

Course Outline

FACULTY:	Faculty of Science and Technology		
PROGRAM(S):	243.A0 Computer Engineering Technology		
DEPARTMENT:	247 Computer Engineering Technology		
COURSE TITLE:	TELECOMMUNICATIONS		
COURSE NUMBER:	247-410-VA		
COURSE SECTION(S):	0001, 0002		
PONDERATION:	2-3-2	lecture - labwork - homework	
NUMBER OF CREDITS:	2.33	credits	
PREREQUISITE(S):	None		
SEMESTER:	Semester 4		
SEMESTER/YEAR:	Winter 2021		
TEACHER:	Manijeh Khataie	Office:	N-245
		Tel.	
		E-mail	Mio
AVAILABILITY:	by appointment in team chat		

Description

This course introduces the student to the basic concepts of Telecommunications, on how analog and digital signals are transmitted over wired and wireless media. Topics include:

- Fundamental technology of telecommunications
- Understanding on concept of transmission, modulation techniques, frequency spectrums and medium requirement for proper transmission
- Measurement techniques and compliance to standards
- Specific focus on system on technologies commonly employed in computer engineering technology including wireless LANs (IEEE 802.11), PAN (802.15 e.g., Bluetooth, Zigbee and Digimesh)
- Install software components related to telecom systems.

Statement of Competencies

037Q To integrate and install computerized system components

1. Become familiar with the specifications.
2. Analyze the planned system.
3. Plan the integration and installation process.
4. Assemble the system.
5. Integrate the software.
6. Test the system.
7. Take the necessary corrective actions.
8. Document the system.

Tentative course and corresponding lab content: The dates for labs that will be in college is tentative and depends the availability of rooms in college.

	Week duration	Theory Topics	Tentative Lab Activities
1	Jan-18	Presentation of Course Outline. Introduction to fundamental of telecommunication.	Introduction to fundamental of telecommunication, Wireless
2	Jan-25	Analog modulation techniques	Exploring time and frequency domain
3	Feb-01	ADC, sampling	Analog modulation (AM and FM) (In Lab 5Feb)
4	Feb-8	Multiplexing and multiple access	ADC
5	Feb-15	*** Test 1 *** Online	Spectrum Analyzer, Analog modulation
6	Feb-22	Digital modulation	Introduction to digital modulation
7	Mar-01		Advanced digital modulation
8	Mar-08	Antenna	Antenna and propagation (in Lab 12 March ?)
9	Mar-15	~~~ Mid-Term Break ~~~	
10	Mar-22	WLAN	Wi-Fi bands and channels
11	Mar-29	*** Test 2 *** Online	TBD
12	Apr-05	Zigbee and Xbee	Introduction to Xbee (in Lab 9April)
13	Apr-12	Bluetooth, RFID	Bluetooth
14	Apr-19	Introduction to cellular phone	Project/ research and presentation
15	Apr-26	Cellular phones(2G-5G)	
16	May-02	Review	
	May-9	*** Final Exam *** In campus	

Course Material Required

- Hand-outs will be provided as required and reading maybe be assigned

Bibliography

- *Principles of Electronic Communication Systems. By Louis E. Frenzel Jr.*
- *Electronic communication systems, Blake*
- *Building Wireless Sensor Networks with ZigBee, XBee, Arduino, and Processing. By Robert Faludi*

Course Structure

THEORY:	2 hour / week	Lectures and demonstrations, discussions and problem solving with student participation.
LABORATORY:	3 hours / week	Demonstrations, lab activities and work performed by students, and results presented. Detailed report written by the students demonstrating an understanding of the competencies addressed. Mini project completed in small group and documented in report.
HOMEWORK:	3 hour / week	The student will be expected to devote approximately 3 hour per week to homework.

ATTENDANCE

THEORY:	Consistent attendance is strongly recommended. Students are responsible for obtaining all material covered during any absence.
LABORATORY:	Laboratory sessions are part of assessment activities. Failure to complete lab activities assigned in the designated lab class without just cause may result in a failure of the lab session and any results and/or lab report derived from the session. In order to meet and be evaluated on the course competencies lab attendance is required. Note that there is both a separate and an integrated professionalism mark associated with the course (see below). During the lab periods you are expected to work on your assignments. It is not permitted to use the internet during lab periods outside the scope of the lab.
TESTS:	Absence will result in failure of the missed test (mark of 0). Students with a just cause for absence are encouraged to seek alternative arrangements with the instructor – beforehand if possible. College policies on just cause will apply.

EVALUATION (Tentative)

The final mark will be weighted:	60% theory	12%	Assignment/Quizzes
		20%	Tests (10% each)
		25%	Final Exam (in college)
		3%	Professionalism and English proficiency
	40% lab	22%	Laboratories (some labs will be in college)
		15%	Project
		3%	Professionalism and English proficiency
Total	100%		

The following general rules apply:

- A minimum mark of 60% is required to pass the course **AND** at least 50% in the Theory portion **AND** at least 50% in the Lab portion. If the mark is less than 50% for either the Theory or Lab portion, the total mark will not exceed 55%.
- At least one week's notice will be given for test dates or changes in test dates.
- Quizzes may be given without prior notice – there are no make-ups for quizzes (mark of 0 for missed quizzes).
- **Students are expected to conduct themselves in a professional manner at all times.** This includes but is not limited to:
 - Arriving to laboratory on time and prepared to do the required work;
 - Conducting themselves in an appropriate manner at all times (including being respectful to the teacher, classmates, and any guests);
 - Using professional language (no cursing and/or swearing and using appropriate vocabulary);
 - Arriving to class/lab with all necessary supplies (logbook, notebook, textbook, manual, paper, writing implements, calculator, etc.);
 - Turning off all personal communication/music/video electronics (removing headphones, earphones, ear buds etc.); and
 - Having all assigned work completed.

Remember that developing professional behaviours and habits now is an important aspect of preparation for entering a professional work environment in the future.

- Students are expected to take their own notes during classes.
- Reports must be typed and computer generated according to the guidelines.
- When requested, Lab preparations and Lab Results/logbooks are to be handed in during the lab session. Late Lab Preparations/Lab Results may not be accepted, and a zero mark will be recorded.
- Reports are due one week after they are assigned unless the instructor provides a specific due date.
- **ALL** assigned work (assignment, lab report etc) must be submitted **ON TIME. NO LATE SUBMISSION WILL BE ACCEPTED**, unless for valid reasons that was communicated to the instructor at least 2 days prior to the deadline.
- In-class assignments will only be accepted in the class in which they are assigned.
- Students who are consistently late for class 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 don't have the answer they can direct you to the right place to find it.

The Learning Center - TLC (B205): Student-orientated centre dedicated to promoting and aiding students' development and success in academics and in society.

Admissions and placement tests	Learning Disabilities (advantages to registering)
English Exit Exam	English conversation and pronunciation clubs
English Peer Tutoring	Scholarship information
Vanier Native Program	Diversity support

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

Math and Science Center (F540): The Mathematics & Science Centre aims to promote student success in mathematics and science.

Drop-in help	Teacher s and Peer Tutoring
Private Tutoring	Various Clubs

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.

General College Academic Policies:

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

Use of Webcam: This course requires students to have a working webcam. Classes and assessments may be conducted using MS Teams or Zoom where the teacher may require students to turn on their webcams. Students should contact the course instructor if they require accommodations or have any questions or concerns.

Notice of video recording & sharing (Download and re-use prohibited): This course, including your participation, may be recorded on video. The recorded video will be available to students in the course for viewing remotely and after each session. The teacher has the exclusive right to record live lecture. Course videos and materials belong to your teacher and the College and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the teacher. Any contravention of these conditions of use may be subject to sanction(s) by the College under the Code of Conduct. For question about recording and use of videos in which you appear please contact your teacher.