

ENGINEERING TECHNOLOGY & MANAGEMENT FOR AGRICULTURAL SYSTEMS, BS

for the degree of Bachelor of Science in Engineering Technology & Management for Agricultural Systems

The major in Engineering Technology and Management for Agricultural Systems is designed to prepare students as problem solvers for systems involving the application, management, and/or marketing of engineering technologies. Students are instructed in engineering and business principles in preparation as technically competent business persons for professional careers as entrepreneurs, marketing representatives, or plant managers working with service organizations, manufacturers, corporate farms, retail dealers, power suppliers, contractors, or management companies from production through processing and distribution.

Students pursuing this major select one of four concentrations:

- Agricultural Production & Processing (http://catalog.illinois.edu/undergraduate/eng_aces/engineering-technology-management-agricultural-systems-bs/agricultural-production-processing/)
- Construction Management (http://catalog.illinois.edu/undergraduate/eng_aces/engineering-technology-management-agricultural-systems-bs/construction-management/)
- Digital & Precision Agriculture (http://catalog.illinois.edu/undergraduate/eng_aces/engineering-technology-management-agricultural-systems-bs/digital-precision-agriculture/)
- Energy & the Environment (http://catalog.illinois.edu/undergraduate/eng_aces/engineering-technology-management-agricultural-systems-bs/energy-environment/)

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Graduation Requirements

Minimum hours required for graduation: 126 hours.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300 and 400 level. These hours can be drawn from all elements of the degree. Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (<https://studentcode.illinois.edu/article3/part8/3-801/>) (§ 3-801) and in the Academic Catalog (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (<https://courses.illinois.edu/gened/DEFAULT/DEFAULT/>). Some Gen Ed requirements may be met by courses required and/or electives in the program.

Code	Title	Hours
	Composition I	4-6
	Advanced Composition	3
	fulfilled by AGCM 220, BADM 340, BTW 250, BTW 261, ECE 316, ESE 360, ETMA 311, NRES 419, or PLPA 200	
	Humanities & the Arts (6 hours)	6
	Natural Sciences & Technology (6 hours)	6
	fulfilled by CHEM 102, PHYS 101; and CHEM 104 or PHYS 102	
	Social & Behavioral Sciences (6 hours)	6
	fulfilled by ECON 102 or ACE 100 and one other courses approved as Social and Behavioral Sciences	
	Cultural Studies: Non-Western Cultures (1 course)	3
	Cultural Studies: US Minority Cultures (1 course)	3
	Cultural Studies: Western/Comparative Cultures (1 course)	3
	Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)	6-8
	fulfilled by MATH 234, PHYS 101, CS 105; and ACE 262, CPSC 241, ECON 202, or STAT 107	
	Language Requirement (Completion of the third semester or equivalent of a language other than English is required)	0-15

Code	Title	Hours
Department Foundation		
	ACES 101	
	Communication Option:	3 or 6
CMN 101	Public Speaking	
ALEC 115	Let's Talk about Food, Agriculture, and the Environment	
CMN 111 & CMN 112	Oral & Written Comm I and Oral & Written Comm II	
	Advanced ETMA Communication Option - Select one of the following:	3-4
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	
NRES 419	Env and Plant Ecosystems	
PLPA 200	Plants, Pathogens, and People	
	Statistics Option - Select one of the following:	3-4
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	
MATH 234	Calculus for Business I (or equivalent)	4
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	
ECON 102	Microeconomic Principles	3 or 4
or ACE 100	Introduction to Applied Microeconomics	

Major Core

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 six 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
ACE 210	Environmental Economics & Policy	3
ACE 221	Negotiation	2
ACE 240	Personal Financial Planning	3
ACE 310	Natural Resource Economics	3
ACE 345	Small Business Finance	3
ACE 346	Tax Policy and Finan Planning	3
ACE 432	Advanced Farm Management	3 or 4
ACE 435	Global Agribusiness Management	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
FIN 230	Introduction to Insurance	3
LER 290	Introduction to Employment Law	3
LEAD 260	Foundations of Leadership	3
LEAD 340	Leadership Ethics & Society: Addressing Contemporary Challenges	3
LEAD 425	Leading Teams	3
SE 361	Emotional Intelligence Skills	3
SE 400	Engineering Law	3 or 4
TE 230	Design Thinking/Need-Finding	3
TE 450	Startups: Incorporation, Funding, Contracts, & Intellectual Property	3

Code **Title** **Hours**

Required Concentration. Choose one from list below:

Agricultural Production & Processing (<http://catalog.illinois.edu/undergraduate/aces/engineering-technology-management-agricultural-systems-bs/agricultural-production-processing/>)

Construction Management (<http://catalog.illinois.edu/undergraduate/aces/engineering-technology-management-agricultural-systems-bs/construction-management/>)

Digital & Precision Agriculture (<http://catalog.illinois.edu/undergraduate/aces/engineering-technology-management-agricultural-systems-bs/digital-precision-agriculture/>)

Energy & the Environment (<http://catalog.illinois.edu/undergraduate/aces/engineering-technology-management-agricultural-systems-bs/energy-environment/>)

Code	Title	Hours
Total Hours		126

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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 and General 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		CHEM 103	1
ACE 100 or ECON 102	4	Communication Option or Composition I	4
Composition I or Communication Option	3	MATH 234	4
Language Other than English (3rd level)		ETMA Elective	3
	14		15

Total Hours 29**Second Year**

First Semester	Hours	Second Semester	Hours
PHYS 101	5	CHEM 104 or PHYS 102	3
CS 105	3	CHEM 105 (or Free Elective course)	1
Business Elective	3	Statistics course	3
ETMA Elective	2	Introductory-Related Course	3

ETMA Elective	2 ETMA Elective	3
	General Education course	3
	15	16

Total Hours 31**Third Year**

First Semester	Hours	Second Semester	Hours
ETMA 421 or 422	3	ETMA 339	3
ETMA Elective	3	ETMA Elective	3
Concentration Elective	3	Business Elective	3
Introductory-Related Course	2	Advanced ETMA Communication course	3
General Education course	3	General Education course	3
Free Elective course	2		
	16		15

Total Hours 31**Fourth Year**

First Semester	Hours	Second Semester	Hours
ETMA 430	2	ETMA 439	4
ETMA Elective	3	Concentration Elective	3
Concentration Elective	3	Concentration Elective	3
Concentration Elective	3	General Education course	3
Concentration Elective	3	General Education course	3
General Education course	3		
	17		16

Total Hours 33**Total Hours: 126**

for the degree of Bachelor of Science in Engineering Technology & Management for Agricultural Systems

The Engineering Technology and Management for Agricultural Systems (formerly Technical Systems Management) program is designed to prepare graduates for careers in management, marketing, operations, maintenance, and application of agricultural and biological engineering technologies within the realms of agriculture, food, energy, water, and the environment. Graduates are expected to understand problems and concerns in engineering technologies from production to processing through distribution and their social and cultural implications. Specific program learning objectives are:

- Objective 1: Provide academic and technical knowledge and experiences needed for success in an increasingly technological agricultural industry and world.

- Objective 2: Enhance students' abilities to formulate questions and find solutions both individually and as a part of a team.
- Objective 3: Improve students' abilities to communication both written and oral forms.
- Objective 4: Enhance the use and understanding of mathematics and calculation for analysis in technology and business.
- Objective 5: Provide opportunities to learn and enhance professional and ethical values and leadership skills.
- Objective 6: Understand their role in society and the social and cultural implications of practice in their profession.
- Objective 7: Recognize the need for and develop the abilities to engage in life-long learning.
- Objective 8: Understand the global nature of agriculture and business.

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Agricultural & Biological Engineering

Agricultural & Biological Engineering Department website (<https://abe.illinois.edu/>)
338 Agricultural Engineering Sciences Building
1304 West Pennsylvania Avenue
Urbana, IL 61801
(217) 333-3570
abe@illinois.edu

College of Agricultural, Consumer & Environmental Sciences

College of Agricultural, Consumer & Environmental Sciences website (<https://aces.illinois.edu/>)

ACES Office of Academic Programs

128 Mumford Hall
1301 West Gregory Drive
Urbana, IL 61801
217-333-3380
aces-academics@illinois.edu

Advising

ABE Advising website (<https://abe.illinois.edu/academics/advising/>)
(217) 333-3570
tsm-etm-abe-advising@rt.aces.illinois.edu

Admissions

ACES Undergraduate Admissions (<https://aces.illinois.edu/admissions/>)
University of Illinois Urbana-Champaign Undergrad Admissions (<https://www.admissions.illinois.edu/>)
(217) 333-3380
visitACES@illinois.edu

The Grainger College of Engineering

The Grainger College of Engineering website (<https://grainger.illinois.edu/>)