1. **Course number and name**  
**ENGR 410: Process Instrumentation and Control**

2. **Credits and contact hours**  
3 credit hours; three 50-minute lecture sessions/week, or two 1-hr-15-minute lecture sessions/week, depending on semester

3. **Instructor’s or course coordinator’s name**  
Instructor: V.V.Krishnan, Instructor  
Course coordinator: V.V.Krishnan, Professor of Mechanical Engineering

4. **Text book, title, author, and year**  

*other supplemental materials*
Driskell, L., *Control Valve Selection and Sizing*, ISA, 1984

5. **Specific course information**  
   a. **brief description of the content of the course (catalog description)**  
      Principles of control and instrumentation. Control of level, flow, temperature, and pressure. Actuators and transducers. Process modeling
   
   b. **prerequisites or co-requisites**
   
      ENGR 300: Engineering Experimentation,  ENGR 305: Linear Systems Analysis
   
   c. **indicate whether a required, elective, or selected elective course in the program**
      Required / Elective for Mechanical Engineering and  Elective for Electrical Engineering

6. **Specific goals for the course**  
   a. **specific outcomes of instruction**
      
      - To familiarize students with techniques of process modeling and linearization
• To introduce the principles of process control theory and some of its specific applications in actual industrial systems.
• To provide a working knowledge of basic techniques of process control and measurement and their applications in the design of process-control systems.
• To develop basic process control design skills including development of component specifications, control-valve sizing techniques, and preparation of Piping & Instrumentation diagrams.
• To familiarize students with standard process control configurations

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
   Course addresses ABET Student Outcome(s): a, c, d, e, h, i, j, k.

7. Brief list of topics to be covered

• Process Controls: Terminology and Definitions
• Modeling of Simple Processes
• Control Valves
• Process Instrumentation
• Basics of Process Controls
• Design and tuning of simple Control loop
• Advanced Control Configurations
• Multivariable Control