

# UNIVERSITARY MASTERS OFFER IN THE FACULTY OF GEOLOGY UNIVERSITY COMPLUTENSE MADRID (SPAIN)



## UNIVERSITARY MASTERS STRUCTURE IN THE FACULTY OF GEOLOGY

## STRUCTURE OF THE JOINT MASTER UCM - UAH

### Master in Geological Engineering 063M

### Master in Environmental Geology 062H

### Master in Geological Processes and Resources 062N

### Master in Advanced Paleontology 062 M

Common Subjects

Common Subjects

Common Subjects

Common Subjects

48

18

24

24

Specialty Subjects

Specialty Subjects

Specialty Subjects

30

30

24

24

24

24

Hydrology, geomorphology & soils

Geological hazards

Sedimentary basins and energetic resources

Inner processes and mineral resources

Evolution and marine ecosystems

Evolution, continental ecosystems and human paleontology

Master Thesis

Master Thesis

Master Thesis

Master Thesis

12

12

12

12

90

60

Total academic offer

84

84

These are 60 ECTS credit masters planned for a single academic year.

[www.geologicas.ucm.es/master](http://www.geologicas.ucm.es/master)

14/03/2013

(ECTS means European Credit Transfer System, which corresponds to 10 presential hours from the 25 hours of the global student work).



# Master in Geological Engineering 063M

## Common Subjects

48

### MI: Engineering Geology and Geotechnics Module 42

#### Topic 1: Geological Techniques in Engineering 21 ECTS

- Geophysical techniques (6)
- *In situ* tests (3)
- Brittle tectonics and fissured massifs (6)
- Petrophysics (6)

#### Topic 2: Soil mechanics and cimentations 9 ECTS

- Surface and deep cimentations (3)
- Advanced soil mechanics (6)

#### Topic 3: Geotechnics 12 ECTS

- Geotechnical hazards (3)
- Construction (6)
- Tunnel geology and geotechnics (3)

### M II: Professional Introduction Module 6

#### Topic 4: Professional introduction module 6 ECTS

- Introduction to the professional practice (6) PEX  
(Practical cases + Works visit + Practiques  
in constructing companies)

### M III; Topic 5: Master Thesis

12

60 ECTS

14/03/2013



# Environmental Geology Master 062H

## MC: Common Subjects Module

18

### **Topic MC1: Geoenvironmental Analysis 18 ECTS**

- Climatic changes 6
- Environmental interest geochemical cycles (3)
- Surface and fluvial hydrology (6)
- Environmental impact evaluation and correction (3)

## Specialty subjects

30

### ME 1: Hydrology, Geomorphology and Soils

#### **Topic ME 1.1: Soils: preservation, pollution and remedy 12 ECTS**

- Applied Edaphology and soil preservation (6)
- Soil pollution and remedy (6)

#### **Topic ME 1.2: Hydrogeologic modelling, hydrochemistry and hydric resources management 12 ECTS**

- Hydrochemistry and pollution (6)
- Digital models in hydrogeology and hydric resources management (6)

#### **Topic ME 1.3: Geomorphology applied to environmental management and ecosystem restoration 6 ECTS**

- Geomorfología aplicada a la gestión ambiental (6)



30

### ME 2: Geologic Hazards Module

#### **Topic ME 2.1: Hazards associated to geological processes of inner origin 9 ECTS**

- Earthquake geology and seismic hazard (6)
- Volcanic hazard (3)

#### **Topic ME 2.2: Hazards associated to geological processes of external origin 12 ECTS**

- Slope dynamics and mudslide and avalanches hazard (6)
- Fluvial and shore morphodynamics oriented to the risk management (6)

#### **Topic ME 2.3: Hazards associated to sedimentation and dissolution 9 ECTS**

- Sedimentology applied to the hazard analysis (6)
- Karstic Hazards (3)

14/03/2013

### M3: Topic 3: Master Thesis

12

90



# Master in Processes and Geologic Resources

## M 1: Common Subjects Module

24

### **Topic 1: Geologic resources and sustainability 6 ECTS**

- Geologic resources and sustainability 6

### **Topic 2: Advanced methods in Geology 18 ECTS**

- Subsoil Stratigraphy 6
- Isotope Geochemistry 6
- Structural Analysis 6

**Specialty subjects**

24

24

## M 2-A: Sedimentary Basins and Energetic Resources Module

### **Topic 3: Sedimentary basins and energetic resources. 24 ECTS**

- Sedimentary basins 6
- Diagenesis 6
- Petroleum systems: Exploration, and oilfield modelling 6
- Sequence Stratigraphy and sedimentary systems 6

## M 2-B Inner Processes and Mineral Resources Module

### **Topic 4: Inner Processes 12 ECTS**

- Magmatism in global dynamics (6)
- Orogen tectonothermal evolution (6)

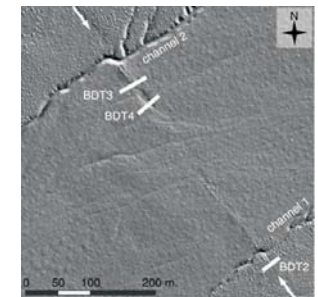
### **Topic 5: Recursos minerales 12 ECTS**

- Metallogenic provinces (6)
- Models and exploration techniques (6)

## M-3: Topic 6: Master Thesis

12

84



# Master in Advanced Paleontology 062M

## M I: Common Subjects

24

### Topic 1: Methodology and paleontological applications 24 ECTS

- Evolutive Paleontology 6
- Taphonomy 6
- Paleoecology and ecosystem evolution 6
- Paleontologic Heritage and paleontological material handling 6

## Asignaturas Especialidades



## M II: Evolution and Marine Ecosystems Module

24

### Topic 2: Paleontology of marine ecosystems 15 ECTS

- Invertebrate Paleontology 6
- Micropaleontology 6
- Macroforaminifers: evolution and applications 3

### Topic 3: Tools in applied paleontology 9 ECTS

- Biochronology and biostratigraphy 6
- Biofacies and ichnofacies 3



## M III: Evolution, Continental Ecosystems and Human Paleontology Module

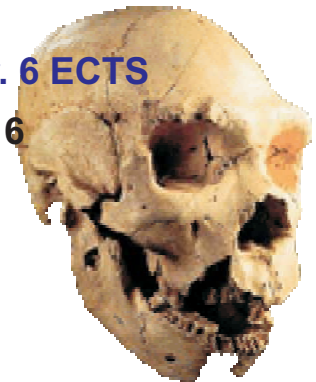
24

### Topic 4: Paleontology of continental ecosystems 18 ECTS

- Vertebrate Paleontology I: anamniotes and reptils 6
- Vertebrate Paleontology II: Synapsids. Evolutionary synthesis 6
- Paleobotanics 3
- Palinology 3

### Topic 5: Human Paleontology. 6 ECTS

- Human and Quaternary Paleontology 6



## M IV; Topic 6: Master Thesis

12