1. **Course number and name**
   CptS 466: Embedded Systems

2. **Credits and contact hours**
   3 credits, 3 lecture hours

3. **Instructor’s or course coordinator’s name**
   Hassan Ghasemzadeh

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

5. **Specific course information**
   a. **Catalog description:** The design and development of real-time and dedicated software systems with an introduction to sensors and actuators.
   b. **Prerequisites or corequisites:** CptS 360 Systems Programming; Good background on Operating Systems, C/C++ programming experience, and knowledge of microprocessors

6. **Specific goals for the course**
   By the end of the course, students will be able to
   - Design an embedded system using modular design and abstraction (1a, 1d, 2b, 2e, 2g, 6a, 6b)
   - Design computer software on an embedded system for real-time processing such as real-time ADC sampling (1b, 1d)
   - Debug and verify an embedded software program using a simulator and on the microcontroller (6b, 6d)

7. **Brief list of topics to be covered**
   - Introduction to Computers and Electronics
   - Introduction to Embedded Systems
   - Introduction to the ARM Cortex-M
   - Introduction to Input/Output
   - Modular Programming
   - Pointers and Data Structures
   - Variables, Numbers, and Parameter Passing
   - Serial and Parallel Port Interfacing
   - Interrupt Programming and Real-time Systems
   - Analog I/O Interfacing
   - Communication Systems