

CAPITOL COLLEGE - DEPT. OF ENGINEERING, COMPUTER SCIENCE & TECHNOLOGY

MA 262 E01 Calculus II
Spring Semester 2008 TTH 5:30-7:30pm LAU MCI 244

Instructor : William Kallfelz

Office Hours: Tuesdays, Thursdays 7:30-8:30pm or by appointment.¹

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Note: Email is the best way to get in touch with me.

wmkallfelz@capitol-college.edu

wkallfel@yahoo.com

wkallfel@umd.edu (alternate email: please use only if yahoo is down)

homepage: <http://www.glue.umd.edu/~wkallfel>

Course Website: <http://www.glue.umd.edu/~wkallfel/MA261-2/index.html>

...or just click the link on my homepage, which you'll find under the: **Recent Courses Taught and TA'd** heading.

- **Note concerning the website:** For the new student, and for those of you continuing with me from MA261, you'll notice the contents of *both* courses listed on the website. This is to provide you with easy access to the material covered in MA261, should you need a refresher on any topic(s). Also (for the new student) you're more than welcome to browse the MA261 contents, to get an idea of how assignments and tests are designed and structured, as I will be using a fundamentally similar approach for MA 261.

I.) OBJECTIVES AND GOALS OF THIS COURSE:

*From the course catalog*²

MA 262 – Calculus II (4-0-4 Class hours-lab hours-credit hours)

Methods of integration: completing the square, substitution, partial fractions, integration by parts, trigonometric integrals, trigonometric substitution, improper integrals. Power series, polar coordinates, parametric equations, vectors in two and three dimensions, lines and planes in space, partial and directional derivatives, differentials, multiple integrals.

The student is hence expected to obtain grounding in some of the essential concepts and computational techniques in the following areas:

¹ I am available for appointments Tuesdays, Thursdays

² http://www.capitol-college.edu/academicprograms/courses_153.SHTML

1. **Mastering fundamental techniques of advanced integration or anti-differentiation. This includes the application of the following techniques: Integration by parts & completing the square applied to (in particular) integrals involving arbitrary powers of trigonometric functions, the method of trigonometric substitutions, the method of partial fractions, and working with improper integrals.**
2. **Achieving a qualitative and quantitative sense of the behavior of sequences and series, and their properties of convergence and divergence.**
3. **Applying concepts mastered in 2. above to the case of power series and Taylor's Theorem: Mastering the fundamentals of characterizing functions by their associated Taylor, McLaurin, and general power series representations.**
4. **Successful application of the transformation from Cartesian to Polar coordinate representations (and vice versa) and the associated transformation of algebraic and calculus features of functions in their associated Cartesian and Polar forms.**
5. **Achieving a qualitative and quantitative sense of the behavior of vectors in two and three dimensions, including applying such techniques to elementary vector algebra and geometry involving the construction of lines and planes in three-dimensional space.**
6. **Applying the concepts mastered in 5. above to generalize the concept of differentiation to the case of partial differentiation, the gradient, directional differentiation, and differentials. Successful *application* of the latter calculus operations is also expected.**
7. **Successful application of the techniques and mastery of the concepts involved in multiple integration.**

II.) COURSE INFORMATION AND POLICIES:

- **Text (required)** Larson, Hostetler, Edwards (LHE 1998) *Calculus* (Alt 6th Edn.)
- **Optional Text(s) / URLs**
I will occasionally cite other texts and URLs in Handouts and Problem Sets 1,2,3 for the interested student. (See **Information Literacy** below)
- **Prerequisite** MA 261 or equivalent
- **Software & Lab Facilities:** There is a panoply of java-based freeware on the internet, as well as applications dealing with MATLAB, Mathematica, etc. I will refer to some of these packages and sites when appropriate, during class and in the class notes I will post on the course website.
- **Academic Integrity:**

From the Adjunct Faculty Handbook: (§H)

"At Capitol College, academic dishonesty consists of:

- ***Cheating:*** *using or attempting to use unauthorized materials, information, or study aids in any academic exercise.*
 - ***Fabrication:*** *falsification or invention of any information or citation in an academic exercise.*
 - ***Facilitating Academic Dishonesty:*** *helping or attempting to help another to violate any provision of this code.*
 - ***Plagiarism:*** *representing the words or ideas of another as one's own in an academic exercise.*
- ...Details are outlined in the Student Handbook."*

Homework I assign for credit will be accompanied by a statement, which you must read and sign and attach as a cover sheet in order to receive a grade for the assignment. This statement will specify explicitly all resources you may consult (e.g. the instructor, text(s), notes, URLs, depending on the nature of the assignment.)

It goes without saying that all work handed in for grading must be your own, but you must go further than this. Avoid situations that could compromise your integrity. For example, do not allow others to copy your work. If inclusion of another person's writings in your submitted work is appropriate, then proper credit should be given to the author of that writing. I will report any instance of suspected academic dishonesty to the appropriate committees of the school for further investigation and possible sanctions.

- **Writing Requirements**

The ability to communicate ideas using established rules of the English language is an important outcome of everyone's technical education. In this course, you will be required to complete assignments for which writing is an important component, and attention to the grammar, spelling, and style of writing that you employ will have a significant impact on your grade in such assignments. You may seek help at the tutoring resource center to improve your writing abilities, should you feel that such help is necessary. You will find a writing guidelines posted at the following web address on school website:

<http://www.capitol-college.edu/resources/lib/writingguide/>

- **Incomplete Policy:** College regulation specifies that an incomplete grade may be awarded only if the student has completed almost all the work for a course and has a valid, institution-approved, reason for being unable to complete it. If you are awarded an incomplete grade, it is your responsibility to complete all work for the course within the first four weeks of the next semester or summer term. After this time, the Registrar automatically converts the incomplete to an F.
- **Information Literacy:** Given the magnitude of information that we are expected to deal with in the performance of our tasks, it is important to learn the proper ways of finding, retrieving, storing, processing and incorporating the right type of information. This course may include assignments that would require the use of on-campus and on-line libraries, the Internet or other sources of publicly available information.
- **Attendance:** Regular attendance in this course, as in any mathematics course, is critical to thorough understanding of each concept and the continuity linking one concept to the next.
 - **Quizzes and Tests and Final:** There will be two exams and three problem sets (based on homework problems assigned at each class but not collected). There will be no make-ups for exams.
 - **Cell Phones, Pagers and iPods:** Cell phones, and pagers must be turned off when the student enters the classroom. Disruption of class by a cell phone or pager may lead to expulsion from the class. iPods in class will not be tolerated. Students with earphones and iPods will be asked to leave the classroom.

- **III.) GRADING:**

A.) Two exams (worth 150 pts) = 300 total

B.) Three problem sets (worth 100 points) =300 total

D.) The final exam is worth 200 points.

F.) The total possible points a student can earn is 800. Final letter grade is decided on a 12.5% scale as listed below:

| <u>Total Points (Pts)</u> | <u>FINAL LETTER GRADE</u> |
|---------------------------|---------------------------|
| 700 ≤ Pts ≤ 800 | A |
| 600 ≤ Pts < 700 | B |
| 500 ≤ Pts < 600 | C |
| 400 ≤ Pts. < 500 | D |
| Below 400 | F |

IV.) IMPORTANT DATES:

Spring 2008

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|--------------------|--|
| January 3 | Residence hall check in for new students |
| January 4 | Final day of registration Graduation applications due for Class of 2007 Orientation/registration for new students |
| January 5 | Residence hall check in for returning students |
| January 7 | Classes begin Last day for 100% refund First tuition installment due Library opens Cooperative education work period begins |
| January 14 | Electronics, physics/chemistry and computer labs open Tutoring Resource Center opens |
| January 21 | Martin Luther King Jr. Day college closed |
| January 22 | Last day for 75% refund |
| January 23 | Last day to add or audit a course Last day to drop a course without W |
| January 28 | Last day for 50% refund |
| February 4 | Last day for 25% refund Second tuition installment due |
| February 11-15 | Financial Aid Disbursement Week/Pell Census |
| March 3 | Final tuition installment due |
| March 10-14 | Spring recess (service offices open) |
| March 17 | Classes resume |
| March 25 | Last day to drop a course with W Registration for summer session begins |
| April 7 | Pre-registration for fall semester begins for continuing students |
| April 28 | Classes end Last day to withdraw Electronics and physics/chemistry labs close Tutoring Resource Center closes All library materials are due Last day for cooperative education work |
| April 29 - May 5 | Final examinations |
| May 5 | Library, computer labs close |
| May 6 | Residence halls close at 5 p.m. |
| May 10 | Commencement |

V.) COURSE PLAN/CONTENT

- **Detailed Lesson Plan**

The lesson plan will follow the timetable below. Time permitting, I may cover optional material further extending and/or specializing the general topic(s) covered in text. Such optional material may appear in your problem sets and exams to give you opportunity to earn bonus points. Each week, I will assign problems from these exercises, which you're free to ask about/discuss the first 30-45 minutes of class (you need not hand these in, that I assign on a weekly basis.) Where relevant, some of the problems you'll encounter in the Assignments that you hand in may involve some software applications.

IMPORTANT: I will be in Seattle, WA until Jan 20th. The first four class sessions (January 8, 10, 15, 17 will not meet.) Please refer to the course website for study materials for those two weeks. Of course I will be in email contact if you have any questions.

| Week of | Chapters covered in text | Topics/assignments/exams |
|----------------|--|--|
| 1. January 7 | 9.1-9.3 (MA 261 review) | Review (Basic Integration techniques & Integration by parts & trigonometric integrals) No class meeting this week. Check website for posted notes. |
| 2. January 14 | 9.3 (MA 261 review) | Review (cont.) Integration of powers of trigonometric functions. No class meeting this week. Check website for posted notes. |
| 3. January 21 | 9.4, 9.5 | Trigonometric Substitutions & Integration by Partial Fractions. Assignment 1 handed out/posted (Tuesday Jan 22) |
| 4. January 28 | 9.5, 9.6 | Integration by Partial Fractions (cont.) & advanced tabular integration. |
| 5. February 4 | 9.6, 9.7 | Tabular integration, rationalizing substitutions, improper integrals Assignment 1 due (Thursday) |
| 6. February 11 | EXAM I Thursday (Topics covered: chptrs.: 9.1-9.7) Postponed to Tuesday, Feb. 19³ | Improper Integrals (cont.) |
| 7. February 18 | 10.1, 10.2, 10.3, 10.4 | Sequences, Series, Convergence, Integral and p -Series tests, alternating series Assignment 2 handed out (Tuesday) |
| 8. February 25 | 10.4, 10.5, 10.5, 10.6, 10.7 | Alternating series (cont.), ratio & root test, Taylor Polynomials |
| 9. March 3 | 10.7, 10.8, 10.9 | Taylor's Polynomials (cont.) Power Series, representation of a function by a power series |
| 10. March 17 | 10.9, 10.10, 11 (selections) | Taylor's Thm., Taylor & McClaurin Series, Review of conic sections Assignment 2 due (Thursday) |
| 11. March 24 | EXAM II Thursday (Topics covered: chptrs.: 10.1-10.10), 12.3, 12.3 (selections) | Plane curves and parametric equations |
| 12. March 31 | 12.3, 12.4 (selections), 12.5 | Calculus of Polar \leftrightarrow Cartesian transformations Assignment 3 handed out (Thursday) |

³ Weather cancellation; Feb. 12

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|--------------|--|---|
| | (selections) | |
| 13. April 7 | 13.1-13.3, 14.1-.3 (selections) | Plane and 3D space vectors & vector-valued functions. |
| 14 .April 14 | 15.1-15.3, 15.6 | Multivariate functions, partial derivatives and differentials, gradients |
| 15.April 21 | 16.1-3 (selections) | Multivariate integration Assignment 3 due (Thursday) |
| 16 April 28 | FINAL EXAM Check posted time and date (TBA) | |

- **Note: The Content of the Syllabus may be liable to some minor changes, please check Course Website:** <http://www.glue.umd.edu/~wkallfel/MA261-2/index.html> for updates.