



Mathematics Department

Course Outline for Remedial Activities for Secondary V Mathematics 201-015-RE

COURSE OBJECTIVES

To review some important concepts of algebra and to ensure competency in proper algebraic manipulations. To introduce the concept of function. To ensure competency in the notation, properties and operations of functions in general, and of linear, quadratic, exponential and logarithmic functions in particular. To introduce the trigonometric functions and to ensure competency in interpreting their properties and applications. To introduce the concepts of vectors, ratio and proportion.

PRE-REQUISITE

Good standing in High School 406, 201-016-50, or equivalent.

PONDERATION

4-2-4

COURSE COMPETENCIES

Remedial Activities for Secondary V Mathematics: Technical and Scientific Option

Objective

Standard

Statement of the Competency

Analyze problems by using concepts in algebra and geometry.

Elements of the Competency

Performance Criteria

1. Analyze situations by using real functions.

- Appropriate modelling of the situation
- Correct determination of the properties (e.g. domain, x- and y-intercepts) and the inverse of an exponential or a logarithmic function, or a second-degree polynomial, square-root, sinusoidal, tangent, rational or piecewise function
- Appropriate use of the additive and multiplicative parameters
- Algebraic manipulation according to the rules (including polynomial division and the composition of functions)
- Accurate interpretation of results

2. Solve problems by using equations and inequalities.

- Appropriate modelling of the problem
- Correct application of the methods for solving equations and inequalities in one variable (second-degree, square root, rational, exponential, logarithmic, trigonometric)
- Correct application of the methods for solving systems of equations involving various functional models
- Accurate interpretation of results

3. Solve problems involving equivalent figures.

- Appropriate modelling of the problem
- Appropriate use of the properties of similar figures (length, area, volume)
- Accurate interpretation of results

4. Solve problems by using geometric vectors.

- Appropriate modelling of the problem
- Appropriate use of vectors (addition, multiplication by a scalar, scalar product)
- Accurate interpretation of results

5. Solve problems by using circles and trigonometry.

- Appropriate modelling of the problem
- Appropriate construction of a standard unit circle and location of its significant points
- Appropriate application of the laws of sines and cosines
- Appropriate manipulation of trigonometric identities
- Appropriate use of metric relations in circles (e.g. degree, radian, chord, arc, circular sector and segment, inscribed angle)
- Accurate interpretation of results

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.

GRADING POLICY

Term work = 60% of final grade.

Final Examination = 40% of final grade.

To pass the course, the students must obtain at least 60%.

REQUIRED TEXT AND MATERIALS

Text: The required text is **Functions and Trigonometry** by George McArthur (available in bookstore).

Reference: College Algebra and Trigonometry (3rd Edition) by Lial, Hornsby and Schneider.

Calculator: Students are only permitted to use the Sharp EL-531XG or XT calculator during tests and examinations.

TEACHING METHODS

Lectures, tutorial and problem sessions.

MATH TUTORIAL ROOM

Volunteer math teachers are available for help in room 7B.1 from 10:00 to 16:00 (Monday through Friday) and from 17:00-18:00 (Monday through Thursday).

COURSE CONTENT & TENTATIVE SCHEDULE

(number of classes listed is approximate)

Basic Algebra: (5 weeks)

Integer Exponents in Algebra (1-30)

Polynomials I (1-7)

Polynomials II (1-32)

Factoring (1-9)

Rational Expressions (Fractions) (1-8)

Roots and Radicals (1-8,12,13)

Solving Linear Equations (1-28)

Solving systems of two linear equations (1-31)
Solving Quadratic Equations by Factoring (1-2)
Solving Quadratic Equations (continued) (1-3)
Solving Equations Containing Fractions (1-4)
Solving radical equations (1-3)
Solving linear inequalities (1-2)

Functions: (5 weeks)

The Rectangular Coordinate System (1-63)
Introduction to Functions (1-77)
Linear Functions (1-6)
The Slope and Equations of a Line (1-30)
Quadratic Functions (1-3)
Solving systems of equations: one linear equation and one quadratic equation (1-6)
Piece-Wise Defined Functions (1-14)
Operations on Functions and Composite Functions (1-38)
Inverse Functions (1-6)
Exponential and Logarithmic Functions (1-78)
Logarithms (1-115)

Trigonometry (4 weeks)

Angles in Trigonometry (1-11)
The Trigonometric Functions (1-4)
Solving Right Triangles (1-43)
Solving Oblique Triangles (1-38)
The Special Angles and Reference Angles (1-3)
Radian Measures in Trigonometry (1-15)
Graphs of the Sine and Cosine Functions (1-3)
Trigonometric Identities (1-41)
Solving Trigonometric Equations (1a-1f, 1o-1q, 2a-2d, 2f-2L)
The Inverse Trigonometric Functions (1-2)

Geometry (1 week)

Introduction to vectors and their operations (1-4)
The dot product (1-24)
Similar figures (1-7)

Note: Exercises not included above are optional.

ISEP STATEMENT

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.

<https://www.dawsoncollege.qc.ca/governance/institutional-student-evaluation-policy/>

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.

ACADEMIC INTEGRITY POLICY

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. (See ISEP section V-C.)

STUDENT CONDUCT AND 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) Cellular phones, pagers and musical listening devices have the effect of disturbing the teacher and other students. All these devices should be turned off. 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)

ATTENDANCE AND COURSE PARTICIPATION REQUIREMENTS

Students should refer to the Institutional Student Evaluation Policy (ISEP section IV-C) regarding attendance.

Attendance is recommended for the successful completion of the course.

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.

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 of Holiday:
