The University of Texas at Tyler
Department of Electrical Engineering

EENG 4325: Real Time Systems (elective)

Syllabus

Catalog Description:
Basic Real-Time Concepts; Computer Hardware; Languages Issues; Real-Time Kernels; Intertask Communication and Synchronization; Real-Time Memory Management; The Software Life Cycle; System Performance Analysis and Optimization; Reliability, Testing, and Fault Tolerance; Hardware/Software Integration; Integrated lab.

Prerequisites: EENG 3307

Credits: 3 (  hours lecture, 0 hours laboratory per week )


Additional Material: Texas Instruments OMAP 5912 and TMS320C64x DSP hardware with development tools

Course Coordinator: Mukul V. Shirvaikar, Associate Professor

Topics Covered: (paragraph of topics separated by semicolons)
Basic Real-Time Concepts; Computer Hardware; Languages Issues; Real-Time Kernels; Intertask Communication and Synchronization; Real-Time Memory Management; The Software Life Cycle; System Performance Analysis and Optimization; Reliability, Testing, and Fault Tolerance; Hardware/Software Integration; Integrated lab experiments with state-of-the-art real-time hardware and software tools.

Evaluation Methods: (only items in dark print apply):
1. Examinations / Quizzes
2. Homework
3. Report
4. Computer Programming
5. Project
6. Presentation
7. Course Participation
8. Peer Review

Course Objectives¹: By the end of this course students will be able to:
1. Understand real time and embedded systems concepts including requirements, complexity, tasks, and deadlines [1-3]
2. Understand real time operating systems, kernels, software design, inter-task communications, and memory management [1-3,5,7]
3. Implement hands-on projects with real time systems and tools [1-3,5]

¹Numbers in brackets refer to method(s) used to evaluate the course objective.
Relationship to Program Outcomes (only items in dark print apply): This course supports the following Electrical Engineering Program Outcomes, which state that our students will:

1. have the ability to apply knowledge of the fundamentals of mathematics, science, and engineering; [1-3]
2. have the ability to use modern engineering tools and techniques in the practice of electrical engineering; [1-3]
3. have the ability to analyze electrical circuits, devices, and systems; [1-5]
4. have the ability to design electrical circuits, devices, and systems to meet application requirements; [1-5]
5. have the ability to design and conduct experiments, and analyze and interpret experimental results; [1-3]
6. have the ability to identify, formulate, and solve problems in the practice of electrical engineering using appropriate theoretical and experimental methods; [1-3]
7. have effective written, visual, and oral communication skills;
8. possess an educational background to understand the global context in which engineering is practiced, including:
   a. knowledge of contemporary issues related to science and engineering;
   b. the impact of engineering on society;
   c. the role of ethics in the practice of engineering;
9. have the ability to contribute effectively as members of multi-disciplinary engineering teams;
10. have a recognition of the need for and ability to pursue continued learning throughout their professional careers.

Numbers in brackets refer to course objective(s) that address the Program Outcome.

Contribution to Meeting Professional Component: (in semester hours)

<table>
<thead>
<tr>
<th>Mathematics and Basic Sciences:</th>
<th>hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Sciences and Design:</td>
<td>3 hours</td>
</tr>
<tr>
<td>General Education Component:</td>
<td>hours</td>
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</tbody>
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Grade Replacement:
If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grade point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-08 Catalog, p. 35)

Prepared By: Mukul Shirvaikar, Associate Professor
Date: 8 January 2004
       6 January 2005
       13 December 2006