
MATH 231: ELEMENTS OF DISCRETE MATHEMATICS I

Instructor: Hamid Behmard

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Course Description:

MTH 231 Elements of Discrete Mathematics I (3 credits)

CRN: 30707; MW 12:00 - 1:50

Topics include sets, set operations, elementary symbolic logic, proof techniques, functions, and sequences. Does not apply toward a math major/minor.

Prerequisite: MTH 95 with a grade of C- or better, or satisfactory score on WOU's math placement test.

Instructor Office Hours:

Mondays, Wednesdays 2:00 - 4:00, Thursdays 2:00 - 3:00

You do not need to make an appointment to come to office hours. At times other than my listed office hours, you are welcome and encouraged to call or email me with questions about the course. If you have scheduling conflicts with my office hours and would like further help, please let me know.

Course Materials:

- Text: Discrete Mathematics; 8th Edition
ISBN-13: 978-0-321-96468-7
Author(s): Richard Johnsonbaugh
Publisher: Prentice Hall
- Access to Moodle: <https://moodle.wou.edu/>. You should automatically be enrolled in the Moodle course if you successfully enrolled in the course.
- Calculator – A graphing calculator is highly recommended for this course, namely a TI-83 or TI-84. Please see me if you are considering purchasing a new calculator.

Course Goals:

- Provides accurate explanations of information presented in mathematical forms
- Convert relevant information into various mathematical forms
- Understand sets, set operations, symbolic logic, and basic proof techniques
- Understand and use polynomials, rational and power families of functions

Expected Learning Outcomes:

- Understand sets and basic set operations
- Understand the notion of proposition, and the application of the elementary logical operations to propositions

- Understand the notions of conditional proposition and logical equivalence, and apply the elementary rules of logic to prove or disprove various conditional propositions
- Understand the notions of necessary condition, sufficient condition, the converse of a proposition, and the contrapositive form of a proposition
- Understand existential and universal quantifiers, and prove or disprove various conditional propositions which incorporate existential and/or universal quantifiers
- Demonstrate competence in basic proof techniques, including direct, contradiction, and induction
- Understand and use polynomial, rational, and power families of functions
- Be able to represent the aforementioned functions graphically, numerically, symbolically, and verbally

Course Policies

ATTENDANCE: Attendance is absolutely important to be successful in this course. If you miss class, you are responsible for the missed material and there will be no opportunities to make-up daily in-class assignments.

CLASSROOM BEHAVIOR: Please refer to the Standards of Conduct in the WOU catalog. In particular, please read <http://www.wou.edu/studentconduct/files/2015/10/CSR-2015-161.pdf>

GRADING:

- Written Homework – Written homework will be assigned and collected weekly. It is imperative for your success in the class that you work the homework as assigned and keep up with your study of the material. Written homework assignments will be due at the beginning of the designated class. *No late homework will be accepted under any circumstances.* Your lowest score of the approximately 10 assignments will be dropped.
- In-class worksheets – Each week one or more in-class activities will be assigned. Often these will be due by the end of the class period. Often it will be possible to work in groups, but you should be prepared to work individually. *No late work will be accepted under any circumstances.* It is imperative that you are in class and actively participating to be successful in this class. Your lowest score will be dropped.
- Quizzes – There will be two quizzes. Tentative dates for the quizzes are
 - Quiz 1 – in-class April 17
 - Quiz 2 – in-class May 22
- Exams – There will be one midterm exam and a final exam. Tentative dates for the exams are
 - Exam 1 – in-class May 8
 - Final Exam – in-class June 14; 12:00 - 1:50

Makeup quizzes and exams are generally not given. If you must miss an quiz/exam due to a documented emergency or a documented university sanctioned absence from class please inform me ASAP. Cell phones may not be used as calculators during an exam and must be turned off.

- Grades – The standard grading scale will be used with each component worth approximately:

Component	%
Written Homework	20
In-class work	20
Quizzes	20
Exam 1	20
Final Exam	20

- INCOMPLETES: An Incomplete can only be granted for a student who is passing a class and has a documented emergency that prevents them from completing the course, after Friday of the seventh week of class, which is the last day for dropping a course with W grade.

Tentative Schedule

Schedule of Topics (section in text)	
Week 1	Sets (1.1) Set Operations(1.1)
Week 2	Set Operations(1.1) Propositions (1.2)
Week 3	Conditional Propositions and Logical Equivalence (1.3) Quiz 1
Week 4	Conditional Propositions and Logical Equivalence (1.3) Arguments and Rules of Inference (1.4)
Week 5	Quantifiers (1.5) Direct Proofs, Counterexamples (2.1)
Week 6	Direct Proofs, Counterexamples (2.1) Exam 1
Week 7	More Methods of Proof (2.2) Mathematical Induction (2.4)
Week 8	Mathematical Induction (2.4) Relations (3.3)
Week 9	Functions (3.1) Exponential & Logarithmic Functions Quiz 2
Week 10	Sequences & Strings (3.2) Review

RESOURCES:

- TUTORING: Free drop-in tutoring for some material from MTH 232 is available at the Math Center in the library. Please see the schedule at http://www.wou.edu/las/natsci_math/math/tutor/. Tutoring is also available through the Learning Center. Information on available services may be found at <http://www.wou.edu/provost/aalc/learning/procedures.php>.
- LEARNING DISABILITIES: If you have a documented learning disability, please talk to me during the first few days of class; I will be more than happy to accommodate you in any way that I can. If you have a documented disability that requires academic accommodations or auxiliary aids at Western Oregon University, please contact the Office of Disability Services (ODS). ODS is located in the APSC, Room 405, Phone 503-838-8250 V/TTY or email at ODS@wou.edu.

- VETERANS AND ACTIVE MILITARY PERSONNEL: Veterans and Active Military Personnel with special circumstances are welcome and encouraged to communicate these, in advance if possible, to the instructor.
- OTHER AVAILABLE SUPPORT: If you experience overwhelming academic stress, difficult life events, or feelings of anxiety or depression, I strongly encourage you to seek support. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you.
 - Student Health and Counseling Center (wou.edu/health). Counseling services are free for all WOU students taking at least 6 on-campus credits.
 - WOU’s Suicide Prevention and Mental Health Promotion program (wou.edu/mental-health).
 - For life threatening situations, call 911 or Campus Public Safety (wou.edu/safety) at (503) 838-9000.
- WOLF CONNECT SYSTEM (WCS): If your faculty member at any point in the term is concerned about your academic progress and ability to succeed in the course, they may make a referral to Student Success and Advising through the Wolf Connection System (WCS). If a referral is created, an Academic Success Advisor from SSA will connect with you via email or telephone to discuss challenges you may be facing and your plan to overcome those obstacles and achieve success. This referral process is in place as a way to support you in this class and not a punishment. Anytime you want to discuss strategies for academic success, you may schedule an appointment with an Academic Success Advisor by calling 503-838-8428 , emailing studentsuccess@wou.edu, or online by logging into the Portal, selecting WCS and selecting Get Advising.