

COURSE DESCRIPTION
ADVANCED CALCULUS II
MA 441/541–ET, SPRING 2020

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Ian Knowles
Office: University Hall, Room 4024
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Office Hours: Before and after class, or phone or email for an appointment.
Meeting times: MTuWTh 3:35-4:25pm.
Meeting location: University Hall, Room 4002
Prerequisite: Grade of C or better in MA 227
Credits: 3 semester hours
Textbook: None. We use lecture notes (2015/16) written by Dr. Weikard.

Important dates:

First day of classes: Monday January 13, 2020.
Last day of classes: Friday April 24, 2020.
Martin Luther King Holiday: Monday January 20, 2020.
Spring Break: March 16–22.

Course policies:

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- For disability accommodations contact DSS at 934-4205 or at dss@uab.edu.

Aims of the course:

Upon successful completion of the course a student

- will have obtained a body of knowledge in Advanced Calculus, the basis of the analysis of real-valued functions of one real variable;
- will have learned how to communicate ideas in both written and oral forms;
- and, perhaps most importantly, will have become acquainted with and started on the road to mastery of, the process of creating mathematics.

Course content:

- Continuity
- Differentiation
- Integration

Date: January 9, 2020.

Assessment procedures: The following rules, based on intellectual and academic honesty, will be in force; they supersede those listed in the Weikard lecture notes.

- (1) Everybody will have the opportunity to present proofs of theorems; these are to be written out on paper and presented using a document camera.
- (2) The audience (including the instructor) may challenge a statement made in the course of a proof at any point.
- (3) If the presenter is able to defend the challenged statement, he or she proceeds; if not, the presenter must sit down earning no points for this problem and losing the right to present again that day. The challenger has earned a challenge reward (see rule (11)).
- (4) A proof of a theorem will be considered correct if and when there are no, or no further, valid objections. Its written version will then be “published” on the class website by emailing to the instructor a pdf file containing a title and the list of authors, as well as the proof in question. The presenter and, if applicable, his or her collaborators (see rule (9)) will collectively earn a total of 10 points at this time.
- (5) During class the instructor has the final decision on determining whether an argument may stand or not. This verdict may still be challenged after a proof is “published” (see rule (6)).
- (6) If someone other than an author discovers a flaw in a “published” proof, he or she will get the opportunity to explain the mistake and present a correct proof, and receive 20 challenge reward points (see rule (11)).
- (7) In preparing for proofs you must not rely on the authority of any materials outside of the class notes and the previously published proofs. More precisely, you can only refer to theorems in the notes, and published proofs of theorems, whose number is smaller than the one on which you are working.
- (8) You must give credit where credit is due; that is, during your presentation you must declare the points at which you had help, and from whom.
- (9) It is also possible to report joint work. Here 4 points are given for the presentation and the other 6 are distributed evenly amongst the group.
- (10) The successor of a presenter will be chosen as the student with the smallest number of points among the volunteers taking into account rule (11) below. To settle ties, each student has a class number between 1 and 17 derived from the class roll, and each problem has a tie number randomly assigned. Of the students in the tie pool for the problem the student whose class number is closest (with respect to distance on the circle) to the problem tie number will present. In the event that two students still remain after the initial tie-break attempt, each problem has an associated H or L, also randomly assigned. H means that the student whose class number exceeds (with respect to circular ordering, so 1 succeeds 17 and 17 is below 1) the problem tie number will present, and L means that the lower class number will be called.
- (11) For a student who has earned a challenge reward, 20 points will be subtracted from their current score for the purpose of determining a successor. At the time the student is selected to prove a theorem the reward expires.
- (12) There will be no partial credit except as described in rule (9). Your final grade for the course depends only on your total point score.

Final grades in MA441: The following cut-offs are intended as reasonable estimates only and may be adjusted up or down as circumstances dictate; firm cutoffs will be announced in class towards the end of the term.

25 points	D
45 points	C
65 points	B
95 points	A

Final grades in MA541: If you are in MA 541 there is no “D” grade, and you need an additional 20 points for each level.
