

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Communication Systems I

CODE NO. : ELN-237 **SEMESTER:** 3

PROGRAM: ELECTRONIC ENGINEERING TECHNICIAN

AUTHOR: PETER SZILAGYI

DATE: Sept. 2003 **PREVIOUS OUTLINE DATED:** Sept. 2002

APPROVED:

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	DEAN	DATE

TOTAL CREDITS: 9

PREREQUISITE(S): ELN-109 and MTH-143

HOURS/WEEK: 7

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For additional information, please contact C. Kirkwood, Dean
School of Technology, Skilled Trades & Natural Resources
(705) 759-2554, Ext. 688

- I. COURSE DESCRIPTION:** A first course in analog electronic communications, intended for the Electronic Technician. The level of the treatment presupposes previous knowledge of basic electric circuits, electronics and mathematics.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Apply AC and Resonant Circuit theory

Potential Elements of the Performance:

- Recall the conditions necessary to produce resonance in a series and in a parallel LCR circuit.
- Describe the meaning of the terms selectivity and bandwidth
- Calculate circuit impedance and quality factor
- Understand the effect of component values on resonant circuit parameters

2. Recognize, analyze and use Coupling Circuits

Potential Elements of the Performance:

- Sketch the frequency response of LC filters
- Measure the loss and plot the frequency response of a filter
- Understand the functioning and the difference between narrow-band and broad-band filters
- Tune up impedance matching circuits
- Recall the definition of reflected impedance in a RF transformer

3. Classify, build and troubleshoot RF amplifiers and Oscillators

Potential Elements of the Performance:

- Recall, that the main purpose of RF amplifiers is to provide gain and selectivity
- Recall, that the main purpose of RF oscillators is to generate a stable RF signal
- Use cascaded amplifier stages, to improve gain
- Align RF voltage and power amplifiers
- Identify the class of operation for each amplifier and oscillator
- Draw the AC equivalent diagram for an amplifier or oscillator

4. Understand modulation, transmission and reception circuits.

Potential Elements of the Performance:

- Recall the important aspects of amplitude, phase and frequency modulation
- Draw the block diagram of a superheterodine radio receiver
- Draw the block diagram of AM and FM radio transmitters
- Operate a spectrum analyzer
- Read schematic diagrams of AM/FM radio equipment

III. TOPICS:

1. Resonance and Filtering
2. Coupling and Impedance Matching
3. Amplifiers and Oscillators
4. Modulation, Transmission and Reception of radio signals

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Communication Systems 1, Study Material. A 200 pages booklet, produced in the Department, and available in the bookstore.

V. EVALUATION PROCESS/GRADING SYSTEM

There will be four theory tests with a weight of 70% of the final grade. The grading of laboratory type objectives will be in two parts: The demonstrated ability to perform a skill function, e.g. use an instrument in a specified role or test a circuit, will be graded "C". Subjective evaluation of lab reports, supporting theory, department, housekeeping etc. will be used to modify the skill function grade upward, where applicable. The grading weight will be 30% for the laboratory. Both theory and laboratory work must be passed independently for a passing grade.

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course, as may be decided by the professor. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

Upgrading:

- If a test is missed for reasons whatsoever, the grade for that test is 0, unless a credible reason is given for the absence.
- No upgrading tests will take place during the semester. All rewrites will be scheduled during the last week of the semester.
- In the case of final marks less than 60% but greater than 55%, provided an 80% or better attendance record, consideration will be given to a supplemental examination covering the whole course.
- Attendance for laboratory classes is compulsory. Attendance for all theory classes is highly recommended and recorded, but not mandatory.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following:

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.