

**COURSE DATA****Data Subject**

<b>Code</b>	33809
<b>Name</b>	Environmental Risks
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1318 - Degree in Geography and the Environment	Faculty of Geography and History	4	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1318 - Degree in Geography and the Environment	631 - Environmental risks	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
SEGURA BELTRAN, FRANCISCA	195 - Geography

**SUMMARY**

It is a 6 credits compulsory subject located in the first semester of the 4th year of the degree of Bachelor of Geography and the Environment. It is an subject that can integrate and articulate previously knowledge in other subjects studied in previous years.

The aim of the course is to introduce students to the knowledge of natural and anthropogenic risks. The first issue explains the basic knowledge of the discipline and the different risk categories. On the following issues endogenous risks (volcanoes and earthquakes) and exogenous risks (mass movements, accelerated erosion, floods) and climatic risks (cold and heat waves, hoses, hail) are explained. The second part of the subject is devoted to explain several anthropic risks (nuclear, chemical).



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Previous knowledge of climatology, hydrology, biogeography, geomorphology and planning are required.

## OUTCOMES

### 1318 - Degree in Geography and the Environment

- Have capacity for analysis and synthesis.
- Have skills for organisation, planning, management and assessment.
- Have oral and written communication skills in one's own language and in a foreign language.
- Have problem-solving skills and decision-making capacity. Be able to design and manage projects.
- Be able to work independently.
- Be able to work in interdisciplinary teams.
- Have skills for interpersonal relations and ability to adapt to complex situation.
- Show commitment to the values of gender equality, interculturality, equal opportunities, universal access for people with disabilities, the culture of peace, democratic values and solidarity.
- Be able to learn independently and show creativity, initiative and entrepreneurship. Be able to resolve unforeseen situations.
- Show motivation for quality, responsibility and intellectual honesty.
- Have research skills.
- Be able to communicate effectively with non-experts.
- Learn about methodology and fieldwork.
- Get acquainted with geographic information systems as a tool for learning about and interpreting the territory and the environment.
- Learn about the time and space dimensions in the explanation of social, territorial and environmental processes.
- Learn about territorial and environmental management. Be able to integrate the social, economic and environmental components under the sustainable development approach.
- Be able to relate the natural environment and the social and human spheres.



## LEARNING OUTCOMES

The aim of the subject is that students are able to understand the complexity that involves the concept of risk and the various terms used to describe the damage produced by natural processes. That student will be able to assimilate the knowledge and skills taught in class. In addition, the course integrates knowledge of other subjects previously studied as geomorphology, hydrology, and climatology or planning. It is therefore a subject in which the student must show their abilities to relate and integrate knowledge, to analyze and synthesise, to express oneself correctly in public using appropriate terminology and practising teamwork. In addition to these skills, the GIS use will be a tool for analysis, prevention and control of environmental risks.

## DESCRIPTION OF CONTENTS

### 1. Environmental risks

Definitions and concepts: risk, disasters and catastrophes. Classification of environmental risks. Risk and contemporary societies. Economic and ecological significance of natural and environmental disasters.

### 2. Vulcanism

Volcanoes. Volcanic areas and their causes. Types of eruptions. Eruptive dynamics. Prevention and monitoring of eruptions. Structural and non-structural measures to control the risk.

### 3. Earthquakes

Earthquakes. Seismic areas. Terratrèmols.Processos magnitude and intensity of an earthquake. Seismic waves. Prediction and prevention of earthquakes.

### 4. Mass movements

Mass movements. Types of movements. Mass moviment factors. Causes the mass movements. Prevention and prediction.

### 5. Meteorological and climatic risks

Meteorological and climatic risks. Heavy rains. Snow and avalanches. Winds. Heat and cold waves. Tropical storms. Tornados. Reduction of severe weather hazards. Climatic changes and associated risks. El Niño. The global warming.



## **6. Flood risk**

Flood risk. Floods factors. Floods types. Natural factors that cause floods. Flooded areas and flood processes. Structural and non-structural measures for flood mitigation.

## **7. Forest fires**

Forest fires. Fuel forestry inflammability and combustibility. Fire environmental factors: meteorological and topographical. Fire behavior in wildfires. Environmental consequences of forest fires in the Mediterranean ecosystems.

## **8. The nuclear risk**

The nuclear risk. Ionizing radiation: Definitions and types. Radioactive phenomena. Radioactive elements. Type of radioactive decay. Dosimetry and magnitudes of measurement. Effects of radioactivity on living organisms. Nuclear and radioactive installations. Emergency plans.

## **9. Biological risks**

Biological risks. Introduction and general concepts. Biological agents: classification. Epidemics caused by biological agents. Biological weapons and bioterrorism. Main measures of protection.

## **10. Pollution**

Pollution. Introduction. Air pollution. The contamination of inland waters. Pollution of marine waters. The soil as a scrubber waste.

## **11. Civil protection and emergency management**

Civil protection and emergency management. The organization of civil protection in Spain. The Spanish political organizations and civil emergencies.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Computer classroom practice	15,00	100
Other activities	15,00	100
Development of group work	30,00	0
Study and independent work	40,00	0
Preparing lectures	5,00	0
Preparation of practical classes and problem	15,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

The teaching methodology is based on a combination of lessons and classroom activities and independent work of the student.

**1. Classes theory**

During the lectures the basic contents of the subject will be explained. For teaching the classes will include audiovisual material, used the Virtual Classroom and literature consultation, students will work on their own. Professor leaves the virtual classroom module resources, presentations, graphics, web and leaves notes for students up access.

**2. Classes practices**

Classes are taught in the classroom computer. The exercises are focused thematic units related to the theoretical topics. A virtual classroom will be posted guidelines exercises, along with the equipment needed for its implementation, which will bring students to class.

To be submitted for consideration must be submitted notebook practices made in class.

**3. Complementary activities and field trip**

They planned a series of activities, which will be followed by the schedule specified in the annex; depending on the academic calendar each year and the agendas of organizations collaborators. The activities could have the following:

- Field trips (SAIH Visit the Hydrographic Confederation Júcar / Visit the Emergency Centre Eliana, etc.). Scientific conferences or videos watching may also be other complementary activities





## EVALUATION

The evaluation of the course will be as follows:

- Theory exam: 60%.
- Control-assessment practices: 30%.
- Complementary activities: 10%.

In order to take the exam and pass, it is **MANDATORY**:

- hand in the internship notebook made in the internship class following the instructions given by the teacher. The notebook will not score, although it will be reviewed by the teacher and will be decisive in outlining the grades.
- **THE DELIVERY OF WORKS WITH AN UNACCEPTABLE COPY PERCENTAGE (20%) WILL BE REASON FOR SUSPENSION OF THE ENTIRE SUBJECT**

Attendance at complementary activities and practical classes will be considered in the final grade.

The practices and all the complementary activities realized during the course, to the margin of the final examination, will have the consideration of continuous evaluation. As such, they will be "NOT RECOVERABLE". Therefore, the grade obtained will be counted in both the first and second call.

## REFERENCES

### Basic

- Ayala-Carcedo, F.J. y Olcina Cantos, J. (coordinadores) (2002): Riesgos naturales. Ariel
- Bryant, E. (2005): Natural hazards. Cambridge University Press. 310 p.
- Keller, E. A. y Blodgett, R.H. (2007): Riesgos naturales : procesos de la Tierra como riesgos, desastres y catástrofes. Pearson Prentice Hall, D. L. 422 p.

### Additional

- Olcina Cantos, J. (2006): ¿Riesgos naturales?. Davinci
- MIMAM (Ministerio de Medio Ambiente) (2000): Libro Blanco del Agua, Madrid.
- MMA (2005): Perfil ambiental 2005. Informes sobre el agua, el aire, residuos, medio urbano y resumen.  
[http://www.mma.es/portal/secciones/calidad\\_contaminacion/indicadores\\_ambientales/perfil\\_ambiental\\_2005/ind](http://www.mma.es/portal/secciones/calidad_contaminacion/indicadores_ambientales/perfil_ambiental_2005/ind)
- Ilustre Colegio Oficial de Físicos (2000): Origen y gestión de residuos radiactivos. Enresa, Madrid, 203 pp.



- Chuvieco Salinero, Emilio (2004): Nuevas tecnologías para la estimación del riesgo de incendios forestales. Madrid : Consejo Superior de Investigaciones Científicas, 2004.
- Vélez Muñoz, Ricardo (2009): La defensa contra incendios forestales [Recurs electrònic] : fundamentos y experiencias. Madrid, McGraw-Hill/Interamericana de España.

