

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

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

Textbook: *Calculus for Engineers and Scientists, Volume II (Franke, Griggs, Norris: accessible via WebAssign; \$45)*

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 – although this should be very rare.

WebAssign: Instructors will **require** their students to 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 e-text is also linked to the WebAssign page under **Resources**. The textbook (e-book) is actually purchased via WebAssign.

MA241 Schedule Spring 2019

Week One: January 7 – January 11

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

Week Two: January 14 – January 18

- 1.1: Arc Length
- 1.2: Average Value of a function
- 1.3: Work (springs)
- 1.3: Work (variable force)

Week Three: *January 21* – January 25

- *MLK, Jr. Holiday (Monday, January 21)*
- 1.3: Work (force due to hydrostatic pressure)
- 1.3: Work (moments and centers of mass)

Week Four: January 28 – February 1

- 1.3: Work (centers of mass)
- Review for Test #1
- **TEST #1 (Thursday, January 31)**
- 2.1: Trigonometric Integrals

Week Five: February 4 – February 8

- 2.2: Trigonometric Substitution
- 2.3: Partial Fractions (Linear Factors)
- 2.3: Partial Fractions (Irreducible Quadratic Factors)

Week Six: February 11 – February 15

- 2.4: Table of Integrals
- 2.5: Numerical Integration (Trapezoidal Rule)
- 2.5: Numerical Integration (Simpson's Rule)

Week Seven: February 18 – February 22

- 2.6: Improper Integrals
- 3.1: Introduction to Differential Equations
- Review for Test #2

Week Eight: February 25 – March 1

- **TEST #2 (Monday, February 25)**
- 3.2: Separable DEs
- 3.3: Applications of DEs (Tank Problems; Growth and Decay)
- 3.3: Applications of DEs (Newton's Law of Cooling; Logistic Growth)

Week Nine: March 4 – March 8

- 3.4: Second Order DEs (Homogeneous)
- 3.5: Second Order DEs (Non-homogeneous)

Week Ten: March 11 – March 15

- *Spring Break (March 11 – March 15)*

Week Eleven: March 18 – March 22

- 3.6: Application of Second Order DEs (Circuits)
- 3.6: Applications of Second Order DEs (Springs)
- 4.1: Sequences

Week Twelve: March 25 – March 29

- 4.2: Series (Geometric Series; Telescoping Series)
- Review for Test #3
- **Test #3 (Wednesday, March 27)**
- 4.3: Convergence Tests (Test for Divergence; Integral Test; p-Series)

Week Thirteen: April 1 – April 5

- 4.3: Convergence Tests (Comparison Test; Limit Comparison Test; Estimation of a Sum)
- 4.4: Alternating Series
- 4.5: Absolute Convergence

Week Fourteen: April 8 – April 12

- 4.6: Power Series (Interval of Convergence)
- 4.7: Functions as Power Series
- 4.8: Taylor and Maclaurin Series (e^x ; $\sin x$; $\cos x$)

Week Fifteen: April 15 – *April 19*

- 4.8: Taylor and Maclaurin Series (Derivatives/Integrals of Power Series)
- 4.8: Taylor and Maclaurin Series (Binomial Series)
- Review for Test #4
- **TEST #4 (Thursday, April 18)**
- *Spring Holiday (Friday, April 19)*

Week Sixteen: April 22 -- April 26

- 4.8: Taylor and Maclaurin Series (Algebra of Power Series)
- 4.9: Taylor and Maclaurin Polynomials (Examples from Physics; Error Analysis)
- Review for Final Exam

FINAL EXAMS: April 29 – May 7 (See exam schedule for exam day/time for your section)