

**QUEENSBOROUGH COMMUNITY COLLEGE
MATH DEPARTMENT**

COURSE OUTLINE

MA-442 ANALYTIC GEOMETRY & CALCULUS II

Pre-requisite: MA-441 (with a grade of C or better) or Departmental permission.

Hours: 4 Class Hours 1 Recitation Hour 4 Credits

Course Description: The second of a three-semester sequence, this course is intended to cover transcendental functions, methods of integration, parametric equations, and infinite series. Computer demonstrations will be arranged where appropriate.

Curricula for which the course is required/recommended:

A.S. Degree Programs in Liberal Arts and Sciences (Science and Mathematics) and Engineering Science.

General Education Objectives: Use analytical and deductive reasoning to apply the concepts and methodologies of calculus to questions in mathematics, the physical and biological sciences and engineering.

Course Objectives/Expected Student Learning Outcomes: Students will develop problem solving skills and construct mathematical models in the computer laboratory using software such as MAPLE, DERIVE, CONVERGE, and MATHCAD.

Text: CALCULUS, Sixth Edition
by James Stewart
Brooks/Cole Cengage Learning Publishing Co.

Required Materials: Graphing Calculator

Methods by which student learning will be evaluated:

The general guidelines for assessing grades are as follows:

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| ○ Three Semester Examinations | 45% |
| ○ Assignments and Classroom Performance | 15% |
| ○ Maple Laboratory Assignments | 10% |
| ○ Final Examination | 30% |

The distribution may be changed at the discretion of the individual instructor

Academic Integrity: Academic honesty is taken extremely seriously and is expected of all students. All assignments must be the original work of the student (and partners or group, if applicable). All questions or concerns regarding ethical conduct should be brought to the course instructor. "It is the official policy of the College that all acts or attempted acts that are violations of academic integrity be reported to the Office of Student Affairs (OSA). At the faculty member's discretion and with the concurrence of the student or students involved, some cases, though reported to the OSA, may be resolved within the confines of the course and department. The instructor has the authority to adjust the offender's grades as deemed appropriate, including assigning an F to the assignment or exercise or, in more serious cases, an F to the student for the entire course." (Taken from the QCC Academic Integrity Policy, 2/14/2005.)

NOTE: *Any student who feels that he/she may need an accommodation based upon the impact of a disability should contact the instructor privately to discuss his/her specific needs. Please contact the office of Services for Students with Disabilities in Science Building, room 132 (718 631 6257) to coordinate reasonable accommodations for students with documented disabilities.*

<u>TOPICS</u>	<u>SECTIONS</u>	<u>HOURS</u>
<u>INVERSE FUNCTIONS</u>		
Inverse Functions	7.1	2
The Natural Logarithmic Function	7.2*	3
The Natural Exponential Function	7.3*	2
General Logarithmic and Exponential Functions	7.4*	1
Exponential Growth and Decay	7.5	1
Inverse Trigonometric Functions	7.6	4
<u>TECHNIQUES OF INTEGRATION</u>		
Integration by Parts	8.1	2
Trigonometric Integrals	8.2	2
Trigonometric Substitution	8.3	2
Integration of Rational Functions by Partial Fractions	8.4	3
Strategy for Integration	8.5	1
Integration Using Tables and Computer Algebra Systems	8.6	1
Improper Integrals	8.8	2
<u>FURTHER APPLICATIONS OF INTEGRATION</u>		
Arc Length	9.1	2
Areas of a Surface of Revolution	9.2	2
<u>PARAMETRIC EQUATIONS</u>		
Curves Defined by Parametric Equations	11.1	1
Calculus with Parametric Curves	11.2	2
Conic Sections	11.5	2
<u>INFINITE SEQUENCES and SERIES</u>		
Sequences	12.1	2
Series	12.2	2
The Integral Test	12.3 (pgs. 733--736)	1
The Comparison Tests	12.4	2
Alternating Series	12.5	2
Absolute Convergence and the Ratio and Root Tests	12.6	1
Strategy for Testing Series	12.7	1
Power Series	12.8	2
Representations of Functions as Power Series	12.9	1
Taylor and Maclaurin Series	12.10	2
Applications of Taylor Polynomials	12.11	1
<u>EXAMS</u>		<u>4</u>
TOTAL		56

The approximate hours per chapter are guidelines and are at the discretion of the instructor. The instructor is responsible for making assignments and scheduling examinations. The Final Exam date is scheduled by the Registrar.