

Math 514 – Methods for Middle/Secondary Mathematics - Summer 2015

as of 5/5/15

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Course Description - Catalog Description: Various methodologies for teaching middle and secondary mathematics will be introduced and used in the course. The emphasis will be on using techniques and ideas suggested in the NCTM standards; the new South Carolina College and Career-Ready Standards will be explored. Ideas on how to supplement textbook material and how to motivate students will be presented. Students in the course will have the opportunity to practice the techniques presented.

Textbook – Teaching Mathematics, A Sourcebook of Aids, Activities, and Strategies (3rd edition), Sobel and Maletsky, Allyn and Bacon, 1999

Calculator - TI-83 or TI-84 recommended

Objectives – The focus of the class will be on motivating students, critical thinking skills, problem solving, promoting understanding, use of appropriate technology, reasoning and proof, applications/connections, collaboration, and communication. More specifically, students will:

- 1) Investigate international mathematics test results.
- 2) Investigate and apply South Carolina College and Career-Ready Standards
- 3) Develop and implement a personal mantra for teaching mathematics
- 4) Explore a variety of teaching strategies including but not limited to
 - Creative openings
 - Mathematical novelties
 - Manipulatives
 - Discovery
 - Guessing and estimating – making sense of large and small numbers
 - Mathematical games and recreations
 - Use of technology to solve problems (TI calculator, Smart Board, EXCEL, GeoGebra, the www)
 - History of mathematics
 - Collaborative groups and wikis
- 5) Explore Science, Technology, Engineering, and Mathematics activities
- 6) Apply concepts of algebra, geometry, probability, and numerical operations.
- 7) Students will investigate and will be encouraged to join professional mathematical organizations including the NCTM, and SCCTM.

Grading – Final grades will be assigned according the letter scale in The Citadel Graduate College Catalog 2014-2015 shown below and the corresponding % scale:

A	work of high quality	90 - 100%
B+	above average quality work	88 - 89%
B	average graduate accomplishment	80 - 86
C+	below average quality work and unsatisfactory	78 - 79%
C	unsatisfactory	70 - 76%
F	minimum requirements have not been met	below 70%
W	withdrawal from the course <u>prior</u> to the scheduled withdrawal deadline	

The computation of final % grade for the course is based on the EXCEL grade sheet passed out the first day of class. The sheet is a plan that may be modified very slightly based on meaningful new material discovered in class or unplanned schedule modifications. As a result, additional assignments may be added and some of the listed assignments may be omitted. However, the end result will be very close to what is listed below.

• Final Exam	1000 points	~20%
• Midterm	500 points	~10%
• Homework	1650 points	~36%
• Problem Solving Reflection Instruments	100 points	~ 2%
• Overall Wiki Inputs	300 points	~ 6%
• Projects (Viral Video & Extended Lesson)	600 points	~12%
• History paper Development of Calculus	300 points	~6%
• Presentations	400 points	~8%
• Mathematical Concept Promote Understanding		
• Manipulative		
• Smart Board		
• Number Systems/Measurement		
	~5050 points	~ 100%

Grading Policies

1. Students are required to work individually on all work done outside of class that will be turned in for a grade; unless explicitly authorized, joint work is forbidden; assistance from anyone other than the instructor, a librarian, or a member of the academic support center is forbidden.
2. Some lessons will require wiki participation. Approximately 6% of the class grade is based on participating in wiki discussions. All homework assignments are due at the beginning of the class. Late work will be accepted within 24 hours with a 25% penalty and within one week at a 50% penalty. Late work will not be accepted after one week without instructor-approved extenuating circumstances.
3. Class attendance and participation can influence borderline grades.
4. A total of three absences will result in a course grade of F. An “online absence” described as not submitting required work assigned to the online session. With respect to this policy, three instances of lateness (more than 15 minutes) count as an absence. In addition, if you are late more than 60 minutes, you will be considered absent.
5. If you miss a class with an excused absence, you are expected to turn in all assignments that were due on the day of your absence within 24 hours (this can be done electronically). No credit will be given for late work due to an unexcused absence.
6. Incomplete grades are given only in unusual circumstances. Consult the college catalog for policy on incomplete work.

Technology Project – Handout Class #9 - This project will involve a set of data which conforms to an exponential function, use of a TI calculator regression capability/EXCEL to model the function and calculate data such as sum of squares error/average error.

History Projects (mini-paper) - The Historical Development of Calculus (must include contributions of diverse cultures) **The paper should have a connection to secondary mathematics.** Papers should be approximately 3 pages of text, double-spaced, 12-font, 1” margins, with a minimum of three sources (no Wikipedia). Since the paper is only three pages, students may want to limit the subject. For example, students may choose to select the contributions of one influential person. A grading rubric for the paper will be provided to the student. Due date: class #13, June 23, 2015

Presentation (5 minutes ± 1 minute) – Students will do a presentation on one of two topics:

- 1) The Historical Development of Numbers and Number Systems - The presentation should not only explain the numbering system but also show how the system was used to perform calculations.
- 2) Historical development of Measurement and Measurement Systems

Each must include contributions of diverse cultures. Topics will be assigned by a random drawing during class #2 on May 14th. Students should turn in a bulleted outline of their presentation. A grading rubric for the presentation will be provided to the student. The target audience is a high school math club. Due date: Jun 23, 2015.

Class Schedule – Tuesday & Thursday, 5:30-8:15 PM, Thompson Hall Room 215

Three days will be online:

Class # 7 June 2, 2015

Class #11 June 16, 2015

Class #14 June 25, 2015 online final exam

Office Hours For Help – Cotter – one hour before each class. Other times by appointment.

Important Dates

- Midterm – June 2, 2015
- Final – June 25, 2015

Expectations

1. Please do not miss assignment deadlines (which includes tests) without a valid excuse! Missing a deadline without a valid excuse can result in a grade of zero. The instructor determines whether or not an excuse is valid. When possible, students should notify the instructor in advance if they will be unable to attend a class. All make-up work will be given outside of normal class time. Once a test has been given, any subsequent make-up tests may differ significantly.
2. Show up for class on time and prepared. That means that you have worked all assigned homework. If you were late to class or absent from the previous class meeting, you are responsible for getting class notes and assignments from another student in the class or from the instructor.
3. Take care of any personal needs outside of class time. Except for emergencies, you should not need to go to the bathroom, get a drink of water, etc. If you need to leave the room at any time while class is in session, you should ask for permission. Generally, classes will be structured as follows: 5:30 – 6:45 PM class time, 6:45 – 7:00 PM break, 7:00 – 8:15 PM class time.
4. Be courteous and respect the rights and opinions of others.
5. A calculator is required for most classes. For in-class, graded assignments, you must have your calculator; you are not allowed to borrow or share calculators. Having a spare set of batteries is a good idea.
6. Cell phones should be concealed and programmed in a silent or vibrate setting during class.
7. You should respect the property of your college. Our classroom is a computer lab; therefore, no eating or drinking please. Also, our academic building is a tobacco-free area.

Disability Disclosure Statement

If you need accommodations because of a disability, please inform me ASAP in private, either after class or in my office. To initiate accommodations, students must register with the office of Access Services, Instruction and Support (OASIS) located in room 105 Thompson Hall or call 953-1820 to set up an appointment. This office is responsible for reviewing documentation provided by students requesting academic accommodations and coordinating between students and instructors.

Syllabus Supplements to be passed out Day #1

- 1. Grading Rubric for History Mini-paper**
- 2. Grading Rubric for Technology Project**
- 3. Grading Rubric for Presentations**
- 4. Grading Rubric for Wiki Posts and Replies**
- 5. Grade book EXCEL** – all preplanned assignments will be shown along with point values.
- 6. Advance Plan of Daily Schedule/Topics** - Students will be required to check our class wiki weekly for changes to the class plan.