

SYLLABUS

MATH 312

Differential Equations

Spring, 2024

Instructor: Ivan C. Sterling, 177 SH, cell 240-431-8185, isterling@smcm.edu.

Office Hours: TBA

Book:

Elementary Differential Equations and Boundary Value Problems, 9th Ed,
Boyce&DiPrima

Course Outline: Chapters 1-6

Tests and Grades: There will be four exams (worth 80% of your course grade, 20% each). One of the four exams will be the non-comprehensive final. Homework will be part of your grade (worth 20%). The homework will be collected at the beginning of class on the day it's due. Late homework will not be accepted. After it is collected some of the homework problems will be selected for the TA to grade. The exam problems will be the same or similar to those in the homework and the examples worked in class.

Dates for the exams: Thursdays 2/8, 3/7, 4/4; Final: M 5/2 2-4:15.

Extra Credit: You can earn up to two extra credit points by attending the NSM colloquia on Wednesday 2/7 and 3/20 in SH106 at 4:45. Please send me an at most two paragraph summary of the lecture.

Grading (roughly):

90-100% A,A-; 80-90% B+,B,B-; 70-80% C+,C,C; 60-70% D+,D,D-; 0-60% F.

TA: James Ripper, jfripper@smcm.edu, phone 240-295-1304, TBA - OfficeHours, ReviewSessions.

For Business Use Only:

- At the completion of MATH312, students will be able to deconstruct nonlinear systems of differential equations and linearize them as demonstrated by using the Jacobian matrix to linearize the nonlinear system at each of the equilibria.
- At the completion of MATH312, students will be able to analyze differential equations geometrically and numerically. as demonstrated by performing stability analysis for equilibrium points and using software to solve them numerically.
- At the completion of MATH312, students will be able to implement techniques for solving first order linear differential equations and separable differential equations as demonstrated by solving first order linear differential equations and separable differential equations analytically .
- At the completion of MATH312, students will be able to create mathematical models describing real-world phenomena and solving them as demonstrated by translating real-world scenarios into mathematics using differential equations, and using the techniques learned to solve and analyze them.