1. **Course number and name**
   EE 466: VLSI Design

2. **Credits and contact hours**
   3 (three lecture hours per week)

3. **Instructor’s or course coordinator’s name**
   Partha Pande

4. **Textbook, title, author, and year**

   Other supplemental materials
   Instructor notes/slides will be provided for some topics.

5. **Specific course information**
   a. **Catalog description:** Very Large Scale Integration circuit, system and physical design using CAD software; project specification, modeling, implementation, documentation, and reporting.
   b. **Prerequisites or corequisites:** EE 234 with a C or better; certified major in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering.

6. **Specific goals for the course**
   By the end of the course, students will be able to
   - Explain the operation principles of MOS transistors (1)
   - Explain the characteristics (DC, AC) of MOS inverter circuit (1, 2)
   - Design, analyze, and optimize static MOS gate circuits (2)
   - Design and analyze high-speed CMOS logic circuits (1, 2, 6)
   - Design and analyze transfer gate and dynamic logic circuits (1, 2, 6)
   - Design and analyze sequential logic (1, 2, 6)
   - Understand and explain logical effort (2)
   - Understand, design, and analyze arithmetic circuits (1, 2)
   - Understand and explain various implementation methods for digital systems (2)
   - Understand, design, and analyze semiconductor memory (1, 2, 6)
   - Understand and explain the characteristics of advanced devices (2)

7. **Brief list of topics to be covered**
   - MOS transistors,
   - MOS inverter circuit,
   - Static MOS gate circuits,
   - High-speed CMOS logic design,
   - Transfer gate and dynamic logic design,
   - Sequential logic,
   - Logical effort,
- Arithmetic circuits,
- Implementation methods,
- Semiconductor memory design,
- Advanced devices beyond CMOS.