STUDENT SYLLABUS

MAC 2313-04
Fall 2014

INSTRUCTOR: Patrick Fletcher

OFFICE: MCH 404A

OFFICE HOURS: MW 10:00AM–11:00AM, T 11:00AM–12:00PM

ELIGIBILITY: You must have the course prerequisites listed below and must never have completed with a grade of C- or better a course for which MAC 2313 is a (stated or implied) prerequisite. Students with more than eight hours of prior credit in college calculus are required to reduce the credit for MAC 2313 accordingly. It is the student’s responsibility to check and prove eligibility.

PREREQUISITES: You must have passed MAC 2312 (Calculus II) with a grade of C- or better or have satisfactorily completed at least eight hours of calculus courses equivalent to MAC 2311 and MAC 2312.

TEXT: Calculus (Early Transcendentals) (Seventh Edition), by James Stewart

COURSE CONTENT: Chapters 12–16 of the text.

COURSE DESCRIPTION: This course covers analytic geometry in three dimensions, multiple integration, and vector calculus. The material in this course should be mastered before the student proceeds to courses for which it is a prerequisite.

COURSE OBJECTIVES: Students will demonstrate the abilities to:

1. analyze and address problems drawn from real-world scenarios by applying appropriate mathematical, statistical, logical, and/or computational models or principles. For example, projectile motion will be covered on the second test.

2. interpret and evaluate data and information, using appropriate technology. They will also be able to communicate clearly a summary of these findings to peers. In particular, students will interpret and explain the concepts required to solve the various problems that arise in the course by making use of the notation and language commonly employed in mathematics and the physical sciences. At least one question on each test will require a written explanation, and the grading of such problems will evaluate both the explanation and the result.

GRADING: There will be four unit tests each worth 15%, homework assignments worth 15%, and a final exam worth 25%. Letter grades will be determined from numerical grades as follows: A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 0-59. Plus or minus grades may be assigned. A grade of I will not be given to avoid a grade of F or to give additional study time. Failure to process a course drop will result in a course grade of F.

UNIVERSITY ATTENDANCE POLICY: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

EXAM POLICY: No makeup tests will normally be given. If a test absence is excused, then the final exam score may, at the instructor’s discretion, be substituted for the missing test grade. An unexcused absence from a unit test will be penalized. Students must bring FSU ID cards to all tests.

Submitted for ABET Review October 5, 2015
TUTORING FOR MATH: Tutoring is available for this course via ACE Tutoring at the Learning Studio in the William Johnston Building. Appointments may be made, and drop-ins are welcome for one-on-one and group tutoring. Please contact the ACE Learning Studio at tutor@fsu.edu, 850-645-9151, or find more information at http://ace.fsu.edu/tutoring.

TEST#1: Thursday, September 18.
TEST#2: Thursday, October 9.
TEST#3: Thursday, October 30.
TEST#4: Thursday, November 20.
FINAL: Thursday, December 11, 10:00AM-12:00PM

ACADEMIC HONOR POLICY: The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and ... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at http://fsa.fsu.edu/Academics/Academic-Honor-Policy)

AMERICANS WITH DISABILITIES ACT: Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the Student Disability Resource Center
874 Traditions Way
108 Student Services Building Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8594 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/

LIBERAL STUDIES FOR THE 21ST CENTURY PROGRAM:

The Liberal Studies for the 21st Century Program at Florida State University builds an educational foundation that will enable FSU graduates to thrive both intellectually and materially and to support themselves, their families, and their communities through a broad and critical engagement with the world in which they live and work. Liberal Studies offers a transformative experience; this course has been approved as meeting the Liberal Studies requirements and thus is designed to help you become a critical analyzer of quantitative and logical claims. In order to fulfill the State of Florida's College mathematics and computation requirement the student must earn a C or better in the course.

SYLLABUS CHANGE POLICY: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.
MAC 2313 Calculus III - FAMU

Florida A&M University
Tallahassee, FL
Course Syllabus

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
<th>Clock Hours per Week</th>
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<td>MAC</td>
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<td>Calculus III</td>
<td>Lecture: 5</td>
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Department: Mathematics
College: Arts & Sciences
Prerequisites: MAC 2312

Required Textbook: OnLine Videos + Adjoining Textbooks (pdf form)
Recommended Software: wxMaxima (freeware)

Faculty Name: Dr. Bruno Guerrieri  (412 Jackson-Davis)
Email: guerrieri.bruno@gmail.com
URL: https://sites.google.com/site/guerrmath2313/home

Term and Year: Fall 2013

Office Hours
Monday   2:40 – 3:25
Tuesday  2:40 – 3:25
Wednesday  12:30 – 1:15
Thursday  2:40 – 3:25
Friday

Course Description
Chapter 12: Vectors and Geometry of Space
Chapter 13: Vector-Valued Functions
Chapter 14: Functions of Several Variables
Chapter 15: Multiple Integration
Chapter 16: Vector Fields

Goals of the Course
To become competent in the understanding and manipulation of

1) functions of several variables, including plotting, differentiating and integrating as well as limit calculations.
2) vector-valued functions, 3D curves, 3D surfaces.
3) scalar fields, vector fields, gradient, divergence, curl.
4) 3D objects including their drawing.
5) the many types of integrals seen in 3D.
6) mappings from one domain to another.
7) maxima/minima techniques.
8) a CAS platform such as Maple/Maple for computational purposes.

Methods of Evaluation
Homework: 8%
Quizzes: 7%
Computer Projects: 5%
4 Tests (Cumul-nodrop): 15% each
Final (Cumul): 20%
Video Reports (end of each month): Discretionary
Scientific Reports (end of each month): Discretionary

Scale

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<tr>
<th>Grade</th>
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<tr>
<td>A</td>
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<td>C</td>
<td>65 TO 79</td>
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<td>D</td>
<td>55 TO 64</td>
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<td>F</td>
<td>BELOW 55</td>
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Behavioral Objectives
Students will be able to do the following without the aid of notes or books:

Vectors:
- add, subtract and sketch vectors in 2 and 3 dimensions
- perform dot and cross products
- write the parametric and vector equations of a line

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• find the equation of a plane
• sketch quadric surfaces
• move between rectangular, polar, cylindrical and spherical coordinate systems

**Vector-Valued Functions:**

• find the limits, derivatives and integrals of vector-valued functions
• calculate the arc length, unit tangents and normals in 2 and 3 dimensions
• calculate curvature, velocity and the components of acceleration

**Functions of two or more Variables:**

• sketch the domain of multivariable functions
• use CAS to plot multivariable functions and their contours
• find the limits of multivariable functions
• differentiate multivariable functions
• find the equation of tangent planes and calculate the total derivatives
• find the directional derivatives and the gradient of functions
• calculate the extrema of a function using the 2nd Partials test and Lagrange Multipliers

**Multiple Integrals:**

• evaluate double integrals over a region using rectangular and polar coordinates
• calculate surface area
• evaluate triple integrals using rectangular, cylindrical and spherical coordinates
• calculate centroids and centers of gravity
• evaluate triple integrals using a change of variables

**Topics in Vector Calculus:**

• sketch vector fields
• calculate the divergence and curl of a vector field
• evaluate line integrals
• understand path independence and the Fundamental Theorem of Line Integrals
• utilize Green’s Theorem to evaluate line integrals around and to calculate areas of closed regions
• evaluate surface integrals
• utilize the Divergence Theorem to calculate the flux across a surface
• understand Stokes’ Theorem as a generalization of Green’s Theorem.

**General Remarks**

The key differences between learning at a university and your high school are: 1) learning does not take place primarily in the classroom, and 2) you, and not your professor, are responsible for your own education. Virtually all of you have the capability for our mathematics classes, but talent alone cannot produce success. The goal in college is to learn flexibly so that you can judge what applies in new situations and carry it out. Thus most students face a new challenge in their college mathematics courses. Flexible learning is especially important because many other departments require mathematics courses and want their majors to be ready to use the material. For that, the student must start to think conceptually. The instructor’s role is to guide the students’ learning. It is not to cover the material, for that is the textbook’s job. One of the most important things an instructor can do for the students is to insist they learn mathematics in part from written sources so they can get beyond the surface. It is not to teach everything to the student; teaching in college becomes a cooperative effort shared by the instructor and the students. There is a corresponding change in what is expected from the student. In a typical high school the attentive student is able to pass with modest exertion. In college the vast majority of students can learn well with reasonable exertion: three hours per week outside of class for each hour in class is not an unreasonable effort. This includes reading the textbook for both concept and additional examples. The course will be moving a lot faster than in high school with far less repetition. The tests will cover several weeks of material, even the whole semester on the final examination. The student should view the learning of mathematics as accumulating a body of knowledge, not just learning isolated facts and problem types. On-time class attendance is compulsory for all students. Students are responsible for all assignments, quizzes and examinations at the time they are due and may not use their absence from class as a plea for extensions of time to complete assignments or for permission to take make-up examinations or quizzes. More than four unexcused absences may result in failing the course. Dean’s Excuses for absences must be presented to your instructor no later than five days after returning to class or the excuse may not be accepted by your instructor. (See page 34 of the current FAMU General Catalog for details.)

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**Mathematics Departmental Policies**

The Mathematics Department makes every effort to place students in the correct course. It is expected that every student will pass this course the first time that he/she enrolls in this course. The Mathematics Department will not make any special effort to re-enroll any student for a second or subsequent time in this course.

**I” Grade**

The “I” grade is given only to students who are PASSING (C or better at the time of the request) and who are prevented from completing the course by UNAVOIDABLE circumstances not of their own doing. Students who have missed more than one test are NOT eligible for an “I” grade.

Check your printout for course and section number.

If you are not attending the section for which you are officially enrolled, the instructor of the section for which you are officially enrolled will assign you an “F” grade on the final grade roll and that will be your FINAL GRADE.

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**COMMUNICATION**

The student will demonstrate competence in writing, reading and speaking about mathematics.

**CRITICAL THINKING**

The student will be expected to apply critical thinking to real world problems.

**TECHNOLOGY LITERACY**

Use of Excel/Maxima (see MathLab in Jackson Davis)
Additional Remarks

The final examination is determined by the registrar. Please consult the final examination schedule when it is released before making travel arrangement. The final examination schedule is posted on the registrar’s link on the FAMU website.

Tests Times:
T1: TBA, T2: TBA, T3: TBA, T4: TBA
Final: Thursday, December 12 (12:30 – 2:30)

HELP:
1) Study Group
2) Movies
3) MathLab
4) Office Hours
On office hours bring transcripts, Class Notes, and attempted homework.

Software:
Calculus is not the way it used to be. The subject matter has not changed over the last two hundred years but the delivery of it has changed drastically. In particular, to take Calculus and not (intelligently) use a computational platform (Maxima/Maple/Matlab) becomes less and less of a defensible position. Be aware that the Maple Adoption program makes Maple 13 available to students for $75.00. Contact me if interested. Matlab at a reduced rate for students is also available. Maxima is available free over the Web and a good introduction to Computer Algebra Systems.

Homework/Quiz/Projects Listing

The homework listing is given to you in a separate handout. The quizzes and projects are usually take-home. I expect you to do the quizzes on your own although if you are truly “studying/working” together that is somewhat fine. You can work in group of no more than two on projects. Be sure to write both names on the report but do recall that each student is to turn in an assignment.

Hmks/Quizzes/Projects are worth one point each and are discounted by 20% everyday they are late including week-end days.

Final Provisos (non-negotiable)

Some students, overtime, think it is OK to be disruptive. It is not, of course, and since the classroom, built by the taxpayer, is a community hall, all students are to participate in maintaining a proper decorum for themselves as well as others. If this covenant is broken by anyone, unfortunately everyone will pay via in-class (on the spot) quiz which will count for 5 points (as opposed to 1 for the take-home ones) and will be graded without curving of any sort and potentially on material that you will have been asked to read/comprehend for that day. The best course of action is for the class as a whole not to get into this predicament that is bound to negatively impact your quiz average. You are welcome to change sections if, somehow, this policy is not acceptable to you.

If there is a problem of any kind that I need to know about, let me know but not at the last minute.

Class time is devoted solely to Mathematics. Assessment issues are discussed outside the classroom. A disrupting student will be given warnings with email copies to the student and to the Chair of the department. If three such emails are sent, the student will automatically get an F for the course.

State of Florida:
However unimportant you may think this is, the State of Florida is asking me to deliver this MAC-2213 class. I have been trained to do so. Please recall that, at the end of the semester, I am putting my signature on the grade roll, an official document that is recognized not only in any university in this country but the world over. If you are passing the class, I am, through my signature, certifying that you have mastered the material. I do not take this responsibility lightly, although I always aim to be fair. Consequently, do not ask for preferential treatment that I will not be able to nor want to grant.

Lack of success:
Some students not performing well on a test will make the statement that they knew the material but that the pressure of the test and its time limit were too much for them. As students, you will be asked to take numerous tests in your academic life, if not outside, and the secret for success resides, as you know, in being prepared! It, on a given day, after having studied a particular section, you are able to, on your own and with no notes of any kind, take sample problems such as the ones seen in the homework, and work them successfully from beginning to end, then you know that material. Otherwise you don’t. It is that simple! Having done this for all sections you are responsible for, you will be in an excellent position to perform well on tests, to have your instructor think well of you, and to value your accomplishments.

Courtesy:
It is mandatory for all of us.

YOU ARE EXPECTED TO READ YOUR TEXTBOOK EVERYDAY AND TO BRING IT TO ALL CLASS MEETINGS. YOU ARE ALSO ENCOURAGED TO STUDY IN GROUPS.

IF YOUR PERFORMANCE IN THE COURSE IS NOT GOING AS WELL AS ANTICIPATED YOU WILL BE BETTER OFF IN THE LONG RUN TALKING TO ME ABOUT IT SO THAT I CAN PROPERLY ADVISE YOU ON WHAT YOUR BEST POLICY IS.

EQUAL TIME WILL BE SPENT ON THEORY AND APPLICATIONS. IT WILL NOT BE POSSIBLE TO INVESTIGATE THE ENTIREITY OF THE HOMEWORK IN CLASS.