

Mathematics 5700

Fall, 2014

- Instructor:** Kelly A. MacArthur
- Class Time and Place:** 4:35 p.m. - 7:35 p.m.
Mondays in LCB323
- Office Hours:** Mondays 2:00 – 3:00 p.m., Wednesdays 8:30 – 9:30 a.m.,
Thursdays 1:00 – 2:00 p.m., or by appointment
- Office Location:** JWB226
- E-mail address:** macarthur@math.utah.edu
- Class Web Page:** <http://www.math.utah.edu/~macarthur> (go to Current Teaching and our class)
- Text:** *Mathematics for High School Teachers: An Advanced Perspective*,
by Usiskin, Peressini, Marchisotto, and Stanley. ISBN: 0-13-044941-5
- Course Information:** Math5700, Mathematics Teaching Capstone Course is a 3-credit semester course.
- Prerequisite:** At least a C grade in Math4030 and Math3100.
- Course Description:** The Capstone Course in Mathematics examines secondary school mathematics from an advanced point of view. The topics covered are drawn from Abstract Algebra, Analysis, and Geometry and are rooted in the core secondary curriculum of number and operations, algebra, geometry, and functions. Students learn to generalize definitions and theorems that help to unite and explain mathematics. As they explore familiar secondary mathematics problems from a higher perspective, they draw connections between ideas taught separately in different courses. Through their work in the course, they improve their ability to promote their students' understanding of mathematics and to make better decisions regarding the direction of their lessons and curriculum.

Expected Learning Outcomes:

- Upon successful completion of this course, a student should be able to:
1. understand the connections between advanced mathematics they are learning in college and secondary mathematics they will be teaching.
 2. be able to articulate the conceptual difficulties, fundamental ideas and techniques of secondary mathematics.
 3. be able to communicate their solutions to problems in a precise language.
 4. demonstrate the ability to modify a given problem/theorem by changing its constraints/hypotheses, and in such a way possibly generalize the problem/theorem.

- Computer Lab:** In the T. Benny Rushing Mathematics Student Center, Room 155C.
M - Th 8 a.m. - 8 p.m.
F 8 a.m.- 6 p.m.
Link to computer lab is <http://www.math.utah.edu/ugrad/lab.html>
- Grading:** The grades will be calculated as follows:
Homework 25%
Projects 20%
Midterm 1 15%
Midterm 2 15%
Final Exam 25%
- Homework:** The homework will be graded for correctness. The grade of each homework set will be based on accuracy, thoughtfulness, completeness and clarity of communication (i.e. there may be no credit given for answers given without work shown). You can use these as study tools for the exams. These homework sets will be due a week or two after assigned. Since these homework sets will be given out at arbitrary times during class, it is your responsibility to show up to class in order to have current, correct information about these problems and their due dates. The lowest homework set score will be dropped, thus late homework will NOT be accepted under any circumstances. To turn in the homework, you will need to staple your homework together. Collaborating on homework is allowed and encouraged, but each student's homework assignment should be clearly written in his/her own words which leaves no room for interpreting collaboration as cheating or copying.
- Projects:** Throughout the semester, I will assign two or three projects that will be given in addition to your homework. The projects will be more in-depth problems than the homework and require more time. These will be discussed more in class.
- Midterms:** There will be two midterm exams throughout the semester, and the dates will be fixed, according to the course outline/schedule that is on our class web page. They will be during normal class time, in our usual classroom.
- Final Exam:** The final exam for this class is comprehensive and it will occur on Monday, December 15th, from 6:00 to 8:00 p.m. In our usual classroom.
- Online Grades:** I will put your grades online on Canvas. You can get there easily from the main University of Utah website www.utah.edu. To log in, you use the same student id and password that you use for Campus Information System. I do my best to update the grades on a regular basis and keep everything accurate. However, I would advise you to check your grades often to make sure there were no data entry mistakes. I'm always happy to correct any mistakes I've made. You just need to let me know about them.
- Grading Scale:** Although I'm not philosophically opposed to curving grades, I find it's rarely necessary. The grade scale will be the usual:
A (93-100), A- (90-92), B+ (87-89), B (83-86), B- (80-82), C+ (77-79),

C (73-76), C- (70-72), D+ (67-69), D (63-66), D- (60-62), E (0-59).
If I do need to curve the grades, I will simply shift everything down by a few points (whatever is necessary).

ADA Statement: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services (CDS), 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and me to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to CDS.

Student Responsibilities: All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. You have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, collusion, fraud, theft, etc. Students should read the Code carefully and know you are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.
<http://regulations.utah.edu/academics/6-400.php>

Teaching Philosophy: I believe strongly that mathematics, at its core, is the art/experience/science of problem solving and pattern recognition. It is inherently a creative process, one to be struggled with, repeated, and enjoyed. The process requires imagination, persistence, courage, processing time, and ultimately produces experiential, mathematical skill. It is from this perspective that I teach. I'm not as concerned with the destination, i.e. the answer, as I am about the journey of problem-solving and mathematical exploration since it is exactly the entirety of the journey that creates the answer. And, self-confidence and mastery are then natural by-products of the mathematical journey.

Additional Policies: Due to experience, I have decided to make some additional policies regarding my classroom administration and grading.

- I do NOT allow the use of laptop computers in my classroom. At this point, it's almost impossible to take notes for a math class on a laptop in real time. Thus, it is unnecessary in class. If you are using a tablet or ipad or some similar device to take notes and the screen lies parallel to your desk, that is totally fine.
- There will be no retakes of exams, for any reason.
- You may take an alternate exam if you talk to me about it first and explain the emergent, extenuating circumstances that make it necessary. It is 100% your responsibility to communicate with me as soon as is possible, before the exam occurs (or as soon as possible).

Talking to me *after* the problem will be sufficient reason for me to allow you to get a zero on that test. I reserve the right to make alternate exams more difficult than the scheduled exam.

- I will demand respectful behavior in my classroom. Examples of disrespect include, but are not limited to, reading a newspaper or magazine in class, social chatting with your friend in class, text-messaging your buddies during class or cuddling with your girl/boyfriend in class. If you choose to be disrespectful with distracting behavior during my class, I can guarantee I will take action to terminate your disruptive behavior, and that action may not be desirable for you.
- There will be no cursing nor negative ranting (for example, “math sucks”) on any written work turned in. The penalty for such things on your written work will be a zero score on that assignment or test.
- You need to have a valid email address registered with Campus Information System. I will regularly send emails to the class and will hold you accountable for receiving that information. If you have troubles receiving my weekly emails, you can (1) check to make sure your email address at Campus Information System is correct, (2) make sure my emails are not going directly to your junk mail folder, or (3) contact the webmaster at Campus Information System.
- If you have crisis-level extenuating circumstances which require flexibility, it is completely your responsibility to communicate with me as soon as possible so I can help you in some manner. The longer you wait to communicate with me, the less I can and am willing to do to help.
- If you have questions about any exam/quiz/homework grade, or you want to appeal the grading of the exam/quiz/homework, you must bring it to me within one week of the exam. I'm happy to look over your appeal and/or questions and give my feedback in order to benefit your learning. But, it must be done in this timeframe of a week from when I hand back the exam/quiz/homework.
- Please make sure you do your best throughout the semester, knowing the grading scheme and what's expected of you, and come talk to me if you need further study strategies. I will be happy to brainstorm ideas to help you maximize your study strategies and improve your mathematical understanding. I will offer an extra credit question on every midterm and final exam, to help make up for arithmetic mistakes. But, I will not offer any additional extra credit at the end of the semester or any other way for you to improve your grade at that time. No exceptions. Please respect this and do not ask for special favors or extra credit when you realize you don't like your grade. Most likely, I just won't respond to such emails or questions in person.
- If you cheat on any homework, project, quiz or exam, I will automatically give you a zero for that grade. Depending on the severity of the cheating, I may decide to fail you from the class. Please note that the use (or even just pulling it out of your pocket) of a cell phone or any other electronic internet device is considered cheating and cause for receiving an automatic zero on any quiz or exam. Also, if you exhibit any other behaviors that are unethical, like offering me a bribe to give you a better grade (even if you later claim you were joking), I will report your behavior to the Dean of Students.
- I reserve the right to change my policies stated in this syllabus at some point in the semester. If I do make a change to a policy, I will announce it in class and send the change in email.