

NORTH CAROLINA STATE UNIVERSITY
Department of Mathematics
MA 241 Weekly Schedule
Spring Semester, 2020

Tests: There are 4 scheduled tests during the semester. The test dates have been coordinated with Physics and hence the test dates **cannot be changed**.

Textbook: *Calculus II for Engineers and Scientists (Franke, Griggs, Norris: accessible via WebAssign under RESOURCES; \$45)* Students actually pay for the webassign homework accessibility and the e-book at the same time.

Class Days: This class is scheduled to meet 5 days each week. The fifth day can be used as a catch-up or review day. It is recommended that you start the semester by meeting each day. As the semester progresses, you may find that you can give your students a day off occasionally – if your section is a 5-day per week section.

Maple Homework Assignments: There are no Maple assignments for MA241 this semester.

WebAssign: All instructors will have their students use WebAssign for homework. It is recommended that it count for 5% -10% of your students' grades. Students pay a nominal fee to use WebAssign. (<http://webassign.ncsu.edu>) The WebAssign homework assignments now match the new e-book. Most of the questions are randomized versions of the even-numbered problems from the exercises in the book.

Calculator Policy: I highly recommend that you do not allow graphing calculators on tests or exams. All graphing calculators actually do differential and integral calculus. I recommend that scientific calculators (or calculators with less functionality) be used on tests and exams.

Course Grading Recommendation: Something close to the following breakdown should be used for this course, and it should be explicitly stated in your personal syllabus.
Homework/Quiz: 10%; Tests: 60%; Final Exam: 30%

Week One: January 6 – January 10

- Course introduction; syllabus; begin Chapter 0 (review of Calc I)
- Chapter 0 (limits; continuity; derivatives) (review of Calc I)
- Chapter 0 (derivatives of trig/exponentials; incr/decr) (review of Calc I)
- Chapter 0 (antiderivatives; areas; volumes; substitution; by parts) (review of Calc I)
- 1.1 Arc Length

Week Two: January 13 – January 17

- 1.2 Average Value of a Function
- 1.3 Work (springs)
- 1.3 Work (variable force)

Week Three: January 20 – January 24

- Martin Luther King, Jr Holiday (September 20)
- 1.3 Work (variable force)
- 1.3 Work (force due to hydrostatic pressure)

Week Four: January 27 – January 31

- 1.3 (moments and centers of mass)
- 1.3 (centers of mass)
- Review for Test #1

Week Five: February 3 – February 7

- **TEST #1 (Monday, February 3)**
- 2.1 Trigonometric Integrals
- 2.2 Trigonometric Substitution

Week Six: February 10 – February 14

- 2.3 Partial Fractions
- 2.4 Table of Integrals

Week Seven: February 17 – February 21

- 2.5 Numerical Integration
- 2.6 Improper Integrals
- 3.1 Introduction to Differential Equation

Week Eight: February 24 – February 28

- 3.2 Separable Differential Equations; Orthogonal Trajectories
- Review for Test #2
- **TEST #2 (Monday, Feb 24)**

Week Nine: March 2 – March 6

- 3.3 Applications of DEs; Tank Problems; Growth and Decay
- 3.3 Applications of DEs; Newton's Law of Cooling, Logistic Growth
- 3.4 Second Order DEs; Homogenous
- Spring Break: March 9-13

Week Ten: March 16 – March 20

- 3.4 Second Order DEs; Homogeneous (continued)
- 3.5 Second Order DEs; Non-homogenous

Week Eleven: March 23 – March 27

- 3.6 Second Order DEs; Applications; Circuits
- 3.6 Second Order DEs; Applications; Springs
- Review for Test#3

Week Twelve: March 30 – April 3

- **TEST #3 (Monday, March 30)**
- 4.1 Sequences
- 4.2 Series; Infinite Geometric Series; Telescoping Series
- 4.3 Convergence Tests; Test for Divergence; Integral Test

Week Thirteen: April 6 – April 10

- 4.3 Convergence Tests; p-series; Comparison Test; Limit Comparison Test; Estimation of Sum
- 4.4 Alternating Series
- 4.5 Absolute Convergence

Week Fourteen: April 13 – April 17

- 4.6 Power Series; Interval of Convergence
- 4.7 Functions as Power Series
- Review for Test#4
- **TEST #4 (Friday, April 17)**

Week Fifteen: April 20 – April 23

- 4.8 Taylor and Maclaurin Series; e^x ; $\sin x$; $\cos x$; Derivatives/Integrals of Power Series
- 4.8 Taylor and Maclaurin Series; Binomial Series
- 4.8 Taylor and Maclaurin Series; Algebra of Power Series
- 4.9 Taylor and Maclaurin Polynomials; Examples from Physics; Error Analysis

Reading Day: Friday, April 24

FINAL EXAMS: April 27 – May 5 (see exam schedule for day/time)