

# Transilvania University of Braşov, Romania

## Study program: Multiple Purpose Forestry

Faculty: Silviculture and Forest Engineering

Study period: 2 years (master)

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
International Environmental Governance and Forests	IEGF	4	2	-	-	-

**Course description (Syllabus):** Course covers fundamentals and principles of environmental governance and sustainable development; understanding and operating with UN forest principles; international obligations related to forest, forestry and wood (e.g. trade, climate change, biodiversity, desertification); decision making, processes and drivers in forestry governance; innovation, scientific advisory and technical support; challenges of the change: understanding the barriers and opportunities for forestry sector.

Course title	Code	No. of credits	Number of hours per week			
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Remote Sensing and GIS in Natural Resource Management	RSGIS	5	1	-	2	-

**Course description (Syllabus):** Course covers the following: introduction to remote sensing, data sources and procurement, vegetation indices, microwave and hyperspectral remote sensing, introduction to GIS, spatial decision support systems and spatial analysis. Laboratory consists of case studies on the above mentioned.

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			course	seminar	laboratory	project
Forests and Water	FW	6	1	-	2	-

**Course description (Syllabus):** Part I: forests-water resources relationships analysis at various levels, water flux in the soil-tree-atmosphere system, hydrological and water erosion processes modelling, flow hydrograph simulation by using complex digital watershed models; Part II: water resources policy and forested watershed management in Romania, hydrological risk assessment and hydrological classification of land use in forested watersheds, using remote sensing products in quantifying the hydrological role of forests.

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Applied Statistics in Forest Research	ASFR	7	2	-	2	-

**Course description (Syllabus):** The discipline covers the following topics: Brief introduction to R language; Descriptive statistics; Hypothesis testing; ANOVA; ANCOVA; Regression analysis; Multilevel models; Logistic regression; Multivariate analysis (e.g. principal component analysis); Spatial statistics (univariate and bivariate point pattern analysis-pair-correlation function). Laboratory consists in solving various exercises applied in forest research.

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Biodiversity Conservation	BC	4	1	-	1	-

**Course description (Syllabus):** The course covers the following: biodiversity – concept, definitions and levels, gene conservation, natural protected areas, protected species, evaluation of biodiversity at plant community level, vegetation classification systems and methods of data analysis in vegetation science, monitoring species and habitats. Laboratory consists of analyses, field work and case studies.

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Academic Skills and Ethics in Research	EASFS	4	1	-	-	-

**Course description (Syllabus):** The course covers the following topics: guidelines for writing scientific papers and dissertation theses, development of presentations, language of reporting in science - meta-discourse, resources of academic writing and their use, textural macrostructures. The course is complemented by discussions and individual work.

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Forest Stand Dynamics	FSD	7	2	2	-	-

**Course description (Syllabus):** the discipline covers the following topics: the process of change in ecosystems (ecological succession); disturbances and forest stand development; understanding and emulating natural forest disturbances; overview of stand development patterns (single cohort stands, single-species stands and mixed-species stands, multicohort stands: behaviour of component cohorts and development of multicohort stands); stand structure and biodiversity; forest patterns over long times and large areas (ecosystem management and landscape ecology).

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Integrated Pest Management	IPM	7	1	-	2	-

**Course description (Syllabus):** The discipline is designed to introduce students to the theory and practice of integrated pest management systems and covers the following: general definitions and concepts of IPM, pest forecast models in IPM (degree-day models), biodiversity and IPM, the impact of exotic and invasive pests, pest management tactics. Laboratory consists in case studies, individual work and field trips.

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Management of Wildlife Populations	MWP	6	1	-	2	-

**Course description (Syllabus):** The principles of sustainable management and conservation of wildlife require the understanding of species ethology, ecology and population demography as well as ecosystem dynamics. The discipline includes estimation of animal abundance and habitat selectivity, the use of age and stage - structural data in demography studies, methods and models used in making decisions in adaptive management. The course includes also population viability assessment, sustainable harvesting, wildlife management areas planning and ecosystem management.

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Management of Timber Harvesting Operations	MTHO	6	1	-	2	-

**Course description (Syllabus):** the discipline covers the following: history of forest operations, forests as a source of raw material and working environment, pre-harvest planning, timber harvesting systems and methods, ergonomics and safety, operational & environmental performance, research and paradigms in timber harvesting. Laboratory consists in case studies, individual work and field trips.

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Advanced Forest Biometry	AFB	4	1	-	1	-

**Course description (Syllabus):** the course includes the following: recent development in instrumentation, taper functions, polynomials and segmented polynomials used to elaborate stem profile models, volume equations for tree species in Europe, merchantable stem volume, biomass equations for tree species in Europe, ground measurement of tree stem and tree parts using portable laser scanner. Laboratory consists in field trips, case studies and individual work.

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Forest Management and Chain of Custody Certification	FMC	6	1	-	2	-

**Course description (Syllabus):** The course covers the following: introduction to forest management and chain of custody certification, forest certification schemes, the main certification schemes in Europe, chain of custody certification and product tracking, practical aspects of certification, impact, costs and benefits of certification, evolution of forest management and chain of custody in Romania and worldwide, forest certification in the wider context of sustainable forest management. Laboratory activities consist of case studies.

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Forest Based Bio-economy (O1)	FBB	5	1	-	2	-

**Course description (Syllabus):** The course consists of: origin of bioeconomy and forest-based bioeconomy perspective, review of economics of the forest sector, forest resources from bioeconomic perspective, competing demand in forest-based bioeconomy, unpriced forest values, bioeconomy based strategies of business, policy and governance issues in forest-based bioeconomy. Laboratory consists of discussions and case studies.

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Management of Research Projects (O1)	MRP	5	1	-	2	-

**Course description (Syllabus):** The course covers the following: generalities regarding the scientific research, research projects objectives and risks, resource identification, allocation and management, activities, implementation, quality management, financing. The laboratory consists of discussions and case studies.

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Decision-Support Systems in Forest Ecosystem Management (O2)	SSFM	5	1	-	1	-

**Course description (Syllabus):** the discipline covers the following: decision; decision-making process; systems analysis tools relevant to silvicultural decision-making and their use; decision-support systems and artificial intelligence; expert systems; the use of silvicultural decision-support systems/tools in forest ecosystem management. The practical activities consist of case studies and individual work.

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Energy Procurement from Woody Biomass (O2)	WPWB	5	1	-	1	-

**Course description (Syllabus):** the discipline covers the following: resources of energy wood, traditional & short rotation coppice silviculture of energy wood, supply chains for energy wood procurement, delivery systems & logistics, operational performance in establishment, harvesting & transport operations, economic & environmental performance, biofuels, woody biofuels and conversion technologies. Laboratory consists of case studies, individual work and field trips.

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Strategy and Marketing of Forest Products	SMFP	4	1	-	1	-

**Course description (Syllabus):** The course covers the following: introduction, processes used for the elaboration of policies and strategies, legal determinants of forest policies and strategies, forest policies and strategies, supply and demand, price formation and markets, marketing techniques for wood and non-timber forest products. The laboratory consists of discussions and case studies.

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Silviculture and Yield of Forest Ecosystems	SYFE	4	1	-	1	-

**Course description (Syllabus):** the discipline covers the following: forest (stand) dynamics, growth and yield; primary production, growth and harvestable yield; stand structures; growing space and competitive situation of individual trees; growth relationships and their biometric formulation; stand structure and yield (even-aged vs. uneven-aged stands); stand density control and yield; species composition and yield (pure vs. mixed stands). The practical activities consist of case-studies, individual work and field trips.

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Life Cycle Assessment in Forestry (O3)	LCAF	6	1	-	2	-

**Course description (Syllabus):** the discipline covers the following: introduction to LCA, management of LCA projects, goal & scope definition, inventory analysis, impact assessment, interpretation. Laboratory consists of case studies on how to use databases, design flows, analyze processes, use impact analysis methods and analyze & interpret results.

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Business Process Management in Forestry (O3)	BPMF	6	1	-	2	-

**Course description (Syllabus):** introduction to Business Process Management, basics of process modelling, mapping the supply chain, analyzing the supply chain, reengineering of supply chain. Laboratory consists in individual & collective work to reengineer a supply chain based on mapping and critical analysis.

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Research Activity	RES	20	-	-	-	-

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Elaboration of MSc Thesis	DIS	10	-	-	-	-