Applied Analysis (Math 475) — Fall, 2010

Location and Time: 103 Bouillon, MWF, 1:00-1:50 pm

Instructor: Dr. Dan Curtis

Office: 107a Bouillon

Office Hours: MTWTF 11:00 -11:50, or by appointment.

Help Sessions: There will be two help sessions each week, where you can go to get extra help from me. They are:

Bu 111, Tuesday, 4:00-5:30 pm and Bu111, Thursday, 4:00-5:30 pm.

Attendance at these help sessions is completely up to you; the sessions are available for you if you wish to take advantage of them. I will work with those who attend, but no new course material will be covered.

***Mathematica* Seminar**: There will be a *Mathematica* session each week, Wednesday, 4:00-5:30 pm, Bu 103. This is for those wanting to learn about *Mathematica*, get answers to questions, talk with other interested students, etc. This is independent of this course but may be of interest to you.

CWU e-mail: curtiswd@cwu.edu

Web Page: www.cwu.edu/~curtiswd

Final Exam: Wednesday, December 8: 12:00-2:00 pm

Textbook: No text. I have prepared a considerable amount of material in the form of *Mathematica* notebooks and pdf files; these will form the basis of the course. I will provide a list of books that cover many topics we will cover; if you feel the need for a book you can get one or more of these.

Course Content: This course and its successors, Math 476 and 477, will comprise an introduction to applied mathematics. We will study mathematical methods for investigating a variety of natural phenomena.

Learner Outcomes: After completing this course, the student will understand:

- what the gradient, divergence, and curl, what they represent, and how they are computed
- how to apply the Divergence Theorem and Stokes Theorem to problems in such fields as fluid mechanics, heat transfer and electromagnetic theory
- how to apply the Divergence Theorem and Stokes Theorem to problems in such fields as fluid mechanics, heat transfer and electromagnetic theory
- how to formulate mathematical models to describe a wide range of natural phenomena
- how Newton derived Kepler's laws of planetary motion from his theory of universal gravitation.
- what a tensor is, and how they arise in scientific and mathematical contexts

Grading: Your course grade will be determined by the following:

1. A project on The Kepler Problem worth 100 points.
2. Five homework assignments, worth 20 points each for a total of 100 points.
3. A take-home midterm problem set worth 100 points.
4. A final exam worth 100 points.

A perfect score on the first four of the above categories would result in a total of 400 points. Your course grade will be determined by the percentage p of these points you earn, according the following scale.

$90 \le p$	A	$65 \le p < 77.5$	C
$89 \le p < 90$	A-	$64 \le p < 65$	C-
$87.5 \le p < 89$	B+	$62.5 \le p < 64$	D+
$80 \le p < 87.5$	B	$50 \le p < 62.5$	D
$79 \le p < 80$	B-	$p < 50$	F
$77.5 \le p < 79$	C+		

Students with disabilities: If you require accommodation based on a documented disability, have emergency medical information to share, or need special arrangements in case of emergency evacuation, please discuss the situation with me as soon as possible

Course Schedule (30 class days)

Date	Class Activity	Date	Class Activity
09/20		11/01	Midterm problems due
09/21		11/02	
09/22	Classes begin	11/03	
09/23		11/04	
09/24		11/05	
09/27		11/08	
09/28		11/09	
09/29		11/10	
09/30		11/11	HOLIDAY: Veterans Day
10/01		11/12	
10/04		11/15	
10/05		11/16	
10/06		11/17	
10/07		11/18	
10/08		11/19	
10/11		11/22	
10/12		11/23	
10/13		11/24	Thanksgiving Break
10/14		11/25	Thanksgiving Break
10/15		11/26	Thanksgiving Break
10/18		11/29	
10/19		11/30	
10/20		12/01	
10/21		12/02	
10/22		12/03	Last day of classes
10/25		12/06	Student study day
10/26		12/07	
10/27	Midterm handed out	12/08	Final Exam (12:00-2:00 pm)
10/28		12/09	
10/29		12/10	