Carleton UNIVERSITY | Department of Systems and Computer Engineering

SYSC 4202
Clinical Engineering

Calendar description

Overview of the Canadian health care system; brief examples of other countries; clinical engineering and the management of technologies in industrialized and in developing countries; safety, reliability, quality assurance; introduction to biomedical sensor technologies; applications of telemedicine; impact of technology on health care.

Includes: Experiential Learning Activity.

Lectures three hours a week, problem analysis three hours alternate weeks.

http://calendar.carleton.ca/undergrad/courses/SYSC/

Prerequisites

Fourth-year status in Biomedical and Electrical or Biomedical and Mechanical Engineering.

Also offered at the graduate level, with different requirements, as BIOM 5406, for which additional credit is precluded.

Prior knowledge

Students should:

- Have good critical thinking skills.
- General understanding of biomedical instrumentation and device design.
- Understand the principles of general and cardio-vascular anatomy and physiology.
- General knowledge of medical devices.

Course objectives

SYSC4202 Clinical Engineering will introduce students to the profession of Clinical Engineering; a specialized branch of Biomedical Engineering. Topics of discussion and lectures will include an overview of the Canadian Health Care System with examples of other countries; the role of clinical engineering in healthcare; medical technology management in industrialized; patient and staff safety considerations; electromagnetic interference; reliability, quality assurance practices; introduction to biomedical sensor and medical technologies; applications of telemedicine; medical technology procurement; the impact of technology on healthcare, and technology assessment. The course provides a good background for students interested in biomedical engineering,

clinical engineering, or medical informatics and for students wishing to work in a biomedical and/or healthcare industry.

List of topics

- Introduction to Biomedical / Clinical Engineering
- Canadian Health Care System
- Introduction to Clinical Engineering, Technology Management
- Health Technology Management
- Capital Equipment Procurement, Device Standards
- Sensors and Medical Technology Overview
- Patient Safety & Risk Management
- Risk Reporting, Liability, Incident Investigation
- Education, Research & Development, Telemedicine Technologies
- Site Visit: University of Ottawa Heart Institute
- Strategic Technology Planning

Learning outcomes

By the end of this course, students will learn:

- The role of clinical engineering in healthcare.
- Various roles and responsibilities of healthcare professionals.
- Funding of healthcare technology and healthcare system in Canada.
- Medical technology and device management in industrialized countries.
- Patient and staff safety considerations.
- Electromagnetic interference.
- Medical device reliability and quality assurance practices.
- Introduction to biomedical sensor and medical technologies.
- Applications of telemedicine.
- Medical technology procurement practices and guidelines.
- Impact of technology on healthcare.
- Healthcare Technology Assessment.

Graduate Attributes (GAs)

The Canadian Engineering Accreditation Board requires graduates of engineering programs to possess 12 attributes at the time of graduation. There are no GA's related to this course. For more information, please visit: https://engineerscanada.ca/.

Instructor and TA contact

Specific to course offering (tbd)

Textbook (or other resources)

Specific to course offering (tbd)

Evaluation and grading scheme

Specific to course offering (tbd)

Breakdown of course requirements

Specific to course offering (tbd)

Tentative week-by-week breakdown

Specific to course offering (tbd)

General regulations

Specific to course offering (tbd)