Casper College Course Syllabus

Course: Math 2120-N1 Geometry and Measurement for Elementary School Teachers

Semester: Summer 2016

Lecture Hours: 3  
Lab Hours: 0  
Credit Hours: 3

Class Time: Mostly online with two campus meetings required  
June 18: 9am-4pm  and July 9: 9am-4pm

Instructor: Kendall Jacobs  
Office: PS 338

Office Phone: 268-2043  
Email: kjacobs@caspercollege.edu

Office Hours: 
MWTH 9:20-10:30

If the above times don't work for you, please feel free to make an appointment - or just drop by!

Course Description: This course is a continuation of MATH 1105 and is for prospective elementary school teachers. Its primary emphasis is the development of spatial reasoning. Explorations focus on the investigations of two- and three-dimensional shapes, including their properties, measurements, constructions, and transformations with the intent of preparing students to be competent in teaching these major concepts.

Prerequisites: “C” or better in Math 1100 or permission of Instructor

Co-requisite: EDEL2410 MUST be taken concurrently with MATH 2120

Course Goal:

The Conference Board of the Mathematical Sciences recommended that “Prospective teachers need mathematics course that develop deep understanding of the mathematics they will teach. . . and most of all, [they] need to learn how to learn mathematics.”

Consequently, the purpose of this course is to provide prospective elementary school teachers with a deeper understanding and mastery of the mathematical skills, concepts, processes, theories, and applications of algebra, probability, and statistics. This foundation will help future teachers to make appropriate "mathematical and pedagogical decisions" pertaining to the teaching of mathematics at the elementary level.

To meet the general learning outcomes for this course, students will

- Use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties.
- Apply and use measurement concepts and tools.
Know, understand, and apply the processes of mathematical problem solving.
Reason, construct, and evaluate mathematical arguments and develop an appreciation for mathematical rigor and inquiry.
Communicate their mathematical thinking orally and in writing to peers, faculty, and others.
Recognize, use, and make connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding.
Use varied representations of mathematical ideas to support and deepen their mathematical understanding.
Embrace technology as an essential tool for teaching and learning mathematics.
Develop a positive disposition toward mathematical processes and mathematical learning.

Course Outcomes:
To meet the specific learning outcomes of this course, students will:

- Analyze and describe basic shapes (two- and three-dimensional), their properties, and the relationships between them.
- Build and manipulate representations of two- and three-dimensional objects using concrete models, drawings, and dynamic geometry software.
- Specify locations and describe spatial relationships using coordinate geometry.
- Apply transformations and use symmetry, congruence, and similarity.
- Understand the role of mathematical definition.
- Demonstrate knowledge of the historical development of Euclidean and non-Euclidean geometries including contributions from diverse cultures.
- Select and use appropriate measurement units, techniques, and tools, including standard (English and metric) systems as well as non-standard systems.
- Recognize and apply measurable attributes of objects and the units, systems, and processes of measurement.
- Employ estimation as a way of understanding measurement units and processes.
- Understand that measurements are approximate and that different units affect precision.
- Be able to compare units and convert measurements from one unit to another.
- Demonstrate knowledge of the historical development of measurement and measurement systems including contributions from diverse cultures.

Materials Needed:
Note: This is the same book you used in Math 1105 (if you took it at CC last semester).

Calculator: You will need a scientific calculator.
Internet: You will be required to have access to the Internet and Moodle. Some of our work will include Excel, Logo and Geometer’s Sketchpad. You may access the Internet via the Casper College Computer Labs.

Methodology: This is a Hybrid courses. It will be YOUR responsibility to read the text, keep up with the assignments and ask for help when needed. We will do many of the hands on activities as addressing more difficult concepts at the two onsite meeting. I recommend that you study with the intent to understand and not just to get by on the exam - think about how you will explain the concepts we are studying when you are "the teacher." I will also schedule several optional live help sessions throughout the semester – you will be encouraged to attend. You will also be encouraged to stop by for individual help as needed. I will also offer optional live chat sessions and/or telephone conference sessions as requested. You will be strongly encouraged to participate in class. I hope you ask LOTS of questions either via the HW help folder or email.

Evaluation Criteria: Your letter grade will be based on your performance (not effort) on the following tasks:

Exams (approx. 65%): Three 100-point exams and a comprehensive final are scheduled. You are required to take exams at the scheduled hours. Under some pre-approved circumstances an exam may be taken early. In the event that an exam is missed, a 200-point cumulative final will be required. All exams and quizzes are cumulative. Some of the exams may have an oral component.

Assignments/Quiz/Projects/Exploration Problems (approx. 35%): 
May consist of Moodle and CPS quizzes, Exploration Problems, calculator activities, peer teaching, expanded homework assignments, In class explorations, Geometer’s sketchpad/GeoAlgebra, and Logo activities, article reviews or short papers. You will be required to complete some of the HW on Course Compass.

Absent/Late work Policy: A high degree of professionalism, participation, and attendance in class is expected. Attendance will be taken every class meeting and for each absence after the third absence, your final grade will be lowered by 3%. If you are absent for one week or more due to accident, illness, etc., contact Student Services and explain your reason. In these cases arrangements will be made for you to make up your work.

Grading Scale: You are guaranteed a traditional grading scale of 90%+ A, 80-89% B, 70-79% C, 60-69% D, 59%- F. But I reserve the right to lower this without notice if I deem it necessary.

Ed Major Note: *Electronic Portfolio Requirement for Education Majors: All education students at CC are required to show evidence of program outcomes (artifacts) through the completion of an electronic portfolio. These artifacts will include appropriate pedagogical practices, as well as knowledge and skills of content area as outcomes for the CC education program. These artifacts are also utilized to demonstrate NCATE (National Council for Accreditation of Teacher Education)and INTASC (Interstate New Teacher Assessment and Support Consortium)proficiencies. Artifacts will be documented within the electronic portfolio - eFolios – provided via Minnesota State
Colleges and Universities and Casper College. Early Childhood Education majors will also be required to document proficiencies for NAEYC (National Association for the Education of Young Children) through the use of eFolio for student teaching. Please save all relevant work in this course in electronic format as evidence of meeting course/program outcomes.

**Student Rights and Responsibilities:** Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

*Chain of Command:* If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head, then the division chair, and lastly the vice president for academic affairs.

*Academic Dishonesty - Cheating & Plagiarism:* Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct.

*Official Means of Communication:* Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

*ADA Accommodations Policy:* It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment to see me at your earliest convenience. If you need ADA accommodation you may contact Brent Heuer, Accommodative Services Counselor 307-268-2557

**Course Content:** See attached schedule:

**Last Day to Change to Audit or Withdraw:** July 8, 2016 will be the last day to drop this class. If you are thinking about changing your class status, you must contact me BEFORE this date. You will not be allowed to audit unless you have been keeping up with your assignments.

**Official Means of Communication:** Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly.

**Help:** I recommend you keep up with the class. If you need help, then get it . . . FAST! I will be available to help individuals during my office hours or by appointment. **I want you to succeed!** The Math Lab (PS 104) is also a great place to go for assistance.

**IF YOU ARE HAVING TROUBLE IN THIS CLASS, PLEASE SEE ME AS SOON AS POSSIBLE!!!**

Let’s have a GREAT semester!
## Math 2120-H1

**Geometry and Measurement for Elementary School Teachers**

**TENTATIVE SCHEDULE Summer 2016**

<table>
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<tr>
<th>Deadlines</th>
<th>Topics</th>
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| **June 10** | 11.1 -11.2 Course Introduction  
Basic Notions of Geometry and Measurement  
Curves – Polygons - Symmetry |
| **June 14** | 11.3 Angles                                                           |
| **June 17** | 11.4 Polyhedra                                                        |
| **June 18** | 9am-4pm Onsite in Casper  
Learning Geometry …Van Hiele Model  
Inductive and Deductive Reasoning  
Constructions and Congruency – GeoGebra  
Several EDEL 2410 Seminars |
| **June 21** | 12.1-12.2 Congruence - Constructions                                  |
| **June 24** | 12.3 -12.4 Congruence – Constructions - Conjectures                   |
| **June 28** | 12.4 Similar Triangles                                                |
| **July 1**  | Midterm Exam                                                          |
| **July 8**  | 13.1-13.3 Transformational Geometry                                   |
| **July 9**  | 9am-4pm Onsite in Casper  
Transformational Geometry  
Indirect Measurement – Intro To Trig  
Several EDEL 2410 Seminars |
| **July 12** | 14.1 Linear Measure  
14.2 Areas of Polygons and Circles                                    |
| **July 15** | 14.3 The Pythagorean Theorem – Distance Formula – Equations of Circles |
| **July 19** | 14.4 Surface Area                                                     |
| **July 22** | 14.5 Volume – Mass- Temperature                                       |
| **July 26** | Measurement Overview – Course Wrap-up                                |
| **July 29** | Final Exam                                                            |