CEGEP JOHN ABBOTT COLLEGE

Introduction to College Mathematics

(Mathematics 912-015-94)

General Information.

Ponderation: 3-2-3 *Credits*: $2\frac{2}{3}$

Prerequisite: 60-69% in one of the following: High School math TS5 or SN5, CEGEP math 201-015-50, or equivalent.

Students are strongly advised to seek help from their instructor as soon as they encounter difficulties in the course.

Introduction. This course is designed to help students bridge the gap between their levels of performance in high school mathematics and the level of performance required for success in Calculus I. Most students taking their first college mathematics course need to make major adjustments in their work habits in order to adjust to the much faster pace of a college-level mathematics course. One major objective of the course is to help students cultivate effective work and study habits. Self-motivation, consistent effort, regular class attendance, self-discipline and realistic self confidence are needed to succeed in this course. All these are part of the positive attitude the student needs in order to achieve success—not only in this course, but in all higher-level Science Program courses.

Course Objectives. Introduction to College Mathematics is a skills course and a theory course. Effort is concentrated on those topics from algebra, functions and trigonometry which are specifically needed for your next math course—Calculus I. Most of these topics should already be familiar to the students taking this course. As you encounter these topics again, your objective ought to be to raise your level of performance of the relevant skills to a higher degree of mastery. These relevant skills include the manipulation of numbers and symbols, the creation and interpretation of graphs, the solving of equations, the clear presentation of results, and the bringing together of these basic skills to solve problems.

Successful graduates of this bridging course will not only possess a solid working knowledge of functions and trigonometry and the ability to execute the fundamental mathematical skills required for the further study of math and natural sciences, but also—perhaps more importantly—they will carry a realistically positive attitude for success into their next college-level math course.

Required Texts. The textbook for this course is *PreCalculus* (Fifth Edition) by J. Douglas Faires and James DeFranza (Brooks/Cole); it is available from the college bookstore for about $160.

Teaching Methods. This course will be 75 hours, meeting three times per week for a total of 5 hours per week. The course will rely mainly on the lecture method but the following methods may be used occasionally: question-and-answer sessions, problem-solving sessions, class discussions. Frequently a set of homework problems will be assigned in one class and these exercises must be completed before the next class.

Failure to keep pace with the lectures nearly always results in a cumulative inability to cope with the material and a failure in the course. Doing the assigned homework is the most important part of this course. "Keeping pace with the lectures" means "doing the assigned homework in a timely fashion". A student will generally succeed or fail in this course depending on how many homework exercises have been attempted and solved. It is your responsibility as a student to complete the assigned homework exercises, and it is highly advisable to do so as soon as possible following that day's lecture, so that the material will be fresher in your mind. Homework should be done without the use of a calculator, since **the use of calculators is not permitted during class tests and the final examination**.

Answers to odd numbered homework exercises can be found in the back of the text and solutions to even numbered problems can be found in the Math Lab. Your instructor may provide supplementary notes and exercises as he or she sees fit. Remember: if you encounter difficulties in honest attempts at solving the homework problems, you are strongly advised to seek help from your teacher immediately.

Math web page. `http://www.johnabbott.qc.ca/departments/math`

Math Lab. The Math Lab is located in H 203 and is open from 11h until 16h (during weekdays) for borrowing course materials or using the computers and printers for mathematics assignments.

Math Help Centre. The Math Help Centre is located in H 203 from 9h until 11h, and in H 222 after 11h. There is usually a teacher available for individual help (see the posted schedule).

Learning Centre. The Learning Centre, located in H 117, offers student skills classes and individual tutoring.

Departmental Attendance Policy. Regular attendance is expected. Many failures are due to students missing classes. Missing six classes is grounds for automatic failure in this course. Students who wish to observe religious holidays must inform their teacher of their intent, in writing, within the first two weeks of the semester.

Evaluation Plan. The student's Final Grade is a combination of the Class Mark and the mark on the Final Exam. The Class Mark will include the student's results from three or more tests (worth at least 75% of the Class Mark), and possibly homework, quizzes and other assignments. **The use of calculators is not permitted during class tests.** The specifics of the Class Mark will be given by your instructor during the first week of classes in an appendix to this outline. Every effort is made to ensure equivalence between the various sections of this course. The Final Exam is set by the Course Committee (which consists of all instructors currently teaching this course). All students taking the course will write the Final Exam at the same time and place specified in the College's Final Exam Schedule. **The use of calculators is not permitted during the final examination.**

The Final Grade will be the better of:

50% Class Mark and 50% Final Exam Mark

or

25% Class Mark and 75% Final Exam Mark

A student with a Class Mark of less than 50% may choose not to write the Final Exam, in which case the Class Mark will be assigned as the Final Grade.

Course Costs. The cost of the textbook (see Required Texts).

College Policies.

College Policy on Cheating and Plagiarism. Cheating and plagiarism are not accepted at John Abbott College. Students are expected to conduct themselves accordingly and must be responsible for all their actions. For more information, students should consult the Institutional Policy on the Evaluation of Student Achievement (IPESA), which is reprinted in the College Calendar and/or Student Agenda.

Mid-semester assessment. Students have the right to feedback on basic skills in the first weeks of the semester so that they can seek extra help if necessary.

Notice to students. It is the responsibility of students to keep all assessed material for at least one month past the grade review deadline in the event that they would request a grade review. Students can learn more about their rights and responsibilities by reading the IPESA.

Course Content (with selected exercises)**.** The lists of selected exercises follow the order of presentation of the course topics as they occur in the required text. Your instructor may make some changes in the order of presentation of topics, may emphasize some topics more than others, and may present supplementary material on certain topics. In any case, students are responsible for doing all exercises given in the text unless otherwise indicated by your instructor.

The selected exercises should help you practice and learn the material taught in this course; they form a good basis for homework but they don't set a limit on the type of question that may be asked. Your teacher may supplement this list during the semester. Regular work done as the course progresses should make it easier for you to master the course.

Selected exercises for the 5th (current) edition of PreCalculus by Faires and DeFranza

Functions.

1.2 The Real Line (17–76)
1.3 The Coordinate Plane (5–66)
1.4 Equations and Graphs (1–44, 51)
1.6 Functions (1–65)
1.7 Linear Functions (1–38, 40, 42)
1.8 Quadratic Functions (1–8, 30–36)
Review Exercises for Chapter 1 (1–77, 79–81)

New Functions from Old.

2.2 Other Common Functions (1–26, 33, 34, 36)
2.3 Arithmetic Combinations of Functions (1–16, 21, 22)
2.4 Composition of Functions (1–26, 30–34)
2.5 Inverse Functions (1–36)
Review Exercises for Chapter 2 (1–24, 29–35, 39, 40, 44)

Algebraic Functions.

3.2 Polynomial Functions (1–38)
3.3 Finding Factors and Zeros of Polynomials (1–41)
3.4 Rational Functions (1–44)
3.5 Other Algebraic Functions (1–32)
Review Exercises for Chapter 3 (1–24, 29–50, 65–74)

Trigonometric Functions.

4.2 Measuring Angles (1–20, 25–42)
4.3 Right-Angle Trigonometry (1–18)
4.4 The Sine and Cosine Functions (1–55)
4.5 Graphs of the Sine and Cosine Functions (1–26, 35, 36)
4.6 Other Trigonometric Functions (1–36)
4.7 Trigonometric Identities (1–48)
4.8 Inverse Trigonometric Functions (1–10, 13–36)
4.9 Additional Trigonometric Applications (supplementary problems distributed by the instructor)
Review Exercises for Chapter 4 (1–72, 83)

Exponential and Logarithmic Functions.

5.2 The Natural Exponential Function (1–19)
5.3 Logarithm Functions (1–65)
5.4 Exponential Growth and Decay (1–10, 18, 19)
Review Exercises for Chapter 5 (1–38, 48, 49)

Selected exercises for the 4th edition of PreCalculus by Faires and DeFranza

Functions.

1.2 The Real Line (17–76)
1.3 The Coordinate Plane (5–66)
1.4 Equations and Graphs (1–44, 51)
1.6 Functions (1–65)
1.7 Linear Functions (1–38, 40, 42)
1.8 Quadratic Functions (1–8, 30–36)
Review Exercises for Chapter 1 (1–77, 79–81)

New Functions from Old.

2.2 Other Common Functions (1–26, 33, 34, 36)
2.3 Arithmetic Combinations of Functions (1–16, 21, 22)
2.4 Composition of Functions (1–26, 30–34)
2.5 Inverse Functions (1–36)
Review Exercises for Chapter 2 (1–24, 29–35, 39, 40, 44)

Algebraic Functions.

3.2 Polynomial Functions (1–38)
3.3 Finding Factors and Zeros of Polynomials (1–40)
3.4 Rational Functions (1–44)
3.5 Other Algebraic Functions (1–32)
Review Exercises for Chapter 3 (1–24, 29–50, 65–74)

Trigonometric Functions.

4.2 Measuring Angles (1–20, 25–42)
4.3 The Sine and Cosine Functions (1–55)
4.4 Graphs of the Sine and Cosine Functions (1–26, 35, 36)
4.5 Other Trigonometric Functions (1–36)
4.6 Trigonometric Identities (1–48)
4.7 Right-Angle Trigonometry (1–22)
4.8 Inverse Trigonometric Functions (1–10, 13–36)
4.9 Applications of Trigonometric Functions (supplementary problems distributed by the instructor)
Review Exercises for Chapter 4 (1–72, 83)

Exponential and Logarithmic Functions.

5.2 The Natural Exponential Function (1–19)
5.3 Logarithm Functions (1–65)
5.4 Exponential Growth and Decay (1–10, 18, 19)
Review Exercises for Chapter 5 (1–38, 48, 49)

Selected exercises for the 3th edition of PreCalculus by Faires and DeFranza

Functions.

1.2 The Real Line (17–66)
1.3 The Coordinate Plane (5–66)
1.4 Equations and Graphs (1–45)
1.6 Functions (1–65)
1.7 Linear Functions (1–38, 40, 42)
1.8 Quadratic Functions (1–8, 30–36)
Review Exercises for Chapter 1 (1–77, 79–81)

New Functions from Old.

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3.3 Finding Factors and Zeros of Polynomials (1–40)
3.4 Rational Functions (1–40)
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