Course Syllabus
Southeast Missouri State University
Department of Industrial & Engineering Technology

Title of Course: **Industrial Electronics**  
Course No.: **ET-264**

I. **Catalog Description and Credit Hours of Course:**

A study of electronic/electrical control and instrumentation used in industry. Topics to include electrical and electronic control systems that include closed-loop control systems and associated industrial control devices, transducers and sensors, solid state devices, optoelectronics, electromechanical devices, electrical control diagrams, and telemetry. 3 Credit Hours

II. **Prerequisites:** ET 194 and ET 260

III. **Purposes or Objectives of the Course:**

Upon completion of this course, the student should be able to:

1. Understand solid state devices as logic switches, power controller switches.
2. Demonstrate an understanding of photoelectronics, lasers, and fiber optics.
3. Understand the working principles of various input devices (sensors, transducers etc.) and output devices (amplifiers, relays etc.) and signal conditioning circuitry.
4. Understand control logix, data communications for industrial electronics, and telemetry.

IV. **Expectations of Students:**

1. Students will be expected to attend class regularly and be responsible for all information presented in class.
2. Students will be expected to participate and contribute to the class as appropriate.
3. Students will be expected to perform satisfactorily on all written/lab assignments.
4. Make satisfactory scores on quizzes and examinations.

The instructor reserves the right to change this syllabus at any time during the semester. All changes will be announced in class in advance.
V. **Course Content:**

Unit
1. Solid State Devices Used in Industrial Logic Circuits
2. Programmable Controller (Allen Bradley Control Logix)
3. Solid State Devices Used to Control Power
   - SCRs, UJTs, TRIACs, Power Transistors
4. Solid State Devices Used for Firing Circuit
5. Photoelectronics, Lasers, and Fiber Optics
   - Active Transducers, Passive Transducers, Thermoresistive
   - Transducers, Photoconductive Transducers, Humidity
   - Transducers, Pressure Transducers, Flow Transducers,
   - Level Determination, Speed Sensing, Vibration Transducers
7. Signal Conditioning Circuitry
8. Output Devices: Amplifiers, Valves, Relays, Variable-Frequency Drives,
   - Stepper Motors, and Servomotor Drives
9. Data Communications for Industrial Electronics, Telemetry
10. Industrial Robots

VI. **Textbook**

Thomas E. Kissell, *Industrial Electronics: Applications for Programmable
   Controllers, Instrumentation and Process Control, and Electrical Machines and

VII. **Basis for Student Evaluations:**

Students will be evaluated based on the following basis.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (%)</th>
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<tbody>
<tr>
<td>Two tests</td>
<td>30%</td>
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<tr>
<td>Laboratory</td>
<td>40%</td>
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<tr>
<td>Final exam</td>
<td>20%</td>
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<tr>
<td>Homework</td>
<td>5%</td>
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<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Grading scale</td>
<td>30% - 100%</td>
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</tbody>
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Grading scale: 90 – 100 = A  
80 - 89 = B  
70 - 79 = C  
60 - 69 = D  
below 60 = F