CCM
COUNTY COLLEGE of MORRIS

MAT 132 – ANALYTIC GEOMETRY AND CALCULUS II   4/2020
4 hrs./wk. – 4 cr.   BEGINNING FALL 2020

Catalog Description: A continuation of Analytic Geometry and Calculus I, which covers the calculus of inverse trigonometric functions, methods of integration, analytic geometry in the plane including polar coordinates and conic sections, hyperbolic functions, sequences and series, and parametric equations.

Prerequisite: MAT 131 (grade of "C" or better) or equivalent.

Text: Larson, Ron, and Bruce H. Edwards. *Calculus of a Single Variable: Early Transcendental Functions*,
        7th ed. Cengage Learning, 2019

Syllabus

Period	Text Sections	Topics
1 - 2	1-5, 5.9	Calculus 1 Review, Hyperbolic Functions
3 - 4	6.2 - 6.3	Growth and Decay, Separation of Variables
5	7.1	Area between curves
6 - 8	7.2 - 7.3	Disk Method and Cross Sections, Shell Method
9	7.4	Arc Length and Surface Area
10		Test 1
11	8.1	Basic Integration Rules
12	8.2	Integration by Parts
13	8.3	Trig Integrals
14	8.4	Trig Substitution
15	8.5	Partial Fractions
16	5.6	L'Hopital Rule
17	8.8	Improper Integrals
18		Test 2
19 - 20	9.1	Sequences
21	9.2	Series and Convergence
22	9.3	Integral Test and p-Series
23	9.4	Comparison Tests
24	9.5	Alternation Series
25	9.6	Ratio and Root Tests
26	9.7	Taylor Polynomials
27	9.8	Power Series
28	9.9	Representation of Functions by Power Series
29	9.10	Taylor and Maclaurin Series
30		Test 3
31 - 32	10.1	Conic Sections
33	10.2	Plane Curves and Parametric Equations
34	10.3	Parametric Equations and Calculus
35 - 36	10.4	Polar Coordinates and Polar Graphs
37 - 38	10.5	Area and Arc Length in Polar Coordinates
39	10.6	Polar Equations of Conics
40		Test 4
41 - 42	7.5 - 7.7	(Time Permitting) Work, Centers of Mass, Fluid Pressure and Force
43		Final Review
44 - 45		2-day Final Exam

Students are expected to adhere to the policies of the County College of Morris. These can be accessed at www.ccm.edu/academics/academic-policies/.

Statement of Course LEARNING OUTCOMES

- **Choose** and **apply** appropriate integration techniques

- **Model** and **solve** problems including areas, volumes, arc lengths, surface areas, and work

- **Determine** whether a series converges or diverges by selecting an appropriate convergence test and applying it

- **Use** power series to represent functions and **create** Maclaurin and Taylor series for familiar transcendental functions

- **Identify** and **graph** conic sections

- **Sketch** graphs of parametric and polar equations, and **apply** derivatives and integrals in parametric and polar forms to solve problems including arc length and surface area