

Technology Systems Management Minor

Effective Fall 2015

<http://reg.msu.edu/AcademicPrograms/ProgramDetail.aspx?Program=5395>

College of Agriculture and Natural Resources
Department of Biosystems and Agricultural Engineering
Undergraduate Programs
Minor in Technology Systems Management

The Minor in Technology Systems Management, which is administered by the Department of Biosystems and Agricultural Engineering, serves students interested in technology for management decision support who are pursuing careers in agriculture and natural resources. The minor provides an opportunity to gain a working knowledge of technologies necessary to monitor and manage aspects of food, agriculture, and natural resource systems.

The minor is available as an elective to students who are enrolled in bachelor's degree programs at Michigan State University. With the approval of the department and college that administers the student's degree program, the courses that are used to satisfy the minor may also be used to satisfy the requirements for the bachelor's degree.

Students who plan to complete the requirements for the minor should consult an undergraduate advisor in the Department of Biosystems and Agricultural Engineering to have their program of study approved in advance and in writing.

Requirements for the Minor in Technology Systems Management

Students must complete a minimum of 15 credits from the following:

1. Four of the following courses (12 credits):

| | | | |
|-----|-----|--|---|
| TSM | 130 | Energy Efficiency and Conservation in Agricultural Systems | 3 |
| TSM | 222 | Fundamentals of Automation and Controls | 3 |
| TSM | 226 | Renewable Energy Systems Management | 3 |
| TSM | 251 | Information Technology in Agricultural Systems | 3 |
| TSM | 331 | Water Management in Agriculture and Food Systems | 3 |
| TSM | 343 | Principles of Precision Agriculture | 3 |
2. One of the following courses (3 or 4 credits):

| | | | |
|------|-----|--|---|
| ABM | 222 | Agribusiness and Food Industry Sales (W) | 3 |
| ANS | 418 | Comprehensive Nutrient Management Planning | 3 |
| CSS | 424 | Sustainable Agriculture and Food Systems: Integration and Synthesis | 3 |
| CSUS | 354 | Water Resources Management | 3 |
| FSC | 325 | Food Processing: Unit Operations | 3 |
| FW | 419 | Applications of Geographic Information Systems to Natural Resources Management | 4 |
| GEO | 221 | Introduction to Geographic Information | 3 |
| TSM | 493 | Professional Internship in Technology Systems Management | 3 |

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The overall purpose of the Technology Systems Management (TSM) Minor is to provide students with an understanding of current and emerging technologies that support effective, efficient management decisions for agriculture and natural resources systems. The TSM Minor is a crosscutting minor providing broader employability opportunities for students primarily in agriculture and natural resources majors. Students completing the minor will have the ability to:

- identify current and emerging technologies that monitor, measure and analyze agriculture, food, natural resource and bioenergy systems, and
- manage identified technologies for agricultural and natural resource systems to support timely, effective management decisions that gain efficiency; reduce inputs, reduce carbon and water footprints and improve system sustainability.

| Total credits for minor = minimum 15 credits | | | | Semester Offered | | |
|---|-----------|----------------------|-----------|-------------------------|-----------|--|
| Requirements | Cr | Prerequisites | FS | SS | US | |

Select 4 of the following:

| | | | | | | |
|----------------|---|----------|---|-----------|-----------|-----------|
| TSM 130 | Energy Efficiency and Conservation in Agricultural Systems | 3 | None | | O* | O* |
| TSM 222 | Fundamentals of Automation and Controls | 3 | (TSM 121 or concurrently) or MTH 103 or dept. approval | ✓ | | |
| TSM 226 | Renewable Energy Systems Management | 3 | (TSM 121 or concurrently) or TSM 130 or MTH 103 or dept. approval | O* | | O* |
| TSM 251 | Information Technology in Agricultural Systems | 3 | Recommended basic computer science course | H* | | |
| TSM 331 | Water Management in Agriculture and Food Systems | 3 | MTH 103 and CSS 210 or approval of department | | ✓ | |
| TSM 343 | Principles of Precision Agriculture | 3 | MTH 103 or MTH 114 or MTH 116 or MTH 124 or MTH 132 | ✓ | | |

Select 1 of the following:

| | | | | | | |
|-----------------|---|----------|---|---|---|---|
| TSM 493 | Professional Internship in Technology Systems Management | 3 | Jr. or Sr. status | ✓ | ✓ | ✓ |
| ABM 222 | Agribus/Food Ind Sales | 3 | (ABM 100 or ABM 130 or EC 201 or EC 202) and completion of Tier I writing requirement | ✓ | ✓ | |
| CSS 424 | Sustainable Agri. and Food Systems: Integration and Synthesis | 3 | CSS 124 | ✓ | | |
| FSC 325 | Food Processing: Unit Operations | 3 | FSC 211 or ANS 201 | | ✓ | |
| GEO 221 | Introduction to Geographic Information | 3 | None | ✓ | ✓ | |
| FW 419 | Applications of Geographic Information Systems to Natural Resources Management | 4 | Recommended GEO 221 | | ✓ | |
| ANS 418 | Comprehensive Nutrient Management Planning | 3 | (BS 161 or LB 145 or BS 181H) and (CEM 143 or CEM 251) | ✓ | | |
| CSUS 354 | Water Resources Management | 3 | Completion of Tier I Writing Requirement | | ✓ | |

* **O=Online / H=Hybrid**

To apply for the Minor, contact Dr. Luke Reese at 517-353-3258, reesel@msu.edu or 103C Farrall Hall, 524 S. Shaw Lane.