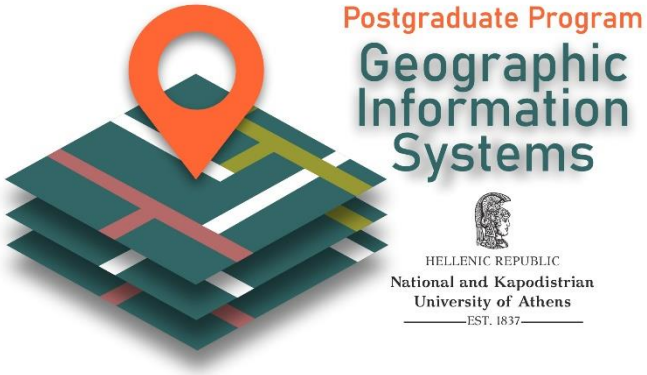
HELLENIC REPUBLIC

National and Kapodistrian University of Athens

EST. 1837

SCHOOL OF SCIENCE

FACULTY OF GEOLOGY AND GEOENVIRONMENT



STUDY GUIDE

ACADEMIC YEAR 2023-2024

Athens, 2024

Contents

1. The National and Kapodistrian University of Athens

1.1 Overview and mission

The Central Administration National and Kapodistrian University of Athens is at 30 Eleftheriou Velizelou Av., 106 79, Athens, Greece. The website is http://www.uoa.gr and its location can be found in the following map http://maps.uoa.gr.

The National and Kapodistrian University of Athens (NKUA) has recently celebrated 180 years as of its foundation and is the oldest university in Greece, as well as the higher education institution in the Balkans and the Eastern Mediterranean. Given its historical background and through the significant efforts of its human resources, the NKUA has attained recognition as a center of educational and scientific excellence.

The NKUA consists of eight Schools and offers a broad range of study areas; prospective students can choose from 33 undergraduate and 183 postgraduate study programs, as well as pursue doctoral and postdoctoral studies. 39,088 undergraduate students, 11,479 postgraduate students, 14,240 doctoral candidates and 5,654 foreign students pursue their studies and foundation of their careers at the NKUA; all these are taught by 2,104 Professors and other Research and Teaching Staff and are supported by 1087 administrative and technical staff. The total area spanned by the university's teaching and research facilities is approximately 700,000 square meters.

The NKUA cares about, and to a considerable degree caters for the personal and professional success of its graduates and endeavors to make them highly employable and influential in their respective professional spheres. To this effect, the curricula of the NKUA's departments are constantly upgraded and educational/ research activities are aggressively pursued. Because NKUA is a research university, all faculty members and researchers are continuously encouraged to push and expand the boundaries of knowledge in their respective fields of expertise. Students are also encouraged to participate and excel in Olympiads and international academic competitions; they are also invited to participate in educational and research activities conducted in the NKUA's laboratories, libraries, and museums.

The internationalization of the NKUA is a priority for both Rectoral Authorities and members of its Academic Community. Decades of cooperation with partner institutions from most European Union and other European countries as well as the participation in international organizations, associations and university networks, have led to a consistent development of the NKUA's international profile and its fundamental role in student and staff mobility. The NKUA strongly believes that cooperation between higher education institutes is essential to the strengthening of bilateral and multi-lateral relations between sovereign countries. The mobility activities foreseen by the ERASMUS+ program for the academic year 2018-19 are based on 655 Erasmus Agreements between the NKUA and 336 universities of 31 European countries. Finally, and importantly, the NKUA is involved in 60 scientific cooperation agreements with universities of EU countries, the US, Canada, China, the Russian Federation, Japan, Australia, Israel, Jordan, Korea, Iran, Taiwan and others, as well as with high profile research centers such as CERN (Switzerland), INRIA (France) and A*STAR (Singapore).

1.1.2 Schools, Departments and Study Programs

The NKUA comprises 9 Schools and 43 Departments; detailed information can be found in:
https://en.uoa.gr/schools_and_departments/
The NKUA offers 43 Undergraduate Study Programs; detailed information can be found in:
https://en.uoa.gr/studies/undergraduate_programs/
The NKUA offers 187 Postgraduate Study Programs in addition to the Postgraduate Program "Geographic Information Systems". Information can be sought in:
https://en.uoa.gr/studies/postgraduate_programs/
The NKUA offers several Postgraduate Study programs in languages other than Greek. For information please visit:
https://en.uoa.gr/studies/master_programs_in_various_languages/

1.1.3 Personnel

- Professors (all ranks): 1,703
- Research associates and other teaching, laboratory and technical staff: 486
- Administrative staff: 1,095

1.1.4 Students

- 44,658 undergraduates
- 13,257 graduate students at Master level
- 8,015 Ph.D. candidates

1.1.5 International students

- 5,795 Undergraduates
- 211 Graduate Students at Master level
- 121 Ph.D. Candidates

1.2 Language Policies

The official language of the University of Athens is Greek, which is the official language of the country, as well as one of the 23 languages of the European Union.
The language in which access to knowledge is achieved and the work language of the Postgraduate Programs that leads to obtaining a post graduate specialty degree or to acquiring a doctoral degree is Greek, except if the internal regulation of the Post-graduate Program makes provision for the use of other languages. The writing up of the doctoral dissertation for the Post-graduate Program or the dissertation for the doctoral degree may be realized in Greek or in another language, according to the internal regulations of the Program. The bibliography that is suggested and is currently used in the Postgraduate is in Greek and in other languages and for this reason, the knowledge of foreign languages by the prospective incoming students of the Post-graduate Program of the University of Athens is either obligatory or optional but desired.

1.2.1 Teaching of Foreign Languages

The National and Kapodistrian University of Athens, within its instructive and broader educational scope, offers its students the possibility of acquiring, during their studies, the knowledge of one or more foreign languages, which constitute necessary tools for scientific fulfillment.

This important task of foreign language learning is accomplished by the Foreign Language Teaching Centre ('Didaskaleio') of the University of Athens.

Didaskaleio is an independent and autonomous academic teaching unit, which offers high-standard foreign language tuition.

At present, 22 foreign languages of all levels of competence, are being taught at Didaskaleio: English, Albanian, Arabic, Bulgarian, Czech, Chinese, Danish, Dutch, French, Finnish, German, Hindi, Italian, Japanese, Korean, Norwegian, Persian, Portuguese, Russian, Serbian, Spanish, Swedish and Turkish.

In addition, special programs are offered for those wishing to specialize in language skills: language laboratories, translation, law and medical terminology. More analytically:

- IELTS Course (International English Language Testing System) (three-hour sessions three times per week)
- Lab for Written and Spoken English; Levels B1-B2
- Lab for Spoken English (Debating-Public Speaking); Levels C1-C2
- English Lab for Academic Writing; Levels C1-C2
- Medical Terminology in English (Medical School Students - Doctors - Nursing Staff)
- Law Terminology in English
- Translation in the English and Greek Language; B2 level and above
- Lab for Spoken French; Levels B1-B2
- Law Terminology in French
- Institutions, Terminology and Translation of European Union Documents in French
- Lab for Written and Spoken German; Levels C1-C2
- Lab for Written and Spoken Spanish; Levels B2-C1
- Lab for Written and Spoken Italian (Levels B2-C1)

Lessons are conducted either in the city centre, or at the University Campus in Zografou and can be attended not only by home students but also by students at other Greek Universities or of Technological Institutes as well as by anyone interested since tuition fees are particularly low.

Upon successful completion of attendance, the Foreign Language Teaching Centre provides students with the following certificates: a Certificate of Attendance and a Certificate of Studies.

Address: Foreign Language Teaching Center, Hippokratous 7, 106 79, Athens

Telephone: 210–3688204, 210-3688232, 210-3688265, 210-3688266, 210-3688263

e-mail: info@greekcourses.uoa.gr

Website: http://www.didaskaleio.uoa.gr/

1.2.2 Greek as A Foreign Language

The Modern Greek Language Teaching Centre of the National and Kapodistrian University of Athens has been functioning since the 1950s, initially with a very limited number of students. In the decades that followed the number of students increased exponentially. The Modern Greek Teaching Centre is the largest of its kind in the world. Many of its graduates are today teachers of Modern Greek and Philology at Universities throughout the world, members of the diplomatic corps in their own countries, church leaders, renowned scientists, company managers, respected artists, and business professionals.

The Teaching Centre is under the auspices of the Interdepartmental Programme for the Teaching of Modern Greek as a second/foreign language along with the similarly titled Master's Degree Programme of The Department of Philology and The Department of Philosophy, Pedagogy and Psychology.

The aims of the Modern Greek Teaching Centre are as follows:

1. The teaching of Modern Greek as a second/foreign language;
2. The certification of the level of knowledge of Modern Greek as second/foreign language;
3. The exposure of foreigners to various facets and themes of the Greek culture;
4. Hands-on practical training of students of the Master's Degree Programme for the Teaching of Modern Greek as a second/foreign language.

Address: Modern Greek Language Teaching Center, University Campus, 157 84 Zografou

Telephone: 210-727 7672, 210 727 7971

E-mail: info@greekcourses.uoa.gr

1.3 ERASMUS+

Erasmus+ is the EU funding programme for education, training, youth and sport 2014-2020. Erasmus+ combines previous funding programmes in the sector, including the Lifelong Learning Pro-gramme (Comenius, Leonardo, Erasmus, Grundtvig and Trans-versal Programmes), Youth in Action and five international coop-eration programmes (Erasmus Mundus, Tempus, Alfa, Edulink and the programme for cooperation with industrialised coun-tries. Erasmus+ supports the following main Actions:

- Key Action 1: Learning Mobility of Individuals
- Key Action 2: Co-operation for Innovation and the Ex-change of Good Practices
- Key Action 3: Support for Policy Reform

For more information, please consult the following web pages:

https://www.iky.gr/en/discover-erasmus (IKY - Erasmus National Agency in Greece), and

http://ec.europa.eu/programmes/erasmus-plus/node_en (European Commission)

Eligible countries are divided into two groups, Programme countries and Partner countries. Although Programme countries are eligible for all actions of Erasmus+, Partner countries can only take part in some, and are subject to specific conditions.

For more information, see:

http://ec.europa.eu/programmes/erasmus-plus/node/3_en

Switzerland at the moment is not participating in Erasmus+ programme on an equal footing with Member States (i.e. as a "Pro-gramme Country") but is enjoying the status of other third countries (i.e. as a "Partner Country") and is financing all incoming and outgoing mobilities.

For more, see: http://ec.europa.eu/programmes/erasmus-plus/updates/20140128-participation-switzerland-erasmus-plus_en

The National and Kapodistrian University of Athens participates in the Erasmus+ programme having been awarded the Erasmus Charter for Higher Education: **31475-EPP-1-2014-1-GR-EPPKA3-ECHE**

Institutional Erasmus Code: **G ATHINE01**

PIC NUMBER OF THE UNIVERSITY: **999643007**

2. The Department of Geology and Geoenvironment

2.1 Contact Information

Address: Panepistimiopoli, Zografou 15784, Greece

Tel: +30 210 727 4279

Fax: +30 210 727 4051, +30 210 727 4063

Website: http://www.geol.uoa.gr

Info: dpsarris@geol.uoa.gr, kelchor@geol.uoa.gr

The Department of Geology and Geoenvironment is a part of the School of Sciences. It is the oldest Earth Science establishment in Greece – its history can be traced to the establishment of the University in 1839. At present, it is also the biggest academic unit in which Earth Sciences are taught and comprises six departments covering a broad range of earth science subjects. The Department's objective is to prepare students for careers in environmental science, natural hazard assessment and mitigation, geotechnical engineering, exploration and exploitation of mineral and energy resources etc.; it also aims at promoting re-search that leads to academic careers in universities, research institutes and museums worldwide.

2.2 Administrative Framework

Competent organs for the administration of the Department are the Chairperson and Deputy Chairperson, the Governing Board and the Assembly.

2.2.1 Chairperson

The Chairperson and Deputy Chairperson are elected by the complement of the teaching, research, technical and administrative staff of the Department of a two-year term. The Chairperson:

a) Supervises the proper functioning of the Department and ensures the observance of competent laws and regulations.

b) Drafts the agenda of the Assembly, convenes and presides over the Assembly, appoints rapporteurs and ensures the implementation of the Assembly's resolutions.

c) Drafts the agenda, convenes and presides over the Governing Board and ensures the implementation of its resolutions.

d) Ensures the proper implementation of study programs and pertinent educational activities.

e) Establishes committees and boards to study and handle the affairs and activities of the Department.

f) Liaises the resolutions and decisions of the Assembly to the competent organs of the NKUA.

g) Is responsible for keeping the record of scientific activity and publications of the Department.

h) Represents the Department in the Senate and liaises the de-liberations and decisions of the Senate to the Department.

The Deputy Chairperson assumes the duties and responsibilities of the Chairperson in the event of his/her absence or impediment. If the Chairperson resigns or expires before the end of his term, the Deputy Chairperson assumes their duties until the end of the term.

2.2.2 Governing Board

The Board of Directors consists of the Chairperson, the Deputy Chairperson, the Directors of the Department's Sections, one representative of the Research and Teaching Staff and one representative of the Administrative and Technical Staff. The Board proposes to the Assembly issues of its competence and process-es issues referred to it by the Assembly.

2.2.3 The Assembly

The Assembly is the ultimate decision-making organ of the Department. The Assembly comprises faculty members (professors), the Chairperson, the Deputy Chairperson the Directors of the Department's Sections, one representative of the Research and Teaching Staff and one representative of the Administrative and Technical Staff and six representatives of the undergraduate and postgraduate students. The Assembly:

a) Determines the general educational and research policy of the Department and the strategies for its development, always within the general framework of the guidelines set by the University and the School of Sciences.

b) Supervises the implementation of the curriculum, assigns teaching duties, approves textbooks and issues degrees and certificates of study.

c) Negotiates with the Deanship of the School of Sciences, the organization of common curricula/studies between the Department of Geology and Geoenvironment and other Departments of the NKUA.

d) Supervises the internal evaluation/accreditation of the Department.

e) Initializes the process of creating/filling new staff positions and ensures due observance of the competent legislation and regulations during the process.

f) Establishes committees and boards to study/handle the affairs and activities of the Department and decides upon their recommendations.

2.3 Premises

The Department is housed in the building complex of the Faculty of Sciences at Panepistimiopolis. The premises occupy the southwest quadrant of the complex.

The Department has 3 large amphitheaters and 15 smaller classrooms equipped with modern image projection and sound reproduction equipment, as well as internet connection. Laboratory space (rooms and halls) is also located in the premises of Academic Sections (see below). Computer rooms and dedicated software for studying, analyzing, and processing geological data are also available.

The Library of the Department is part of the Library of the School of Sciences and is housed in the building of the Department of Mathematics on the 1st and 2nd floor (Panepistimiopoli, Zografou). Information can be sought in telephone numbers 2107276599 and 2107276525 (secretariat) or by e-mail in sci@lib.uoa.gr and sci-loan@lib.uoa.gr (loans); the website is www.lib.uoa.gr/sci. Opening Hours are Monday to Friday 08:30-19:30, Sat-Sat: 09:30-14:30. The library remains closed on public holidays.

2.4 Academic Sections

The Department is organized in 10 academic units comprising six Sections with their dependencies (Laboratories or Museums) and four independent Laboratories:

2.4.1 Section of Mineralogy and Petrology

The Department of Mineralogy and Petrology addresses questions pertaining to the description, classification and formation of minerals and rocks. Special emphasis is put on mineral chemistry and structure as well as on igneous, sedimentary and metamorphic processes and their evolution in space and time. The social, environmental and health impact of rocks and minerals and the nature and consequences of volcanism are also examined in detail.

Specific research topics include:

- Geometrical properties and internal structure of crystals.
- Formation, growth and systematic classification of minerals.
- Generation, evolution and emplacement of magmas.
- Volcanoes, their activity and products; volcanic hazards and their management.
- Depositional and diagenetic processes, products and environments of sedimentary rocks; tectonic settings of sedimentary deposits; provenance analysis of siliciclastic rocks.
- Metamorphism at spreading centers, subduction zones, collisional orogens and the deep interior of the Earth.
- Physicochemical conditions and thermodynamic modelling of igneous of metamorphic reactions and processes.
- Dating of geological processes through mineral and whole-rock isotopic techniques.
- Environmental and applied mineralogy and petrology.
- Archaeometry – Conservation and restoration of monuments.
- Gemmology and medical geology.

Web address: http://minpet.geol.uoa.gr/index.htm

2.4.1.1 Laboratory of Mineralogy and Petrology

The Laboratory of Mineralogy and Petrology carries out basic and applied research and projects related to basic and applied research including the development of environmental and industrial applications. Its main activities include sampling and pro-cessing of rocks and minerals, determination of the internal structure of minerals, qualitative and quantitative determination of the chemical composition of rocks and minerals as well as chemical analyses of surface and subsurface fluids and gases. Determination of physical properties of geological samples such as crystal dimensions, shape, orientation, and intergrowth also takes place. In addition, the laboratory determines physical/mechanical properties of rocks and minerals and runs gemological analyses to examine the quality of precious and semiprecious stones. The infrastructure is available for research and education to undergraduate and postgraduate students and includes:

- Equipment for sample preparation (jaw crusher, cutting saw, lapping system, polishing system, mortar grinder, ball mill, hydraulic press (25T) and pellet press)
- Various bench top analytical instruments (pH-meter, conductivity meter, colorimeter, microhardness tester)
- X-Ray Diffractometer,
- ED & WD X-Ray Fluorescence Spectrometers
- Direct Current Plasma Atomic Emission Spectrometer,
- Transmitted-light polarizing microscopes equipped with digital cameras
- Dark room for Optically Stimulated Luminescence (infrared).

Web address: http://minpet.geol.uoa.gr/MINPETesot_files/ergastiria.htm

2.4.2 Section of Historical Geology and Palaeontology

The Section of Historical Geology and Palaeontology studies the scientific topics of Historical Geology, Stratigraphy, Palaeontology and Sedimentology, as well as many other more specialized topics, thus producing important scientific and educational work in the Department of Geology and Geoenvironment. These topics include:

- Invertebrate Palaeontology.
- Micropalaeontology.
- Vertebrate Palaeontology, Palaeoanthropology, bone and teeth diagenesis.
- Palaeobotany, Palynology.
- Fossilization, geochronology, Archaeometry, geoarchaeology.
- fossil conservation and preparation, museum studies, Enhancing of geological heritage.
- Lithostratigraphy, biostratigraphy, chemostratigraphy, magnetostratigraphy, stratigraphy of alpine and metalpine formations, etc.
- Palaeoecology, palaeoclimatology, evolutionary palaeoecology, palaeogeography.
- Environmental micropalaeontology, palaeoenvironments.
- Sedimentary basin analysis, Marine geology.
- History and Philosophy of geosciences, didactics of Geosciences.

All the above contribute to the knowledge concerning the evolution of life and biodiversity on the planet, the reconstruction of environmental conditions during the geological past, palaeogeography, climatic changes in older geological periods and their effect on living organisms, the use of microfossils as indices of environmental health in marine environments, monuments of Geo-logical heritage. Palaeontological excavations are also conducted by our Section.

Web address: http://geopal.geol.uoa.gr

2.4.2.1 Laboratory of Historical Geology and Palaeontology

The Laboratory of Historical Geology and Palaeontology is one of the oldest in the University. To this day, it plays a very important role in education and scientific research of the Section, in topics such as Palaeontology, Micropalaeontology, Stratigraphy, Sedimentology, Historical Geology, Palaeoecology and Ecostratigraphy. The Laboratory facilities include a modern thin section lab, a modern lab for the retrievement and preparation of fossils and microfossils as well as the conservation and creation of moulds/casts. There is also a modern lab for the analysis of sedimentary basins.

For the educational and research needs of the Section, the Laboratory also includes an e-teaching hall/room, with 24 computers and stereoscopes, 5 polarizing microscopes, three of which are connected to computers, and a Scanning Electron Microscope (SEM) connected to an X-ray Microanalysis system (WDS).

The laboratory may provide the following services: a) thin sections of rocks, sediments and fossils; retrievement and preparation of fossils; construction of fossil casts, b) identification of nano-, micro-, macro-fossils, c) analysis of sediments and sedimentary environments with applications in Hydrocarbon and water resources research, d) analysis of texture, composition, granulometry and identification of inorganic and organic compo-sites of sediments, e) preparation of samples for C, O and S stable isotope analysis in sediments, f) digital logging and mapping of aqueous floors, g) stereotransportation (sedimentation) and hydrodynamic parameters measurements and h) protection of Geological Heritage.

Web address: http://labgeopal.geol.uoa.gr

2.4.3 Section of Geography and Climatology

The Section of Geography and Climatology (SGC) deals with earth surface processes, both terrestrial and marine. It hosts the Laboratory of Physical Geography (LPG) and the Laboratory of Climatology and Atmospheric Environment (LACAE). It offers the Postgraduate course of “Geography and Environment”, since 1991; it is also involved in the Postgraduate program “Oceanog-raphy and Management of Marine Environment” since 1978 (School of Sciences). The SGC has participated in several national and international (mostly European) research programmes (e.g. MATER, CINCS, PDTD, INTERREG IIIB-CADSES, CAVESNETWORK - INTERREG III C., COST Action C22, INTERREG III B ARCHIMED (ARISTHOT), INTERREG IIIB (MEDOCC), IKYDA and has hosted a Marie-Curie fellowship. Research topics include:

- The recent geomorphological and geological evolution of the terrestrial and seabed surface.
- The atmosphere and climate change, the processes of extreme weather/climate events and their adverse effects on the natural and social environment
- Coastal and inland waters with emphasis on the management and utilization of aquatic systems
- Coastal erosion and sea level rise effects
- Desertification phenomena and the environmental consequences of extensive forest fires
- The study, analysis, assessment and management of natural hazards and mitigation of impacts
- The management of complex environmental problems of habitats and of the coastal zone
- The development of techniques for digital analysis and modelling of geomorphological processes

- The study, protection and promotion of karst forms
- Land-use planning and regional planning, from a geographical-geomorphological point of view

2.4.3.1 Laboratory of Climatology and Atmospheric Environment

The ***Laboratory of Climatology and Atmospheric Environment*** (LACAE) specialises in the study of climate change on various time and space scales, urban climatology, studies on the ozone layer, measurements of ultraviolet radiation, meteorological parameters and air quality, climatic effects from aircraft emissions and impacts of weather/climate variability and air quality on human health. The members of LACAE have long experience in teaching in undergraduate and postgraduate courses and have supervised many undergraduate and postgraduate theses in the fields of climatology and the atmospheric environment. It is equipped with:

- One Brewer MK IV monochromator measuring columnar amounts of ozone, SO2 and NO2.
- Two Yankee UV-B instruments measuring solar erythermal doses
- Instruments measuring atmospheric pollution (CO, CO2, NO2, PM)
- A complete autonomous/automatic meteorological station.
- A portable meteorological station

Web address: http://lacae.geol.uoa.gr

2.4.3.2 Laboratory of Physical Geography

The ***Laboratory of Physical Geography*** (LPG) deals with air-sea-land interactive processes forming the earth's surface morphology (sub-aerial and sub-aqueous), i.e. river deltas, beach zones, fluvial geomorphology, morphotectonic processes, karstification, aeolian processes, geoarchaeological studies, coastal indicators of relative sea level changes, climate change (past, present and future), coastal oceanography, sediment dynamics, photogeology, remote sensing and GIS applications.

It is equipped with:

- autonomous driller of fine-grained sediments,
- sieving analysis (dry and wet),
- autonomous continuous recording tidal gauge,
- manual operated current meter
- thermo-salino-meter,
- portable weather stations,
- GPS
- Tachymeter
- Software: SPS (statistics), MATLAB (incl. fuzzy logic tools), ERDAS (analysis of satellite images) CEDAS (nearshore hydrodynamics), DAVIS (weather station software), ArcGIS (handling, interpreting, presenting geo-data.

Web address: http://pg.geol.uoa.gr

2.4.4 Section of Geophysics and Geothermy

The *Section of Geophysics and Geothermy* was established in 1983, as successor to the Chair of Seismology (est. 1931) and the Laboratory of Seismology (est. 1929). The Section underwent rapid and multi-faceted development during the last 25 years, keeping pace with the corresponding rapid development of geophysics and Seismology at the international level. This, in turn has led to the establishment of a second dependent laboratory, the Laboratory of Geophysics (1999).

Throughout its long history, the Section has accumulated extensive experience in practically all aspects of pure and applied geophysics by teaching and researching topics such as: Theoretical and Applied Geophysics, Physics of the Earth's interior, Earth System science, mineral and energy resource prospecting, Engineering and Environmental Geophysics, Seismology, Engineering and Historical Seismology, Seismotectonics and Geodynamics, Physics of the earthquake source, Geomagnetism, Palaeomagnetism, Physical Volcanology and Geothermics, Remote Sensing, Satellite Geodesy and space-borne applications to Earth Sciences and Earth system Science. It has also developed intensive cooperation with numerous international research establishments and academic institutions.

The Section offers under- and post-graduate courses in geophysics, seismology, environmental science and natural disaster analysis, assuming an integrated approach towards the earth system sciences. The educational, research and other activities of the Section of Geophysics are thoroughly presented in the web pages of the Section and its dependent laboratories (see below).

Web address: http://www.geophysics.geol.uoa.gr/

2.4.4.1 Laboratory of Geophysics

The mission of the ***Laboratory of Geophysics*** (est. 1999) is:

- To provide high level practical training (laboratory and field exercises) and modern analytical skills, as part of the geophysics courses offered by the Section, at the under- and post-graduate levels.
- To support research with state-of-the-art instrumentation and analytical facilities.
- To offer advanced geophysical services to public and private sector patrons, requiring the application of state-of-the-art or cutting edge technologies.

During the recent few years, significant effort has been directed towards the development of modern/high resolution exploration technologies and geophysical data analysis software. The hitherto, teaching and research activities of Laboratory can be summarized as follows:

- Methodological developments in near-surface and deep geophysical exploration methods.
- Environmental and Engineering geophysics
- Geothermal and other energy resource exploration
- Mineral resource prospecting.
- Physics of the Earth's interior – determination and analysis of Earth structure at all depth scales.
- Physics of the earthquake source and earthquake prediction

- Geomagnetism, Geoelectromagnetism and Palaeomagnetism
- Space borne applications in the Earth Sciences and Geodynamics (DGPS, SAR/DINSAR, thermal imaging etc.).
- Geophysical software development.
- Earth System Science.

The Laboratory has developed multiple cooperative ties with corresponding national and international research establishments and academic institutions. It is also actively involved in outreach and dissemination of scientific information by organizing seminars, symposia and lectures for scientists and the general public. Moreover, it offers a broad range of geophysical services to public and private sector establishments, with particular reference to engineering and environmental applications, mineral and groundwater resource prospecting and geothermal prospecting.

Web address: http://geophysicslab.geol.uoa.gr

2.4.4.2 Laboratory of Seismology

The ***Laboratory of Seismology*** was established in 1929 in order to contribute to the education of students attending the Faculties of Physics and Natural Science, as well as in monitoring and researching the seismicity of Greece.

The Scientific and Technical Staff of the Laboratory has frequently been commended by Civil Authorities and the University Administration for its immediate response and major contribution in the relief operations and research of major destructive earthquakes. Their expertise is reflected in numerous publications, a multitude of research and civil protection programmes, extensive collaboration with international research and educational establishments and consultancies of public and private sector companies.

The Laboratory maintains the state-of-the-art ATHENET network, comprising 32 stations in Central Greece and the Cyclades (real time seismicity at Follow this link). It also possesses an extensive inventory of seismometric and accelerometric equipment, as well as data analysis facilities.

The principal teaching and research activities of the Laboratory are:

- Seismicity monitoring.
- Engineering Seismology and earthquake hazard analysis (including microzonation, vulnerability analysis and strong ground motion analysis,).
- Physics of the earthquake source and earthquake prediction.
- Seismotectonics, Geodynamics and Earth System Science.
- Macroseismology, Historical Seismology and Archaeoseismology.
- Preparedness and protection against earthquake disasters, including the training of students, schools and the general public at the SEISMOPOLIS earthquake simulation centre

Web address: http://dggsl.geol.uoa.gr/en_index.html

2.4.5 Section of Economic Geology and Geochemistry

Economic Geology and Geochemistry combines the study of geology of ore deposits and geochemistry to describe and understand the processes of mineral resource formation as well as to quantify the environmental impact of mineral and energy resource exploitation. Research in the Section is also focused on the development of techniques and solutions related to sustainable production of mineral resources, quality control of industrial raw materials and assessment of contaminated land and water.

Research topics include:

- Exploration and assessment of mineral resources
- Baseline geochemistry of soils and water
- Biogeochemical processes related to ore deposits
- Environmental impact of mining activities
- Use of mineral resources for environmental protection
- Recycling of by-products from metal mining and metallurgy
- Soil and water pollution assessment and management
- Sustainable reclamation of polluted grounds
- Urban Geochemistry

Web address: http://geochem.geol.uoa.gr/index_gr.htm

2.4.5.1 Laboratory of Economic Geology and Geochemistry

The ***Laboratory of Economic Geology and Geochemistry*** supports and facilitates research activities involving sampling and chemical analysis as well as mineralogical analysis of a variety of geological samples (rocks, minerals, ores, soil, sediment, water etc.). Laboratory infrastructure includes:

- Manually operated systems for sample and microscopy specimen preparation (crushing, screening and splitting bulk samples, pulverizing and homogenizing subsamples to prepare them for chemical analysis; thin and polished section preparation)
- Chemical laboratory equipped with various instruments for sample dissolution, microwave digestion, leaching experiments, filtration, high temperature sample treatment, sample storage and incubation etc.
- Atomic Absorption Spectroscopy unit operated in flame and graphite furnace modes
- Scanning Electron Microscopy unit equipped with a SEM-EDS microanalysis system
- X-Ray Diffraction unit
- Flame photometer
- Bench -top and portable spectrophotometers
- Optical microscopes
- Fluid inclusion- microthermometry unit equipped with optical microscope and digital monitor

Web address: http://geochem.geol.uoa.gr/lab_gr.htm

2.4.6 Section of Dynamic, Tectonic and Applied Geology

The Section **s**tudies the dynamic interior of the Earth. To this effect, it collects geological data and develops new tools for their analysis and interpretation, complemented by numerical modelling and use of digital technology. The research and educational interests and activities of the Section span a wide range of topics including tectonics and structure of the Earth's crust and lithosphere, seismic hazard, dynamics of plates, engineering geology, hydrogeology, environmental geology and natural disasters. The educational curriculum offered by the Section includes, besides classroom lectures and exercises, a wide range of field exercises which, together with the field course of geological mapping, provide students with the necessary foundations and experience for subsequent scientific development.

Through a wide network of collaborations, both at the national and international level, with educational and research institutions, the Section has developed interdisciplinary research activities, funded mainly by EU research grants and the wider public sector (Ministries, Prefecture and Local Authorities etc.). Many of these programs are innovative and have enjoyed international recognition. Research topics include:

- Development of geotectonic maps (both conventional and offshore),
- Restoration of Uncontrolled Waste Disposal Sites,
- Water Resources Management,
- Geotechnical design of large-scale infrastructure projects (roads, dams, foundations of buildings, industrial plants, oil pipelines and natural gas, etc.) in Greece and abroad.

2.4.6.1 Laboratory of Tectonics and Geological Mapping

The ***Laboratory of Tectonics and Geological Mapping*** covers the educational and research needs of the Section and the Department in the fields of Tectonics, Structural Geology, Geological Mapping, Hydrology, Hydrogeochemistry and Soil and Rock Mechanics. Within this frame we develop educational curricula and conduct basic and applied research; cooperate and exchange scientific knowledge with other academic or research institutions from Greece and abroad; organize seminars, symposia, conferences, and lectures; provide services to external bodies from the public and the private sector.

Ample laboratory space is available for various activities including full IT support supplemented by modern computing and printing facilities, testing of physical and mechanical properties of rocks and soils and chemical analysis of water samples. Available equipment includes a variety of instruments for field research, a total station, auger corers, triaxial, uniaxial, point and unimpeded loading apparatuses, rock sample corer, portable stations for chemical analysis of water samples, turbidity meters, groundwater samplers, etc. Efforts are constantly made for the upgrading of the existing infrastructure.

2.4.7 Laboratory of Remote Sensing

The ***Laboratory of Remote Sensing*** (LRS) was established in order to meet the educational and research requirements of the Department of Geology during the early 1990’s. Its research interests expand in the fields of modern space-borne Earth Observation Systems associated with the disciplines of Geodesy (Satellite

Geodesy), Surveying, Photogrammetry, Digital Cartography and Remote Sensing. In general, the purpose and function of the LRS within the University of Athens and the Department of Geology and Geoenvironment, is the following:

- To satisfy under- and post-graduate educational requirements of the Department.
- To develop teaching and research curricula for the post-graduate study programmes.
- To pursue basic and applied research aiming at:
- The development of techniques and applications associated with the Country's needs,
- The creation of opportunities for collaboration between the Academic staff and the Industry,
- To pursue and promote collaborative research between researchers of Hellenic Universities and Research Institutions,
- To provide services in accordance with Law 159/1984.

Current activities of the LRS members, include GPS measurements and Radar Interferometry (both conventional and advanced InSAR (PS and Stacking), including satellite imaging analysis (LANDSAT, ASTER, IKONOS, QUICKBIRD) and Orthorectification.

2.4.8 Laboratory for Prevention and Management of Natural Disasters

The ***Laboratory on Prevention and Management of Natural Hazards*** was established in 2003 within the Department of Geology and Geoenvironment of the University of Athens. The Laboratory participates in a number of research projects financed by national, European or other international and bilateral organizations. Current activities focus on emergency planning, development of action plans, seismic hazard, tsunamis, forest fires, floods, landslides and volcanic hazard. The scientific activities of the Laboratory include the organization of seminars, lectures, symposia and related disseminating scientific activities involving the scientific as well as the social sector. It is an educational and research unit utilized by the undergraduate students of The Department and the Postgraduate Studies Programme on Prevention and Management of Natural Hazards.
Web address: http://labnathaz.geol.uoa.gr

2.4.9 Laboratory and Centre of Museum Research

The laboratory was founded in 2007, and it assists the research and teaching activities of NKUA on museum studies. The laboratory aims to assist the relevant research projects and teaching activities of the undergraduate and postgraduate programmes of the NKUA courses of the University of Athens. It further aims to the development of the museums of the NKUA, through specialized studies and services. The laboratory promotes the collaboration between the members of the Faculties of the NKUA and the Department of Conservation of Antiquities and Works of Art of the University of West Attica. The laboratory is located at the facilities of the Postgraduate Studies Program of Museum Studies, at the University Campus (Panepistimiopoli).
Tel: 210-7276499, 210-7276465, 210-7276434

2.4.10 Museum of Palaeontology and Geology

The ***Museum of Palaeontology and Geology*** is hosted by the Department of Geology and Geoenvironment. It has a rich collection of vertebrate and invertebrate animals, as well as plant fossils from Greece and abroad. It conducts scientific surveys and excavations throughout the country constantly enriching its collections. It is open daily for school visits and the public and also offers guided tours. The Museum, in collaboration with the local authorities, operates an Annex at Vryssa (Polychnitos, Lesvos Island, Greece). The Annex houses local natural history collections including unique findings such as mammoths, rhinoceroses, antelopes, gazelles, giant tortoises, oversized horses etc.

The Museum of Palaeontology and Geology is hosted in the building of the Department of Geology and Geoenvironment at the University Campus (Panepistimiolpoli).

Although the Museum was founded in 1906, its history can be traced back to 1858 with the foundation of the Natural History Museum of Athens. Its current collection includes fossil vertebrates and invertebrates from Greece, historical specimens, comparative zoological and teaching specimens. It includes approximately 100,000 specimens, making it the largest collection of fossils in Greece. Its main exhibition includes fossils vertebrates from Pikermi, Peloponnesus and Crete.

The museum conducts scientific surveys and excavations throughout the country constantly enriching its collections. It is open daily for school visits and the public and also offers guided tours. The Museum, in collaboration with the local authorities, operates an Annex at Vrissa (Polychnitos, Lesvos Island, Greece). The Annex houses local natural history collections including unique findings of Early Pleistocene vertebrates.

Contact Info:

Mail Address: Department of Geology and Geoenvironment, Zografou University Campus, GR 15784 Telephone: +30 210-727 4086, +30 210-727 4202

Fax: +30 210-724 1888

E-mail: palaeo-museum@geol.uoa.gr

Web address: http://paleo-museum.uoa.gr/paleontology.

Vryssa Annex Telephone: +30 22520 61890

2.4.11 Museum of Mineralogy and Petrology

The rock and mineral collections of ***Mineralogy and Petrology Museum*** were assembled by the Physiographic Society (est. 1835). They are exhibited in a gallery of 1100 m^2 at the premises of the Department. They are not only the oldest in Greece, but also include rare specimens of interest to the international community. The museum is open daily for schools and the public and also offers guided tours.

Contact Info:

Mail Address: Department of Geology and Geoenvironment, Zografou University Campus

Telephone: +30 210-727 2124, +30 210-727 4112

Fax: +30 210-727 4883

E-mail: akaterin@geol.uoa.gr

2.5 Personnel

Chairperson

Prof. Dr. Asimina Antonarakou

Tel.: 210 727 4166

e-mail: chair@geol.uoa.gr

Deputy Chairperson

Assoc. Prof. Dr. Ioannis Alexopoulos

Tel.: 210 727 4106

e-mail: chair@geol.uoa.gr

Secretariat

Supervisor:	**Demetrios Psarris**

Tel: 210727- 4418

Fax: 210727-4051, 210727-4063

e-mail: dpsarris@geol.uoa.gr, kelchor@geol.uoa.gr

Name	**Status**	**E-mail**	**Telephone**
Psarris Demetrios	Administrative Staff	dpsarris@geol.uoa.gr	210 727-4279
Skenteris Taxiarchis	Administrative Staff.	taxskent@geol.uoa.gr	210 727-4062
Stampoliadi Dafne	Administrative Staff	dstabol@geol.uoa.gr	210 727-4682
Chorafopoulou Calliope	Administrative Staff	kelchor@geol.uoa.gr	210 727-4061

Library of the School of Sciences

Tel.: 210 72.76.599 fax: 210 72.76.524

E-mail: sci@lib.uoa.gr Website: http://www.sci.lib.uoa.gr

	Telephone (landline)
Person in Charge: V. Valsamakis	210 727-6527
Secretariat	210 727-6525

3. Organizational and Regulatory Framework of the Postgraduate Program

3.1 Scope of the Postgraduate Program

The Postgraduate Program (PSP) “Geographic Information Systems” is supported by the Department of Geology and Geoenvironment of NKUA. The subject of “Geographic Information Systems” is the scientific field of Geographical Information Systems with an emphasis on programming tools and databases in a GIS environment, on online tools for commercial applications and research topics, both at an applied and research level, focusing on the field of geoenvironment, geoarchaeology, medicine, finance and marketing.

The scope of the postgraduate program is the substantial and targeted offer from the Faculty of Geology & Geoenvironment of the National and Kapodistrian University of Athens , which has extensive experience in managing and presenting information, in relation to their spatial component, as well as the use of the above in research applications. The postgraduate program can provide the necessary knowledge so that graduate scientists are able to meet the demands of new scientific challenges and technological requirements, in areas that focus on analysis of spatial information and the development of relevant tools. By obtaining the master's degree, graduates will contribute greatly to the development of the national economy, covering the increased needs for trained human resources in various areas of development and analysis of geographical data, management of environmental, cultural and socio-economic and medical issues, through cartographic illustrations and spatial representations.

The PSP “Geographic Information Systems has an international orientation. It leads to the awarding of a Master's Degree. The title is awarded by the Department of Geology & Geoenvironment of NKUA. Upon successful completion of the PSP graduates will be able to:

- develop or apply original ideas, often in a research context, based on the knowledge they will have acquired,
- solve problems in new or unfamiliar environments and situations in a wider and interdisciplinary context,
- integrate knowledge and activate their skills in a more complete way in complex situations, so that they can substantiate their judgment and make decisions with partial completeness of evidence and data.

3.2 Administrative Framework

Competent bodies for the administration of the PSP according to Law 4957/2022, n.81 are:

At an Institutional level competent bodies are the **Committee of Postgraduate Studies** and the **Senate** of NKUA.

At a departmental level, the **Assembly of the Department** (henceforth “The Assembly”) is responsible for:

- recommends to the Senate, through the Committee of Postgraduate Studies, the necessity of establishing/amending the PSP, as well as the extension of the duration of the PSP,
- appoints the Director and the members of the Coordination Committee of the PSP,

- sets up Committees to evaluate the applications of prospective postgraduate students and approves their registration in the PSP,
- assigns the teaching work among the members of the PSP and may assign auxiliary teaching work in the PSP to the PhD candidates of the Department, under the supervision of a faculty member of the PSP,
- sets up examination committees for the examination of students' postgraduate dissertation and assigns the supervisor for each dissertation,
- certifies the successful completion of the students' PSP and awards the Postgraduate Diploma,
- approves the report of the PSP, following the recommendation of the Coordination Committee,
- assigns postgraduate students to carry out auxiliary teaching,
- exercises any other legal competence.

The Coordination Committee (CC) is composed by the Director of the PSP and four faculty members of the department and emeritus professors who have a related academic subject to that of the PSP and undertake teaching duties in the PSP. The CC members are determined by the decision of the Assembly. CC is responsible for monitoring and coordinating the PSP and in particular:

- prepares the initial annual budget of the PSP and its amendments, as long as the PSP has resources, and recommends its approval to the Special Account For Research Grants (SARG),
- draws up the report of the PSP and recommends its approval to the Assembly,
- approves the expenditure of the PSP,
- approves the awarding of scholarships, in accordance with what is defined in the founding decision of the PSP and the Regulations for postgraduate and doctoral studies,
- recommends to the Assembly the distribution of teaching duties, as well as the assignment of teaching duties,
- recommends to the Assembly the invitation of Visiting Professors to meet the teaching needs of the PSP,
- prepares a plan for the modification of the study program, which is submitted to the Assembly,
- recommends to the Assembly the redistribution of courses between academic semesters, as well as issues related to the quality upgrade of the curriculum.

The Director of the PSP is a faculty member of the Department at the level of Professor or Associate Professor and he/she is appointed by the Assembly for two consecutive two-year terms, with the possibility of renewal without limitation. The Director has the following duties:

- Presides over the CC, prepares the agendas and convenes its meetings,
- recommends the issues related to the organization and operation of the PSP to the Assembly,
- recommends to CC and the other bodies of the PSP and the University, issues related to the effective operation of the PSP,
- is the Scientific Manager of the PSP and exercises the corresponding responsibilities,
- monitors the implementation of the decisions of the PSP bodies and the Internal Regulation of master's and doctoral study programs, as well as the monitoring of the implementation of the budget of the PSP,

- exercises any other authority, which is defined in the decision establishing the PSP.

3.3. Prospective Applicants

Admissable students at the PSP are primarily graduates from the School of Sciences, Polytecnic Schools, Departments of Geography, Agriculute, Medicien, Archaeology, Economics and related subjects of University Departments national or similar, recognised by DOATAP, foreign institutions. The maximum number of admissions is set to fifty (50) per academic year.

The maximum number of admissable students is determined according to the number of tutors of the PSP and the student-tutor ratio, the infrastructure and the absorption of graduates by the labor market. In addition to the number of admissions, one (1) member of the E.E.P., E.D.I.P. and E.T.E.P. categories is accepted. per year, as long as the work carried out at the institution is related to the subject of the PSP.

3.4 Admission Criteria and Procedure

The selection of students is made in accordance to the current legislation, the regulation of postgraduate and doctorate studies of NKUA and the provisions of the PSP regulations. Every March, by decision of the Assembly, an announcement is published and posted on the website of the Department for the admission of students to the PSPs. The relevant student applications, along with the necessary supporting documents, are submitted to the Secretariat of the PSP, within a deadline specified in the announcement and may be extended by decision of the Assembly. The Assembly assigns to a committee, composed of three faculty members of the CC of the PSP, the selection process of admissible students.

The necessary supporting documents are:

1. Application form
2. Curriculum vitae
3. Photocopy of two sides of identity card or passport
4. Copy of diploma or certificate of completion of studies
5. Detailed rating of undergraduate courses
6. Certificate of English Language Proficiency.
7. Two recommendation letters
8. Scientific publications, if any
9. Evidence of professional or research activity, if any

The evaluation of candidates and the selection of admissable students is based on the following criteria:

A. Primary criteria

- Bachelor degree or current grade average, in case the 1st cycle of studies has not been completed (provided that it is completed before enrolling in the PSP)
- Average grade in five (5) bachelor courses related to the wider subject of the PSP
- Performance in a undegraduate Thesis or Internship, when this is provided for in the 1st study cycle
- Certified knowledge of the English language

- Recommendation letters

B. Secondary critera

- Research or related work activity
- Scientific Publications
- Possession of a second-degree from A' or B' study cycle
- Oral interview before a committee, if required.

Based on the overall criteria, the CC draws up the student evaluation table and submits it for approval to the Assembly.

3.5 Enrollment

Admissable studets are required to enrol to the Secretary of the PSP within thirty (30) days from the decision of the Assembly.

In the event of a tie (with mathematical rounding to the whole unit of the scale of 100), candidates with the same grade are admitted, in a percentage not exceeding 10% of the maximum number of admissions. In case of non-registration of one or more students, the runners-up (if any) will be invited to register in the PSP, based on their order in the approved evaluation table.

In order for admissable studnets to enroll they must have paid their tuition fees, unless they choose to request a waiver. The payment of tuition fees is proven by submitting the relevant documents and/or receipts. In the event that they do not meet the deadline for no reason, or have not paid the tuition fees, they are automatically dismissed.

At the same time of their registration, admissable students sign a Declaration that they have taken note of the PSP Regulations and accept it unreservedly.

3.6 Duration, Suspension and Resumption of Studies

The duration of study at the PSP, leading to a Diploma of Postgraduate Studies, is defined in four (4) academic semesters, of full study, which include the time for preparing a postgraduate dissertation. The possibility of part-time study is not foreseen. However, there is a possibility of extension, after a reasoned application by the student and approval by the CC. The maximum time allowed to complete the studies is set at six (6) academic semesters.

Students who have not exceeded the upper limit of study, after their justified application to the Assembly, may interrupt their studies for a period of time that does not exceed two (2) consecutive semesters. Suspension of studies is granted for serious reasons (military service, illness, pregnancy, absence abroad, etc.). The application must be justified and be accompanied by all relevant supporting documents from competent public authorities or organizations, which prove the reasons for suspension of studies. The student status is suspended during the interruption of studies and participation in any educational process is not allowed. The semesters of suspension of the student status are not counted towards the prescribed maximum duration of normal studies.

At least two weeks before the end of the suspension, the student is required to re-enroll in the program to continue his/her studies with the rights and obligations of an active student. Students may apply to suspend their studies and return to the PSP only if they have requested suspension of studies for two consecutive academic semesters. The request to stop the study suspension must be submitted no later than two weeks before the start of the second semester of the suspension. If the student who has been suspended from studies does not return and assumes his duties and obligations towards the PSP immediately after the expiration of the suspension, he will be deleted from the PSP. Deletion is done with a deed by the Director of the PSP and its approval by the CC.

The duration of the suspension or extension of the study period is discussed and approved on a case-by-case basis by the CC, which makes recommendations to the Assembly.

3.7 Study program

The PSP begins in the winter semester of each academic year. A total of one hundred and twenty (120) credits (ECTS) are required to obtain a diploma of the PSP. All courses are taught weekly and, where appropriate, include courses by video conference, with synchronous and asynchronous teaching, lectures, seminars, and practical exercises.

The educational work of each academic year is structured in two semesters, winter and spring, each of which includes at least thirteen (13) weeks of teaching.

The language of teaching and writing of the postgraduate disseration is English. In case all the students are Greek, the courses may be taught in the Greek language, while the supporting material of the courses (presentations, laboratory exercises, etc.) remains in the English language.

During their studies, students are required to attend and be examined succesfully in postgraduate courses, research and writing of scientific papers, as well as to prepare a postgraduate disseration. The preparation of the postgraduate disseration takes place in the fourth (4th) semester of studies and is credited with thirty (30) ECTS.

The teaching of the courses is done remotely, in accordance with the existing legislation and the regulations of the PSP.

The indicative program of courses is structured as follows:

1st semester				
		MANDATORY COURSES	**Teaching hours**	**ECTS**
GIS01	M	Introduction to Geographic Information Systems	150	6
GIS02	M	Advanced processes in Geographic Information Systems	200	8
GIS03	M	Geospatial Databases and Data Mining	200	8
GIS04	M	Cartography and Visualization	200	8

		TOTAL		**30**
2nd semester				
GIS05	M	Geospatial Modeling and Analysis	200	8
GIS06	M	GIS and Remote Sensing	200	8
GIS07	M	Scientific Research on GIS	150	6
GIS08	M	Spatial Statistics	200	8
		TOTAL		**30**
3rd semester				
		ELECTIVE COURSES		
GIS09	E	GIS Programming	200	8
GIS010	E	Web and Mobile GIS Applications and Programming	200	8
GIS11	E	GIS for Decision Making	200	8
GIS12	E	Natural Hazard Modeling	200	8
GIS13	E	GIS applications on geoenvironment	150	6
GIS14	E	GIS applications on health science	150	6
GIS15	E	GIS applications on economy	150	6
GIS16	E	GIS applications on history - archaeology	150	6
		TOTAL		**30**
4th semester				
		MANDATORY COURSES		**ECTS**
GIS17	M	Master thesis		30
		TOTAL		**120**

3.7.1 Exams and evaluation of students

The academic year includes three (3) weeks of exams. The courses of the winter and spring semesters are re-examined during the September term.

Attending the courses/laboratories etc. is mandatory. A student is considered to have attended a course (and therefore has the right to be examined) only if he/she has attended at least 50% of the course hours. Otherwise, the student is obliged to attend the course again in the following academic year. In the event that the percentage of absences exceeds 50% of the total number of courses, the student is considered to be deleted. The matter in question is examined by the CC, which provides a recommendation to the Assembly.

The evaluation of students and their performance in the courses they are required to attend within the framework of the PSP is carried out at the end of each semester with written or oral exams or with the preparation of assignments throughout the semester or based on intermediate progress exams, written assignments, laboratory exercises or a combination of all of the above. The evaluation method is defined by the tutor of each course. When conducting written or oral examinations, as evaluation methods, the integrity of the process must be guaranteed. Grading is done on a scale of 1-10. The results of the exams are announced by the tutor and sent to the Secretariat of the PSP and the Department within four (4) weeks at the latest from the examination of the course.

The evaluation of the students may be carried out by exams remotely, provided that the integrity of the evaluation process is ensured. In cases of illness or recovery from a serious illness, the tutor is recommended to facilitate, in whatever way he/she considers appropriate, the student (e.g. remote oral examination). During the oral exams, the tutor ensures that he/she will not attend alone with the student being examined.

Courses in which students did not receive a passable grade must be repeated. If the student fails more than three (3) times in the same course, the procedure defined by the current legislation is followed.

3.7.2 Postgraduate Dissertation

In the 4th semester, the preparation of a postgraduate thesis is foreseen. The assignment is made by the CC following an application, which is co-signed by the candidate and the supervisor, and which contains the proposed title of the dissertation and a summary. The CC designates the supervisor and the other two members of the three-member examination committee. In order to designate a dissertation subject, the student must have been successfully examined in all the courses of semesters A and B.

The Supervisor, as well as the members of the three-member examination committee, derive from all the categories of tutors of the PSP, as defined in the PSP regulation. The subject of the dissertation can have a practical-applied, academic-research and/or broad literature review type character and be relevant to the subject of the PSP. The title of the dissertation can be modified upon application by the student and with the agreement of the supervisor to the CC of the PSP. The application must also include a brief justification of the change.

Writing guidelines (e.g. cover, font, minimum-maximum number of words, etc.) are determined by the CC and are posted on the PSP website. The composition of the examining committee is prominently mentioned on the cover of each submitted and approved dissertation. The dissertation text is mandatorily checked for plagiarism under the responsibility of the supervisor. For the dissertation to be approved, the student must defend it before the examination committee (par. 4, art. 34, Law 4485/2017), in English. The examination of the postgraduate dissertation is considered successful when the student receives at least two (2) positive votes from the three-member examination committee, which grades the student's performance with a score from zero to ten (0-10).

The dissertations, once approved by the examination committee, are compulsorily posted on the website of at least the Department of Geology and Geoenvironment and the dissertation is deposited electronically in the "PERGAMOS" Digital Repository, in accordance with the decisions of the Senate of NKUA.

Since the dissertation contains unpublished original results, it is possible, at the supervisor's request, which is co-signed by the student, that only the summaries are published on the website, and the full text may be published at a later date.

Dissertations are a product of original scientific research or application of scientific knowledge. For this purpose, the student signs a declaration of non-infringement of intellectual property, a draft of which is posted on the website of the PSP. This statement is attached to all submitted dissertations.

3.8 Diploma of Postgraduate Studies

Within the framework of the PSP, a Postgraduate Diploma in "Geographic Information Systems" is awarded. The student completes his/her studies to obtain the Graduate Diploma by completing the minimum number of courses and credits required to receive the Diploma, as well as the successful completion of postgraduate dissertation. The Assembly, following the proposal of the CC, verifies the completion of the studies in order to grant the diploma. Upon completion of the above procedure, the student is granted a certificate of completion of studies, his/her student status is lost and his/her participation in the collective administrative bodies of the University ceases.

The Diploma certifies the successful completion of the studies and indicates a grade, with an accuracy of two decimal places, according to the following scale: Excellent (8.5 to 10), Very Good (6.5 to 8.5 not included) and Good (5 to 6.5 not included).

A Diploma is not awarded to a student who, without having been released from the obligation to pay tuition fees, maintains financial outstandings after the end of the maximum period of study.

3.8.1 Calculation of Diploma Grade

For the calculation of the diploma grade, the importance of each course in the study program is taken into account and is expressed by the number of credits (ECTS). The number of credits (ECTS) of the course is also the weighting factor of the course. To calculate the grade of the diploma, the grade of each course is multiplied by the corresponding number of credit units (of the course) and the total sum of the individual products is divided by the total number of credit units required to obtain the degree. This calculation is expressed by the following mathematical formula:

$$\boldsymbol{Diploma\ grade = \Sigma_{k=1}^{N} CG^{k} \times ECTS_{k} \,/\, 120}$$

where:

N = number of courses required for the diploma

CGk = grade of course k

ECTSk = ECTS credits of course k

120 = total of credits to receive the diploma

For the acquisition of the Diploma, each student must attend and be successfully examined in all of the mandatory and the required number of elective courses from the offered courses of the PSP and prepare a postgraduate dissertation, thus accumulating 120 ECTS.

3.9 Obligations and Rights of Postgraduate Students

Postgraduate students have all the rights and benefits provided for students of the first cycle of studies, until the end of any granted extension of study, except for the right to access free textbooks.

NKUA ensures that students with disabilities and/or special educational needs have access to the suggested books and teaching (https://access.uoa.gr/).

The Liaison Office of NKUA provides advisory support to students in matters of study and professional rehabilitation (https://www.career.uoa.gr/ypiresies/).

Students are invited to participate and attend seminars of research groups, bibliographic information discussions, laboratory visits, conferences/workshops with a subject related to that of the PSP, lectures or other scientific events of the PSP, etc.

The Assembly, after the proposal of the CC, may decide to delete postgraduate students if:

- Have exceeded the maximum absence limit,
- have failed the examination of a course or courses and have not successfully completed the program, in accordance with what is defined in the PS regulation,
- exceed the maximum duration of study at the PSP, as defined in its Regulation,
- have violated the written provisions regarding dealing with disciplinary offenses by the competent disciplinary bodies,
- do not pay the tuition fees,
- submit a deletion request themselves.

In the event that a student is deleted from the PSP, he/she can request a certificate for the courses in which he/she has been successfully examined.

Studnets can participate in international student exchange programs, such as ERASMUS + or CIVIS, according to the current legislation. In this case the maximum number of ECTS they can recognize is thirty (30). This possibility is provided after the first semester of their studies. Students should apply to the CC and follow the terms of the program.

The students of NKUA can register in a postgraduate program of the same or other University of the country or abroad in the context of educational or research cooperation programs in accordance with the applicable legislation.

It is possible to study in parallel in an undergraduate and a postgraduate study program or in two (2) Postgraduate Programs of the same or another Department, in the same or another University.

At the end of each semester, each course and each tutor is evaluated by the students.

Students can apply for the issuance of a diploma supplement in Greek and English.

3.10 Attendance Fees

For their participation in the postgraduate program “Geographic Information Systems”, students must pay tuition fees amounting to 5,000 euros. The fee is paid as follows: 2,500 euros no later than two weeks before the start of Semester A, 1,500 euros no later than two weeks before the start of Semester B, 1,000 euros no later than two weeks before the start of C semester.

3.10.1 Tuition exemption

Exempt from tuition fees are students of the PSP, who meet the economic or social criteria and the conditions for excellence during the first cycle of studies, in accordance with the current legislation. This exemption is granted for participation in a single PSP. In any case, the exempted students do not exceed the percentage of thirty percent (30%) of the total number of students admitted to the PSP per academic year.

The application for exemption from tuition fees is submitted after the completion of the student selection process. The financial situation of a candidate is in no case a reason for non-selection in the PSP. Those who receive a scholarship from another source or are are citizens of non-EU countries are not entitled to an exemption. The examination of the criteria for exemption from tuition fees is carried out by the Assembly nd a reasoned decision is issued on the acceptance or rejection of the application. Since the current legislation sets an age criterion, it is recommended, for reasons of good administration and equal treatment, that the date of birth of the students is considered to be December 31 of the year of birth.

The members of the E.E.P., E.D.I.P., E.T.E.P. categories, are exempt from paying tuition fees.

In the event that members of the same family up to the second degree of consanguinity by blood or by blood are studying at the same time at the University’s PSP, it is possible to provide a reduction in the tuition fees paid by 50%.

4. Curriculum

4.1 List of Courses

1st SEMESTER

Mandatory Courses		Hours per week	ECTS
GIS01	Introduction to Geographic Information Systems	2	6
GIS02	Advanced processes in Geographic Information Systems	2	8
GIS03	Geospatial Databases and Data Mining	2	8
GIS04	Cartography and Visualization	2	8
	Total	**8**	**30**

2nd SEMESTER

Mandatory Courses		Hours per week	ECTS
GIS05	Geospatial Modeling and Analysis	2	8
GIS06	GIS and Remote Sensing	2	8
GIS07	Scientific Research on GIS	2	6
GIS08	Spatial Statistics	2	8
	Total	**8**	**30**

3rd SEMESTER

Elective Courses		Hours per week	ECTS
GIS09	GIS Programming	2	8
GIS10	Web and Mobile GIS Applications and Programming	2	8
GIS11	GIS for Decision Making	2	8
GIS12	Natural Hazard Modeling	2	8
GIS13	GIS applications on geoenvironment	2	6
GIS14	GIS applications on health science	2	6
GIS15	GIS applications on economy	2	6
GIS16	GIS applications on history - archaeology	2	6
	Total	**8**	**30**

4th SEMESTER

Mandatory Courses	
Postgraduate Dissertation	30
Total	**30**

4.2 Course Outlines

4.2.1 Mandatory Courses

GIS01 INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS

Instructors: N. Evelpidou

Semester: A

Type: General background, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 6 ECTS

LEARNING OUTCOMES

Learning outcomes:

The aim of the course is to homogenize the knowledge of students in topics of Geographic Information Systems, introducing them to the basic concepts, features, capabilities and applications of GIS. Students will become familiar with the simple procedures performed in a GIS and in particular with topics related to the collection, import, storage, management, analysis, processing and presentation of data. They will understand the characteristics of the different projection and coordinate systems, in order to gain an understanding of the cartographic representation of the earth surface on the map. Through hands-on exercises they will put the above theoretical knowledge into practice in order to have a deeper understanding of the possibilities of GIS.

General Competences:

Through the completion of this course students will have acquired the following competences:

- Search, analysis and synthesis of spatial data and geographic information, using the necessary technologies
- Working independently
- Teamwork
- Working in an international environment
- Project planning and management
- Production of free, creative and inductive thinking

SYLLABUS

This course examines the basic principles of Geographic Information Systems. Students will be introduced to the software ArcGIS Pro, they will learn basic principles for managing geographic data, they will have a complete overview of the different data categories, of coordinate systems, and they will be introduced to data analysis. The course syllabus includes lectures and practical exercises on the following:

- Introduction to the environment of the software ArcGIS Pro
- Managing geographical data in ArcGIS Pro
- Data categories

- Data input (raster and vector)
- Coordinate systems
- Georeferencing raster data
- Development of vector data – digitization
- Thematic mapping
- Data analysis
- Multivariate data analysis

TEACHING AND LEARNING METHODS

DELIVERY

Distance learning

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software.

In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.)

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	84
Preparation of course assignment	40
Course total	**150**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work

Performance during the semester **50%** (laboratory exercises, multiple choice questions)

Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass
- Course textbook.

Journals:

- Annals of GIS, https://www.tandfonline.com/journals/tagi20
- Geo-spatial Information Science, https://www.tandfonline.com/journals/tgsi20
- GIScience & Remote Sensing, https://www.tandfonline.com/journals/tgrs20
- International Journal of Digital Earth, https://www.tandfonline.com/journals/tjde20
- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Journal of Geographical Systems, https://link.springer.com/journal/10109

- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671

WEBSITE

https://eclass.uoa.gr/courses/GEOL621/

GIS02 ADVANCED PROCESSES IN GEOGRAPHIC INFORMATION SYSTEMS

Instructors: G. Saitis

Semester: A

Type: Special background, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

The aim of the course is to introduce students to complex processing in Geographic Information Systems. As students are already familiar with the basic procedures performed in a GIS, they will immerse themselves in complex processes of importing, storing, managing, retrieving, analysing, processing and presenting data. They will become familiar with alternative ways of collecting and managing geographical information, conversion of projection systems, use and homogenization of data of different origins, scale, etc. After completing this course successfully, postgraduate students will have specialized knowledge on data analysis, data management, various interference methods and spatial relations analysis.

General Competences:

Through the completion of this course students will have acquired the following competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

SYLLABUS

This course examines advances processes that can be performed in a GIS, related with data analysis, data management, various interference methods and spatial relations analysis. The course syllabus includes lectures and laboratory exercises on the following topics:

- Analysis of geographic and descriptive data
- Statistic Data Analysis
- Geographic data analysis
- Proximity analysis (Multiple Ring Buffers, Create Thiessen Polygons, Euclidean Allocation)
- Spatial interference

- Local Proximity Interference
- Geostatic Methods
- Variation Methods
- Descriptive data management (relate, join)
- Boolean Logic
- Selections
- Algebra of logical rules
- Logical rules in GIS

TEACHING AND LEARNING METHODS

DELIVERY

Distance learning

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software.

In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.)

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	94
Preparation of course assignments	80
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work

Assignment during the semester **100%** (laboratory exercises, multiple choice questions)

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass

Journals:

- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671

WEBSITE

https://eclass.uoa.gr/courses/GEOL622/

GIS03 GEOGRAPHIC INFORMATION SYSTEMS. GEOSPATIAL DATABASES AND DATA MINING

Instructors: L. Ragia, G. Saitis

Semester: A

Type: Special background, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

GIS03 will teach students how to create a spatial database and use it to answer geographic questions. Students will learn data mining techniques. At the successful completion of this course, students should be able to:

- understand the use of a database and especially of spatial database,
- understand database terminology,
- design a database schema from a set of requirements,
- retrieve data from an existing database using SQL select queries,
- implement the database design through the creation of related tables,
- insert and update rows in a table,
- model real-world entities through subtypes, domains, topology rules, and relationships,
- manage vector and raster data in a geodatabase,
- understand data mining techniques and important pattern discovery concepts, and methods,
- identify differences between data mining and artificial intelligence,
- learn well-known spatial mining techniques, including classification, association rules, characteristic rules, and clustering,
- learn hierarchical clustering and especially the hierarchy of clusters represented by a dendrogram,
- understand data mining methods and their applications by using examples with their visualization in Geographic Information Systems,
- understand machine learning techniques and understand the difference between machine learning and artificial intelligence.

General Competences:

Considering the general competences that the graduate should have acquired, the course aims to:

- in the analysis, and synthesis of digital spatial data for their storage and management,
- in making decisions concerning the choice of data and techniques, for the correct structure of a spatial database,
- in adapting to new situations that require the creation of spatial databases and the use of new software, new techniques, and methodologies,

- in the autonomous work through the theoretical development and practical processing of issues related to the concepts of spatial databases and data mining with the aim of developing the skills necessary to use them,
- in acquiring skills using terminology, techniques and new technologies of spatial databases and data mining,
- working in an interdisciplinary and international environment supported by the nature of geographic data and by learning English terminology,
- promote free, creative and inductive thinking.

SYLLABUS

Theory

- Introduction to databases. Basic concepts and terminology. Different data types of databases. Operational and analytical databases.
- The two basic models: The Object-Oriented Model in DBMS or OODM and the relational data model. Description of database schema.
- Relational databases and its items. Entity relationship model with description and examples of the terms: entities, relationships, and attributes.
- Introduction to Spatial Databases. Definition and the role of a Spatial Database Management System.
- Spatial data Types. Spatial Data Models. Entity based model and field-based model. Representation modes. Tessellation and vector representation.
- Geometry of a Collection of points. Spaghetti model. Network model. Topological model.
- Spatial query processing. Relational operations. Spatial Query Language. Structured Query Language. Theory and examples with maps from Geographic Information Systems.
- Spatial Index. Space driven structures and data driven structures.
- Introduction to Data Mining. Introduction to Machine Learning. The process of Knowledge Discovery in Databases (KDD).
- Data Mining techniques. Association Rules. Classification. Methods for data mining classification.
- Clustering analysis and methods for data clustering. Partitioning, hierarchical, density-based, grid-based, and model-based clustering.
- Regression analysis. Linear and multiple regression.
- Prediction. Forecast modeling. Classification modeling. Cluster Modeling. Time series modeling.
- Outlier detection. Global, Collective and Contextual Outliers. Sequential Patterns.
- Spatial Data Mining. Classification. Association Rules. Characteristic Rules. Discriminant Rules. Clustering.
- Hierarchical Clustering. Agglomerative and divisive. The dendrogram with it meaning. The single Linkage, Complete Linkage and Average Linkage Technique.
- Machine Learning Techniques. Supervised and unsupervised learning. Reinforcement Learning.
- Machine Learning of spatial data. Support Vector Machine.

Exercises:

- Spatial operations returning new spatial objects.
- Spatial queries using Structured Query Language
- Relational databases
- Space driven structures with emphasis to KD-tree
- Spatial index
- Clusters of using single link technique

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Slides, Software, video, internet, smart phones, etc

TEACHING METHODS:

Activity	*Semester workload*
Lectures and exercises	26
Study of educational material	112
Preparation for exams	60
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Evaluation methods:

- Written exam at the end of the semester: 60%
- Exercises 40%

SUGGESTED LITERATURE

Bibliography:

- Agrawal A, Agrawal C.P., Pandey A., 2018, Reference Empowering Multimedia with Data Mining and Data Warehousing
- Elmasri R. A, and Navathe S.B., 2004, 'Fundamentals of Database Systems'. Addison-Wesley Longman Publishing Co., Inc., 2004
- Han J., Kamber M., Pei J., 2013, Data Mining: Concept and Techniques (3rd ed.) Simon Fraser University,
- Laurini R., Thompson D., 1992, Fundamentals of Spatial Information Systems, Academic Press.
- Loshin P., Sirkin J., 2022, Structured Query Language (SQL),
- PostGIS 2023 https://postgis.net/
- Rigaux P., Scholl M., Voisard A., 2001, 'Spatial Databases with Application to GIS'
- Zhang, X and Du, Z., 2017. Spatial Indexing. The Geographic Information Science & Technology Body of Knowledge (4th Quarter 2017 Edition), John P. Wilson (ed). DOI: 10.22224/gistbok/2017.4.12

- Yue P. and Tan, Z., 2022, Relational Database Management Systems (DBMSs) and their Spatial Extensions. The Geographic Information Science & Technology Body of Knowledge (4th Quarter 2022 Edition), John P. Wilson (ed.).

Journals:

- Mokbel M. F. and Agef W.G., 2009, Space-filling Curves for Query Processing in Topor, R., Salem, K., Gupta, A., Goda, K., Gehrke, J., Palmer, N., Fuxman, A. (2009). Spatial Indexing Techniques. Encyclopedia of Database Systems, 2702–2707. doi:10.1007/978-0-387-39940-9_355
- Nadeem A., 2022, Machine learning 101: Supervised, unsupervised, reinforcement learning explained.
- Velicanu A, 2010, Spatial Operations, Database Systems Journal 1 (1), 5-8

WEBSITE

https://eclass.uoa.gr/GEOL623

GIS04 CARTOGRAPHY AND VISUALIZATION

Instructors: A. Karkani, H. Kranis

Semester: A

Type: Special background, Specialised general knowledge, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

The aim of the course is a better understanding of the concepts of cartographic mapping and data visualization and the corresponding practical experience, so that students have all the tools to develop and compose an accurate and readable map. By completing this course students will be able to:

- Apply different methods of thematic cartography and map composition.
- Select the appropriate tools to construct a map.
- Use thematic cartography according to the needs of their research.
- Design a correct and accurate map composition.
- Select methods of using three spatial axes (3D) to highlight and display data and draw 3D maps.

General Competences:

Through the completion of this course students will have acquired the following competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Teamwork
- Production of new research ideas
- Production of free, creative and inductive thinking

SYLLABUS

This course examines the principles of cartographic design and visualization. The training will concern the creation of maps, the cartographic composition, the correct use of symbols and the development of new symbols, the methods of visualization of quantitative and descriptive data and the creation of thematic maps. Students will gain experience in techniques for creating three-dimensional / continuous data, geo-visualization and representation of spatial data in 3D. At the end of the course students will have a better understanding of the concepts of mapping and data visualization and practical experience, to create and compile their own map. The course syllabus includes:

- Basic concepts in cartography
- Cartographic design

- Generalization
- Labels
- Graphics
- Adding and creating symbols
- Symbols and scale
- Creating new symbols, modifying existing symbols
- Thematic cartography and its categories
- Development of thematic maps
- Development of map for printing
- Development of 3D maps

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software.

In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.)

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	114
Preparation of course assignment	60
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work

Performance during the semester **50%** (laboratory exercises, multiple choice questions)

Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass,
- Course textbook.

Journals:

- Journal of Maps https://www.tandfonline.com/journals/tjom20
- International Journal of Cartography https://www.tandfonline.com/journals/tica20

- Cartography and Geographic Information Science https://www.tandfonline.com/journals/tcag20
- KN - Journal of Cartography and Geographic Information https://www.springer.com/journal/42489
- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Cartographica: The International Journal for Geographic Information and Geovisualization https://www.utpjournals.press/loi/cart
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671

WEBSITE

https://eclass.uoa.gr/courses/GEOL624/

GIS05 GEOSPATIAL MODELLING AND ANALYSIS

Instructors: G. Saitis

Semester: B

Type: Special background, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

This course emphasizes the fundamental statistical methods and procedures related to geographic data and spatial analysis. More specifically, it focuses on point, line and polygon trend analyses, interpolation methods, spatial accuracy estimation, error estimation, etc. Students are also introduced to the basic concepts of landscape modelling with GIS. By the successful completion of this course students will be able to better understand spatial analysis questions, correlate spatial data, they will deepen their knowledge on the various geospatial analysis tools and methods.

General Competences:

Through the completion of this course students will have acquired the following competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

SYLLABUS

The content of the course includes fundamental statistical methods and procedures related to geographic data and spatial analysis, trend analyses, interpolation methods, spatial accuracy estimation, and landscape modelling with GIS. The course syllabus includes lectures and exercises on the following topics:

- Creation and management of data using geospatial analysis tools.
- Spatial interactions
- Spatial analysis
- Identification of best routes
- Identification of best locations
- Methodology on GIS model development

- Model builder

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software.

In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.)

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	94
Preparation of course assignment	80
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work

Performance during the semester **50%** (laboratory exercises, multiple choice questions)

Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass.

Journals:

- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671
- Journal of Geovisualization and Spatial Analysis, https://link.springer.com/journal/41651
- International Journal of Applied Geospatial Research, https://www.igi-global.com/journal/international-journal-applied-geospatial-research/1138
- ISPRS International Journal of Geo-Information, https://www.mdpi.com/journal/ijgi

WEBSITE

https://eclass.uoa.gr/courses/GEOL630/

GIS06 GIS AND REMOTE SENSING

Instructors: E. Vassilakis

Semester: B

Type: Special background, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

Upon successful completion of the course, students will:

- understand the principles and techniques of remote sensing data processing
- select data based on the different resolutions offered
- import data into GIS applications and determine how to visualize them (natural color, false color, etc.)
- apply remote sensing data spatial analysis and classification methods
- apply and evaluate digital image processing methodologies within a GIS platform

General Competences:

Through the completion of this course students will have acquired the following competences:

- Search for analysis and synthesis of data and information, with the use of the necessary technology
- Acquiring skills using terminology, techniques and new technologies relative to Geographic Information Systems and Remote Sensing
- Decision-making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Respect for the natural environment
- Production of free, creative and inductive thinking
- Project planning and management

SYLLABUS

1) Introduction to Remote Sensing

2) Methods for implementing Remote sensing Data in ArcGIS Pro

Organizing raster data using mosaic datasets

Displaying and visualizing a mosaic dataset

Optimizing a mosaic dataset display

Evaluation

3) Processing Remote sensing Data Using ArcGIS Pro

Dynamically processing multispectral images

Use appropriate functions to process raster data dynamically

Evaluation

4) Classifying Remote Sensing data in ArcGIS Pro

Supervised

Unsupervised

Evaluation

5) Change detection in ArcGIS Pro

Optimizing the data visualization

Applying band ratios

Evaluation

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

ICT in teaching,

ICT in laboratory education,

ICT in communication with students

TEACHING METHODS:

Activity	*Semester workload*
Lectures	20
Study and analysis of educational material	90
Assignments delivery	50
Projects delivery	40
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: Individually written Project assignment after every lesson and Exams at the end of semester

The learning procedure and evaluation criteria are included in the course syllabus and is announced at the e-class Platform.

SUGGESTED LITERATURE

Bibliography:

- Lecture presentations
- Digital links on the Internet
- Principles of Remote Sensing, 2004, ITC
- Remote Sensing of the Environment: An Earth Resource Perspective, Jensen, 2009

Journals:

Environmental Monitoring and Assessment	Netherlands	1981
Geomatics, Natural Hazards and Risk	United Kingdom	2010
International Journal of Applied Earth Observation and Geoinformation	Netherlands	
ISPRS Journal of Photogrammetry and Remote Sensing	United States	
Remote Sensing of Environment	Netherlands	
Remote Sensing (MDPI)	Switzerland	2009

WEBSITE

https://eclass.uoa.gr/courses/GEOL632/

GIS07 SCIENTIFIC RESEARCH ON GIS

Instructors: K. Kartalis, K. Filipopoulos

Semester: B

Type: Special background, Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 6 ECTS

LEARNING OUTCOMES

Learning outcomes:

Upon successful completion of the course, students will:

- be able to design a research study and formulate research questions and objectives.
- build specialized skills in solving geo-environmental problems in a GIS environment.
- obtain knowledge on best practices for conducting research in a GIS environment.
- be able to apply methods for analyzing large-scale Earth observation data to solve problems and extract information.
- have the needed skills to use any geospatial data platform.

General Competences:

Through the completion of this course students will have acquired the following competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Respect for the natural environment
- Production of free, creative and inductive thinking
- Project planning and management

SYLLABUS

The course focuses on research design, information/data collection and geospatial data analysis strategies. Students will focus on developing appropriate research questions, conceptual models, and their application to contemporary environmental problems. The course introduces the principles of Geographic Information Systems and methods for processing vector and raster data. The course presents the theoretical background of important environmental issues and analysis techniques in a GIS environment and includes the use of machine learning models on geospatial data. Students are asked to select a modern problem, which they will develop entirely in a GIS environment. They will be asked to evaluate the results of the analysis and propose solutions/measures to address the problem being studied.

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

ICT in teaching,

ICT in laboratory education,

ICT in communication with students

TEACHING METHODS:

Activity	*Semester workload*
Lectures	28
Study and analysis of bibliography	30
Project Assessment	56
Essay writing	40
Exams	2
Course total	**156**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: Individually written Project assessment and Exams

The learning procedure and evaluation criteria are included in the course diagram and the e-class Platform.

SUGGESTED LITERATURE

Bibliography:

- Jiang, Z., & Shekhar, S. (2017). Spatial big data science. Schweiz: Springer International Publishing AG.
- Huang, T., Vance, T. C., & Lynnes, C. (Eds.). (2022). Big Data Analytics in Earth, Atmospheric, and Ocean Sciences.
- Jeffrey A. Cardille, Morgan A. Crowley, David Saah, Nicholas E. Clinton (2024). Cloud-Based Remote Sensing with Google Earth Engine - Fundamentals and Applications

Journals:

- Journal of Geographical Sciences,
- International Journal of Geographical Information Science,
- International Journal of Remote Sensing,
- Remote Sensing of Environment,
- Climate,
- Atmosphere,
- Remote Sensing

WEBSITE

https://eclass.uoa.gr/courses/GEOL645/

GIS08 SPATIAL STATISTICS

Instructors: M. Hatzaki, G. Lazoglou, P. Patlakas

Semester: B

Type: Special background; Specialised general knowledge; Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

The learning outcome is to help students with the successful completion of the course to become familiar with statistical calculations, with the application of statistical methods and the interpretation of their results and with the visualization of data and results, using:

- the ArcGIS Pro, as well as
- the R environment and programming language

And more specifically, the goals are to:

- be able to import and process different types of data in ArcGIS Pro and R computing environments
- derive key statistical parameters and apply statistical distributions to the data
- construct extreme value time series, apply Extreme Value Theory and calculate the return periods of extreme events
- perform spatial interpolation techniques
- apply spatial regression analysis with GIS
- apply hot spot analysis with GIS
- apply spatial queries

General Competences:

Upon successful completion and examination of the course, the aim is for the student to acquire the following general competencies and skills and they should:

- be able to conceptualize their own project, and in particular,
- perform computations and visualize results using the two programming environments on which they have been trained
- analyze and synthesize data and information for geoscience databases, with the use of the appropriate tools and methods
- design problem solving
- work independently, working with others
- think critically
- meet deadlines and time schedules

SYLLABUS

- Descriptive statistics
- Theoretical distributions
- Introduction in R
- Use of geospatial datasets
- Methods of spatial interpolation with R
- Extreme value statistics
- Correlation and Regression
- Regression models with GIS
- Hot spot analysis with GIS
- Spatial queries

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Electronic communication with the students using ICT. Computer-aided lectures, eclass platform, projects with numerical simulations on a computer.

TEACHING METHODS:

Activity	*Semester workload*
Lectures	26
Weekly exercises of practice on the methods	26
Study of educational material	90
Study for the written exams	58
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

The evaluation of the students is done through:

(a) problem solving during semester (20% of the total grade); and

(b) final written exams on computer (80% of total grade).

SUGGESTED LITERATURE

Bibliography:

- Spatial Statistics Illustrated, L. Bennett and F. Vale, Publisher: ESRI, Incorporated 2023
- Applied Spatial Data Analysis with R, *http://gis.humboldt.edu/OLM/r/Spatial%20Analysis%20With%20R.pdf*
- https://rspatial.org/index.html
- Schaum's Outline of Theory and Problems of PROBABILITY AND STATISTICS, Murray S. Spiegel, McGraw-Hill, 2nd Edition, 2000

- Courses of Applied Statistics, I Lioki-Livada and D.N. Asimakopoulos, Symmetria Eds, 2010 (in Greek)
- Martin H. Trauth, MATLAB® Recipes for Earth Sciences, Springer Textbooks in Earth Sciences, Geography and Environment, 5th ed., Springer Cham, 2021; 10.1007/978-3-030-38441-8

Journals:

- Journal of Statistical Software, https://www.jstatsoft.org/index
- Spatial Statistics, https://www.sciencedirect.com/journal/spatial-statistics
- Spatial Statistics, https://www.journals.elsevier.com/spatial-statistics/open-access-articles

WEBSITE

https://eclass.uoa.gr/courses/GEOL634

4.2.2 Elective courses

GIS09 GIS PROGRAMMING

Instructors: I. Agathaggelidis

Semester: C

Type: Special background; Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

After completing the "GIS programming" course successfully, postgraduate students will have specialized knowledge to perform the basic functions of geospatial analysis with Geographic Information Systems (GIS) through the use of a programming language (Python). They will acquire a complete and comprehensive overview of the functions of importing, modifying, managing, analysing and visualising geospatial data (vector and mosaic). Students are introduced to and gain an understanding of the theoretical background of geoinformatics, including the basic principles underlying geospatial algorithms. Through hands-on exercises they will deepen and apply the theoretical knowledge acquired to solve practical GIS applications through programming, as well as to approach research questions. They will have developed critical thinking in order to adopt the most appropriate and efficient geospatial algorithms and workflows on a case-by-case basis. They will also be introduced to the importance of using open-source software and the importance of developing reproducible GIS methodologies.

General Competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Production of free, creative and inductive thinking

SYLLABUS

1. Introduction

- Basic principles of GIS: vector data, raster data, and geographic coordinate systems.
- Why is programming useful in GIS applications?
- Fundamental geospatial software (GDAL, GEOS, PROJ).

2. A brief introduction to Python

- Installation.
- Basic data structures and commands.
- Introduction to scientific computing libraries.

3. Vector data

- Introduction to the most important libraries for vector data.
- Handling the basic vector data format types.
- Attribute data operations.
- Reprojection.
- Visualization.

4. Vector data processing

- Spatial operations (spatial sub-setting, topological relations, spatial aggregation).
- Geometry operations (buffer zones, Thiessen polygons, convex hull polygons, affine transformations, geometry unions).

5. Raster data

- Introduction to remote sensing.
- Introduction to the most important libraries for raster data.
- Handling the basic raster data format types.
- Visualization.

6. Raster data processing

- Spatial operations (map algebra, local, focal and global operations, mosaicking).
- Geometric operations (aggregation, reprojecting).
- Vector and raster data connections.

7. Machine learning and geostatistics for GIS

- Introduction to machining learning libraries.
- Applications in classification and regression applications.
- Introduction to geostatistics libraries.
- Applications in autocorrelation and spatial regression problems.

8. Applications in geology, urban environment, and climate change

- Processing data elevation models (contour lines, spatial interpolation, slope/terrain aspect).
- Comparison of land surface temperature between built-up regions and green areas.
- Changes of climate parameters through climate model projections.

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

For educational material, announcements, assignments and student feedback the asynchronous eLearning platform eClass is used. For the interactive interaction of students with the programming language lectures in the form of Jupyter Notebooks and specialised software are provided.

TEACHING METHODS:

Activity	*Semester workload*
Lectures	20
Independent study of educational material	90
Assignments	50
Project	40
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Students are evaluated through written assignments during the semester, the preparation and presentation of a final project and a written examination which includes short answer questions, multiple choice questions and problem solving.

SUGGESTED LITERATURE

Bibliography:

- Westra, Erik. Python geospatial development. Packt Publishing Ltd, 2013.
- Garrard, Christine. Geoprocessing with python. Simon and Schuster, 2016.
- Lawhead, Joel. Learning Geospatial Analysis with Python: Understand GIS fundamentals and perform remote sensing data analysis using Python 3.7. Packt Publishing Ltd, 2019.
- Lovelace, Robin, Jakub Nowosad, and Jannes Muenchow. Geocomputation with R. CRC Press, 2019

Journals:

- Journal of Geographical Systems, Springer ISSN: 1435-5949
- Geographical Analysis, Wiley-Blackwell, ISSN2

WEBSITE

https://eclass.uoa.gr/courses/GEOL646/

GIS10 WEB AND MOBILE GIS APPLICATIONS AND PROGRAMMING

Instructors: S. Valkaniotis

Semester: C

Type: Special background; Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

This course will introduce students to the essential skills needed to develop web applications and program spatial analytics in a Web environment. This course will also help students to understand the pros and cons of using GIS mobile applications. Mobile GIS is the extension of office GIS technology to the field. A mobile GIS allows users working in the field to capture, store, update, manipulate, analyse, and view geographic information. Students will acquire skills for developing network GIS and applications on mobile devices such as phones and tablets. These skills will enable students to develop web and mobile applications to support geospatial data access, analysis, sharing, and synthesis over the Internet.

General Competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Production of new research ideas
- Production of free, creative and inductive thinking

SYLLABUS

This course provides an in-depth exploration of Geographic Information Systems (GIS) with a focus on developing web and mobile applications. Students will learn web mapping technologies, and programming skills to create interactive and dynamic spatial applications. The syllabus includes lectures and laboratory exercises on the following topics:

- Introduction to web mapping technologies
- Understanding mobile GIS and its significance
- Overview of mobile GIS platforms
- Building basic mobile GIS applications
- Creating interactive web maps
- Creating GIS web applications with Python frameworks

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software. In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.).

TEACHING METHODS:

Activity	*Semester workload*
Lectures and laboratory exercises	26
Independent study of educational material	84
Assignments	50
Project	40
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work. Performance during the semester **50%** (exercises). Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures in the eclass.

Journals:

- International Journal of Geographical Information Science (IJGIS)
- Journal of Spatial Information Science
- Computers, Environment and Urban Systems
- Geoinformatica

WEBSITE

https://eclass.uoa.gr/courses/GEOL647/

GIS11 GIS FOR DECISION MAKING

Instructors: A. Karkani

Semester: C

Type: Special background; Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

This course will help students understand the usefulness of GIS in decision making, with the goal of solving contemporary societal problems. Students will learn to recognize the problem they will be called to face, to determine the criteria for the decisions they will make to solve it, the possible alternatives offered and their implementation and finally its solution in a GIS environment. By the completion of this course, students will have acquired the abilities to integrate, analyze, and visualize spatial data and use GIS capabilities to support spatial decision making.

General Competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Working in an international environment
- Project planning and management
- Respect for the natural environment
- Production of free, creative, and inductive thinking

SYLLABUS

The course content includes the application of acquired knowledge in GIS in support of decision-making processes. The syllabus includes lectures and exercises related to the following subjects:

- GIS-based multi-criteria decision analysis methods
- Spatial Analysis, to understand complex relationships between geographical elements, aiding in informed decisions
- Risk Assessment and Management
- Policy Development
- Market Analysis
- Environmental Conservation

- Infrastructure Planning
- Emergency Response and Management

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software.

In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.).

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	94
Preparation of course assignment	80
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work.

Performance during the semester **40%** (laboratory exercises, multiple choice questions).

Assignment delivered at the end of the semester **60%**.

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass.
- Malczewski J. (1999) GIS and Multicriteria Decision Analysis, New York: Wiley
- Malczewski (2000) On the use of weighted linear combination method in GIS: common and best practice approaches. Transactions in GIS, 4(1), 5-22.
- Malczewski J. (2006) GIS-based multi-criteria decision analysis: a survey of the literature. International Journal of Geographical Information Science, 20(7), 703–726

Journals:

- Cartography and Geographic Information Science https://www.tandfonline.com/journals/tcag20
- KN - Journal of Cartography and Geographic Information https://www.springer.com/journal/42489
- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671

WEBSITE

https://eclass.uoa.gr/courses/GEOL641/

GIS12 NATURAL HAZARD MODELLING

Instructors: N. Evelpidou

Semester: C

Type: Special background; Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 8 ECTS

LEARNING OUTCOMES

Learning outcomes:

The aim of the course is to deepen students' knowledge in GIS methodologies with emphasis on natural hazards and includes methods of natural hazard modelling, creation of monitoring and impact maps, creation of crisis management plan maps (e.g., modelling of population evacuation zones) and modelling applied issues (e.g. flood risk, tourism applications). By the completion of this course students will be able to use various GIS tools and techniques to analyse, model, and visualize various natural hazards.

General Competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Project planning and management
- Respect for the natural environment
- Production of free, creative and inductive thinking

SYLLABUS

The course focuses on modelling natural hazards using GIS. The syllabus includes lectures and laboratory exercises that will focus on the following topics:

- Natural hazards and their characteristics
- Overview of GIS in natural hazard modelling
- Data Collection and Management for Hazard Modelling
- Data acquisition and preprocessing
- Spatial data quality and uncertainty
- Terrain Analysis and Modelling (DEMs for hazard modelling, Slope analysis, aspect, terrain-based modelling of flood and landslide hazards)

- Hydrological Modelling (e.g. Watershed delineation and hydrological modelling, floodplain mapping using GIS, coastal flooding)
- Flood hazard modelling
- Climate Change and Natural Hazards
- Management of natural hazards using GIS
- Monitoring and impact maps
- Case studies on modelling of natural hazards

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software. In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.).

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	94
Preparation of course assignment	80
Course total	**200**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work. Performance during the semester **50%** (exercises, multiple choice questions). Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass.

Journals:

- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671
- Geomatics, Natural Hazards and Risk, https://www.tandfonline.com/journals/tgnh20
- Natural Hazards, https://link.springer.com/journal/11069
- Natural Hazards and Earth System Sciences, https://www.natural-hazards-and-earth-system-sciences.net/
- GeoHazards, https://www.mdpi.com/journal/geohazards

WEBSITE

https://eclass.uoa.gr/courses/GEOL644/

GIS13 GIS APPLICATIONS ON GEOENVIRONMENT

Instructors: G. Saitis

Semester: C

Type: Special background; Skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 6 ECTS

LEARNING OUTCOMES

Learning outcomes:

This course includes the presentation and analysis of GIS applications, focusing and deepening on geoenvironmental issues. The aim is for students to specialize in the evaluation of primary data, in their proper preparation, as well as to be trained in the use of modern methodologies of spatial analysis of environmental data and in the correct interpretation of results in order to ensure maximum reliability of final maps.

General Competences:

Upon completion of this course, students will have acquired the following general competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Working in an international environment
- Project planning and management
- Respect for the natural environment
- Production of free, creative, and inductive thinking

SYLLABUS

This course deals with the presentation and analysis of GIS applications, focusing and deepening on geoenvironmental issues. The syllabus will include lectures and exercises with a focus on the following topics:

- Introduction to geoenvironmental issues
- Spatial data in geoenvironmental science
- Land use and land cover in solving geoenvironmental issues
- Environmental modelling with GIS
- Spatial statistics in environmental research
- Spatial Analysis in geoenvironmental science
- Case studies on geoenvironmental issues using GIS
- GIS apps in presenting and analysing geoenvironmental issues (e.g. dashboards, story maps, webmaps, etc.)

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software.

In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.).

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	74
Preparation of course assignment	60
Course total	**150**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work. Performance during the semester **50%** (exercises, multiple choice questions). Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass.

Journals:

- International Journal of Applied Earth Observation and Geoinformation, https://www.sciencedirect.com/journal/international-journal-of-applied-earth-observation-and-geoinformation
- Journal of Maps https://www.tandfonline.com/journals/tjom20
- Cartography and Geographic Information Science https://www.tandfonline.com/journals/tcag20
- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671
- Geoenvironmental Disasters, https://geoenvironmental-disasters.springeropen.com/about

WEBSITE

https://eclass.uoa.gr/courses/GEOL643/

GIS14 GIS APPLICATIONS ON HEALTH SCIENCE

Instructors: K. Stefi

Semester: C

Type: special background, specialised general knowledge, skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 6 ECTS

LEARNING OUTCOMES

Learning outcomes:

- Knowledge Acquisition:

Understanding GIS Fundamentals in Health: foundational concepts, terminologies of Geographic Information Systems (GIS) and health issues. Recognize the applications and significance of GIS in health science, including epidemiology, environmental health, healthcare access, and public health planning.

- Technical Skills Development:

Spatial Data Handling/Spatial Analysis Techniques: Apply a range of spatial analysis methods to explore, visualize, and interpret health-related spatial patterns and relationships; Disease Mapping and Epidemiology; Create disease maps, conduct spatial epidemiological analysis, and identify spatial patterns of health conditions and diseases; Utilize GIS insights for strategic planning, resource allocation, and decision-making in public health interventions.

- Research and Communication Skills:

Research Proficiency:

Participation in research projects applying GIS methodologies in health science, including data collection, analysis, and interpretation.

Visualization and Communication:

Present findings effectively through maps, reports, and presentations tailored to diverse audiences within the health science domain.

- Collaboration and Teamwork:

Engage in collaborative projects, demonstrate teamwork, and effectively communicate within multidisciplinary health-focused teams.

- Skills and Competences:
  - ✓ Data Management: Proficiency in collecting and managing health-related spatial data.
  - ✓ Spatial Problem-Solving: Ability to analyze spatial problems and derive solutions using GIS techniques.
  - ✓ Critical Thinking: Apply critical thinking to interpret and derive meaningful insights from health-related spatial data.

- ✓ Effective Communication: Communicate GIS findings clearly and effectively to diverse stakeholders within the health science field.
- ✓ Decision-Making: Use GIS insights to support informed decision-making in health planning and interventions.

General Competences:

After completing a GIS course focused on Health Sciences, students will have acquired several skills to:

- Comprehend GIS Concepts: Grasp the basic principles, terminologies, and functions of Geographic Information Systems as applied to health sciences.
- Data Handling: Gain proficiency in handling and managing spatial data relevant to health-related contexts.
- Apply GIS Techniques in Health Science: (Apply various spatial analysis techniques to understand patterns, relationships, and distributions of health-related data; Epidemiological Mapping).
- Assess Health and Environmental Relationships: (Evaluate the relationships between environmental factors in specific area and effect on health).
- Identify Health Disparities: (using spatial analysis of healthcare access, utilization among different populations).
- Plan and Implement Public Health Interventions
- Amplify Scientific Research Skills: (participation in independent research projects using GIS techniques in health sciences, including data collection, analysis, and interpretation).

SYLLABUS

The course on GIS in Health Science covers various aspects of Geographic Information Systems tailored to health-related applications.

- Introduction to GIS and Health Science: Overview of GIS concepts and its relevance in health science, understanding spatial data and its significance in healthcare; Geocoding, mapping, and visualization of health-related data
- Spatial Epidemiology: Exploring disease mapping and spatial patterns of diseases; Cluster analysis and identification of disease hotspots
- Environmental Health and GIS: Understanding the impact of environmental factors on health; Analyzing environmental health data using GIS techniques
- Healthcare Access and Utilization: Assessing healthcare access and utilization through spatial analysis; Studying healthcare facilities distribution and proximity analysis
- Data Collection and Management in Health GIS: Data collection methods and ethics in health-related GIS projects; Managing and preprocessing health-related spatial data
- Community Health Mapping: Engaging communities in health mapping projects
- Future Trends and Innovations: Emerging technologies and future trends in GIS for health science. Discussing research “frontiers” and career opportunities
- Practical Sessions: Practice GIS tools and software (ArcGIS, QGIS, etc.) for health-related data analysis.

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software. In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.)

TEACHING METHODS:

Activity	*Semester workload*
Lectures	20
Laboratory exercises	30
Unguided study	50
Preparation of course assignment	60
Exams	4
Course total	**164**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: i) part a: mid-semester exams (laboratory exercises, short-answer questions, multiple choice questions); **50%**

ii) part b: at the end of the semester: Written individual essay where a serious health problem will be analyzed (bibliographically) and a thematic map will be created for this disease; **50%**

Assessment methods: The evaluation process and criteria are included in the course diagram and posted on the course page on the e-class Platform.

SUGGESTED LITERATURE

Bibliography:

- "GIS and Public Health" by Ellen K. Cromley and Sara L. McLafferty - Offers comprehensive insights into the applications of GIS in public health contexts.
- "Spatial Epidemiology: Methods and Applications" by P. Elliott, J.C. Wakefield, and N.G. Best - Fo-cuses on spatial epidemiology techniques using GIS in health research.
- "GIS in Hospital and Healthcare Emergency Management" by Ricardo A. Olea and Sriram Venka-traman - Explores GIS applications in emergency healthcare services.

Journals:

- International Journal of Health Geographics
- Health & Place
- Journal of Spatial Science

WEBSITE

https://eclass.uoa.gr/courses/GEOL648/

GIS15 GIS APPLICATIONS ON ECONOMY

Instructors: A. Livieratos

Semester: C

Type: special background, skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 6 ECTS

LEARNING OUTCOMES

Learning outcomes:

GIS is increasingly used for fast, intelligent business analysis with tools that everyone involved in economic development can use. This course includes the presentation and examination of GIS applications in socio-economic issues. This course presents tools and techniques for understanding and analysing spatial socio-economic phenomena to highlight management methods and draw conclusions and information, vital in decision-making processes. By the completion of this course, students will be able to use spatial data to analyse economic trends and make informed business decisions, understand the factors contributing to development patterns, and visualize information such as customer and business clusters and target markets.

General Competences:

Upon completion of the course students will acquire the following general competencies:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Working in an international environment
- Project planning and management
- Respect for the natural environment
- Production of free, creative, and inductive thinking

SYLLABUS

The course explores the intersection of GIS, economics, and business analytics. The course syllabus includes lectures and laboratory exercises with focus on the following topics:

- Spatial Analysis Techniques in economy and business (e.g. Spatial queries and analysis, Buffering and overlay operations, Distance analysis, Hotspot analysis)
- Spatial aspects of economic development
- Location theory and site selection
- Impact of geography on economic activities

- Business Location Analysis (e.g. Site suitability analysis)
- GIS in Market Research (e.g. Geodemographics and consumer profiling, Visualization techniques for market research)
- GIS web-applications for economy and business (e.g. Dashboards, webmaps, etc.)

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In teaching: presentations with multimedia material (images, animation, videos). Use of specialized GIS software. In communication with students: support of the teaching process through the eclass (announcements, messages, documents, assignments, questionnaires, multimedia, etc.)

TEACHING METHODS:

Activity	*Semester workload*
Lectures and Laboratory exercises	26
Study of educational material	64
Preparation of course assignment	60
Course total	**150**

STUDENT EVALUATION

Language of evaluation: English

Methods of evaluation: multiple choice questionnaires, short-answer questions, computer exercises, written work

Performance during the semester **50%** (exercises, multiple choice questions)

Assignment at the end of the semester **50%**

SUGGESTED LITERATURE

Bibliography:

- Presentations and video lectures on the eclass.

Journals:

- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671

WEBSITE

https://eclass.uoa.gr/courses/GEOL642/

GIS16 GIS APPLICATIONS ON HISTORY – ARCHAEOLOGY

Instructors: A. Livieratos

Semester: C

Type: special background, specialised general knowledge, skills development

TEACHING ACTIVITIES

Lectures and laboratory exercises

2 hours of lecturing per week, 6 ECTS

LEARNING OUTCOMES

Learning outcomes:

After the completion of the course, the students will be able to use Geographic information systems software for the description and analysis of historical and archaeological sites. In more detail, the students will be able to do:

- Spatial analysis
- Basic 3d analysis
- Basic archaeological mapping
- Georeferences
- Archaeological data management
- Databases
- Data collection methods
- Remote sensing of archaeological sites

General Competences:

Upon completion of the course students will acquire the following general competencies:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Working independently
- Working in an interdisciplinary environment
- Respect for the natural environment
- Criticism and self-criticism
- Production of free, creative and inductive thinking

SYLLABUS

The following subjects will be included in the course:

- Introduction to management of archaeological data
- Geo-database and taxonomy of archaeological data
- Collection of Data in archaeological sites
- Spatial analysis

- Archaeological landscape reconstruction
- Remote sensing technics in archaeology
- Landscape archaeology routes calculation

TEACHING AND LEARNING METHODS

DELIVERY

Remote synchronous and asynchronous lectures

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Course management environment: Electronic; EKPA class (eclass.uoa.gr)

- Course material
- Assessment Exercises/Tasks
- Links to audio-visual material
- Announcements
- Communication with teachers and administrative services
- Modern training via Webex
- Asynchronous education

TEACHING METHODS:

Activity	*Semester workload*
Lectures	15
Study and analysis of Bibliography	45
Exercises /essays	90
Course total	**150**

STUDENT EVALUATION

Language of evaluation: English

Evaluation Methods (alternatively or in combination): Closed type questions (at least 50% of the grade); Multiple choice questions; True/False questions; Matching questions; Text completion questions; Written assignment (up to 50% of the grade)

SUGGESTED LITERATURE

Bibliography:

- Bogdani, Julian & Mitri, Eugenio. (2017). A Bibliography on the Application of GIS in Archaeology and Cultural Heritage. Groma. Documenting archaeology. 13. 10.12977/groma12.
- Conolly, J., and M. Lake. 2006. Geographical information systems in archaeology. Cambridge Univ Pr.
- Neteler, M., and H. Mitasova. 2007. Open Source GIS: A GRASS GIS Approach. The International Series in Engineering and Computer Science: Volume 773. New York.

WEBSITE

https://eclass.uoa.gr/courses/GEOL649

4.2.3 Thesis

GIS17 THESIS

Semester: D

Type: Special background

TEACHING ACTIVITIES

Independent study

30 ECTS

LEARNING OUTCOMES

Learning outcomes:

In the context of completing the studies for obtaining a master's degree in Geographical Information Systems, the preparation of a Thesis is also included. During its preparation, the students are given the opportunity to prove that they have the ability to use all they have learned during their studies. At the same time, students are given the opportunity to organize a study by themselves with their own personal effort and study to reach the best possible result. The professor who supervises the student's thesis guides and supports them to complete the work. In addition, students are given the opportunity to choose a topic that interests them related to the subject of study.

By the successful completion of the thesis students will be able to:

- Search, evaluate and critically use the available literature
- Design a research plan and develop an appropriate methodology for approaching and investigating a topic under study
- Document his/her opinions and argumentation
- Suggests future study perspectives
- Know how to write a scientific essay
- Successfully carry out a complete presentation of a topic through ICT.

General Competences:

- Search, analysis and synthesis of spatial data and geographic information, using the necessary technologies
- Decision-making
- Working independently
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas
- Production of free, creative and inductive thinking

SYLLABUS

In the 4th semester, the thesis is prepared.

The subject of the thesis can be of a practical-applied, academic-research and/or broad-type literature review, and should be related to the subject of the Postgraduate Program. Students can indicate the thematic fields of their interest for the work they will undertake, or they can, following the advice of the supervising professor, propose a work topic, as provided by the Regulation.

The assignment is made by the Coordinating Committee following an application, which is co-signed by the candidate and the supervisor, and which states the proposed title of the thesis and contains a summary of the proposed thesis. The Committee designates the supervisor and the other two members of the three-member examination committee. The writing language of the master's thesis is English. The title of the thesis can be modified upon application by the student and with the agreement of the supervisor to the Committee of the Postgraduate Program. The text of the thesis is mandatorily checked for plagiarism under the responsibility of the supervising professor.

TEACHING AND LEARNING METHODS

DELIVERY

Distance learning in collaboration with supervisor

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Electronic communication with the student using ICT. Use of databases, scientific literature

TEACHING METHODS:

Activity	*Semester workload*
Independent study	200
Search of articles and data	130
Cooperation with supervisor	40
Thesis writing	350
Thesis Presentation	30
Course total	**750**

STUDENT EVALUATION

Language of evaluation: English

Public Presentation and Final examination (100%) by the three-member committee.

The main examination points are as follows: 1. Satisfaction of work objectives. 2. Organized way of presentation. 3. Good problem definition. 4. Use of appropriate tools and techniques selected for the solution. 5. Appropriate interpretation and justification, within the limits of the work, of the choices of tools, solutions, criteria, etc.

The work is presented orally to the professors of the Department and students of the postgraduate program. Oral presentation contributes 10% to the total evaluation

SUGGESTED LITERATURE

Related academic journals (depending on the subject of the thesis):

- Annals of GIS, https://www.tandfonline.com/journals/tagi20
- Geo-spatial Information Science, https://www.tandfonline.com/journals/tgsi20
- GIScience & Remote Sensing, https://www.tandfonline.com/journals/tgrs20
- International Journal of Digital Earth, https://www.tandfonline.com/journals/tjde20
- International Journal of Geographical Information Science https://www.tandfonline.com/journals/tgis20

- Journal of Geographical Systems, https://link.springer.com/journal/10109
- Transactions in GIS https://onlinelibrary.wiley.com/journal/14679671

4.3 Teaching personnel

The teaching work of the PSP is assigned, following the decision of the Assembly, to the following categories:
a) faculty members, Special Educational Staff (EEP), Laboratory Teaching Staff (EDIP) and Special Technical Laboratory Staff (ETEP) of the department or other departments of NKUA or another University, with additional employment beyond their legal obligations,
b) emeritus professors or retired faculty members of the Department or other Departments of NKUA or another university,
c) collaborating professors,
d) authorized tutors,
e) visiting professors or visiting researchers,
f) researchers and scientists of research and technological bodies of article 13A of Law 4310/2014 (A' 258) or other research centers and institutes from Greece or abroad,
g) scientists of recognized prestige, who have specialized knowledge and relevant experience in the subject of PSP
By decision of the Assembly, teaching may be assigned to the PhD candidates of the Department or the School, under the supervision of a faculty member of the PSP.
The following categories of tutors have the right to supervise a postgraduate dissertation dip, provided that they hold a doctoral degree:
a) faculty members, Special Educational Staff (EEP), Laboratory Teaching Staff (EDIP) and Special Technical Laboratory Staff (ETEP) of the department or other departments of NKUA or another University, with additional employment beyond their legal obligations,
b) emeritus professors or retired faculty members of the Department or other Departments of NKUA or another university,
c) collaborating professors,
e) visiting professors or visiting researchers,
f) researchers and scientists of research and technological bodies of article 13A of Law 4310/2014 (A' 258) or other research centers and institutes from Greece or abroad,

4.4 List of Teaching Personnel

Surname	Name	Academic status	Institution	E-mail	Telephone
Agathaggelidis	Ilias	Postdoctoral researcher	NKUA	iliasaga@phys.uoa.gr	210 727 6848
Valkaniotis	Sotiris	Postdoctoral researcher	Democritus University of Thrace	valkaniotis@yahoo.com	6988013581
Vassilakis	Emmanuel	Faculty member	NKUA	evasilak@geol.uoa.gr	210 727 4400
Evelpidou	Niki-Nikoletta	Faculty member	NKUA	evelpidou@geol.uoa.gr	210 727 4297

Karkani	Anna	ΕΔΙΠ	NKUA	ekarkani@geol.uoa.gr	210 727 4132
Kartalis	Konstantinos	Faculty member	NKUA	ckartali@phys.uoa.gr	210 727 6926
Kranis	Charalambos	Faculty member	NKUA	hkranis@geol.uoa.gr	210 727 41862
Lazoglou	Georgia	Postdoctoral researcher	The Cyprus Institute	g.lazoglou@cyi.ac.cy	+357 22 397 562
Livieratos	Antonis	Faculty member	NKUA	alivieratos@ba.uoa.gr	210 368 9809
Patlakas	Platon	External collaborator	NKUA	platon@mg.uoa.gr	210 727 6832
Polidorou	Miltiadis	Postdoctoral researcher	University of Cyprus	mpolidorou@gmail.com	+35799396863
Ragia	Lemonia	Collaborating teaching staff	Hellenic Open University	ragia.lemonia@ac.eap.gr	2106728726
Saitis	Ioannis	External collaborator	NKUA	saitij@geol.uoa.gr	210 727 4378
Staridas	Spiridon	Collaborating teaching staff	STARIDAS GEOGRAPHY Making Maps Pretty	staridasgeography@gmail.com	2810 289676
Stefi	Aikaterini	Postdoctoral researcher	NKUA	kstefi@biol.uoa.gr	210 727 4615
Filipoppoulos	Konstantinos	Postdoctoral researcher	NKUA	kphilip@phys.uoa.gr	210 727 6831
Hatzaki	Maria	Faculty member	NKUA	marhat@geol.uoa.gr	210 727 4192

5. Student Care and Other Benefits

5.1 Sustenance

All students are entitled to sustenance at the Campus Refectory (tel. 210-72774443 και 210-7277734), which operates in the premises of the School of Philosophy, at approximately 10 minutes walking distance from The Department. Sustenance is subsidised and provided at particularly low prices. The Refectory is open daily, between 12:00 – 16:00 and 18:00-21:00, except for a 15-day break during the Christmas and Easter holidays. Students are also entitled to special low-price sustenance at all other refectories of the NKUA, as well as and at the University Club.

European Union students who meet the requirements of the Law with respect to (low) family income are entitled to free sustenance up to the day of their graduation. If students entitled to free sustenance decide to suspend their studies, the benefit is accordingly suspended but can be reinstated once they resume their studies. Information can be sought in phone (landline) numbers 2103688216, 2103688252 and 2103688230, as well as at the Student Club, (Hippocrates 15 St., 5th floor, daily between 09:00 and 12:00.

5.2. Health Care

Subject to the limitations specified in Section 3.6 of the present Guide, students are entitled to free and comprehensive health and medical care for the duration of their studies and up to the 31st of December of the year of their graduation. Health care is provided at the numerous facilities of the University and at the clinics and hospitals of the School of Medicine. In special cases, or under special circumstances, care can be provided

in facilities outside of the University. It includes in or out of hospital care, all types of medical tests, medication, child birth services, dental care, physical therapy, orthopaedic care and social services.

For students who decide to suspend their studies, medical and health care benefits are accordingly suspended. The benefits are reinstated once they resume their studies and up to their completion (also see Section 3.6 of the Guide).

If a student is entitled to the benefits of a third party health care provider, he/she has the right of choice between the services provided by the University or the services of the third party. If a student decides on third party care, all expenses will be reclaimed from his/her provider. However, if the student's health care provider may cover only part of these expenses, (e.g. only a percentage of hospital costs), the University will supplement the costs to their full extent.

The Health Services of the University are located in the 1st floor of the University Club; the landline of the secretariat is 210 3688218. Services include:

- Medical examinations (tel. 2103688208)
- Hospital care (tel. 2103688208, 2103688218)
- Pharmaceutical care (tel. 2103688208, 2103688241, 2103688243, 2103688210)
- Paraclinical examinations (tel. 2103688208, 2103688241, 2103688243, 2103688210)
- Examinations at home (tel. 2103688208, 2103688243)
- Physical therapy (tel. 2103688208, 2103688241, 2103688243)
- Dental care (tel. 2103688210)
- Orthopedic articles (tel. 2103688208, 2103688241, 2103688243)

Clinics operate at the University Club and the University Campus (Panepistimiopoli) as follows:

UNIVERSITY CLUB 1st FLOOR

- **Internal Medicine** (tel. 2103688241 and 2103688243): daily Monday to Friday between 8:00 and 14:00.
- **Gynecology** (tel. 2103688242) Tuesday and Thursday 10:30 - 12:45 and Friday 10:30 - 15:00.
- **Dermatology** (tel. 2103688209) Tuesday and Thursday 12:00 - 14:30.
- **Radiology laboratory** (tel. 2103688212), daily 8:00 - 13:30.
- **Dentist** (tel. 2103688210), daily 8:30 - 13:00.
- **Social and Psychological Support** (tel. 2103688226, 2103688282, 2103688209), daily 08:00 – 14:00.

UNIVERSITY CAMPUS (PANEPISTIMIOPOLI) – BUILDING A'

- **Internal Medicine** (tel. 2107275567): daily, Monday to Friday, 9:00 - 13:30.
- **Dermatology** (tel. 210 7275582) Monday and Wednesday 12:00 - 14:30.
- **Social and Psychological Support** (tel. 2107275580, 2103688282, 2103688209), daily 08:00 – 14:00.

UNIVERSITY CAMPUS – SCHOOL OF PHILOSOPHY (GROUND FLOOR)

- **Internal medicine** (tel. 2107277873): daily, 8:30 - 14:00.

UNIVERSITY CAMPUS – SCHOOL OF SCIENCES

- **First aid services** (tel 2107274391): daily, Monday to Friday, 8:00 – 20:30.

5.3. Discount in Transportation Fares

Students are entitled to 50% discount in Public Transportation fares (bus/trolley-bus, subway, tram and suburban railway) operating in the Metropolitan area of Athens and 25% discount in the fares of Public Transportation in other Greek cities. Students permanently residing in cities other than Athens are also entitled to a 50% discount in bus and railway fares to and from their city of residence.

The right to reduced student fares is effective immediately upon matriculation and holds until the day of graduation. Students are supplied with a special ID card which they must produce when they buy a reduced fare ticket; the card is strictly personal and non-transferable. If lost, it can be replaced but only following a tedious process which may take a minimum of two months to complete.

For students who decide to suspend their studies (Section 3.6), the right to reduced fares is accordingly suspended and the ID cards are returned to the Secretariat. The benefit is reinstated once studies are resumed. Further information can be sought in the Secretariat as well as at http://paso.minedu.gov.gr or in telephone numbers 801-11-31400 and 210-7724375.

5.4 Services provided to students

The Postgraduate program provides several important services for which students can find information on the websites of the PSP, the Department and the University. The services provided are:

- Electronic Class (e-class) which is an integrated electronic course management system and supports the asynchronous distance learning service at NKUA without restrictions and commitments. No specialized technical knowledge is required to access the service.
- Electronic Secretarial Services through which the students of the PSP have access to a series of electronic services (e.g. grades).
- Library and Information Center which includes electronic resources and related electronic services, including (i) access to electronic online information sources, (ii) bibliographic databases, (iii) institutional repository/digital library platform "Pergamos", (iv) article ordering, etc.
- Multimedia Content Hosting and Search service, which is addressed both to the content creators themselves, (e.g. teaching and research staff of the institution), and to users who have access to the educational content through the ability to search or navigating freely.
- Academic Adviser Service through which guidance and support is provided to PSP students, providing various advice regarding the program as well as the possible further development of the students' studies.
- Provision of an Academic ID with the right to a reduced ticket.
- Digital Services with electronic services such as email, connection via a wireless network (Wi-Fi), personal websites, virtual private network (VPN), electronic questionnaires, etc. For further information you may visit the relevant page https://www.uoa.gr/el/foitites/ilektronikes_ypiresies/psifiakes_paroches/

5.5 Other Facilities and Contact Information

5.5.1 Accessibility Unit for Students with Disabilities

The mission of the Accessibility Unit for Students with Disabilities is ***to actively realize coequal access to academic studies for students with different abilities and needs, through built environmental modifications, Assistive Technologies and access services.***

The Unit provides students with disabilities with:

- Access to interpersonal communication with members of the academic community.
- Access to the built environment of the University including transportation services.
- Access to printed or electronic educational material.
- Access to classroom material and presentations.
- Assistance in note keeping, course and laboratory work and access to written examinations.
- Access to information, Internet content and applications of Information Technology.

Tel: 210 7275687

FAX: 210 275193

E-mail: access@uoa.gr

Website: https://access.uoa.gr/en/

5.5.2 Student Relief Fund

Provides material and moral support in extraordinary cases or extenuating circumstances. The service is located at the University Club, 3rd floor; Tel: 2103688221; Website: http://tafpa.uoa.gr/.

5.5.3 Student Counseling Centre

Open Monday to Friday, 10:00 - 16:00. Tel.: 2107277554; Website http://www.cc.uoa.gr/skf/

5.5.4 Student Ombudsman

The Student Ombudsman endeavours to:

- review complaints pertaining to problems with the academic and administrative services and seek their solution;
- facilitate the interaction of the students with the Institution and administrative services;
- review complaints related to violations of laws and regulations, as well as academic and professional ethics;
- inform the students about their rights and obligations as members of the University Community

Address: University Club Building (15, Ippokratous st., 1st floor) – open every Wednesday, hours: 14:00 - 15:30 p.m.

Telephone: 210 368 8274

e-mail: sinigorosfititi@uoa.gr

5.5.5 Sports Facilities

Tel: 2107275554, 2107275551, 2107275556, 2107275549.

Web: http://www.lesxi.uoa.gr/foithtiki-merimna/panepisthmiako-gymnastirio.html.

5.6 Access to the department

The Department of Geology and Geoenvironment is located at Panepistimioupolis, Zografou. You can visit the following page for further information on location https://maps.uoa.gr/60/60

The department can be accessed by bus, using the bus line “250”, departing from Evangelismos station and stopping at “Geologia” stop.

APPENDIX I – Non-Infringement of Intellectual Property

To be included to all Postgraduate Dissertations

Infringement of Intellectual Property is defined to be the total or partial reproduction of the intellectual work of other person/persons, or the appropriation of the intellectual work of other person/persons and its presentation as intellectual work of the Student signing and submitting a Dissertation. The Department of Geology and Geoenvironment is ardently opposed to such practices and vehemently condemns such conduct by its Postgraduate Students. In cases of apparent or voluntary infringement of intellectual property, the competent organs of The Department are authorized to investigate and impose sanctions that may result in the expulsion of students from the PSP. In compiling their Postgraduate Dissertation, students are obliged to respect the following guidelines fully and unreservedly:

1. The Postgraduate Dissertation must be the exclusive intellectual product of the student who signs and submits it.
2. To copy or paraphrase the work of a third party constitutes infringement of intellectual property and is a serious offense. The offense includes appropriation of the intellectual property of fellow students as well as the verbatim reproduction or appropriation of material from published sources (books, textbooks, dissertations, scientific articles). The appropriation and usage of material copied from websites and digital documents of any kind is equally serious to the appropriation and usage of material copied prom printed sources or data bases.
3. Utilization of excerpts from the work of third parties is acceptable if and only if the source of the excerpt is clearly referenced. If verbatim quotation of excerpts from the work of a third party is necessary, then the use of quotes or appropriate footnotes/ endnotes is mandatory in order for the source to be acknowledged.
4. The paraphrase of text from the work of third parties constitutes infringement of intellectual property.
5. The sources of information used and/or quoted in the Dissertation must be listed in the “References Section” attached to the Dissertation.
6. The infringement of intellectual property, once demonstrated, is subject to severe sanctions that may result in expulsion from the PSP and are completely specified in Art. 10 of the “Regulation of Studies”.

I hereby declare that the Postgraduate Dissertation that I herewith submit does not contain elements of Infringement of Intellectual Property, as these are defined in the above Declaration whose terms I have read, understood, and unreservedly accept. I unreservedly provide assent for a digital copy of my Postgraduate Dissertation to be inspected either manually or by competent software in order to confirm that elements of Infringement of Intellectual Property are totally absent from my Dissertation.

Date **Signature**

APPENDIX II – Alphabetic List of Courses