Math 272.01/02 Multivariable Calculus I Syllabus Spring 2016

Math 272 Learning Outcomes

This course introduces students to the theory, techniques, and applications of three related topics: Sequences and series, vector calculus, differential and integral calculus of multivariable functions.

Pre-Requisite Skills … Students will be able to

- Demonstrate familiarity with graphical and algebraic representations of the elementary functions (lines, quadratics, exponentials, logarithms, trigonometric, etc.);
- Compute limits (especially of indeterminate forms);
- Compute derivatives and antiderivatives of single-variable functions.

At the end of the Math 272 course students will be able to …

1. *Compute partial sums;*
2. *Identify a geometric series and, if it converges, compute its sum;*
3. *Apply various tests for convergence (integral, comparison, ratio);*
4. *Determine the interval of convergence for a power series;*
5. *Find the Taylor Polynomial of degree n and the Taylor Series representation for a function;*
6. *Differentiate and integrate Taylor Series;*
7. *Perform algebraic computations involving vectors*
    a. *Magnitude;*
    b. *Unit vector;*
    c. *Dot Product;*
    d. *Cross Product;*
    e. *Vector projections;*
8. *Express curves and surfaces parametrically;*
9. *Utilize*
    a. *Answer question involving orthogonality;*
    b. *Compute work;*
    c. *Find equations of plane;*
    d. *Compute areas and volumes;*
10. *Describe and recognize graphs of functions of two variables;*
11. *Determine limiting and continuity properties of functions;*
12. *Compute partial derivatives, differentials, gradients, and directional derivatives;*
13. *Find equations of tangent planes;*
14. *Find extrema.*

In addition, in this class you will learn…

- Apply appropriate technology to solve problems;
    - Model phenomena mathematically;
- Working cooperatively with others;
- Read and understand complex mathematical problems;
- Describe the methods used to approach a problem;
    - Read and understand complex mathematical problems;
    - Model phenomena mathematically;
- Express solutions in written and oral form.
    - How to "speak math", and
    - How to use logic to justify mathematical ideas,

You will be successful in this course if you….

- Are self-motivated,
- Willing to work hard,
- Look for alternate ways of solving the same problem,
- Participate actively in group-work and class discussions,
- Ask questions, and
- Believe in yourself and your ability to learn and grow.

Course Requirements and Grading Standards

Online Homework:
http://webwork.math.cwu.edu/webwork2/Math2720dell/

Online homework will be assigned regularly and is typically due within a couple of school days at 11:59 pm. Your goal for the online homework will be to practice the procedures and applications of the class. Doing the homework assignment on time is important for future class activities. The quizzes will be based on the last few online assignments, so you will need to not just get through the online homework, but will have to put in the effort to understand it deeply.

Keeping up with the homework is one of the best things you can do to help yourself succeed in this course! Don't expect an email response to homework inquiries within 12 hours of the due date time. Start early and come to office hours. Practice communicating your understanding of the problem by writing problems out by hand.

Worksheets**:** You should dive into the problems with your group and strive to understand the question, process and solution to your best ability. This is your opportunity to ask lots of questions! First you will discuss questions with your group, then you can bring a "group question" to the instructor. Through group work, I

will help you learn how to ask questions, how to answer your own questions, how to use resources like your textbook, classmates, etc. The worksheets will be about the process, the logic and the justification – not the answer!!! If you do not finish the worksheet in class, you will take it home for homework.

Quizzes: There will be both in class quizzes and take home quizzes
The in class quizzes will be based on recent sections that we covered in class lectures and worksheets or on online homework. This will be important practice for the exams. There are no make-up quizzes. The take home quizzes you will have a couple of days to work on and you are welcome to get help from other people.

Exams:

There will be three exams (100 pts each) plus the final (200 pts). The exam dates will be posted on Canvas and announced in class. Regularly review your email and Canvas for any changes in exam dates.

A missed exam will be given a zero and there will be no make-up exams. The only exceptions to this will be made completely at the discretion of the instructor and will only be granted for serious and compelling reasons. Please contact me ASAP to ensure the likelihood of having your issue taken seriously.

Final Exam for Section 002: Friday, March 17th, 8 am

You must be present at the final exam! Add it to your calendar now.

Final Grades:
The following table reflects the planned letter grade for the course structure.

Total Score	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	0-59
Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

General Course Information

Instructor:	***email***	***office***	***office phone***
Thad O'Dell	odellt@cwu.edu	Black 225-35	509-963-2296

The best way to contact the instructor is at office hours or via email.

Question and Answer Hours: MTWTh11:00-12:00. **Location**: Black 225-35
Additional hours are available via appointment, please email the instructor to schedule these meetings.

Required Course Materials:
Textbook: *Rogawski, Jon and Colin Adams. Calculus: Early Transcendentals (3rd Edition). W.H. Freeman & Company (2015).*
This course will cover material from chapters 8,10,11,12,13 and 14 of the text. You should read the book.

Syllabus Changes: *I reserve the right to change the policies contained in this syllabus as dictated by developments during the quarter.*

University Policies

Academic Integrity: While completing this course you must follow the CWU Student Code of Conduct which is defined by Washington State. Please be reminded that the Washington State Legislature defines Academic Dishonesty in all its forms including, but not limited to the following:

- Cheating on tests.
- Copying from another student's test paper.
- Using materials during a test not authorized by the person giving the test.
- Collaboration with any other person during a test without authority.
- Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of an unadministered test or information about an unadministered test.
- Bribing any other person to obtain an unadministered test or information about an unadministered test.
- Substitution for another student or permitting any other person to substitute for oneself to take a test.
- ``Plagiarism'' which shall mean the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit.
- ``Collusion'' which shall mean the unauthorized collaboration with any other person in preparing work offered for credit.

Support Services/ Accommodations: *Students who have special needs or disabilities that may affect their ability to access information and/or material presented in this course are encouraged to contact the office of Disability Support Services on campus (DS@cwu.edu -or- 963-2214 –or- visit their office in Hogue 126). Also, please let me know if you need me to accommodate for a disability in anyway, I am glad to do so!*

Test scheduled through Testing Services must be scheduled 2 business days in advance.