

**QUEENSBOROUGH COMMUNITY COLLEGE**  
**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**COURSE OUTLINE**

**MA-128      CALCULUS FOR TECHNICAL AND BUSINESS STUDENTS**

**Pre-requisite:** MA-114 or MA-120 or satisfactory score on CMAT or COMPASS exams or equivalent

**Hours:** 4 Class Hours      4 Credits

**Course Description:** Analytic geometry, curve sketching, differentiation and integration of algebraic, exponential, and logarithmic functions, maxima/minima, related rates, rectilinear motion, the definite integral, area and volume.

**Curricula for which the course is required and curricular objectives addressed by the course:**

MA-128 is a second-level course required for the following curricula in the Associate in Applied Science (AAS) Degree program. MA-128 is also one of the General Education core requirements for these curricula.

- *Computer Engineering Technology*
- *Electronic Engineering Technology*
- *Computerized Architectural Technology*
- *Laser and Fiber Optics Technology*
- *Mechanical Engineering Technology*
- *Telecommunications Technology*

Students demonstrate competency in differentiating and integrating exponential logarithmic and trigonometric functions; students use basic differentiation for finding maxima/minima, related rates and integration for finding areas between two curves, and finding volumes; students demonstrate problem solving skills using the techniques of differentiation and integration; students demonstrate competence in using graphing calculators in problem solving.

**General Education Objectives:** Students meet basic calculus requirements for successful two year graduation or transfer into a four year baccalaureate technology program; students will demonstrate mastery of discipline-specific tools required for entry into or advancement in the job market in their field (career programs); students will use analytical reasoning skills and apply logic to solve problems; students write, read, listen, and speak clearly and effectively.

**Course Objectives/ Expected Student Learning Outcomes:** Students will be able to operate on polynomial, rational, exponential, logarithmic and trigonometric functions and apply them to practical problems; student will be able to work with the concepts of limits and continuity; student will be able to work with the concept of derivatives; student will be able to work with the concept of integration; students will be able to determine and apply appropriate mathematical methods and skills to solve problems; students will be able to connect problems in their disciplines (electrical and civil engineering, optics, architecture, etc.) with their mathematical models; students will be able to use technology - graphing calculators/computers for data representations and computations; students will be able to express a mathematical problem in a visual format; students will demonstrate self-reliance by reading and interpreting technical information that is expressed mathematically; students will be able to apply to real world problems techniques learned in solving contextual problems and generating project results.

**Text:** Calculus for Business, Economics, Life Sciences, and Social Sciences by Barnett, Ziegler, and Byleen, 11<sup>th</sup> Edition, Pearson Prentice Hall © 2008

**Methods by which student learning will be evaluated:**

The general guidelines for assessing grades are as follows:

- |   |     |
|---|-----|
| ○ Assignments and Classroom Performance | 35% |
| ○ Mid-term Examinations                 | 30% |
| ○ Final Examination                     | 35% |

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>TOPIC</u>	<u>CHAPTER</u>	<u>SECTION</u>	<u>HOURS</u>
<b>Review: Functions and Graphs</b>	<b>2</b>	<b>2-1 – 2-5</b>	<b>2</b>
<b>Limits and the Derivative</b>	<b>3</b>	<b>3-1 – 3-5</b>	<b>10</b>
<b>Additional Derivative Topics</b>	<b>4</b>	<b>4-1 – 4-6</b>	<b>10</b>
<b>Graphing and Optimization</b>	<b>5</b>	<b>5-1 – 5-6</b>	<b>10</b>
<b>Integration</b>	<b>6</b>	<b>6-1 – 6-5</b>	<b>10</b>
<b>Additional Integration Topics</b>	<b>7</b>	<b>7-1 – 7-3</b>	<b>6</b>
<b>Trigonometric Functions</b>	<b>9</b>	<b>9-1 – 9-3</b>	<b>4</b>
<b>Exams and Review</b>			<b>4</b>
		<b>TOTAL HOURS</b>	<b>56</b>

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. A graphing calculator is required.

**DVB: cs**

**Fall 2009**

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