Annex A. Guidelines for cooperation in the Erasmus Mundus MSc European Forestry Programme

Consortium Committee meeting

1. Each partner nominates one representative onto the Consortium Committee, which holds a get-together-meeting twice a year, in the spring and in the autumn. Additional Consortium Committee meetings can be held through mail, phone and internet.

Marketing of the programme

1. The general marketing policy will be discussed and approved by a Consortium Committee meeting.
2. The coordinator will organise the common marketing efforts (marketing letters through mail and internet, marketing tour etc).
3. The partners disseminate information for applicants through their own marketing channels.

Call for applications

1. The schedule will be approved by the Consortium Committee autumn meeting. The European Commission defines general guidelines for the schedule.
2. The selection criteria will be defined by the Consortium Committee autumn meeting.
3. The official applications will be mailed to the coordinating university.
4. The coordinator will prepare a supplementary internet based application procedure in order to enhance information distribution to the partners.

Selection of the students

1. The selection is based on the special selection guidelines of the European Commission (EIGHT STEPS to establish your ERASMUS MUNDUS STUDENT LISTS).
2. The coordinator's responsibilities
    a. Validity and correctness of the application documents.
    b. Preliminary ranking
    c. Disseminating the application documents to the partners (latest 5 weeks after the expiration of the call).
        i. All documents dealing with 40 top applicants on the basis of the preliminary ranking.
        ii. Application form dealing with 20 next applicants.
        iii. The name list of all the applicants.
        iv. Disseminate other application documents on the basis of the request from a partner.
3. The partners will check the validity of the applications and rank the applicants on the basis of the received documents. The partners will present their ranking to the coordinator within two weeks of receipt.
4. The consortium will approve the new students under lead of the coordinator (within 8 weeks after the expiration of the call).
5. The coordinator will send the final list of the new students to the European Commission.

Approval and registration of the students

1. The partners are making all the necessary measures so that the selected students will be approved by the competent administrative bodies as ordinary students. The approval must be based on the documents that the partners have received in the selection process. Student fees are not charged at this stage.
2. The partners are making all the needed measures in order to register a student according to the study path (planned and approved together with the coordinating and a partner university) with full local student's rights and services. This is done in due time before the student starts the studies in the partner university in question and study fees will be charged if applicable.

Arrangement and organisation of teaching

1. The general content and the schedule will be decided by the Consortium Committee spring meeting for the coming academic year.
2. The minimum amount of studies required by a partner university for issuing the local degree, is
   - University of Natural Resources and Applied Life Sciences, Vienna: 40 ECTS (incl. thesis)
   - Freiburg: 30 ECTS + thesis
   - Joensuu: all students in the MSc EF programme can get the degree
   - Lleida: 25 ECTS
   - Swedish University of Agricultural Sciences: 30 ECTS or thesis
   - Wageningen: courses 36 ECTS and thesis min. 30 ECTS.
3. The coordinator is responsible with the overall general management of the studies and the detailed coordination of the European field course. This plan has to be approved by the Consortium Committee meeting.
4. The partners are responsible for organising joint courses according to the plan approved by the Consortium Committee meeting. An equal distribution of the courses among partners is aimed at.
5. The coordinator is responsible for keeping and updating a guidebook for studies on the internet with links to the partner universities.
6. The partners will provide the coordinator with preliminary information dealing with courses suitable for MSc EF students by the end of November for preparing the guidebook of studies for the coming academic year.
7. The partners will provide the coordinator with information dealing with registration for the courses by the end of November for preparing the guidebook of studies for the coming academic year.
8. Each partner will offer a minimum of 4 Applied Period placements for the MSc EF students.
9. The partners are prepared to organise the MSc EF course taking into account an equally shared student population during the second year of the studies. Each partner university will take an equal share of the total cohort of selected students. According to the specialisation needs of the students, the number of students in a partner university may exceed or go below the target figure by one. The distribution of students within the consortium will be approved by a Consortium Committee meeting.
10. The partners have a basic right to charge the consortium fee fund on the basis of a maximum 108 €/ECTS achieved by the programme students in the charging partner university according to the national legislation. Alternatively, the consortium fee fund can be charged on the basis of true occurred consortium costs of organizing and carrying out the teaching

(the total charge must not exceed the sum which would come from calculating the costs on a per ECTS basis, 108 €/ECTS). In the European field trip, a charge of 200 €/ECTS can be made, which includes local transportation and student accommodation. Charges can only be made for studies accomplished in and organized by the partner university, including the European field trip. Organizing applied period placements justifies charging the consortium fee fund with up to 250 €/student. For jointly supervised thesis works, both partner universities may charge for half of the ECTS amount of the thesis or, if agreed between the thesis guiding partners, the charge may be divided differently. Sending guest lecturers to other partner universities does not justify charging for the credits. Travelling costs within the programme are reimbursed from the consortium funds for the economy class only. Host university is responsible for overseeing that the budget will not be exceeded. The living costs of the students are not covered by the charges made / the money received by the partner universities.

Course studies and thesis

1. The common (obligatory) studies of the programme have to be approved by the partner universities as being part of the degree studies of the programme students.
2. The structure of the studies is presented in Annex C. The second year studies are done in at least one degree giving partner university according to the personal, approved, study plan.
3. The joint guiding of thesis works is recommended.

Degree and grading of studies

1. Each partner university will issue a local degree forming part of a double degree to the MSc EF students, at the latest, in 2007.
2. Each partner has adopted the bachelor/master structure (Bologna process) of studies, at the latest, in 2007.
3. Each partner has adopted the use of ECTS, at the latest, in 2007.
4. Each partner has adopted the use of ECTS grading system, at the latest, in 2007. If not, the local grades must be expressed also according to the ECTS grading system.

Annex B. Annual budget

1. Each partner will provide the coordinator with a budget proposal for the coming academic year within one month after the Coordination Committee spring meeting.
2. The coordinator will send a consortium budget proposal to the partners by mid September.
3. The partners will make their comments on the coordinator's budget proposal within two weeks from receiving the proposal.
4. After the partners' comments, a consensus will be negotiated under the lead of the coordinator.
5. Expenses for travel and subsistence costs of the partners' representatives in the consortium committee meetings are covered by the budget.

Annex C. Structure of Studies

1ST YEAR STUDIES (60 ECTS)

A) COMMON OBLIGATORY COURSES (48 ECTS)

Introductory Course (IC)
8 ECTS
Organiser: Swedish University of Agricultural Sciences (SLU)
Duration: 4 weeks (approx.)
Time: 30.08 - 28.09.2006
Place: Garpenberg (Sweden), after a Welcoming and Orientation programme in Helsinki (Finland) and Stockholm.
Contact person: Mr Roland Hörnfeldt, tel: +46-18-673835, e-mail: roland.hornfeldt@sh.slu.se
Study mode: A four week intensive course with lectures, field visits, group work and assignments, seminars, information and communication technologies (ICT), a panel debate and an exam.
Contents: The Introductory course (IC) has a duration of 4 intensive weeks and consists of an introduction into European forestry topics. The course consists of several blocks, each of which is taught by one of the partner universities. Emphasis will be on Policy Analysis, Social Dynamics, Business Management, Market and Trade, Legislation and Taxation, Aspects of Cultural Diversity, Resource Management, Ecology and Biodiversity. Problem solving in groups is an important teaching method.

Applied Period (AP)
12 ECTS
Organiser: The partner universities in cooperation with various research institutes, forest organizations and companies such as the SILVA Network, IUFRO, the European Forest Institute, UPM-Kymmene, FAO or the Finnish Forest Research Institute (METLA).
Duration: 10 weeks (minimum)
Time: October-December 2006
Place: Different forestry institutions around Europe
Contact person: The coordinators at the partner universities and Mr Javier Arévalo, tel: +358 13 251 111, email: Javier.arevalo@joensuu.fi

Aim: The aim of the AP is for the students to apply their skills and knowledge gained throughout their student and working life. Furthermore the aim is through working as a part of a team to learn how the organization is operating in European and in International level; business culture, values, team working, project and organizational management are important. In case of research institutions it is also important to learn how a research project starts, how it is managed, funded and reported in addition to the research methods.
Contents: The Applied Period (AP) consists of 12 ECTS of work assignment at appropriate active supranational organisation in Europe (Institutions, National Boards, Companies...). The AP is project based, and a topic of the work assignment is agreed upon in cooperation with the hosting organization, the supervisor, and the student. The AP is supervised by a lecturer from one of the participating universities. The student is required to write a report on his AP.

Seminar period
8 ECTS
Organiser: The University of Joensuu
Duration: 4-5 weeks
Time: January- February 2007
Place: Joensuu (Finland)
Contact person: Professor Paavo Pelkonen, Room 302, Borealis building, tel: +358 13 251 3641, email: paavo.pelkonen@joensuu.fi or Mr Javier Arévalo, tel: +358 13 251 4480, email: Javier.arevalo@joensuu.fi

"Academic English in Forest Science" (3 ECTS)
Study mode: Lectures and seminars (30+ hours).
Assessment; written report, poster presentation and presentation.
Aim: Providing solid grounding for thesis and academic paper writing, as well as skills for life as a researcher.
Contents: MSc thesis writing, poster presentation, power point presentation and CV writing.

"Ethical Approach to Forestry" (5 ECTS)
Study mode: Lectures and seminars (30+ hours) including: introductory lectures (8 hours) and seminars (20 hours) led by various experts; required literature (150 pages); exercises; a written report; and an examination on the literature and lectures.
Aim: Thorough understanding of ethical principles and codes of conduct related to global forestry.
Contents: Introduction to basic concepts of Forest ethics and ethical conflicts in global forests. Seminars on various facets of forest ethics including the importance of the four dimensions of sustainability (environmental, social, cultural, and economic), as well as the ethical responsibility of various forest stakeholders.

Research Methodology
4 ECTS
Organiser: The University of Joensuu
Duration: 2 weeks
Time: February 2007
Place: Joensuu (Finland)
Contact person: Professor Paavo Pelkonen, Room 302, Borealis building, tel: +358 13 251 3641, email: paavo.pelkonen@joensuu.fi or Mr Javier Arévalo, tel: +358 13 251 4480, email: Javier.arevalo@joensuu.fi
Aim: Understanding the quantitative and qualitative research methods and its application to forest sciences.
Study mode: Lectures, study cases, group exercises, oral presentation of assignments and a group report (30%), final examination (70%).
Contents: Introduction to experimental science, theory and concepts, research definition and research design, formulating theses problems, qualitative methods, survey methods and questionnaires, concepts in data analysis and statistic inference, interpretation of results, model and experiments, and presenting scientific data.

Problem Oriented Course I (POC I)
4 ECTS
Organiser: The University of Joensuu
Duration: 2 weeks
Time: February-March 2007
Place: Joensuu (Finland)
Contact person: Professor Paavo Pelkonen, Room 302, Borealis building, tel: +358 13 251 3641, email: paavo.pelkonen@joensuu.fi or Mr Javier Arévalo, email: Javier.arevalo@joensuu.fi
Study mode: Lectures, field trips and discussion paper/exam. The students are required to apply their skills and experience in order to solve a given problem.
Contents: The POC is conducted by Professors Promode Kant (Indian Forest Academy) and Paavo Pelkonen (Univ. of Joensuu), focusing on "International Treaties in Forest and Wildlife and their Effect on Communities", with the following contents:
Introduction to the Effect of international forestry accords on communities
Forestry as Climate change mitigation option – Introduction, UNFCCC & Kyoto Protocol, CDM and JI, Risk Management, Carbon trade
CBD & Cartagena Protocol on Biosafety
CITES
Ramsar Convention on Wetlands
UNFF, Role of UNFF in dealing with the distresses caused by international agreements to weaker communities
WTO, Objectives of WTO, The "Green Boxes", Specific instances of effect on communities involved in forest trade
Forest certification, its effect on communities
Convention on Combating Desertification
Visit to forests/Industry
Presentation of discussion papers

European Forestry Field Course (EFFC)
8 ECTS
Organiser: The University of Joensuu as the coordinator, University of Lleida (Spain), Swedish University of Agricultural Sciences (Sweden), the University of Freiburg, and Wageningen University, with the collaboration of the French Institute of Forestry, Agricultural and Environmental Engineering-ENGREF.
Duration: 4 weeks
Time: March-April 2007
Place: Various European countries
Contact person: Professor Paavo Pelkonen, Room 302, Borealis building, tel: +358 13 251 3641, email: paavo.pelkonen@joensuu.fi or Mr Javier Arévalo, tel: +358 13 251 4480, email: Javier.arevalo@joensuu.fi
Study mode*:* Intensive field course including forest and cultural visits, lectures, seminars and presentations. The students are required to carry out group work and discussion on given topics, as well to prepare an individual report.
Contents*:* A four-week field course where the students will be provided with an overview on the main European forestry issues, in addition to an historical and cultural background, culminating with the students presenting their findings. The field course takes place in Finland, Spain, France, Germany and The Netherlands.

Problem Oriented Course II (POC II)
4 ECTS
Organiser: The University of Natural Resources and Applied Life Sciences of Vienna (BOKU)
Duration: 2 weeks
Time: Tentatively May-June 2007
Place*:* Austria: Vienna and BOKU study field centre
Contact person*:* Professor Harmut Gossow, Phone +43 1 47654 4456, email: hartmut.gossow@boku.ac.at, or Professor Hubert Hasenauer, Phone: +43 1 47654 4205, e-mail: hubert.hasenauer@boku.ac.at
Study mode*:* Lectures, field trips and group work. The students are required to work in group and apply their skills and experience in order to solve a given problem.
Contents: Under the heading "Integrated Mountain Forest Management", the major goal of this POC is to raise awareness for existing tensions between forest protection and forest use as well as for socio-economic mechanisms on an also international scale. Additionally, other mountain land uses - like pasturing, hunting, outdoor sports - are to be considered.
Literature*:* Details on the course literature will be provided later.

B) ELECTIVE COURSES (minimum of 12 ECTS from the following courses)

Orientation in Academic Studies for International Students
Code No. 700019 Credit units 2
Aim: Understanding the physical and administrative layout of the University of Joensuu and Finland to a level that improves the ability to study at the University and live in Finland.
Study mode: Lectures (approximately 20 hours). Course credit is obtained by satisfactory attendance of general lectures, language classes, and an individually scheduled library orientation.
Contents: Essential information for studying at the University of Joensuu including an introduction to the library facilities. Presentations on Finnish society, people, and language, including a basic intensive course in the Finnish language.

Production and Energy Use of Wood Biomass
Code No. 165303 Credit units 6
Aim: Understanding the development of ecological energy systems that are based on the utilisation of wood, with emphasis on understanding the production potential of forests and short-rotation plantations within the framework of production ecology.
Study mode: Lectures (24 hours), self study materials and exercises (30 hours), excursions (16 hours), and specified literature, with a final examination on the lectures and literature.
Contents: Basic concepts of forest production ecology; the biomass production potential of a forest ecosystem; production of energy wood at special short-rotation plantations; use of residual biomass from traditional forestry operations for energy; harvesting and transportation logistics of energy wood production; a brief introduction to bioenergy conversion technologies; utilisation of bioenergy with reference to the global carbon cycle and climatic change, especially with regard to CO2 emissions and carbon storage; and the role of bioenergy in the European Union and globally, especially its potential for the development of rural areas.
Literature: To be specified later.

Bioenergy Markets and Policies
Code No. 1607525 Credit units 4
Aim: Obtaining the abilities for analysing the development of the rapidly expanding bioenergy market, especially in the European Union. Special emphasis is placed on understanding the demands and needs of consumers.
Study mode: Lectures (12 hours), exercises (15 hours), specified literature, and a final examination.
Contents: Overview of the markets for wood biomass for energy production globally and within the European Union (EU) this includes the supply, quantity, demand, and consumption as well as consumer market aspects. Fundamentals of the policies that have impacts on the supply and consumption of the energy wood; wood based fuels; and/ or bioenergy markets in the EU, specific case-countries, and globally.
Required literature: Will be specified during the course.

Biotechnology in Forestry
Code No. 168413 Credit units 3
Aim: Understanding the methodologies, possibilities, and applications of biotechnology in the forestry sector.
Study mode*:* Internet-based fully virtual interaction using WebCT software. If a sufficient number of participants desire actual lectures, they may also be given.
Contents: Clonal forestry; molecular tools for genetic conservation of indigenous tree species; utilisation of tree associated fungi and their metabolites; molecular tree improvement: utilisation and risk assessment; and some biotechnological applications and prospective for bio-energy and biofuels.
Literature: Required and suggested literature is specified on the course Internet pages. For more details please visit the course Internet pages at:
http://joyx.joensuu.fi/~apappine/Teaching.html

Boreal Forests, Their Functioning and Management
Code No. 168056 Credit units 3
Aim: Understanding the ecology and dynamics of Finnish boreal forest ecosystems and their management.
Study mode: Lectures (20 hours), suggested literature, and a final examination.
Contents: The focus is on the ecology and dynamics of Finnish boreal forest ecosystems and their sustainable management. Emphasis will be placed on understanding how environmental conditions (climate, soil) and management control the functions of trees and stands under boreal conditions. The management focus will be on timber production, but other ecosystem services such as the sequestration of carbon and the maintenance of biodiversity will also be discussed as they relate to sustainable management.
Required literature: Kellomäki, S. (editor). 1998. Papermaking Science and Technology, Book 2: Forest Resources and Sustainable Management. Fapet Oy, Helsinki, Finland. 425 p. (assigned sections pp. 12-185 and pp. 217-309).

Introduction to Forest Protection in Finland
Code No. 168207 Credit units 3
Aim: Obtaining the ability to recognise the most significant damage agents of boreal forests and understanding their role within the ecosystem.
Study mode: Lectures (12 hours), demonstrations of damage agents, independent study of specimens, field excursion in February (8 hours), and a final examination on the course work. There is also a forest insect and fungi species identification examination (35 species).
Contents: Role of damage agents in the boreal forest ecosystem, with emphasis on insects and mammals; herbivory of trees; the most important fungal diseases on conifers; and identification of damage agents.
Literature: Material will be distributed during the lectures.

Forest Protection Literature Review
Code No. 1607073 Credit units 3
Aim: Expanding the understanding of a specific topic from the field of forest protection.
Study mode: Preparation of a report on an approved topic from approved literature and presentation of the topic in a seminar.
Contents: Topics from forest zoology and pathology.
Literature: To be approved based on the topic selected.

Field Course in Forest Protection
Code No. 164523 Credit units 1
Aim: Obtaining direct experience and familiarity with the field identification of biotic and abiotic forest damage agents.
Study mode: Excursions (4 days) with discussion in FINNISH, but with some English translation, full attendance or its equivalent is required for satisfactory completion and course credit.
Location: Various areas in the province of North Carelia, in the eastern part of Finland, and in the Republic of Karelia, in Northwest Russia.
Contents: Field identification of important biotic and abiotic agents of damage, their ecology, symptoms, and prevention.

Introduction to European and Finnish Environmental Law
Code No. 007715 Credit units 3
Aim: Understanding the basic concepts, organisations, procedures, and problems of interpretation concerning Finnish and European environmental law.
Study mode*:* Lectures (16 hours) and required literature, followed by a written examination on the lectures and literature.
Contents: The general principles of environmental law, sources of environmental law, pollution control, environmental impact assessment, nature conservation, zoning and land-use planning, environmental liability, forest law, and forest policy.
Required literature: Krämer, L. 2000. E.C. Environmental Law, Fourth Edition. Sweet & Maxwell, London, United Kingdom. 329 p. (assigned section pp. 1-108).
Kumpula, A. 2002. Environmental Law. in: J. Pöyhönen (editor). 2002. An Introduction to Finnish Law, Second Edition. Finnish Lawyers' Publishing, Helsinki, Finland. 582 p. (assigned section pp. 499-555). Vihervuori, P. 2002. Public Environmental Law in Finland. In: R. J. G. H. Seerden, M.A. Heldeweg, and K. R. Deketelaere (editors). Public Environmental Law in the European Union and the United States: a comparative analysis. Kluwer Law International, the Hague, the Netherlands. 583 p. (assigned section pp 127-170).

Environmental Law in the European Union (literature)
Code No. 007714 Credit units 4
Aim: Understanding the fundamentals of environmental law and policy with in the European Union.
Study mode*:* A written examination on the literature.
Contents: Analysis of the historical development, the legal basis, the focal sectors, and topical issues of environmental law within the European Union. The competence of the Union and of the Member States is examined, as well as the impact of EU law on enactment and implementation of environmental laws on the national level.
Required literature: Jans, J. H. 2000. European Environmental Law, Second Edition. Europa Law Publishing, Groningen, Netherlands. 464 p.

European Forest Related Policies
Code No. 160523 Credit units 4
Aim: Obtaining familiarity with policy frameworks and processes of the European Union, but also those of a broader Pan-European region.
Study mode*:* Lectures (20 hours), literature (200 pages), and a seminar paper.
Contents: Introduction to: theoretical concepts of international politics and to forestry and forest policies at the Pan-European level including: special focus on EU policies, major actors and their relationships at the European level, the role of the EU Forest Strategy, intersectoral aspects of relevant policies, the decisions and policy guidelines of the Ministerial Conferences on the Protection of Forests in Europe (MCPFE), the role of United Nations Economic Commission on Europe/ Food an Agriculture Organisation of the United Nations (UNECE/FAO), European level institutions and frameworks linkages to global processes and major trends in different countries and regions of Europe.
Required literature: Hogl, K. 2000. The Austrian Domestic Forest Policy Community in Change? Impacts of the Globalization and Europeanisation of Forest Politics. Forest Policy and Economics. 1(1): 3-13. Humphreys, D. (editor). 2004. Forest for the future: National forest programmes in Europe – Country Reports from COST Action E19. Office for Official Publications of the European Communities. Luxembourg. 345 p. (assigned section: pp. 7-126). MCPFE (Ministerial Conference for the Protection of Forests in Europe). 2003. Implementation of MCPFE Commitments: National and Pan-European Activities 1998–2003. MCPFE Liaison Unit Vienna, Austria. 70 p. Available from MCPFE
webpages at:
<http://www.mcpfe.org/publications/pdf/implementations_of_mcpfe_commitments.pdf>
Ottitsch A., B. Michie, M. Palahi, and P. Wardle. 2005. Changes in the Forest Sector in Europe and Russia. In: G. Mery, R. Alfaro, M. Kanninen, and M. Lobovikov (editors). 2005. Forests in the Global Balance – Changing Paradigms. International Union of Forest Research Organisations (IUFRO) World Series, Volume 17. Helsinki, Finland. 318 p. (assigned section pp. 231–242).
Additional literature will be specified later and some will be distributed during the lectures.

Introduction to the Finnish Environment and Global Environmental Problems
Code No. 140559 Credit units 3
Aim: Understanding the basic physical environmental conditions in Finland, and generally understanding global environmental change.
Study mode: Lectures (14 hours), required literature, and examination on the lectures and literature.
Contents: Introduction to geography, climate, and living conditions in Finland; environmental problems: exploitation of natural resources, water pollution, effects of atmospheric pollution, and problems of urban areas; and nature conservation: laws and regulations, nature protection programs, and voluntary movements.
Required literature: Moore, P. D., B. Chaloner, and P. Scott. 1996. Global Environmental Change. Blackwell Science, Oxford, United Kingdom. 244 p.

Social Forestry
Code No. 168211 Credit units 3
Aim: Understanding the history, basic objectives, methodologies, and applications of social forestry, including community forestry.
Study mode*:* Self-study format using a course outline, some texts, list of literature, and exercises/examination. Each section of the self-study package has background material, case examples, and information that are tested in the final examination/exercises. All the questions in the examination/exercises can be answered by applying and learning from the texts provided. There may be optional introductory lectures (10 hours) at the beginning of the autumn and spring semesters. Alternatively, a paper can be submitted for credit, but only with advanced agreement with the instructor.
Contents: Basic concepts of: social forestry, people and forests, community participation methodologies, tailoring forest management to fit local needs, the effects of external organizations on community forestry, and adapting to new circumstances.
Required Literature*:* Provided in the self-study course material.

Forestry in Changing Societies in Europe
Code No: 165805 Credit units 3
Aim: Obtaining experience in identifying, researching, and providing solutions to challenges in the placed on the forest sector by the changes in European societies.
Study mode*:* Lectures (10 hours), problem oriented course work (20 hours), and specified literature; with a final examination on the lectures and literature.
Contents: A European perspective of forestry is provided. The challenges the European forestry professional is faced with due to the on going changes in regional societies are contemplated and possible ways to meet these challenges are sought. Numerous examples of changes that have impacts on forestry in individual European countries will be provided, with emphasis on current issues such as globalization and European integration.
Required literature: Pelkonen, P., A. Pitkänen, P. Schmidt, G. Oesten, P. Piussi, and E. Rojas (editors). 1999. Forestry in Changing Societies in Europe. Study book Part I. SILVA Network, Joensuu, Finland. 82 p. Pelkonen, P., A. Pitkänen, P. Schmidt, G. Oesten, P. Piussi, and E. Rojas (editors). 2000. Forestry in Changing Societies in Europe. Study book Part II: Country Reports. SILVA Network, Joensuu, Finland. 480 p.

Forestry in Russia
Code No. 168023 Credit units 5
Aim: Basic understanding of the forests, forestry, and forest industries in Russia.
Study mode: Lectures in English (26 hours) given by Russian professionals, specified literature (about 100 pages), and a final examination based on the lectures and literature.
Contents: Introduction to forestry and the forest industries in Russia. Special attention is paid to the concepts and terminology needed to understand Russian forestry. Topics cover forest resources, their classification and inventory; silviculture and forest management; nature protection and the multiple use of forests; wood procurement and forest technology; and the forest industry cluster with perspectives for the forest industry in Russia.
Literature: Karvinen, S., Välkky, E., Torniainen, T. & Gerasimov, Y. 2006. Northwest Russian Forestry in a Nutshell. Working Papers of the Finnish Forest Research Institute. Available at: <http://www.metla.fi/julkaisut/workingpapers/2006/>

Geographical Information Systems
Code No. 165503 Credit units 3
Aim: Understanding the basics of spatial data and geographical information systems (GIS), and obtaining the ability to use GIS software to solve spatial problems.
Study mode: Introductory lectures (2 hours), supervised exercises (12 hours), a practical project, literature, and a final examination. Completion of the practical project and a passing score of the examinations are required. Final course marking based on the following weighting: 25% for the practical project and 75% for the final examination.
Contents: Fundamental components and functions of geographical information systems (GIS) including spatial data models and structures, as well as management and analysis of spatial data. Introduction to methods for describing environmental data on a GIS database and using a GIS software package (ArcGIS) to solve complex spatial problems.
Tentative literature: Burrough, P. A. and R. A. McDonnell.1998. Principles of Geographical Information Systems. Oxford University Press, Oxford, United Kingdom. 333 p. Heywood, I., S. Cornelius, and S. Carver. 2002. An Introduction to Geographical Information Systems, Second Edition. Prentice Hall New York, Harlow, United Kingdom. 295 p. Additional material will be distributed during the course.

Advanced Geographical Information Systems
Code No. 160517 Credit units 5
Aim: Obtaining the ability to routinely use complex spatial analyses while also understanding the theory behind these analyses, and the ability to manage different stages of a geographical information system (GIS) project.
Study mode: Supplemental English language reading material or FINNISH language lectures (12 hours), exercises (16 hours), a practical project with a report, specified literature, and a final examination.
Contents: Spatial modelling, geostatistics, and spatial analysis for managing environmental data including: advanced discussions of spatial interpolation, error, and uncertainty; multi-objective decision making; and data visualization. An overview of the opportunities and restrictions involved in the use of spatial data is provided. The topics may vary from year to year.
Literature: Specified during the lectures.

Economics of Multiple-Use Forestry
Code No. 160506 Credit units 5
Aim: Understanding the concepts and methods of production theory and environmental economics that are used to assess values and for analysing the trade-offs in multiple use-forestry.
Study mode*:* Lectures (20 hours) and literature (300 pages), with a final examination on the lectures and literature.
Contents: Principles of multiple-use economics; multi-commodity production in forestry; benefits and products of forests; methods for valuing environmental benefits; value categories of multiple-use forests and the total value of forests; special economic features of different forest uses; and monetary valuation of the impact of forestry on the environment.
Suggested literature: Klemperer, D. W. 1996. Forest Resource Economics and Finance. McGraw-Hill. New York, United States. 551 p. (assigned section: pp. 418-478). Turner, R.K., D. Pearce, and I. Bateman. 1994. Environmental Economics: An Elementary Introduction. Harvester Wheatsheaf, New York, United States. 328 p. In addition a compilation of lecture notes and reading material will be distributed during the lectures.

Selected Literature on Forest Economics
Code No. 160409 Credit units 3
Aim: Understanding the principles of: i) socially and privately optimal forest use and ii) forestry accounting for farm forestry enterprises.
Study mode: Specified literature (80 hours) and an examination on the literature.
Contents: Supplementary literature on forest economics: economics of timber production, supply and demand for timber, management accounting in forest economics, and cost-benefit analysis.
Literature: Klemperer, W. D. 1996. Forest Resource Economics and Finance. McGraw-Hill, New York, United States. 551 p. (assigned sections: pp. 202-417 and pp. 479-538). Niskanen, A., and W. Sekot (editors). 2001. Guidelines for Establishing Farm Forestry Accountancy Networks. European Forest Institute (EFI) Research Report 12, EFI, Joensuu, Finland. 126 p. Price, C. 1989. Theory and Application of Forest Economics. Blackwell, Oxford, United Kingdom. 402 p. (assigned section: pp. 237-345).

Logging Methods: Cut-to-Lengths Method Versus Tree Length Method
Code No. 164411 Credit units 3
Aim: Understanding of the concepts and terminology of the cut-to-lengths and tree length logging methods.
Study mode: Lectures (8 hours), individual or team work including an oral presentation of current forest logging methods in each student's or group of students' home country, and a final examination on the lectures and literature.
Contents: A presentation of the methods and machinery for different logging methods including details of: their productivity and cost-effectiveness under different conditions; their environmental impacts on a forest stand; and their impacts on livelihoods and society. In addition, how to organise logging operations and plan work sites when cut-to-length technology is applied.
Required literature: Harstela, P. 1993. Forest work science and technology, Part I. Silva Carelica 25. University of Joensuu, Joensuu, Finland. 113 p. Harstela, P. 1996. Forest work science and technology, Part II. Silva Carelica 31. University of Joensuu, Joensuu, Finland. 175 p. Harstela, P. 1998. Timber procurement. In: S. Kellomäki (editor). 1998. Papermaking Science and Technology, Book 2: Forest Resources and Sustainable Management. Fapet Oy, Helsinki, Finland 425 p. (pp. 311-364). Other material will be distributed during the lectures.

2ND YEAR STUDIES (60 ECTS)

Elective courses (16-26 ECTS)

During the second year of studies, which is spent at one or more partner universities of the consortium, the students must complete the total amount of courses that, together with the Master thesis, equal to 60 ECTS. Prior to beginning the second year studies, the students must compile a study programme, which has to be approved by the responsible universities in order to fulfil the requirements for the degree at the home university. Course requirements may include written examinations, practical exercises, class participation, a term paper, an oral presentation, seminar working, etc... or combinations of these.

Thesis (30-40 ECTS)

The thesis is one of the main areas of the MSc EF. It consists of the preparation of a thesis with an explicit European dimensions at one of the universities members of the consortium of the MSc EF. Working on the thesis is supplemented by a course programme. The student will have to contact with a department of the preferred university. Selection of the university and the supervisor is based on the preference of the student. It is also suggested to have another supervisor from a University different that the Thesis host one.

Academic presentation seminar (4 ECTS)

Presentations and discussions of the students' Master Theses.
Place: Joensuu (Finland) or as a virtual seminar through an Internet platform (to be decided later).