Syllabus for Math 520, *Geometry for Teachers*, Summer 2011

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COURSE DESCRIPTION: This course will cover topics from Euclidean and non-Euclidean Geometry. We will use the software Geometry Explorer as a supplement to the text. This software can be installed on Windows, Macintosh or Linux machines. It is understood that the students have as a pre-requisite an in-depth, working knowledge of (high school level) Euclidean geometry. Prior experience with proving mathematical results is highly recommended. The goal of this class is to expose you to new concepts in geometry and to deepen your understanding of basic concepts in Euclidean geometry. This is NOT a methods course, nor is it a workshop where you will take home worksheets, projects, etc. for your own students. This is a content course where you will broaden your knowledge and hopefully your appreciation of geometry, which should enhance the teaching of your individual curriculum. Topics for this course will include axiomatic geometry, advanced Euclidean geometry, analytic geometry, transformational geometry, non-Euclidean geometry and fractal geometry. We will cover most of the sections in Chapters 1, 2, 5, 7 and 9 of the text.

TEXT: *Geometry with Geometry Explorer* by Michael Hvidsten, Geometry Explorer CD (included with text) The text can be obtained in one of three ways.

(1) Purchase the book online used. There are several copies on Amazon.
(2) Purchase the book from the bookstore. This will be a printed version of the book. Not a hardcover copy. $62.57.
(3) Purchase an eBook from the publisher, McGraw-Hill.
    https://create.mcgraw-hill.com/shop/#/catalog/details/?isbn=9781121226654 $75.87.

The software from the CD can be downloaded here: http://homepages.gac.edu/ hvidsten/gex/download-2.0.2.html. In fact, this program is more up to date than the one on the CD.

ATTENDANCE: This is an online course scheduled from June 13-July 15. There is no campus attendance required. There will be at least one on campus session a week for asking questions, going over homework, and meeting other students in the class face to face. These sessions will be optional. There will be a deadline for turning in each assignment. The schedule is flexible in that it will be possible for you to turn in assignments early and even finish the class early. However, the deadlines are not flexible, and no late work will be accepted. July 15 is the absolute deadline for turning in the final exam. You must have access to a computer, e-mail, scanner and printer. Assignments must be turned in by e-mail or in person. (If you can turn in all of your assignments/quizzes/exams in person, you do not need a scanner).

GRADING: The grading will be assigned on a graduate scale: A, A-, B+, B, B-, C, F. A=Excellent, B=Good, C=Poor, F=Fail. Grades will be based on quizzes, computer projects, midterm, final and participation.

QUIZZES: Quizzes will be given after every few sections. Each quiz will cover the material since the last quiz. Quizzes are to be taken on your honor, in 30 minutes or less. You may not use your notes or text or any other help. You should print the quiz, write your answers on it in pencil, and then either scan it and e-mail it to me or drop it off at the JMU Math Office. Each quiz will have a deadline. When you are ready to take the quiz, you must request a copy of the quiz by e-mail. You will then have 24 hours to submit the quiz to me. 24 hours prior to the deadline, I will make the quiz available on blackboard. I must receive the quiz by the deadline. No late work will be accepted. You must submit your quiz to the dropbox on blackboard, or drop it off in person to my office.

HOMEWORK: Homework will be assigned, but not collected. However, it is extremely important that you do the homework and get help if necessary. Quizzes will be based on both lectures/readings and homework. It is helpful to work on homework problems together and ask questions during office hours or by e-mail.

COMPUTER PROJECTS: There will be 6 computer projects assigned during this course. These projects are designed for you to learn new concepts, solidify concepts covered in the lectures/text, and, in general, to get exposure to learning techniques using geometry software. The software provided with the textbook is very similar to other commercially available software packages that you can use in your own classroom. You are encouraged to work together on the computer projects, but you must write up your own work to turn in. You must write up your reports in either LaTeX or another software that allows you to type mathematical symbols. You can either submit the projects to the dropbox on blackboard or drop off the projects by the due date.

EXAMS: There will be one "take home" mid-term. You may not work together on this, but you may use your notes, your text book and the software. Please do not use any other assistance such as other texts, other people or other computer sites or software. When you are ready to take the mid-term, let me know by e-mail and I will e-mail it to you. You will have 3 days to complete it from the time I e-mail it to you. You may submit it either to the dropbox on blackboard or in person on-campus. There will be an "in-class" final exam that I will proctor on campus on July 15. Time and room TBA. If you cannot come to campus to take the exam, or if you want to take it earlier, you will need to have it proctored by someone over the age of 21, not related to you, and not a student in 520, preferably a colleague from your home school. I will e-mail a copy of the final exam to the proctor, and the proctor will scan and e-mail it back to me, or drop it off on campus by 3pm on July 15. The final exam will be will be a 2 hour, closed-book exam, no notes will be allowed.

GROUP WORK: Group work, also called cooperative learning, is an important and effective learning strategy. You are encouraged to work together. However, when turning in projects or homework, you must write up the work yourself. If you turn in work that is not your own, you must have the author's name on it as well. Not crediting the work correctly is a violation of the honor code.

HONOR CODE: You are to abide by the JMU Honor Code at all times. Please familiarize yourself with the code at this site: http://www.jmu.edu/honor/code.shtml#TheHonorCode I will ask you to sign a statement at the beginning of class agreeing to the Honor Code and issues specific to an online course. In particular, you must not share LaTeX code, files containing your project, or any quiz or exam with other students in the class. After printing out each quiz or exam, you must delete any electronic copy that you may have. Since this course will be taught again, it is important to not have electronic copies of quizzes and exams floating around. Feel free to keep any printed materials.

Special note about summer classes: This is a 15 week course being run in 5 weeks. So each week you will be expected to cover 3 weeks worth of material. This is a lot of material in a short period of time. It is not advisable to be taking other courses during this time or working full time during the class. Expect to spend several hours *each day* on this course.

How to be successful in this class: PDF versions of the lectures will be posted online as they are available. At the end of each lecture, there will be homework problems assigned. The projects and quizzes will also be assigned along with their due dates. You should read the sections in the text BEFORE the lecture notes. Then go through the lecture notes carefully, writing down definitions and theorems as you go. Then read the sections in the text again AFTER reading the lecture notes. Refer back to the text or notes as you are working on the homework. In reviewing for a quiz, memorize any definitions or theorems from the sections, understand the key concepts in the sections, and be comfortable with the homework problems. I will ask you to state definitions and theorems. They do not need to be word for word as they are in the text and the notes. They just need to be correct and complete.