SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE:	NETWORK ANALYSIS		
CODE NO. :	ELR309	**SEMESTER:**	6
PROGRAM:	ELECTRICAL/ELECTRONIC TECHNOLOGY		
AUTHOR:	DOUG FAGGETTER		
DATE:	JAN. 2002	**PREVIOUS OUTLINE DATED:**	JAN. 2001

APPROVED:

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 DEAN **DATE**

TOTAL CREDITS: 8

PREREQUISITE(S): ELR109 MTH551

HOURS/WEEK: 5

NETWORK ANALYSIS   ELR309

I.   COURSE DESCRIPTION:
An in-depth study of electric circuits using network theorems, differential
equations and Laplace transforms.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1)   Analyze a resistive circuit using Nodal analysis and Mesh analysis.

        Potential Elements of the Performance:
        -    Using a matrix solution of the network equations, determine the
             voltage and current in the elements of a resistive circuit.

2)   Analyze a First-Order circuit.

        Potential Elements of the Performance:
        -    Write and solve a differential equation for a network with resistors a
             capacitor.
        -    Write and solve a differential equation for a network with resistors and
             an   inductor.

3)   Analyze a Second-Order circuit using differential equations.

        Potential Elements of the Performance:
        -    Write and solve a differential equation for a Second-Order circuit with
             resistors, inductors and capacitors.
        -    Solve the differential equation for a Second-Order circuit with excitation
             by   initial conditions, excitation by a source and excitation by
             initial conditions and a source.
        -    Write complementary, particular and complete solutions.
        -    Solve for the under-damped case, critically-damped case and over-
             damped case.

4)   Analyze a First-Order circuit using Laplace transforms.

        Potential Elements of the Performance:
        -    Define the Laplace transform.
        -    Analyze a circuit with a transformed network if excited by a source.
        -    Analyze a circuit by transforming the differential equation if the circuit is
             excited by initial conditions and a source.

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III.   TOPICS:

1)   Basic Circuit Laws

2)   Resistive Networks

3)   Capacitors and Inductors

4)   First-Order Circuit Analysis

5)   Second-Order Circuit Analysis

6)   Laplace Transform Circuit Analysis

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:
        Course Notes package

V.   EVALUATION PROCESS/GRADING SYSTEM:

The grading weight will be:

    Theory 100%

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

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual – Deferred Grades and Make-up*).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.	

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/program, as may be decided by the professor/dean. 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.

Course outline amendments:
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.

VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

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.