

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

COURSE OUTLINE

MA-128 CALCULUS FOR TECHNICAL AND BUSINESS STUDENTS

Pre-requisite: MA-114 with a C or better or MA-119 and MA-121 with a C or better in both courses or satisfactory score on the Placement Exam Level II.

Hours: 4 Class Hours 4 Credits

Course Description: Analytic geometry, curve sketching, differentiation and integration of algebraic, exponential, logarithmic, and trigonometric functions, maxima/minima, rectilinear motion, the definite integral, introduction to differential equations.

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: *Technical Mathematics with Calculus*
Second Custom Edition for Queensborough Community College
By: Cleaves/Bittinger/Washington
Pearson Education, Inc., 2014

Methods by which student learning will be evaluated:

The general guidelines for assessing grades are as follows:

- Examinations and Assignments*: **Please note that it is very important to take into account the student's use of precision of mathematical language, accuracy of units, and organization when marking exams and assignments.** Students should write solutions using equations and equal signs, where appropriate. The use of the symbols $\pm\infty$ should be emphasized. 70%*
- Final Examination: Students must score a minimum of 55 or better on the uniform final exam to pass the course. 30%

**** It is recommended that 10% of the grade be assignments where students bring in worked-out problems from their technology or business courses in which they demonstrate how concepts learned in MA-128 are applied to courses in their majors. The department will collect copies of these marked assignments. The assignments are to be left in the Chair's mailbox.***

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>
Limits	13	13.1 - 13.2	4
Average Rate of Change	13	13.3	2
Differentiation/ Derivatives	13	13.4 – 13.8	11
Maximum and Minimum (Extrema)	14	14.1 – 14.3	5
Exponential and Logarithmic Functions	15	15.1 – 15.5	7
Integration (Antidifferentiation)	16	16.1 – 16.5	10
Trigonometric Functions	17	17.1 – 17.3	6
Differential Equations	18	18.1 – 18.2	6
Review			3
Exams, including the final exam			6
TOTAL HOURS			60

MA-128 Summer 2F0 Weekly Outline:

Lecture Videos:

The link to the lecture videos can be found on Blackboard (BB)

Assessments:

Links to HW SET, review sheets and Test links are all on Blackboard (BB)

	Lecture	Assessment
Week 1 May 26, 2020	Watch 13.1 – 13.7 7 sections	Do introductions on Blackboard (discussion board) Do HW SET#1 – Review Sheet 1
Week 2 June 1,2020	Watch 13.8 – 15.2 6 sections	Test 1 – Tuesday June 2, 2020 13.1 – 13.7 HW Set #1 Due
Week 3 June 8, 2020	Watch 15.3 – 16.5 8 sections	Test 2 – Tuesday June 9, 2020 13.8 – 15.2 HW Set #2 Due
Week 4 June 15,2020	Watch 17.1 – 18.2 5 sections	Test 3 – Tuesday June 16, 2020 15.3 – 16.5 HW Set #3 Due
Week 5 June 22, 2020		Test 4 – Tuesday June 23, 2020 17.1 – 18.2 HW Set #4 Due
Week 5 June 23, 2020	Watch/Do Final Review Sheet Solutions videos on BB	Final Exam on June 25, 2020 12:10pm – 2:10pm