

ELECTRICAL AND COMPUTER ENGINEERING, PH.D.

Electrical & Computer Engineering

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Academic Staff: Please refer to the Electrical and Computer Engineering (<https://umanitoba.ca/engineering/faculty-staff/electrical-and-computer-engineering/>) website for Faculty information.

Electrical & Computer Engineering (ECE) Program Information

The department offers programs leading to the Master of Engineering, Master of Science, and Doctor of Philosophy. Students may select either a specialized research-oriented activity, an interdisciplinary program, or collaboration with industry or research centres in Canada.

Admission Information

Admission to the Faculty of Graduate Studies

Application and Admission Procedures are found in the Academic Guide (<https://catalog.umanitoba.ca/graduate-studies/academic-guide/application-admission-registration-policies/>).

Admission requirements for doctoral students are found in the Doctor of Philosophy General Regulations (<https://catalog.umanitoba.ca/graduate-studies/academic-guide/doctor-philosophy-general-regulations/>) section of the Guide.

ECE Ph.D. Admission Requirements

The student must normally hold a Master of Science degree in Electrical or Computer Engineering and have received tentative approval from a professor in the Department of Electrical & Computer Engineering. A 3.5 GPA or higher is recommended

Application Information

Students should complete and submit their online application with supporting documentation by the date indicated on the ECE Ph.D. program of study (<https://umanitoba.ca/explore/programs-of-study/electrical-and-computer-engineering-phd/>) page.

Degree Requirements

The Ph.D. program in Electrical and Computer Engineering depends on student classification as follows:

- **M.Sc.** degree in Electrical or Computer engineering and who have been admitted directly into the Ph.D. program
 - minimum of 12 credit hours of Advisory Committee-approved coursework is required
 - courses must be at the 7000 level or higher
 - at least 6 of the 12 credit hours must be from the ECE department
- **B.Sc.** degree in Electrical or Computer Engineering and who are

- recommended for transfer into the Ph.D. program from the ECE M.Sc. program at this university
- minimum of 24 credit hours of Advisory Committee-approved coursework is required
 - 9 credit hours **MUST** be at or above the 7000 level
 - 6 credit hours may be
 - Other department: at or above the 3000 level **or**
 - ECE department: 4000 level elective courses
 - at least 12 of the 24 credit hours **must** be from the ECE department
 - In the case of a transfer from an M.Sc. program to the ECE Ph.D. program credit may be given for approved coursework completed at the M.Sc. level

• Transferred from the M.Sc program

- Please see info at http://umanitoba.ca/faculties/engineering/departments/ece/curr_students/graduate/transfer-to-phd.html

• For all other categories of students

- a minimum of 24 credit hours of advisory committee-approved coursework is required if the student does not hold a M.Sc., otherwise 12 credit hours is required
 - of which 9 credit hours must be at or above the 7000 level
 - the balance of 6 credit hours must be at or above the 3000 level from other departments or 4000 level elective courses from the ECE department
 - at least 12 of the 24 credit hours must be from the Dept. of Electrical and Computer Engineering department
- A Ph.D. thesis, which is based on research work normally carried out at this university, is required.

Expected Time to Graduate: 3.5 years

Progression Chart

Ph.D. Students Holding a Master's Degree

Course	Title	Hours
Years 1-2		
GRAD 7300	Research Integrity Tutorial	0
GRAD 7500	Academic Integrity Tutorial	0
GRAD 8010	Doctoral Candidacy Examination	0
ECE 7XXX	ECE Courses designated 7000 level or higher ¹	12
Hours		12
Year 2		
Ph.D. Thesis Proposal Presentation		0
Hours		0
Years 3-6		
GRAD 8000	Doctoral Thesis	0
Hours		0
Total Hours		12

¹ TBD (Course must be in the student's field of research) – Must be approved by Academic Advisor. With permission from the Academic Advisor and Department students may take courses outside of ECE.

Ph.D. Students Without a Master's Degree

Course	Title	Hours
Years 1-2		
GRAD 7300	Research Integrity Tutorial	0

GRAD 7500	Academic Integrity Tutorial	0
GRAD 8010	Doctoral Candidacy Examination	0
Hours		0
Years 1-2.5		
ECE 7XXX	ECE Courses designated 7000 level or higher ^{1,2}	12-24
ECE 4XXX	ECE Courses designated 4000 level or higher outside ECE, 3000 or higher ^{1,3}	6
Hours		18-30
Year 2		
Ph.D. Thesis Proposal Presentation		
Hours		0
Years 3-6		
GRAD 8000	Doctoral Thesis	0
Hours		0
Total Hours		18-30

¹ TBD (Course must be in the student's field of research) – Must be approved by Academic Advisor.

² At least 12 of the 24 credit hours **must** be from the ECE Department.

³ **Up to** 6-credit hours may be taken from another department.

Registration Information

Students should familiarize themselves with the Faculty of Graduate Studies 'GRAD' courses applicable to their program (<https://catalog.umanitoba.ca/graduate-studies/registration-information/>). If you have questions about which GRAD course(s) to register in, please consult your home department/unit.

Courses are subject to cancellation if there is insufficient enrolment. Courses with insufficient enrolment may be cancelled the first week of classes. Not all courses will be offered each year – contact the department for courses that will not be offered. All returning and newly admitted students must see an academic advisor or the department head prior to attempting to register.

Regulations

Students must meet the requirements as outlined in both Supplementary Regulation and BFAR documents as approved by Senate.

Supplementary Regulations

Individual units may require specific requirements above and beyond those of the Faculty of Graduate Studies, and students should consult unit supplementary regulations (<https://umanitoba.ca/graduate-studies/supplementary-regulations/>) for these specific regulations.

Bona Fide Academic Requirements (BFAR)

Bona Fide Academic Requirements (BFAR) (<https://catalog.umanitoba.ca/graduate-studies/academic-guide/academic-performance-general/#BFAR>) represent the core academic requirements a graduate student must acquire in order to gain, and demonstrate acquisition of, essential knowledge and skills.

All students must successfully complete:

- GRAD 7300 prior to applying to any ethics boards which are appropriate to the student's research or within the student's first year, whichever comes first; and
- GRAD 7500 within the first term of registration;

unless these courses have been completed previously, as per Mandatory Academic Integrity Course (<https://catalog.umanitoba.ca/graduate-studies/academic-guide/academic-performance-general/#GRAD7500>) and Mandatory Research Integrity Online Course (<https://catalog.umanitoba.ca/graduate-studies/academic-guide/academic-performance-general/#GRAD7300>).

Students must also meet additional BFAR requirements (<https://umanitoba.ca/graduate-studies/student-experience/core-academic-requirements/#additional-requirements-by-program>) that may be specified for their program.

General Regulations

All students must:

- maintain a minimum degree grade point average of 3.0 with no grade below C+;
- meet the minimum and not exceed the maximum course requirements, and
- meet the minimum and not exceed the maximum time requirements (in terms of time in program and lapse or expiration of credit of courses).