ENGINEERING TECHNOLOGY & MANAGEMENT FOR AGRICULTURAL SYSTEMS: ENERGY & THE ENVIRONMENT, BS

for the degree of Bachelor of Science Major in Engineering Technology & Management for Agricultural Systems: Energy & the Environment concentration

Students in the Energy and the Environment concentration focus on renewable energy systems, environmental systems, or both. Students will 1) gain an understanding of the science behind renewable energy from sunlight wind, geothermal, and biomass sources; 2) perform economic analysts of proposed systems; 3) manage energy systems to blend appropriate sources into reliable , cost-effective, and long-lasting systems; and 4) develop, construct, and operate large-scale, grid-connected renewable energy projects. Students will also have the ability to utilize GIS and other technologies to develop and manage practices for controlling the transport of agricultural and other non-point sources of pollution in the environment, and to implement systems for sustaining and improving water quality, maintaining ecosystems, managing stormwater, and developing optimal irrigation use and drainage systems. Gradates of the Energy & the Environment concentration are prepared for careers with private consulting firms, government and environmental agencies, both small and large technology companies, or for entrance into graduate or professional school.

for the degree of Bachelor of Science Major in Engineering Technology & Management for Agricultural Systems, Energy & the Environment concentration

Prescribed Courses including Campus General Education

Code	Title	Hours
Composition I and Speech		
Select one of the following:		6-7
RHET 105 & CMN 101 ');">CMN 101	Writing and Research and Public Speaking (or equivalent (see college Composition I requirement))	
CMN 111 & CMN 112	Oral & Written Comm I and Oral & Written Comm II	
Advanced Composition		**3-4**
Select from the list below		
AGCM 220	Communicating Agriculture	
BADM 340	Ethical Dilemmas of Business	
BTW 250	Principles Bus Comm	
BTW 261	Principles Tech Comm	
ECE 316	Ethics and Engineering	
ESE 360	Environmental Writing	
ETMA 311	Humanity in the Food Web	
LEAD 230	Leadership Communications	
NRES 419	Env and Plant Ecosystems	
PLPA 200	Plants, Pathogens, and People	
Cultural Studies		**9**
Select one course from Western culture, one from non-Western culture, and one from U.S. minority culture from campus approved lists.		
Foreign Language		
Coursework at or above the third level is required for graduation.		
Quantitative Reasoning I		
MATH 234	Calculus for Business I (or equivalent)	4
Quantitative Reasoning II		**3 or 4**
Select one of the following:		
ACE 262	Applied Statistical Methods and Data Analytics I	
CPSC 241	Intro to Applied Statistics	
ECON 202	Economic Statistics I	
STAT 107	Data Science Discovery	
Natural Sciences and Technology		
CHEM 102 & CHEM 103	General Chemistry I and General Chemistry Lab I	4
PHYS 101	College Physics: Mech & Heat	5
Select one of the following:		4-5
CHEM 104 & CHEM 105	General Chemistry II and General Chemistry Lab II	
OR		
PHYS 102	College Physics: E&M & Modern	
Humanities and the Arts		
Select from campus approved list.		6
Social and Behavioral Sciences		
ACE 100	Introduction to Applied Microeconomics	3-4
or ECON 102	Microeconomic Principles	
Social and behavioral sciences. Select from campus approved list.		3 or 4
ACES Prescribed		
ACES 101	Contemporary Issues in ACES	2
ETMA Required		
CS 105	Intro Computing: Non-Tech	3
ETMA 100	Technical Systems in Agr	3
ETMA 339	Optimization in Engineering Technology and Management	3
ETMA 421	Industrial and Agricultural Safety-Injury Prevention	3
or ETMA 422	Industrial and Agricultural Occupational Illness Prevention	
ETMA 430	Project Management	2
ETMA 439	Capstone Experience	4
Business electives		**6**
A total of 6 hours from the Business Electives list which do not satisfy any other requirements.		
ACCY 200	Fundamentals of Accounting	3
ACCY 201	Accounting and Accountancy I	3
ACCY 202	Accounting and Accountancy II	3
ACCY 211		
ACCY 212		

ACE 210	Environmental Economics	3
ACE 240	Personal Financial Planning	3
ACE 310	Natural Resource Economics	3
ACE 345	Finan Decision Indiv Sm Bus	3
ACE 346	Tax Policy and Finan Planning	3
ACE 432	Advanced Farm Management	3 or 4
ACE 435	Global Agribusiness Management	3
AGCM 270	Ag Sales and Persuasive Communication	3
BADM 300	The Legal Environment of Bus	3
BADM 310	Mgmt and Organizational Beh	3
BADM 311	Leading Individuals and Teams	3
BADM 312	Designing and Managing Orgs	3
BADM 313	Strategic Human Resource Management	3
BADM 314	Leading Negotiations	3
BADM 320	Principles of Marketing	3
BADM 322	Marketing Research	3
BADM 323	Marketing Communications	3
BADM 326	Pricing Strategy	3
FIN 221	Corporate Finance	3
FIN 230	Introduction to Insurance	3
LER 290	Introduction to Employment Law	3
LEAD 140	Harnessing Your Interpersonal Intelligence	2
LEAD 260	Foundations of Leadership	3
LEAD 340	Leadership Ethics & Society: Addressing Contemporary Challenges	3
LEAD 380		
LEAD 440	Interpersonal Intelligence for Professional Success	2
SE 361	Emotional Intelligence Skills	3
SE 400	Engineering Law	3 or 4
TE 230	Design Thinking/Need-Finding	3
TE 250	From Idea to Enterprise	2
TE 333	Creativity, Innovation, Vision	4
TE 360	Lectures in Engineering Entrepreneurship	1
TE 450	Startups: Incorporation, Funding, Contracts, & Intellectual Property	3
Introductory Related Courses		
Select 2 courses from the list for your concentration.		6-8
ETMA Electives		
A total of 20 hours from the list for your concentration with a minimum of 11 hours at the advanced level.		20
Concentration Electives		
Select 18 hours from the list for your concentration, which do not satisfy any other requirements, with a minimum of 12 hours at the advanced level.		18
Total Hours		**126**

ETMAS majors will need 40 hours of upper-level courses (300- and 400-level) to satisfy the campus minimum requirement of 40 hours of advanced coursework.

Concentration Requirements

Code	Title	Hours
Introductory Related Courses		
Select two courses from this list		
ACES 102	Intro Sustainable Food Systems	
CPSC 112	Introduction to Crop Sciences	
ENVS 101	Introduction to Energy Sources	
LEAD 260	Foundations of Leadership	
NRES 102	Introduction to NRES	
NRES 201	Introductory Soils	
UP 136	Urban Sustainability	
ETMA Electives		
Required		
ETMA 352	Land and Water Mgt Systems	
ETMA 438	Renewable Energy Applications	
Select an additional 14 hours from the list below for a total of 20 hours with a minimum of 11 hours at the advanced level		
ETMA 130	Basics of CAD	
ETMA 132	Basics of Project Management	
ETMA 232	Materials and Construction Sys	
ETMA 233	Metallurgy & Welding Processes	
ETMA 234	Wiring, Motors and Control Sys	
ETMA 295	Undergrad Research or Thesis	
ETMA 371	Residential Housing Design	
ETMA 372	Environ Control & HVAC Systems	
ETMA 396	UG Honors Research or Thesis	
ETMA 425	Managing Industrial and Agricultural Safety Risks	
ETMA 435	Elec Computer Ctrl Sys	
ETMA 496	Independent Study	
Concentration Electives		
Select 18 hours from the list below with a minimum of 12 hours at the advanced level.		
At least one of:		
ACE 210	Environmental Economics	
ACE 310	Natural Resource Economics	
ACE 406	Environmental Law	
ACE 410	Energy Economics	
ACE 411	Environment and Development	
At least one of:		
NRES 219	Applied Ecology	
NRES 370	Environmental Sustainability	
NRES 419	Env and Plant Ecosystems	
NRES 420	Restoration Ecology	
NRES 425	Natural Resources Law & Policy	
NRES 426	Renewable Energy Policy	
NRES 429	Aquatic Ecosystem Conservation	
NRES 438	Soil Nutrient Cycling	
NRES 439	Env and Sustainable Dev	
NRES 471	Pedology	
NRES 474	Soil and Water Conservation	
NRES 477	Introduction to Remote Sensing	
NRES 488	Soil Fertility and Fertilizers	
At least one of:		
UP 405	Watershed Ecology and Planning	
UP 406	Urban Ecology	
UP 446	Sustainable Planning Seminar	

UP 466	Energy & the Built Environment
UP 480	Sustainable Design Principles

May select from the below list to achieve 18 hours:

AGCM 330	Environmental Communications
CEE 320	Construction Engineering
CEE 330	Environmental Engineering
CPSC 215	The Prairie and Bioenergy
CPSC 336	Tomorrow's Environment
CPSC 415	Bioenergy Crops
CPSC 416	Native Plants, Pollinators, & Food Ecosystems
CPSC 431	Plants and Global Change
CPSC 437	Principles of Agroecology
ESE 465	Transportation &Sustainability
ESE 482	Challenges of Sustainability
GLBL 201	Energy Systems

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Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. For more information, see the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
ETMA 100	3	CHEM 102	3
ACES 101	2	CHEM 103	1
RHET 105 or CMN 101	4	CMN 101 or RHET 105	3
ACE 100	4	MATH 234	4
Language Other than English (3rd level)	4	ETMA Elective	3
	17		**14**

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 104	3	PHYS 101	5
CHEM 105	1	ACE 262, CPSC 241, ECON 202, or STAT 107	3
CS 105 CINE 489 , CWL 489 , FR 489 , HUM 489 , MACS 489	3	ETMA Elective	3
ETMA 103	2	Introductory related course	3
Business Elective	3		
General Education course	3		
	15		**14**

Third Year

First Semester	Hours	Second Semester	Hours
ETMA 422 or 421	3	ETMA 421 or 422	3
ETMA 352	3	ETMA 339	3
ETMA Elective	4	Concentration Elective	3
Introductory Related Course	3	Business Elective	3
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	4	General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3
	17		**15**

Fourth Year

First Semester	Hours	Second Semester	Hours
ETMA 430	2	ETMA 439	4
ETMA Elective	4	ETMA 438	3
Concentration Elective	3	Concentration Elective	3
Concentration Elective	3	Concentration Elective	3
Concentration Elective	3	General Education course	3
General Education course	3		
	18		**16**

Total Hours 126

for the degree of Bachelor of Science Major in Engineering Technology & Management for Agricultural Systems: Energy & the Environment concentration in the Department of Agricultural & Biological Engineering.

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College of Agricultural, Consumer & Environmental Sciences
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Admissions
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