

NORTH CAROLINA STATE UNIVERSITY  
Department of Mathematics  
MA 241 Weekly Schedule  
Fall Semester, 2019

**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: August 21 – August 23

- 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)

Week Two: August 26 – August 30

- Chapter 0 (antiderivatives; areas; volumes; substitution; by parts) (review of Calc I)
- 1.1 Arc Length
- 1.2 Average Value of a Function

Week Three: September 3 – September 6

- Labor Day (September 2)
- 1.3 Work (springs)
- 1.3 Work (variable force)

Week Four: September 9 – September 13

- 1.3 Work (force due to hydrostatic pressure)
- 1.3 (moments and centers of mass)
- 1.3 (centers of mass)
- Review for Test #1

Week Five: September 16 – September 20

- **TEST #1 (Monday, September 16)**
- 2.1 Trigonometric Integrals
- 2.2 Trigonometric Substitution

Week Six: September 23 – September 27

- 2.3 Partial Fractions
- 2.4 Table of Integrals

Week Seven: September 30 – October 4

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

Week Eight: October 7 – October 11

- 3.2 Separable Differential Equations; Orthogonal Trajectories
- Fall Break October 10, 11
- Review for Test #2
- **TEST #2 (Monday, October 14)**

Week Nine: October 14 – October 18

- 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

Week Ten: October 21 – October 25

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

Week Eleven: October 28 – November 1

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

Week Twelve: November 4 – November 8

- **TEST #3 (Monday, November 4)**
- 4.1 Sequences
- 4.2 Series; Infinite Geometric Series; Telescoping Series
- 4.3 Convergence Tests; Test for Divergence; Integral Test

Week Thirteen: November 11 – November 15

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

Week Fourteen: November 18 – November 22

- 4.6 Power Series; Interval of Convergence
- 4.7 Functions as Power Series
- 4.8 Taylor and Maclaurin Series;  $e^x$ ;  $\sin x$ ;  $\cos x$ ; Derivatives/Integrals of Power Series
- Review for Test#4

Week Fifteen: November 25 – November 29

- **TEST #4 (Monday, November 25)**
- 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
- Thanksgiving Break November 27, 28, 29

Week Sixteen: December 3 – December 7

- 4.8 Taylor and Maclaurin Series; Algebra of Power Series
- 4.9 Taylor and Maclaurin Polynomials; Examples from Physics; Error Analysis

Reading Day: Wednesday, December 11 (after two days of final exams)

**FINAL EXAMS: December 9 – December 18 (see exam schedule for day/time)**