

# DISCRETE MODELS FOR MIDDLE LEVEL TEACHERS

MATH 232 | SPRING QUARTER 2012

## **INSTRUCTOR:**

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## **COURSE DESCRIPTION:**

Prospective teachers will learn and use the concepts of discrete mathematics in a discovery and inquiry approach. This is an on-line course so instructor will initiate new topics through Blackboard that connection to the middle level curriculum. 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:**

*Curriculum and Evaluation Standards for School Mathematics* (NCTM, 2000) 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:*****Blackboard***

Blackboard is a Learning Management System which we will use for our course. You can login to Blackboard at <http://courses.cwu.edu> Your username and your password are the same one you use for Novell/Safari.

The "Blackboard Help and Support" section of the Online Learning web site at, <http://www.cwu.edu/~avpugrad/OnlineLearning/support.html>, is provided to give you and your students vital information on teaching and learning online with Blackboard.

Read READ ME FIRST, before completing assignments in this course. Take special attention to review the hardware and software requirements of Blackboard. The most important aspect of this information is the "systems check" that can be found in section B "Minimum Hardware and Software Requirements" of the Blackboard Student Orientation. When you click on "system check" the program will tell you if there is any problem with the software needed to complete this course. If there are any problems, the program will give you detailed instruction on how to fix the problems.

***Software and Hardware***

- Blackboard account with enrollment in MATH 232
- Washington State Academic Learning Requirements for Math <http://www.k12.wa.us/CurriculumInstruct/default.aspx>
- Graphing Calculator (TI-83+ is best)
- Documents in this course will be presented in .pdf. You will need Adobe Reader which you can obtain for free at <http://get.adobe.com/reader/>.
- Written assignments may be presented as a Microsoft Word document (.doc). If you do not have Microsoft Word installed on your computer, you can use Open Office Writer instead, which you can obtain for free at <http://www.openoffice.org/>.

***Textbook(s)***

- [Navigating through Discrete Mathematics in Grade 6-12, NCTM.](#)
- [Discrete Mathematics Workbook](#) by James R. Bush.

**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.

<b>Assignment</b>	<b>Points</b>
Blog about teacher issues of teaching discrete mathematics to middle level students (7 reflections at 20 points each)	140
Chapter tests: You take these after you have completed all quizzes in that section at 80% or higher (6 exams at 50 points each, these exams can only be taken twice and must be taken in one hour.)	300
Practice Quizzes (16 at 10 points each, retake until 80% or better score.) I will change the scores to 10 points after 80% is reached and chapter test is taken.	160
Introductory Survey (10 points for completion)	10
Introductory Paper (20 points)	20
Comprehensive final multiple choice exam (100 points) Contact instructor to take exam	100
<b>Total Points</b>	<b>730</b>

**COURSE ACTIVITIES:*****First Assignments***

Read the introduction of the textbook, complete the course survey, and Discrete Math Description. *Both the survey and the Introduction Paper are due before the end of the second week.*

***Readings***

You are expected to read and study the textbook pages assigned.

***Practice Exercises***

There are practice exercises in the textbooks and posted attachments. Complete the practice exercises before taking the practice quizzes. Use the answers to the practice exercises to check your understanding.

***Practice Quizzes***

You will be required to complete eight “No-pressure Quizzes”. These quizzes will consist of multiple-choice questions related to the textbook problems and practice exercises. **You are expected to complete all readings, view the presentation, and complete practice exercises before you take the practice quiz.** You must get 80% the quiz questions correct to receive ANY quiz points, but you may RETAKE the quiz as many times as you would like. After you take the chapter tests I will change the quiz to 10 out of 10.

***Chapter Tests***

The first test is mathematical logic then the next 6 tests correspond to the 6 chapters in the NCTM textbook. The tests are based on the materials covered in the practice quizzes.

***Blogs***

Each unit/chapter also has a blog writing assignment, you must read a paper or watch a movie, write a blog, and then comment on another student's blog. The blog assignments can be found just before the chapter tests. *The blog assignments have due dates.* The blog assignments give the due date for the blog post and a due date for the blog comment on a peer post. *Chapter 6 has a proof paper instead of a blog.*

***Final***

The final test is a paper and pencil 50-question multiple-choice comprehensive exam. This final must be scheduled with the course instructor for dates between November 27 and December 6. All assignments must be completed before the final exam can be taken.

***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 Content menu of Blackboard. The first item in this menu is a movie and written description of how to complete this course. This course is made up of eight lessons to be completed in order and then take the final exam. You can go as fast as you want but it is expected that you complete at least one lesson every two weeks to participate in the required journaling activities. If you miss the first two assignments or one of the blogs, you must complete the assignment as soon as possible so that you will receive most of the possible points.

**COURSE POLICIES:*****Instructor Feedback/Communication***

I will be reading the Discussion Boards and replying to messages occasionally. You will receive specific feedback on your Syllabus Draft and your Course Syllabus in the form of electronic comments appended to your electronic submission.

I will use the Announcements tool in Blackboard 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 Blackboard 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.
- 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 Blackboard and on the Course Schedule.

**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.

***Special Needs***

If you have a disability that may prevent you from meeting course requirements, contact the instructor immediately to file a Student Disability Statement and to develop an Accommodation Plan. Course requirements will not be waived but reasonable accommodations will be developed to help you meet the requirements. You are expected to work with the instructor and the CWU Disability Support Specialist to develop and implement a reasonable Accommodation Plan. For contact information at Center for Disability Services (CDS) please visit <http://www.cwu.edu/~dss/cms/>.