

Linn-Benton Community College
Department of Mathematics

Math 231
Elements of Discrete Mathematics
Spring 2019
Course Information & Syllabus

1 Instructor Information

Jeff Crabill

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WWW: <http://www.schoology.com> Register using the code 595B9-H2G3Q

Office Hours: MWF 12:00 - 12:50 PM and *by appointment*

2 Course Information

2.1 Course Meetings

MTWF 1:00 - 1:50 WOH-126

Your attendance and participation are expected!

2.2 Course Description

This is a survey course in discrete mathematics for mathematics and computer science majors. Topics include elementary logic and set theory, functions, direct proof techniques, contradiction, contraposition, mathematical induction and recursion, elementary combinatorics, basic graph theory, minimal spanning trees, and other appropriate topics as time allows.

2.3 Course Text/Reference

Mathematical Structures for Computer Science by Judith Gersting.

2.4 Course Caveat

Please be aware that this course will feel much different than the traditional stream of precalculus and calculus courses you have taken. You must be prepared for the difference and consider the likely possibility that habits you have developed in those courses may not be adequate for this course. This material will challenge you in different ways and you may need to find different approaches.

Please note that this course now reflects recent changes instituted at Oregon State University at the start of the 2013-14 school year. Two courses were combined into one and the topics in this course may feel choppy as a result.

2.5 Major Course Topics

- Basic Logic and Truth Tables
- Logical Proof Construction
- Elementary Mathematical Definitions and Direct Proof
- Indirect Proof and Proof by Contrapositive
- Mathematical Induction
- Elementary Set Theory
- Relations, Functions, Equivalence Relations, and Partial Orders
- Elementary Combinatorics
- Graph Theory Introduction, including basic algorithms

2.6 Course Objectives

1. Apply basic set operations.
2. Use ideas from propositional calculus to understand how to negate and form contrapositives of compound and qualified statements.
3. Construct a direct proof (from definitions) of simple statements.
4. Understand and apply the Principle of Mathematical Induction.
5. Demonstrate an understanding of the construction of indirect proofs.
6. Construct complete explanations for solutions to basic combinatorics problems.
7. Understand and use the matrix representation of finite graphs.
8. Apply at least one algorithm to find a minimal spanning tree in a connected graph.

2.7 Course Website

The course website can be found at <http://www.schoology.com>. Use the code 595B9-H2G3Q when you register after logging in and/or creating your account.

Schoology is a lot like Facebook and we will use it much like Facebook to interact, post thoughts and ideas. **All assignments must be submitted as PDF files at the appropriate place on the schoology.com website.** If you have any trouble, please see your instructor!

3 Course Grading Criteria

Your grade in Math 231 will be comprised of several different assignments that will comprise a weighted average to determine your final grade.

Category	Weight	Range	Grade
Two Midterm Exams	15%/20%	90% - 100%	A
Group Activities	20%	80% - 89%	B
Individual HW	25%	70% - 79%	C
Final Exam	20%	60% - 69%	D
		< 60%	F

Please note that no grades of **Y** will be given in Math 231.

One midterm exam score can be replaced with the final exam score (up to 80%) if the student completes the optional course outcomes assignment at the end of the term. Details will be given in class during week 9.

4 Course Policies

1. Attend class regularly. This course will not be 100% lecture-based and your interaction with your classmates and with the material is critical.
2. Make up exams must be coordinated with your instructor ahead of the scheduled exam. If you need alternative arrangements of any kind, simply consult with the instructor ahead of time.
3. Due dates and times for assignments will be posted on the associated assignment web page on schoology.com.
4. **Late submissions** are NOT accepted. In order to avoid this problem, please submit the work you have done on the assignment at the time it is due for partial credit.
5. Incompletes are given solely at the instructor's discretion to students with unusual and verifiable extenuating circumstances. You are expected to complete the course requirements within the time frame of the academic quarter.

6. Your instructor reserves the right to modify this syllabus at any time and any circumstances not addressed specifically in this document shall be handled solely at the instructor's discretion.

5 College Policies

5.1 LBCC Comprehensive Statement of Nondiscrimination

LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws.

5.2 Disability Services Statement

Students who have any emergency medical information the instructor should know of, who need special arrangements in the event of evacuation, or students with documented disabilities who may need accommodations, should make an appointment with the instructor as early as possible, and no later than the first week of the term. If additional assistance is required, the students should contact the Center for Accommodation Resources (CFAR) at 541-917-4789.