
MATH 231: ELEMENTS OF DISCRETE MATHEMATICS I

Course Description:

MTH 231 Elements of Discrete Mathematics I (3 credits)

Topics include sets, set operations, elementary symbolic logic, proof techniques, and study of polynomial, rational, and power functions. 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: Breeann Flesch, PhD

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Instructor Office Hours:

Tuesdays 9:00 - 10:00 & 12:00 - 1:00

Thursdays 9:00 - 10:00 & 12:00 - 1:00 & 4:30 - 5:30

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
ISBN-13: 978-0-13-159318-3
Author(s): Richard Johnsonbaugh
Publisher: Prentice Hall
- Access to Moodle: <http://online.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.

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/las/natsci_math/math/academicdishonesty.php

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. Be sure to sign up for our online discussion through Piazza as assignments will be posted there and email reminders sent to your official WOU email. 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 work** – Each week one or more in-class activities will be assigned. Often these will be due by the end of the class period. At times 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 of the approximately 10 assignments will be dropped.
- **Exams** – There will be two midterm exams and a cumulative final exam. Tentative dates for the exams are
 - Exam 1 – in-class Tuesday January 26, 2016
 - Exam 2 – in-class Tuesday February 16, 2016
 - Final Exam – 8:00 - 9:50 pm on Tuesday March 15, 2016

Makeup exams are generally not given. If you must miss an 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	15
In-class work	20
Exam 1	20
Exam 2	20
Final Exam	25

Tentative Schedule

Schedule of Topics (section in text)	
Week 1	Syllabus, Polynomials (Appendix: Algebra Review) Polynomials
Week 2	Power Functions Solving Equations
Week 3	Sets (1.1)
Week 4	Sets (1.1) Propositions (1.2) Exam 1 (material up to Sets (1.1))
Week 5	Propositions (1.2) Conditional Propositions and Logical Equivalence (1.3)
Week 6	Arguments and Rules of Inference (1.4) Quantifiers (1.5, 1.6)
Week 7	Rational Functions Exam 2 (material up to Quantifiers (1.6))
Week 8	Direct Proofs, Counterexamples (2.1) More Methods of Proof (2.2)
Week 9	More Methods of Proof (2.2)
Week 10	Mathematical Induction (2.4)

RESOURCES:

- TUTORING: Free drop-in tutoring for some material from MTH 231 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>.
- WOLF CONNECT SYSTEM (WCS): If the instructor determines your performance in this class is placing you at academic risk, you may be referred to Western's Student Success Specialist. The specialist will offer to work with you to address issues and develop a student success strategy. Regardless of whether a referral has or has not been made, you are ultimately responsible for tracking your own progress in this course. If you would like to meet with a specialist regarding any academic struggles you are experiencing, please contact the Academic Advising and Learning Center at 503-838-8428.
- 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.
- 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.