Department of Mathematics and Statistics
MAT 312 — Mathematical Reasoning — Fall 2015

Course Description: Course designed to improve the students' understanding of the nature and methods of mathematical proof by means of practice and participation. The content will include mathematical logic, set theory, relations and functions, cardinality, axiomatic structures, techniques of proof, and extensive practice in proof and problem solving. Credit cannot be received for both MAT 312 and 399. The department recommends a student take this course in his/her sophomore year in the program. (3 credit hours)

Prerequisites: MAT 308 or permission of instructor.

Course Objectives: Primary skill to be acquired is the ability to write simple mathematical proofs and understand the logical underpinnings of this process.

Instructional Activities: Lectures and problem solving.

Field, Clinical, Laboratory Experiences, Resources: None.

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

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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/312home.html

Office Hours: Ask me or check the webpage.

Textbook & Content Outline: T. Sundstrom, "Mathematical Reasoning, Version 2.0". We plan to cover chapters 1–7 or their parts.

Homework: To promote a continuous effort in the course, homework problems will be assigned. Typically, a section will be assigned once we have covered it and selected problems will be discussed in class. The list of homework problems may be found on the webpage. A smaller portion of the homework problems is to be written up and handed in. In order to succeed in the course you will need to work on all the problems, since test problems will be based on *all* problems assigned for homework and those done in class, not just the ones you hand in.

The problems that you hand in should be reasonably neat and all the sheets should be stapled together. The proofs you write need to be logically correct and written in accordance to guidelines that we will learn. Points will be taken off if these guidelines are not followed or if the homework is late.

Don't fall behind: Many people have trouble with this course because they have no experience writing proofs. This task is not in itself difficult (in the examples that we do in this course), but requires a lot of practice. Unlike following simple procedures, which is what one has mostly done in math courses so far, writing proofs is more of an acquired skill based on experience. Thus, the key is to keep trying and to learn from mistakes. Finally, if you are having difficulty, come to me for help as soon as possible, and not the day before the exam...

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).

Participation in class: is strongly encouraged, as your questions indicate what points need to be addressed in more detail. We will go over some homework in class. You are expected to have worked the problems at home in order to both ask and answer questions on the homework. To encourage participation, a portion of your final course grade will be based on how active you are in class. In order to earn points, you need to be able to answer a homework question when called on.

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. **On all exams calculators will not be allowed.**

Final exam: is comprehensive and will be held on Wednesday, December 9th at 8:00AM in our usual classroom.

Grading procedure: For your final grade, each of the three exams is worth 20%, homework is worth 36% and participation in class is worth 4% of the total. Your final exam grade replaces your poorest exam grade if it is better. If you are happy with your exam scores during the semester, you don't have to take it. (Note that getting a good grade on the final is more difficult than on a regular exam, since it covers the whole semester.) No extra credit work will be given to repair your grade. The final grade scale is approximately

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).

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

	E1	E2	E3	Final	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16
Score																				