



**Course Information Sheet**  
**COMMUNICATIONS AND INFORMATION TECHNOLOGY**

**COURSE IDENTIFICATION**

<b>Course Name:</b>	MODERN COMMUNICATION SYSTEMS	<b>Credits</b>	5
<b>Course Number:</b>	<u>ELNC545</u>	<b>Scheduled Classroom Hrs/Wk:</b>	3 hr. lect. & 2 lab
<b>Prerequisite No:</b>	ELNC442	<b>Prerequisite Name:</b>	Linear Circuits II
<b>Prerequisite No:</b>	MATH330	<b>Prerequisite Name:</b>	Mathematics III
<b>Corequisite No:</b>	N/A	<b>Corequisite Name:</b>	N/A

**Minimum Grade required:** 50% (specify by program where applicable)

**Graduation Requirements:** A cumulative grade point average of 60%, based on courses within a program curriculum, is required for graduation from Niagara College.

**Offered in the following programs/term:** Electronics Engineering Technology

**Prepared by:** Greg Swick **Date:** October, 2001

**Co-ordinator:** Greg Swick **Date:** October, 2001

**Approved by:** L. Tiberi **Date:** October, 2001

(Director)

**Division:** Communications and Information Technology

**Current Academic Year:** 2001/2002

**COURSE DESCRIPTION:**

The student will learn the fundamental principles, perform analysis and design calculations and develop testing and measurement skills in communication systems involving time and frequency domain concepts, electronic noise concepts, transmission lines, wave propagation, antennas, waveguides, microwave devices, microstrip, S parameters, and radar.



**TEXTBOOKS AND MATERIALS REQUIRED** (frequent use):

BLAKE, Roy.

**ELECTRONIC COMMUNICATION SYSTEMS**

Delmar Publishing.; ISBN # 0-7668-2684-8

- Lab. Book: Blueline or Spiral
- 1 Set of three (3) Scope Leads

**SUPPORT MATERIALS, REFERENCE BOOKS:**

**COURSE ATTENDANCE POLICY:**

Attendance at Lab. Sessions is mandatory!

Absence from a test results in "0" (**NO RETEST**)

**ALL LABS MUST BE SUCCESSFULLY COMPLETED TO RECEIVE A PASSING GRADE.**

A passing grade of 50% in both the lecture and lab portions of the course must be obtained in order to pass the course.

**TYPES OF EVALUATION USED IN THIS COURSE AND THEIR WEIGHT**

**TYPE**

**WEIGHT**(percentage of final grade):

TEST 1, 2 and 3	50%
FINAL EXAM	25%
LAB WORK	20%
ASSIGNMENTS	5%



**COURSE GOALS** (general student learning outcomes)

1. Understand the elements of a general communication system.
2. Discuss various transmission line principles and applications.
3. Learn the various modes of electromagnetic wave propagation.
4. Understand basic antenna principles and applications.
5. Implement antenna analysis procedures.
6. Learn basic waveguide principles.
7. Discuss the principles of microstrip.
8. Implement S parameters in the analysis of microwave circuits.
9. Learn basic radar principles.

**SPECIFIC CURRICULUM OBJECTIVES BY UNIT:**

**UNIT NAME: ONE**

**A. CURRICULUM OBJECTIVES:**

**The student will:**

1. Understand the elements of a communication system.
2. Perform time and frequency domain analysis and calculations.
3. Calculate the impact of noise on communication systems.
4. Analyze transmission lines both analytically and graphically (using the Smith Chart).
5. Perform measurements on high frequency transmission lines to determine performance.
6. Implement transmission lines as matching devices using quarter wave and half wave sections and stubs.

**B. EVALUATION OF COURSE/COMPONENT CURRICULUM OBJECTIVES:**

Test(s), Assignments and Lab Work



**SPECIFIC CURRICULUM OBJECTIVES BY UNIT:**

**UNIT NAME: TWO**

**A. CURRICULUM OBJECTIVES:**

**The student will:**

1. Analyze the three basic modes of electromagnetic wave propagation.
2. Discuss various antenna configurations that are commonly implemented in the current communications environment.
3. Analyze several antenna structures to determine performance.
4. Implement CAD packages to design an antenna and analyze radiation characteristics in polar form.
5. Perform system calculations on a variety of transmitting and receiving antennas.

**B. EVALUATION OF COURSE/COMPONENT CURRICULUM OBJECTIVES:**

Test(s), Assignments and Lab Work

**SPECIFIC CURRICULUM OBJECTIVES BY UNIT:**

**UNIT NAME: THREE**

**A. CURRICULUM OBJECTIVES:**

**The student will:**

1. Analyze the performance of microwave waveguides.
2. Analyze the performance of microwave antennas.
3. Understand characteristics of various solid state and vacuum tube microwave devices.
4. Analyze characteristics of microstrip line.
5. Implement S-parameters to characterize microwave networks.
6. Explore microstrip techniques in the application of Patch antennas and matching.
7. Analyze elements of pulse and doppler radar.

**B. EVALUATION OF COURSE/COMPONENT CURRICULUM OBJECTIVES:**

Final Exam, assignment and Lab Work

30/05/02