



WINTER 2019

ECE 7180 – Embedded Systems Engineering

COURSE DESCRIPTION:

A structured approach to the design of modern digital systems is presented with specific emphasis on embedding computer applications. Topics will include the formal methodology of digital design together with selected topics from the current research literature.

COURSE OBJECTIVE:

As the use of computing systems from signal processing and control become more widespread, and their operation and inter-device interactions become more complex, it is important that a principled design methodology be followed in the development of such systems. The goal of this course is to provide a logical framework for the design of digital systems with specific emphasis on embedded computing applications.

PRE-REQUISITES:

Undergraduate background in microprocessor systems and software.

CONTACT HOURS:

3-hours per week

COURSE CONTENT:

The following topics will be discussed:

- Design in embedded systems;
- Modelling of embedded computation;
- Estimating system performance;
- Communication issues in an embedded environment;
- Distributed processing systems;
- Real-time processing and performance.

Additional advanced research topics in embedded computing as determined by the instructor.

HOMEWORK:

Homework will consist of assignments, preparation of a seminar on an assigned article from the research literature, and an individual design project.

TEXTBOOK:

TBD

EVALUATION:

Your final course grade is determined by your performance in assignments, a research seminar, a course project, and a final examination. The weighting of each of these components is as follows:

| COMPONENT | NO | VALUE % | TOTAL VALUE | DETAILS / ADDITIONAL INFO |
|-------------------|----|---------|-------------|---------------------------|
| Seminars | 1 | 10% | 10 | |
| Assignments | 5 | 3% | 15 | |
| Project | 1 | 25% | 25 | |
| Final Examination | 1 | 50% | 50 | |
| TOTAL | | | 100 | |

INSTRUCTOR INFO:

Name: Dean K. McNeill
Office: E2-390J EITC
Tel: (204) 474-8963
Email: Dean.McNeill@umanitoba.ca

Office Hours: By appointment

VOLUNTARY WITHDRAW DEADLINE:

Wednesday, 20 March 2019

REQUIREMENTS/REGULATIONS

Student Responsibilities: It is the responsibility of each student to contact the instructor if he/she is uncertain about his/her standing in the course and his/her potential for receiving a failing grade. Students should also familiarize themselves with Sections 4 and 6 of the Regulations dealing with, among others, incomplete term work, deferred examinations, attendance and withdrawal, etc..

Lectures: Attendance at lectures is essential for successful completion of this course. Students must satisfy each evaluation component in the course.

ACADEMIC INTEGRITY

Students are expected to conduct themselves in accordance with the highest ethical standards of the Profession of Engineering and evince academic integrity in all their pursuits and activities at the university. As such, in accordance with the General Academic Regulations and Requirements of the University of Manitoba, Section 7.1, students are reminded that plagiarism* or any other form of cheating is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university) regardless of media

- examinations
- assignments
- laboratory reports
- term exams

A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty

Please refer any questions regarding Academic Integrity to your course instructor.

***Plagiarism:** to steal and pass off (the ideas or words of another) as one's own; use (another's production) without crediting the source