



## Study Plan

**School:** School of Sciences and Technology

**Degree:** Bachelor

**Course:** Geography (cód. 204)

### Specialization Geography

#### 1st Year - 1st Semester Specialization Geography

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2368L	Physical Geography I	Geography	6	Semester	156
GEO2369L	Human Geography I	Geography	6	Semester	156
GEO2370L	Geography Methods	Geography	6	Semester	156
MAT2558L	Statistics Applied to Human and Social Sciences	Mathematics	6	Semester	156
GEO2371L	Cartography	Geography	6	Semester	156

#### 1st Year - 2nd Semester Specialization Geography

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO0773L	Photo Interpretation	Geography	3	Semester	78
GEO2373L	Human Geography II	Geography	6	Semester	156
GEO2372L	Physical Geography II	Geography	6	Semester	156
GEO2374L	Fundamentals of Geology	Geosciences	3	Semester	78
ECN2289L	Economic Geography	Geography	6	Semester	156
MAT2557L	Multivariate Data Analysis	Mathematics	6	Semester	156

#### 2nd Year - 3rd Semester Specialization Geography

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
BIO2375L	Biogeography	Geography	3	Semester	78
GEO0772L	Urban Space	Geography	6	Semester	156
PAO0782L	Landscape and Countryside	Geography	6	Semester	156
GEO0780L	Systems of Geographical Information in Geosciences	Geography	6	Semester	156
GEO2376L	Geomorphology	Geography	6	Semester	156
ERU0535L	Remote Sensing	Rural Engineering	3	Semester	78



**2nd Year - 4th Semester  
Specialization Geography**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2377L	Geography of Portugal	Geography	6	Semester	156
PAO0769L	Space Analysis	Geography	6	Semester	156
PAO2378L	Characterisation and Assessment of Territory	Environment and Ecology Sciences	3	Semester	78
PAO2390L	Ecology	Environment and Ecology Sciences	6	Semester	156
GEO2379L	Pedology for Planning	Geosciences	3	Semester	78
Group of Free Options					

**3rd Year - 5th Semester  
Specialization Geography**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2380L	Investigation Techniques in Geography	Geography	6	Semester	156
PAO2381L	Environmental Impact Assessment	Environment and Ecology Sciences	6	Semester	156
PAO11050L	Regional Planning	Landscape and Planning Sciences	6	Semester	156

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Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ECN2383L	Public Administration and Regional Policy	Economy	6	Semester	156
GEO2384L	Coastal and Area Areas	Geography	3	Semester	78
SOC2385L	Demography	Sociology	6	Semester	156
ECN2307L	Regional Economics	Economy	6	Semester	156
GEO2386L	Social and Cultural Geography	Geography	3	Semester	78
GEO1448L	Geology of Portugal	Geosciences	6	Semester	156
GEO2387L	Habitat Microclimatology	Geosciences	3	Semester	78
PAO2388L	Planning of Touristic Resources	Environment and Ecology Sciences	3	Semester	78
ERU2389L	Surveying	Rural Engineering	6	Semester	156
LLT2313L	Academic Writing Skills	Languages and Literature	3	Semester	78
GES2310L	Entrepreneurship and Innovation	Management	6	Semester	156
GEO1440L	Environment Geology and Regional Planning	Geosciences	6	Semester	156
Group of Free Options					

**3rd Year - 6th Semester  
Specialization Geography**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2382L	Research Project in Geography	Geography	12	Semester	312



### 3rd Year - 6th Semester Specialization Geography

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
<b>Group of Options</b>					
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ECN2383L	Public Administration and Regional Policy	Economy	6	Semester	156
GEO2384L	Coastal and Area Areas	Geography	3	Semester	78
SOC2385L	Demography	Sociology	6	Semester	156
ECN2307L	Regional Economics	Economy	6	Semester	156
GEO2386L	Social and Cultural Geography	Geography	3	Semester	78
GEO1448L	Geology of Portugal	Geosciences	6	Semester	156
GEO2387L	Habitat Microclimatology	Geosciences	3	Semester	78
PAO2388L	Planning of Touristic Resources	Environment and Ecology Sciences	3	Semester	78
ERU2389L	Surveying	Rural Engineering	6	Semester	156
LLT2313L	Academic Writing Skills	Languages and Literature	3	Semester	78
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GEO1440L	Environment Geology and Regional Planning	Geosciences	6	Semester	156
<b>Group of Free Options</b>					

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\*\*\* TRANSLATE ME: Geografia  
Para obtenção do grau de licenciado em Geografia &ndash; Perfil Geografia é necessário obter aprovação a 144 ECTS em unidades curriculares obrigatórias e 36 ECTS em unidades curriculares optativas distribuídas da seguinte forma:

1º Ano  
1º Semestre:  
5 UC Obrigatórias num total de 30 ECTS  
2º Semestre  
6 UC Obrigatórias num total de 30 ECTS

2º Ano  
3º Semestre  
6 UC Obrigatórias num total de 30 ECTS  
4º Semestre  
5 UC Obrigatórias num total de 24 ECTS  
1 UC Optativa livre num total de 6 ECTS

3º Ano  
5º Semestre  
3 UC Obrigatórias num total de 18 ECTS  
1 UC Optativa condicionada num total de 6 ECTS  
1 UC Optativa livre num total de 6 ECTS  
6º Semestre  
1 UC Obrigatórias num total de 12 ECTS  
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### Specialization Geography and History

#### 1st Year - 1st Semester Specialization Geography and History

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2368L	Physical Geography I	Geography	6	Semester	156
GEO2369L	Human Geography I	Geography	6	Semester	156



**1st Year - 1st Semester**  
**Specialization Geography and History**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2370L	Geography Methods	Geography	6	Semester	156
MAT2558L	Statistics Applied to Human and Social Sciences	Mathematics	6	Semester	156
GEO2371L	Cartography	Geography	6	Semester	156

**1st Year - 2nd Semester**  
**Specialization Geography and History**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO0773L	Photo Interpretation	Geography	3	Semester	78
GEO2373L	Human Geography II	Geography	6	Semester	156
GEO2372L	Physical Geography II	Geography	6	Semester	156
GEO2374L	Fundamentals of Geology	Geosciences	3	Semester	78
PAO2390L	Ecology	Environment and Ecology Sciences	6	Semester	156
HIS2391L	General History of Art	History	6	Semester	156

**2nd Year - 3rd Semester**  
**Specialization Geography and History**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO0772L	Urban Space	Geography	6	Semester	156
HIS2392L	History of Classical Antiquity	History	6	Semester	156
GEO0780L	Systems of Geographical Information in Geosciences	Geography	6	Semester	156
GEO2376L	Geomorphology	Geography	6	Semester	156
HIS2393L	Pre-History	History	6	Semester	156

**2nd Year - 4th Semester**  
**Specialization Geography and History**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2377L	Geography of Portugal	Geography	6	Semester	156
PAO0769L	Space Analysis	Geography	6	Semester	156
HIS2394L	History of Medieval Portugal	History	6	Semester	156
HIS2395L	History of Early Modern and Contemporary World	History	6	Semester	156

**Group of Options**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
HIS2398L	Expansion and Colonial Dynamics	History	6	Semester	156
HIS2399L	Empires and Decolonization	History	6	Semester	156
HIS2400L	Themes of History of Modern Portugal	History	6	Semester	156
HIS2401L	Themes of History of Contemporary Portugal	History	6	Semester	156
HIS2402L	Themes of Medieval History of Portugal	History	6	Semester	156



**3rd Year - 5th Semester  
Specialization Geography and History**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2380L	Investigation Techniques in Geography	Geography	6	Semester	156
PAO0782L	Landscape and Countryside	Geography	6	Semester	156
HIS2396L	History of Early Modern Portugal	History	6	Semester	156
HIS2397L	History of Contemporary Portugal	History	6	Semester	156
PAO11050L	Regional Planning	Landscape and Planning Sciences	6	Semester	156

**3rd Year - 6th Semester  
Specialization Geography and History**

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
GEO2382L	Research Project in Geography	Geography	12	Semester	312
ECN2289L	Economic Geography	Geography	6	Semester	156

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HIS2398L	Expansion and Colonial Dynamics	History	6	Semester	156
HIS2399L	Empires and Decolonization	History	6	Semester	156
HIS2400L	Themes of History of Modern Portugal	History	6	Semester	156
HIS2401L	Themes of History of Contemporary Portugal	History	6	Semester	156
HIS2402L	Themes of Medieval History of Portugal	History	6	Semester	156

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## Program Contents



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### **Physical Geography I (GEO2368L)**

The lighting of the terrestrial sphere: annual and diurnal variation of the height of the Sun; variation of the Earth illumination rhythms with latitude. The climate system. Solar radiation. Insolation over the globe, world latitude zones. The Atmosphere (composition and structure). Solar radiation and temperature. The long wave radiation. The global radiation budget. Annual cycle of air temperature. Land and oceans temperature contrasts. Atmospheric pressure and winds. Air masses and cyclone storms. Cold and warm fronts. Global distribution of surface pressure systems. Regional pressure systems and winds. Atmospheric moisture and precipitation. Condensation and the adiabatic processes. The hydrologic cycle and the soil-water balance. The distribution and diversity climatic zones of the Earth; the Köppen climate classification. The extreme climatic events and the natural hazards. Climatic global changes, prediction and mitigation.

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### **Human Geography I (GEO2369L)**

Part One – Foundations (Introduction: Geography and Human Geography : geography's themes and perspectives ; The sense of scale: a notion of local, regional and global scale; The sense of space - spatial perspective: absolute location, relative location and human perceptions of environment; The role of maps in human geography ; Time and space: the place of History in Geography; some different dimensions of human geography: local- global relations; cultural-nature relations; image-reality (the role images play in the construction of geographical knowledge)

Part Two – Some themes: production and consumption; development; sustainability; citizenship and governance; landscapes.

Part Three – Some contexts: the city; the country; travel and tourism; the media.

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### **Geography Methods (GEO2370L)**

Methods and tools for Geographical analysis. Schemes and field drawings. Reading and analyzing texts. Synthesis. Identification of the main ideas in a text and critica analysis. Search, discussion and clearing of concepts. Identification and formulation of a problem. Making up a report. Written and oral presentations. Literature review and organization of literature references.

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### **Statistics Applied to Human and Social Sciences (MAT2558L)**

Descriptive statistics

Introduction to probability

Random variables : unidimensional and bidimensional

Main probability distributions

Introduction to sampling

Point estimation and confidence intervals

Hypothesis testing

Goodness of fit and independence tests

Other non-parametric tests

Correlation and linear regression

Use of statistical software.



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### **Cartography (GEO2371L)**

Theoretical principles of cartography: Map scale, coordinate systems and reckoning; map projections; processes and generalizing geographical data; graphic perception and design.

Data manipulation and generalization; simplification and classification processes; symbolization (mapping with point, line and area symbol)

Portuguese cartography: main stages of the Portuguese cartography evolution

Use of maps with a critical perspective

Case Studies involving compilation and treatment of statistic data concerning conception of thematic maps.

Introduction to geographic representation: From cartography to GIS, evolution of digital cartography

The concept of geographical information system: Presentation of the basic characteristics of spatial data models i.e. vectorial data model, the raster data model and other spatial data models, providing an introductory evaluation to its main possibilities and limitations.

Introduction to spatial analysis in GIS - Patterns and spatial relationships

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### **Photo Interpretation (GEO0773L)**

Remote detection and aerial photography

Explanation of what is meant by remote sensing, and within this concept, the use and analysis of aerial photography as an element of analysis for different geographical situations.

Explanation on how to get aerial photos and the types of photos that can be made, including the use of different wavelengths.

Aerial photography and its uses in geography and geology.

Use of aerial photography: observation of slopes, areas at risk, rocky areas, vegetation types, roads, rural roads, rivers, drainage network types, geology, geological fractures, photointerpreted alignments, etc..

View aerial photos in stereoscopy.

Practical analysis of aerial photography based on stereoscopic observation. Design of structures on pairs of photographs and their analysis.

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### **Human Geography II (GEO2373L)**

1. Culture – Nature: cultures, environments and regions; The Earth as humanity's home. 2. Population patterns and processes. 3. Cultural areas and political imprint. 4. Geography of economic development: everything in its place – principles of location; globalization and local economic development 5. Social Geographies of the modern world: global disparities in nutrition and health; Geographies of inequality.

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### **Physical Geography II (GEO2372L)**

Lithosphere and plate tectonics. The alpine chains, continental shields, areas of sedimentary cover, rifts zones, volcanic areas, faults and earthquakes. The role of the relief in the enhancement of global climatic diversity. The ocean currents. The Gulf Stream and climate of Western Europe. The thermohaline circulation. The watershed of major worldwide rivers (flow, regime, sediment transport). Potentials and limitations of large physical units. Quantitative analysis of river basins. The water cycle, runoff, groundwater. Watercourses. Physical variables used in river studies. Sediment transport. Factors affecting the hydraulic erosion, transport and deposition of sediment. Fluvial landforms. Variation of the base level. Formation of estuaries and deltas. Dynamics of coastal areas. The types of coast. Areas of coastal erosion and accumulation. Glacier erosion systems worldwide. Systems for wind erosion. The wind environments worldwide. Causes and consequences of sea level changes.





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### **Fundamentals of Geology (GEO2374L)**

The Dynamic of Earth - Earth as a system of interacting components: the climate system, system tectonic and geodynamic system

1 - The tectonic system ? The theory of plate tectonics; 2 - The hydrologic system and groundwater; 3 - The study of minerals; 4 - Rocks: the record of geologic processes; 4.1. The geologic cycle, 4.2. Igneous rocks, 4.3. Sedimentary rocks, 4.4. Metamorphic rocks; 5 - Erosion and weathering: physical and chemical weathering, the soil as a residue of weathering processes; 6 - Sedimentary environments: continental - lacustrine and fluvial, coastal and marine; 7 ? Rock deformation processes: folds and faults.

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### **Economic Geography (ECN2289L)**

1. Characterization and conceptual framework
2. The organization of space
3. A predominantly urban world
4. Current Dynamics of the World Economy
5. The role of institutions in the globalization
6. Development and Underdevelopment

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### **Multivariate Data Analysis (MAT2557L)**

1. Elementary concepts of the theory of matrices.
2. The Multivariate Normal Distribution.
3. Univariate analysis of variance.
4. Multivariate Analysis of Variance.
5. Non-Parametric Tests (Multivariate).
6. Principal Component Analysis. Factorial Analysis. Cluster Analysis.

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### **Biogeography (BIO2375L)**

I. Fundamentals.

Scales of space, time and shift.

Brief concepts of systematics and biological taxonomy.

Abiotic factors; latitudinal and altitudinal zonation.

Biotic factors; ecological interactions.

Evolutionary processes: extinction, speciation, adaptation.

Patterns of species distribution, endemism, rarity, colonization, migration and geographic dispersion.

Distribution patterns of communities: terrestrial biomes, areas of transition, diversity and richness.

II. Applications and case studies.

Indexes and zonal gradients; indexes of diversity.

Cluster analysis of chorotypes.

Models of selection of protected areas.

Effects of anthropogenic disturbance on a global scale.

Peculiarities of the Iberian flora. Peculiarities of the Iberian fauna.



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### **Urban Space (GEO0772L)**

1. Discussion about the concept of city and urbanization process.  
2. Origin and historical evolution of the cities.  
From the first cities to the Industrial Revolution.  
The Industrial Revolution, the development and reorganization of the cities.
3. Urban morphology and structure.  
Elements of the urban landscape.  
Typology of built spaces.  
Typology of not constructed urban spaces.  
Urban structure models.
4. Urban functions and urban spaces functions.  
Location pattern of the main activities and trends of evolution.
5. Main problems of the urban development.  
Degradation of urban life quality.  
Aging and requalification of historical centers.  
The urban expansion and the integration in the landscape.
6. Strategic planning and requalification of the medium sized cities.  
Some case studies.

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### **Landscape and Countryside (PAO0782L)**

The concept of rural space and its evolution. Rural Geography, Agricultural Geography, and contributions from other disciplines. The organization of the rural space, until some decades ago. Models of interpretation. Processes of change of the agriculture and of the landscape. From productivism to post-productivism and multiple transition processes. The demand and the definition of landscape functions. Patterns and organization of the landscape today. The Portuguese rural space today.

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### **Systems of Geographical Information in Geosciences (GEO0780L)**

GIS and the sciences.  
Graphical representations; Projection Systems; Georeferencing; Scanning information.  
Computer georeferenced data.  
Symbols and Labels in GIS  
Creation of Layouts  
Scanning of points and lines.  
Creation of a project  
Georeferencing:  
Digitizing polygons  
Creating layouts  
Information search the tools and basic SQL Databases • Rules for creating maps  
Small GIS project.



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### **Geomorphology (GEO2376L)**

Theoretical:

1 – slopes, process and forms, mass movements, 2 – fluvial processes; forms related with fluvial processes; 3 – estuaries and deltas; 4 – alluvial fans; 5 – coastal processes and landforms; 6 – glacial processes and landforms, ice sheet and alpine glaciers, fluvioglacial processes, lacustrine sediments; 7 – Geomorphology of arid regions, aeolian processes and landforms, formation of glacia, pediments and pediplains; 8 – structural reliefs and drainage patterns related with structural controls, tectonics and drainage adjustment; 9 – longterm landscape evolution (cycle of erosion) and formation of planation surfaces.

Practical:

Identification of structural landforms, fluvial, coastal, glacial, periglacial, aeolian and karst, using topographic maps, aerial photography, MDT, and sketch maps to the appropriate topics.

Elaboration of a geomorphologic map.

Calculation of incision rates and uplift rates using fluvial and marine terraces as geomorphic references.

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### **Remote Sensing (ERU0535L)**

I. Fundamentals of Remote Sensing

1.1. Electromagnetic Radiation, 1.2. Laws of thermal radiation, 1.3. Interaction with the atmosphere and image correction; 1.4. Interaction with the Earth's surface (Type of sensors).

II. Characteristics of images

2.1. Concept of resolution (spectral, spatial, temporal, radiometric).

III. Remote Sensing systems

3.1. Platforms and their characteristics; 3.2. Components of satellites; 3.3. Orbits of satellites; 3.4. Sensors and their characteristics; 3.5. Applications and characteristics of its satellites and optical sensors).

IV. Processing and image analysis

4.1. Visual interpretation, 4.2. Pre-processing (geometric corrections; Ortho-rectification image, radiometric corrections), 4.3. Improvement of image contrast, 4.4. Transformation of the data (Vegetation indices, principal component analysis; Tasseled Cap Transformation), 4.5. Classification imaging (supervised classification; accuracy assessment of the classification results)

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### **Geography of Portugal (GEO2377L)**

- The geographic position of Portugal. Significance and importance of the position in SW of Europe (between the Mediterranean and the Atlantic, in transition to Africa).

- Landforms and geomorphologic dynamics.

- The climate of Portugal, originality and diversity. Implications in the environment.

- Water resources (surface and underground). - Natural hazards and most sensitive ecosystems: riparian zones, coastal ecosystems (cliff, beach and dunes, estuaries and deltas, lagoon).

- The settlement.

- The population and the territory.

- The cities ? National urban network.

- Geographic division of continental Portugal.



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### **Space Analysis (PAO0769L)**

Geographic representation: Evaluation of the different representation metaphors and an introduction to a systemic approach to representation metaphors.

Spatial data models: Detailed analysis of vectorial model, raster model and other data models.

Unique layer spatial operations: Neighbourhood analysis, buffering, masks and filtering.

Multiple layer spatial operations: Overlay analysis and geoprocessing operations.

Dimensionality of geographic data: 3-dimensional models and an introduction to time modelling.

Conceptual design of data models and geographic modelling: Geographic modelling concepts and flowcharts design including map algebra operations.

Network analysis: Shortest path analysis, service area, cost distance functions

Future perspectives: New spatial data models, new models for spatial relations and new spatial analysis processes.

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### **Characterisation and Assessment of Territory (PAO2378L)**

Concept of Landscape

The nature of spatial information

Perception of the nature of the landscape

The importance of scale, structure and function:

Landscape assessment:

- the analytical, synthetic and hierarchical perspectives
- the landscape as a complex object
- the disturbed landscape
- the ecological landscape
- the cultural landscape

The practice of landscape assessment

- Material and circumstantial elements
- Climatology
- Morphology
- Geology
- Soil
- Hydrology
- Ecology

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### **Ecology (PAO2390L)**

Ecology: Definitions, concepts, scope.

Structure and function of ecosystems: circulation of matter and energy; energy to control entropy

Biogeochemical cycles: global and local, impact of human activities

Environmental factors: Leibig and Shelford Laws. Factors of production and decomposition. The landscape interpretation

Production and trophic structure: Energy fluxes between trophic levels and ecological efficiencies. The predominant paths

Population: characteristics and vital rates. Models of growth. Selection strategies r and K. Predator-prey interactions, population cycles. Competition. Population regulation

Species diversity in the evaluation of anthropogenic pressures and environmental quality

Island biogeography Theory - implications for networks of green spaces and classified areas

Community: Structure, stability, environmental quality. Resistance and resilience

Succession: Primary and secondary. Natural and Cultural.Climax theories.

Man-Nature relationship



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### **Pedology for Planning (GEO2379L)**

Soil functions, spatial and temporal framework for soil study. Soil profile, horizons and soil material. Soil composition. Basic chemical and physical soil properties. "Classificação dos Solos de Portugal". Soil maps and soil information systems. Sustainable soil use and main types of soil degradation. Soils and land use management.

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### **Investigation Techniques in Geography (GEO2380L)**

- The process of research in geography: The object of study, interpretation of reality (the common sense and scientific knowledge); The production of scientific knowledge and broad conceptions of science, theory, concepts and methods.
- Recognition of the importance of linking different approaches to the analysis and contextualization of research.
- The question of the choice of methodologies. The data processing.
- The importance of the advisor / advising: contacts and discussion of the investigation.
- Examples of application of educational research in Geography.
- Presentation of results in the form of scientific articles, reports, dashboards and oral communications.

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### **Environmental Impact Assessment (PAO2381L)**

The concepts of environmental assessment and sustainability- the concepts of disturbance, naturalness and artificiality. The evaluation system of reference - Mankind health and well being.

The EIA concept in the frame of the environmental management concept - strategic evaluation, auditing, certification. Transdisciplinary horizontal evaluation

The evaluation concept - reference systems, scales, operation, values, reproducibility. The paradigms, evaluation and decision making. Outrage.

Legal framework. Other national models, Relations with the planning and permit processes

EIA phases: screening, scoping, reference situation, impact evaluation and mitigation, Environmental Impact Declaration, post evaluation (monitoring and auditing) Public participation

The practice of EIA: Impact evaluation and prediction, Universes of impact, Impact aggregation.

Impacts of Biophysical systems, on flora, fauna, vegetation, habitats and on the natural and cultural heritage.

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### **Regional Planning (PAO11050L)**

1. Spatial planning process:

1.1. Introduction to theories and their evolution;

1.2. Basic concepts;

1.3. Planning System in Portugal;

1.4. Public participation in Spatial planning.

2. Presentation of plans at different levels (Natura 2000 and National Protected Areas Network, among others); analysis and discussion on different subjects, mainly related with the valorization and conservation of natural resources.

3. Evaluation and public decision: notions of Evaluation. Multicriteria decision aid methodology.

4. Potentialities and constraints for the future of spatial planning in Portugal.

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### **Public Administration and Regional Policy (ECN2383L)**

1. Introduction. 2. Public Administration, Government, Territorial Development and Planning. 3. Local and Regional Development Public Policies. 4. Policies for Urban Management and Planning. 5. Analysis and Evaluation of Territorial Public Policies. 6. Regional and Urban Public Policies in Portugal. 7. Models of Decision Analysis. 8. Conclusions.



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### **Coastal and Area Areas (GEO2384L)**

Coastal and riparian systems as elements of natural geographic environment. General aspects of coastal systems (beach, dune and cliff), elements of coastal dynamics. Historical development and recent coastal environments. Relationship between the evolution of the coastline and land use. Natural and technological hazards. Environment and coastal ecosystem concepts. The importance of riparian areas in regional economies: the multifunctional land use. Dynamic evolution of riparian environments. Risks and hazards (causes and consequences). Current problems of land use: the abandonment of traditional activities and the new land uses (fishing, agriculture, industry, residence, use sports, bathing and other); changes in the natural landscape; conflicts between land use and the balance of the natural system. The management and planning of coastal and riparian environments. Consequences of climate change on coastal and riparian environments, future scenarios and mitigation forms.

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### **Demography (SOC2385L)**

Module 1- Population Growth and Age Structure Analysis

Data and sources of demographic knowledge; The balancing equation for populations; Exponential growth; The Growth rate "r"; Doubling times; Age and sex composition; Age Pyramids; Dependency Ratios; Population Momentum.

Module 2 – Periods and Cohorts

Lexis Diagrams; The Synthetic Cohort; Period-Persons Years Lived; The Crude Rate Model; The Infant Mortality Rate

Module 3 – Cohort and Period Mortality

Cohort survival; Probabilities of dying; Cohort Life Table and Period Life Table

Module 4 – Cohort and Period Fertility

Cohort fertility and Parity; Period Measures; Period Age-Specific Fertility; Period NRR, TFR and GRR; Agestandardized Rates.

Module 5 - Location and Migration

Population Distribution by Geographic Areas; Internal Migration and Short-Distance Mobility; International Migration; Net Migration Estimation Methods.

Module 6 – Causes and consequences of population change.

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### **Regional Economics (ECN2307L)**

1. The variable space in economic analysis. The space and its scales . The space and its indicators analysis and planning . Region concept . The territory and its agents . The territory and its organization and hierarchy .

The territory and its infrastructure and equipment . Political and administrative territorial structure. Factors dynamic economic territories . The assessment of potential territorial and sectoral.

2. The regional economic theory . The precursors . The economic base of export theory. The growth poles theory. Models of regional growth. Theories of endogenous and exogenous regional development . The new approaches and perspectives .

3. The spatial analysis methods and techniques. The spatial analysis models. The spatial econometrics. The GIS.

4. The Portuguese system for regional policy and territorial planning. Regional planning in Portugal . The NSRF 2007-2013. The financial programming period 2014-2020 .

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### **Social and Cultural Geography (GEO2386L)**

1. Themes: Social and cultural geographical processes ; cultural systems ; cultural nationalism; culture and identity; gender inequities in geographic perspective; globalization and social and cultural changes

2. Contexts: some examples about place - the distinctions of public and private and rural and urban places. Our understandings of places can play a central role in processes of social and cultural exclusion.



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### **Geology of Portugal (GEO1448L)**

Main geological units of Portugal.

Short reference to the Proterozoic record.

The evolution during the Paleozoic: The Variscan Cycle.

The Early Paleozoic: stratigraphy and magmatism

The Late Paleozoic: stratigraphy, magmatism, metamorphism and structure.

Synthesis of the evolution of the Portugal Mainland during the Variscan Cycle and the transition to the Alpine Cycle

The evolution of Meso-Cenozoic.

The West and Algarve basins, its relations with the Atlantic and Tethys oceans.

Stratigraphy

Sedimentary environments and paleogeography

Magmatism

Short reference to the geology of Azores and Madeira islands.

The Portuguese continental shelf.

The geological evolution during the Plio-Pleistocene, Neotectonic activity and seismicity in Portugal.

Analysis of selected sheets of the Geological Map of Portugal at different scales.

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### **Habitat Microclimatology (GEO2387L)**

1. Micrometeorology and Microclimatology

2. The climate system: components, properties and processes.

3. The Energy in the climate System

4. The water in the climate system

5. Physical Principles of Microclimatology

6. Transport of momentum, energy and mass in the boundary layer

7. Soil Temperature and soil moisture

8. Natural atmospheric environments

9. The climate of modified environments

10. Planning in the scope of climate change.

11. Microclimatological instrumentation.

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### **Planning of Touristic Resources (PAO2388L)**

Landscape concept, pattern and components. The rural landscape dynamics and present characteristics. Multifunctionality of the rural landscape. Relation of recreation and tourism with other rural activities. Planning. Regulative instruments. Proposal of the development project for rural sustainable tourism.

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### **Surveying (ERU2389L)**

The course is structured in the following programmatic lines:

A-Reviews (scales, angular units and its conversions; elementary trigonometry);

B-Introduction to the concepts of geoid, ellipsoid, geographic coordinates, map projection systems, geodetic datum, geodetic network; rectangular plane coordinates (distance and direction calculations, coordinates transportation, orientation), introduction to notions of altimetry and planimetry for the interpretation and use of topographic maps, terrain cross sections and longitudinal cross sections, calculation of cut and fill volumes;

C-surveying: with optical level (geometric), with a theodolite (trigonometric) and topographic GPS (DGPS).

D-Introduction to Surveying software (Autodesk LandDesktop).



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### **Academic Writing Skills (LLT2313L)**

1. From active reading to writing - how to read to write better.
2. From the identification of the various types of written texts to writing - how to distinguish the various discursive registers.
3. From debate to writing - how to interpret the confrontation of different perspectives on a many-sided debate on a determined issue.
4. From the working hypothesis to writing - how to know and recognize what is at stake on a determined working hypothesis.
5. From the subject to the written plan - how to structure a subject in a work plan to write about the same topic.

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### **Entrepreneurship and Innovation (GES2310L)**

Module 1 – Introduction to Entrepreneurship and Innovation

- a. Definitions and concepts of Entrepreneurship
- b. Profile and characteristics of entrepreneurs
- c. Social entrepreneurship and intrapreneurship
- d. What is innovation? Types of innovation
- e. Dynamics of innovation

Module 2 – Conception and Structuring business ideas

- a. Process and techniques of generating ideas
- b. Design Thinking tool
- c. Evaluation of business ideas
- d. The process of creating a business idea and firm
- e. Simulation games- from ideas to business formation

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### **Environment Geology and Regional Planning (GEO1440L)**

- 1 – Water cycle sustainability
- 2 – Geologic hazards and land-use planning
- 3 – Geologic risks and water resources
  - a) Floods
  - b) Groundwater contamination
  - c) Aquifer remediation and protection
- 5 – Sismicity
- 6 – Coastal hazards and coastal erosion
- 7 – Soils and erosion
- 8 – Mass movement
- 9 – CO<sub>2</sub> storage and climate change

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### **Research Project in Geography (GEO2382L)**

- Research project: guiding principles for research (philosophy of science); project concept (science geographical) operationalization of the project (methods).
- Steps of the research process: defining the starting point, holding the object of study; questioning the purpose of study; identifying key concepts; research structure (relations between concepts) identification of hypotheses; data collection appropriate to the development of hypotheses; data processing; conclusion - response and / or theses.





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### **General History of Art (HIS2391L)**

The Pre-History, Proto-History and first civilizations arts as an introduction to the Art History.

The Greek world and the Roman Art

From the Late Antiquity to the Middle Ages. The Romanesque. The Gothic and the Late Gothic.

Renaissance and Mannerism. The new social status of the artist and the treatises emergence. The classic ideal paradigm and its overcoming in architecture and sculpture. The individual, the nature, the experience, the science and the space of representation.

Baroque and Rococo: between faith, emotion and reason.

The 19th century: tradition, revolution and progress. Neoclassicism and Romanticism. From Realism to the Post-Impressionism.

Symbolism and Expressionism. Arts and Crafts, Art Nouveau and Art Deco. The Chicago School.

Avant-Gardes and the new architectonic tendencies

From the Post-War to the beginning of the 21st century. Between Informalism and Action. The return to the Figuration. The

New Abstraction. Conceptua Art. Technology and Mega-structures

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### **History of Classical Antiquity (HIS2392L)**

Key concepts: Classicism, Myth, Identity

The available sources and geographical framework

#### I. Greece

-Minoan Greece

-The Mycenaean Greece

-The Dark Ages: The world of Homer and the founding myths

-The Archaic Period

-The Classical Age: from the oikos to the polis:

a. the emergence of city-states and the renewal of identities

b. the formation of political programs

c. the Hellenic Wars and the crisis of the polis

-The end of classicism. The Hellenism

#### II. Rome

- Italy before Rome

- The city of Rome: from the villages to the Urbs

- The Roman Republic:

a. the patrician and plebeian Res Publica: origins of a new political system

b. the Roman Republic until the Punic Wars

c. the foreign policy during the Punic Wars

d. the conquest of the East

- The Imperium

- Causes of decay of Rome

- Christianity and the changes in the world of Late Antiquity



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### **Pre-History (HIS2393L)**

1. THE PREHISTORY AND THE ARCHAEOLOGY
2. THE HUNTERS - COLLECTORS IN PALAEOOLITHIC
  - 1 Man's place in the zoological series
  - 2 The evolution during the Inferior Paleolithic
  - 3 The evolution during the Middle Paleolithic
  - 4 The evolution during the Upper Paleolithic
3. FROM THE HUNTERS - COLLECTORS TO THE FIRST PRODUCERS
  - 1The post-glacial environment and the new society
  - 2.The Habitats and the economy
  - 3The shell mounds
  - 4The stone industry and the use of the bone.
4. THE FIRST AGRO-PASTORAL SOCIETIES (the Neolithic)
  - 1The concepts of Neolithic
  - 2 Climate and the socio-economic changes
  - 3The domestication of the land and animals
  - 4The new utensils
  - 5The occupation of space - the habitats and territories
5. THE FIRST SOCIETIES WITH METALLURGY
  - 1The objects of prestige and "vessel" Bell
  - 2 The "Secondary Products Revolution".
  - 3 Spaces of habitat and areas of exploration
  - 4The various "Bronze Age"
  - 5The artifacts world of metallurgical societies
  - 6The first Mediterranean commercial shops and the writing.

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### **History of Medieval Portugal (HIS2394L)**

- I The Iberian Peninsula from 8th to 10 th century: land and landlords
  - 1 The Muslim Invasion. From the Emirate to the caliphate. The coexistence of religions.
  - 2 The Leonese kingdom of Asturias. The territorial advance of 9th and 10th centuries
- II From the county to the regnum
  - 3 The nobility and the construction of the portuguese county.
  - 4 The government of the county: from D Henry to D Teresa and the demand for political autonomy
  - 5 From S. Mamede to the Manifestis Probatum
- III The construction of the regnum: The power of royalty (1128-1325)
  - 6 Reconquest and territory
  - 7 The limits of royalty: 1211-1245
  - 8 The reign of Alphonse III and the organization of king Denis
- IV The construction of the regnum: institutions and agents (1128-1325)
  - 9 To rule the kingdom: the basis of the administration
  - 10 The write of memory: the royal chancery and his agents
- V The 14th century
  - 11 The causes of the crisis
  - 12 The political instability and the crisis of 1383-85
- VI The Avis dynasty



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### **History of Early Modern and Contemporary World (HIS2395L)**

Operational concepts and periods in the 'History of the Modern and Contemporary world' study.

The political geography of Europe and its evolution: 16th-18th cents..

European expansion. Dynamics of colonial empires: 15th-18th cent..

Renaissance(s), Reforms and Religious Wars.

The construction of the Modern State. Absolutism and Parliamentarianism. France versus England.

The new intellectual order. Modern science and illumination.

The American Revolution and the French Revolution. The Europe of revolutions. Liberalism, the Romantic movement and nationalist movements.

The Ind. Revolution in Britain, industrialization and modern economic growth. Europe and the World.

Culture and ideology in the 19th cent..

The 1<sup>st</sup> W. War and the Russian Revolution. 1929 crisis of and the rise of totalitarian ideology in Europe.

The 2<sup>nd</sup> W. War, political blocks and the Cold War. The fall of the Berlin Wall.

Economy and society in the second half of the 20th cent.. Europe and the World.

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### **Expansion and Colonial Dynamics (HIS2398L)**

1. Historical Antecedents of European Expansion.

2. Evolution of old concepts such as "colony", "colonialism" and "imperialism".

3. Origin and evolution of the main Colonial Empires and their colonial policies:

Portugal (Africa, Brazil, Asia/Southeast Asia/Oceania)

Spain (Spanish-America/Río de Oro/Equatorial Guinea/Philippines)

France (Canada/French Caribbean/French Guyana/French Africa/French Asia/French Oceania)

Holland (New Amsterdam/Dutch Brazil (1624-1654)/Dutch Caribbean/Dutch Guyana/Dutch Asia)

England (Canada and the North-American Colonies/British Caribbean/British Guyana/British Africa/British Asia/British Oceania)

4. Present chronologically the different territorial expansion models and the subsequent formation of the European Colonial Empires in different parts of the world.

5. Analyze the different dynamics behind Western/European colonization; sociological profile of the colonizers, exile; emigration;erc

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### **Empires and Decolonization (HIS2399L)**

1. Introduction to the history of imperialism, colonialism and decolonization. Chronology, theories and concepts.

2. The general question of decline and fall of empires. Gibbon the "classical" Roman Empire theory.

3. American independences and the phenomena of imperialism (c. 1770 - c. 1830).

4. "New" imperialism (c. 1830-1914): its origins and nature.

5. Imperialism and colonialism in post World War One: crisis, decline and revival.

6. Imperialism and colonialism: from Second World War to the ultimate decolonization wave (1939-c.1980). Theory and history.

7. Neo-colonialism and post-imperialism: politics, economy, culture, religion and ideology.



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### **Themes of History of Modern Portugal (HIS2400L)**

- 1 Humanism and Renaissance: the specificity of Portugal
- 2 The impact of the Counter-Reformation in Portugal. The Inquisition. Censorship.
- 3 The ecclesiastical power: the post-Tridentine context and the religious experiences.
- 4 Production structures and tax burdens: social appropriation of land and the legal system of land ownership, the domestic market and the colonies.
- 5 The construction of the central political-institutional, legal and political culture, the structure of the modern state. Local authorities and peripheral administration of the Crown. The military and diplomatic issues.
- 6 The social space of the Ancien Régime: inequality, privilege and hierarchy as structuring brands of the society; forms of social control and representation.
- 7 Material culture and everyday life spaces. The Reading and the writing; social and political contexts of cultural production.
- 8 Forms of violence and control. Mental models and cultural paradigms at the end of Ancien Régime in Portugal.

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### **Themes of History of Contemporary Portugal (HIS2401L)**

The main themes on History of Portugal (19th and 20th centuries) are:

1. Population, Family and Migration (1800-1990)
2. Society and Social Change in Portugal (1800-1970)
3. The Portuguese Economy in the 19th and 20th centuries: Transition, Dynamics and Debates.
4. Portugal and the 3rd Empire: Construction and Fall (1836-1975).
5. Portugal and the European Construction.

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### **Themes of Medieval History of Portugal (HIS2402L)**

1. Demographics and society
2. Powers and discourses of power
3. Economy: production and circulation
4. Culture: intellectual, artistic and material culture
5. Everyday life and sociability

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### **History of Early Modern Portugal (HIS2396L)**

1. Structural trend lines:
  - 1.1. Formation of the empire and evolution of geographical and historical complexes from the late fourteenth century.
  - 1.2. Demography and the small rate of urbanization.
2. Conjunctural dynamics (from the late fifteenth century to the Napoleonic wars):
  - 2.1. The House of Avis: from the "Manueline" apogee to Alcazarquivir;
  - 2.2. The economic crises of the second half of the sixteenth century;
  - 2.3. 1580 as conjuncture;
  - 2.4. Portugal under the House of Austria (1580-1640);
  - 2.5. The Restoration;
  - 2.6. The political crises of the second half of the seventeenth century and its political and social effects.
  - 2.7. The economic crisis of the 1660-1680s;
  - 2.8. Portugal under D. João V;
  - 2.9. The Age of Pombal;
  - 2.10. The "viradeira";
  - 2.11. The situation in Portugal in the European context of the threshold of the nineteenth century and the French invasions.
3. The major structural changes of the Early Modern Portugal: a synthesis.



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### **History of Contemporary Portugal (HIS2397L)**

An overview of the Contemporary History of Portugal through the perspective of the political processes and dynamics, since the crisis of the Ancien Régime (1807) until the joining of the EEC in 1986.

This syllabus emphasizes four topics: the periodization; the political transitions, the political institutions and the political citizenship. The main titles of those topics are:

1. THE PORTUGUESE HISTORIOGRAPHY ON CONTEMPORARY PORTUGAL.
2. TIMES OF REVOLUTIONS AND CHANGE: THE CONSTRUCTION AND CONSOLIDATION OF THE LIBERAL PORTUGAL (1808-1890).
3. THE CRISIS OF THE CONSTITUTIONAL MONARCHY AND THE 1ST REPUBLICAN EXPERIENCE (1890-1926)
4. THE ESTADO NOVO: THE AUTHORITARIAN AND ANTI-LIBERAL CYCLE (1926-1974)