1. **ECE 553, Testing and Testable Design of Digital Systems**
2. **Credits**: 3  
   **Contact Hours**: 3.5

   a. **Other Supplemental Materials**: Notes from Bob’s Copy Shop.

   - **Specific Course Information**:
     a. **Brief description of the content of the course (Course Catalog Description)**: Faults and fault modeling, test equipment, test generation for combinational and sequential circuits, fault simulation, memory and microprocessor testing, design for testability, built-in self-test techniques, and fault location.
     b. **Pre-requisites or Co-requisites**: ECE/Comp Sci 352; Comp Sci 367; ECE 353 or cons inst
     c. **This is a Selected Elective course**.

   - **Specific Goals for the Course**:
     a. **Course Outcomes**:

        1. Students will be able to generate test vectors for complex digital (combi-national and sequential) circuits
        2. To understand and develop algorithms for automatic test pattern generation; and to be able to design circuits so that they are easy to test or can test themselves.

   - **ABET Student Learning Outcomes**:
(a) Ability to apply mathematics, science and engineering principles.
(b) Ability to design a system, component, or process to meet desired needs.
(c) Ability to function on multidisciplinary teams.
(d) Ability to identify, formulate and solve engineering problems.
(e) Ability to communicate effectively.
(f) The broad education necessary to understand the impact of engineering solutions in a
global and societal context.
(i) Recognition of the need for and an ability to engage in life-long learning.
(k) Ability to use the techniques, skills and modern engineering tools necessary for
engineering practice.

- **Brief List of Topics to be Covered:**
  1. Test Economics
  2. Fault Modeling and Fault Simulation
  3. Test Generation Algorithms
  4. Functional testing including Memory testing
  5. Design for Testability including boundary scan
  6. Built-In Self-Test
  7. Test Techniques (such as Iddq testing)
  8. Analog testing (time permitting)