Accelerated Master of Geographic Information Science

School of Forest Resources and Environmental Science

Contacts:
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Overview

The accelerated Master of Geographic Information Science is a new option within the existing Master of Geographic Information Science (MGIS) coursework-only master's. The accelerated MGIS is for students who earn their bachelor's degree at Michigan Tech and wish to continue to pursue a master's degree. The maximum time to degree for students in an accelerated master's program is 5 years from the time the student is accepted into the program.

In order to be formally accepted into this accelerated master's program, students must apply to and be accepted into the Graduate School at Michigan Technological University. Applications will be reviewed by the School of Forest Resources and Environmental Science (SFRES) according to normal procedures.

Admission requirements are the same as for other graduate programs in SFRES with the exception that only students earning a bachelor's degree from Michigan Tech with a GPA of 3.0 or higher are eligible to be admitted. Students can apply for admission to an accelerated master's program at any time after they attain sophomore-level class standing and up until they are awarded their bachelor's degree.

Students who are accepted to the program will not be allowed to continue if their cumulative undergraduate GPA falls below 3.0. A student may reapply if their GPA rises above a 3.0, or may apply to enter the regular non-accelerated MGIS degree program.

Students will be considered undergraduates for the purposes of financial aid, tuition, and class standing until their undergraduate degree has been awarded. Once students are awarded their undergraduate degree, they will be considered graduate students for the purposes of financial aid and tuition.

Credit Requirements

A total of 30 credits are required for the master's degree, including six that may be applied to both the bachelor's and master's degree. A minimum of 150 credits must be completed for the combined bachelor's and master's degree programs. Ten of the remaining 24 credits required for the masters degree may be completed while an undergraduate under senior rule, but these credits cannot be applied towards the bachelor's degree. Prior to completion of the master's degree, students must indicate on their master's degree schedule which undergraduate-level courses and credits (up to a maximum of six), should be applied to both their bachelor's and master's degrees. These classes will be 3000 or 4000 level classes required of the undergraduate forestry major.

This program is offered only as a coursework option, requiring no thesis or report, but requiring a comprehensive final oral exam. Under this option, up to 12 credits of the 30 credit total may be at the 3000 or 4000 level. The 6 credits counted for both the bachelor's and master's degree count towards these 12 credits if they are at the 3000 or 4000 level.

Summary of Class Requirements

Required classes	FW5550 - GIS for Resource Management (Fall)	**4 credits**	
	FW5554 – GPS field techniques (Fall)	**2 credits**	
	FW5555 - Advanced GIS Concepts and Analysis (Spring)	**3 credits**	
	FW5556 – GIS Project Management (Spring)	**3 credits**	
	FW5510 – Special Topics in Natural Resources - Spatial Statistics (Spring)	**3 credits**	
	Remote Sensing class	**3-4 credits**	
	FW5801 – Masters Seminar in GIS (Fall and Spring)	**1 credit**	
	Credits applied to both BS and MGIS degree	**6 credits**	**Subtotal 25-26 credits**
Electives	Select from topic based lists	**4-5 credits**	**Subtotal 4-5 credits**
		Grand total	**30 credits minimum**

The following courses are required:

Introductory GIS

FW5550 - GIS for Resource Management (4 credits, Fall)

Advanced Spatial Topics (GIS, GPS, cartography, data and project management)

FW5554 – GPS field techniques (2 credits, Fall)

FW5555 - Advanced GIS Concepts and Analysis (3 credits, Spring) Pre-requisite: FW5550

FW5556 – GIS Project Management (3 credits, Spring) Pre-requisite: FW5550

Spatial Statistics

FW5510 – Special Topics in Natural Resources - Spatial Statistics (3 credits, Spring).

Remote Sensing

FW4540 - Remote Sensing of the Environment (3 credits - alternate Fall semesters) or

FW5540 - Advanced Terrestrial Remote Sensing (4 credits, alternate Fall semesters) or

FW5560 - Digital Image Processing: A Remote Sensing Perspective (3 credits, Spring) Pre-requisite: FW5550 or

GE4250 - Fundamentals of Remote Sensing (3 credits, Spring) Pre-requisites: PH2200 and MA2160 or

SU4140 - Photogrammetry (3 credits, Fall) Pre-requisite: SU2260

Communications

FW5801 – Masters Seminar in GIS (1 credit, Fall and Spring)

Electives (select 4-5 credits from the following lists – classes can be from different topic areas)

Business

BA5650 - Project Management (3 credits, Fall, Spring, Summer) Pre-requisite: MA2710 or MA 2720 or MA 3710

BA5760 - Corporate Social Responsibility & Business Ethics (3 credits, on demand)

Cartography

SS5XXX Critical Cartography (1 credit, Summer)

Computer Science

CS4421 - Database Systems (3 credits, Spring) Pre-requisite: CS2321

Communications and writing

FW5850 - Effective Grantsmanship Workshop (2 credits, Spring)

HU5081 - Writing Applications in Technical Communication (3 credits, on demand) NOT in the current course list

HU5091 - Writing for publication (3 credits, on demand)

Geospatial applications

UN4000 - Remote Sensing Seminar (1 credit, Fall & Spring)

FW3540 - Introduction to GIS for Natural Resource Management (4 credits, Spring) Pre-requisite: MA 2710 (C) or MA 2720 (C) or MA 3710 (C)

FW4545 - Map Design with GIS (3 credits, alternate Spring) Pre-requisite: FW3540 or FW5550

SU3540 - Geospatial Information Technology (4 credits, Spring) Pre-requisite: MA3710

SU5003 - GIS Fundamentals (1 credit, on demand)

SU5004 - Introduction to Geospatial Image Processing (3 credits, on demand)

SU5041 - Geospatial Data Processing (3 credits, on demand)

Policy

ENG5520 - Sustainable Futures II (3 credits, Spring)

FW5111 - Advanced Natural Resource Policy (3 credits, Fall)

FW5150 - Institutions and Natural Resource Management (up to 3 credits, Fall, Spring, Summer)

Natural resources

CE5666 - Water Resources Planning and Management (3 credits, on demand) Pre-requisites CE3620 and (EC3400 or EC3402 or ENT3402)

ENVE4505 - Surface Water Quality Engineering (3 credits, Fall) Pre-requisite: ENVE3501 or ENVE 3503

FW 4220 - Wetlands (4 credits, Fall)

FW4300 - Introduction to Wildland Fire (3 credits, Spring) Pre-requisite: FW3020 and (FW3010 or FW3012)

FW4370 - Forest and Landscape Hydrology (3 credits, Spring)

FW4380 - Landscape Ecology (3 credits, Spring)

FW5032 - Integrated Forest Inventory and Data Analysis (3 credits, Spring)

FW5088 - Forest Finance & Economics (3 credits, Spring)

FW5130 - Forest Vegetation Dynamics (3 credits, Fall) Pre-requisites: BL3400 or FW3010 or FW3012 or FW3020

FW5140 - Stable Isotopes in Ecology and Environmental Science (2 credits, Fall)

FW5413 - Sustainable Biomass (3 credits, Fall)

GE4150 - Natural Hazards (3 credits, Fall) Pre-requisites: (GE2000 or GE2100) and UN2002

Statistics

EC4200 - Econometrics (3 credits) Pre-requisites: (EC2001 or EC3002 or EC3003) and (BA2100 or BUS2100 or MA2710 or MA2720 or MA3710) and (MA1135 or MA1160 or MA1161)

FW5411 - Applied Regression Analysis (3 cr, alternate Spring semesters)

MA4710 - Regression Analysis (3 cr, Spring) Pre-requisites: MA2720 or MA3710

MA4740 - Sampling Methods (3 cr, on demand)

MA5701 - Statistical Methods (3 cr, Fall)

Program Administration

This program will be overseen by the coordinator of the MGIS program. Adjustments to the course of study are possible with the approval of the Coordinator.

Sample 5-year curriculum based on a Forestry undergraduate degree (Class number, name and number of credits)

Year 1	Fall	Spring
	UN1015 Composition (3) FW2051 Field Techniques (1) FW2010 Vegetation of North America (4) MA1135 Calculus for Life Sciences (4) HASS Distribution (3)	UN1025 Global Issues (3) BL2160 Botany (4) CH1150 University Chemistry I (3) CH1151 University Chemistry Lab I (1) FW1050 Natural Resources Seminar (1) Free Electives (4)
	Total 15 credits	Total 16 credits
Year 2	**Fall**	**Spring**
	Humanities and Fine Arts (HUFA) (3) MA2720 Statistical Methods (4) FW3020 Forest Ecology (3) FW3330 Soil Science (4) HASS Distribution (3)	Social and Behavioral Sciences (SBS) (3) FW1035 Wood anatomy (4) FW3200 Biometrics and Data Analysis (4) FW3540 Intro to GIS (4)
	Total 17 credits	Total 15 credits
Year 3	**Fall**	**Spring**
	FALL CAMP FW3010 Practice of Silviculture (4) FW3840 Forest Health (3) FW3600 Wildlife Habitat (3) FW3170 Land Measurements/GPS (1) FW3190 Multi-resource Assessment (3) FW3150 Timber Harvesting (2)	FW4080 Forest Economics and Finance (3) Directed Elective (3) FW3110 Natural Resource Policy (3) FW4140 Vegetation Modeling (2) FW4370 Forest and Landscape Hydrology (3) HASS Distribution (3)
	Total 16 credits	Total 17 credits
Year 4	**Fall**	**Spring**
	FW4810 Integrated Resource Assessment (4) HASS Distribution (3) FW4150 Forest Resource Management (3) Free Electives (6)	Free Electives (13) and EC3400 Economic Decision Analysis (3) OR BUS2200 Business Law (3) OR PUS2300 Quantitative Problem Solving (3) OR OSM 3200 Project Management (3)
	Total 16 credits	Total 16 credits
Year 5	**Fall**	**Spring**
	FW5550 GIS for Resource Management (4) FW5554 GPS Field Techniques (2) FW5801 Masters Seminar in GIS (1) EC4300 Econometrics (3) FW5140 Stable Isotopes in Ecology and Environmental Science (2)	FW5555 Advanced GIS Concepts and Analysis (3) FW5560 Digital Image Processing (3) FW5556 GIS Project Management (3) FW5510 Special topics – Spatial Statistics (3)
	Total 12 credits	Total 12 credits

Grand Total: 152 Credits

Directed electives are selected from FW3320 Forest Genetics and Genomics (3 cr.), FW4120 Tree Physiology (3 cr.), FW4220 Wetlands (4 cr.), FW4370 Forest and Landscape Hydrology (3 cr.).
Courses counted for both degrees (6 credits) are most likely to be FW3540 Intro to GIS, and FW4140 Vegetation Modeling.