UNIVERSITY OF WEST ATTICA
SCHOOL OF ENGINEERING
DEPARTMENT OF SURVEYING & GEOINFORMATICS ENGINEERING

5-YEAR UNDERGRADUATE CURRICULUM 2019

1st SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY [1]	HOURS	ECTS
GEO101	Mathematical Analysis	Θ	4	5
GEO102	Linear Algebra & Matrices	Θ	4	5
GEO103	Informatics & Programming	Θ	4	5
GEO104	Fundamentals of Geodesy and Surveying Engineering	K	4	5
GEO105	Technical & Topographic Drawing	Θ	4	5
GEO106*	Introduction to Economics	Θ	3	5
GEO107*	Philosophy of Sciences	Θ	3	5
		TOTAL	23	30

Students must select one from the courses GEO106 & GEO107

2nd SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO201	Probability Theory & Statistics	Θ	4	5
GEO202	Programming Techniques & Algorithms	Θ	4	5
GEO203	Differential Equations	Θ	4	5
GEO204	Surveying Instruments & Measuring Methods	K	5	5
GEO205	Analytical Geometry	K	4	5
GEO206	Physics I (Mechanics)	Θ	5	5
		TOTAL	26	30

3rd SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO301	Theory of Errors & Adjustment of Observations I	K	4	5
GEO302	Construction Surveying	E	4	5
GEO303	Physics II (Electromagnetism & Optics)	Θ	4	4
GEO304	Numerical Methods	K	4	4
GEO305	General Cartography	E	4	4
GEO306	Descriptive Geometry	K	4	4
GEO307	Physical Geography and Environmental Management	K	4	4

[1] Θ : Fundamental - Introductory course
K : Specialty core course
E : Consolidation course

TOTAL	28	30	

4th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO401	Photogrammetry I (Introduction to Photogrammetry)	E	4	5
GEO402	Surveying Networks and Computations	E	4	4
GEO403	Thematic Cartography	E	5	5
GEO404	Urban Hydraulic Works	E	4	4
GEO405	Analytical Cartography	E	4	4
GEO406	Engineering Mechanics	K	4	4
GEO407	Remote Sensing I	E	4	4
		TOTAL	29	30

5th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO501	Geometrical Geodesy	E	4	4
GEO502	Photogrammetry II (Analytical Photogrammetry)	E	4	4
GEO503	Road Design I (Geometrical Features)	E	4	4
GEO504	Geographic Information Systems & Science	E	4	5
GEO505	Satellite Positioning	E	4	5
GEO506	Engineering Hydrology	E	4	4
GEO507	Programming & Data Bases	K	3	4
		TOTAL	27	30

6th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO601	Introduction to Digital Image Processing	E	3	4
GEO602	Urban Planning	E	4	5
GEO603	Remote Sensing II	E	3	4
GEO604	Spatial Decisions Support Systems	E	4	4
GEO605	Field Surveying Course	E	4	5
GEO606	Spatial Analysis	E	4	4
GEO607	Spatial Data Bases & Digital Cartography	E	5	4
		TOTAL	27	30

7th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO701	Land Management & Real Estate	E	4	5
GEO702	Photogrammetry III (Digital Photogrammetry & Computer Vision)	E	4	5
GEO703	Cadastre	E	4	5
A1. COMPULSORY FOR THE DIRECTION IN SURVYING				
GEO704	Theory of Errors & Adjustment of Observations II	E	4	5
A1.1 COMPULSORY FOR SPECIALIZATION IN GEODESY				
GEO706	Geodetic-Surveying Applications	E	4	5
A1.2 COMPULSORY FOR SPECIALIZATION IN PHOTOGRAMMETRY				
GEO707	Special Topics in Remote Sensing	E	4	5
B1. COMPULSORY FOR THE DIRECTION IN GEO-INFORMATICS				
GEO705	Spatial Planning & Regional Development	E	4	5
GEO708	Analytical Methods in Geographic Information Systems	E	4	5
C1. COMPULSORY FOR THE DIRECTION IN DEVELOPMENT PROJECTS				
GEO709	Architecture	E	4	5
GEO710	Soil Mechanics - Foundations	E	4	5
		TOTAL	24-28	30

8th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO801	Transport Systems Analysis & Planning	E	4	5
GEO802	Geographic information Management in the web	E	4	5
A1. COMPULSORY FOR THE DIRECTION IN SURVYING				
GEO803	Signal Analysis & Processing	E	4	5
GEO807	3D Data Processing & Visualization	E	4	5
A1.1 COMPULSORY FOR SPECIALIZATION IN GEODESY				
GEO805	Space & Time Reference Systems	E	4	5
A1.2 COMPULSORY FOR SPECIALIZATION IN PHOTOGRAMMETRY				
GEO806	Special Topics in Photogrammetry & Computer Vision	E	4	5
B1. COMPULSORY FOR THE DIRECTION IN GEO-INFORMATICS				
GEO807	3D Data Processing & Visualization	E	4	5
GEO808	Cadastral Applications and Land Information Systems	E	4	5
C1. COMPULSORY FOR THE DIRECTION IN DEVELOPMENT PROJECTS				
GEO809	Road Design II	E	4	5
GEO810	Water Resources Management	E	4	5
D. OPTIONAL				
GEO816	Practical Training	E		5
		TOTAL	24-28	30

GEO816 is a 3-month practical training, normally out of the university

9th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO901	Legislation for Engineers & Administration	Θ	3	5
A1. COMPULSORY FOR THE DIRECTION IN SURVYING				
GEO902	Mobile Mapping - Unmanned Aerial Vehicle (UAV)	E	4	5
A1.1 COMPULSORY FOR SPECIALIZATION IN GEODESY				
GEO903	Satellite Positioning Applications	E	4	5
A1.2 COMPULSORY FOR SPECIALIZATION IN PHOTOGRAMMETRY				
GEO904	Introduction to Machine Learning	E	4	5
B1. COMPULSORY FOR THE DIRECTION IN GEO-INFORMATICS				
GEO905	Programming in Geo-information	E	4	5
GEO906	Spatial Data Visualization Special Topics	E	4	5
C1. COMPULSORY FOR THE DIRECTION IN DEVELOPMENT PROJECTS				
GEO907	Open-Channel Hydraulics & Watercourses Management	E	4	5
GEO908	Traffic Flow Analysis and Management	E	4	5
		TOTAL	20-24	30

A1.1 ELECTIVE COURSES FOR SPECIALIZATION IN GEODESY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO711*	Physical Geodesy	E	4	5
GEO712*	Applied Geophysics	E	4	5
GEO713*	Applied Optics & Laser Technology	E	4	5
GEO804*	Digital Systems & Sensors	E	4	5
GEO811*	Gravimetry	E	4	5
GEO812*	Navigation	E	4	5
GEO813*	Advanced Geodetic Field Course	E	4	5
GEO909*	Oceanography - Hydrography	E	3	5
GEO910*	Space Geodesy	E	4	5
GEO911*	Early Warning Systems & Natural Disaster Management	E	4	5

The students who follow the **Specialization in Geodesy**, in addition to the required courses within this Direction, they must also choose a further of 5 elective courses (i.e. 30 ECTS in total). These courses are selected regardless of the semester (autumn/spring), and freely among all the offered (non-compulsory) courses from: a) the proposed courses of the selected Specialization (A.1.1); b) all the compulsory and elective courses of the other Directions/Specializations.

A1.2 ELECTIVE COURSES FOR SPECIALIZATION IN PHOTOGRAMMETRY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO713*	Applied Optics & Laser Technology	E	4	5
GEO804*	Digital Systems & Sensors	E	4	5
GEO905*	Programming in Geo-information	E	4	5
GEO906*	Spatial Data Visualization Special Topics	E	4	5
GEO508*	Artificial Intelligence	E	4	5
GEO820*	Computer Graphics	E	4	5

The students who follow the **Specialization in Photogrammetry** in addition to the required courses within this Direction, they must also choose a further of 5 elective courses (i.e. 30 ECTS in total). These courses are selected regardless of the semester (autumn/spring), and freely among all the offered (non-compulsory) courses from: a) the proposed courses of the selected Specialization (A.1.2); b) all the compulsory and elective courses of the other Directions/Specializations.

B1.1 ELECTIVE COURSES FOR THE DIRECTION IN GEO-INFORMATICS				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO707*	Special Topics in Remote Sensing	E	4	5
GEO714*	Spatial Data Bases Special Topics & Systems Theory	E	4	5
GEO716*	Cadastre, Urban Planning& Infrastructure Systems	E	4	5
GEO721*	Sustainable Urban Development	E	4	5
GEO810*	Water Resources Management	E	4	5
GEO815*	Economic Geography	E	4	5
GEO818*	Deepening in Geographic Information Systems	E	4	5
GEO902*	Mobile Mapping - Unmanned Aerial Vehicle (UAV)	E	4	5
GEO903*	Satellite Positioning Applications	E	4	5
GEO904*	Introduction to Machine Learning	E	4	5
GEO911*	Early Warning Systems & Natural Disaster Management	E	4	5
GEO912*	Coastal Areas & Marine Spatial Planning	E	4	5
GEO913*	Spatial Data Advanced Analysis Methods	E	4	5
GEO914*	Special Topics in Real Estate	E	4	5
GEO819*	Environmental Impact	E	4	5

The students who follow the **Direction in Geo-informatics**, in addition to the required courses within this Direction, they must also choose a further of 5 elective courses (i.e. 30 ECTS in total). These courses are selected regardless of the semester (autumn/spring), and freely among all the offered (non-compulsory) courses from: a) the proposed courses of the selected Direction (B.1); b) all the compulsory and elective courses of the other Directions/Specializations.

C1.1 ELECTIVE COURSES FOR THE DIRECTION IN DEVELOPMENT PROJECTS				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO706*	Geodetic-Surveying Applications	E	4	5
GEO717*	Building - Technical Materials	E	4	5
GEO718*	Construction Equipment - Organization of Construction Site Layout	E	4	5
GEO719*	Reclamation Works	E	4	5
GEO720*	Construction Elements of Transportation Projects	E	4	5
GEO808*	Cadastre Applications & Land Information Systems	E	4	5
GEO817*	Reinforced Concrete	E	4	5
GEO815*	Economic Geography	E	4	5
GEO814*	Integrated Urban Interventions	E	4	5
GEO819*	Environmental Impact	E	4	5
GEO915*	Intelligent Transportation Systems	E	4	5
GEO916*	Groundwater Hydrology	E	4	5
GEO917*	Road Safety and Urban Road Networks	E	4	5
GEO918*	Project Management	E	3	5

The students who follow the **Direction in Development Projects**, in addition to the required courses within this Direction, they must also choose a further of 5 elective courses (i.e. 30 ECTS in total). These courses are selected regardless of the semester (autumn/spring), and freely among all the offered (non-compulsory) courses from: a) the proposed courses of the selected Direction (C.1); b) all the compulsory and elective courses of the other Directions/Specializations.

10th SEMESTER

COURSES				
A. COMPULSORY				
CODE	COURSE	COURSE CATEGORY	HOURS	ECTS
GEO1000	Diploma Thesis	E	20	30
		TOTAL	20	30