

**ARISTOTLE UNIVERSITY OF THESSALONIKI
FACULTY OF AGRICULTURE FORESTRY & NATURAL
ENVIRONMENT
SCHOOL OF FORESTRY & NATURAL ENVIRONMENT**

**POSTGRADUATE
STUDIES
PROGRAMME**

***FORESTRY & NATURAL
ENVIRONMENT***

**STUDIES GUIDE
ACADEMIC YEAR 2017-2018**

ORIENTATIONS

FOREST PRODUCTION – FOREST PROTECTION – NATURAL ENVIRONMENT

RANGE SCIENCE –WILDLIFE MANAGEMENT & FRESHWATER FISHERIES

PLANNING AND DEVELOPMENT OF NATURAL RESOURCES

FOREST AND WATER ENGINEERING

HARVESTING AND TECHNOLOGY OF FOREST PRODUCTS

SCHOOL OF FORESTRY AND NATURAL ENVIRONMENT A.U.TH.

POSTGRADUATE STUDIES PROGRAMME «FORESTRY AND NATURAL ENVIRONMENT»

The Postgraduate Studies Programme of Forestry and Natural Environment exists from 1998-1999 until today and has the following orientations:

- a) Forest Production – Forest Protection and Natural Environment.
- b) Range Science Wildlife Management and Fresh Water Fisheries.
- c) Planning and Development of Natural Resources.
- d) Forest and Water Engineering.
- e) Harvesting and Technology of Forest Products.

The Postgraduate Programme of the School of Forestry and Natural Environment aims in the scientific knowledge promotion and the fulfillment of educational research and development needs in Forestry and Natural Environment. Especially the goals of the Postgraduate Programme of the School of Forestry and Natural Environment are to:

- a) Promote knowledge in all the subjects of each orientation.
- b) Promote forestry research in order to develop new technologies and support foresters – environmentalists and all other scientists working in this section. The above will have a direct impact on improving the quality of forest products and services, the proper management of natural resources and the protection of natural environment.
- c) Meet the needs in special scientists (e.g. staff of the private and public sector educational institutions, international organizations, etc.)
- d) Specialized training of foreign scientists.
- e) The Postgraduate Programme of the Department of Forestry and Natural Environment provides students with principles, knowledge and methods suitable for immediate field application and also able to pass these knowledge to future generations.

In the Postgraduate Programme of Forestry and Natural Environment teaching is conducted by all members of the staff (Lecturers, Assistant Professors, Associate Professors, Professors, Professors of other Departments and Universities, accomplished scientists and visiting Professors.

In the Postgraduate Studies Programme, leading to Master of Science degree (MSc), the graduates of departments of Higher Education Institutions can be accepted, coming either from domestic or from recognized foreign academic institutions. Specifically, the Postgraduate Studies Programme accepts graduates from the Department of Forestry and Natural Environment and also domestic or foreign graduates coming from Institutions of a relevant field of studies, at a maximum percentage of 20% of the accepted students.

In the following Table the number of applicants for registration, the number of registered students and the number of graduated students are presented.

Data Table

Academic Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Number of available positions	35	35	35	35	35	35	35	35	35	35	35
Applications for registration	88	108	90	78	42	69	68	53	33	48	26
Registered students	34	33	28	22	28	23	24	12	12	29	16
[α] Department of Forestry & N..E and Forestry & M.E & N .R. graduates	62	85	72	62	34	49	57	-	29	43	21
[β] graduates from other Institutions	26	23	18	16	8	20	11	-	4	5	5
Postgraduated students	0	12	46	44	24	17	30	9	20	14	-

Head of the Postgraduate Studies Programme
of the School
of Forestry and Natural Environment



Thekla K. Tsitsoni
A.U.TH. Professor

**A. ORIENTATION: FOREST PRODUCTION – FOREST PROTECTION –
NATURAL ENVIRONMENT**

Code	L. (hours)	Course Title	ECTS
A' SEMESTER			
0101Y	3	Research Methodology and Scientific Writing	6
0102Y	3	Statistics and Sampling Techniques	6
0114Y or 0115Y	3	Forest Protection (Y) or Soil of Mountain Area: Management, Protection, Amelioration and Restoration of Soil Functions	6
0103E	3	Climatic Change and Forest Ecosystems	6
0104E	3	Gene Conservation in Forestry	6
0105E	3	Urban Forestry – Periurban Forests	6
0106E	3	Forest Ecology	6
		TOTAL	30
B' SEMESTER			
0107Y	3	Applied Silviculture and Reforestations	6
0108Y	3	Systematics and Taxonomy of Spermatophytes	6
0109Y	3	Population Genetics, Quantitative Genetics, Genetics and Forest Tree Improvement, Applications of Breeding on Forest trees	6
0110E	3	Nature Conservation and Forest Landscape Planning	6
0111E	3	Soil genesis (Formation) and Soil Taxonomy	6
0112E	3	Forest Fire Behavior Prediction Models	6
0113E	3	Aspects of Applied Geobotany	6
		TOTAL	30
C' SEMESTER			
Postgraduate Master Thesis			30

B. ORIENTATION: RANGE SCIENCE – WILDLIFE MANAGEMENT AND FRESHWATER FISHERIES

Code	L (hours)	Course Title	ECTS
A' SEMESTER			
0201Y	3	Research Methodology and Scientific Writing	6
0202Y	3	Statistics and Sampling Techniques	6
0203Y	3	Management of Rangeland Ecosystems	6
0204E	3	Ecology and Conservation of Rare Wildlife Species	6
0205E	3	Aquatic Organisms and Pollution in Inland Waters	6
		TOTAL	30
B' SEMESTER			
0209Y	3	Growth and Dynamics of Rangeland Ecosystem and Landscape	6
0210Y	3	Analysis of Wildlife-Habitat Interactions	6
0211Y	3	Management of Biological Resources in Inland Waters	6
0206E	3	Range Plant Physiology under Abiotic Stress	6
0207E	3	Agroforestry and Environment	6
0208E	3	Restoration of Rangeland Ecosystems	6
		TOTAL	30
C' SEMESTER			
Postgraduate Master Thesis			30

C. ORIENTATON: PLANNING AND DEVELOPMENT OF NATURAL RESOURCES

Code	L (hours)	Course Title	ECTS
A' SEMESTER			
0301Y	3	Research Methodology and Scientific Writing	6
0302Y	3	Statistics and Sampling Techniques	6
0303Y	3	Information Systems and Environment	6
0309E	3	Regression Analysis	6
0305E	3	Environmental Geographic Information Systems	6
		TOTAL	30
B' SEMESTER			
0306Y	3	Economic Evaluation of Forest Investments and Environmental Goods	6
0307Y	3	Environmental Policy and Sustainable Development	6
0308Y	3	Adaptive Forest Management	6
0309Y		Environmental Remote Sensing and Digital Image Analysis	
0310E	3	Multivariate Statistical Analysis	6
0311E	3	Environmental Interpretation and Didactic of Environment	6
		TOTAL	30
C' SEMESTER			
Postgraduate Master Thesis			30

D. ORIENTATION: FOREST AND WATER ENGINEERING

Code	L (hours)	Course Title	ECTS
A' SEMESTER			
0401Y	3	Research Methodology and Scientific Writing	6
0402Y	3	Statistics and Sampling Techniques	6
0403Y	3	Stochastic Hydrology	6
0404E	3	Mountainous Water Management Methods and Principles	6
0405E	3	Building Materials and Dimensioning Forest Constructions	6
		TOTAL	30
B' SEMESTER			
0406Y	3	Integrated Cadastral Systems	6
0407Y	3	Opening up and Transport Networks, Forest Road Construction	6
0408Y	3	Sediment Transport Mechanisms (creation, transport, deposition)	6
0409E	3	Soil-Mechanical Applications and Machinery	6
0410E	3	Geoinformatics Application on Mountainous Water Management	6
0411E	3	Forest and Water Engineering Works in Relation to the Environment	6
		TOTAL	30
C' SEMESTER			
Postgraduate Master Thesis			30

E. ORIENTATION: HARVESTING AND TECHNOLOGY OF FOREST PRODUCTS

Code	L (hours)	Course Title	ECTS
A' SEMESTER			
0501Y	3	Research Methodology and Scientific Writing	6
0502Y	3	Statistics and Sampling Techniques	6
0503Y	3	Research Methods of Timber Harvesting Systems	6
0504E	3	Wood Structure Microtechniques	6
0505E	3	Composite Wood Products – Production Technology, Properties, Uses	6
		TOTAL	30
B' SEMESTER			
0506Y	3	Relationship between Structure and Properties and Uses of Wood	6
0507Y	3	New Technologies in Wood Processing	6
0508Y	3	Furniture Technology	6
0509E	3	The Human Factor in Harmony with the Working Environment in Forestry and Forest Products Economy	6
0510E	3	Quality Control and Certification of Wood Products	6
0511E	3	Environmental Impacts of Timber Harvesting and Utilization	6
		TOTAL	30
C' SEMESTER			
Postgraduate Master Thesis			30

1 ST ORIENTATION: FOREST PRODUCTION –FOREST PROTECTION – NATURAL ENVIRONMENT						
SEMESTER	COURSE TITLE	C/O	DAY	L. (HOURS)	TEACHING STAFF	TEACHING ROOM
1o	RESEARCH METHODOLOGY AND SCIENTIFIC WRITING	C	WEDNESDAY	14:00-17:00	F.ARAVANOPOULOS, I. BARBOUTIS, D. BAKALOUDIS, M. SAPOUNTZIS, M. TRIGAS	<i>THE TEACHING STAFF WILL APPOINT THE ROOM</i>
	STATISTICS AND SAMPLING TECHNIQUES	C	TUESDAY	14:00-17:00	G. STAMATELLOS	LABORATORY OF FOREST BIOMETRY (A' FLOOR, B' BUILDING, FOINIKAS)
	FOREST PROTECTION	C _A	THURSDAY	14:00-17:00	AL. DIMITRAKOPOULOS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	SOIL OF MOUNTAIN AREA: MANAGEMENT, PROTECTION, AMELIORATION AND RESTORATION OF SOIL FUNCTIONS	C _B	THURSDAY	14:00-17:00	ATH. PAPAIOANNOU	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	CLIMATE CHANGE AND FOREST ECOSYSTEMS	O	TUESDAY	17:00-20:00	P.ALIZOTI, F. ARAVANOPOYLOS, P. GKANATSAS, AL. DIMITRAKOPOULOS, TH. ZAGKAS, E. BARBAS, S. PANAGIOTIDIS, ATH. PAPAIOANNOU, A. SKALTSOGIANNIS, M. TSAKTSIRA, TH.TSITSONI, P. TSOLFIA	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	FOREST ECOLOGY	O	TUESDAY	11:00-14:00	TH. ZAGKAS, TH. TSITSONI, P. GKANATSAS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	GENE CONSERVATION IN FORESTRY	O	THURSDAY	11:00-14:00	A. SKALTSOGIANNIS, F. ARAVANOPOULOS, E. BARBAS, P. ALIZOTI, M. TSAKTSIRA, P. TSOLFIA	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
URBAN FORESTRY-PERIURBAN FORESTS	O	WEDNESDAY	11:00-14:00	P. ALIZOTI, F. ARAVANOPOYLOS, P. GKANATSAS, E. ELEFThERiADOU, TH. ZAGKAS, K. THEODOROPOULOS, E. BABRAS, ATH. PAPAIOANNOU, A. SKALTSOGIANNIS, M. TSAKTSIRA, TH. TSITSONI, P. TSOLFIA	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION	
2o	POPULATION GENETICS, QUANTITATIVE GENETICS AND FOREST TREE IMPROVEENT, APPLICATIONS OF BREEDING ON FOREST TREES	C	WEDNESDAY	14:00-17:00	A. SKALTSOGIANNIS, F. ARAVANOPOULOS, E. BARBAS, P. ALIZOTI, M. TSAKTSIRA, P. TSOLFIA	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	SYSTEMATICA AND TAXONOMY OF SPERMATOPHYTES	C	THURSDAY	14:00-17:00	K. THEODOROPOULOS, E. ELEFThERiADOU, S. PANAGIOTIDIS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	APPLIED SILVICULTURE AND REFORESTATIONS	C	WEDNESDAY	11:00-14:00	TH. ZAGKAS, TH. TSITSONI, P. GKANATSAS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	NATURE CONSERVATION AND FOREST LANDSCAPE PLANNING	O	TUESDAY	11:00-14:00	TH. ZAGKAS, TH. TSITSONI, P. GKANATSAS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	SOIL GENESIS (FORMATION) AND SOIL TAXONOMY	O	THURSDAY	11:00-14:00	ATH. PAPAIOANNOY	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	ASPECTS OF APPLIED GEOBOTANY	O	TUESDAY	14:00-17:00	K. THEODOROPOULOS, E. ELEFThERiADOU, S. PANAGIOTIDIS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
	FOREST FIRE BEHAVIOR PREDICTION MODELS	O	TUESDAY	17:00-20:00	AL. DIMITRAKOPOULOS	E' BUILDING, FOINIKAS, AMPHITHEATRE OF DIVISION
3o	Undertaking and Writing of Postgraduate Master Thesis					

2ND ORIENTATION: RANGE SCIENCE –WILDLIFE MANAGEMENT AND FRESHWATER FISHERIES						
SEMESTER	COURSE TITLE	C/O	DAY	L. (HOURS)	TEACHING STAFF	TEACHING ROOM
1 ^o	RESEARCH METHODOLOGY AND SCIENTIFIC WRITING	C	WEDNESDAY	14:00-17:00	E. ABRAHAM, F. ARAVANOPOULOS, I. BARBOUTIS, M. SAPOUNTZIS, G. STAMATELLOS	<i>THE TEACHING STAFF WILL APPOINT THE ROOM</i>
	STATISTICS AND SAMPLING TECHNIQUES	C	TUESDAY	14:00-17:00	G. STAMATELLOS	LABORATORY OF FOREST BIOMETRY (A' FLOOR, B' BUILDING, FOINIKAS)
	MANAGEMENT OF RANGELAND ECOSYSTEMS	C	MONDAY	11:00-14:00	E. ABRAHAM, M. YIAKOULAKI, Z. PARISI	FACULTY OF AGRICULTURE, FORESTRY AND NATURAL ENVIRONMENT, LABORATORY OF RANGELAND ECOLOGY, 3 RD FLOOR.
	ECOLOGY AND CONSERVATION OF RARE WILDLIFE SPECIES	O	MONDAY	14:00-17:00	CHR. VLAXOS, D. BAKALLOUDIS	B' BUILDING, FOINIKAS, 2 ND FLOOR, LABORATORY OF WILDLIFE AND FRESHWATER FISHERIES
	AQUATIC ORGANISMS AND POLLUTION IN INLAND WATERS	O	TUESDAY	11:00-14:00	A. KOKKINAKIS	B' BUILDING, FOINIKAS, 2 ND FLOOR, LABORATORY OF WILDLIFE AND FRESHWATER FISHERIES
2 ^o	RANGE PLANT PHYSIOLOGY UNDER ABIOTIC STRESS	O	WEDNESDAY	14:00-17:00	E. ABRAHAM, M. KARATASIOY	FACULTY OF AGRICULTURE, FORESTRY AND NATURAL ENVIRONMENT, LABORATORY OF RANGELAND ECOLOGY, 3 RD FLOOR.
	AGROFORESTRY AND ENVIRONMENT	O	TUESDAY	14:00-17:00	M. YIAKOULAKI, Z. PARISI	FACULTY OF AGRICULTURE, FORESTRY AND NATURAL ENVIRONMENT, LABORATORY OF RANGELAND ECOLOGY, 3 RD FLOOR.
	RESTORATION OF RANGELAND ECOSYSTEMS	O	TUESDAY	11:00-14:00	E. ABRAHAM, M. YIAKOULAKI, Z. PARISI	FACULTY OF AGRICULTURE, FORESTRY AND NATURAL ENVIRONMENT, LABORATORY OF RANGELAND ECOLOGY, 3 RD FLOOR.
	GROWTH AND DYNAMICS OF RANGELAND ECOSYSTEM AND LANDSCAPE	C	WEDNESDAY	11:00-14:00	M. KARATASIOU	FACULTY OF AGRICULTURE, FORESTRY AND NATURAL ENVIRONMENT, LABORATORY OF RANGELAND ECOLOGY, 3 RD FLOOR.
	ANALYSIS OF WILDLIFE – HABITAT INTERACTIONS	C	MONDAY	14:00-17:00	CHR. VLAXOS, D. BAKALLOUDIS	B' BUILDING, FOINIKAS, 2 ND FLOOR, LABORATORY OF WILDLIFE AND FRESHWATER FISHERIES
	MANAGEMENT OF BIOLOGICAL RESOURCES IN INLAND WATERS	C	MONDAY	11:00-14:00	A. KOKKINAKIS	B' BUILDING, FOINIKAS, 2 ND FLOOR, LABORATORY OF WILDLIFE AND FRESHWATER FISHERIES
3 ^o	Undertaking and Writing of Postgraduate Master Thesis					

3RD ORIENTATION: PLANNING AND DEVELOPMENT OF NATURAL RESOURCES						
SEMESTER	COURSE TITLE	C/O	DAY	L. (HOURS)	TEACHING STAFF	TEACHING ROOM
1o	RESEARCH METHODOLOGY AND SCIENTIFIC WRITING	C	WEDNESDAY	14:00-17:00	E. ABRAHAM, F. ARAVANPOULOS, I. BARBOUTIS, M. SAPOUNTZIS, G. STAMATELLOS	<i>THE TEACHING STAFF WILL APPOINT THE ROOM</i>
	STATISTICS AND SAMPLING TECHNIQUES	C	TUESDAY	14:00-17:00	G. STAMATELLOS	LABORATORY OF FOREST BIOMETRY (A' FLOOR, B' BUILDING, FOINIKAS)
	INFORMATION SYSTEMS AND ENVIRONMENT	C	TUESDAY	11:00-14:00	Z. ANDREOPOULOU	LABORATORY OF FOREST BIOMETRY (D' BUILDING, FOINIKAS)
	ENVIRONMENTAL REMOTE SENSING AND DIGITAL IMAGE ANALYSIS	O	THURSDAY	14:00-17:00	I. GITAS	LABORATORY OF FOREST MANAGEMENT AND REMOTE SENSING (1 ST FLOOR, B' BUILDING, FOINIKAS)
	ENVIRONMENTAL GEOGRAPHIC INFORMATION SYSTEMS	O	THURSDAY	11:00-14:00	I. GITAS	LABORATORY OF FOREST MANAGEMENT AND REMOTE SENSING (1 ST FLOOR, B' BUILDING, FOINIKAS)
2o	ECONOMIC VALUE OF FORESTS INVESTMENTS AND ENVIRONMENTAL GOODS	C	TUESDAY	14:00-17:00	M. TRIGAS	LABORATORY OF FOREST ECONOMICS N. STAMOY (2 ND FLOOR, B' BUILDING, FOINIKAS)
	ENVIRONMENTAL POLICY AND SUSTAINABLE DEVELOPMENT	C	WEDNESDAY	11:00-14:00	P. RAGOU	READING ROOM OF FOREST RECREATION, ENVIRONMENTAL EDUCATION AND SOCIOLOGY (2 ND FLOOR, B' BUILDING, FOINIKAS _c)
	ADAPTIVE FOREST MANAGEMENT	C	THURSDAY	14:00-17:00	I. GITAS	LABORATORY OF FOREST MANAGEMENT AND REMOTE SENSING (1 ST FLOOR, B' BUILDING, FOINIKAS)
	MULTIVARIATE STATISTICAL ANALYSIS	O	WEDNESDAY	14:00-17:00	G. STAMATELLOS	LABORATORY OF FOREST BIOMETRY (A' FLOOR, B' BUILDING, FOINIKAS)
	ENVIRONMENTAL INTERPRETATION AND DIDACTIC OF ENVIRONMENT	O	THURSDAY	14:00-17:00	P. RAGOU	READING ROOM OF FOREST RECREATION, ENVIRONMENTAL EDUCATION AND SOCIOLOGY (2 ND FLOOR, B' BUILDING, FOINIKAS _c)
3o	Undertaking and Writing of Postgraduate Master Thesis					

4 TH ORIENTATION: FOREST AND WATER ENGINEERING						
SEMESTER	COURSE TITLE	C/O	DAY	L. (HOURS)	TEACHING STAFF	TEACHING ROOM
1 ^o	RESEARCH METHODOLOGY AND SCIENTIFIC WRITING	C	WEDNESDAY	14:00-17:00	E. ABRAHAM, F. ARAVANOPOULOS, I. BARBOUTIS, M. SAPOUNTZIS, G. STAMATELLOS	<i>THE TEACHING STAFF WILL APPOINT THE ROOM</i>
	STATISTICS AND SAMPLING TECHNIQUES	C	TUESDAY	14:00-17:00	G. STAMATELLOS	LABORATORY OF FOREST BIOMETRY (A' FLOOR, B' BUILDING, FOINIKAS)
	STOCHASTIC HYDROLOGY	C	TUESDAY	11:00-14:00	M. SAPOUNTZIS, D. STATHIS, D. MYRONIDIS	LABORATORY OF MOUNTAINOUS WATER MANAMEGENT AND CONTROL (C' BUILDING, GROUND FLOOR, FOINIKAS)
	MOUNTAINOUS WATER MANAGEMENT METHODS AND PRINCIPLES	O	WEDNESDAY	11:00-14:00	P. STEFANIDIS, D. STATHIS	LABORATORY OF MOUNTAINOUS WATER MANAMEGENT AND CONTROL (C' BUILDING, GROUND FLOOR, FOINIKAS)
	BUILDING MATERIALS AND DIMENSIONING FOREST CONSTRUCTIONS	O	THURSDAY	11:00-14:00	K. DOUKAS, E. KARAGIANNIS, A. STERGIADOU	LABORATORY OF MECHANICAL SCIENCE AND TOPOGRAPHY (C' BUILDING, 2 ND FLOOR, FOINIKAS)
2 ^o	INTEGRATED CADASTRAL SYSTEMS	C	MONDAY	14:00-17:00	K. DOUKAS, B. GIANNOULAS, A. STERGIADOU	LABORATORY OF MECHANICAL SCIENCE AND TOPOGRAPHY (C' BUILDING, 2 ND FLOOR, FOINIKAS)
	OPENING UP AND TRANSPORT NETWORKS, FOREST CONSTRUCTION	C	WEDNESDAY	17:00-20:00	E. KARAGIANNIS, A. STERGIADOU	LABORATORY OF MECHANICAL SCIENCE AND TOPOGRAPHY (C' BUILDING, 2 ND FLOOR, FOINIKAS)
	SEDIMENT TRANSPORT MECHANISMS (CREATION, TRANSPORT, DEPOSITION)	C	WEDNESDAY	14:00-17:00	P. STEFANIDIS, M. SAPOUNTZIS	LABORATORY OF MOUNTAINOUS WATER MANAMEGENT AND CONTROL (C' BUILDING, GROUND FLOOR, FOINIKAS)
	SOIL – MECHANICAL APPLICATIONS AND MACHINERY	O	TUESDAY	17:00-20:00	E. KARAGIANNIS, A. STERGIADOU	LABORATORY OF MECHANICAL SCIENCE AND TOPOGRAPHY (C' BUILDING, 2 ND FLOOR, FOINIKAS)
	GEOINFORMATICS APPLICATION ON MOUNTAINOUS WATER MANAGEMENT	O	TUESDAY	14:00-17:00	D. STATHIS, D. MYRONIDIS	LABORATORY OF MOUNTAINOUS WATER MANAMEGENT AND CONTROL (C' BUILDING, GROUND FLOOR, FOINIKAS)
	FOREST AND WATER ENGINEERING WORKS IN RELATION TO THE ENVIRONMENT	O	MONDAY	11:00-14:00	E. KARAGIANNIS, A. STERGIADOU, D. STATHIS, D. MYRONIDIS	LABORATORY OF MOUNTAINOUS WATER MANAMEGENT AND CONTROL (C' BUILDING, GROUND FLOOR, FOINIKAS)
3 ^o	Undertaking and Writing of Postgraduate Master Thesis					

5TH ORIENTATION: HARVESTING AND TECHNOLOGY OF FOREST PRODUCTS						
SEMESTER	COURSE TITLE	C/O	DAY	L. (HOURS)	TEACHING STAFF	TEACHING ROOM
1o	RESEARCH METHODOLOGY AND SCIENTIFIC WRITING	C	WEDNESDAY	14:00-17:00	E. ABRAHAM, F. ARAVANOPOULOS, I. BARBOUTIS, M. SAPOUNTZIS,, G. STAMATELLOS	<i>THE TEACHING STAFF WILL APPOINT THE ROOM</i>
	STATISTICS AND SAMPLING TECHNIQUES	C	TUESDAY	14:00-17:00	G. STAMATELLOS	LABORATORY OF FOREST BIOMETRY (A' FLOOR, B' BUILDING, FOINIKAS)
	RESEARCH METHODS OF TIMBER HARVESTING SYSTEMS	C	MONDAY	11:00-14:00	I. VOULGARIDIS	D' BUILDING, GROUND FLOOR, FOINIKAS, POSTGRADUATE STUDIES RPROGRAMME ROOM
	WOOD STRUCTURE MICROTECHNIQUES	O	MONDAY	14:00-17:00	I. VOULGARIDIS	D' BUILDING, 2 ND FLOOR, FOINIKAS, LABORATORY OF FOREST UTILIZATION
	COMPOSITE WOOD PRODUCTS – PRODUCTION TECHNOLOGIES, PROPERTIES, USES	O	TUESDAY	11:00-14:00	A. GRIGORIOU, I. BARBOUTIS	D' BUILDING, 2 ND FLOOR, FOINIKAS, LABORATORY OF FOREST TECHNOLOGY
2o	RELATIONSHIP BETWEEN STRUCTURE AND PROPERTIES AND USES OF WOOD	C	MONDAY	11:00-14:00	I. VOULGARIDIS, I. BARBOUTIS	D' BUILDING, 2 ND FLOOR, FOINIKAS, LABORATORY OF FOREST UTILIZATION
	NEW TECHNOLOGIES ON WOOD PROCESSING	C	MONDAY	14:00-17:00	V. VASILEIOU, I. BARBOUTIS	D' BUILDING, 2 ND FLOOR, FOINIKAS, LABORATORY OF FOREST TECHNOLOGY
	FURNITURE TECHNOLOGY	C	WEDNESDAY	11:00-14:00	I. FILIPPOU, I. BARBOUTIS	D' BUILDING, 2 ND FLOOR, FOINIKAS, LABORATORY OF FOREST TECHNOLOGY
	THE HUMAN FACTOR IN HARMONY WITH THE WORKING ENVIRONMENT IN FORESTRY AND FOREST PRODUCTS ECONOMY	O	TUESDAY	11:00-14:00	I. VOULGARIDIS, I. BARBOUTIS	D' BUILDING, GROUND FLOOR, FOINIKAS, POSTGRADUATE STUDIES RPROGRAMME ROOM
	QUALITY CONTROL AND CERTIFICATION OF WOOD PRODUCTS	O	TUESDAY	14:00-17:00	I. BARBOUTIS	D' BUILDING, 2 ND FLOOR, FOINIKAS, LABORATORY OF FOREST TECHNOLOGY
	ENVIRONMENTAL IMPACTS OF TIMBER HARVESTING AND UTILIZATION	O	WEDNESDAY	14:00-17:00	I. FILIPPOU, I. BARBOUTIS	D' BUILDING, GROUND FLOOR, FOINIKAS, POSTGRADUATE STUDIES RPROGRAMME ROOM
3o	Undertaking and Writing of Postgraduate Master Thesis					

Courses Description of the Postgraduate Studies Programme

A. ORIENTATION: FOREST PRODUCTION –FOREST PROTECTION – NATURAL ENVIRONMENT

A´ SEMESTER

RESEARCH METHODOLOGY AND SCIENTIFIC WRITING (0101Y)

An overview of research in the natural sciences, Introduction in the basic principles of research methodology, Fundamentals of scientific inference in the natural sciences, Selection and development of a research topic, Methodology of literature search, Preparation and basic principles of organizing and writing a research proposal, Models – a basic tool in research, Presentation of research results: tables, figures, posters, Practicum on scientific poster preparation, Data acquisition in scientific research, Data analysis in scientific research, Methods of data collection and literature search in forest engineering and mountain hydromomics, Methodology of scientific paper and Thesis writing.

STATISTICS AND SAMPLING TECHNIQUES (0102Y)

Introduction and basics of experimental design. Simple comparative experiments. Experimental designs with one factor (basics) and with more factors (factorial). Introduction in Sampling. Basic sampling designs. Sampling of natural resources. Computer applications.

FOREST PROTECTION (0114Y)

Protection of forests from biotic and abiotic factors.

OR

SOIL OF MOUNTAIN AREA: MANAGEMENT, PROTECTION, AMELIORATION AND RESTORATION OF SOIL FUNCTIONS (0115Y)

Uplands Soils (development, characteristics, zonation, classification), Sustainable management of upland soils (goals and environmental quality), Soil resources use efficiency and upland soil conservation, Soil quality: the concept of soil quality, assessment, indicators and improving of soil quality, Soil degradation and method of soil amelioration, Disturbed soil and soil reclamation, Soil amendments.

CLIMATE CHANGE AND FOREST ECOSYSTEMS (0103E)

Past climatic changes and forest vegetation. Influence of past climatic changes on forest vegetation- Research methods .Climatic interchanges and the historical development of vegetation. The diachronic ‘climate-forest’ relationship in Greece. Modern- contemporary climatic change and forest vegetation- Research methods. Impact of climatic change on flora and vegetation. Climate change and the forest vegetation of Greece, Effects of climate change on the evolution of forest populations - genetic monitoring and gene pool of threatened forest populations/species, Adaptation of forest populations in climate change, Genetic improvement for resistance/tolerance, Climate change and its impact to phenomics and to demographic processes of forest species. Roles and strategies of genetic improvement in the face of climate change aiming

towards the conservation of genetic variation of forest species and especially of marginal forest populations. New technologies and climate change, Impacts of climate change on forest regeneration, Ecology and silvicultural treatments of timberlines, Influence of climate change on structure, functions and dynamics of forest ecosystems, Silvicultural treatments adapted to climate change, Forest fires - climate change interaction and its impact on the greenhouse effect and carbon accumulation in forest ecosystems. Impact of climate change on the epidemics of insects and fungi diseases in forest ecosystems, Soil and climate change, Sustainable soil management and climate change, Soil quality and climate change, Impact of climate change on soil properties, Peculiarities of upland soils and climate change, Soil humidity and soil temperature and climate change, Changes on water and nutrients use efficiency from forest ecosystems as a result of climate change.

GENE CONSERVATION IN FORESTRY (0104E)

Evolution of forest species, Threats to genetic diversity, Pollution and global climate change, Strategies to conserve genetic diversity, In Situ gene conservation, Ex Situ gene conservation, Population sizes and gene conservation, Number and location of populations for gene conservation, Effects of forest management practices and domestication on genetic diversity, Collection, preservation and control of forest genetic material, Criteria and indicators for Gene Conservation, Application of new technologies in gene conservation, International efforts and initiatives aiming towards conservation of forest genetic resources.

URBAN FORESTRY - PERIURBAN FORESTS (0105E)

Ornamental trees and shrubs, Botanical Gardens, Urban soils characteristics, Sustainable management of urban soils, Drainage and irrigation of urban soils. Design and construction of stable soil profile in urban soils, Substrate adapted to terraces (natural and recycled), Amendments and fertilizers of urban soils, Peri urban environment and evolutionary - adaptive processes of forest species, Conservation of genetic variation in urban and peri urban environment, Effects of stress caused by urban and peri urban environment on DNA, Genetic improvement for resistance/tolerance on the stresses of the urban - peri urban environment, Multiple trait selection methods for production of improved genetic material tailored for planting in urban and peri urban environments, Vegetative propagation, Techniques of reproduction of ornamental forest species (sexual-asexual reproduction), Clonal forestry, Ecological relationships of urban green and urban environment, Pruning and plant care in urban environment, Production of planting material for urban environments, Digital registers of trees and evaluation indices for silvicultural characteristics of trees.

FOREST ECOLOGY (0106E)

Light and energy flow in forest ecosystems, Temperature relations with forest ecosystems, Silvicultural treatment and water relations, Structure analysis and biodiversity in forest ecosystems, Changes and control of populations in forest ecosystems, Seed Ecology, Silvicultural treatment and trophic relations in forest ecosystems, Influence of climate change on succession of forest ecosystems, Impacts of environmental problems (e.g. greenhouse effect, atmosphere pollution, etc.) on forest ecosystems, Growth ecology of stem and root of forest trees, Ecology of alluvial ecosystems, Analysis and dynamics of fire damaged ecosystems, Forest ecosystems and CO₂ sequestration.

B' SEMESTER

APPLIED SILVICULTURE AND REFORESTATIONS (0107Y)

Natural regeneration of forest ecosystems, Stand structure and dynamics of forest ecosystems, Tending of forest ecosystems, Conversion of coppice forests–rehabilitation of degraded forest ecosystems, Influence of silvicultural interventions on the conservation of biodiversity, Organizing of planting material production – Greenhouse plant production, Planning, performance and evolution of reforestations, Multipurpose silviculture, Silvicultural planning, Analysis, evolution and management of Urban biotopes, Creation and silvicultural treatments of mixed forests, Establishment and tending of forest plantations, Selection of forest species, Evaluation of planting material and planting techniques.

SYSTEMATICS AND TAXONOMY OF SPERMATOPHYTES (0108Y)

Taxonomy and Systematics, Comparative morphology of Spermatophytes – Homologous and analogous structures, Systems of plant taxonomy, Hierarchical system of higher plants, Species concepts, Nomenclature of Spermatophytes, Herbarium Establishment and management, Pollen Taxonomy and Systematics.

POPULATION GENETICS, QUANTITATIVE GENETICS, GENETICS AND FOREST TREE IMPROVEMENT, APPLICATIONS OF BREEDING ON FOREST TREES (0109Y)

Quantifying the genetic composition of populations, Mating systems and inbreeding, Forces that change allele frequencies, Joint effects of evolutionary forces, Nature and study of polygenic traits, Modelling phenotypes of parents and offsprings, Genetic variances and heritabilities, Genetic correlations, Genotype by Environment interaction, Estimation of genetic parameters, Structural genomics, Functional genomics, Comparative genomics, Bioinformatics and databases, Concepts of marker-assisted selection (MAS), Indirect selection based on markers linked to QTLs, Direct selection based on genes coding for target traits, Marker-assisted breeding, Breeding of fast growing and ornamental forest species, Genetic tolerance for biotic and abiotic stresses, Breeding for wood quality.

NATURE CONSERVATION AND FOREST LANDSCAPE PLANNING (0110E)

Categorization systems of Protected Areas, Planning and Management of Protected Areas, Monitoring and Evaluation Systems for Protected Areas, Ecological corridors, Silvicultural measures for the improvement of conservation status of rare (important) forest ecosystems, Influence of reforestations on biodiversity, Landscape analysis and management, Impact analysis of human interventions, Analysis, planning and reclamation of disturbed areas, Environmental Impacts' Plans, Silvicultural treatments and Landscape Planning, Impacts on Landscape.

SOIL GENESIS (FORMATION) AND SOIL TAXONOMY (0111E)

From parent material to soil, Chemical, physical and biological processes of soil genesis, Clay minerals (formation, properties and classification), Organic matter (formation and properties), Organic matter and forest floor classification, Soil classification, soil diagnostic horizons, Wetland soils, Saline soils, Sodic soils, Soils of reforestation lands, Dry soils, polluted soils,, Clayey soils, Gley soils, Acid soils, Urban soils etc.

FOREST FIRE BEHAVIOR PREDICTION MODELS (0112E)

Analysis of forest fire environment, Thermodynamic and meteorological models for estimating forest fire parameters.

ASPECTS OF APPLIED GEOBOTANY (0113E)

Floristic kingdoms of the world, Floristic regions, Floristic regions of the Holarctic kingdom, Endemism, Chorological and life-form spectra, Flora and Vegetation of Greece, Factors shaping vegetation, Vegetation types, Habitat Types, Syntaxonomy and nomenclature of vegetation units – Nomenclature code of plant associations, Rare and endangered plant species and habitat types, Monitoring of plant species and vegetation, Sampling methods - Directive 92/43/EEC, Natura 2000 Network, Management committees of Greece, Research methods of historical Geobotany, The pollen as a blueprint of vegetation, Monitoring of modern pollen deposition, pollen – vegetation models.

C' SEMESTER

Postgraduate Master Thesis

B. ORIENTATION: RANGE SCIENCE –WILDLIFE MANAGEMENT AND FRESHWATER FISHERIES

A´ SEMESTER

RESEARCH METHODOLOGY AND SCIENTIFIC WRITING (0201Y)

An overview of research in the natural sciences, Introduction in the basic principles of research methodology, Fundamentals of scientific inference in the natural sciences, Selection and development of a research topic, Methodology of literature search, Preparation and basic principles of organizing and writing a research proposal, Models – a basic tool in research, Presentation of research results: tables, figures, posters, Practicum on scientific poster preparation, Data acquisition in scientific research, Data analysis in scientific research, Methods of data collection and literature search in forest engineering and mountain hydromorphology, Methodology of scientific paper and Thesis writing.

STATISTICS AND SAMPLING TECHNIQUES (0202Y)

Introduction and basics of experimental design. Simple comparative experiments. Experimental designs with one factor (basics) and with more factors (factorial). Introduction in Sampling. Basic sampling designs. Sampling of natural resources. Computer applications.

MANAGEMENT OF RANGELAND ECOSYSTEMS (0203Y)

Proper use of rangelands ecosystems definition, Multidisciplinary Management of rangelands, Grazing Systems Effectiveness, Management for optimum forage production, Multiple Use of Rangeland Ecosystems, Quantitative and Qualitative Parameters of Rangeland Vegetation, Methodology for determination of Quantitative and Qualitative Parameters, Methods of Inventory and Classification of rangelands Habitats.

ECOLOGY AND CONSERVATION OF RARE WILDLIFE SPECIES (0204E)

Identification and ecological processes of rare and endangered wildlife species in natural ecosystems (bats, carnivores, birds of prey, wildfowl, reptiles, amphibians, etc). Experimental design and data analysis. Techniques for population monitoring, censuses and movements. Methods of behaviour and food habits analysis. Techniques for capture, mark and radio-telemetry. Estimation of reproduction. Physiology and ecotoxicology. Conservation of rare and endangered species. Breeding in captivity, conservation measures and legislation.

AQUATIC ORGANISMS AND POLLUTION IN INLAND WATERS (0205E)

The impact of the pollution in natural aquatic ecosystems to aquatic organisms, in general. Effects of significant organic and inorganic pollution parameters to aquatic organisms, such as the dissolved Oxygen, the BOD, the COD, the TOC, the thermal deterioration, the suspended solids and the alkalinity of natural waters. The importance and the relationships of nutrients in aquatic biocoenosis, eutrophication and nitrate pollution in inland waters. Biocoenosis of lakes and watercourses, relationships, interactions and consequences of eutrophication, pollution and their thermal condition. Control strategies, protection and rational management of inland waters.

B' SEMESTER

GROWTH AND DYNAMICS OF RANGELAND ECOSYSTEM AND LANDSCAPE (0209Y)

Growth and Population Dynamics, Biodiversity of Rangeland Landscape, Dioxide carbon balance in the rangeland ecosystem, Physiology of Plant Production, Rangeland Landscape Sustainability, Grazing Ecology

ANALYSIS OF WILDLIFE-HABITAT INTERACTIONS (0210Y)

Concepts and estimation of wildlife population demographic parameters. Estimation of population abundance, census and sampling methods. Population indices analysis and estimation of population trends. Estimation of species richness and wildlife community parameters. Estimation of wildlife habitat parameters from micro-scale to landscape level.

Principles of wildlife habitat management in evolutionary and ecosystem context.

Integrated wildlife-habitat study design and monitoring program.

MANAGEMENT OF BIOLOGICAL RESOURCES IN INLAND WATERS (0211Y)

Hydrobiology in general details and description of inland waters ecosystems. Plankton, phytoplankton and zooplankton composition. Benthic communities, distribution and adaptations. Sampling methods and analysis of hydrobiological parameters. Nekton composition, ecological adaptations, organization and management of fish populations. Aquatic productivity, limiting factors, food chains. Rational fishery management in rivers (watercourses) or lakes. Fishery biology, fish population dynamics, fish population assessment methods, fishery mortality and survival. Fishery improvement management of inland waters, improvement of the living conditions of fish populations, fish shelters, methods for improving fish breeding areas. Legislation concerning the inland waters fisheries.

RANGE PLANT PHYSIOLOGY UNDER ABIOTIC STRESS (0206E)

Abiotic environment and stress, Definition of Drought, Soil –Plant- Atmosphere- Plant, Physiology of Water Relations, Relations Drought and Productivity, Efficient Water Use for Production.

AGROFORESTRY AND ENVIRONMENT (0207E)

Impacts of Environmental Factors in the Use of Rangelands, and in Management, Aesthetic Value of Rangeland Landscape and Conservation of Cultural Heritage Value of Traditional Agroforestry Systems and their Recreation Resources, Structural forms of Agroforestry Systems and their establishment technique, Sustainable Management of Agroforestry Systems, Pollard, Pollarded and Shredded trees.

RESTORATION OF RANGELAND ECOSYSTEMS (0208E)

Multidisciplinary production of goods and services from rangeland ecosystems, Planning, establishment and culture of herbaceous and woody species, evaluation of environmental impact, Agroforestry system use, Conservation of endangered species, Restoration of plant communities by grazing.

C' SEMESTER

Postgraduate Master Thesis

C. ORIENTATION: PLANNING AND DEVELOPMENT OF NATURAL RESOURCES

A' SEMESTER

RESEARCH METHODOLOGY AND SCIENTIFIC WRITING (0301Y)

An overview of research in the natural sciences, Introduction in the basic principles of research methodology, Fundamentals of scientific inference in the natural sciences, Selection and development of a research topic, Methodology of literature search, Preparation and basic principles of organizing and writing a research proposal, Models – a basic tool in research, Presentation of research results: tables, figures, posters, Practicum on scientific poster preparation, Data acquisition in scientific research, Data analysis in scientific research, Methods of data collection and literature search in forest engineering and mountain hydromomics, Methodology of scientific paper and Thesis writing.

STATISTICS AND SAMPLING TECHNIQUES (0302Y)

Introduction and basics of experimental design. Simple comparative experiments. Experimental designs with one factor (basics) and with more factors (factorial). Introduction in Sampling. Basic sampling designs. Sampling of natural resources. Computer applications.

INFORMATION SYSTEMS AND ENVIRONMENT (0303Y)

Structure, components and types of Information Systems. Environmental Information Systems (E.I.S.). Database management Systems and Data mining. Data mining techniques, information retrieve and Decision Support. Decision Support Systems (D.S.S.), structure, development and application to natural environment. Information Communication technologies ICT, innovative network types. Internet services and applications for the protection and sustainable management of natural environment. Green Informatics. Web-based databases. Telemetry and networks in monitoring of natural resources.

REGRESSION ANALYSIS (0304E)

Simple Linear Regression, Multiple Linear and Non Linear Regression.

ENVIRONMENTAL GEOGRAPHIC INFORMATION SYSTEMS (0305E)

Lectures: Introduction to GIS, principals of GIS, spatial phenomena and data, coordinate and projection systems, geographic databases, digitizing and analysis, vector and raster spatial analysis, multi-criteria analysis of spatial data, spatial statistics, spatial decision support systems, web GIS, environmental applications of GIS.

Practical classes: Getting familiar with geographic data, the ArcGIS interface, symbology, projection systems, georeferencing, digitization, attribute tables, queries, working with tables, vector analysis, raster analysis, applications of spatial statistics, multi-criteria analysis, map layout design, demonstration of Web GIS, decision support systems, environmental applications of GIS, essay writing (2500 words)

B' SEMESTER

ECONOMIC EVALUATION OF FOREST INVESTMENTS AND ENVIRONMENTAL GOODS (0306Y)

Compound interest, discount, capitalization, discount rate and risks – uncertainty. Co evaluation of inflation in capitalizations. Investments evaluation criteria. Inconsistencies of investments evaluation criteria and treatment. Environmental Cost Benefit Analysis. Values of Environmental Goods: Use Values, Non Use Values. Evaluation of Environmental Goods methods.

ENVIRONMENTAL POLICY AND SUSTAINABLE DEVELOPMENT (0307Y)

The course is designed to familiarize students with concepts and topics such as : Society and Environment, Ecological, Social, Economic, Political and Cultural dimensions of Environmental Issues, Institutions and Environment, Environment and Development, Tools of Environmental and Natural Resource Policy, European Environmental Policy, Community-based Environmental Protection, Environmental Protection Strategies, Environmental Law, Negative consequences in Environment of neoliberal development model, Environmental risk, change, and uncertainty, Environmental Accidents and Disasters, Sustainable Development, Sustainability Principles, Environmental Values, Sustainability and Environment, Ecotourism.

ADAPTIVE FOREST MANAGEMENT (0308Y)

Introductory concepts. The change of the environment in the world and especially in the Mediterranean. The dynamics of forest ecosystems to changing conditions in relation to the growth, production and composition. Introduction to chaos theory, basic concepts and consequences of the investigation of the dynamics of forest stands. Description of changes with multivariate dynamic stochastic models. Customized management strategies for maintaining and improving the environment

ENVIRONMENTAL REMOTE SENSING AND DIGITAL IMAGE ANALYSIS (0309E)

Lectures: Introduction of RS, history of RS, image display, image formats and software, spatial-temporal-spectral-radiometric resolution, image correction (geometric, atmospheric, topographic), image transformations (vegetation indices, Tasselled Cap, Principal Component Analysis), image processing (contrast enhancement, spatial and spectral filters, texture analysis, mosaicking), supervised and non-supervised image classification, pattern recognition, spectral signatures, thematic accuracy assessment, change detection, advanced image analysis techniques (object-based classification, Support Vector Machines, Neural Networks), RADAR and LiDAR image analysis, spatial statistics in RS (sampling, error estimation, uncertainty), environmental applications of RS, RS/GIS integrated applications

Practical classes: Introduction to ERDAS Imagine, image display, image enhancement, basic functions, image profile, raster and AOI tools, creating subsets, layer stacking, mosaicking, reprojection, atmospheric correction, geometric correction, vegetation indices, spatial filters, transformations, image classification, change detection, demonstration of advanced image analysis techniques, essay writing (2500 words)

MULTIVARIATE STATISTICAL ANALYSIS (0310E)

Introduction. Principal Component Analysis, Factor Analysis, Cluster Analysis, Discriminant Analysis and other methods. Computer applications.

ENVIRONMENTAL INTERPRETATION AND DIDACTIC OF ENVIRONMENT (0311E)

The course is designed to familiarize students with concepts and tools such as: Interpretation, The Origin and the objectives of Environmental Interpretation, Principles of Environmental Interpretation, Environmental Communication Techniques, Benefits of Environmental Interpretation, Interpretive Techniques, Forms of Environmental Interpretation, Criteria for evaluating the Interpretive Projects, The Environmental Interpretation as a Forestry and Environmental Policy Tool-Environmental Interpretation in Forest Recreation Areas and Protected Areas, Mass Media and Environment, Environmental Awareness, the Politics of Environmental Knowledge, Environmental problem solving in Didactic, Environmental Ethics, Environmental Stewardship.

C' SEMESTER

Postgraduate Master Thesis

D. ORIENTATION: FOREST AND WATER ENGINEERING

A´ SEMESTER

RESEARCH METHODOLOGY AND SCIENTIFIC WRITING (0401Y)

An overview of research in the natural sciences, Introduction in the basic principles of research methodology, Fundamentals of scientific inference in the natural sciences, Selection and development of a research topic, Methodology of literature search, Preparation and basic principles of organizing and writing a research proposal, Models – a basic tool in research, Presentation of research results: tables, figures, posters, Practicum on scientific poster preparation, Data acquisition in scientific research, Data analysis in scientific research, Methods of data collection and literature search in forest engineering and mountain hydromonics, Methodology of scientific paper and Thesis writing.

STATISTICS AND SAMPLING TECHNIQUES (0402Y)

Introduction and basics of experimental design. Simple comparative experiments. Experimental designs with one factor (basics) and with more factors (factorial). Introduction in Sampling. Basic sampling designs. Sampling of natural resources. Computer applications.

STOCHASTIC HYDROLOGY (0403Y)

Statistical analysis of hydrological variables. Frequency analysis of extreme values (Gumbel, Pearson type III, exponential distributions). Intensity-duration-frequency relationships. Hydrograph analysis. Rainfall-Runoff modeling methods. Rainfall temporal distribution. Unit, instant and synthetic hydrograph. Synthetic unit hydrographs. Hydrological modeling.

MOUNTAINOUS WATER MANAGEMENT METHODS AND PRINCIPLES (0404E)

Principles of Mountainous water management. Intervention procedure and preventive methods for the regulation of torrential stream damages. Protective water management: preventing the production of sediment erosion, landslides and rock fall. Regulating sediment transport and deposition. Prevent of flood generation through a flow regulation. Addressing mudflow events. Hydrological hazards mitigation. Ecological engineering methods. Types, methods, and efficiency of water resources management.

BUILDING MATERIALS AND DIMENSIONING FOREST CONSTRUCTIONS (0405E)

Categories of building materials, aggregates, soil as a construction material, wood, recycled building materials, metals, concretes, mortars. Testing and certification of building materials. Categories and control concrete, reinforced concrete. Dimensioning and design of wooden and stone construction and construction of iron-forced concrete and steel double T. Economic and environmental compatibility of forest structures with the environment, environmental impact assessments (EIA) of forest structures.

B' SEMESTER

INTEGRATED CADASTRAL SYSTEMS (0406Y)

Gravitational field, vertical metric, geometric and geodetic altitude. Satellite geodesy, satellite positioning system (GPS), errors of geometric geodesy, systems and permanent GPS stations. Integrated metering units (Total Station). Analytical photogrammetric. Economic and organizational analysis cadastral survey of the natural environment.

OPENING UP AND TRANSPORT NETWORKS, FOREST ROAD CONSTRUCTION (0407Y)

Factors affecting the forest opening up networks. Planning, evaluating, goals, aspirations and contributions of opening up networks in forest management, development and utilization of mountain forest area. Means and methods of ground and air transport in forest for harvesting timber products, protection, recreation mountain tourism and prosperity of society. Improved methods for planning and constructing forest roads. Maintenance of forest roads and slope stabilization with modern methods. Cost - benefit analysis in the construction of forest roads. Dimensioning recyclable materials for economy reasons on construction and environmental protection. Environmental Impact Studies in forest opening up networks, road construction and forestry transportations.

SEDIMENT TRANSPORT MECHANISMS (CREATION, TRANSPORT, DEPOSITION) (0408Y)

Sediment transport mechanisms through natural streams. Torrential processes. Debris flow creation mechanisms. Sediment sources identification. Sediment transport. Bedload and suspended sediment load transport. Debris flow and sediment deposition. Sediment transport in relation to land use. Stream fluvial morphology evolution and its consequences in the sediment transport.

SOIL-MECHANICAL APPLICATIONS AND MACHINERY (0409E)

Foundation methods on Forest Road construction. Soil dynamics in road construction. Methods and calculation of resistance, landslides, soil susceptibility testing. Introduction and general principles of machinery, earthmoving machinery, transportation machinery, drilling and mining rocks, water pumps, and modern machinery equipped with electronic devices. Efficiency, operating costs, environmental protection.

GEOINFORMATICS APPLICATION ON MOUNTAINOUS WATER MANAGEMENT (0410E)

Geoinformatics applications on the analysis of watershed morphometrical and hydrographical characteristics. Flood hazard assessment. Erosion assessment. Rainfall-runoff modelling. Hydrograph analysis induced by a flood event. Sediment modelling. Land use data manipulation from different data sources. Water budget modeling. GPS devices utilization in the mountainous water management.

FOREST AND WATER ENGINEERING WORKS IN RELATION TO THE ENVIRONMENT (0411E)

Introduction and general principles. The environment and its protection. The Forest Engineering projects as an element either of landscape disturbance or of sustainable development of the region. Effect of water

engineering projects on the environment (sediment transport, formation of fluvial bed, riparian vegetation, estuarine ecosystem). Assessment of the impact of construction on the environment. Legal Framework for the environmental licensing of engineering projects. Adaptation of Forest and Water Engineering projects in the natural environment (planning, design, construction, maintenance).

C SEMESTER

Postgraduate Master Thesis

E. ORIENTATION: HARVESTING AND TECHNOLOGY OF FOREST PRODUCTS

A´ SEMESTER

RESEARCH METHODOLOGY AND SCIENTIFIC WRITING (0501Y)

An overview of research in the natural sciences, Introduction in the basic principles of research methodology, Fundamentals of scientific inference in the natural sciences, Selection and development of a research topic, Methodology of literature search, Preparation and basic principles of organizing and writing a research proposal, Models – a basic tool in research, Presentation of research results: tables, figures, posters, Practicum on scientific poster preparation, Data acquisition in scientific research, Data analysis in scientific research, Methods of data collection and literature search in forest engineering and mountain hydromonics, Methodology of scientific paper and Thesis writing.

STATISTICS AND SAMPLING TECHNIQUES (0502Y)

Introduction and basics of experimental design. Simple comparative experiments. Experimental designs with one factor (basics) and with more factors (factorial). Introduction in Sampling. Basic sampling designs. Sampling of natural resources. Computer applications.

RESEARCH METHODS OF TIMBER HARVESTING SYSTEMS (0503Y)

System analysis. Classification and characteristics of production systems with emphasis on socio-technical systems. Relationships, interactions, flows and peculiarities of the individual components of the socio-technical systems [(people, machines, technical facilities and provisions, landscaping, traffic, lighting, jobs, optimization (technical, ergonomic, performance and cost)]. The main subsystems. Research methods of individual variables of key subsystems. Modern approaches and means of investigation and evaluation. Comparison of harvesting systems on identical basis. Specific problems between timber harvesting – management of forest ecosystems and certification schemes. Variations and limits of application methods.

WOOD STRUCTURE MICROTECHNIQUES (0504E)

Preparation and observation of defibred wood material and wood microtome sections in a simple microscope. Preparation techniques of wood sectioning and submicroscopic structure (microstructure) observation of wood cells, cell walls, pits and pit membranes, tyloses and microfibrils in electron microscopes (TEM, SEM). Specific treatments and techniques for microscopic observation of deteriorated wooden archaeological remains and charred wood.

COMPOSITE WOOD PRODUCTS – PRODUCTION TECHNOLOGY, PROPERTIES, USES (0505E)

Glued laminated lumber made of sawn timber of trapezoidal cross section. Structural composite lumber (OSB, LSL, PSL, LVL). Solid wood panels. Stress-skinned-panels. Wood polymer/plastic composites. Wood products from recycled wood. Lightweight wood panels for construction and insulation. Wood I Joists. Wood composites from agricultural lignocellulosic residues and waste paper.

B' SEMESTER

RELATIONSHIP BETWEEN STRUCTURE AND PROPERTIES AND USES OF WOOD (0506Y)

Structural characteristics, variability of structure, defects and deterioration of wood from biological and physical factors, and their relations with the properties and uses of wood. Mechanical behaviour of wood as a biological raw material in structures.

NEW TECHNOLOGIES IN WOOD PROCESSING (0507Y)

Application of new technologies in processing and production of wood products. Raw materials, Machinery, Stages of production, Technological conditions, Finishing Processing Techniques, Products, Properties and Uses.

FURNITURE TECHNOLOGY (0508Y)

Furniture types. Rhythm. Secondary wood treatments (mechanical shaping, curving, gluing, coating, polishing, painting etc.) Raw materials and furniture machines. Technology and furniture production processes. Industrial design and quality control of furniture.

THE HUMAN FACTOR IN HARMONY WITH THE WORKING ENVIRONMENT IN FORESTRY AND FOREST PRODUCTS ECONOMY (0509E)

Basic principles of humanization of work systems, health and work safety, special characteristics of forest works, specialized forest workers' training in Greece and Europe. Multivariate analysis of factors affecting work satisfaction (working atmosphere, job, physiological, psychological and social dimensions). Participation in decisions, personality respect, remuneration and recognition. Creation of a satisfactory work environment.

QUALITY CONTROL AND CERTIFICATION OF WOOD PRODUCTS (0510E)

Quality of a product or service. Quality assurance systems. Quality assurance systems. Inspection and certification bodies. Sampling and testing. Quality control and certification applications in wood products. Quality control of the production process and the end product. Requirements of the corresponding standards. Certification of materials and services. Certification of management systems and CE Marking.

ENVIRONMENTAL IMPACTS OF TIMBER HARVESTING AND UTILIZATION (0511E)

Timber harvesting impacts on forest ecosystems. Residual stand damages, infections, harvesting systems design and damage reduction. Work mechanization and soil compaction, decrease of water permeability, water infiltration, soil aeration and impacts on the forest growth potential. Combination of wood harvesting with silvicultural and environmental demands and forest recreation. Visual and aesthetic evaluation of logging operations. Environmental evaluation of wood harvesting systems and forest certification schemes (FSC, PEFC etc.). Wood products as renewable natural products. Competitive products. Comparative environmental advantages in storage and processing, manufacturing, distribution and use of various products. Noise, vibration, dust, sewage, chemicals, gas releases, energy consumption etc. Energy production. Utilization of waste products, product recycling. Life cycle of wood products. Environmental studies. Environmental management systems.

C' SEMESTER

Postgraduate Master Thesis