



FALL 2018

ECE 7180 – Optimization Techniques With Applications to Communications
Systems and Networks

COURSE DESCRIPTION:

The course will introduce different mathematical optimization techniques and algorithms and their applications to the communications systems and networks. Topics will include unconstrained optimization, linear programming, and nonlinear constrained optimization together with selected applications from the current research literature.

COURSE OBJECTIVE:

Optimization techniques are fundamental tools for designing and analyzing efficient engineering methods and systems including communications systems and networks. The goal of this course is to provide a basic understanding of different optimization techniques and algorithms with specific emphasis on communications systems and networks applications.

PRE-REQUISITES:

Undergraduate background in basic linear algebra and basic programming skills in MATLAB.

CONTACT HOURS:

3-hours per week

COURSE CONTENT:

The following topics will be covered:

- Applications of linear, non-linear, discrete, and robust optimizations in communications systems and networks
- Set-constrained and unconstrained optimization
- Linear programming
- Nonlinear constrained optimization
- Robust optimization

Additional advanced research topics in optimization techniques and their applications to the design and analysis of communications as determined by the instructor.

TEXTBOOK:

TBD

EVALUATION:

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

COMPONENT	NO	VALUE %	TOTAL VALUE	DETAILS / ADDITIONAL INFO
Seminars	2	20%	20	
Final exam	1	50%	50	
Project	1	30%	30	
TOTAL			100	

INSTRUCTOR INFO:

Name: Ekram Hossain
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Office Hours: By appointment

VOLUNTARY WITHDRAW:

Wednesday, 20 March 2018

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.

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