EE/CIS 694P: Design of Embedded Systems

1. **Department**
   CIS and EE
2. **Number**
   694P
3. **Title of course**
   Design of Embedded Systems
4. **Description** ***(from Course Description Bulletin)***
   Design of digital signal processor-based embedded systems in electric drives, motor control systems, fuel cells, and energy and voltage control of energy systems.
5. **Level**
   U G
6. **Credits**
   4
7. **Class Time Distribution**
   3 class, 1 lab, two times a week for one and half hour in each meeting
8. **Prerequisites**
   EE647 or CIS/EE 694X
9. **Quarters Offered**
   Winter
10. **General Information**
    Lab assignments are programmed in C.
11. **Exclusions**
    None
12. **Cross-Listings**
    CIS 694P, EE 694P
13. **Other Information**
14. **Course Objectives**
    Be familiar with embedded system design
    Be familiar with the Microsoft .NET framework
    Be familiar with electric drives
    Be familiar with pulse width modulation techniques
    Be familiar with control of DC and AC motors
    Be familiar with Internet-based monitoring systems
    Be familiar with distributed energy systems based on embedded DSP systems
15. **Textbooks and Other Required Material**
    Lecture notes.

EE/CIS 694P: Design of Embedded Systems

16. **Topics** ***(including approximate duration)***
    Two weeks each:
    Microsoft .NET framework
    Interfacing to electric drives(DC-DC converters and inverters)
    Interfacing with motor control (AC and DC motors)
    Interfacing to Internet-based monitoring systems (HVAC, security, etc.)
    Interfacing with distributed energy systems

17. **Representative Lab Assignments** ***(if applicable)***
    User defined modules
    Electric drives
    Motor control systems
    Energy systems
18. **Grading Plan**
    Midterm: 25%
    Final exam: 25%
    Lab assignments: 50%
19. **Contribution to Meeting ABET "Professional Component"** ***(i.e., to ABET "mathematics and basic sciences, engineering topics, and general education") (if applicable)***

20. **Relationship to ABET-Accredited Program Objectives** ***(if applicable)***

21. **Preparation Date**
    October 4, 2002
22. **Preparer Name**
    Ali Keyhani of EE and Gerald Baumgartner of CIS