

# Department Master Syllabus

**Camden County College**

**Blackwood, New Jersey**

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| **Course Number:**  MTH-150 | | **Course Title:**  Calculus II | | | |
| **Department/Program:** Mathematics | | | | | |
| **Date of Review:** Click here to select a month. | | Click here to select a year. | | | |
| (This Department Master Syllabus has been examined by the program/department faculty members and it is decided that no revision is necessary at this time.) | | | | | |
| **Date of Revision:** December | | | | 2021 | |
| (This Department Master Syllabus has been examined by the program/department faculty members and it is decided a change requiring a revision is necessary at this time.) | | | | | |
| N.B. A change to the course materials alone (textbooks and/or supplementary materials) may not constitute a revision. Any other change to the items listed below on this form is considered a revision and requires approval by the department/program faculty at a department/program meeting and by the division at a Chairs and Coordinator meeting. | | | | | |
| **Credits:** 4 | | | | | |
| **Contact Hours** | **Lecture:** 4 | | **Lab:** 0 | | **Other:** 0 |
| Prerequisites: MTH-140 | | | | | |
| Co-requisites: None | | | | | |
| Course Description: This course is a continuation of Calculus I. Topics include: applications of the definite integrals including areas, volumes, lengths of curves, work, fluid pressure and forces, center of mass; derivatives and integrals of Hyperbolic functions, techniques of integration, improper integrals, sequences, series, (parametric and polar curves, if time permits). | | | | | |
| **Student Learning Outcomes (SLOs)**  Course specific student learning outcomes  Upon completion of this course the student will be able to:   * demonstrate the algebraic and calculus skills appropriate to this course, as assessed by tests, quizzes, homework, or projects. * understand and use the concept of the definite integral in solving area between two curves, area of surface of revolution, volume of a solid revolution with different methods and a variety of situations, as assessed by tests, quizzes, homework, or projects. * solve problems related to work done by constant and variable force, center of mass, and fluid pressure and force involving real world applications, as assessed by tests, quizzes, homework, or projects. * apply the concept of more advanced techniques of integral calculus to solve problems, as assessed by tests, quizzes, homework, or projects. * define a sequence and an infinite series and determine whether the sequence and an infinite series converges or diverges using an appropriate test for convergence, as assessed by tests, quizzes, homework, or projects. * define a power series, determine the interval and radius of convergence of the power series, differentiate and integrate a power series as assessed by tests, quizzes, homework, or projects.   As assessed by: tests, quizzes, homework, or projects. | | | | | |
| **General Education Student Learning Outcomes**  If this course has applied for General Education Elective Status the general education student learning outcomes listed below must exactly match those the sponsor has identified on the General Education Request form.  General Education SLOs:  Students will apply appropriate mathematical and statistical concepts and operations to interpret data and to solve problems, as assessed by tests, quizzes, homework, or projects.  As assessed by:  tests, quizzes, homework, or projects. | | | | | |
| **Program Learning Outcomes**  List all course level student learning outcomes that interconnect to a particular program learning outcome.  N/A  Describe the assessment of the interconnected program learning outcome(s).  N/A | | | | | |
| **Course Outline:**  **Unit I. Applications of Integration**  Regions between Curves  Volume by Slicing  Volume by Shells  Length of Curves  Physical Applications  Logarithmic and exponential functions revisited  Exponential models  Hyperbolic Functions  **Unit II . Integration Techniques**  Integration by Parts  Trigonometric Integrals  Trigonometric Substitution  Partial Fractions  Other Integration Strategies  Numerical Integration  Improper Integrals  Introduction to Differential Equations (optional)  **Unit III. Sequences and Infinite Series**  An Overview  Sequences  Infinite Series  The Divergence and Integral Tests  Comparison Tests  Alternating Series  The Ratio and Root Tests  Choosing a Convergence Test  **Unit IV. Power Series**  Approximating Functions with Polynomials  Properties of Power Series  Taylor Series  Working with Taylor Series  **Unit V. Parametric and Polar Curves (if time permits)**  Parametric Equations  Polar Coordinates  Calculus in Polar Coordinates  Conic Sections | | | | | |
| **Course Activities:**  The classroom activities will include formal and informal lectures where new material and assigned problems will be explained. Students will be encouraged to participate in discussion during the presentation and at times present problems on the blackboard. Time will be set aside to answer specific questions concerning homework problems and other previous material. Software and/or calculator  (TI 83, 84, 89) exercises will be given and methods of analysis will be discussed. | | | | | |
| **Course Materials:**  Textbook(s): *Calculus, Early Transcendental Functions, Briggs, Cochran and Gillett,  Current edition, Pearson*  Supplemental Materials: T1-83/84 Plus Graphing Calculator – recommended  Textbook specific course management system.  Software Licenses: N/A  Computers: N/A | | | | | |
| **Course Assessment Plan**  How often and by what means will the effectiveness of this course as part of the curriculum be assessed?    Course will be assessed according to the department’s PSLO/CSLO cycle. | | | | | |