

ESM1A 2006: General Information and Weekly Plan

Peter Oswald

Welcome to the Single Variable Calculus course ESM1A. I will introduce myself at the first lecture on Thursday September 6th, 8:15am. Office hours are on Mondays, 13:30-15:00, in Research I, Room 113. Outside this small window of opportunity and the classes, I try to be accessible as much as possible (there is a limit for everything!). If you want to talk to me, make an appointment by email or over the phone (x3179).

Both sections A and B of the ESM1A course are taught at similar pace and depth. In my section, quizzes will be administered approximately every two weeks during class time (on Thursdays). Homework assignments (about 10) will be posted in Weeks 2-7 and 10-13, and are due in the following week (submission to the corresponding mailbox located in the entrance hall of Research 1). For organizational reasons, we will not accept late homework. Important: Although most students don't believe it, it is NOT a good idea to do the homework the night before it is due.

Both tracks of ESM1A will have the same Midterm and Final Exams. The contribution to the final grade for the course will be 10% from the quizzes, 20% from homework, 30% from the midterm and 40% from the final.

My policy on excuses is strict: No excuses other than regulated by Jacobs University policy will be accepted. Only in these cases, adjustments will be handled on an individual basis (makeup exams will be offered for those with valid excuses, but no makeups for homework and quizzes).

Further details on the course, the TA tutorial sessions, the Math Support Center etc. will be announced in due time. The TA for the course is Brendan Creutz (b.creutz@jacobs-university.de). A web page for the course is up and running, see <http://www.faculty.jacobs-university.de/poswald>. It allows you to download course materials such as homework assignments, look at detailed grading policies etc. Also, it has a 95 page long script of last year's course

which you can use as orientation and for further reading (but not as excuse for not showing up in class!).

Below, an "approximate" week-by-week plan is given. References are to chapters in the textbook Edwards & Penney [EP]. Listing of a chapter does not mean that all chapter will be covered (the lectures are there to guide you through the material in an economic way). Slight shifts in time and reordering of material can always happen.

Week	Sections [EP]	Topics to be covered
1	1	Elementary concepts, Functions and their graphs
2	2.2-3, 11.1-2 2.4	Limits of functions (and sequences) Continuity, Introduction to derivative
3	3.1-2 3.3-4, 3.7, 7.1	Derivatives; Differentiation rules Chain rule; Derivatives of elementary functions
4	3.5-6, 3.8 4.1-2	Applications: Minimum/Maximum, Equation solving by iteration Implicit differentiation; Differentials (linear approximation, errors)
5	4.3-6 -	Curve discussion and sketching Complex numbers (algebraic properties, roots of polynomials)
6	10.2 5.1-4	Polar coordinates, trigonometric form of complex numbers Introduction to integration
7	5.5-7, 8.2 8.3-4	Fundamental theorem of calculus, Substitution Integration by parts, Trigonometric integrals
8		Review Midterm Exam Midterm Exam
9	7.5-6; 5.8 8.5	Inverse trigonometric/hyperbolic functions, Applications: Area Integrals with rational functions
10	8.8, 6.1-3 6.4-6.6	Improper integrals, Applications: Volumes Applications: Work, Moments, Arc length (selection)
11	9.1-3 9.4	Ordinary differential equations (ODE), Separable equations Linear ODE with applications
12	9.3, 9.5 11.3, 11.5-6	Further ODE applications Infinite series: Convergence tests (selection)
13	11.7-8 11.4	Convergence tests (continued), Power series Taylor series and polynomials
14		Review for Final Exam Review for Final Exam