DISCRETE MODELS FOR MIDDLE LEVEL TEACHERS

MATH 232 | FALL 2014

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:

- Canvas account with enrollment in MATH 232
- Documents in this course will be presented as .pdf, Adobe Reader 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, 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.

Assignment	Points
Post Discussion Responses related to teaching discrete mathematics to middle level students (6 reflections at 20 points each)	120
Chapter tests: You take these after you have completed the practice quiz (7 exams at 50 points each, these exams can only be taken twice and must be taken in one hour.)	350
Practice Quizzes (7@10 points each, retake for better score)	70
Introductory Paper and Proof by Math Induction Paper (20 points each)	40
Comprehensive final multiple choice exam (100 points) Contact instructor to take exam	100
Total Points	**680**

Course Activities:

First Assignments

Read the introduction of the textbook, complete the course survey, and Discrete Math Description.

Readings

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

Practice Exercises

There are practices 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 you understanding.

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.

Discussion Posts

Each module/chapter also has a Discussion writing assignment, you must read a paper or watch a movie, write a response post, and then comment on another student's post. The Discussion assignments can be found in the Discussion menu. *The blog assignments have due dates.* The due dates for Discussion posts and comments are on the Discussion assignments and course calendar. *Chapter 6 has a proof paper instead of a Discussion response.*

Final

The final exam is a paper and pencil 50-question multiple-choice comprehensive exam. The questions are similar to the practice quiz and chapter test questions. This final must be scheduled with the course instructor for dates between December 1 and 11 . 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%, 0-60% = F Please see the CWU Catalog for the eligibility requirements for an incomplete (I).

Performance Expectations

This course is made up of eight units (Modules) 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 week to participate in the required journaling activities. If you miss the first assignment or one of the Discussions, you must complete the assignment as soon as possible so that you will receive most of the points.

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.

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.

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/.