Syllabus   Ron Buckmire

Scientific Modeling and Differential Calculus   Alan Knoerr

Schedule

Class Meetings:

Section 1	Fowler 316, Mon Wed Fri 8^{30} am¡ 9^{25} am
Section 2	Fowler 316, Mon Wed Fri 10^{30} am¡ 11^{25} am

Lab Sessions:

Section 1	Fowler 112, Thu 3^{30} pm¡ 4^{55} pm
Section 2	Fowler 112, Thu 8^{30} am¡ 9^{55} am
Section 3	Fowler 112, Thu 10^{00} am¡ 11^{25} am
Section 4	Fowler 112, Thu 1^{30} pm¡ 2^{55} pm

Text: Calculus by Hughes-Hallet, Gleason et al. (2nd Edition)

Instructors:

Ron Buckmire: http://www.ron.oxy.edu/fall2000schedule.html
Office Hours:
MWF 9^{30} am¡ 10^{30} am, Fowler 320
W 1^{00} pm¡ 3^{00} pm, Fowler 320
MWF 4^{30} pm¡ 5^{00} pm, Fowler 320
Phone: x2536
email: ron@oxy.edu

Alan Knoerr: Office Hours:
MF 11^{30} am¡ 12^{30} pm, Fowler 317
T 1^{30} am¡ 2^{30} pm, Fowler 317
R 3^{00} am¡ 5^{00} pm, Fowler 317
Phone: x2912
email: knoerr@oxy.edu

Website: http://www.ron.oxy.edu/math/110/00/

Important Course Information:

Course Description: Models in the natural and social sciences often take the form of a system of differential equations. We approach the study of calculus by examining how these models are constructed and used for analysis. The mathematical theme running throughout the course is that of local linearity and error estimation. This course will help you to understand and master the techniques associated with differential calculus, increase analytical skills, improve communication and writing skills in mathematics. The course will proceed sequentially, divided into units.

Unit 1: Modeling, Euler's Method, and Successive Approximation

Unit 2: Local Linearity and Differentiation

Unit 3: Optimization and Other Applications of Derivatives

Homework: Homework will be assigned weekly, collected on Mondays and graded. You are encouraged to attempt all of the assigned problems. In order to learn mathematics, one must practice mathematics. You are encouraged to work in groups, but you must turn the homework you submit must represent your own understading.

Quizzes: There will be weekly quizzes. These will usually be take-home quizzes distributed on Wednesdays and will resemble homework problems which connect or advance important concepts and skills. Work on quizzes are subject to the same rules as on exams.

Labs and Lab Write-ups: Labs are not optional. In the labs, you will have the chance to collaborate with your fellow classmates in teams of two or three students. This work will frequently involve computers using **True BASIC**, **Derive**, and **Excel**, but no prior knowledge of computers or programming is necessary. The lab is a place where you will explore the content of the course in more depth, both because the computers can perform so many computations so quickly and because your team will prepare a written report each week based on your work in lab. Labs are your opportunity to struggle with the difficult skill of successfully communicating your ideas and actively listening to the ideas of others as you work together in groups to produce well-written lab reports and essays.

In-Class Exams: There will be three 1-hour evening exams. Exams will be given on **Tuesday September 26** and **Thursday October 26** and **Monday November 20** from 6:30-9:30pm.

Final Exam: Monday December 11 6:30pm-9:30pm. The rules of Occidental College will not recognize travel plans as an excuse to move a final exam time.

Gateway Exams: There will be four (4) Gateway Exams that will be given this semester. Failure to pass a Gateway will result in lowering your final grade one third of a grade. See the Gateway Information handout for more information on the Gateway exams.

Class Handouts: Classes will combine lectures with more active learning. There will be daily handouts and worksheets supplementing the text for the course. You are strongly encouraged to purchase a looseleaf binder to organize these handouts and your notes.

Independent and Group Study: Students are strongly encouraged to study in groups, although work turned in for evaluation must be your own. Our experience is that many successful calculus students combine individual and group study. The Academic Mastery Program will be available for this course, offering a more structured form of group study. This program is very helpful in providing a consistent setting in which you can work on the topics of the course, with the guidance of an experienced tutor who consults with the faculty regularly. Students often work together at the Center for Teaching and Learning, located on the ground floor of the library. The CTL also offers Peer Advising in mathematics by upper-class students.

Online Component: In the Math Department we are strongly committed to the use of technology to improve and enhance teaching and learning. We make use of a number of Internet resources to assist students. We have class mailing lists, to which all registered students in Math110 are subscribed. The addresses are Math110sec1-L@oxy. edu for Section 1 (8:30am) and Math110sec2-L@oxy. edu for Section 2 (10:30am). You should use the mailing list and our web-based bulletin board to communicate with your colleagues in the class in a professional manner. You can use the class website to review homework and exam solutions, check on the course schedule and interact with students and the professors to continue engagement with course material outside of the classroom. We hope to provide online access to your course grades by the end of the semester. Important course announcements may be found online before being repeated in class.

Calculator Use: You will need at least a scientific calculator with graphing capabilities for this course. If you do not at present own a calculator, we recommend you buy the TI-83 graphing calculator. If you already own a different graphing calculator, you do not need to go out and buy a TI-83, but you may have some work to do to figure out how our TI-83 specific instructions can be translated to work with your calculator. We will be using the TI-83 in class, in lab and on exams.

The use of calculators on exams is encouraged, BUT inappropriate use will not be tolerated. For instance, using the programming capabilties to record notes is dishonest work. If a question on an exam expressly forbids the use of the graphing capabilities of your calculator, it means just that. If you have any doubt about using any features on your calculator on exams, ask one of the instructors. Do not trust your classmates to know what is allowed and what is not allowed. If you are caught using your calculator in an unacceptable manner, the matter will be referred to the Judicial Board

Course Policies: You are expected to know and follow the policies below.

Honest Academic Work: It is expected that each student in this class will conduct her- or himself within the guidelines of the Student Handbook. All academic work should be done with the complete honesty and integrity that this college demands.

Classroom Conduct: Our primary goal in this classroom is to teach/learn/discuss/debate/enjoy/do calculus. This is best accomplished when we feel free to question and doubt, free to argue and exchange creative ideas. If one feels threatened or unwelcome, this becomes impossible. Therefore, the classroom should be a safe space. All are welcomed and encouraged to actively participate in the learning of calculus, regardless of gender, race, nationality, native language, sexuality, political ideology, and especially personal mathematical history. Any student who feels she or he is experiencing a hostile environment should speak to one of us.

Make-Up Work: No late homework or quizzes will be accepted. If you know you must miss a scheduled quiz or exam, let us know as soon as possible beforehand and we will try to work something out. If work is not handed in due to an illness or emergency it will be ignored in the computation of your grade.

Tardiness: Entering late disrupts the °ow of class and sends the message that you do not respect your fellow students or your professors. If you arrive late, enter quietly and deal with missed handouts after class. If you will be late on a regular basis, please come and share the reasons with us before we approach you.

Grading: The table below explains how your ¯nal average in this course will be determined.

	Score	percent	
Homework Average	£	10%	=
Quiz Average	£	10%	=
Exam # 1	£	15%	=
Exam # 2	£	15%	=
Exam # 3	£	15%	=
Lab Average	£	15%	=
Final Exam	£	20%	=
		Total:	

The grade scale below assumes that you have passed all of the gateway exams:

average	below 60	60{68	68{70	70{72	72{78	78{80
letter grade	F	D	D+	C-	C	C+
average	80{82	82{88	88{90	90-92	93+	100
letter grade	B-	B	B+	A-	A	A(+)

Unfortunately, there is no o±cial A+.

You are expected to keep track of your own quiz and lab averages. You should also keep all of your quizzes and labs. This way, discrepancies can be worked out easily.