ENGG*3450 Electronic Devices - DRAFT

Fall 2018
Section(s): C01

School of Engineering
Credit Weight: 0.50
Version 1.00 - October 15, 2018

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1 Course Details

1.1 Calendar Description

This course explores the theory and principles of modern electronic devices and their applications in circuits. Course topics include: intrinsic and doped semiconductors; drift and diffusion currents; metal-semiconductor contacts and MOS capacitors; pn junctions and breakdown phenomena; solid-state diodes; bipolar and MOS field-effect transistors; current-voltage characteristics and biasing; small-signal models and operation; circuit integration; analysis and design of application circuits, operational transconductance amplifiers, and logic gates.

Pre-Requisite(s): ENGG*2450

1.2 Timetable

Lectures

Monday	16:30–17:20	ROZH 103
Wednesday	16:30–17:20	ROZH 103
Friday	16:30–17:20	ROZH 103

Laboratory sessions and tutorials

Sect. 1	Thursday	8:30–10:20	RICH 1504
Sect. 2	Thursday	14:30–16:20	RICH 1504
Sect. 3	Tuesday	9:30–11:20	RICH 1504

1.3 Final Exam

The final exam is on Friday, 14 December 2018, 14:30 to 16:30. Please verify time and location on the exam schedule webpage and on WebAdvisor.

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2 Instructional Support

2.1 Instructor(s)

Stefano Gregori

Email: sgregori@uoguelph.ca
Telephone: 519-824-4120 ext. 56191
Office: RICH 3521
Office Hours: on course webpage or by appointment

2.2 Instructional Support Team

Lab Technician: Hong Ma
Email: hongma@uoguelph.ca
Telephone: 519-824-4120 ext. 53873
Office: RICH 1506

2.3 Teaching Assistant(s)

Teaching Assistant: Michelle Del Rosso
Email: mdelross@uoguelph.ca
Office Hours: on course webpage or by appointment

Teaching Assistant: Junfei Li
Email: jli64@uoguelph.ca
Office Hours: on course webpage or by appointment

Teaching Assistant: Mark Lipski
Email: mlipski@uoguelph.ca
Office Hours: on course webpage or by appointment

Teaching Assistant: Abolfazl Rahimnejad
Email: arahimne@uoguelph.ca
Office Hours: on course webpage or by appointment

Teaching Assistant: Abu Siddique
Email: asiddi04@uoguelph.ca
Office: THRN 3114
Office Hours: on course webpage or by appointment

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3 Learning Resources

3.1 Required Resource(s)

Course webpage (Website)
Please check regularly the course webpage on CourseLink for information and resources.

Course textbook (Textbook)
A. S. Sedra and K. C. Smith, *Microelectronic Circuits*, Oxford, 7th ed., 2014, TK7867 .S39

3.2 Recommended Resource(s)

Reference books for consultation (Readings)
S. Dimitrijev, *Principles of Semiconductor Devices*, Oxford, 2nd ed., 2011, TK7871.85 .D54697

D. A. Neamen, *Microelectronics: Circuit Analysis and Design*, McGraw-Hill, 4th ed., 2010, TK7867 .N412

Library resources (Readings)
The textbook and the reference books above are available in the bookstore and on Course Reserve in the library. Additional references are indexed by library call numbers TK7800 to TK8360 (i.e. located on the 5th floor of the library).

3.3 Additional Resource(s)

Lecture notes (Notes)
The lecture notes will be posted on the course webpage. The notes are prepared with the intention that you will fill in the blanks, take additional notes and write down examples during class.

Problem sets (Other)
The problem sets will be posted on the course webpage.

Laboratory manuals (Lab Manual)
The laboratory manuals will be posted on the course webpage. The manuals are prepared with the intention that you will read them before each laboratory session to be ready for a safe and successful activity.

Datasheets and instruction manuals (Other)
Datasheets of electronic components and instruction manuals of electronic instrumentation will be posted on the course webpage.

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4 Learning Outcomes

This course aims to provide you with:

1. Information about the properties of semiconductor materials and about the models and the principles of operation of electronic devices.
2. Understanding the connections between device-level characteristics and circuit-level performance as the way to analyzing electronic circuits and designing applications that operate as you desire.
3. Developing your knowledge-integration, problem-solving, and investigation skills to prepare for your career in engineering.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Relate the properties of semiconductor materials to the models of diodes and transistors, and describe the principles of operation of these devices.
2. Bias a circuit for linear operation, and solve circuit problems by applying device models and by executing mathematical operations based on the large-signal and small-signal abstractions.
3. Understand that you can use ideal models to predict experiments with real devices, and identify in which aspects the behaviour of a real device deviates from its model.
4. Draw schematic diagrams correctly, and apply systematic analysis methods to evaluate the performance of circuits with diodes, transistors, amplifiers, and logic gates.
5. Read schematic diagrams, deduce function from combination of devices, and identify the device parameters that determine performance of gain stages, amplifiers, and logic gates.

6. Safely operate bench-top electronic instrumentation for characterizing electronic devices, assemble and troubleshoot simple circuits, and communicate about data sheets of electronic devices.

4.2 Engineers Canada - Graduate Attributes (2018)

Successfully completing this course will contribute to the following:

#	Outcome Set Name	Course Learning Outcome
1	Knowledge Base	1, 2
1.1	Recall, describe and apply fundamental mathematical principles and concepts	1, 2
1.2	Recall, describe and apply fundamental principles and concepts in natural science	1, 2
1.3	Recall, describe and apply fundamental engineering principles and concepts	1, 2
1.4	Recall, describe and apply program-specific engineering principles and concepts	1, 2
2	Problem Analysis	2, 4
2.1	Formulate a problem statement in engineering and non-engineering terminology	2, 4
2.2	Identify, organize and justify appropriate information, including assumptions	2, 4
2.3	Construct a conceptual framework and select an appropriate solution approach	2, 4
2.4	Execute an engineering solution	2, 4
2.5	Critique and appraise solution approach and results	2, 4
3	Investigation	3, 5
3.1	Propose a working hypothesis	3, 5
3.2	Design and apply an experimental plan/investigative approach (for example, to characterize, test or troubleshoot a system)	3, 5
3.3	Analyze and interpret experimental data	3, 5
3.4	Assess validity of conclusions within limitations of data and methodologies	3, 5
4	Design	4, 5
4.1	Describe design process used to develop design solution	4, 5

#	Outcome Set Name	Course Learning Outcome
4.2	Construct design-specific problem statements including the definition of criteria and constraints	4, 5
4.3	Create a variety of engineering design solutions	4, 5
4.4	Evaluate alternative design solutions based on problem definition	4, 5
4.5	Develop and refine an engineering design solution, through techniques such as iteration, simulation and/or prototyping	4, 5
5	Use of Engineering Tools	5, 6
5.1	Select appropriate engineering tools from various alternatives	5, 6
5.2	Demonstrate proficiency in the application of selected engineering tools	5, 6
5.3	Recognize limitations of selected engineering tools	5, 6
6	Individual & Teamwork	6
6.1	Describe principles of team dynamics and leadership	6
6.2	Understand all members' roles and responsibilities within a team	6
6.3	Execute and adapt individual role to promote team success through, for example, timeliness, respect, positive attitude	6
6.4	Apply strategies to mitigate and/or resolve conflicts	6
6.5	Demonstrate leadership through, for example, influencing team vision and process, promoting a positive team culture, and inspiring team members to excel	6
7	Communication Skills	1, 2, 3, 4, 5, 6
7.1	Identify key message(s) and intended audience in verbal or written communication as both sender and receiver	1, 2, 3, 4, 5, 6
7.2	Interpret technical documentation such as device specification sheets, drawings, diagrams, flowcharts, and pseudocode	1, 2, 3, 4, 5, 6
7.3	Construct the finished elements using accepted norms in English, graphical standards, and engineering conventions, as appropriate for the message and audience	1, 2, 3, 4, 5, 6
7.4	Substantiate claims by building evidence-based arguments and integrating effective figures, tables, equations, and/or references	1, 2, 3, 4, 5, 6
7.5	Demonstrate ability to process oral and written communication by following instructions, actively listening, incorporating feedback, and	1, 2, 3, 4, 5, 6

#	Outcome Set Name	Course Learning Outcome
	formulating meaningful questions	
8	Professionalism	4, 6
8.1	Demonstrate an understanding of what it means to be a professional engineer and distinguish between legislated and non-legislated professions	4, 6
8.2	Effectively describe engineering law and its impact on professional engineering practice	4, 6
8.3	Demonstrate professional behaviour	4, 6
9	Impact of Engineering on Society and the Environment	3
9.1	Analyze the safety, social, environmental, and legal aspects of engineering activity	3
9.2	Evaluate the uncertainties and risks associated with engineering activities	3
9.3	Anticipate the positive and negative impacts of introducing innovative technologies to solve engineering problems	3
10	Ethics & Equity	1, 2, 3, 4, 5, 6
10.1	Summarize ethical theories and equity, diversity, and inclusivity principles	1, 2, 3, 4, 5, 6
10.2	Determine an ethical course of action by applying ethical theories and the PEO Code of Ethics	1, 2, 3, 4, 5, 6
10.3	Demonstrate values consistent with good ethical practice, including equity, diversity, and inclusivity	1, 2, 3, 4, 5, 6
11	Economics and Project Management	6
11.1	Apply project management techniques and manage resources within identified constraints	6
11.2	Identify risk and change management techniques, in the context of effective project management	6
11.3	Estimate economic impact and feasibility of an engineering project or design using techniques such as cost benefit analysis over the life of the project or design	6
12	Life Long Learning	1, 2, 3, 4, 5, 6
12.1	Identify personal career goals and opportunities for professional development	1, 2, 3, 4, 5, 6
12.2	Self-assess skills relative to career goals and SOE defined learning	1, 2, 3, 4, 5, 6

#	Outcome Set Name	Course Learning Outcome
	outcomes	
12.3	Demonstrate capability for continuous knowledge and skill development in a changing world	1, 2, 3, 4, 5, 6

5 Teaching and Learning Activities

5.1 Lecture schedule

Week	Dates	Lecture topics	References	Learning objectives
—	Sept. 7–8	Introduction	ch. 1	1, 4, 5
1	Sept. 11–15	Semiconductors and pn junction	ch. 3	1
2	Sept. 18–22	Diodes	ch. 4	1, 2
3	Sept. 25–29	Diode circuits	ch. 4	1, 2, 3, 4, 6
4	Oct. 2–6	Transistors	ch. 5	1, 2
5	Oct. 9–13	Transistor circuits in dc	ch. 5	1, 2, 3, 4, 6
6	Oct. 16–20	Transistor amplifiers	ch. 7	2, 3, 4, 5
7	Oct. 23–27	Amplifier building blocks	ch. 8	4, 5
8	Oct. 30–Nov. 3	Differential and multistage amplifiers	ch. 9	4, 5, 6
9	Nov. 6–10	Inverters	ch. 14	3, 4, 5
10	Nov. 13–17	Logic gates	ch. 14	4, 5
11	Nov. 20–24	Advanced topics, if schedule permits	chs. 6, 13, 15	3, 4, 5, 6
12	Nov. 26–30	Review	all	1–6

Topics schedule will be adjusted throughout the course as needed.

5.2 Laboratory and tutorial schedule

Week	Dates	Laboratory and tutorial topics	Due date
—	Sept. 6–7	—	—
1	Sept. 10–14	Laboratory 1, introduction to instruments, components, and laboratory practices	—
2	Sept. 17–21	Tutorial 1, semiconductors and pn junction	—
3	Sept. 24–28	Laboratory 2, diodes and diode circuits	Oct. 1–5
4	Oct. 1–5	Tutorial 2, diodes and analysis of diode circuits	—
5	Oct. 8–12	Study-break week	—
6	Oct. 15–19	Tutorial 3, transistors and analysis of transistor circuits in dc	—
7	Oct. 22–26	Laboratory 3, transistors and gain stages	Oct. 29–Nov. 2
8	Oct. 29–Nov. 2	Tutorial 4, analysis of amplifier circuits using the small-signal abstraction	—
9	Nov. 5–9	Laboratory 4, transistor amplifiers and logic gates	Nov. 12–16

10	Nov. 12–16	Tutorial 5, differential amplifiers and logic gates circuits	—
11	Nov. 19–23	Tutorial 6, review	—
12	Nov. 26–30	—	—

Topics schedule will be adjusted throughout the course as needed.

5.3 Other Important Dates

Thursday, 6 September 2018:	First day of class
Monday, 8 October 2018:	Holiday (i.e. no classes scheduled)
Tuesday, 9 October 2018:	Study break day (i.e. no classes scheduled)
Friday, 2 November 2018:	Fortieth class day (i.e. drop date)
Thursday, 29 November 2018:	Tuesday schedule in effect
Friday, 30 November 2018:	Monday schedule in effect and last day of class

Please consult the Undergraduate Calendar to verify the schedule of dates for this term:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c03/c03-fallsem.shtml
Please consult the Undergraduate Calendar to find information about dropping courses:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

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6 Assessments

6.1 Marking Schemes & Distributions

Final grade (G) (100%)

From 0 to 100%. The pass grade is 50%. You must pass the exams (i.e. midterm and final combined) in order to pass the course, and the final exam will have a higher weighting if you do better in the final than in the midterm. Accordingly, your final grade is calculated as follows.
Setting
$E = \max[F + M,\ (9 / 8)\ F + (5 / 6)\ M]$,
your final grade in percentage points is given by
$G = E + L / \{1 + (L - 15)\ u(L - 15) / [15\ e^{(E - 35) \cdot u(E - 35)}]\}$
with
$u(x) = 0,\ x < 0$
$u(x) = 1,\ x \geq 0$
unit step.

6.2 Assessment Details

Laboratories (L) (30%)
From 0 to 30 points, made of three laboratory reports (0 to 10 points each). Please see section 5.2 for schedule and due dates.

Midterm exam (M) (30%)
From 0 to 30 points. The midterm exam is on Friday, 26 October 2018, 16:30 to 18:00. Please verify time and location on the course webpage.

Final exam (F) (40%)
From 0 to 40 points. The final exam is on Friday, 14 December 2018, 14:30 to 16:30. Please verify time and location on the exam schedule webpage and on WebAdvisor.

6.3 Course grading policies

Missed assessments:

If you are unable to meet an in-course requirement due to medical, psychological, or compassionate reasons, please advise the course instructor in writing (with your name, student number, and email contact) at the earliest possible time. Please see the undergraduate calendar for information on regulations and procedures for academic consideration: https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Accommodation of religious obligations:

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor at the start of the semester to make alternative arrangements. Please see the undergraduate calendar for information on regulations and procedures for academic accommodation of religious obligations: https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

Missed exams:

Any student not taking an exam receives a grade of zero for that exam. There are no makeup midterm exams. In case you have a legitimate reason for missing the midterm exam, the instructor may consider an accommodation upon presentation of a written request and suitable documentation before the time of the exam.

Laboratory work:

There are no laboratory exemptions, and attendance is mandatory for submitting laboratory reports. There are no makeup laboratory sessions. In case you have a legitimate reason for missing a session, the instructor may consider an accommodation upon presentation of a written request and suitable documentation before the time of the session.

Late laboratory reports:

Any student not handing in a report receives a grade of zero for that submission. There are no makeup reports and late submissions are not accepted for marking.

Copies of reports:

Please keep reliable back-up copies of all out-of-class assignments, because you may be asked to resubmit your work.

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7 Course Statements

7.1 Communication and email policy

Communication is through announcements in class. Some information will be posted on the course webpage or sent via email messages to your University address. It is your responsibility to keep yourself informed about the course.

Please use lectures, tutorials, and laboratory sessions as your main opportunity to receive information about the course. Please meet the instructor and the teaching assistants during the office hours or study sessions when you have specific questions about concepts, problem sets, and laboratory experiments, and any question that cannot be answered easily or briefly with a

reply email.

The course email policy is as follows:

- Use your University email account for correspondence relating to the course.
- Start the subject header with the course identifier "ENGG*3450" and add the topic of your message (e.g. "Ch 1 question," "Lab 2 problem," "missed midterm").
- Include a clearly written message and your name and student number.
- You will normally receive a reply in a timely manner (with the exception of nights, weekends, and holidays). If you do not receive a reply within two days, please resubmit your question or phone (leaving a message if necessary).

The University regulations require all students to check their University email accounts regularly, because email is the official route of communication between the University and its students.

7.2 Relationships with other courses

Previous courses

ENGG*2450, Electric Circuits:
lumped-element models, node and mesh analysis, linearity and superposition, Thévenin and Norton theorems, operational amplifier, RLC circuits in dc, ac, and transient conditions.

Follow-on courses

ENGG*3490, Introduction to Mechatronic Systems Design:
modelling and design of mechatronic systems with electronic and mechanical components.

ENGG*4080, Micro and Nano-Scale Electronics:
circuit integration and operating principles of integrated micro and nano electronic circuits.

ENGG*4390, Bio-Instrumentation Design:
electronic instrumentation and measurements for biological systems.

ENGG*4550, VLSI Digital Design:
CMOS gates, latches, registers, pipelining, adders, multipliers, and shifters.

7.3 Recommendations about studying

You are encouraged to spread the learning periods over the entire term (e.g. it is a good idea to start studying from today). Try to avoid distractions while studying and during lectures, tutorials, and laboratory sessions. Take notes and outlines while reading or listening. Note down the questions and doubts that arise and get clarifications at the earliest possible time. When you are in a classroom or laboratory, as a courtesy to classmates and instructors, please keep your cellphone silenced, do not eat (water or a drink in a leak-proof container are usually fine), and use your tablet or laptop only for note-taking and course-related applications.

7.4 Recommendations about obtaining help

You can obtain help from the instructor and the teaching assistants during the office hours (posted on the course webpage) and from the laboratory technician during the laboratory time slots.

Please contact the instructor if you need help or you have fallen behind in your work. He is willing to put in as much effort to help you as you are willing to put in to help yourself. He is happy to work with you on difficult concepts and to hear your suggestions for improving the course. If you are busy during his office hours, then email him with some days and times you are free, and he will set an appointment that works for both you and him.

If you are ill, please call the Student Health Services or a medical doctor. If you have emotional, family, or living environment problems that affect your ability to study, please visit the Counselling Services or your academic advisor. If you have a disability or a short-term disability, please refer to the Student Accessibility Services. You are encouraged to use the available services and programs, and you are welcome to discuss with the instructor your specific learning needs in this course at the earliest possible time.

7.5 Recommendations about laboratory safety

Food and drinks are prohibited from all laboratories. Food is prohibited from all computer rooms and drinks are permitted only if stored in a sealed, reusable container. You are not allowed to let unauthorized people in, or to wedge the doors open.

Please use good judgement and safe working habits and remember that food and drink are not allowed in RICH 1504 at any time. Before the first laboratory session, you must read the course manual on Safety and Laboratory Policies. In case of doubts about safety procedures, please consult with the laboratory technician or the instructor before proceeding. Any violation of safety policies may result in loss of laboratory privileges.

7.6 Recommendations about academic misconduct

You are encouraged to familiarize yourself with your responsibilities, review the tutorial on Academic Integrity, and discuss any question you may have with the instructor or a faculty member.

When writing laboratory reports, please remember that copying text, data, or figures is plagiarism, even if you received the material from a friend, if you found the material on the Internet, or if you are reusing material for which you have previously received credit. Letting others use your work is also not allowed. Therefore please keep your reports and data in a secure location.

Resources

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

A tutorial on Academic Integrity produced by the Learning Commons can be found at:
http://www.academicintegrity.uoguelph.ca/

A section on Academic Misconduct and the Code of Ethics adopted by the School of Engineering are available in the Rules and Procedures Guide for engineering students.

Turnitin

In this course, your instructor will be using Turnitin, integrated with the CourseLink Dropbox tool, to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to maintain academic integrity at the University of Guelph.

All submitted assignments will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

7.7 Recording of materials

The instructor reserves the right to all materials made available for this course and all interpretations presented, which may not be reproduced, retained, or transmitted to others without the written consent of the instructor. The materials available on the course webpage and the materials distributed in class and in the laboratory may be protected by copyright and are only for the use of students enrolled in this course for the purposes associated with this course and may not be retained or further disseminated.

7.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations that apply to undergraduate, graduate and diploma programs.

This course outline includes sections and standard statements adapted with permission from the course outline template of the School of Engineering and from the course outline checklist of the University of Guelph. In case of any discrepancy, please refer to the current Academic Calendars.

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8 School of Engineering Statements

8.1 Instructor's Role and Responsibility to Students

The instructor’s role is to develop and deliver course material in ways that facilitate learning for a variety of students. Selected lecture notes will be made available to students on Courselink but these are not intended to be stand-alone course notes. Some written lecture notes will be presented only in class. During lectures, the instructor will expand and explain the content of notes and provide example problems that supplement posted notes. Scheduled classes will be the principal venue to provide information and feedback for tests and labs.

8.2 Students' Learning Responsibilities

Students are expected to take advantage of the learning opportunities provided during lectures and lab sessions. Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor. Students who do (or may) fall behind due to illness, work, or extra-curricular activities are advised to keep the instructor informed. This will allow the instructor to recommend extra resources in a timely manner and/or

provide consideration if appropriate.

8.3 Lab Safety

Safety is critically important to the School of Engineering and is a shared responsibility among faculty, staff, and students. As a student you are responsible for taking all reasonable safety precautions and following the approved safety procedures specific to the laboratory you are working in. In addition, you are responsible for reporting all safety issues to the laboratory supervisor or the faculty responsible.

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9 University Statements

9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The regulations and procedures for Academic Consideration are detailed in the Undergraduate Calendar.

9.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.

9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

9.6 Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

9.7 Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.