Math Structures and Proofs: MATH 216

PPHAC 235, MWF 11:45 AM - 12:55 PM
Fall 2013

Instructor:
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Office Hours: M 10:15-11:15 AM, T 1:00 - 2:00 PM, W 2:20-3:20 PM, TR 10:30 -1:30 AM and by appointment

Text: *Mathematics: A Discreet Introduction*, Edward Scheinerman, 2011, Second Edition, Brooks-Cole.

Course Goals

The main purpose of this course is to provide you with the necessary skills and background to successfully study and communicate advanced mathematics and computer science topics. Mathematics writing is an essential part of the course. Speci?c course goals are to:

1. improve your ability to read and understand mathematical de?nitions and proofs

2. help you learn how to construct mathematical proofs

3. help you learn how to write mathematical proofs

4. help you learn how to communicate mathematical ideas to di?erent audiences

5. help you learn about basic mathematical structures that are useful for further study of mathematics and related sciences

Course Topics: The course focuses on a study of mathematical logic and types of mathematical proof, including induction and combinatorial arguments. We will investigate set theory, relations, function, cardinality of sets, algorithm analysis, basic number theory, recurrences and graphs.

We will explore more sections in chapter 1 through 5 and 9 of the text along with portions of chapter 6 through 10. Topics include: the foundations of logic and proofs; basic structures such as sets, functions, and sequences the fundamentals of algorithms and the integers; induction and recursion; counting; relations; an introduction to graph theory.

The class will be a mixture of short lectures, questions and discussion, and classroom activities that you will investigate. Active participation during class meetings is expected from each student. Some activities will involve working as a group or working individually.

Assessment:

Homework: As with other written assignments in other courses the homework you hand in should not be your ?rst draft. First attempt at homework should be done on your own. If you still need assistance you may ask for a hint from a classmate or work on the problem together. However acquiring an entire solution from a classmate in not acceptable. Homework is to be written up individually. Any collaboration must be properly documented. If two or more homework sets look similar, no points will be awarded for the entire homework set (with no warning). Please see the section on academic honesty policy for more information. You are always welcome to come to office hours to see the instructor. Late homework will not be accepted for a grade. Homework should be emailed in pdf form.

In-Class Assignments: There will be several in class assignments throughout the course. Some of these weekly assignments will be done individually, and some may be completed as a group. These weekly assignments are to reinforce the material learned over the previous few days and apply the material to realistic problems.

Exams: We will have two in class exams and a final exam. If you will miss an exam (with an approved excuse), you must notify me PRIOR to the exam. You will then be given a suitable but more difficult exam. Extenuating circumstances will be taken into account.
Your final exam will be on Wednesday, December 11, 8:30AM. This exam is comprehensive.

Papers: There will be at least two papers for this course. More information on the papers will be given later in the course.

Attendance: Regular class attendance is expected of all students. You are responsible for all material assigned or covered in class. If you do miss class for any reason, it is your responsibility to keep up with the class. You should see a classmate for notes, homework assignments, and any announcements from class.

Your final grade is based on the following distribution:
Homework and In-Class Assignments: 36%
Papers: 14%
Exam I: 15%
Exam II: 15%
Final Exam: 20%

The exam schedule will be as follows, although slight changes may be made:

Exam I: Friday, October 4
Exam II: Friday, November 8
Final Exam: Wednesday, December 11, 8:30AM

Course Policies

Final Exam: Your final exam is on **Wednesday, December 11, 8:30AM**. A make-up final exam will not be administered to accommodate any travel plans.

Participation in class discussions: Class participation enhances your learning experience. Students who attend class regularly, participate in discussions, and are in between grades at the end of the semester may receive the higher of the two grades.

Other Expectations of Student Performance/Behavior:
Please turn off your cell phones at the beginning of class. Be considerate of your classmates and keep private discussions during class to a minimum. Please check your email for any announcements regarding this class. If you wish to email me, please use your Moravian email accounts only as I frequently delete spam.

This syllabus is subject to change. Any changes will be announced in class.

Mathematics Department Academic Honesty Policy: The Mathematics Department supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of members of the Mathematics Department faculty.

For graded homework assignments and projects, you may use your class notes and any books or library sources except a solutions manual. Any resources you use must be documented at the top of the homework assignment. As an example if you get help from the Tutor Center for problem 4 only, please write ?Help with problem 4 from Tutor Center?. No points will be deducted for honestly acknowledging help. However if you do not document any appropriate resource this is considered cheating.

Learning Disability Accommodations: Students who wish to request accommodations in this class for a disability should contact the assistant director of Academic and Disability Support in the Academic Support Center, Monocacy Hall, lower level (extension 7625). Accommodations cannot be provided until authorization is received from the Academic Support Center.

The Writing Center is located in a building that is not accessible to persons with mobility impairments. If you need the services of the Writing Center, please call 610-861-1392.