ENGINEERING TECHNOLOGY & MANAGEMENT FOR AGRICULTURAL SYSTEMS: DIGITAL & PRECISION AGRICULTURE, BS

for the degree of Bachelor of Science Major in Engineering Technology & Management for Agricultural Systems: Digital & Precision Agriculture concentration

Students in the Digital & Precision Agriculture concentration learn the application of technology in agriculture and the larger system of production agriculture, including machinery, agronomy, and business management. Students will gain an understanding of 1) the application of advanced technology used in agriculture with an emphasis on geospatial information systems and machinery technology; 2) the functional workings and management of agricultural machinery; 3) crop and soil science and their interactions with advanced technologies; 4) numerical and scientific processes to drive agricultural management decisions; and 5) business operations and management with a focus on the agricultural industry. Graduates of the Digital & Precision Agriculture concentration are prepared for careers in industry with both small and large companies, agricultural retailers and service providers, production farming operations, government and environmental agencies, or for entrance into graduate or professional school.

Prescribed Courses including Campus General Education

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHET 105</td>
<td>Writing and Research and Public Speaking</td>
<td>6-7</td>
</tr>
<tr>
<td>&amp; CMN 101</td>
<td>(or equivalent (see college Composition I requirement))</td>
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</tr>
<tr>
<td>CMN 111</td>
<td>Oral &amp; Written Comm I</td>
<td></td>
</tr>
<tr>
<td>&amp; CMN 112</td>
<td>and Oral &amp; Written Comm II</td>
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</tbody>
</table>

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  General Chemistry I 4

& CHEM 103  and General Chemistry Lab I

PHYS 101  College Physics: Mech & Heat 5

Select one of the following: 4-5

- CHEM 104  General Chemistry II
- & CHEM 105  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  Understanding Financial Statements 3

ACCY 212  Understanding Accounting for Business Decisions 3

ACE 210  Environmental Economics 3

Information listed in this catalog is current as of 09/2023
ETMA Electives

Required

ETMA 103 Agricultural Machinery and Technology
ETMA 262 Agricultural Machine Systems Management
ETMA 363 Fluid Power Systems
ETMA 435 Elec Computer Ctrl Sys
ETMA 464 Heavy Equipment Powertrains
ETMA 467 Precision Agric Technology

Select an additional 4 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 233 Metallurgy & Welding Processes
ETMA 234 Wiring, Motors and Control Sys
ETMA 295 Undergrad Research or Thesis
ETMA 352 Land and Water Mgt Systems
ETMA 381 Grain Drying & Storage Systems
ETMA 396 UG Honors Research or Thesis
ETMA 425 Managing Industrial and Agricultural Safety Risks
ETMA 486 Grain Bioprocessing Coproducts
ETMA 496 Independent Study

Concentration Electives

Select 18 hours from the list below with a minimum of 12 hours at the advanced level.

One of:
ACE 210 Environmental Economics
ACE 222 Agricultural Marketing
ACE 231 Food and Agribusiness Mgt
ACE 232 Farm Management
ACE 427 Commodity Price Analysis
ACE 428 Commodity Futures and Options
ACE 432 Advanced Farm Management
ACE 435 Global Agribusiness Management

One set of:
GGIS 379 Introduction to Geographic Information Systems
or GGIS 380 Geographic Information Systems II
OR
GGIS 477 or GGIS 478 Introduction to Remote Sensing Techniques of Remote Sensing
OR
NRES 454 & NRES 455 GIS in Natural Resource Mgmt and Advanced GIS for Environmental Management

One of:
NRES 438 Soil Nutrient Cycling
NRES 471 Pedology
NRES 474 Soil and Water Conservation
NRES 475 Environmental Microbiology
NRES 488 Soil Fertility and Fertilizers

One of:

Information listed in this catalog is current as of 09/2023
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 Education Requirements page (http://catalog.illinois.edu/general-information/degree-general-education-requirements/).

<table>
<thead>
<tr>
<th>First Year</th>
<th>First Semester Hours</th>
<th>Second Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>ETMA 100</td>
<td>3</td>
<td>CHEM 102</td>
</tr>
<tr>
<td>ACES 101</td>
<td>2</td>
<td>CHEM 103</td>
</tr>
<tr>
<td>RHET 105 or CMN 101</td>
<td>4</td>
<td>CMN 101 or RHET 105</td>
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<tr>
<td>ACE 100</td>
<td>4</td>
<td>MATH 234</td>
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<tr>
<td>Language Other than English (3rd level)</td>
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<td>General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)</td>
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| Total Hours | 17 |

<table>
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<th>Second Year</th>
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<td>PHYS 101</td>
</tr>
<tr>
<td>CHEM 105</td>
<td>1</td>
<td>ACE 262, CPSC 241, ECON 202, or STAT 107</td>
</tr>
<tr>
<td>CS 105</td>
<td>3</td>
<td>NRES 201</td>
</tr>
<tr>
<td>ETMA 103</td>
<td>2</td>
<td>ETMA 262</td>
</tr>
<tr>
<td>Business Elective</td>
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<td>ETMA 363</td>
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<tr>
<td>General Education course</td>
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| Total Hours | 15 |

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<th>Third Year</th>
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<tbody>
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<td>ETMA 422 or 421</td>
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<td>ETMA 421 or 422</td>
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<tr>
<td>CPSC 112</td>
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<td>ETMA 339</td>
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<tr>
<td>ETMA Elective</td>
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<td>Concentration Elective</td>
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<tr>
<td>Concentration Elective</td>
<td>3</td>
<td>Business Elective</td>
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| General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation) | 3 |

| Total Hours | 14 |

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<th>Fourth Year</th>
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<th>Second Semester Hours</th>
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<tbody>
<tr>
<td>ETMA 430</td>
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<td>ETMA 439</td>
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<tr>
<td>ETMA 435</td>
<td>3</td>
<td>ETMA 464</td>
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<tr>
<td>Concentration Elective</td>
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<td>ETMA 467</td>
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<tr>
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<td>General Education course</td>
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<tr>
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<td>Education course</td>
</tr>
<tr>
<td>General Education course</td>
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</table>

| Total Hours | 16 |

| Total Hours 126 |

for the degree of Bachelor of Science Major in Engineering Technology & Management for Agricultural Systems: Digital & Precision Agriculture concentration in the Department of Agricultural & Biological Engineering.