



# MSc European Forestry

ERASMUS MUNDUS

**A two-year Erasmus Mundus Master's Degree Programme**



## **ACADEMIC STUDY GUIDE 2017–2019**

University of Eastern Finland

AgroParisTech, France

University of Lleida, Spain

University of Freiburg, Germany

Transilvania University of Braşov, Romania

University of Natural Resources and Life Sciences, Vienna, Austria



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# FOREWORD

## **Welcome to our MSc European Forestry Erasmus Mundus programme!**

MSc European Forestry is a unique, multicultural master's degree Erasmus Mundus programme in Europe. It aims at providing you insight into the various practices, administrative characteristics and state-of-the-art technologies of the contemporary forest cluster.

Forestry is a multidisciplinary field of science where the MSc European Forestry programme takes you on an exciting journey throughout Europe. It highlights the importance of urban forestry, introduces you to the applications of multiple uses of forests, and teaches you the practices in mountain forestry as well as in technologies used in the production-oriented forest industry. The variety of subjects within European Forestry allows you to choose the studies that best suit your ambitions. Throughout the studies, our professional teaching personnel are committed to supporting your learning process towards a scientific way of thinking.

I am proud to act on behalf of our MSc EF Consortium that jointly provides the best knowledge in European Forestry today! On behalf of all the Partners, I congratulate you and wish you all the best for your two-year studies!



Professor Timo Tokola,  
Coordinator of the MSc European Forestry programme

# ERASMUS MUNDUS AND EUROPEAN UNION

## **The Erasmus Mundus programme**

Erasmus Mundus (EM) is a cooperation and mobility programme in the field of higher education which promotes the European Union as a centre of excellence in higher education. It supports European top quality master's courses (EMJMD) and doctorate programmes (EMJD) and enhances the visibility and attractiveness of European universities. MSc European Forestry was awarded the title of Erasmus Mundus programme in 2004–2008, 2009–2013 and again in 2016–2021.

The first cohort of the Erasmus Mundus students started in 2004. Since then, over 12,000 students have been selected for the 100 different master's courses that are currently offered. The EM disciplines vary from humanities to space science and technology, and among them, the MSc in European Forestry stands as the only one in the field of bioeconomy and forest sciences.

## **The European Union**

As stated on the European Union website (<http://www.europa.eu>), the European Union (EU) is a family of 28 democratic European countries, committed to working together for peace and prosperity. The member states have set up common institutions to which they delegate some of their sovereignty so that decisions on specific matters of joint interest can be made democratically at the European level.

Initially, the EU consisted of just six countries: Belgium, Germany, France, Italy, Luxembourg and the Netherlands. Denmark, Ireland and the United Kingdom joined in 1973, Greece in 1981, Spain and Portugal in 1986, Austria, Finland and Sweden in 1995. In 2004 the biggest ever enlargement took place with 10 new countries joining: Estonia, Latvia, Lithuania, Malta, Czech Republic, Slovakia, Poland, Slovenia, Hungary and Cyprus. In 2007, Romania and Bulgaria joined the Union. Croatia became the 28th EU member country on 1 July 2013.

# The European Union



Source: [www.ec.europa.eu](http://www.ec.europa.eu)

For more information:

[https://europa.eu/european-union/index\\_en](https://europa.eu/european-union/index_en)

[http://ec.europa.eu/programmes/erasmus-plus/opportunities-for-individuals/students/erasmus-mundus-joint-master-degrees\\_en](http://ec.europa.eu/programmes/erasmus-plus/opportunities-for-individuals/students/erasmus-mundus-joint-master-degrees_en)

# PROGRAMME DESCRIPTION

The Master of Science in European Forestry (MSc EF) is a master's degree programme provided by a consortium of six well-known European universities. The MSc EF is an international double-degree programme, which is acknowledged as a top quality European MSc under the Erasmus Mundus programme by the European Commission.

MSc EF is an interdisciplinary programme that provides academic education in the field of sustainable resource management with a special emphasis on bioeconomy. MSc EF offers a new approach to the markets in forestry and nature management and it connects the increasing number of forest-related issues with a European dimension at international as well as national levels.

The objective of the MSc EF programme is to educate professionals who have a thorough understanding of sustainable forest bioeconomy as well as in European business culture.

## CONSORTIUM

In MSc EF, six European top-class forestry universities collaborate intensively to offer joint study modules in addition to their existing curricula.

The MSc EF Consortium consists of the following *Full Partners*:

- University of Eastern Finland (coordinator)
- AgroParisTech, France
- University of Freiburg, Germany
- University of Lleida, Spain
- University of Natural Resources and Life Sciences Vienna, Austria
- Transilvania University of Brasov, Romania

In addition, MSc EF Consortium includes the following *Associated Partners*:

*Associated Partner universities:*

- Federal University of Paraná, Brazil
- Northwest A&F University, China
- São Paulo University, Brazil
- University of British Columbia, Canada
- University of New Brunswick, Canada

*Associated Industrial and Scientific Partners:*

- Arbonaut Ltd., Finland
- Centre Tecnològic Forestal de Catalunya, Spain
- Chinese Academy of Forestry, China

- District Forest Office (Forstamt) Johanniskreuz, Germany
- European Forest Institute, Finland
- EFICEEC-EFISEE, Austria (belongs to BOKU)
- International Institute for Applied Systems Analysis (IIASA), Austria
- Office National des Forêts (ONF), France
- Stora Enso Wood Supply, Finland

The University of Eastern Finland is the coordinator of MSc EF, but all the *Full Partners* are providing courses in English and in national languages, and fully recognise the studies provided by the other partners within this study programme. In addition, *Associated Industrial and Scientific Partners* offer applied period placements and MSc thesis topics for the MSc EF students.



# DESCRIPTIONS OF THE FULL PARTNERS

## University of Eastern Finland, FINLAND

The Universities of Joensuu and Kuopio merged on 1 January 2010 to constitute the University of Eastern Finland. With approximately 15,000 students and 2,800 members of staff, the University of Eastern Finland is one of the largest universities in Finland. The university has campuses in Joensuu, Kuopio and Savonlinna. The four faculties of the University of Eastern Finland, i.e., the Philosophical Faculty, the Faculty of Science and Forestry, the Faculty of Health Sciences, and the Faculty of Social Sciences and Business Studies, offer teaching in more than 100 major subjects.

The School of Forest Sciences situated in the Joensuu campus belongs to the Faculty of Science and Forestry. It is one of the university's flag-ships as a centre for international education and research. More than 100 international students study at the school annually, which is a significant number for a school with an annual intake of about 70 degree-students. The School coordinates the MSc EF programme, the MSc in Forestry programme of the Finnish-Russian Cross-Border University (CBU) and the MSc in Wood Materials Science, and participates in the EU-Canada programme: the Transatlantic Forestry Master (TransFor-M) and offers a non-degree International Study Programme in Environmental Sciences and Forestry.

For more information:

[www.uef.fi/uef/english](http://www.uef.fi/uef/english), [www.uef.fi/en/web/forest](http://www.uef.fi/en/web/forest)

## AgroParisTech, FRANCE

AgroParisTech was founded in 2007 by the merger of three existing French engineer schools: INA P-G, ENSIA and ENGREF. It has activities in the fields of agronomy, forestry, environment, life sciences and food technology. It has the following three primary missions: (I) to train master of engineering, master of science and doctoral students, (II) to contribute to the advancement of scientific knowledge through fundamental and applied research, and (iii) to develop international relations to enhance the career prospects of the graduates. AgroParisTech has 300 scientists in 33 laboratories and 450 PhD students.

Within AgroParisTech, the centre in Nancy is in charge of the education in forestry at the master/engineer and doctoral levels, and of the post-master programme for the training of high level managers for the public and private sectors. Forestry training and research mainly take place on the Nancy campus, with contributions from two other AgroParisTech campuses in Montpellier (southern France) and Kourou (French Guyana). The Nancy campus is a host to 36 scientists and presently receives circa 200 students per year. AgroParisTech's close partners in Nancy, INRA (French National Institute

for Agricultural Research) and the University of Lorraine participate in the *Erasmus Mundus* master in forestry. With its local partners in higher education in Nancy, AgroParisTech runs the Nancy doctoral school called "Resources, Products, Processes, Environment" in the frame of which a PhD in forestry can be prepared.

For more information:

[www.agroparistech.fr](http://www.agroparistech.fr)

## University of Freiburg, GERMANY

The Faculty of Environment and Natural Resources is located in Freiburg, a traditional and at the same time dynamic university town of 220,000 inhabitants. The main focus of the faculty is the interaction between environment and society. Natural sciences, social sciences, and technical competences serve as a foundation for a wide-ranged, interdisciplinary approach to research and education. The faculty - which has 1,500 students - offers four bachelor's and eight master's programmes in the field of forest and environmental sciences. There are also 250 PhD students.

The MSc European Forestry students can choose studies from the MSc Forest Sciences/Forstwissenschaften programme. This specialisation focuses on the sustainable management of natural resources, with a particular focus on forested landscapes. Courses generally yield 5 ECTS credits each, with a duration of three weeks. A course usually comprises lectures, practicals, tutorials, preparation, reading, independent learning and assessment.

The Faculty has a strong network with other academic institutions within Europe and overseas, such as the EU-Canada programme Transatlantic Forestry Master's (Transfor-M) or the NFZforestnet, a cooperation between Nancy, Zürich and Freiburg.

For more information:

[www.msc-forst.uni-freiburg.de](http://www.msc-forst.uni-freiburg.de)

[www.iww.uni-freiburg.de/teaching/international-teaching-networks](http://www.iww.uni-freiburg.de/teaching/international-teaching-networks)

[www.uni-freiburg.de](http://www.uni-freiburg.de)

## University of Lleida, SPAIN

The University of Lleida is a public institution with approximately 9,650 students and 750 faculty members. The 44 highly competitive research groups receive resources both from national research financing agencies and from the European Union. The UdL has long been involved with other universities and institutions through international networks (ASEFOREP, NATURA, SILVA, ICA, IROICA, ECHAE) and in the framework of international EU student and teaching staff

mobility programmes (ERASMUS). Looking to the future, the UdL accepts the challenging task of training competent open-minded citizens who are sensitive to other cultures and to the peculiarities that these cultures involve.

The UdL is made up of seven faculties and schools, including the Higher Technical School of Agrarian Engineering (ETSEA). The ETSEA is a Spanish leader for teaching and research in the Agronomy, Food Technology and Forestry areas and regarding the last is specialised in Mediterranean forestry, forest protection and non-wood forest products. Forest Science studies are taught in the ETSEA campus, where a complete infrastructure for study and personal work is provided (libraries, study and computer rooms open all day, laboratories, greenhouses, practice fields, virtual campus and access to teaching resources for the courses). All courses and programmes are designed according to the European Higher Education Area (EHEA) project, and many courses in English are available (and increasing) for the MSc EF students.

For more information:

[www.europeanforestry.udl.cat](http://www.europeanforestry.udl.cat)

## University of Natural Resources and Life Sciences, Vienna (BOKU), AUSTRIA

The University of Natural Resources and Life Sciences, Vienna, also known by the acronym 'BOKU', comprises 15 departments including Forest and Soil Sciences and four service centres in Vienna. The university has approximately 12,000 students (of which 20 per cent are international), provides courses at the bachelor's, master's and doctoral levels, has approximately 700 scientists employed on a project basis, about 74 full professors and about 130 associate professors.

The university sees itself as a teaching and research institution that focuses on renewable resources that are a prerequisite for human existence. The relationships between man, society and the environment form the basis of all activities, and its foremost aim is to make decisive contributions to securing the well-being of future generations. In this endeavour, it will seek ways of ensuring a sustainable and environmentally sound management of natural resources by allying the competences of the natural, engineering, economic and social sciences. BOKU offers 27 national and international master's programmes, whereas the Master of Mountain Forestry has been successfully established and is attracting students around the world. Altogether, BOKU offers 48 master's courses in the field of forest sciences which are entirely taught in English and is actively involved in a wide range of international educational projects (EM, EM ECW, TEMPUS...).

For more information:

[www.boku.ac.at](http://www.boku.ac.at)

<http://www.boku.ac.at/en/universitaet-fuer-bodenkultur-wien-boku/studieren-an-der-boku/themen-fuer-studierende/internationales/international-students-coming-to-boku/>

## Transilvania University of Braşov, ROMANIA

Founded in 1948, Transilvania University of Brasov is one of the largest universities in the country and the best reputed higher education institution in the central region of Romania. It has 18 faculties, over 19,200 students and more than 1,250 permanent staff members. The faculties offer academic degree programmes in a wide range of fields (from different engineering and science domains to economic and social sciences, humanistic sciences, medicine and music).

The forestry section was established in 1948. At present there are three BSc programmes of study (Forest management, Forest engineering and Wildlife management) and two MSc degree programmes (Forest ecosystem management and Technical systems and management in forest engineering). A new master's degree programme in English will be launched in autumn 2017. The faculty of forestry is involved in basic and applied research and has strong partnerships with forest administrations, harvesting and primary wood processing companies.

For more information:

[www.unitbv.ro/en/Home.aspx](http://www.unitbv.ro/en/Home.aspx)

[www.unitbv.ro/silvicen/AboutFaculty.aspx](http://www.unitbv.ro/silvicen/AboutFaculty.aspx)



# DESCRIPTIONS OF THE ASSOCIATED PARTNER UNIVERSITIES

## Federal University of Paraná, BRAZIL

Federal University of Paraná (UFPR) was established in 1912. Currently UFPR has 101 undergraduate and 90 postgraduate courses in almost all areas of knowledge. The university enrolment is around 30,000 students, with 2,200 faculty members. UFPR is a public university with eight campuses in the city of Curitiba and other municipalities of the State of Paraná. Currently the University has close cooperative relations with about 110 universities of different countries. The internationalisation plan takes on the account policy to integrate the university into the various existing international research networks as well as establishes and strengthens international research network in interdisciplinary research areas, where there are substantial needs from the viewpoint of human society in a globalised world. Forest engineering course offered by UFPR is a hybrid of engineering, forestry, and management. Forest engineers are unique professionals who can combine skills to produce ecosystems services (supporting, provisioning, regulating and cultural), with a focus on the forested landscape.

For more information:

[www.ufpr.br/portafulpr](http://www.ufpr.br/portafulpr)

## Luiz de Queiroz College of Agriculture, University of São Paulo, BRAZIL

The Luiz de Queiroz College of Agriculture (USP/ESALQ), located in Piracicaba, São Paulo, is one of the 42 academic units of the University of São Paulo (USP). This college, which is made up of 250 faculty members, offers seven undergraduate programmes and 13 graduate programmes, in addition to one international, one inter-institutional and two inter-unit programs. It contributes to undergraduate and graduate areas of agricultural, applied social and environmental sciences. Forest Sciences Department develops activities in the areas of forestry; forest management; applied ecology and technology of forest products, in order to assess, plan and manage a sustainable use and conservation of forest resources, taking into account environmental, social and economical aspects. It is responsible for the undergraduate and postgraduate programmes in forest resources, and provides undergraduate disciplines for Agriculture, Environmental Management and Biological Sciences courses.

The research projects are developed in partnership with the main Brazilian private forest companies and in its own two experimental stations with 2,910 ha (Itatinga and Anhembi Forest Research Stations).

For more information:

[www.en.esalq.usp.br](http://www.en.esalq.usp.br)

## Northwest A&F University, CHINA

Northwest A&F University (NWUAF), located in Yangling, Shaanxi Province, the birthplace of Chinese agricultural civilisation, is a key national comprehensive university directly under the administration of the Ministry of Education. As one of the leading universities in China, NWUAF is supported by the Ministry of Education's *Project 985* and *Project 211* and is characterised by its integration of education, research and social services. Currently there are 2,048 full time teachers among 4,498 staff members. A complete range of study programmes is now available for undergraduates, master's, Ph.D. and post-doctoral studies. There are currently over 21,000 full-time undergraduate students, 7,300 postgraduates (5,400 masters and 1,900 doctoral students) and over 9,000 adult education students. In 2006, the university received approval to recruit international students funded by Chinese government scholarships.

The College of Forestry was reformed on the basis of the amalgamation of former separate institutes and offers for students four undergraduate programmes: forestry, forest protection, chemical engineering of forest product, wood sciences and engineering; eight master's programmes, namely, ecology, silviculture, forest protection, tree genetics and breeding, forest management, protection and utilisation of wild animals and plants, chemical engineering of forest products, and wood sciences and technology; and similar Ph.D programmes offered except chemical engineering of forest products and wood sciences and technology. There are 188 teaching and research staff currently, alongside with 12 sci-tech innovation platforms through ministerial or provincial level support, 7 experimental stations (bases) and 2 nurseries for experiments and teaching.

For more information:

<http://en.nwsuaf.edu.cn/>

## University of British Columbia, CANADA

The University of British Columbia is a global centre for research and teaching, consistently ranked among the 40 best universities in the world. Since 1915, UBC's West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning.

UBC's forest education is keeping pace with changing social values and an increasingly knowledge-based forest sector. The Faculty of Forestry offers both master's and doctoral programmes in which our graduate students learn from a dynamic and diverse group of researchers who educate and communicate how

forests and the products that are created from them contribute to the well-being of all living things. The health and sustainability of forests underlies everything we do.

UBC is among the best institutions globally in forest-related education and research, and is also unique in the breadth of expertise it possess, which allows it to integrate new knowledge across many disciplines. UBC's mandate is the advanced training of tomorrow's scientists and leaders.

For more information:

[www.forestry.ubc.ca/](http://www.forestry.ubc.ca/)

[www.grad.ubc.ca/prospective-students/faculties/faculty-forestry](http://www.grad.ubc.ca/prospective-students/faculties/faculty-forestry)

## University of New Brunswick, CANADA

Founded in 1785, UNB offers undergraduate and graduate degrees in more than 60 disciplines and continuing education in a variety of fields.

Campuses are located in two New Brunswick cities: Fredericton and Saint John. Fredericton, the provincial capital, was named one of the Top 7 Intelligent Communities by the New York-based Intelligent Communities Forum. Saint John, New Brunswick's financial and industrial centre, is emerging as an energy hub for the Eastern Seaboard.

UNB has among the best student-to-faculty ratios of Canada's comprehensive universities, according to Maclean's magazine. It offers world-class programmes while maintaining a small-university experience.

The Faculty of Forestry & Environmental Management offers two undergraduate degree options. The Bachelor of Science in Forestry (BScF) degree allows for an Urban Forestry Major, and the Bachelor of Science in Environment & Natural Resource (BScENR) degree allows for a major in environmental management, water resource management, or wildlife conservation. It also offers course-based Masters of Environmental Management (MEM) and of Forestry (MF), a thesis-based Master of Science in Forestry (MSc.F), a thesis-based Master of Science in Environmental Management (M.Sc.EM), and a Ph.D.

For more information:

[www.unb.ca/](http://www.unb.ca/)

[www.unb.ca/fredericton/forestry/](http://www.unb.ca/fredericton/forestry/)

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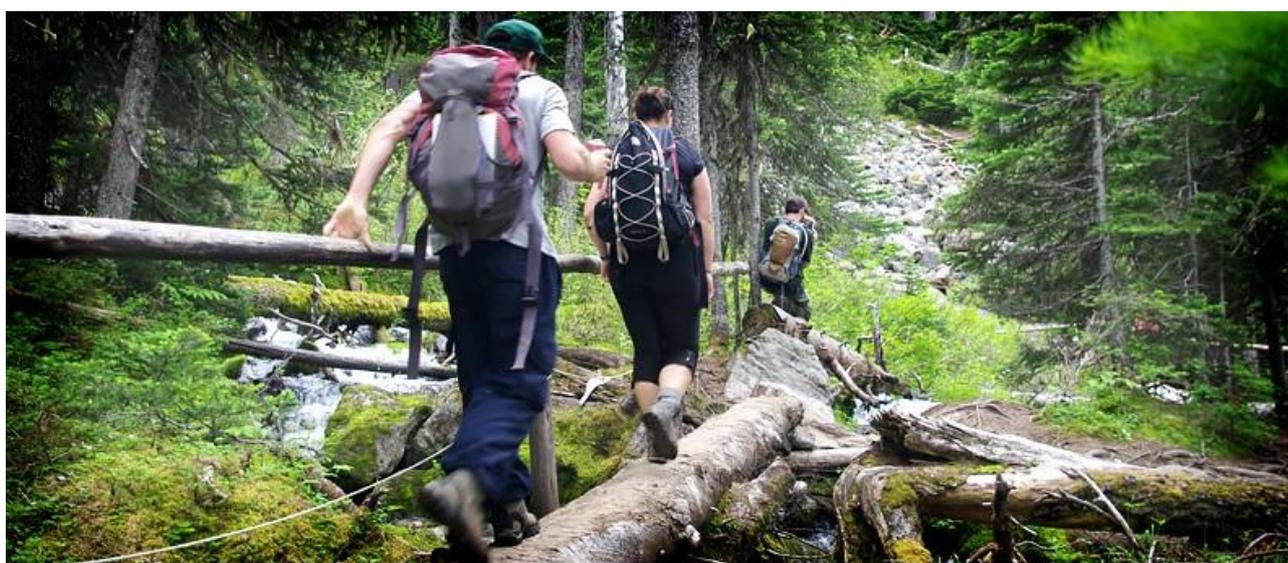
# STUDIES

## DEGREES AWARDED

Each student is awarded, upon completion of the MSc programme, a double-degree certificate and diploma supplements by two of the MSc EF Full Partner Universities: the two degree-awarding universities are the University of Eastern Finland, and the MSc EF Full Partner University where the student carries out the second year of studies.

### MSc EF degrees awarded by the Full Partners

| University   | Degree  |
|--|---|
| University of Eastern Finland<br><b>(the coordinating institution)</b> | MSc (Agriculture and Forestry) with major in European Forestry                            |
| University of Lleida, Spain  | Master of Science Erasmus Mundus in Spatial and Ecological Modelling in European Forestry |
| University of Freiburg, Germany  | MSc Forest Sciences   |
| University of Natural Resources and Life Sciences, Vienna, Austria     | MSc European Forestry   |
| AgroParisTech, France  | Master in Life and Environmental Science and Technologies                                 |
| Transilvania University of Braşov                                      | Master in Forestry  |



## PROGRAMME STRUCTURE AND GRADING

The MSc EF programme consists of 120 ECTS of obligatory and elective studies provided at the different partner universities. The structure of the programme is designed so that the students deepen their understanding in the diverse aspects of forest sciences with regard to selected study tracks of decision support systems for resource management, resource management for ecosystem services, spatial and ecological modelling, resource economics and policy and silviculture and engineering.

The **first year** provides students with a complete background in European forestry while familiarising them with the consortium universities and with other forest organisations. During the first year of the programme, students attend most of the compulsory courses of the MSc EF, which are mostly organised at UEF. Additionally, during the first year, students are required to carry out the applied period (practical training) at a forest institution.

During the **second year**, students specialise in their fields of interest by taking obligatory and elective courses and carrying out the master's thesis at one of the partner universities according to an individual study plan agreed upon by the study advisors. For the second year, each partner university offers an equal number of study places aiming at even student distribution among the partner universities. Although, students' preferences for their second-year host university are taken into account, the coordinators of the consortium will make the final student selection among the consortium universities (self-paying students may choose their second year university freely taking into account the possible restrictions mentioned in the letter of admission). Also there might be restrictions or additional supplementary studies required for some students.

The work-load of each course is calculated according to the ECTS (European Credit Transfer and Accumulation System), which is the pan-European credit system. Generally one ECTS credit corresponds to 27 hours of student's work. Find out more about ECTS at [http://ec.europa.eu/education/index\\_en.htm](http://ec.europa.eu/education/index_en.htm)



## MSc EF programme structure

| 1. YEAR<br>60 ECTS             | Academic year 2017/2018:<br>Obligatory and elective studies  | Credits<br>(ECTS)    | Location   |
|--------------------------------|--|----------------------|--|
| Aug-Apr                        | <b>Module 1</b><br>Trends in European forestry<br>Academic skills in forest sciences<br>Research methodology in forest sciences<br>Global virtual seminar      | 5<br>1.5<br>3.5<br>2 | Joensuu, Finland   |
| May-July                       | <b>Module 2</b><br>European forestry field course<br><br>Applied period in forest institutions   | 8<br><br>10          | Spain, France, Germany,<br>Austria and Romania<br><br>Preferred Consortium<br>country                        |
| Sep-Apr                        | <b>Elective courses</b>  | 30                   | Joensuu, Finland +<br>online courses   |
| 2. YEAR<br>60 ECTS             | Academic year 2018/2019:<br>Obligatory and elective studies,<br>Master thesis  | Credits<br>(ECTS)    | Location   |
| Autumn<br>& spring<br>semester | <b>Module 3</b><br>Obligatory and elective courses<br>Master's thesis and thesis seminar<br>(online)<br><br>European forestry forum and graduation<br>ceremony | 30<br>30<br><br>0    | MSc EF partner<br>university according<br>to the student's<br>individual study track<br><br>Joensuu, Finland |

Studies are graded using the grades described in the table below.

### Grade conversion table

| ECTS      | AgroParisTech | ALU     | BOKU | UoL  | UTBv | UEF |
|-----------|---------------|---------|------|------|------|-----|
| <b>A</b>  | ≥17           | 1.0-1.6 | 1    | 9-10 | 10   | 5   |
| <b>B</b>  | ≥15<17        | 1.7-2.6 | 2    | 8    | 9    | 4   |
| <b>C</b>  | ≥13<15        | 2.7-3.6 | 3    | 7    | 7-8  | 3   |
| <b>D</b>  | ≥11<13        | 3.7-3.9 | 4    | 6    | 6    | 2   |
| <b>E</b>  | ≥10<11        | 4.0     | 4    | 5    | 5    | 1   |
| <b>FX</b> | <10           | 5       | 5    | 4    | 4    | 0   |
| <b>F</b>  | <10           | 5       | 5    | 0-3  | 1-3  | 0   |

# STUDY SCHEDULE 2017-2019

## First Academic Year (2017/2018), 60 ECTS

### Autumn semester

|     |                                |    |                 |    |    |                                |    |    |       |    |    |                                      |    |    |    |    |    |                   |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|--------------------------------|----|-----------------|----|----|--------------------------------|----|----|-------|----|----|--------------------------------------|----|----|----|----|----|-------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Aug | 01                             | 02 | 03              | 04 | 05 | 06                             | 07 | 08 | 09    | 10 | 11 | 12                                   | 13 | 14 | 15 | 16 | 17 | 18                | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|     |                                |    |                 |    |    |                                |    |    | Intro |    |    | Trends in European Forestry (5 ECTS) |    |    |    |    |    |                   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Sep | 01                             | 02 | 03              | 04 | 05 | 06                             | 07 | 08 | 09    | 10 | 11 | 12                                   | 13 | 14 | 15 | 16 | 17 | 18                | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |    |
|     |                                |    | JEF orientation |    |    | Module 1 and elective courses* |    |    |       |    |    |                                      |    |    |    |    |    |                   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Oct | 01                             | 02 | 03              | 04 | 05 | 06                             | 07 | 08 | 09    | 10 | 11 | 12                                   | 13 | 14 | 15 | 16 | 17 | 18                | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|     | Module 1 and elective courses* |    |                 |    |    |                                |    |    |       |    |    |                                      |    |    |    |    |    |                   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Nov | 01                             | 02 | 03              | 04 | 05 | 06                             | 07 | 08 | 09    | 10 | 11 | 12                                   | 13 | 14 | 15 | 16 | 17 | 18                | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |    |
|     | Module 1 and elective courses* |    |                 |    |    |                                |    |    |       |    |    |                                      |    |    |    |    |    |                   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Dec | 01                             | 02 | 03              | 04 | 05 | 06                             | 07 | 08 | 09    | 10 | 11 | 12                                   | 13 | 14 | 15 | 16 | 17 | 18                | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|     | Module 1 and elective courses* |    |                 |    |    |                                |    |    |       |    |    |                                      |    |    |    |    |    | Christmas holiday |    |    |    |    |    |    |    |    |    |    |    |    |    |

### Spring semester

|       |   |    |    |    |                               |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |
|-------|---|----|----|----|-------------------------------|----|----|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------|----|----|--|--|--|--|--|
| Jan   | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29     | 30 | 31 |  |  |  |  |  |
|       | holiday   |    |    |    |                               |    |    | Module 1 and elective courses |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |
| Feb   | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |        |    |    |  |  |  |  |  |
|       | Module 1 and elective courses                     |    |    |    |                               |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |
| March | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29     | 30 | 31 |  |  |  |  |  |
|       | Module 1 and elective courses                     |    |    |    |                               |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Easter |    |    |  |  |  |  |  |
| Apr   | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29     | 30 |    |  |  |  |  |  |
|       | holiday   |    |    |    | Module 1 and elective courses |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |
| May   | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29     | 30 | 31 |  |  |  |  |  |
|       | Module 2: European Forestry field course (8 ECTS) |    |    |    |                               |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |
| June  | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29     | 30 |    |  |  |  |  |  |
|       | Module 2: Applied period (10 ECTS)                |    |    |    |                               |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |
| July  | 01  | 02 | 03 | 04 | 05                            | 06 | 07 | 08                            | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29     | 30 | 31 |  |  |  |  |  |
|       | Module 2: Applied period (10 ECTS)                |    |    |    |                               |    |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |    |    |  |  |  |  |  |

\*Elective courses: During the period September-April, students must complete a min. of 30 ECTS in elective courses (the list of courses is provided separately on p. 32-33).

## Second Academic Year (2018/2019), 60 ECTS

### Autumn semester

|     |           |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Aug | 01        | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19                 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|     | Module 3* |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |    |
| Sep | 01        | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19                 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |    |
|     | Module 3* |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |    |
| Oct | 01        | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19                 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|     | Module 3* |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |    |
| Nov | 01        | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19                 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |    |
|     | Module 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |    |
| Dec | 01        | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19                 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|     | Module 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Christmas holiday* |    |    |    |    |    |    |    |    |    |    |    |    |

### Spring semester

|       |  |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
|-------|--|----|----|----|----|----|----------|----|----|----|----|----|----|----|----|----|----|----|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|
| Jan   | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |  |  |  |  |  |  |
|       | Christmas holiday*                               |    |    |    |    |    | Module 3 |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| Feb   | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |    |    |    |  |  |  |  |  |  |
|       | Module 3   |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| March | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |  |  |  |  |  |  |
|       | Module 3   |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| Apr   | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |    |  |  |  |  |  |  |
|       | Module 3   |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    | Easter holiday* |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| May   | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |  |  |  |  |  |  |
|       | Module 3   |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| June  | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |    |  |  |  |  |  |  |
|       | Module 3   |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| July  | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |  |  |  |  |  |  |
|       | Module 3   |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |
| Aug   | 01   | 02 | 03 | 04 | 05 | 06 | 07       | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19              | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |  |  |  |  |  |  |
|       | Graduation ceremony and European Forestry Forum* |    |    |    |    |    |          |    |    |    |    |    |    |    |    |    |    |    |                 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |

\*Starting dates vary from the end of August to the beginning of October, depending on the partner university. Also the timing of the holiday seasons and graduation times may vary depending on the partner university.

# COURSE LIST 2017-2018

## Modules

|   | <b>ECTS</b>             |
|---|-------------------------|
| <b>Module 1</b>   | <b>12</b>               |
| 3513157 Trends in European forestry   | 5                       |
| 3513061 Academic skills in Forest Sciences  | 1.5                     |
| 3513148 Research methodology in forest sciences   | 3.5                     |
| 3513154 Global virtual seminar  | 2                       |
| <br><b>Elective courses</b>   | <br><b>min. 30 ECTS</b> |
| 3513028 Advanced geographical information systems   | 5                       |
| 3513029 Advanced remote sensing   | 5                       |
| 3513144 Analysis of forest economics and policy   | 6                       |
| 3513142 Basics of wood material science   | 4                       |
| 3513019 Bioenergy markets and policies  | 6                       |
| 3513125A Carbon dynamics of forest soils (field course)                                   | 3                       |
| 3513125B Carbon dynamics of forest soils (literature exam)                                | 4                       |
| 3513127 Current issues in forest conservation and biodiversity                            | 3                       |
| 3513040 Economics of multiple-use forestry  | 3                       |
| 3513057 Fibrous products  | 5                       |
| 3513165 Foresight methods and applications for the forest sector                          | 5                       |
| 3513152 Forest ecosystem modelling, concepts and applications                             | 4                       |
| 3513011 Forest zoology  | 4-6                     |
| 3513044 Forestry in Russia  | 5                       |
| 8020270 Information skills and sources in science and forestry for international students | 1                       |
| 3513135 Innovation management   | 4                       |
| 3513149 Intensive forest management and production of forest biomass                      | 3                       |
| 3513151 International forest governance and environmental policy                          | 5                       |
| 3513123 Nutrient dynamics in forest ecosystems  | 4                       |
| 3513130 Organic and biomass chemistry   | 6                       |
| 3513147 Perspectives to bioeconomy  | 6                       |
| 3513045 Study tour to Russian forestry  | 2                       |
| 3513056 Structure and properties of wood-based materials                                  | 8                       |
| 3513129 Supply and energy use of lignocellulosic biomass                                  | 6                       |
| 8031003 University study skills   | 1                       |
| <br><b>Module 2</b>   | <br><b>18</b>           |
| 3513073 European forestry field course  | 8                       |
| 3513158 Applied period in forest institutions   | 10                      |

|   |            |
|---|------------|
| <b>Module 3</b>   | 60         |
| Advanced Courses  | 30         |
| 3513154 Master's Thesis                                     | 30         |
| 3513075 MSc European forestry thesis seminar                | 0          |
| European forestry forum – Job fairs and graduation ceremony | 0          |
| <b>min.</b>   | <b>120</b> |

## COURSE DESCRIPTIONS

### Module 1

#### **3513157 Trends in European forestry (5 ECTS)**

##### **Learning outcomes**

Upon successful completion of this course, the students should be able to describe the essential features regarding the history of forests and land use in Europe; account for the basic conditions of forestry as well as the present state of the forests and forestry in different parts of Europe; identify various production goals that can be found in European forestry, contrast them with objectives regarding, for example, environmental conservation, and discuss ways to handle possible conflicts, and discuss how trends in society and environment (climate) affect European forests and forestry, the ecosystems, carbon accounting, the use of forests as well as the forest industries and their markets.

##### **Content**

Forestry in different parts of Europe, the various objectives within forestry, as well as the trends affecting forest ecosystems, forestry, forest production, forest conservation and forest industry, special topics within forest management and forest policy.

##### **Modes of study**

Lectures (approx. 70 h), project and group works (approx. 10 h), panel discussions (approx. 10 h), excursions (approx. 10 h), examination (approx. 2 h) and self-studies (approx. 20 h).

##### **Evaluation criteria**

0-5. Evaluation is based on written examination.

##### **Teachers**

Teachers from different MSc EF Consortium universities. Contact person in Joensuu: Professor of Forest Information Systems Timo Tokola.

#### **3513061 Academic skills in forest sciences (1.5 ECTS)**

##### **Learning outcomes**

Upon successful completion of this course the students will be able to effectively communicate scientific knowledge when interacting with different audiences and

using a variety of communication tools including traditional and ICT-based tools (e.g., blogs) and have solid grounding for thesis and academic paper writing, as well as for presenting scientific findings orally.

#### **Content**

Academic skills and competencies related to oral presentations (using Power Point, Prezi, posters, etc.) and other forms of communication (academic writing, using ICT-based tools), as well as for MSc thesis writing.

#### **Modes of study**

Lectures and interactive sessions on communication and presentation techniques (20 h); Practicals - individual oral presentation, and group work on other communication methods (wiki, blog, or others). The themes of the practicals' contents will be selected from recent literature on European forestry, forest ecology, forest economy, forest policy or other relevant forestry fields (20 h).

#### **Evaluation criteria**

0-5

#### **Teachers**

Senior researcher Blas Mola and adjunct instructors

### **3513148 Research methodology in forest sciences (3.5 ECTS)**

#### **Learning outcomes**

Upon successful completion of this course students are expected to be able to understand the principles of research methodology in forestry, taking into account the research issue and objective formulation as well as selection of an appropriate research approach, experimental set-up and sampling technique. Students will be able to understand basic biometric and ecosystem modeling concepts and to apply basic commands of R statistics to model and analyse the collected data. In addition, students will be able to critically evaluate accuracy, error types and reproducibility of research results. Finally, students will understand basic concepts in Geographic Information Systems and remote sensing techniques, and the use the basic GIS software to solve spatial problems and perceive the potential for forestry-related research.

#### **Content**

Applied statistics, research methodology, biometric and ecosystem modeling concepts, R statistics, GIS and remote sensing techniques.

#### **Modes of study**

Lectures on research, data analysis, statistical concepts and methods (28 h), practical exercises with R statistics and GIS software (14 h). Modeling group work and learning diary.

#### **Evaluation criteria**

0-5

#### **Teachers**

Professor of Forest Information Systems Timo Tokola, MMT Sanna Härkönen and Senior researcher Blas Mola.

### **3513154 Global virtual seminar (2 ECTS)**

#### **Learning outcomes**

Upon successful completion of this course, the students should be able to have

a global view of the chosen topic in forest sciences. Students will familiarize themselves with the chosen topic by interviewing the experts and by critically examining recent scientific literature on the chosen topic. The course themes will vary between years. The final virtual seminar will provide students an in-depth view of differences and similarities between countries in the chosen topic.

### **Content**

The course consists of three elements: (1) The introductory lectures will introduce the study methods and the available topics. (2) Each group will prepare a report (5 pages) based on the findings from interviews and literature. (3) Each group will prepare a seminar presentation about the chosen topic to be presented in the final virtual seminar that ends the course.

### **Modes of study**

Introductory lectures (approx. 4 h), interviews and group work (approx. 20 h), seminar (approx. 2 h) and self-studies (approx. 20 h).

### **Evaluation criteria**

0-5

### **Teachers**

Teachers from different MSc EF Consortium universities. Contact person in Joensuu: Professor of Forest Information Systems Timo Tokola.

## Elective courses

A minimum of 30 ECTS credits of elective courses must be completed during the first academic year.

In the below tables, the elective courses are listed according to the study tracks which are as follows:

*Track 1: Decision support systems for resource management*

*Track 2: Resource management for ecosystem services*

*Track 3: Spatial and ecological modelling*

*Track 4: Resource economics and policy*

*Track 5: Silviculture and engineering*

The importance/relevance of the course for different study tracks is marked as x important/relevant

xx very important/relevant (helps to prepare for studying more advanced courses of the study tracks of the second academic year).

Descriptions of the elective courses below can be found in WebOodi:

<https://weboodi.uef.fi/weboodi/>

## Elective core courses for different study tracks 2017-2018

| Code     | Name of Course  | Timing         | ECT | Track1 | Track2 | Track3 | Track4 | Track5 |
|----------|---|----------------|-----|--------|--------|--------|--------|--------|
| 3513144  | Analysis of forest economics and policy   | Autumn         | 6   | xx     |        |        | xx     |        |
| 3513142  | Basics of wood material science   | Autumn         | 4   |        |        | x      |        | x      |
| 3513125A | Carbon dynamics of forest soils (field course)                                    | Autumn         | 3   |        | x      | x      |        | xx     |
| 3513125B | Carbon dynamics of forest soils (literature exam)                                 | Autumn         | 4   |        | x      | x      |        | xx     |
| 3513127  | Current issues in forest conservation and biodiversity                            | Autumn         | 3   |        | x      |        |        | xx     |
| 3513040  | Economics of multiple-use forestry  | Autumn         | 3   | xx     | xx     |        | xx     |        |
| 3513057  | Fibrous products  | Autumn         | 5   |        |        | x      |        | x      |
| 3513165  | Foresight methods and applications for the forest sector                          | Autumn         | 5   | xx     | x      | x      | xx     | x      |
| 3513152  | Forest ecosystem modelling, concepts and applications                             | Autumn         | 4   | x      | xx     | xx     | x      | x      |
| 3513044  | Forestry in Russia  | Autumn         | 5   | x      | x      | x      | x      | x      |
| 8020270  | Information skills and sources in science and forestry for international students | Autumn         | 1   | x      | x      | x      | x      | x      |
| 3513149  | Intensive forest management and production of forest biomass                      | Autumn         | 3   |        |        |        |        | xx     |
| 3513130  | Organic and biomass chemistry   | Autumn         | 6   |        |        |        |        | x      |
| 3513129  | Supply and energy use of lignocellulosic biomass                                  | Autumn         | 6   | x      | x      |        |        | x      |
| 8031003  | University study skills   | Autumn         | 1   | x      | x      | x      | x      | x      |
| 3513147  | Perspectives to bioeconomy  | Autumn /spring | 6   | x      | x      | x      | x      | x      |
| 3513028  | Advanced geographical information systems   | Spring         | 5   | xx     | xx     | xx     |        |        |
| 3513029  | Advanced remote sensing   | Spring         | 5   | xx     | xx     | xx     |        |        |
| 3513019  | Bioenergy markets and policies  | Spring         | 6   | x      |        |        | xx     |        |
| 3513011  | Forest zoology  | Spring         | 4-6 |        |        |        |        | xx     |
| 3513135  | Innovation management   | Spring         | 4   | x      | x      | x      | x      | x      |
| 3513151  | International forest governance and environmental policy                          | Spring         | 5   | x      | x      |        | xx     |        |

|         |  |        |   |   |   |   |   |    |
|---------|--|--------|---|---|---|---|---|----|
| 3513123 | Nutrient dynamics in forest ecosystems           | Spring | 4 |   |   | x |   | xx |
| 3513045 | Study tour to Russian forestry                   | Spring | 2 | x | x | x | x | x  |
| 3513056 | Structure and properties of wood-based materials | Spring | 8 |   |   |   |   | x  |

| Online courses at different partner universities (currently available only at UoL, other courses might be available at the different partner universities at later stage and the information will be updated here accordingly) |     |        |        |        |        |        |
|--|-----|--------|--------|--------|--------|--------|
|  | ECT | Track1 | Track2 | Track3 | Track4 | Track5 |
| <i>UoL</i>   |     |        |        |        |        |        |
| Introduction to spatial statistics: Spatial analysis with R  | 5   |        |        | x      |        |        |
| Forest dynamics in a global change context: drivers, processes and modelling approaches  | 5   |        |        | x      |        |        |
| Stand to continental forest health management  | 5   |        |        | x      |        |        |
|  |     |        |        |        |        |        |

### Other courses\*

1131003 Orientation for international students (1 ECTS) (highly recommended)

8031004/5 University computing skills lectures/practices (1+1 ECTS) (recommended for those with limited computing skills)

8015008 Elementary Finnish (2 ECTS) (highly recommended)

1130007 Career planning - international students seeking a job or a traineeship in Finland (2 ECTS)

\*These courses are not counted as ECTS of elective courses, however.

## Module 2

### 3513073 European forestry field course (8 ECTS)

#### Learning outcomes

Upon successful completion of this course students are able to have a deep understanding of contemporary forest management in different regions of Europe. In addition, they are able to comprehend the influence of historical, cultural and geographical factors in European forestry.

#### Content

An intensive field course where the students will familiarise themselves with topical forestry issues in European countries.

#### Modes of study

Intensive field course including forest and cultural visits, lectures, seminars and presentations. The students are required to carry out group work, discuss given topics and prepare individual reports.

**Evaluation criteria**

0-5. Grading is based on the given assignments.

**Teachers**

Teachers from different MSc EF Consortium universities. Contact person in Joensuu: Professor of Forest Information Systems Timo Tokola.

**Time**

May 2018

**3513158 Applied period in forest institutions (10 ECTS)****Learning outcomes**

Upon successful completion of this course students are able to know through working as a part of a team how the organisation is operating on European and on international levels; apply their skills and knowledge in practice; have knowledge and understanding of European and international business culture and values, team work practices as well as project management and how a research project starts and how it is managed, funded and reported.

**Content**

The course consists of a work assignment in a national or international forestry-related institution. The course is project oriented, and the topic of the work assignment is agreed upon in cooperation with the hosting organisation, the supervisor and the student. The course is supervised by a lecturer from one of the MSc European Forestry partner universities. An essential part of the course is a final report that the students write on the basis of the training period.

**Modes of study**

Participating in a project, a final report on the findings during the course and a seminar presentation based on the report.

**Evaluation criteria**

0-5. Grading is based on the written report (40%), oral presentation (30%) and general performance during the internship based on supervisor's evaluation (30%).

**Teachers**

Supervisors from different MSc EF Consortium universities. Contact person in Joensuu: Professor of Forest Information Systems Timo Tokola.

**Time**

June-July 2018

**Applied period: students' experiences**

"The Applied Period in the Forstamt Johanniskreuz has provided opportunities for independent silvicultural research, harvest operation planning and analysis, and the variety of tasks and responsibilities that day-to-day forestry entails. Throughout the Applied Period, work was carried out with the guidance and support of the highest caliber foresters and administrative leaders, whose insights, experience and willingness to mentor contributed substantially to the educational and professional value of the time spent here".

*-John Foppert, MSc EF 2011-2013, AP in Forstamt Johanniskreuz (Germany)-*

“The applied period in Brazil was organised as a partnership with Federal University of Paraná cooperating with two other Brazilian state universities: State University of São Paulo and Federal University of the Amazon. The challenging objective of this applied period was to organise and conduct excursions, cultural visits and practical work within three regions of the country, representing three of Brazil’s major and most important biomes: the Atlantic forest *mata Atlântica* in the southern state of Paraná, the tropical rain forest - floresta tropical- in the region of Amazonia - Para state and finally in the Savanna region, Cerrado, in the country’s central part – the states of São Paulo and Mato Grosso do Sul. The practical placement gave us the unique opportunity to see various, very diverse (environmentally and culturally) regions, do challenging work and nevertheless gave us a better understanding and a broader picture of Brazil’s importance on an international level as an impressively diverse country and a land of opportunity in which there are still so many things to be done, discovered and understood”.

*-Alexandru Giurca, MSc EF 2011-2013, AP in Federal University of Paraná, Brazil-*

“The Applied period I have done from February to April 2011, was in a private company located in Joensuu, Finland. The company, Arbonaut Oy Ltd., provides the customers with information systems and GIS solutions for forest resource assessment and forest planning. The company is composed of different teams, including: an IT team, the Powerline Team, the REDD Team and the Inventory Team. During the Applied Period, the work was concerned mainly about forest inventories, but it also included some tasks regarding the REDD Team. This applied period has been very useful to practically apply the theoretical knowledge acquired in the previous months during the studies at the University of Eastern Finland”.

*-Stefano Puliti, MSc EF 2010-2012, AP in Arbonaut Oy Ltd (Finland)-*

## Module 3

For the second academic year of studies at the MSc EF, the coordinators of the consortium universities will distribute the students equally among the second-year study tracks available. The preferences of the students are taken into account as much as possible.

The offered study tracks for the second academic year are:

- *Full academic year at AgroParisTech (France)*
- *Full academic year at ALU (Germany)*
- *Full academic year at BOKU (Austria)*
- *Full academic year at UoL (Spain)*
- *Full academic year at UTBv (Romania)*

Each university offers an equal number of study places to the students. The individual study tracks are discussed and decided during the spring of the first academic year (approx. February-March).

The details on the second-year studies are agreed individually with the coordinator at the partner university to form an interesting and relevant study plan for the student, fitting the topic of the thesis and providing the required skills and competences. It is also possible to complete an MSc thesis and/or some advanced-level courses at Associated Partner Universities in Brazil, Canada or China if agreed upon by the second year home university.

Selected elective core courses for different study tracks are listed below. Also other courses available at the second-year home university can be included in the study plan, if agreed upon by the local coordinator of the second-year home university. The descriptions of the courses below as well as of the other courses that can be selected can be found on the web pages of each Full Partner University.

### Selected elective core courses for different study tracks

| Second academic year (2018/2019)                 |                |   |      |             |
|--|----------------|---|------|-------------|
| Study track                                      | Uni            | Core courses  | ECTS | Timing      |
| Decision support systems for resource management | AgroParis Tech | Models in forest management                                   | 3    | Autumn 2018 |
|  |                | Geographical information systems in forest ecology (optional) | 3    | Autumn 2018 |
|  |                | Project in forest management                                  | 6    | Autumn 2018 |
| Resource management for ecosystem services       | AgroParis Tech | Forest communities and forestry                               | 6    | Autumn 2018 |
|  |                | Carbon accounting in forest ecosystems (optional)             | 3    | Winter 2019 |
| Spatial and ecological modelling                 | AgroParis Tech | Biogeochemical cycles in forest ecosystems                    | 3    | Autumn 2018 |
|  |                | Advanced statistics (optional)                                | 3    | Autumn 2018 |
|  |                | Understanding tree structure and functions                    | 3    | Autumn 2018 |
| Resource economics and policy                    | AgroParis Tech | European forests: challenges and opportunities                | 3    | Autumn 2018 |
| Silviculture and engineering                     | AgroParis Tech | Introduction to the forestry context in Lorraine              | 3    | Autumn 2018 |
| Decision support systems for resource management | ALU            | Ecosystem management  | 5    | ST*         |
|  |                | biodiversity  | 5    | WT*         |
|  |                | Community-based monitoring systems                            | 5    | WT          |
|  |                | Biomass resource assessment                                   | 5    | WT          |

|  |      |   |     |             |
|--|------|---|-----|-------------|
| Resource management for ecosystem services       | ALU  | Soil ecology & management   | 5   | ST          |
|  |      | Forest resources and their goods and services                             | 5   | WT          |
|  |      | Integrated land use management  | 5   | ST          |
|  |      | Research in wildlife ecology  | 5   | WT          |
|  |      | Forest resources and management in France and Germany                     | 5   | WT          |
|  |      | Life cycle management   | 5   | WT          |
|  |      | Carbon forestry   | 5   | WT          |
|  |      | Wildlife behavioral ecology   | 5   | WT          |
| Spatial and ecological modelling                 | ALU  | Assessing, analysing and monitoring of vegetation                         | 5   | ST          |
|  |      | Statistics with R   | 5   | WT          |
|  |      | Ecohydrology  | 5   | WT          |
|  |      | R projects  | 5   | WT          |
|  |      | Wildlife habitat modeling   | 5   | WT          |
| Resource economics and policy                    | ALU  | Forestry economics and management   | 5   | WT          |
|  |      | International forest governance   | 5   | ST          |
|  |      | Current topics in biomaterials  | 5   | WT          |
|  |      | Experimental sustainability economics                                     | 5   | WT          |
|  |      | Economics of Biodiversity and ecosystem services                          | 5   | WT          |
|  |      | Climate governance  | 5   | WT          |
| Silviculture and engineering                     | ALU  | Inventory and spatial inf. systems  | 5   | WT          |
|  |      | Plantation forestry   | 5   | WT          |
|  |      | Tropical forest ecology   | 5   | WT          |
|  |      | Close-to-nature forest management   | 5   | ST          |
|  |      | Restoration ecology   | 5   | ST          |
|  |      | Natural hazards and risk management                                       | 5   | WT          |
| Decision support systems for resource management | BOKU | Remote sensing and GIS in natural resource management                     | 3   | Autumn 2018 |
|  |      | Decision support systems  | 3   | Autumn 2018 |
|  |      | Multiple criteria decision making in natural resource management          | 3   | Autumn 2018 |
| Resource management for ecosystem services       | BOKU | Natural resource management in mountain forests I, III                    | 4+2 | Spring 2019 |
|  |      | Agroforestry in mountain regions  | 2   | Spring 2019 |
|  |      | Biodiversity and conservation of mountain forests                         | 2   | Spring 2019 |
|  |      | Natural resources management in mountainous areas III - wildlife problems | 2   | Spring 2019 |
| Spatial and ecological modelling                 | BOKU | Modelling of mountain forest ecosystems                                   | 2.5 | Autumn 2018 |
|  |      | Adapting forest management to climate change                              | 2   | Autumn 2018 |
| Resource economics and policy                    | BOKU | Forest resource economics   | 4.5 | Autumn 2018 |
|  |      | Innovations for sustainable forest management                             | 4   | Autumn 2018 |
|  |      | Economics of multiple use forestry  | 1.5 | Spring 2019 |
|  |      | Mountain forest policy  | 4.5 | Autumn 2018 |

|  |      |  |                    |  |
|--|------|--|--------------------|--|
| Silviculture and engineering                     | BOKU | Harvesting systems for mountainous regions<br>Cable yarding project<br>Road network planning<br>Field camp III - integrated forest management applications   | 2<br>1.5<br>3<br>3 | Autumn 2018<br>Autumn 2018<br>Spring 2019<br>Autumn 2018 |
| Decision support systems for resource management | UoL  | ST in decision support systems for resource management<br>ST in mapping and monitoring forest natural resources<br>ST in spatial statistics  | 3<br>3<br>3        | Autumn 2018  |
| Resource management for ecosystem services       | UoL  | ST in resource management and planning for ecosystem services<br>ST in methods in hazard analysis and risk assessment<br>ST in global environmental change<br>ST in Multi-scale forest dynamics models | 5<br>3<br>3<br>5   | Autumn 2018  |
| Spatial and ecological modelling                 | UoL  | ST in Climate: Nitrogen and Carbon dynamics<br>ST in landscape ecology and biological connectivity<br>ST in biodiversity and ecology<br>ST in disturbance ecology and forest health                    | 5<br>5<br>5<br>5   | Autumn 2018  |
| Resource economics and policy                    | UoL  | ST in bio-economy and principles of environmental sustainability<br>ST in markets and payments for ecosystem services<br>ST in European resource economics and policy                                  | 3<br>3<br>3        | Autumn 2018  |
| Silviculture and engineering                     | UoL  | ST in precision forestry<br>ST in forest research & development  | 3<br>3             | Autumn 2018  |
| Decision support systems for resource management | UTBv | To be updated  |                    |  |
| Resource management for ecosystem services       | UTBv | To be updated  |                    |  |
| Spatial and ecological modelling                 | UTBv | To be updated  |                    |  |
| Resource economics and policy                    | UTBv | To be updated  |                    |  |
| Silviculture and engineering                     | UTBv | To be updated  |                    |  |

\*WT=Winter Term, ST=Summer Term

## **Courses at Associated Partner Universities**

### **Organisers**

Northwest A&F University, China  
São Paulo University, Brazil  
University of British Columbia, Canada  
University of New Brunswick, Canada

### **Time**

Arranged individually

### **A preliminary list of available course topics**

Federal University of Paraná, Brazil

To be updated.

Northwest A&F University, China

Forest resources and the means of vegetation restoration in China  
The development and role of nature reserves in China  
Forest products and utilisation of non-timber-oriented plants  
Forest pest and disease control: problems and advancement

São Paulo University, Brazil

To be updated.

University of British Columbia, Canada

To be updated.

University of New Brunswick, Canada

To be updated.

For more information about the course contents and timetables, contact Marjoriitta Möttönen: marjoriitta.mottonen(at)uef.fi

## **3513620 M.Sc. thesis (Agr & For, European forestry) (30 ECTS)**

### **Organiser**

Second-year home university

### **Time**

Generally in the spring semester of the second academic year (2018/2019):

Duration: ~6 months (estimated)

### **Contact person**

The coordinators at the partner universities.

### **Study mode**

Individual research in forestry. The general idea is to learn how to independently identify and carry out research in forestry. The goal is to produce such an internationally acceptable piece of research work with European or wider dimension included that can be published in an international scientific journal.

### **Contents**

Detailed guidelines will be provided by the host university.

### **Further information**

Information on titles and abstracts of MSc EF students is available on the webpage of the programme:

<http://www.uef.fi/en/web/mdp-europeanforestry/thesis>

### **3513075 MSc European forestry thesis seminar (0 ECTS\*)**

#### **Organiser**

The University of Eastern Finland

#### **Time**

Arranged individually, after submission of the student's thesis (June – October 2019)

#### **Study mode**

A seminar consisting of the individual online presentation and discussion of each student's master's thesis in Moodle course site.

Further information: <http://www.uef.fi/en/web/mdp-europeanforestry/thesis-seminar>

\*Thesis seminar, although does not have credit load, is obligatory in order to graduate.

### **European Forestry Forum – Job Fairs and Graduation Ceremony**

You have the opportunity to participate at the European Forestry Forum where the graduation ceremony takes place. All the graduated participants present their thesis to a wide audience of fellow students, researchers and employers. Those graduates who have not yet managed to find employment have an ample opportunity to meet potential employers and network with researchers from all over the world.



# COUNCELLING

MSc European Forestry Secretariat will offer confidential informal and formal conflict resolution services to resolve students' possible problems and concerns related to MSc European Forestry studies. If the problems and concerns are related to the studies of the second academic year, students can also contact the local coordinator of the MSc EF Full Partner university in question.

The possible conflicts and problems that cannot be managed by the local coordinator or by MSc European Forestry Secretariat are dealt with at the MSc EF Consortium level and/or at the MSc EF Full Partner university in question according to the rules of the university in question.

# ALUMNI

Our students graduate with an amazing network of alumni. During the studies, our students become acquainted with a number of academic experts throughout Europe. Additionally, each course itself is composed of various nationals hence facilitating the students to adapt to working in a multicultural environment.

European Forestry secretariat and the Erasmus Mundus programme aim to promote the professional and personal networking of its alumni. Students and graduates of the programme may join us in the [MSc European Forestry Alumni group on Linked-In](#) and also become a member of the [Erasmus Mundus Students and Alumni Association \(EMA\)](#).



**Master's degree programme in European Forestry Erasmus Mundus  
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**Universitat de Lleida**



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