

Course Outline

FACULTY:	Faculty of Science and Technology	
PROGRAM(S):	243.A0 Computer Engineering Technology	
DEPARTMENT:	247 Computer Engineering Technology	
COURSE TITLE:	CIRCUIT ANALYSIS AND SIMULATION I	
COURSE NUMBER:	247-105-VA	
COURSE SECTION(S):	00001, 00002, 00003	
PONDERATION:	2-3-2	Lecture – Lab work - Homework
NUMBER OF CREDITS:	2.33	credits
PREREQUISITE(S):	None	
SEMESTER/YEAR:	1, 2019	
TEACHER (THEORY):	Mohamed Tavakoli Office: K-306 Tel: 514-744-7500 Ex.7373 E-mail: MIO	
AVAILABILITY:	Office Hours: Wed. 13:30-14:30, Fri. 13.30-14:30 Or by appointment with the teacher.	
TEACHER (LAB):	Mohamed Tavakoli Office: K-306 Tel: 514-744-7500 Ex.7373 E-mail: MIO	
Introduction Course Description: <i>This course will introduce students to D.C. analog circuits, their schematics, and component datasheets. Students will learn the basics of D.C. electrical circuits and how to apply that knowledge as they interpret circuit diagrams, examine circuits, perform circuit simulations using a professional CAD, and troubleshoot problems. Students will learn to read component datasheets and schematics using a professional CAD. They will learn to use various instruments to troubleshoot circuit problems, as well as to write diagnostic reports. Finally, students will also learn to interpret and process verification results.</i>		

Statements of Competencies:

<p>Competency Code and Statement: 037E—To diagnose an analog electronics problem.</p>
<p>ELEMENTS:</p> <ul style="list-style-type: none"> 1-Become familiar with the problem and specifications. 2-Identify anomalies. 3-Take measurements. 4-Analyse the results 5-Determine the cause or causes of the problem. 6-Write a report.
<p>COMPETENCY: 037L To produce electronic diagrams</p> <p>ELEMENTS</p> <ul style="list-style-type: none"> 1--Become familiar with the specifications. 2-Plan the work. 3-Modify existing schematic diagrams. 4-Draw new schematic diagrams. 5-Finalize the schematic diagrams 6-Present the information

Bibliography - for reference only

Introductory DC/AC Electronics Third Edition

By: Nigel P. Cook, Prentice Hall.

Circuit Analysis Theory and Practice - Latest Edition

by: Allan H. Robbins & Wilhelm C. Miller, Delmar Publishers Inc.

Circuit Analysis - Latest Edition

By: R. L. Boylestad, D. Edgar, J. Jenness, J. Tompkin, and Prentice Hall - Publishers Inc.

Circuit Électroniques – 2nd Edition (in French)

By: Louis Trussart Available in the Library

Minimum required reading material:

- Using the Internet, the student will organize Reference Data and Design Manuals for the components under reviewed including Data Sheets, Application Notes and Technical Manuals
- Web sites and reading material will be provided.
- Class notes taken by the student.
- Handouts as required.
- Reference materials, as required

Course Material

Class and lab notes taken by students and handouts distributed in class and in Omnivox.
Scientific Calculator – with polar/rectangular conversion keys. Examples from Bookstore:
Casio fx-991MS Plus at approximately \$25

Not Allowed: Calculators with memory for equations (i.e. graphing calculators). Also, cell
Phones are not to be used as calculators.

Log notebook

Assignments & Lab Activity information

Will be distributed in class or through Omnivox/LEA. Students are responsible for monitoring the site for new documents and assignments.

	Course Content: and Laboratory Exercises:
Week	Topic
1	Unit conversions and International System of Unit Basic Atomic Theory Related to Electron Flow Resistance & Concepts Related to Resistance
2	Electronic components and symbols (ex: resistor, diode, and capacitor). Circuit prototyping on breadboard Voltage and current
3	Measuring instruments (multimeter, oscilloscope) Ohms' Law ,Power Simulate schematics diagram using a CAD tool
4	Analyze schematics diagram Kirchhoff's Laws
5	Series circuit topology Voltage divider
6	Parallel circuit topology Current divider
7	Midterm Exam. Parallel circuit topology
8	Voltage and Current Source Thevenin Theorem
9	Norton Theorem
10	Superposition, Source Transformation
11	DC and AC source. Capacitors
12	Capacitors. Transient (RC, charging)
13	Techniques of Circuit Analysis: Node-Voltage Method,
14	Techniques of Circuit Analysis: Mesh-Current Method
15	Final Exam

Course Structure:

THEORY:	2 hours/week	Lectures and demonstrations, discussions and problem solving with student participation.
LABORATORY:	3 hours/week	Demonstrations, lab activities, work performed by students, and results presented. Detailed report written by the students demonstrating an understanding of the competencies addressed
HOMEWORK:	2 hours/week.	The student will be expected to devote 1 hour per week to homework.
ATTENDANCE:	Students are to communicate their absence to the teacher prior to start of lectures and labs. Late arrivals may not be admitted to class at the next break	
THEORY:	Consistent attendance is strongly recommended. Students are responsible for obtaining all material covered during their absence.	
LABORATORY:	Failure, to complete all labs assigned, without just cause, may result in a failure of the lab session and any result and/or Lab Report derived from the session. Students are expected to conduct themselves professionally. This means arriving in a timely manner to attend all labs, respecting all present, and focusing on the work required. The student is required to provide a breadboard with support hardware to complete the labs. A list of materials will be provided. The estimated cost is \$100. Although it is not necessary, it is recommended that the student have access to a laptop or desk computer to work on software that is required for the course.	
TESTS:	Absence will result in failure of the missed test. Students with a just cause for absence are encouraged to seek alternative arrangements with the instructor.	

EVALUATION: Evaluation of the student will be based on his/her performance in class along with performance in class tests, class participation, attendance, quizzes, assignments, lab work, lab reports, mid-term, final exams and professionalism.

A minimum mark of 60% is required to pass the course

FINAL MARK:	Weighting:			
	50%	Theory	15%	Midterm
			20%	Final Exam
			15%	Quizzes and Assignments
	40%	Lab work	15%	Lab Report
			15%	Laboratory practice, preparation for lab activity, proper maintenance of a logbook, lab skills and professional behaviour in the lab
			10%	Lab Test
	10%		10%	English Proficiency/ Professionalism

Important Dates (Tentative)

Midterm: 7th week of semester

Final Exam: 15th week of semester

Lab Test : 15th week of semester

Quizzes: No Notice

Assignments: Due Dates as specified

The following general rules apply:

- A minimum mark of 60% is required to pass the course.
- Tests will be given with at least one week's notice.
- Quizzes may be given without prior notice.
- Students are expected to take their own notes during classes.
- Students are expected:
 - to arrive to class/lab on time with all required material
 - to conduct themselves in a professional manner at all times
 - to take their own notes during class/lab
 - to turn off cell phones, pagers, iPods, MP3 players etc. during the class/lab.
- Failure to do so may result in the student being asked to leave the class/lab.
- Reports and Essays must be typed and computer generated according to the guidelines provided by the teacher.
- When required, lab results are to be handed in at the end of each lab session. Late Lab Results will not be accepted, and a zero mark will be recorded.
- Reports are due one weeks after they are assigned unless the instructor provides a specific due date.
- Late Reports and Assignments will be reduced by 5% per day up to a maximum of 25% of the maximum mark.
- Reports and Assignments which are more than 1 week late will not be accepted, and a zero mark will be recorded.
- Professionalism: Students are expected to conduct themselves in a professional manner while in both the lab and theory class. This includes arriving at their scheduled lab/theory class on time, arriving at the lab prepared, having read the lab activity ahead of time, having assigned work completed. Arriving to both class and lab with all necessary supplies (logbook, notebook, writing implements, etc.), and demonstrating appropriate conduct while in class/lab.
- Students are to remove headphones and to turn off cell phones, iPods, MP3/4 players, pagers etc. during all theory classes.
- Students who are consistently late for class (lab, theory) may be refused entry.
- All grades are reported on a numeric scale from 0% to 100%. The following categories briefly describe the relative value of these grades.

Range	Mean	Description
90 - 100	95	Excellent, mastery of the objectives
80 - 89	85	Very Good mastery of the objectives
65 - 79	72	Good, mastery of objectives
60 - 64	62	Fair mastery of objectives
0 - 59	n/a	Poor mastery of objectives

Academic and other Resources

If at any point in the semester, you are concerned about the course or you realise that you are having academic difficulties; your first resource should be to talk to me, your teacher. Academic difficulties include problems with the understanding of the theory, to the development of the practical skills required by the course. The earlier you look for help, the greater your chances of succeeding in the course. If I don't feel I can provide you with the help you need then I may recommend one of the College resources below.

For other problems or difficulties, you may encounter while at Vanier there are a number of Services available to help you within the college. They are there for you to use. These include:

Student Services (C203): Some areas where they provide services and/or information are:

Services for students with disabilities	Counselling (personal and other problems)
Student Advocate	Financial Aid (including aid and scholarships)
Health Services (Nurse on staff)	Student Employment
Academic and Behaviour Policies	Lockers
Housing	Volunteering

Student Services is a great resource for questions about college life and any problems you encounter while at Vanier. If they do not have the answer, they can direct you to the right place to find it.

Tutoring and Academic Success Center - TASC (F-300): Student-orientated centre dedicated to promoting and aiding students' development and success in academics and in society.

Admissions and placement tests	S.T.A.R. Program
English Exit Exam	English conversation and pronunciation clubs
English Peer Tutoring	Scholarship information
Vanier Native Program	Diversity support

TASC is the main college resource for students with learning difficulties and for students with weak English language skills.

Science, Technology, Engineering and Mathematics - STEM (D-301): This Centre aims to promote student success in mathematics and science. The large interactive study space includes a hackerspace for hands-on applied projects such as robotics, and a study hub for collaborative group work. Teacher help, computers, and a large collection of math and science textbooks are equally available. We offer a number of activities, services and resources including:

Free drop-in peer tutoring	Drop-in help from teachers
Free private tutoring	Teacher-led review sessions
Computer access	Laptop borrowing

Mediation and Grades Review

There are two committees available to the student for resolution of academic complaints.

1. The [Grades Review Committee](#) to review complaints concerning the grading of students' work.
2. The *Faculty Mediation Committee* to review academic complaints other than those dealing with student grades – see *Student Academic Complaints* below.

Information on College Policies

It is the student's responsibility to be familiar with and adhere to Vanier College Academic Policies. A summary of the course-level academic policies that apply in this and all other Vanier courses can be found in Omnivox under Important Vanier Links, or by following this link <http://www.vaniercollege.qc.ca/psi/course-level-policies/>.

Complete policies can also be found on the Vanier College website, under [Policies](#).