

# Math 467 Fall 2006

## Syllabus

INSTRUCTOR: Dr. Hundley

OFFICE: Olin 234

OFFICE HOURS: Mon/Thur at 2:30, Tues at 1:15PM and Friday at 11AM.

As usual, feel free to schedule an appointment for another time if you'd like.

OFFICE PHONE: 527-5151

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CLASS WEBSITE: [people.whitman.edu/~hundledr/courses/M467.html](http://people.whitman.edu/~hundledr/courses/M467.html)

### 1. COURSE INFO: Math 467

This is a course about numerical methods and the associated numerical errors. If you are performing any kind of scientific computation, it is critical that you understand the sources of error as well as techniques that will minimize that error.

A brief list of the topics we'll cover is included below, however, this is the first time we've used this textbook, so we'll see how we progress through the material.

2. REQUIRED TEXT: Schaum's Outline, Numerical Analysis, second edition. This is a very inexpensive text. We will use it mainly as a source for summarizing important ideas, and as a source for solving a lot of examples. I will be supplementing the course with handouts for homework, etc.
3. COMPUTATION/SOFTWARE: Basic scientific calculators are allowed for the homework, for each exam, I will make an announcement beforehand. For the computational side of the course, we will be using Matlab, which is installed on all of the computers in the Math Computer Lab (therefore, everyone will need an account on these machines—we'll talk about this today).

### 4. Grading Criteria.

- Exams. There will be two exams and a Final Exam. Some of the exams may have a take-home component so that you can work with Matlab. Exams will make up 80% of the overall class grade.

The **exam dates will be:** Monday, Oct. 2 and Monday, November 13th. We will discuss the exams in advance, and there will be some review sheets to look over.

- Participation/Quizzes (10%): I will be asking you to present results of homework to the class every now and then. Some sections will be more challenging than others. We will have a short quiz during those sections (will be announced at least two class sessions prior).

- Projects (10% of the overall grade). There will be an occasional project assigned. The goal of the projects is to help give you a better understanding of the physical meaning of differential equations. There will be a handout discussing what you'll need to turn in later.

Grading:

90-100%=A, 80-89%=B, 70-79%=C, 60-69%=D, 59 and below=F

I will use the plus/minus grading only sparingly in those borderline cases.

5. Help! I encourage you to come see me. If you can't make it during office hours, either email me if you have short questions, or make an appointment.
6. Academic Honesty. Academic standards will be *strictly* adhered to as outlined in the College's policies. This means that cheating will not be tolerated. Looking at another student's exam or quiz (whether or not you mean to copy answers) while taking it will be considered cheating. *Please don't test this policy!* Students caught cheating for the first time will fail the exam or quiz during which the cheating took place, and the Dean of Students will be notified. Continuation of this behavior will lead to an automatic failing grade for the course, and may include other administrative action.
7. If you have a learning disability, please let me know as soon as possible so that we can make alternative assessment methods. Please do not wait until the day of the exam!
8. List of Topics:
  - Introduction: Base 2, Error, Calc review (Ch 1 in Schaum)
  - Solving Equations (aka root-finding algorithms) (Ch 25 in Schaum)
  - Solving Systems of Equations (Ch 25/26 in Schaum)
  - Finding functions from data: One dimension (topics from Ch 2-12 of Schaum)
  - Finding functions from data: Least Squares (Ch 21 in Schaum)
  - Numerical Differentiation and Integration (Ch 13-14 in Schaum)
  - Solving ODEs (Ch 19-20 in Schaum)
  - (If we have time) Random Numbers (Ch 30)
  - (If we have time) Trigonometric Approximations (Fourier Analysis, Ch 24 in Schaum)