

DISCRETE MODELS FOR MIDDLE LEVEL TEACHERS

MATH 232 | FALL QUARTER 2019

INSTRUCTOR:

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COURSE DESCRIPTION:

Prospective teachers will learn and use the concepts of discrete mathematics in a discovery and inquiry approach. In this course the instructor will initiate learning through in-class and CANVAS. Through classroom discourse, practice problems, quizzes, project papers, and exams students will show their ability to apply discrete mathematic concepts in multiple context and formats.

COURSE RATIONALE:

State Endorsement Standards (2014) and *National Middle School Association* (NMSA) outline specific changes needed in pre-service mathematics. To meet the expectations of national stakeholders, pre-service candidates must develop knowledge, skills, and dispositions that enable the best 4-9 teaching and learning possible. This will be influenced by the best practices in math education. Since many teachers will teach as they were taught, it is crucial that pre-service training include both elements. In particular, effective learning will take place when student(s) (a) preconceptions are engaged, (b) they do activities consistent with professionals in the field, and (c) they are aware of how (and what) they learn. Research indicates the best learning is based on discovery via inquiry and collaborative problem solving in balance with direct instruction. Therefore, your training as future professional educators will emphasize these elements.

COURSE OBJECTIVES:

By the end of the course, students will be able to:

Outcomes	Assessment	Standards
Use mathematical logic to read and create mathematical arguments.	Written projects connected to teaching middle level students, quizzes, projects, and exams.	WA-MLM 12 WA-MLS 13 -20
Create and solving problems using the conceptual and procedural elements of combinatorics.	Written projects connected to teaching middle level students, quizzes, projects, and exams.	WA-MLM 12 WA-MLS 13 -20
Create and solving problems using the conceptual and procedural elements of Graph theory.	Written projects connected to teaching middle level students, quizzes, projects, and exams.	WA-MLM 12 WA-MLS 13 -20
Create and solving problems using the conceptual and procedural elements of iteration and recursion (including Mathematical induction).	Written projects connected to teaching middle level students, quizzes, projects, and exams.	WA-MLM 12 WA-MLS 13 -20
Use technology tools to explore and represent fundamental concepts of Discrete mathematics.	Written projects connected to teaching middle level students, quizzes, projects, and exams.	WA-MLM 12 WA-MLS 13 -20
Create and solving problems with historic and cultural relevance.	Written projects connected to teaching middle level students.	WA-MLM 12 WA-MLS 13 -20

COURSE RESOURCES:

Canvas. Check course announcements, messages, due dates, assignments and feedback before *each* class. If you are new to Canvas, [instructions](#) are available. Read Home page of the CANVAS MATH 232 course before starting the course.

Textbook

No Text Book

ASSIGNMENTS AND EVALUATION GUIDELINES:

The instructional and assessment strategies for this course are designed to inform you of your progress in achieving the performance outcomes. The instructors will give you feedback on your progress in meeting performance outcomes.

Assignment	Points
Group projects: 5 group projects at 30 points each.	150
Tests: 4 exams at 100 points each, these exams can only be retaken to earn points missed.	400
Practice Quizzes: 8 quizzes at 10 points each, may retake.	80
Procedure Fluency Check Assignments: 8 points each, may be resubmitted.	80
Proof by Mathematical Induction paper: 20 points, may be resubmitted.	20
Comprehensive final multiple-choice exam: 100 points	100
Total Points	830

COURSE ACTIVITIES:**HOW TO LEARN MATHEMATICS IN THIS COURSE?**

First, understand what you will be required to know and able to.

In the first module you will research, What is Discrete Math? As group write a short paper identifying discrete math topics and explain how this knowledge can be used to teach important mathematics to middle level students.

Second, understand how to find resources and course information.

Important concepts and procedures are presented through CANVAS modules as activities, videos, and worked examples.

Third, practice required knowledge and skill through informal and formal assessments.

In this course students practice their knowledge and procedures by doing exercises and investigations. These exercises are not graded, but rather prepare you to take the Practice Quizzes and Procedure Fluency Check assignments. These exercises and investigations will be discussed in class and will inform both you and the instructor on your progress in meeting the course expectations.

Fourth, demonstrate required knowledge and skill through informal and formal assessments.

In this course after students have practiced the math exercises, they will take the practice quizzes (these quizzes can be take an unlimited number of time) and Procedure Fluency Check assignments (these can be resubmitted if needed). Use these assessment to be prepared for the module tests. If you make corrections you will be allowed to retake similar questions to the ones you missed to earn back half of the points you missed. Contact your instructor if you do not understand the questions or why you got a question incorrect.

Fifth, explain and teach concepts and skills.

In this course Group Discussion and Assignments will be used to share ideas about how to explain and teach the course concepts to middle level students.

Sixth, you need to monitor your own progress in the course.

In this course if you do not understand an assignment, assessment question, or practice exercise, contact you instructor by in person, e-mail or phone for help.

Attention: To complete the course you must complete all assignments and I will never take more than 5 points from any assignment for lateness.

GRADING SCALE

93-100% = A, 90-93% = A-, 87-90% = B+, 83-87% = B, 80-83% = B-, 77-80% = C+, 73-77% = C, 70-73% = C-, 67-70% = D+, 63-67% = D, 60-63% = D-, 0-60% = F Please see the CWU Catalog for the eligibility requirements for an incomplete (I).

PERFORMANCE EXPECTATIONS

All of the assignments and directions can be found in the CANVAS menu. If you miss a course session and especially a group assignment you must contact me and discuss a method for participating and completing the group assignment.

COURSE POLICIES:**Instructor Feedback/Communication**

Send me e-mails, phone calls, or visit me in my office if you would like to talk about the course or course content. I will use the Announcements tool in CANVAS to communicate changes to the course and other course information.

Suggestions for Success

Take the responsibility for your own achievement of these performance objectives. You can get individual help by e-mail or in person in my office. If at any time you have trouble-using CANVAS or do not understand an assignment make sure to contact the instructor. Use the activities, assignments, assessments and people such as the instructor to insure that you understand the mathematical teaching concepts and can demonstrated this understanding in the form of the performance objectives.

Student Feedback/Communication

I welcome all feedback on the course. My preferred method of communication with individual students is via email. I am also available for office hours. If you experience a legitimate emergency (according to my standards), which will prevent you from completing required coursework on time, I expect you to communicate with me at the earliest reasonable opportunity. Please state the nature of the emergency, and when you expect to turn in the coursework.

Submitting Electronic Files

All electronic files must be submitted in .doc or .pdf format. If you do not have Microsoft Word, you can download Open Office Writer for free at <http://www.openoffice.org/>. This will allow you to open the instruction files, make changes and save in .doc or .pdf.

Late Work

Late work will be given reduced points depending on how many days the assignment is late. If you take the quizzes and tests after the dates I will take 1 point for 2 days late, 2 points for a week late, and 5 points for 2 weeks late. All assignments must be completed before you can take the final exam, which is required. The due date and time associated with each quiz, discussion, exam and assignment are stated clearly in CANVAS.

UNIVERSITY POLICIES:**Academic Integrity**

Academic Integrity is a standard set for this course. Students are expected to complete all of their coursework and assignments using their original words and ideas and will properly cite the words and ideas of others. Students are also expected to be honest in their interactions with the instructor. A student found to have not upheld these expectations is subject to failing this course and shall be subject to disciplinary action or sanction. The University catalog defines the term "academic dishonesty" in all its forms including, but not limited to:

- cheating on tests;
- copying from another student's test paper;
- using materials during a test not authorized by the person giving the test;
- collaboration with any other person during a test without authority;
- knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of an unadministered test or information about an unadministered test;
- bribing any other person to obtain an unadministered test or information about an unadministered test; substitution for another student or permitting any other person to substitute for oneself to take a test; plagiarism" which shall mean the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit;
- "collusion" which shall mean the unauthorized collaboration with any other person in preparing work offered for credit.

Documented incidences of Academic Dishonesty will be referred to Office of the Vice President of Student Affairs.

AMERICANS WITH DISABILITIES ACT (ADA)

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

COMMITMENT TO DIVERSITY

CWU expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events.