# MATH 112-02 Calculus II Spring 2013

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**Section coursepage:** http://www.math.wm.edu/~vinroot/112S13.html

**Text:** 1)*Single Variable Calculus, Early Transcendentals (7 E)* by James Stewart.

2) *Calculus Labs:* These are found on the Math 112 website, http://www.wm.edu/as/mathematics/undergrad/wheretostart/math112/index.php

**Topics:** Area between curves, volumes (disk, washers, slicing), work, fluid force and pressure, substitution method of integration, integration by parts, trigonometric integrals, trigonometric substitution, partial fractions, numerical methods of integration, improper integrals, arc length, modeling with differential equations, sequences, series, various test for convergence of series, power series, and Taylor and Maclaurin series. Topics are presented with an emphasis on definitions and proofs as well as applications.

**Calculators:** TI-83, TI-83 Plus, or TI-84 calculator is recommended. A calculator may be used for homework and labs but not on most quizzes, tests or the final exam.

**Tests and Quizzes:** There are three mid-semester tests on the following Tuesday lab sessions: February 21st, March 21st, and April 18th. The time allotted for tests is 8-9:30 AM (starting 30 min before lab time). Make-up tests are given only in extreme circumstances such as documented serious illness or personal circumstance as noted by the Dean of Students. Such documentation must be obtained ***prior*** to the start of the test. A weekly quiz covering 2-3 sections is administered during other lab sessions. There are no make-up quizzes, even for legitimate absences such as illness, family emergency, or a college sponsored event. There are no exceptions so please do not request a make-up quiz. Your lowest two quiz scores will be dropped, however, before your final grade is calculated.

\*To prepare for quizzes and tests, rework the assigned homework problems and all the example problems from class lectures; recreate the steps shown in class. Know definitions and review proofs and concepts presented in lecture. Each step of a problem is assigned points and graded on clarity and correctness so the final “answer” is only one part of the complete solution. Work must also be neatly presented in a logical and understandable fashion to receive full credit.

**Final Exam:** The common final exam is a “block” exam taken by all sections of Math 112 from 9am-noon on Tuesday,

May 7th. Your final exam score may replace your lowest attempted test score if it is higher. A practice final exam is located on the Math 112 website.

**Homework:** Routine homework problems are assigned for each lecture but not usually graded. Understanding and completing the homework is essential for success in the course. Many of the quiz and test problems come from the homework.

**Labs:** The 4th hour of this course is a lab session. You are required to attend all your lab sessions and bring a printed copy of the week’s lab assignment (not completed.) The lab assignments are located on the Math 112 website; use the provided schedule to determine which lab is needed each week. Your assigned graduate student Teaching Assistant (TA) will give you helpful instruction for each lab and then administer the weekly quiz. Most completed labs are submitted the following week (see schedule) and then graded by the TA. The lab scores count toward your overall grade for the course. Lab 0, located on the Math 112 website, is a review of sections 5.1 – 5.4. Note: **Lab 0 is a readiness assessment; complete it without any assistance. It is due at the first lab meeting which meets the first *full* week of classes.**

**GER1 Criteria:** Course content includes necessary numerical calculations, mathematical justifications and applications.

**Attendance:** Regular attendance is critical for success in this course. If you miss class, you are expected to get notes and missed material from a classmate.

**Grading:** Your final grade is calculated as follows: Mid-semester Tests 15% each

Quizzes 15%

Labs 15%

Final Exam: 25% (plus can replace your lowest test if higher)

The final letter grade is assigned using the scale: A 93-100, A- 90-92, B+ 87-89, B 83-86, B- 80-82, C+ 77-79,

C 73-76, C- 70-72, D+ 67-69, D 63-66, D- 60-62, F < 60

**Honor Code:** Students are expected to uphold the honor code in this class. Any suspected infraction will be reported.

**Tutoring:** (free) is available Sunday through Thursday evenings from 5-8pm, Jones 112.

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| Week | Lecture Date | Section or Topic | Thurssday Labs |
| 1 | W Jan 16 | Introduction and Review | No lab meeting, **complete Lab 0** **independently** |
|  | F Jan 18 | 5.5 Substitution Rule |
| 2 | M Jan 21 | MLK Day (no classes) | Jan 24 - Lab 1: Substitution  Submit Lab 0 for grading |
|  | W Jan 23 | 5.5 Substitution Rule (special cases) |
|  | F Jan 25 | 6.1 Areas Between Curves |
| 3 | M Jan 28 | 6.2 Volumes | Jan 31 - Lab 2: Volumes  Submit Lab 1for grading |
|  | W Jan 30 | 6.4 Work |
|  | F Feb 1 | 6.4 Work (cont.)/6.5 Average Value of a Function |
| 4 | M Feb 4 | 7.1 Integration by Parts | Feb 7 - Lab 3: Applications of Integration  Submit Lab 2 for grading |
|  | W Feb 6 | 7.2 Trigonometric Integrals |
|  | F Feb 8 | 7.2 (cont.)/7.3 Trigonometric Substitution |
| 5 | M Feb 11 | 7.3 Trigonometric Substitution (cont.) | Feb 14 - Lab 4: Method of Partial Fractions  Submit Lab 3 for grading |
|  | W Feb 13 | 7.4 Integration using Partial Fractions |
|  | F Feb 15 | 7.4 (cont.) |
| 6 | M Feb 18 | 7.5 Strategy for Integration/Review | **Feb 21 - Test 1**  (5.5, 6.1, 6.2, 6.4, 7.1-7.5)  8:00-9:30 AM (starting 30 min before Lab) |
|  | W Feb 20 | 7.7 Approximate Integration/\*Submit Lab 4 for grading |
|  | F Feb 22 | 7.8 Improper Integrals |
| 7 | M Feb 25 | 7.8 Improper Integrals (cont.)/8.1 Arc Length | Feb 28 - Lab 5: Approximating Definite Integrals |
|  | W Feb 27 | 8.3 Applications to Physics and Engineering |
|  | F Mar 1 | 8.4 Applications to Economics and Biology |
| 8 | M Mar 4 | Spring Break | Spring Break |
|  | W Mar 6 | Spring Break |
|  | F Mar 8 | Spring Break |
| 9 | M Mar 11 | 9.1 Modeling with DEs/ 9.2 Direction Fields | Mar14 - Lab 6: Hurricanes, DEs and Slope Fields  Submit Lab 5 for grading  Submit History Assignment (Math 112 Website) |
|  | W Mar 13 | 9.2 (cont.) Euler’s Method/9.3 Separable Equations |
|  | F Mar 15 | 9.3 (cont.)/9.4 Models for Population Growth |
| 10 | M Mar 18 | 9.4 (cont.)/Review | **Mar 21 - Test 2** (7.7, 7.8, 8.1, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4)  8:00-9:30 AM (starting 30 min before Lab) |
|  | W Mar 20 | 11.1 Sequences/\*Submit Lab 6 for grading |
|  | F Mar 22 | 11.2 Series |
| 11 | M Mar 25 | 11.2 (cont) | Mar 28 - Lab 7: Introduction to Sequences |
|  | W Mar 27 | 11.3 Integral Test and Estimation of Sums |
|  | F Mar 29 | 11.3 (cont.) |
| 12 | M Apr 1 | 11.4 Comparison Tests | Apr 4 - Lab 8: Series Applications  Submit Lab 7 for grading |
|  | W Apr 3 | 11.5 Alterrnating Series |
|  | F Apr 5 | 11.6 Absolute Convergence/Ratio and Root Tests |
| 13 | M Apr 8 | 11.6 (cont.) | Apr 11 - Lab 9: Convergence or Divergence Series  Submit Lab 8 for grading |
|  | W Apr 10 | 11.7 Strategy for Testing Series |
|  | F Apr 12 | 11.8 Power Series |
| 14 | M Apr 15 | 11.8 (cont.)/ Review | **Apr 18 - Test 3** (11.1-11.8)  8:00-9:30 AM (starting 30 min before Lab)  Complete Lab 10: Maclaurin Series independently between Test 3 and Fri, Apr 26 |
|  | W Apr 17 | 11.9 Representing Functions as a Power Series/\*Submit Lab 9 for grading |
|  | F Apr 19 | 11.9 (cont.) |
| 15 | M Apr 22 | 11.10 Taylor and Maclaurin Series | Apr 25 - Review  \*Submit Lab 10 for grading by Fri, Apr 26 |
|  | W Apr 24 | 11.10 (cont.) |
|  | F Apr 26 | Catch up or Review |
| EXAM | T May 7 | Final Exam (9am-noon) | Cumulative, block final (Location TBA) |

\*indicates submit to box on TAs office door, Jones 103, or during lecture