

# TECHNOLOGY TSM SYSTEMS MANAGEMENT

## Department of Biosystems and Agricultural Engineering College of Agriculture and Natural Resources

- 121 Fundamentals of Electricity**  
Fall. 4(3-2) P:M: MTH 103 or MTH 116 or (MTH 124 or concurrently) Not open to students with credit in AE071.  
Application of Ohm's law. Kirchoff's laws. Series and parallel circuits. Inductive and capacitive reactance. Power factor. Practical single and three-phase electrical systems. Electromagnetic induction. Transformers. Environmental constraints in power use and production.
- 122 Alternating and Direct Current Machines**  
Spring. 3(3-3) P:M: TSM 121 Not open to students with credit in AE 084.  
Types and characteristics of electric motors. Connecting, reversing and servicing of AC and DC motors and drives. Stepper motors. Variable frequency drives for induction motors.
- 223 Fundamentals of Automation and Controls**  
Fall. 4(3-2) P:M: TSM 121 Not open to students with credit in AE 083.  
On-off controllers for electric actuators. Installation according to code. Ladder-logic. Programmable logic controllers. Installation and programming. Interfacing to a computer.
- 224 Digital Systems, Sensors and Measurements**  
Spring. 3(3-3) P:M: TSM 121 or PHY 184 Not open to students with credit in ECE 230.  
Electrical components in transient and steady state operation. Thermo-electric, piezoelectric, magnetic, resistive and capacitive sensors. Electro-optical devices. Digital circuits. Data acquisition.
- 341 Power and Machinery Systems**  
Fall. 3(2-2) P:M: (PHY 231 and TSM 122 and TSM 223 and TSM 224 and CEM 141) or (BE 456 and TSM 224 and CEM 141) or (LBS 171 and TSM 122 and TSM 223 and TSM 224 and LBS 172) or (BE 456 and TSM 224 and LBS 172)  
Principles, performance, operation, and management of agricultural machine systems and tractors.
- 342 Power and Control Hydraulics**  
Spring. 3(2-2) P:M: TSM 341 or (BE 331 and ECE 345) Not open to students with credit in BE 430.  
Properties of hydraulic fluids. Fixed and variable displacement pumps and motors. Control valves and circuitry. Measurement and analysis of hydraulic systems. Component selection.
- 343 Principles of Precision Agriculture**  
Fall. 3(2-2) P:M: TSM 341 and GEO 221  
Global positioning systems (GPS), yield monitors, computer software. Analysis and interpretation of field maps. Variable-rate application. Economics of precision agriculture.

- 351 Information Technology in Agricultural Systems**  
Fall. 3(2-2) P:M: CSE 101  
Applications and trends in information systems. Evaluation and use of computer systems, peripherals, networks, presentation systems, and communication systems.
- 481 Technology Systems Management - Capstone I (W)**  
Fall. 3(3-0) P:M: (TSM 341 and TSM 342 and TSM 343 and TSM 351 and ABM 332) and completion of Tier I writing requirement  
R: Open only to seniors.  
Project management. Integration of technology systems concepts. Teamwork and leadership skills. Financial and time constraints. Ethics, safety, and liability. Expectations of society.
- 482 Technology Systems Management - Capstone II**  
Spring. 3(0-6) P:M: TSM 481  
Team project in technology systems management.
- 490 Independent Study**  
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Approval of department.  
Supervised individual student research and study in technology systems management.
- 491 Special Topics**  
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.  
Special topics in technology systems management.