EECS 298:
Embedded Software Synthesis
Lecture 2

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Lecture 2: Overview

- Course administration
  - Enrollment
  - Assignments

- Embedded Software
  - Real-time Issues
  - Real-time Operating Systems (RTOS)
  - Scheduling

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Course Administration

- Enrollment
  - Course enrollment complete?
  - State of enrolled students

- Assignments
  - Project proposal
    - brief description of the project (half a page)
  - Project execution
    - do your project
  - Project presentation
    - 10-20 minute presentation of the project
  - Project report
    - final report about the project

Assignments

- Project options (1/3)
  - Hands-on experience with Embedded Software
    - Choose an embedded target platform
      - PDA
      - Lego Mindstorm robot
      - Xilinx board
      - ...
    - Choose an application
      - Controller
      - Game
      - ...
    - Implement the application on the platform
    - Report on your implementation

Assignments

- Project options (2/3)
  - Literature research
    - Choose an interesting article from the literature on one aspect of Embedded Software Synthesis
      - see course contents for applicable areas
    - Summarize the article and its context
      - check references, related work
      - compare contributions
    - Analyze and critique the article
      - describe pros and cons
    - Report on your topic

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Course Literature

- P. Marwedel:
  "Embedded System Design",
  Kluwer Academic Publishers, Boston, 2003.
- F. Vahid, T. Givargis:
  "Embedded System Design: A Unified Hardware/Software Introduction",
  John Wiley and Sons, New York, 2002.
- A. Jerraya, S. Yoo, D. Verkest, N. Wehn (editors):
  "Embedded Software for SoC",
  Kluwer Academic Publishers, Boston, 2003.
- J. Staunstrup, W. Wolf (editors):
  "Hardware/Software Co-Design: Principles and Practice",
  Kluwer Academic Publishers, Boston, 1997.
- H. Kopetz:
  "Real-time Systems",
  Kluwer Academic Publishers, Boston, 1997.
- C. Krishna, K. Shin:
  "Real-Time Systems",
  McGraw-Hill, 1997.
- P. Marwedel, G. Goosens (editors):
  "Code Generation for Embedded Processors",
  Kluwer Academic Publishers, 1995.
- A. Gerstlauer, R. Doemer, J. Peng, D. Gajski:
  "System Design: A Practical Guide with SpecC",
  Kluwer Academic Publishers, Boston, June 2001.

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Assignments

- Project options (3/3)
  - Software synthesis example
    - Specify an example system in the SpecC system-level description language
    - Validate your example
      - simulation
    - Synthesize your example down to an embedded software implementation
      - System-on-Chip Environment (SCE)
    - Report on your experiment

Assignment 1

- Project proposal
  - brief description of your project idea
    - topic
    - approach
    - expected result
  - email to
    doemer@uci.edu
  - due by next week:
    - October 8, 2004, at 12pm (noon)

Embedded Software

- Chapter 4, part 1, of
  "Embedded System Design"
  by P. Marwedel (Univ. of Dortmund, Germany),
  Kluwer Academic Publishers, 2003.