

COURSE OBJECTIVES

This course is designed, in consultation with the Department of Electronics Engineering Technology, to raise the mathematical ability of students to the level required for study in Electronics Engineering Technology. The course consists of a review and expansion of some high school material, with special reference to electronics applications, and with the addition of complex numbers.

COURSE COMPETENCIES

This course contributes to the partial achievement of the competency:

041R: To implement mathematical models related to electronics

Elements of the competency 041R:

1. *Become familiar with the situation requiring the implementation of a model.*
2. *Select the model.*
3. *Apply the model to the situation.*
4. *Assess the results.*
5. *Present the results*

PRE-REQUISITE

Registration in Electronics Engineering Technology (Secondary IV Mathematics)

PONDERATION

3-2-3

REQUIRED TEXTS AND MATERIALS

Text

1. **Prerequisites** (*a.k.a. 'Chapter 0'*), 2013 Edition, by Carl Stitz & Jeff Zeager
(available for free download at www.stitz-zeager.com)
2. **Precalculus**, 3rd Edition, by Carl Stitz & Jeff Zeager
(available for free download at www.stitz-zeager.com)

Additional Source

Functions and Trigonometry by George McArthur (Available in Bookstore)

Calculators

Students **are only permitted to use the Sharp EL-531X, XG or XT calculator in this class**, including during tests and examinations.

EVALUATION SCHEME

College Evaluation Policy

The Institutional Student Evaluation Policy (ISEP) is designed to promote equitable and effective evaluation of student learning and is therefore a crucial policy to read and understand. The policy describes the rights and obligations of students, faculty, departments, programs, and the College administration with regard to evaluation in all your courses, including grade reviews and resolution of academic grievance. ISEP is available on the Dawson website.

Term Work

A minimum of 3.5 hours of in class testing is required.

Final Examination

The final examination will be a supervised, comprehensive examination held during the formal examination period. There will be no exemptions.

Grading Policy

The final grade is calculated following the scheme:

- | | |
|--|-----|
| 1. Term Mark (tests, quizzes, assignments) | 60% |
| 2. Final Examination | 40% |

Standard of performance

In order to pass this course the student must obtain a final grade of at least 60%.

MATH TUTORIAL ROOM

Volunteer math teachers are available for help in room 7B.1. The schedule of available teachers is available on the door of the tutorial room and on the Mathematics Department website.

TEACHING METHODS

Lectures and problem solving sessions.

ATTENDANCE AND COURSE PARTICIPATION REQUIREMENTS

Students should refer to the Institutional Student Evaluation Policy (*ISEP Section IV-C*) regarding attendance. Attendance is strongly recommended for the successful completion of the course.

LITERACY STANDARDS:

Problem solving is an essential component of this course. Students will be expected to analyze problems stated in words, to present their solutions logically and coherently, and to display their answers in a form corresponding to the statement of the problem, including appropriate units of measurement. Marks will be deducted for work which is inadequate in these respects, even though the answers may be numerically correct.

STUDENT OBLIGATIONS

- (a) Students have an obligation to arrive on time and remain in the classroom for the duration of scheduled classes and activities.
- (b) Students have an obligation to write tests and final examinations at the times scheduled by the teacher or the College. Students have an obligation to inform themselves of, and respect, College examination procedures.
- (c) Students have an obligation to show respectful behavior and appropriate classroom deportment. Should a student be disruptive and/or disrespectful, the teacher has the right to exclude the disruptive student from learning activities (classes) and may refer the case to the Director of Student Services under the Student Code of Conduct.
- (d) Electronic/communication devices (including cellphones, mp3players, etc.) have the effect of disturbing the teacher and other students. All these devices should be turned off and put away. Students who do not observe these rules will be asked to leave the classroom.

Everyone has the right to a safe and non-violent environment. Students are obliged to conduct themselves as stated in the Student Code of Conduct and in the ISEP section on the roles and responsibilities of students. (ISEP Section II-D)

ACADEMIC INTEGRITY

Cheating in Examinations, Tests, and Quizzes

Cheating includes any dishonest or deceptive practice relative to formal final examinations, in-class tests, or quizzes. Such cheating is discoverable during or after the exercise in the evaluation process by the instructor. Such cheating includes, but is not limited to

- a. copying or attempting to copy another's work
- b. obtaining or attempting to obtain unauthorized assistance of any kind
- c. providing or attempting to provide unauthorized assistance of any kind
- d. using or possessing any unauthorized material or instruments which can be used as information storage and retrieval devices
- e. taking an examination, test, or quiz for someone else
- f. having someone take an examination, test, or quiz in one's place

Unauthorized Communication

Unauthorized communication of any kind during an examination, test, or quiz is forbidden and subject to the same penalties as cheating.

Plagiarism on Assignments and the Comprehensive Examination

Plagiarism is the presentation or submission by a student of another person's assignments or Comprehensive Assessment as his or her own. Students who permit their work to be copied are considered to be as guilty as the plagiarizer.

Penalties

Cheating and plagiarism are considered extremely serious academic offences. Action in response to an incident of cheating and plagiarism is within the authority of the teacher.

Penalties may range from zero on a test, to failure in the course, to suspension or expulsion from the college.

According to ISEP, the teacher is required to report to the Sector Dean all cases of cheating and plagiarism affecting a student's grade. (ISEP Section V-C)

INTENSIVE COURSE CONFLICTS & POLICY ON RELIGIOUS OBSERVANCE

If a student is attending an intensive course, the student must inform the teacher, within the first two weeks of class, of the specific dates of any anticipated absences.

Students observing religious holidays must **inform** each of their teachers, in writing, of the specific dates as soon as possible, but **no later than the end of the second week of the impacted semester or term**. Alternative arrangements convenient to both the student and the teacher must be made at the earliest opportunity. In the event that the date of a religious observance has yet to be determined, students must submit the name of the observance to their teachers and provide them with the specific date(s) as soon as it becomes available. This applies both to the semester or term, as well as to any final examination period. Students who make such arrangements will not be required to attend classes or take examinations on the designated days, nor be penalized for their absence.

It must be emphasized, however, that this College policy should not be interpreted to mean that a student can receive credit for work not performed. It is the student's responsibility to fulfill the requirements of the alternative arrangement. (ISEP Section IV-D)

A form for this purpose is available at the end of this document.

COURSE CONTENT & Tentative SCHEDULE

REVIEW OF ALGEBRA (4 weeks)

*Using textbook: **Prerequisites** (a.k.a. 'Chapter 0') by Carl Stitz and Jeff Zeager*

- §0.2 Real Number Arithmetic
Suggested exercises: p.36, #1-33
- §0.3 Linear Equations and Inequalities
Suggested exercises: p.47-48, #1-23, 29-34, 38-46
- §0.4 Absolute Value Equations and Inequalities
Suggested exercises: p.58, #1-9, 19-25
- §0.5 Polynomial Arithmetic
Suggested exercises: p.68, #1-9, 16-18, 23-25, 28-32 (and supplementary exercises)
- §0.6 Factoring
Suggested exercises: p.81, #1-42
- §0.7 Quadratic Equations
Suggested exercises: p.94, #2-18
- §0.8 Rational Expressions and Equations
Suggested exercises: p.108, #1-12, 19-22 (and supplementary exercises)
- §0.9 Radicals and Equations
Suggested exercises: p.124, #14-25 (and supplementary exercises)

*Using textbook: **Precalculus**, 3rd Edition, by Carl Stitz and Jeff Zeager*

- §8.1 Systems of Linear Equations
Suggested exercises: p.562-563, #1-26 (and supplementary exercises)

REVIEW OF FUNCTIONS, AND GRAPHS (2.5 weeks)

*Using textbook: **Precalculus**, 3rd Edition, by Carl Stitz and Jeff Zeager*

- §1.1 Sets of Real Numbers and the Cartesian Coordinate Plane
Suggested exercises: p.15-16, #20-29
- §1.3 Introduction to Functions
Suggested exercises: p.49-52, #1-47
- §1.4 Function Notation
Suggested exercises: p.63-65, #11-62
- §5.1 Function Composition
Suggested exercises: p.369, #1-14, 16, 18, 20-24
- §2.1 Linear Functions
Suggested exercises: p.163, #1-26
- §2.3 Quadratic Functions
Suggested exercises: p.200-202, #1-8, 17, 22-26
- §1.6 Graphs of Functions
Suggested exercises: p.107, #6, 8, 9, 11, 13-17
- §1.7 Transformations
Suggested exercises: p.140-142, #1-15, 19-27, 38-48, 54-62

§5.2 Inverse Functions
Suggested exercises: p.394, #1-20

LOGARITHMIC AND EXPONENTIAL FUNCTIONS (2.5 weeks)

*Using textbook: **Precalculus**, 3rd Edition, by Carl Stitz and Jeff Zeager*

- §6.1 Introduction to Exponential and Logarithmic Functions
Suggested exercises: p.429-430, #1-52, 58-69
- §6.2 Properties of Logarithms
Suggested exercises: p.445-446, #1-26, 34-39
- §6.3 Exponential Equations
Suggested exercises: p.456, #1-33
- §6.4 Logarithmic Equations
Suggested exercises: p.466, #1-20
- §6.5 Applications of Exponential and Logarithmic Functions
Suggested exercises: p.483-486, #14-18, 28, 33-34 (and supplementary exercises)

TRIGONOMETRY (3 weeks)

*Using textbook: **Precalculus**, 3rd Edition, by Carl Stitz and Jeff Zeager*

- §10.1 Angles and their Measure
Suggested exercises: p.709-711, #1-49, 56-62
- §10.2 The Unit Circle: Cosine and Sine
Suggested exercises: p.736-738, #1-68
- §10.3 The Six Circular Functions and Fundamental Identities
Suggested exercises: p.759-762, #1-93
- §10.5.1 Graphs of the Cosine and Sine Functions
Suggested exercises: p.809, #1-12
- §10.6 The Inverse Trigonometric Functions
Suggested exercises: p.841, #1-24
- §10.7 Trigonometric Equations
Suggested exercises: p.874, #1-18, 29-32, 36, 38, 42

INTRODUCTION TO COMPLEX NUMBERS (2 weeks)

*Using textbook: **Prerequisites** (a.k.a. 'Chapter 0') by Carl Stitz and Jeff Zeager*

- §0.10 Complex Numbers
Suggested exercises: p.132, #1-32, 34-36

*Using textbook: **Precalculus**, 3rd Edition, by Carl Stitz and Jeff Zeager*

- §3.4 Complex Zeros and the Fundamental Theorem of Algebra
Suggested exercises: p.295-296, #1-30, 33
- §11.7 Polar Form of Complex Numbers
Suggested exercises: p.1004-1005, #1-34, 41-76

RELIGIOUS OBSERVANCE/ INTENSIVE COURSES FORM

Students who intend to observe religious holidays or who take intensive courses must inform their teachers in writing as prescribed in the ISEP Policy on Religious Observance
(*ISEP Section IV-D*)

The following form must be submitted within the first two weeks of classes

Name: _____

Student Number: _____

Course: _____

Teacher: _____

Date of Holiday

Description/Name of Holiday: