

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Wireless Systems

CODE NO. : ELN-245

SEMESTER: 4

PROGRAM: Electronic Technician

AUTHOR: Peter Szilagyi

DATE: Jan. 2004

PREVIOUS OUTLINE DATED: Jan. 04
2005

APPROVED:

DEAN

DATE

TOTAL CREDITS: 7

PREREQUISITE(S): ELN-237

HOURS PER WEEK: 7

Copyright ©2004 The Sault College of Applied Arts & Technology

Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited.

For additional information, please contact Colin Kirkwood, Dean

School of Technology, Skilled Trades & Natural Resources

(705) 759-2554, Ext. 688

 Course Name

- I. COURSE DESCRIPTION:** This course is the continuation of **ELN-237**, which is a prerequisite. Amplitude, Frequency and Phase modulation will be treated, followed by a study of Communications Techniques, Antennas and Wave Propagation.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Understand the functioning of AM and FM radio transmitters and receivers

Potential Elements of the Performance:

- Set up, tune and troubleshoot AM/FM radio equipment
- Use the oscilloscope and the spectrum analyzer to visualize AM/FM modulated waves
- Display the frequency response of IF filters

2. Recall special communications techniques used in radio links

Potential Elements of the Performance:

- Explain Signal to Noise ratio, Sensitivity, Selectivity, Squelch, Upconversion and Frequency Synthesis

3. Calculate transmission Line and Antenna circuits, set up, tune and test antennas for transmission and reception

Potential Elements of the Performance:

- Be able to use an RF current meter, an Antenna Tuner, SWR meter, RF Power Meter and navigate on the Smith chart

4. Understand Wave Propagation , reflection and refraction in the domain of HF and VHF

Potential Elements of the Performance:

- Explain MUF, Critical Angle , Wave polarization, Transverse Electro Magnetic Waves.
- Be familiar with the structure of the Ionosphere.
- Know the properties of Ground Waves, Sky Waves and Space Waves.

Course Name**III. TOPICS:**

1. Modulation
2. Communications Techniques
3. Antennas and Transmission Lines
4. Wave Propagation

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Miller, G: Modern Electronic Communication, 7th edition

- 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, deportment, 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.

The following semester grades will be assigned to students in post secondary courses:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical	

Course Name

U	placement or non-graded subject area. 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.

Course Name

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.