

Department of Mathematics and Statistics

MAT 725 — Integration Theory — Fall 2015

Course Description: Riemann integrals, continuous functions, functions of bounded variation, Riemann-Stieltjes integrals (3 credit hours).

Prerequisites: Prerequisites: MAT 525 or 625 (soon to be MAT 526 or 626)

Course Objectives: The student will delve into the various definitions of integrals of functions and explore measures of sets on the real line. Primary skills to be acquired are solving problems involving the concepts, and understanding and constructing mathematical proofs about them.

Instructional Activities: Lectures, problem solving, assignments.

Field, Clinical, Laboratory Experiences, Resources: None.

Instructor: Dubravko Ivanišić [DOO-brahv-ko EE-vahn-shich] Ivanišić is the last name.

Phone & e-mail: 809-3552, divansic@murraystate.edu

Office: Faculty hall 6A-1 (in the Department of Mathematics and Statistics annex)

Course webpage: (A link to this has also been placed on Canvas.)

<http://campus.murraystate.edu/academic/faculty/divansic/15fall/725home.html>

Office Hours: Ask me or check the webpage.

Textbooks & Content Outline: Our primary textbook is H.L. Royden and P.M. Fitzpatrick, *Real Analysis*, fourth edition (updated printing, if possible; selections from chapters 2–12), but we also plan to use previous semester's R. Bartle & D. Sherbert, *Introduction to Real Analysis*, fourth edition (chapter 8) and R.L. Wheeden & A. Zygmund, *Measure and Integral* (chapter 2).

Homework: Homework is a substantial portion of your grade (list is on the webpage). It will consist of a selection of problems of varying degrees of difficulty: type A (5-point), type B (8-point) and type C (12-point) problems. You are strongly encouraged to do all of the problems. For the ones you turn in, you can choose any of the assigned problems subject to the conditions: turn in at least 30 points worth, where at least 40% of total are type B or harder. You may turn in problems with greater point-worth than the minimum, but only the first 60 points' worth will be graded.

Some Success Tips: As you read the textbook or your notes, make sure you have a pencil and paper with you. Work things out on paper as you read them. Whenever a definition is introduced, as you try to understand what the definition is supposed to capture, try to think of several objects that fit the definition and several that do not. Before you read a proof, see if you can figure it out yourself, based on the previous material. (If you have no idea, that's OK, too, then just try to understand the presented proof.) If you have trouble with the material, make sure you stop by for office hours. Many things can be made much clearer in conversation with me.

Attendance: Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletins. Attendance is strongly encouraged every day, and roll will be taken. If you missed four or fewer classes during the semester, you get 3% bonus points. Note that you are not penalized for missing a class (the points are in excess of your total grade), so an absence is counted as such regardless of the reason ("excused" or not).

Seating: If there are seats available in the front rows of the classroom, no one will be allowed to sit in the back rows.

Exams: There will be three exams whose dates will be announced well in advance. Calculators will **not** be allowed on any of the exams.

Final exam: is comprehensive and will be held on Wednesday, December 9th at 1:30PM in our usual classroom.

Grade: Your homework score is computed as (points earned)/(points attempted), assuming you have satisfied the minimum point requirements. Your final grade is computed roughly as follows: homework will count for 40% of the grade and each exam counts for 20%. Your final exam grade replaces your poorest exam grade only if it is better, so if you are happy with your exam scores during the semester, you don't have to take it.

Whether you have satisfied the minimal requirement for homework point-worth and how much you have done extra also affects your grade, but I don't have a formula for this. Guidance for the final grade scale is

$$90\%–100\%=A, 80\%–89\%=B, 70\%–79\%=C, 60\%–69\%=D, 0\%–59\%=E.$$

Make-ups: Make-ups for exams will be given only in cases of illness, field trips or other unavoidable circumstances. You will need to provide written verification of the reason for your absence in advance and as soon as possible. If you are unexpectedly absent from an exam, contact me by phone or e-mail **that same day** and arrange to take a make-up. The make-up should occur *soon*, which typically means “before I return the exam”. Make-ups for other graded work will be given at my discretion. Asking for a make-up more than once makes it less likely that I will grant it.

Academic honesty policy: Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include: **Cheating** — Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise; **Fabrication and Falsification** — Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information; **Multiple Submission** — The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor; **Plagiarism** — Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action. Disciplinary action may include, but is not limited to the following: 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s); 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved; 3) Lowering the grade or failing the student(s) in the course. If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Equal Opportunity. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

Non-Discrimination Policy Statement: Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. In addition, Murray State University does not discriminate on the basis of sex in its educational programs and activities and is required by Title IX and 34 CFR part 106 not to discriminate in such a manner. The prohibition against sex discrimination specifically includes a prohibition of sexual harassment and sexual violence. This non-discrimination in education programs and activities extends to employment and admissions and to recruitment, financial aid, academic programs, student services, athletics, and housing. For more information, contact the Title IX Coordinator and Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

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	E2		
	E1		
		Numerator	
		Denominator	

Track your grades here:
E=exam, H=homework.