Course Syllabus and Information
MTH 351: Geometry for K-8 Mathematics Teachers
Fall 2019

Instructor: Tibor Marcinek   Office Hours: Tue- Thu: 12:30 –1:30p
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Website: http://cmich.marcinek.sk/   by appointment

Prerequisites: MTH 256; MTH 152 with grade of B or better

Text Book & materials to be furnished by the student:

(1) GeoGebra and GeoGebra 3D. (Excellent free software that you might want to install on/ access from your home computer.)
(2) A ruler, compass, protractor. In the first days also a few (about 10) sheets of paper for paper folding.
(3) Supplementary material as announced in the class. This includes scissors, mirrors, yarn, Geoboard, etc. If you already have *The Addison-Wesley Advantage Cuisenaire's Manipulative Kit*, you'll find some of the material there.
(4) Eraser, crayons or markers or colored pencils…
(5) Suggested text: Musser, Trimpe, Maurer: *College Geometry*.

Course Content:

(1) History of Euclidean geometry, Euclidean constructions.
(2) Triangles
(3) Polygons
(4) Quadrilaterals
(5) Circles
(6) Isometries

Course Methodology:

The course is designed to meet the mathematical needs of those students who plan to teach grades K-8. It is based on the philosophy that mathematical ideas are learned only through active involvement. Therefore, in this course a lecturing is reduced and teaching methodology includes small group activities and presentations and whole class discussions – the methodology you will be using to present mathematical topics to your students.

General Course Objectives:

Upon the completion of this course the students will be able to:

Identify the fundamental axioms and principles of Euclidean and Spherical geometry; Use techniques of Euclidean constructions to model geometry problems; Use dynamic geometry software in

conducting geometry explorations; Use problem solving techniques solve geometry problems and conduct open-ended geometry explorations; Write mathematical arguments using inductive and deductive reasoning techniques; Complete problems and explorations that are in line with NCTM standards for teaching and learning geometry and Common Core State Standards in K-8; Identify various levels of growth of geometric thinking according to current theories of learning; Identify the level of growth of mathematical understanding as presented in sample work produced by peers and K-8 students; Assess accuracy and adequacy of mathematical arguments and written formal proofs produced by peers and K-8 students.

Course Requirements and Assignments:

Attendance. It is an activity-based class. Therefore it is important to attend every day for entire class period with your homework completed so that you can take active part in group work activities. Attendance will be taken every day. If for some reason you must be absent, it is your responsibility to contact me <u>before</u> the day you miss the class (in emergency situations as soon as possible). If you contact me by e-mail, I will send you back copies of handouts and homework assignments. You are allowed *three* excused absences. Each *unexcused* absence will lower your grade by five percent points.

Daily assignments. You are expected to complete all in and out of class assignments. I will not collect all your homework but I expect you do it and understand it. I encourage you to work together with other MTH 351 students. There will not be time in class to go over every homework problem so plan on coming to my office or contact me through e-mail if you have any questions regarding the assignment. Short (1-2 questions) unannounced quizzes may be given to monitor your home preparation.

Group work. You will be working in groups of 3-4 students. As a group, try to answer all the questions on worksheets or asked by the instructor and discuss how to present your answers to the rest of the class. Make sure that <u>*all*</u> group members understand it completely and that *any* group member is able to lead the presentation as the instructor will randomly select the presentation leader. If any group member has a question, try to resolve it within your group first. If nobody is able to answer and/or explain it to other group members, then ask the instructor. Please keep in mind that the instructor will be answering <u>*group questions*</u>, not questions of individual students.
It is the responsibility of each group to get all members on task and participate. Activity of all members counts towards your group grade, which will be explained in the class.

> **Computer Lab Policy**: In the lab, you may be tempted to use the browser for activities unrelated to our class (social networks, news and other websites). Please resist the temptation – it is a considerable distraction that prevents the instructor to see who is still working and who is done. Using computer for unrelated tasks will result in deductions in "On Task" points. If done repeatedly, the student who breaks the rule will get 0 points for each day of using the computer for unrelated tasks.

Presentations. Each group must have at least 14 satisfactory presentations during the semester. These presentations are typically explanations of the work done by the group and can take various forms. They usually take 3-10 minutes, depending on the task and discussion in the class. The rest of the class will evaluate presentations. Please observe these simple rules when presenting:
   1.   Do not start your presentation until you have the attention of the whole class.

2. Act as if the instructor were not in the class. Maintain the eye contact with the class not the instructor for important signs and immediate assessment of your presentation.
3. If using the visualizer, do not stand at the visualizer. Instead, go to the screen and point to your notes as displayed on the screen.

Exams. You will complete two 50 min "chapter" tests and one (cumulative) final examination.

Projects. You will submit two or three projects and a few take-home assignments. Some projects can be worked out in groups; take-home assignments are individual tasks. Topics of projects will be provided in the class and on my website http://cmich.marcinek.sk .

Other rules.
- Academic dishonesty (cheating) is a serious offence with serious consequences. If I see evidence that you are cheating, you will receive a grade of zero on that quiz or exam, and I will contact the Dean of Students and the Director of Teacher Education.
- Late coming, cell phone and other class disruptions will result in decreasing your group grade. To prevent it, make sure you turn OFF your cell phone before entering the classroom. Make sure that you notify me of any unavoidable late arrivals in advance.
- Electronic Devices: In order to protect the intellectual property interests of the instructor, the privacy interests of student members of the class, and to encourage an open and fair exposition of all student views in the classroom without fear that student views expressed will be recorded and possibly posted in another forum, recording of classroom lectures and conversations is not permissible without the express, prior written consent of the instructor. Unauthorized recording of classroom activity shall be considered a violation of the CMU Student Code of Rights, Responsibilities, and Disciplinary Procedures as disruptive of a student's right to learn under 3.2.3 Disruption of Learning.

What you will be graded on

2 Exams	20 points each	40 points
Final Exam		25 points
Projects and Take-home assignments		18 points
Group Work		7 points
Group Presentations		10 points

Attendance: You are allowed <u>three</u> excused absences. Each <u>unexcused</u> absence will lower your grade by five per cent points.

Total possible points   100 points

Point value of each item is set so that they add up to 100 points. This way it is easy to keep track of your grade:

A: 94 and up	A-: 92-93	B+: 90-91	B: 83-89	B-: 80-82
C+: 77-79	C: 72-76	C-: 69-71	D: 60-68	Failing: below 60

NOTICE: CMU provides students with disabilities reasonable accommodation to participate in educational programs, activities, or services. Students with disabilities requiring accommodations to participate in class

activities or meet course requirements should first register with the Office of Student Disabilities Services (250 Foust Hall, telephone #517-774-3018, TDD #2568), and then contact me as soon as possible.