

MAP 4153
Fall 2007, 3 credit hours

INSTRUCTOR: Prof. D. J. Kaup
OFFICE: MAP 202C
OFFICE HOURS: MWF 1:00-2:00 (Other hours by appointment)
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CLASS LOCATION: MAP 406
CLASS TIMES: MWF 2:30-3:20
TEXTBOOK: Tensor Calculus; by J.L. Synge and A. Schild [Dover (NY)]

MATERIAL COVERED:
We shall cover Chapters I - VII in the textbook, and maybe other material from elsewhere.

ATTENDANCE POLICY:
Attendance will not be taken.

HOMEWORK:
Homework will not be collected or graded. Random quizzes will be given about once a week. Maybe at the start of class, maybe at the end of class. You will be expected to know how to solve any and all exercises in the textbook.

EXAMS:
There will be two in-class examinations and a mandatory final.

GRADING POLICY:
Project – 20%. Quizzes – 20%. Exams – 40%. Final Exam – 20%. I will use +/- grades.

GRADING SCALE:

Average	Grade
90-100%	A
80-86%	B
70-76%	C
60-66%	D
0-58%	F

CHANGES:
This syllabus is subject to change at any time during the semester. Any such change shall be posted on the website <http://math.ucf.edu>. The changes will usually be marked in red and often will also be announced in class.

IMPORTANT DATES:

Labor Day - Monday, September 3, 2007

Veteran's Day - Monday, November 12, 2007

Thanksgiving - November 22 – 24, 2007

Last Day of Class – Dec. 3, 2007

Finals Period – Dec. 4-10, 2007

PROJECTS:

Every student will be expected to carry out one independent project in Tensor Calculus. It could be some application of Tensor Calculus to your major area, a report on an independent study of a further topic in Tensor Calculus, etc. All projects must be typed (electronic or hard-copy), and must contain as minimum sections: i) Introduction and Background, ii) Project Description, iii) and iv) Results. All projects are to be due by Nov. 16, 2007. In addition to the demonstrated level of application of mathematics inside any submitted project, other considerations that can affect the grade will be the quality of the English used, correct spellings and how well the written project communicates what was done.

Ideally the report should be written so that someone unfamiliar with the problem will understand what you have learned or done as well as any results obtained or abilities gained. For this, it is best that the graphs and the calculations be imbedded in the text. Word and Excel works together in this respect. This has to do with the quality of the communication. Flesh your report out so that it flows, explaining what the problem is, what you are doing, the results and recommendations you came up with, and (if any such thing happened) what skills or successes you got from doing the project.

HOW TO STUDY FOR THIS COURSE

I always give advice concerning study. Study is easy to do, if you know how. The following are points which you should know about and should also use.

STUDY HINTS:

1. Read the chapter before any lecture on that chapter. Make a list of any questions that you may have from your reading of that chapter. Get them answered in lecture, or after class.
2. Watch for and learn the nomenclature of the chapter and of this subject. If you do not have a mathematical dictionary, get one. (Note that our textbook does NOT have a Glossary.) There is a fairly good paperback mathematics dictionary published by Harper Collins.
3. Any confusion that you may have about what is the meaning of any paragraph, can almost always be traced to a “not fully understood word” or the nomenclature.
4. Don't bypass even a common English word, if you are not sure what its exact meaning is. Look it up in a good English dictionary and get rid of the uncertainty.
5. Anytime a study difficulty does not resolve, you are looking too late. There will be something earlier that had been missed, or was not understood. This is just too simple.

And the difficulty could even lie way back in something which you never fully understood in Cal I.

6. Do the exercises promptly after that section of the chapter is completed in lecture, if not before. Don't wait until just before the exam. It takes more than "cramming" to obtain skills.
7. A perfectly valid question for any exam or quiz is: "What is the definition of _____? Also give an example of it, tell why it is important or not, and describe how someone could make use it." The professor can fill in the blank with a word or phrase of his choice. So, learn the nomenclature, and be able to use it. This includes any mathematical terms that you may have had in earlier courses.
8. Lastly, why are you taking this course? Do you want the grade or the ability? Or both? If all you want is the grade, then you may not fair well. After all, Mathematics exists because it can be applied and used. If you study for application, then as you study, you will want to keep asking yourself, "How could I make use of this later on in my career?" And you can work this around until you either figure out how you can, or understand just exactly how significant or insignificant the material is. Tensor Calculus will be of little use to a salesman, but to a bridge designer, with lots of curves in a bridge, ... Once you have the ability to apply and use a subject, then you can do well on exams, AND will have the bonus of having the data available for use later.

EXAM ANNOUNCEMENTS

Exam #1 – Sept. 26, 2007, in class. No calculators allowed. Covers through Chapter 2.3.

Exam #2 – Nov. 7, 2007, in class. Covers the remaining assigned sections in Chapter 2. You still will be held responsibility for earlier material. No calculators allowed.

Final Exam – Sometime in Dec. 4-10.