

# ENGR. 9875 - Embedded and Real-time Systems Design

## Course Information Sheet

Memorial University of Newfoundland

Winter, 2012

### Contact Info.

**Instructor** Siu O'Young, [oyoung@mun.ca](mailto:oyoung@mun.ca), EN-3074, 864-8345.

**Lectures** Monday, Wednesday, Friday 0900-0950, EN4035

**Project meetings** To be determined

**Office hour** Friday 1000-1200, or by appointment via email.

**Web page** <http://www.engr.mun.ca/~oyoung>

### Outline

- Hardware platform and operating system Overview
- Kernel architectures
- Processes and threads
- Real-time & non-RT scheduling
- Operating system and hardware concurrency issues
- Memory, I/O management, and device drivers
- Examples drawn from current RTOS and embedded platforms
- Theoretical modeling framework for RT systems
- Formal RT specifications
- Automatic verification

## Text

- Stallings W., *Operating Systems, internals and principles*, 7th ed., Prentice-Hall, 2012

## References

1. Olderog E. R. and H. Dierks, *Real Time Systems, formal specification and automatic verifications*, Cambridge University Press, 2008
2. Polderman, J.W. and J. C. Willems, *Introduction to Mathematical System Theory: a behavioral approach*, Springer, 1998.
3. Garrido, J. M., R. Schlessinger and K. Hoganson, *Modern Operating Systems*, 2nd ed., Jones & Bartlett, 2012

## Evaluation Scheme

<b>Assignments</b>	10	Jan 21, Feb 3, 17, Mar 2,16
<b>Mid-term</b>	20	Feb 17
<b>Final exam</b>	30	TBD
<b>Project</b>	40	TBD

## Other Info.

- Assignments are due by 8:55 am on the due date. Late assignments will not be accepted without prior arrangement or documented justification.
- Calculators will not be permitted to be used in the mid-term or final exam.
- Any complaints about marks, addition, recording etc., or special circumstances (e.g., illness, bereavement) must be brought to my attention before the final exam. No reconsideration of marks other than the final exam will be made after the exam has been written.
- Asking questions is strongly encouraged.
- Comments, suggestions and constructive criticisms are always welcome.

## The Memorial University of Newfoundland Code

All members of the Memorial University of Newfoundland Community, which includes students, faculty, and staff, shall treat others with respect and fairness, be responsible and honest, and uphold the highest standards of academic integrity.

## **Expectations of Student Conduct**

Like Professional Engineers, engineering students are expected to behave in a professional manner at all times. Students are encouraged to conduct themselves in a manner consistent with the PEG-NL code of ethics. MUN has two sets of rules which deal with inappropriate behaviour by students. The first set deals with academic offences such as cheating while the other set deals with non-academic offences such as disruptive behaviour in class. Both sets of rules can be found in the University Calendar under Regulations. It is strongly recommended that students read and follow these rules because the penalties can be severe, the severest being expulsion from the University.