ENVIRONMENTAL & NATURAL RESOURCES MANAGEMENT, B.TECH.

Major Code: 3001

The Bachelor of Technology (B.Tech.) degree in Environmental & Natural Resources Management (ENRM) focuses on providing students with advanced technical education in environmental and natural resources, highlighting the management, communication and business skills needed for graduates in the 21st century.

The ENRM B.Tech. is a full four-year program with two separate tracks: Natural Resources Conservation (NRC) and Aquaculture and Aquatic Sciences (AQAS). While the course offerings are somewhat different during the first two years of the two tracks, these are identical for the last four semesters, including a 15-credit, full-semester internship that places students in a supervised work environment with a cooperating agency. This provides students with opportunities to gain valuable experience, make professional contacts, and build their resumes in preparation for future employment and career decisions.

Most internships are paid. Opportunities exist nationwide in both the public and private sectors. Many placement sites are available in New York State, but students who wish to travel can find opportunities in other parts of the country. Successful internships have included experiences in forestry, arboriculture, outdoor recreation management, GIS (geographic information system) mapping, wetlands delineation and management, wildlife management studies, and environmental education.

The ENRM B.Tech. degree program is offered as a standalone, eight-semester, degree program. Students are also admitted to the program after completing an A.S., A.A.S. or equivalent degree with a minimum 2.20 grade point average. A student who does not meet this requirement may be admitted as a junior on a conditional basis. A major in Natural Resources, Environmental Science, Environmental Technology, Aquaculture and Aquatic Science or a closely related field is strongly recommended. An individual seeking to enroll in the Environmental & Natural Resources Management B.Tech. program with an unrelated associate degree may be granted admittance with an understanding that up to 18 prerequisite credits will be required.

The B.Tech. in Environmental & Natural Resources Management is designed to prepare students for entry into public and industrial jobs at the field, supervisory, and management levels where technical, business, and communication skills are necessary. Students completing the B.Tech. in Environmental & Natural Resources Management can pursue jobs in the forest products industry; the aquatic resources industry, including sport and commercial fisheries, wetland management, and aquaculture; the recreation industry, arboriculture and urban forestry, and environmental technology, including water treatment and brownfield reclamation.

Student Learning Outcomes

Upon successful completion of this program:

- Students will utilize their developed expertise in concepts, theories, and emerging methodologies to tackle real-world issues in natural resource management.
- Students will become independent, self-motivated professionals who can recognize problems in their renewable resources technical field of expertise and formulate solutions to such problems.
- Students will conduct themselves in a manner consistent with an embodied sense of conservation stewardship.
- Students will assess, analyze, synthesize, and evaluate information objectively and deal professionally and ethically with clients, the public, and agency personnel.
- Students will communicate clearly and effectively using appropriate verbal, visual, electronic, and written techniques necessary to interact in the profession.
- Students will recognize and interpret natural resource laws and policies.
- Students will demonstrate hands-on experience in natural resource sampling, inventory, and measurement techniques.
- Students will recognize and interpret natural resource problems and opportunities across spatial scales from local to global through implementing and managing geospatial technologies (Global Navigational Satellite System (GNSS), Geographic Information System -- GIS, and remote sensing).
- Students will apply critical thinking and problem-solving skills in formulating and evaluating alternative solutions to complex problems in natural resource management and recommending and defending the best alternatives.
- Students will anticipate, analyze, and evaluate natural resource issues and opportunities and utilize an integrated approach to ecosystem impact assessment and adaptive management.
- Students will exercise life-long learning and management skills developed before graduation and utilize existing technology, products, and services to maximize work efficiency and success.
- Students will seek the input and perspectives of diverse stakeholders regarding natural resource issues and practice a collaborative spirit in team efforts and project coordination.

Curriculum Requirements

A minimum of 120 credits is required for degree completion.

NRC Track

Code	Title	Credits
Curriculum Requirements - First Four Semesters		
NATR 100	Intro to Forestry and NR	3
NATR 101	General Ecology	3
NATR 103	Natural Resources Equipment Op	2
NATR 110	Natural Resources Measurements	3
NATR 113	Intro toGlobal Positioning Sys	1
NATR 115	Forest Ecology	3
NATR 120	Intro To Recreation Area Mgmnt	3
NATR 142	Plane Surveying I	3
NATR 144	Seminar/Environmental Resc I	1
NATR 145	Intro Environmental Technology	3
NATR 210	Dendrology	3
NATR 213	Basics Geospatial Technology	2
NATR 250	Aquatic Ecology	3
BIOL 102	Botany-Form Function Seed Plt	3
AGRO 110	Soil Science	3
SUNY General Education Communication Written and Oral as advised		6

SUNY General Education Mathematics as advised		3
SUNY General Education Diversity, Equity, Inclusion and Social Justice as advised		3
Technical Electives selected from the following subjects: AGBS, AGEN, AGSC, BIOL, BSAD, CHEM, CJUS, ENSC, ENRM, HORT, NATR, RENG		2
Core Specialization		
Select three of the following:		9
NATR 211	Forest Protection	
NATR 215	Practices Of Silviculture	
NATR 221	Invasive Species Management	
NATR 232	Wildlife Ecology & Management	
NATR 252	Fish Ecology and Management	
Curriculum Requirements - Final Four Semesters		
ENRM 345	Surface & Groundwater Mgt. [1]	3
ENRM 302	Riparian Ecology & Wetland Mgt	3
ENRM 303	Fundamentals Geospatial System	4
ENRM 305	Environment Law Policy Justice	3
ENRM 312	Field Sampling Design & Techniques	3
ENRM 332	Environment Planning & NR Mgt	3
ENRM 412	Ecosystem Adaptive Management	3
ENRM 420	Geospatial Tech Applications I	1
ENRM 421	Geospatial Tech Application II	2
ENRM 450	Environmental & Natural Resource Management Internship Orientation	1
ENRM 470	Internship in Environmental & Natural Resource Management	15
BSAD 116	Business Organization & Mgmnt	3
BSAD 300	Management Communications	3
CITA 405	Project Management (or RENG 3XX - Renewable Energy Elective as advised)	3
SUNY General Education as advised		3
MATH 123	Elementary Statistics	3
or AGSC 137	Agricultural Statistics	
Total Credits		**118**

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AQAS students will take NATR 210 Dendrology in Year 3 fall semester.

AQAS Track

Code	Title	Credits
Curriculum Requirements - First Four Semesters		
NATR 101	General Ecology	3
NATR 144	Seminar/Environmental Resc I	1
NATR 150	Aquaculture	3
NATR 152	Fish Reproduction	2
NATR 158	Fish Nutrition	2
NATR 250	Aquatic Ecology	3
NATR 252	Fish Ecology and Management	3
NATR 254	Fish Health Management	3
NATR 156	Aquaculture Practicum I	1
NATR 256	Aquaculture Practicum II	1
Select two of the following Practicum/Research Electives:		2
NATR 257	Aquaculture Practicum III	

NATR 258	Aquaculture Practicum IV	
NATR 288	Research in Aquatic Science I	
NATR 289	Research Aquatic Science II	
Select one of the following:		2-3
AGEN 110	Small Power Equipment	
NATR 103	Natural Resources Equipment Op	
AGEN 151	Applied Hydraulics Hydropower	
AGEN 120	Water Supply & Sanitation	3
or ENRM 345	Surface & Groundwater Mgt.	
NATR 113	Intro toGlobal Positioning Sys	1
BSAD - Business Elective as advised		3
Select one of the following:		3-4
CHEM 101	Basic Chemistry	
CHEM 121	General College Chemistry I	
BIOL 120	General Biology I	
NATR 110	Natural Resources Measurements	
Technical Electives selected from the following subjects: AGBS, AGEN, AGSC, BIOL, BSAD, CHEM, CITA, CJUS, ENSC, ENRM, HORT, NATR, RENG, SOCI		6-7
SUNY General Education Communication Written and Oral as advised		3
SUNY General Education Mathematics as advised		3
BIOL 285	General Microbiology	3-4
or NATR 153	Marine Biology	
Curriculum Requirements - Final Four Semesters		
ENRM 345	Surface & Groundwater Mgt. [2]	3
ENRM 302	Riparian Ecology & Wetland Mgt	3
ENRM 303	Fundamentals Geospatial System	4
ENRM 305	Environment Law Policy Justice	3
ENRM 312	Field Sampling Design & Techniques	3
ENRM 332	Environment Planning & NR Mgt	3
ENRM 412	Ecosystem Adaptive Management	3
ENRM 420	Geospatial Tech Applications I	1
ENRM 421	Geospatial Tech Application II	2
ENRM 450	Environmental & Natural Resource Management Internship Orientation	1
ENRM 470	Internship in Environmental & Natural Resource Management	15
BSAD 300	Management Communications	3
CITA 405	Project Management (or RENG 3XX - Renewable Energy Elective)	3
SUNY General Education as advised		3
MATH 123	Elementary Statistics	3
or AGSC 137	Agricultural Statistics	
Total Credits		**104-108**

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Proficiency through MATH 102 Intermediate Algebra w Trig Required.

[2]

AQAS students will take NATR 210 Dendrology in Year 3 fall semester.

Suggested Course Sequence
NRC Track

Course	Title	Credits
Year 1		
Fall		
BIOL 102	Botany-Form Function Seed Plt	3
SUNY General Education Communication Written and Oral as advised		3
NATR 145	Intro Environmental Technology	3
SUNY General Education Mathematics as advised		3
NATR 100	Intro to Forestry and NR	3
NATR 144	Seminar/Environmental Resc I	1
NATR 113	Intro toGlobal Positioning Sys	1
	Credits	**17**
Spring		
NATR 101	General Ecology	3
NATR 103	Natural Resources Equipment Op	2
NATR 110	Natural Resources Measurements	3
NATR 115	Forest Ecology	3
NATR 213	Basics Geospatial Technology	2
Select one of the following:		2-3
	SUNY General Education Communication Written and Oral as advised	
	SUNY General Education Diversity, Equity, Inclusion and Social Justice as advised	
	Technical Elective as advised	
	Credits	**15-16**
Year 2		
Fall		
NATR 120	Intro To Recreation Area Mgmnt	3
NATR 142	Plane Surveying I	3
NATR 210	Dendrology	3
NATR 250	Aquatic Ecology	3
Select one of the following:		2-3
	SUNY General Education Communication Written and Oral as advised	
	SUNY General Education Diversity, Equity, Inclusion and Social Justice as advised	
	Technical Elective as advised	
	Credits	**14-15**
Spring		
AGRO 110	Soil Science	3
Select one of the following:		2-3
	SUNY General Education Communication Written and Oral as advised	
	SUNY General Education Diversity, Equity, Inclusion and Social Justice as advised	
	Technical Elective as advised	
General Education Elective as advised		3
Capstone Courses		
Select three of the following Capstone Courses:		9
	NATR 211	Forest Protection	
	NATR 215	Practices Of Silviculture	
	NATR 221	Invasive Species Management	
	NATR 232	Wildlife Ecology & Management	
	NATR 252	Fish Ecology and Management	

Students in the NRC Track can further specialize by enrolling in the Forest Technology or the Urban Forestry Concentration

	Credits	**17-18**
Year 3		
Fall		
ENRM 312	Field Sampling Design & Techniques	3
ENRM 302	Riparian Ecology & Wetland Mgt	3
BSAD 116	Business Organization & Mgmnt	3
MATH 123	Elementary Statistics	3
SUNY General Education as advised		3
	Credits	**15**
Spring		
ENRM 345	Surface & Groundwater Mgt. [1]	3
ENRM 303	Fundamentals Geospatial System	4
ENRM 305	Environment Law Policy Justice	3
ENRM 332	Environment Planning & NR Mgt	3
ENRM 420	Geospatial Tech Applications I	1
ENRM 450	Environmental & Natural Resource Management Internship Orientation	1
General Elective as advised		1
	Credits	**16**
Year 4		
Fall		
BSAD 300	Management Communications	3
ENRM 412	Ecosystem Adaptive Management	3
ENRM 421	Geospatial Tech Application II	2
Select one of the following:		3
	ENRM - 300 Level Renewable Energy Elective as Advised	
	CITA 450	Applied Database Manager	
SUNY General Education as advised		3
	Credits	**14**
Spring		
ENRM 470	Internship in Environmental & Natural Resource Management	15
	Credits	**15**
	Total Credits	**123-126**

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AQUA students will take NATR 210 Dendrology in Year 3 fall semester.

AQAS Track

Course	Title	Credits
Year 1		
Fall		
SUNY General Education Communication Written and Oral as advised		3
NATR 144	Seminar/Environmental Resc I	1
NATR 101	General Ecology	3
NATR 150	Aquaculture	3
NATR 156	Aquaculture Practicum I	1
SUNY General Education Mathematics as advised		3
NATR 113	Intro toGlobal Positioning Sys	1
	Credits	**15**
Spring		
Select one of the following:		3-4
	NATR 110	Natural Resources Measurements	
	CHEM 101	Basic Chemistry	
	CHEM 121	General College Chemistry I	
	BIOL 120	General Biology I	
SUNY General Education Communication Written and Oral as advised		3
NATR 158	Fish Nutrition	2
NATR 252	Fish Ecology and Management	3
NATR 256	Aquaculture Practicum II	1
Technical Elective as advised		3
	Credits	**15-16**
Year 2		
Fall		
Select one of the following:		2-3
	AGEN 110	Small Power Equipment	
	NATR 103	Natural Resources Equipment Op	
	AGEN 151	Applied Hydraulics Hydropower	

BIOL 285
   or NATR 153
	General Microbiology
	   or Marine Biology
		3-4

NATR 280	Herpetology	3
NATR 152	Fish Reproduction	2
NATR 250	Aquatic Ecology	3

NATR 257
   or NATR 288
	Aquaculture Practicum III (as advised)
	   or Research in Aquatic Science I
		1

	Credits	**14-16**
Spring		

AGEN 120
   or ENRM 345
	Water Supply & Sanitation [1]
	   or Surface & Groundwater Mgt.
		2-3

SUNY General Education Diversity, Equity, Inclusion and Social Justice as advised		3
NATR 254	Fish Health Management	3

NATR 258
   or NATR 289
	Aquaculture Practicum IV (as Advised)
	   or Research Aquatic Science II
		1

BSAD - Business Elective as advised		3
Technical Elective as advised		3
	Credits	**15-16**
Year 3		
Fall		
ENRM 312	Field Sampling Design & Techniques	3
ENRM 302	Riparian Ecology & Wetland Mgt	3
BSAD 116	Business Organization & Mgmnt	3
MATH 123	Elementary Statistics	3
SUNY General Education as advised		3
	Credits	**15**
Spring		
ENRM 345	Surface & Groundwater Mgt. [1]	3
ENRM 303	Fundamentals Geospatial System	4
ENRM 305	Environment Law Policy Justice	3
ENRM 332	Environment Planning & NR Mgt	3
ENRM 420	Geospatial Tech Applications I	1
ENRM 450	Environmental & Natural Resource Management Internship Orientation	1
General Elective as advised		1
	Credits	**16**
Year 4		
Fall		
BSAD 300	Management Communications	3
ENRM 412	Ecosystem Adaptive Management	3
ENRM 421	Geospatial Tech Application II	2
Select one of the following:		3
ENRM - 300 Level Renewable Energy Elective as advised		
CITA 450	Applied Database Manager	
SUNY General Education as advised		3
	Credits	**14**
Spring		
ENRM 470	Internship in Environmental & Natural Resource Management	15
	Credits	**15**
	Total Credits	**119-123**

[1]

AQAS students will take NATR 210 Dendrology in Year 3 fall semester.