SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: Data Communications

CODE NO. : ELN-317 **SEMESTER:** 5

PROGRAM: Electronic/Electrical Technologist

AUTHOR: Peter Szilagyi

DATE: 08/2006 **PREVIOUS OUTLINE DATED:** 08/2005

APPROVED:

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DEAN **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S): MTH-551

HOURS/WEEK: 4 hours/ week 16weeks

Data Communications ELN-317
Code No.
_____
Course Name

I. COURSE DESCRIPTION: This course is offered for both the Electrical and Electronic technologist student. After an introductory chapter about the general concepts of telecommunications, the dial-up telephone system will be presented and explained. Modem theory, coding, data formats and Fiber Optics will be treated in fair detail. Specific integrated circuits used in data communication will be introduced and examined in the laboratory. The theory in this course is based on Spectrum Analysis, and that topic will be reviewed.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Understand the Public Switched Telephone System and Data Communications procedures, over a band limited analog system.

   Potential Elements of the Performance:
   - Recall and explain the structure of the Telephone Network.
   - Recall the concepts of Time Division and Frequency Division multiplexing .
   - Familiarity with Data Communications concepts and standards.
2. Know the structure of The Seven Layer OSI architecture

   Potential Elements of the Performance:
   - Understand the Physical Layer protocols.
   - Be familiar with the structure of standard computer serial ports
   - Recall the principles of Limited Distance Data Communications.
3. Utilize Telephone modems

   Potential Elements of the Performance:
   - Be familiar with modulation techniques
   - Recognize standard Low Speed and High speed modems
   - Know the spectral utilization of dial up and leased lines.
   - Interpret Shannon's law.
4. Understand the principles and applications of Fiber Optics in Data Communications

   Potential Elements of the Performance:
   - Know the basic terminology of F/O

- Recall the structure of Single mode and Multimode Optical Fiber
- Understand the principles of F/O light sources photo-detectors

III. TOPICS:

1. Introduction to Communications Systems
2. Seven Layer OSI architecture
3. Telephone Modems
4. Fiber Optics
5. Fourier analysis with numerical methods

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:
Handouts and course notes will be provided, as well as components for the laboratory experiments.

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 all credit courses.			
	Grade	**Definition**	*Grade Point Equivalent*
	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.

<*include any other special notes appropriate to your course*>

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.