

University of Memphis  
Dept Math Sciences  
Dwiggins  
Fall 2015

## Course outline for MATH 1920, Calculus II

We will cover five chapters from the text (Stewart, 7<sup>th</sup> or 8<sup>th</sup> ed).

Chapters 6, 7, 8 cover applications and techniques of integral calculus.

Chapter 10 covers topics from analytic geometry (conic sections and polar coordinates).

Chapter 11 covers Sequences and Series.

We will not cover Chapter 9, which serves as an introduction to MATH 3120, Differential Equations.

Because the material from Chapter 11 is so very much different from everything else covered in the first year of calculus, students have both historically and typically had more problems with this material than anything else, including the material from Calc III. Because these topics take so much time to grasp, it is to the students' disadvantage to postpone covering this material until right before the end of the semester. Thus, I start covering Chapter 11 during the first week of the semester, returning to it in segments as we master the material one step at a time.

There are 16 weeks in the semester, with the 8<sup>th</sup> week containing Fall Break, and the 16<sup>th</sup> week being the time when students take their final exams. Thus, with Thanksgiving break included, there are only 13-14 weeks in which to schedule lectures, quizzes, and exams.

### **Course Description:**

This course, the second in the Calculus sequence, is intended to provide students majoring in the natural sciences with the mathematical tools and concepts needed to complete their course work in other topics. The main emphasis of Calculus I is that of derivatives and differentiation, and the main emphasis of Calculus II is that of integrals and integration.

Topics to be covered in Calculus II include the definitions of the definite and indefinite integral, techniques and applications of integration, infinite limits and limits at infinity, methods of calculating plane area, volume, arc length, and surface area, the calculus of parametric curves, polar coordinates and polar equations, the concepts of sequence and series, and power series expansions of functions. If time permits, at the end of the semester we will also discuss the analytic geometry of conic sections.

### **Course Prerequisites:**

MATH 1910 (Differential Calculus). Since integration techniques involve methods of finding antiderivatives, you must know the rules of derivatives backwards and forwards in order to proceed with Integral Calculus. An alternative choice for fulfilling this prerequisite is to take the business calculus course, MATH 1830, followed by MATH 1900, Scientific Trigonometry.

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MS, Mathematics, Memphis State University, 1984  
PhD, Differential Equations, Southern Illinois University, 1993

**Office:** Dunn Hall, Room 368, 678-4174

**Hours:** TBA

**Course Evaluation:**

There will be three 100-point tests and a 100-point daily average based on quizzes and/or written homework assignments. The lowest of these four scores will be dropped, leaving a total of 300 points. The final exam is also worth 100 points, and can be used to replace the lowest test score. The semester average is then based on dividing this 400-point total by four. You can raise this average using the additional homework assignments posted online, giving a 500-point total to be divided by five.

**Grade Calculation:**

Based on the semester average, grades are assigned according to the posted [Grade Scale](#).

**Make-Up Policy:** Three-day make-up (with excuse) for missed test or exam.

**Attendance Policy:** As needed for purposes of reporting to the University.