Math 4153/5053: Advanced Calculus II
Spring 2015

Instructor: Dr. Michael Oehrtman
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MSCS 426

Office Hours: MWF 1:30 pm – 2:30 pm
or by appointment

Class Times: MWF 10:30 pm – 11:20 pm

Location: MSCS 422

Website: https://oc.okstate.edu (then log in and find our course)

Prerequisites: C or better in MATH 4143

Required Text: *None*

Course Description: This course develops the content of multivariable calculus including differentiation, integration, and calculus on manifolds. The course will be taught using Inquiry Based Learning (IBL). See http://www.inquirybasedlearning.org/?page=Why_Use_IBL for a nice summary of the principles behind the IBL method. The main activity in an IBL class is focused on students solving challenging problems that are sequenced to develop proficiency in the main concepts and mathematical practices of the course subject. Although I will frequently give an orienting min-lecture or summarize work completed by the class, most of our time will be spent with students working in small groups, presenting solutions, or leading discussions. I expect active participation through presenting, explaining, hypothesizing, actively listening to others, critiquing (constructively), arguing (collegially), asking questions, validating others work, etc. While solutions to many of the assigned problems may be found in books or online, the ***process*** of solving them is far more important than the solution! Consequently, I ask that you not refer to any external resources for the content of this course. I will provide several excellent resources for the content of the course at the end of the semester for your future reference.

Class Participation and Presentations: I expect everyone in the class to contribute constructively to the class and group discussions. This can take several forms from clearly articulating points of confusion to uncovering problems with previous lines of reasoning to providing key ideas and breakthroughs. If you, your group, or even the entire class is stuck and/or confused (this will happen on a regular basis, by the way), you should be resourceful in trying to find new ways to attack the problem or on uncovering what is wrong with your previous attempts. You should also look for ways to draw other students into the conversation, since much of what you need to learn is how to listen and evaluate mathematical reasoning. You are not participating fully if you are at either extreme: either never talking or doing all of the talking.

Homework: You should reserve significant time to spend on the homework for this class. I will post the homework problems well in advance of their due date. Although you will not turn in your solutions, you will be expected to present or lead a discussion of your solution productively with the class. If you are unable to solve a problem, I may still ask you to present what you were able to do and lead a discussion of where you got stuck. In this case you should either resolve the problem through the support of me and your classmates or develop a plan to make progress on the problem.

Exams: I will give two exams. The first will cover multivariable differentiation and integration and the second will cover differentiation and integration on manifolds. Before each exam, I will provide an overview of what will be covered.

Project: Every student in the class, in consultation with me, will choose a special topic of interest to them closely related to the content of the course to study. You will give a 30-minute presentation of your topic to the class to the class near the end of the semester. You will also write a comprehensive, stand-alone paper on the topic due at the time scheduled for the final by the university, Friday, May 8 at 10:00 am. Although we will not have a final exam, we will meet at this time to complete the special topic presentations.

Grades: Course grades will be determined as follows:

	Points	Grade	Points earned
Project Paper	200	A	900-1000
Project Presentation	100	B	800-899
Exam 1	150	C	700-799
Exam 2	150	D	600-699
Participation	400	F	0-599
Total Possible	**1000**		

Syllabus Attachment: Please read the OSU syllabus attachment, linked on the web at http://academicaffairs.okstate.edu/images/Patty/FacultyandStaffResources/Syllabus/spring%202015%20syllabus.pdf. This has a lot of important information, including instructions about disability accommodations. Please contact me privately during the first week of the course if you need accommodations as a result of a disability.