

## MASTER'S DEGREE, FOREST SCIENCES, 2023-2026, 120 cr

### ADVANCED STUDIES: FOREST ECONOMICS, BUSINESS AND SOCIETY -STUDY TRACK, 73 cr

After each course is the responsible teacher's name.

	<b>cr</b>	<b>study year</b>
KK-ENG516/KK-ENG501 Academic writing (Language Center)	2	1-2
KK-ESP/KK-ITA/KK-KII/KK-RAN/KK-SAK/KK-VEN/Finnish/Swedish Language studies, according to PSP (Language Center)	3	1-2
FOR-018 Introduction to MSc programme in forest sciences (Albert Porcar-Castell)	3	1
FOR-002 Career portfolio and internship or a special project (Juha Rikala, Petri Parvinen)	5	1-2
FOR-003 Master's thesis seminar (Petri Parvinen)	5	2
FOR-004 Master's thesis (Markku Larjavaara)	30	2
FOR-101 Responsible business management in circular and bioeconomy (Angelina Korsunova-Tsaruk)	5	1
FOR-103 Quantitative methods and data (Sami Berghäll)	5	1-2
FOR-104 International forest policy, politics and power (Maria Brockhaus)	5	1
FOR-113 Forest business economics (Mirja Mikkilä)	5	1
FOR-108 Qualitative empirical research methods, approaches and research ethics (Maria Brockhaus)	5	1-2
VIIKM-001 Master's maturity test	0	2

### ELECTIVE ADVANCED STUDIES

FOREST ECONOMIS, BUSINESS AND SOCIETY STUDY TRACK, CHOOSE 15 cr

	<b>cr</b>	<b>study year</b>
<i>Business studies:</i>		
FOR-105 Sales management and business models (Petri Parvinen)	5	1-2
FOR-106 Yrityksen strategia ja yrityspeli (Mika Rekola, Juuso Töyli)	5	1-2
EKM-127 Sustainable Entrepreneurship	5	1-2
AGERE-A10 Sustainable Financing	5	1-2
AGERE-A05 Production and cost theory	5	1-2
<i>Policy and responsibility studies:</i>		
YET-214 Climate and energy	5	1-2
FOR-111 Behavioural change and sustainability (Annukka Vainio)	5	1-2
AGFO-310/DENVI-115 Introduction to comparative policy research design (Maria Brockhaus)	5	1-2 (odd years)

## ELECTIVE STUDIES, FOREST ECONOMICS, BUSINESS AND SOCIETY STUDY TRACK, 32 cr

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Studies according to the PSP:

For example studies abroad, language studies, forest sciences courses from forest ecology and management study track (ME-201-ME-241, FOR-211-FOR-276)

FOR-011 Tieteen popularisointi (Petri Nummi) 3-5 cr

FOR-013 Studies with changing content 1-5 cr

FOR-014 Making a scientific article 1-12 cr

FOR-015 Working as a teaching assistant 1-5 cr

FOR-271 Practical course in bioinformatics (Fred Asiegbu) 5 cr

FAF-310 Greentech linkage (Petri Parvinen, Jens Schmidt) 10 cr

SUST-001 Sustainability course 3 cr (if you have not completed it in the bachelor's degree)

VIKIM-002 Tutoring 5 cr

VIKIM-003 Orientation week 1 cr

VIKIM-005 Demanding participation in administrative bodies and student organizations 2-5 cr

VIKIM-200 Study module accomplished at another university

VIKIM-201 Study module accomplished abroad

Courses taken at other universities

Unipid study module: Sustainability in development 25 cr [Virtual Studies Module – UniPID](#)

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MASTER'S DEGREE ALTOGETHER 120

## ADVANCED STUDIES: FOREST ECOLOGY AND MANAGEMENT STUDY TRACK 83 cr

	<b>cr</b>	<b>study year</b>
FOR-018 Introduction to MSc programme in forest sciences (Albert Porcar-Castell)	3	1
FOR-002 Career portfolio and internship or a special project (Petri Parvinen, Juha Rikala)	5	1-2
FOR-003 Master's thesis seminar (Kari Minkkinen, Eshetu Yirdaw)	5	1-2
FOR-004 Master's thesis (Markku Larjavaara)	30	1-2
FOR-005 Advanced literature (Kari Minkkinen)	5	1-2
FOR-017 R-basic course (Teppo Mattsson)	5	1-2
FOR-007 Tilastollisia malleja: Yleistettyjen lineaaristen mallien perusteet (Teppo Mattsson)	5	1-2
VIKIM-001 Master's maturity essay	0	2
Module according to specialization	25	1-2

## ELECTIVE STUDIES, FOREST ECOLOGY AND MANAGEMENT STUDY TRACK, 37 cr

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### Studies according to PSP:

For example studies abroad, language studies, courses in statistics, courses from forest economics, business and society study track (ME-101-ME-107, FOR-101-FOR-112), another module from forest ecology and management

FOR-008 Tilastollinen ennustaminen ja otanta (Teppo Mattsson) 5 cr

FOR-009 Statistical modelling with R (Teppo Mattsson) 5 cr

FOR-011 Tieteen popularisointi (Petri Nummi) 3-5 cr

FOR-013 Studies with changing content 1-5 cr

FOR-014 Making a scientific article 1-12 cr

FOR-015 Working as a teaching assistant 1-5 cr

FOR-271 Practical course in bioinformatics (Fred Asiegbu) 5 cr

SUST-001 Sustainability course 3 cr (if you have not completed it in the bachelor's degree)

ATM-309 Analysis of atmosphere-surface interactions and feedbacks 5 cr

FAF-310 Greentech linkage (Petri Parvinen, Jens Schmidt) 10 cr

VIKIM-002 Tutoring 5 cr

VIKIM-003 Orientation week 1 cr

VIKIM-005 Demanding participation in administrative bodies and student organizations 2-5 cr

VIKIM-200 Study module accomplished at another university

VIKIM-201 Study module accomplished abroad

Courses taken at other universities

Unipid study module: Sustainability in development 25 cr [Virtual Studies Module – UniPID](#)

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## MASTER'S DEGREE ALTOGETHER

120

### Modules in the master's degree

FOR-100 Advanced studies in forest economics, business and society/Metsäekonomia, liiketalous ja yhteiskunta -syventävät opinnot (Mika Rekola)

FOR-309 Advanced studies in ecosystem function and biogeochemistry/ Metsäekosysteemien toiminnan ja biogeokemian syventävät opinnot (Jussi Heinonsalo)

FOR-310 Advanced studies in production ecology, silviculture and land use management/Metsien tuotoksen, metsänhoidon ja maankäytön syventävät opinnot (Marjo Palviainen)

FOR-311 Advanced studies in Biodiversity, evolution and interactions in forests/Metsien biodiversiteetin, evoluution ja vuorovaikutusten syventävät opinnot (Fred Asiegbu, Tanja Pyhäjärvi)

FOR-314 Advanced studies in tropical forestry, agroforestry and land use (Edward Webb)

FOR-208 Advanced studies in forest resource management and geoinformatics/Metsävarojen hallinnan ja geoinformatiikan syventävät opinnot (Markus Holopainen)

FOR-209 Advanced studies in forest operations and wood supply management/Metsäteknologian ja logistiikan syventävät opinnot (Jori Uusitalo)

FOR-210 Advanced studies in wood material science/Puumateriaalitieteen syventävät opinnot (Tuula Jyske)

VIKIM-301 other studies in the master's degree (include electives 20 cr/39 cr)

MODULES ACCORDING TO SPECIALIZATION: FOREST ECOLOGY AND MANAGEMENT STUDY TRACK

25 cr

Choose at least one of the following modules

FOR-309 Ecosystem function and biogeochemistry/Metsäekosysteemien toiminta ja biogeokemia

25 cr

<b>Choose at least 25 cr of following</b>	<b>cr</b>	<b>study year</b>
FOR-211 Tree ecophysiology (Albert Porcar Castell)	5	1-2
FOR-217 Forests and peatlands as modifiers of atmospheric composition (Jaana Bäck)	5	
FOR-218 Basics of biometeorology (Teemu Hölttä)	3/5	1
FOR-223 Ecology of peatlands (Kari Minkkinen)	5	(even years)
FOR-227 Methods to study forest soils/Basic methods in terrestrial biogeochemistry (Kristiina Karhu/Jussi Heinonsalo) (prerequisite for FOR-275 ja FOR-230 courses)	5	(even years)
FOR-228 Forest ecosystem biogeochemistry (Jussi Heinonsalo)	5	1-2
FOR-230 Forest soil and root ecology (Jussi Heinonsalo)	5	(even years)
FOR-275 Soils and Climate Change (Kristiina Karhu)	5	(odd years)
FOR-284 Methods in ecophysiology (Albert Porcar-Castell)	5	(even years)
AGRI-414 Pedogenesis and Soil Classification	3/5	(odd years)

FOR-310 Production ecology, silviculture and land use management/Tuotosekologia, metsänhoito ja maankäytön suunnittelu 25 cr

<b>Compulsory course 5 cr</b>	<b>cr</b>	<b>study year</b>
FOR-221 Advanced silviculture (Marjo Palviainen)	5	1-2

<b>Choose at least 20 cr of following</b>	<b>cr</b>	<b>study year</b>
FOR-286 Simulation of forest growth (Markku Larjavaara)	5	1-2
FOR-285 Climate change mitigation and adaptation in forestry (Jaana Bäck)	5	(even years)
FOR-220 Monitavoitteisen metsänhoidon menetelmät (Marjo Palviainen)	5	1-2
FOR-224 Soiden luonnonvarasuunnittelun kenttäkurssi (Kari Minkkinen)	5	(odd years)
FOR-225 Turpeen käyttö Suomessa - tavoitteet ja ristiriidat (Kari Minkkinen)	5	(even years)
FOR-226 Restoration of degraded ecosystems: theory and practice (Eshetu Yirdaw, Petri Nummi)	5	(odd years)

FOR-311 Biodiversity, evolution and interactions in forests/Metsien biodiversiteetti, evoluutio ja vuorovaikutukset 25 cr

<b>Choose at least 25 cr of the following</b>	<b>cr</b>	<b>study year</b>
FOR-233 Advanced forest mycology & pathology (Fred Asiegbu)	10	1-2
FOR-232 Forest microbiology (Fred Asiegbu)	10	1-2

FOR-231 Basic biotechnology applications in forestry (Fred Asiegbu)	5	1
FOR-238 Alien species (Petri Nummi, Eshetu Yirdaw)	4	(even years)
FOR-272 Herbivory and trophic interactions in a changing world (Carita Lindstedt-Kareksela)	5	(odd years)
FOR-235 Multidisciplinary view on insect outbreaks and host-pathogen dynamics (Carita Lindstedt-Kareksela)	5	(odd years)
FOR-242 Riistaeläintieteen syventävä lajintuntemus (V-M Väänänen)	3	
FOR-246 Riistaeläintieteen ajankohtaiskysymykset (Petri Nummi, V-M Väänänen) 1-2		
EEB-104 Nisäkäsekologian kenttäkurssi (Janne Sundell)	5	(odd years)
FOR-243 Riistatalouden suunnittelu (V-M Väänänen)	3	(even years)
FOR-244 Riista ja yhteiskunta (Petri Nummi)	2	(even years)
FOR-245 Riistatarhaus (Petri Nummi, V-M Väänänen)	2	(every 3. or 4. year)
FOR-278 Forest tree breeding and genetic resources (Tanja Pyhäjärvi)	5	(even years)
FOR-279 Forest tree genomics, evolution and adaptation (Tanja Pyhäjärvi)	5	(odd years)

FOR-314 Tropical forestry, agroforestry and land use/Trooppinen metsätalous, agrometsätalous ja maankäyttö 25 cr

**Compulsory courses 10 cr** **cr** **study year**

FOR-247 Methods and tools in tropical forestry (Edward Webb)	5	1-2
FOR-248 Field course: Tropical forests and agroforests (Edward Webb)	5	(odd years)

**Choose at least 15 cr of following** **cr** **study year**

FOR-276 Sustainable forestry and agroforestry in the tropics (Edward Webb)	5	(even years)
FOR-281 Tropical landscape change (Edward Webb)	5	1 (odd years)
FOR-282 Tropical forest landscape restoration (Eshetu Yirdaw)	5	(even years)
FOR-104 International forest policy, politics and power (Maria Brockhaus)	5	2
FOR-108 Qualitative empirical research methods, approaches and research ethic (Maria Brockhaus)	5	1-2
GEOG-341 Geography of megatrends, environmental change and development in the Global South	5	1-2
IPS-174 Tropical flora of East Africa / AGRI-247 Tropical plants of economic importance	5	1-2

FOR-208 Forest Resource Management and Geoinformatics/Metsävarojen hallinta ja geoinformatiikka 25 cr

**Choose at least 25 cr of following** **cr** **study year**

FOR-254 Metsävarojen inventointi- ja suunnitteluprojekti (Ilkka Korpela) (Can be completed in English)	10	1-2 (even years)
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FOR-286 Simulation of forest growth (Markku Larjavaara)	5	1-2
FOR-256 Metsävarojen hallinnan ja geoinformatiikan vaihtuvaisältöiset erikoistumisopinnot (Markus Holopainen)	1-5	1-2
FOR-258 GIS-analyysi ja mallinnus (Markus Holopainen)	5	1-2 (even years)
FOR-260 Advanced 3D remote sensing of forests (Markus Holopainen)	5	1 (odd years)
FOR-263 Operations research in forest resource management (V-P Kivinen)	5	1-2 (even years)
FOR-283 Open GIS (Markus Holopainen)	5	1-2 (web course)

**Recommended courses in Forest resource management and geoinformatics:**

FOR-007 Tilastollisia malleja: Yleistettyjen lineaaristen mallien perusteet (Teppo Mattsson) 5 cr

FOR-008 Tilastollinen ennustaminen ja otanta (Teppo Mattsson) 5 cr

FOR-009 Statistical modelling with R (Teppo Mattsson) 5 cr

FOR-209 Forest operations and wood supply management /Metsäteknologia ja logistiikka 25 cr

**Compulsory courses 20 cr**

	<b>cr</b>	<b>study year</b>
FOR-261 Environmental effects of forest operations (Jori Uusitalo)	5	(even years)
FOR-280 Precision harvesting (Jori Uusitalo)	5	(odd years)
FOR-265 Terramechanics and trafficability prediction (Jori Uusitalo)	5	(even years)
FOR-266 Wood supply chain management (Jori Uusitalo)	5	(odd years)

**Choose one of the following**

	<b>cr</b>	<b>study year</b>
FOR-263 Operations research in forest resource management (V-P Kivinen)	5	1-2 (even years)
AGRI-104 Measurement technology	5	1-2 (even years)

FOR-210 Wood material science/ Puumateriaalitiede 25 cr

**Compulsory courses 20 cr**

	<b>cr</b>	<b>study year</b>
FOR-267 Wood science (Tuula Jyske)	5	1-2
FOR-268 Metsäteollisuuden laboratoriotyöt (Juha Rikala)	5	1-2
FOR-269 Puu rakennus- ja huonekalumateriaalina (Tuula Jyske)	5	1-2
FOR-270 Wood as fibre raw material (Tuula Jyske)	5	1 (even years)

**Choose at least 5 cr of following**

	<b>cr</b>	<b>study year</b>
FOR-101 Responsible business management in circular and bioeconomy (Angelina Korsunova-Tsaruk)	5	1-2
FOR-106 Yrityksen strategia ja yrityspeli (Mika Rekola, Juuso Töyli)	5	1-2
AGERE-A10 Sustainable financing	5	1

## MODULES OFFERED FOR OTHER DEGREE PROGRAMMES

FOR-301 Module in Geoinformatics/Geoinformatiikan opintokokonaisuus (Markus Holopainen)

FOR-303 Module in Peatland Ecology and Management/Soiden ekologian ja käytön opintokokonaisuus (Kari Minkkinen)

FOR-304 Module in Forest Soil Sciences/Metsämaatieteen opintokokonaisuus (Jussi Heinonsalo)

FOR-308 Module in management and restoration of forest and peatland ecosystems/ Metsä- ja suoekosysteemien hoidon ja ennallistamisen opintokokonaisuus (Marjo Palviainen)

FOR-301 Module in Geoinformatics/ Geoinformatiikan opintokokonaisuus 25 cr

<b>Choose at least 25 cr of following</b>	<b>cr</b>	<b>timing</b>
ME-203 Geoinformatiikka 1/ME-204 Geoinformatics 1	5	web course
ME-230 Geoinformatiikka 2	5	
FOR-283 Open GIS	5	(web course)
ME-232 Kaukokartoitus 1	5	
ME-234 Metsätieteiden laskentamenetelmät	5	
FOR-258 GIS-analyysi ja mallinnus	5	(even years)
FOR-260 Metsien kaukokartoituksen jatkokurssi	5	(odd years)

FOR-303 Module in Peatland Ecology and Management/Soiden ekologian ja käytön opintokokonaisuus 25 cr

<b>Choose at least 25 cr of the following</b>	<b>cr</b>	<b>timing</b>
ME-201 Metsämaiden ominaisuudet, prosessit ja kasvupaikkuokittelu	5	
ME-013B Metsätieteiden kenttäkurssi: metsä- ja suoekologia ja metsänhoito	6	
ME-216 Soiden ekohydrologia ja kasvillisuus	5	(odd years)
ME-217 Ojitusalue metsien hyödyntäminen: mahdollisuudet ja ongelmat	3	(odd years)
FOR-223 Ecology of Peatlands	5	(even years)
FOR-224 Soiden luonnonvarasuunnittelun kenttäkurssi	5	(odd years)
FOR-225 Turpeen käyttö Suomessa - tavoitteet ja ristiriidat	3	(even years)

FOR-304 Module in Forest Soil Sciences/ Metsämaatieteen opintokokonaisuus 25 cr

<b>Choose at least 25 cr of the following</b>	<b>cr</b>	<b>timing</b>
ME-201 Metsämaiden ominaisuudet, prosessit ja kasvupaikkuokittelu	5	
ME-013B Metsätieteiden kenttäkurssi	6	
FOR-227 Methods to study forest soils	5	
FOR-228 Forest ecosystem biogeochemistry	5	
FOR-230 Forest Soil and root ecology	5	(even years)

AGRI-414 Pedogenesis and soil classification	3
FOR-261 Environmental effects of forest operations or other courses according to PSP	5

FOR-308 Module in management and Restoration of Forest and Peatland Ecosystems/ Metsä- ja suoekosysteemien hoidon ja ennallistamisen opintokokonaisuus 25 cr

<b>Choose at least 25 cr of the following</b>	<b>cr</b>	<b>timing</b>
FOR-220 Monitavoitteisen metsänhoidon menetelmät	5	
FOR-221 Advanced silviculture	5	
FOR-223 Ecology of peatlands	5	(even years)
FOR-224 Soiden luonnonvarasuunnittelun kenttäkurssi	5	(even years)
FOR-225 Turpeen käyttö Suomessa - tavoitteet ja ristiriidat	5	(even years)
FOR-226 Restoration of degraded ecosystems: Theory and practice	5	(odd years)
ME-244 Bioenergia	5	(odd years)