Calculus II
MATH222
Fall 2015

This course is a continuation of MATH 221 Calculus I. This is a second course in the sequence of calculus of one variable intended for undergraduate mathematics, science, technology or engineering majors. Topics include techniques and applications of integration, indeterminate forms, improper integrals, and infinite series. Prerequisite: C- or higher in MATH 221 Calculus I; waiver by placement testing results; or departmental approval.

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Solve applied problems using differentiation and integration.	1. Solve differential equations using separation of variables. (CT,QS,R,TS) 2. Find the area of the region between two curves. (CT,QS,R,TS) 3. Find the volume of a solid of revolution by the disc or washer method or by the shell method. (CT,QS,R,TS) 4. Other applications as time permits.
Demonstrate an understanding of various integration techniques in order to solve many different types of integrals.	1. Solve problems using integration by parts. (CT,R,QS) 2. Solve problems involving trigonometric integrals and those involving trigonometric substitution. (CT,R,QS) 3. Solve problems involving partial fractions. (CT,R,QS) 4. Solve problems using integration tables and other integration techniques. (CT,R,QS)
Demonstrate an understanding of the concept of indeterminate forms in order to solve application problems.	1. Solve problems using L Hôpital's Rule. (CT,R,QS) 2. Determine when L Hôpital's Rule does not apply. (CT,R,QS) 3. Determine the divergence or convergence of an improper integral. (CT,R,QS) 4. Evaluate an improper integral that converges. (CT,R,QS)
Demonstrate an understanding of sequences and series in order to develop various techniques to solve application problems.	1. Find the general term of a sequence. (CT,R,QS) 2. Determine the convergence or divergence of a given sequence. (CT,R,QS) 3. Determine if a sequence is monotonic. (CT,R,QS) 4. Determine the convergence or divergence of a series. (CT,R,QS) 5. Find the sum of a given convergent series. (CT,R,QS) 6. Use the integral test, the direct comparison test, the limit comparison test, the alternating series test, the ratio test and the root test approximately to determine the convergence or divergence of a series. (W, CT,R,QS) 7. Determine whether a series converges conditionally or absolutely. (CT,R,QS) 8. Approximate the sum of a series. (CT,R,QS)

	9. Find Maclaurin polynomials of degree n for a given function. (CT,R,QS) 10. Find the Taylor polynomial of degree *n* centered at *r* for a given function. (CT,R,QS) 11. Find the interval of convergence for a given power series. (CT,R,QS) 12. Find a power series for a given centered function centered at a given value. (CT,R,QS) 13. Find the Taylor and Maclaurin series for given functions. (CT,R,QS)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W).