METHODS IN STRATIGRAPHY: Stratigraphy. Objectives. Methods and techniques.

PART 2. SEDIMENTARY PROCESSES OF THE EXTERNAL GEOLOGIC CYCLE: Introduction, Transport: processes and effects. Sedimentation: processes and properties of sediments. Diagenesis.

PART 3. CHARACTERISTICS OF STRATIFIED ROCKS: Stratification. Sedimentary structures: Classification. Sedimentary structures formed by unidirectional, bidirectional and multidirectional flows. Sedimentary structures formed by deformation. Biogenic sedimentary structures. Diagenetic sedimentary structures.

PART 4. ASSOCIATIONS OF STRATA: Concepts of transgression, regression and facies. Sequences. Stratigraphic units. Discontinuities.

PRACTICALS

Laboratory (17 h)

Exercise 1. Measuring of stratigraphic sections: Clues for field work and for graphic illustration of data.

Exercise 2. Grain size analysis: graphic analysis and interpretation.

Exercise 3. Sedimentary structures: visual identification through rock samples and analysis of paleocurrent data.

Exercise 4. Sedimentary cycles: analysis of stratigraphic sections.

FIELD WORK (4 days)

Days 1 and 2: Measuring stratigraphic sections in sequences made of horizontal and inclined strata.

Day 3: Measuring detailed stratigraphic sections and identification of sedimentary structures.

Day 4: Identification of sedimentary cycles.

5.4.Planning and scheduling

The following distribution of classes is scheduled for classroom activities:

Lectures (theory): 3 ECTS, 2h/week. Monday 11 to 12h, Tuesday 10 to 11h.

Laboratory classes (practicals): 1.7 ECTS, 2h/week through 8 weeks (+ 1h). Students will choose a 2h-group (Monday: 12 -14h, 16 -18h, 18 - 20h and Wednesday: 15 - 17h. These classes start in March.

Field classes (practicals): 1.3 ECTS, represent 4 journeys, with 24 h learning time. The field trip calendar is published by the Department of Earth Sciences on its web page.

Evaluation activities will take place on the dates and places established by the Science Faculty.

5.5.Bibliography and recomended resources

BB	Boggs, Sam. Principles of sedimentology and stratigraphy / Sam Boggs, Jr. . - 3rd ed. Upper Saddle River (New Jersey) : Prentice Hall, 2001
BB	Dabrio González, Cristino José. Estratigrafía / Cristino J. Dabrio, Santiago Hernando Madrid : Facultad de Ciencias Geológicas, Universidad Complutense de

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	Madrid, [2003]
BB	Estratigrafía / Inmaculada Corrales Zarauza...[et al.] Madrid : Rueda, D.L. 1977
BB	Selley, Richard C.. Applied sedimentology / Richard C. Selley. . - 2nd ed. San Diego [etc.]: Academic Press, 2000
BB	Vera Torres, Juan Antonio. Estratigrafía : principios y métodos / Juan Antonio Vera Torres. Madrid : Rueda, D.L. 1994 [Recomendado por Concha Arenas]
BC	Allen, John R. L.. Sedimentary structures : their character and physical basis / John R.L. Allen . Amsterdam [etc.] : Elsevier, 1982
BC	Friedman, Gerald M.. Principles of sedimentology / Gerald M. Friedman, John E. Sanders New York [etc.] : John Wiley & Sons, cop. 1978
BC	Guía estratigráfica internacional : guía para la clasificación, terminología y procedimientos estratigráficos / por la Subcomisión Internacional de Clasificación Estratigráfica de la UICG ; Hollis D. Hedberg, editor Barcelona [etc.] : Reverté, D.L. 1980
BC	Reineck, Hans-Erich. Depositional sedimentary environments : with reference to terrigenous clastics / H.-E. Reineck, I.B. Singh . - 2nd ed., rev. and updated, 2nd print. Berlin [etc.] : Springer-Verlag, 1986