DEPARTMENT OF FOREST ENGINEERING

Content of Ph.D Degree in Forest Engineering with Thesis

COURSE CODE	COURSE NAME AND CONTENTS	T	A	C	ECTS
LUEE801	**Scientific Research Techniques and Scientific Ethics**	**3**	**0**	**3**	**8**
Purpose and Content	To be able to know how a process in a scientific research proceeds and how a scientific report must be prepared. Fundamental concepts and information about the science, the structure of scientific research, scientific methods and different ideas on these methods, data acquisition methods (quantitative and qualitative), registration, analysis, interpretation and reporting of datas.				
ORM8001	**Geographical Variation in Forests**	**3**	**0**	**3**	**8**
Purpose and Content	To ensure understanding of the geographical effects of adaptation in forest trees. Definitions and concepts related to geographic variation, experimental methods used to study geographic variation, patterns of geographic variation in forest trees, ımplications of geographic variation for seed transfer				
ORM8002	**Post-fire Vegetation Dynamics**	**3**	**0**	**3**	**8**
Purpose and Content	Having the knowledge on the effects of forests fires on fire adapted and non-adapted ecosystems as a natural component of ecosystem processes in addition to their anthropogenic character. Forest fires in their components. Fire regime. Fire adapted and non-adapted ecosystems. Succession and Autosuccession. Growth forms. Alfa, Beta and Gama diversity, Fire adaptive strategies. Post-fire vegetation management.				
ORM8003	**Forest and Rangeland Hydrology**	**3**	**0**	**3**	**8**
Purpose and Content	Forest and pasture areas cover a large part of our country's lands. Therefore, they represent an important component in the hydrological cycle. To teach the basic concepts, approaches and methods related to understanding the hydrological relationships in forest and pasture areas and using them in modeling. Climate and Hydrology, Forest and Rangeland Hydrological Features, Land Use and Its Impact on Basin Hydrology				
ORM8004	**Research Methods in Precipitation Basins**	**3**	**0**	**3**	**8**
Purpose and Content	The aim of this course is to give information about what kind of research can be done in rainfall basins, what methods can be used in these studies, how to evaluate and interpret the results obtained. Watershed functions, and watershed management practices, watershed management field of planning, watershed management field of research, the field of watershed management research methods, research carried out in rain basins in Turkey.				

ORM8005	**Vırtual Marketing Processes in Forestry**	**3**	**0**	**3**	**8**
Purpose and Content	Determining the marketing conditions of the products and services offered by forests with virtual marketing techniques. Evaluation of the marketing systems and operation of the basic products and services offered by forests and the virtual marketing opportunities.				
ORM8006	**The Law of Carbon Markets of Management in the World and in Our Country**	**3**	**0**	**3**	**8**
Purpose and Content	The aim of this course is to reveal the legal structure of the market functioning of forest carbon in the world and in our country. In addition, to inform students about the basic concepts of carbon economy and exchange, climate change and forest ecosystems, carbon storage and loss amounts in forest ecosystems, and the state of the forestry sector in carbon markets. It includes the legal structure of carbon (forest carbon) kept on forest resources, especially the carbon element, and the certification of forest carbon and thus becoming a capital market investment instrument.				
ORM8007	**Nature Conservation in the Forest**	**3**	**0**	**3**	**8**
Purpose and Content					
ORM8008	**Public Relations and Management in the Digital Environment in Forestry**	**3**	**0**	**3**	**8**
Purpose and Content	The aim of this course is to enable students to recognize the effectiveness of public relations and basic public relations techniques, to convey the role of public relations and public relations in virtual environment in forestry management and to teach them how to use them, to give information about effective communication methods and to enable them to make and interpret the SWOT analysis of public relations and governance in forestry. Virtual environment types in public relations and opportunities offered by virtual environment, types of virtual environments in terms of public relations and governance in forestry and opportunities to benefit from virtual environment, SWOT analysis of public relations and governance in forestry.				
ORM8009	**Biological Control Methods**	**3**	**0**	**3**	**8**
Purpose and Content	Biological Control of the importance, advantages and disadvantages of biological control against pests is to learn the principles and methods. The importance of biological control and its properties, development and principles of biological control, biological control organism groups are used, the advantages and disadvantages of biological control, biological control startup process, population dynamics in biological control				
ORM8010	**Biodiversty**	**3**	**0**	**3**	**8**

Purpose and Content	To learn all aspects of the concept of biological diversity To better understand the consequences of biodiversity loss Conservation of biodiversity-related knowledge to work. The importance and mean of Biodiversity, Distribution of Biodiversity, Centers of Biodiversity, Threats induced by the lost of biodiversity, The quantification of Biodiversity and its index, IUCN Criteria, Biodiversity in Turkey, Biodiversity and Globalization, Biodiversity and Global warming , Approaches nature conservation, Sustainability.				
ORM8011	**Technical Structures in the Improvement of Flood Basins**	**3**	**0**	**3**	**8**
Purpose and Content	To give information about the structural measures applied in mountainous basins causing floods. To understand the importance of the problems arising from the upper basins and to develop suggestions for the solution of the problems. Erosion process. Formation and development of river basins. General information about floods, floods and floodplains. Balance profile. Measures to be taken in different parts of the floodplains. Rusubat dams. Base belts. Paving. Providing surface and mass stability on slopes. Coastal walls. Slope coverings. Spurs. Terraces. Drainage facilities. Flood traps. Prevention of avalanche damages. Features of technical structures and materials used.				
ORM8012	**Environmental Polution and Protection**	**3**	**0**	**3**	**8**
Purpose and Content	To educate people to be able to compare terrestrial and aquatic ecosystems, to be able to disadvantages of air pollution on plant growth, to be able to give direction to forestry activities on forested areas knowing the factors that affect water quality in natural waters produced from water pollution, to be able to follow the changes that occur with climate change in ecosystems and participate in projects on soil pollution and reclamation issues. Today's environmental problems and population size, production - consumption relations. The natural ecosystems. Terrestrial and aquatic ecosystems. Biomes on earth. The sources of air pollution and pollutants exchanging and heat balance. The acid rains, dry and wet storage, acidification of the environment. The effects of air pollution on plants and human health. The measures against air pollution. The environmental problems in International studies. The water resources. Water use and water pollution-water quality. The cations and anions dissolved in streamwater. The insoluble substances in streamwater and water quality analysis. The biological indicators in water and macroinvertebrates. The soil pollution pollutants and their activities. The soil pollution prevention, the soil reclamation andrehabilitation.				
ORM8101	**Advanced Forest Politics**	**3**	**0**	**3**	**8**

Purpose and Content	In the course in which the world's forests and forestry are introduced, forestry policies that have changed from history to the present are explained. Turkey stands out in the world and forestry issues, policies prepared for the solution of these problems, in this context, international and practices at national level are evaluated. In this context, information on Sustainable Forest Management is provided. In addition, what level forestry will reach in the future is examined. Forestry policy, forestry history, international development, sustainable forest management, participation in forestry, the situation in Turkey and the world forestry, forestry problems and solutions in Turkey forestry legislation relationship between forest policy-historical process of the Ottoman Empire era and republican titles scrutiny-constitutional forestry relations				
ORM8103	**Management and Organization Principles in Forestry**	**3**	**0**	**3**	**8**
Purpose and Content	In the course, in which the world's forests and forestry are introduced, forestry policies that have changed from history to the present are explained. Forestry problems that stand out in the world and in Turkey, the policies prepared for the solution of these problems, and international and national practices within this framework are evaluated. In this context, information on Sustainable Forest Management is given. It also examines what level forestry will reach in the future. Forestry policy, forestry history, international developments, sustainable forest management, participation in forestry, the situation in forestry in the world and in Turkey, forestry problems and solutions, relations between forestry policy and forestry legislation in Turkey - in the historical process, with the titles of the Ottoman Empire period and the republic period. scrutiny-constitutional forestry relations				
ORM8113	**Trial Planning Methods in Forestry Research**	**3**	**0**	**3**	**8**
Purpose and Content	Establishing and analyzing trials in research. Basic statistical concepts, research and statistical relationship, introductory statistics, correlation and regression, trial designs and analysis (complete randomised , randomised blocks, factorial design), comparison tests				
ORM8115	**Soil Erosion and Sedimentation**	**3**	**0**	**3**	**8**
Purpose and Content	It aims to reveal the causes of erosion and sedimentation in the soil, its formation, the damages it will cause, measurement techniques and preventive measures that can be taken. Basic information about erosion, concepts, factors causing erosion, types of soil erosion, preventive measures against erosion, erosion estimation and measurement methods, sediment properties, sediment and sedimentation concept, stream properties and sediment transport in rivers, sediment management in rivers.				
ORM8117	**Molecular Approaches to Fungal Taxonomy**	**3**	**0**	**3**	**8**
Purpose and Content	Aim of this course is to highlight the advances of both in methodology and in the understanding of genomic organization and approach problems of the identification and differentiation of fungi using molecular markers and compare those with classical procedures traditionally used for species designation. General view to taxonomy of Fungi in molecular methods improved techniques in recent years. Comparing classical identification and classification of Fungi wtih molecular methods				

ORM8118	**Quantitative Genetics I**	**3**	**0**	**3**	**8**
Purpose and Content					
ORM8120	**Using Information Technologies in Forest Fires**	**3**	**0**	**3**	**8**
Purpose and Content					
ORM8204	**Rural Development and Social Forestry in Developed and Developing Countries**	**3**	**0**	**3**	**8**
Purpose and Content	By discussing development and development concepts; To ensure that underdeveloped, underdeveloped and developed country evaluations are perceived. Social capital is the evaluation of sustainable development criteria and indicators and their evaluation in terms of the forestry sector. As an economic structure; Underdevelopment, underdevelopment and development philosophies and concepts of rural development and social forestry are discussed. The development processes of these concepts for sustainable development, social capital and forestry sector are explained. Sustainable development criteria and indicators and their evaluation in terms of forestry are determined. The role and role of the forestry sector in development and rural development are discussed.				
ORM8208	**Nature Conservation in the Forest**	**3**	**0**	**3**	**8**
Purpose and Content	Using nature conservation techniques and methods in forest areas, identifying the ecosystem components with priority to be protected on the basis of species, habitat and site, and transferring the measures for their protection, development and improvement to the students. Introduction to basic concepts in nature conservation, forest ecosystems ecology-nature conservation relationship, forest functions and nature protection, basic principles of species and area conservation, use, analysis and evaluation of red lists, evaluation of forest habitat quality, forest biodiversity conservation and management, determination of the structural and functional characteristics of forests in nature conservation approach and criteria for their protection, mapping of forest biotopes, protection and management of sensitive species and areas in the forested areas, silvicultur, and some forest practices and nature protection, evaluation of tourism and recreation activities in forest areas and protected areas with a nature conservation approach, species and habitat-based in forest protected areas planning approaches, Concept of Natura 2000, geospatial applications in nature conservation				
ORM8210	**Plant Sociology**	**3**	**0**	**3**	**8**

Purpose and Content	By informing about vegetation knowledge, to create a basic accumulation about plant sociology and to provide the necessary theoretical equipment for applied vegetation knowledge. Description of Plant sociology, its background and study fields, Growth forms of plants, Physiognomic and ecological classification of formations in the World The factors effecting the plant communities Competition, Physiologic and ecological amplitudes, Definition of plant communities, Braun-Blanquet method (sampling, assessment and vegetation tables) Phytosociological nomenclature, Syndynamic, Synchronology and synecology				
ORM8216	**Epidemiology in Plant Disease**	**3**	**0**	**3**	**8**
Purpose and Content	To teach the basic information about the epidemiology of plant diseases, important diseases with epidemic potential, minimization and control of diseases. Definition and Importance of Epidemiology; Characteristics of Pathogen Populations Causing Diseases in Plants; Factors Affecting the Emergence of Epidemias; From Advance of Plant Disease Epidemics, Early Warning and Disease Management.				
ORM8301	**Evaluation of Forests Ecosystem Services**				
Purpose and Content	The aim of this course is to teach students that forest ecosystems offer functions such as soil protection, flood control, carbon capture, as well as products and services with direct use value such as wood, non-wood forest products, grass, recreation services. Ecosystems - the services it provides, biodiversity, payment programs for ecosystem services, sustainable ecosystem service policies, new approaches in ecosystem services.				
ORM8307	**Principles of Forest Fire Management - I**	**3**	**0**	**3**	**8**
Purpose and Content	To teach the basic components of forest fire management, its features, evaluation of fire management studies and fire fighting theory and practice. Forest fire management and decision support systems, forest fire behavior system, principles and purpose of fire simulation, management of fighting forest fires, introduction to forest fire ecology, forest fire prevention measures and fire silviculture				
ORM8309	**Quantitative Vegetation Ecology**	**3**	**0**	**3**	**8**
Purpose and Content	To constitute a comprehensive background on vegetation database management, numerical classification and ordination analysis. Constitution of vegetation databases Numerical classification of vegetation data Numerical ordination analyses of vegetation data				
ORM8317	**Soil Research Methods**	**3**	**0**	**3**	**8**
Purpose and Content	It is the sampling, analysis, evaluation and interpretation of the results of soil and litter. Physical and chemical properties of the soil, soil sampling, laboratory and analysis methods, evaluation and reporting of analysis results.				

ORM8402	**Multidimensional Decision Making Methods and Applications in Forestry**	**3**	**0**	**3**	**8**
Purpose and Content	Providing the understanding of objective evaluation principles in forestry with multi-criteria decision making methods. Analytical hierarchy process, modeling and application areas, analytical network process, multi-dimensional decision making methods and applications.				
ORM8404	**Valuing Forests**	**3**	**0**	**3**	**8**
Purpose and Content	The aim of this course is to give theoretical and practical information about the determination of the economic value of fixed capital in forestry (land, tree wealth and forest) and non-market forestry goods and services. Interest and income accounts as a financial analysis tool, calculation of fish and capital value of finite and infinite incomes, capital elements in forestry business, determination of land product value, cutting of tree wealth, determination of future and cost value, determination of cut, future and cost value of forest, forestry Determination of the economic value of goods and services, sale of the forest, expropriation, exploitation of mine assets, determination of value in case of passing a road and energy line through the forest, compensation and loss calculations arising from storm, snow, fire, grazing, insect and fungus, gas and smuggling and examples on these issues Solving the problems constitutes the content of this course.				
ORM8408	**Principles of Forest Fire Management II**	**3**	**0**	**3**	**8**
Purpose and Content	To teach the students the theories and practices about fire prevention measures, integration of fires into forest management, fire fighting and fighting techniques, fire ecology, which are the basic components of forest fire management. Fire prevention measures, fire silviculture, fire prevention facilities, integration of fires into forest management, firefighting and fighting techniques, impact of fires on vegetation and wildlife, increasing the effectiveness of fire management				
ORM8410	**Forest Vegetation of Turkey**	**3**	**0**	**3**	**8**
Purpose and Content	To have a large knowledge on forest vegetation diversity of Turkey, which is represented by different phytogeographical regions and factors driving this diversity. Geomorphological structure of Turkey Climate types Geobotanical characteristics of Turkey Distribution of Forest Trees Phytogeoprahical regions and main forest vegetation types Structural characteristics of Forest types				
ORM8416	**Basin Carbon Management**	**3**	**0**	**3**	**8**

Purpose and Content	To understand the carbon accumulation in the basin within the scope of global warming, climate change, greenhouse effect and their prevention.				
ORM896	**PhD Qualification**	**3**	**0**	**3**	**8**
Purpose and Content	It is to determine whether the student has the basic knowledge to be able to do doctorate work, whether she/he has reached sufficient scientific maturity and is ready to do research at the doctoral level. The doctoral qualifying exam is made from basic courses at undergraduate and graduate levels and special topics related to doctoral study.				
ORM897	**PhD Seminar**	**0**	**2**	**0**	**6**
Purpose and Content	• To decide on the objectives of the thesis work and the strategy • To give the ability of the oral presentation and discussion. Presentation of the thesis work				
ORM8098D	**Course Specialised Field**	**4**	**0**	**0**	**4**
Purpose and Content	Course Specialised Field is a theoretical course proposed by a faculty member to share their knowledge, experience, and expertise in their scientific field with graduate students under their supervision. This course aims to educate students on scientific ethics and instil a strong work discipline.				
ORM8098T	**Thesis Specialised Field**	**4**	**0**	**0**	**4**
Purpose and Content	Thesis Specialised Field is a theoretical course that the faculty member proposes to the graduate students he/she supervises in order to share the methods of conducting research in the current literature, following and evaluating the literature, and to establish and carry out the scientific foundations of the student's thesis / exhibition / project work.				
ORM899	**PhD Thesis Research**	**0**	**1**	**0**	**26**
Purpose and Content	To improve the ability of getting the scientific information, its evaluation and interpretation by conductive scientific research. PhD. thesis work.				