

COLLEGE GEOMETRY II

MATH 455 | SPRING QUARTER 2020

INSTRUCTOR

Dr. Mark Oursland

Office: Science II 301D

Office Hours: M-F 9-11AM *other times by appointment suggest media that works for you*

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COURSE DESCRIPTION

This course is the second of a two-course sequence. It mixes the basic principles of geometry with concept connection to other disciplines. The axiomatic systems of Euclidean, Hyperbolic, and Elliptical Geometry will be studied as well as the models of these geometries. Connections to trigonometry and transformational geometry will be studied and applied to real world problems. The underlying theme will be to model both processes and content of mathematic studies of geometry as they directly apply to the secondary mathematics classroom.

COURSE RATIONALE

Geometry is a basic part of the high school curriculum and the NCTM recommended that “Prospective teachers need mathematics courses develop a deep understanding of the mathematics they will teach”. This course will begin with high school geometry and make deep connection to all areas of mathematics. This course will also develop a deep understanding of when and how to use proof to communicate understanding of mathematical concepts.

COURSE OBJECTIVES

Students will be able to:

Outcomes	Assessments	Standards
define geometric concepts critical to the intuitive and logical development of geometry.	Written problem solutions, group projects, weekly quizzes, exams, and final exam.	WSMS 1,4
construct geometric figures using multiple technologies and methods, including those classical straight edge and compass techniques.	Written problem solutions, group projects, weekly quizzes, exams, and final exam.	WSMS 1,4, 7
conjecture, prove, give counterexamples, and evaluate conjectures, proofs, and counterexamples for correctness, elegance, and utility.	Written problem solutions, group projects, weekly quizzes, exams, and final exam.	WSMS 1,4
make connections among geometry, other areas of mathematics, real world phenomena, and science.	Written problem solutions, group projects, weekly quizzes, exams, and final exam.	WSMS 1,4,7,10
contribute to the class knowledge base in a professional manner that includes preparation, courtesy, and respect for others.	Written problem solutions and group projects	WSMS 1,10
communicate geometric and pedagogical ideas with others in a clear and concise manner, properly using the language of mathematics, specifically, and geometry.	Written problem solutions, group projects, weekly quizzes, exams, and final exam.	WSMS 1,4,7,10
solve problems using the geometric concepts from Euclidean, Transformational, and Noneuclidean Geometries.	Written problem solutions, group projects, weekly quizzes, exams, and final exam.	WSMS 1,4

COURSE RESOURCES

Canvas Check course announcements, messages, due dates, assignments and feedback before *each* class. Read the Home page of the CANVAS MATH 455 course before starting the course. No textbook, a translation of Euclid’s Elements is included as pdf file. Students will need a compass and straight-edge and access to a computer with the free program Geogebra.

ASSIGNMENTS AND EVALUATION GUIDELINES:

The instructional and assessment strategies for this course are designed to inform you of your progress in achieving the performance objectives. The instructors will give you feedback on your progress in meeting performance outcomes.

Assignment	Points
Individual Assignments (160 points from many assignments)	30%
Group projects (150 points from 3 assignments)	7.5%
Practice Quizzes (90 points from many quizzes, may retake)	10%
Exams (400 points from 3 exams and final exam)	45%
Group Discussion Board (150 points from 3 assessments)	7.5%

COURSE ACTIVITIES

The course will consist of module activities done individually and shared in group discussions on a Discussion Board. Each module also contains multiple individual CANVAS assignments, a group project, a group Discussion Board, video lectures, an on-line quiz, and an on-line test. You will need to communicate what you know and have questions about on the Discussion Board. After you have completed all group and individual work including an on-line quiz. The module exams will be on-line in CANVAS, these exams must be taken on the day assigned and you have one hour to take the exam. Contact your instructor if you need different accommodations. Finally, there will be an on-line comprehensive final.

HOW TO LEARN MATHEMATICS IN THIS COURSE AND MEET THE PERFORMANCE EXPECTATIONS?

- You need to understand what you will be required to know and be able to do.** *Read the module Exam Review found on the Group Discussion Board.*
- You need to have the course math concepts and procedures explained and modeled.** *The course concepts and procedures are presented through module pages and video lectures. You will receive feedback on module assignments and Discussion Board statements and questions.*
- You need to practice your knowledge and procedures by doing math problems.** *Practice your knowledge and procedures by doing the module assignments individually and posting what you do understand and questions you have on the group Discussion Board. This Discussion Board is organized around reviewing what will be on the module exam. You will also submit/complete individual assignments in each module. The assignments are submitted on CANVAS and the quizzes are taken on CANVAS.*
- You need to check your understanding of the concepts and procedures.** *The instructor will give you feedback on Discussion Board and submitted assignments. Also you can take the practice quizzes an unlimited number of times.*
- You need to be able to explain and teach the math to other people.** *On the Group Discussion Board you share ideas about what you know and have questions about. Also, the group projects are designed around explaining and teaching the math concepts to middle level students.*
- You need to monitor your own progress in the course.** *At the end of the module you will be ready to show what you know on the module exam. These exams will be on set days and you will have 1 hour to complete the exam. Contact the instructor by e-mail or phone for help or questions about the preparing or learning from the exam.*

GRADING SCALE

93-100% = A, 90-93% = A-, 87-90% = B+, 83-87% = B, 80-83% = B-, 77-80% = C+, 73-77% = C, 70-73% = C-, 67-70% = D+, 63-67% = D, 60-63% = D-, 0-60% = F See CWU Catalog for the eligibility requirements for an incomplete.

COURSE POLICIES

Instructor Feedback/Communication

Send the instructor e-mails, phone calls, or visit his office if you would like to talk about the course. The Announcements tool in CANVAS to communicate changes to the course and other course information.

Suggestions for Success

Take the responsibility for your own achievement of these performance objectives. You can get individual help by e-mail or in person in my office. If at any time you have trouble-using CANVAS or do not understand an assignment make sure to contact the instructor. Use the activities, assignments, assessments, and people (instructor and peers) to ensure that you understand the mathematical teaching concepts and can demonstrated this understanding in the form of the performance objectives.

Student Feedback/Communication

I welcome all feedback on the course. My preferred method of communication with individual students is via email. I am also available for office hours . If you experience a legitimate emergency, which will prevent you from completing required coursework on time, contact the instructor at earliest opportunity. Please state the nature of the emergency and when you expect to turn in the coursework.

Submitting Electronic Files

All electronic files must be submitted in .doc or .pdf format. If you do not have Microsoft Word, you can download Open Office Writer for free at <http://www.openoffice.org/>.

Late Work

Late work will be given reduced points depending on how many days the assignment is late. If you take a quiz or tests after the dates or submit an assignment late 10% for 1 or 2 days late, 20% for a week or more late. Over 75% of the assignments and 100% of the exams must be completed before you can take the final exam, which is required. The due date and times associated with assignments are clearly stated in CANVAS.

STUDENT SUCCESS

Multiple resources are available to help students move past challenges and become academically successful.

Academic Success Center

The CWU Academic Success Center helps students learn strategies that can increase GPA and improve course pass rates. All services are available online via Zoom unless otherwise noted. Expanded hours are available to meet student need. To access, go to www.cwu.edu/asc or <https://tutortrac.cwu.edu>, use your CWU login and password, and click the **Schedule an Appointment** link.

Tutors

Several forms of peer tutoring are available. All Canvas courses include a direct link to a tutoring resources page. The PALS program pairs a trained tutor with a faculty member to promote learning strategies and content comprehension in specific courses. eTutoring allows students to get online help in 15 subjects with expanded hours of 5am-midnight, 7 days per week. To access, students visit www.etutoringonline.org, select CWU, and request a password link be sent to their CWU email address. A list of subjects is available at <https://www.cwu.edu/academic-success/online-tutoring/online-tutoring>

Academic Coach

Students can work one-on-one with an [academic coach](#) in individualized sessions that focus on building academic strength. Students can improve time management, develop a study plan, unpack how to process new information for deep understanding, increase reading and comprehension skills, and more. Coaches help students discover learning best strategies, maximize academic experiences, and reduce stress.

Writing Center

Learning to write well can be a difficult skill set to develop, a process made easier via targeted feedback via the [CWU Writing Center](#). Students submit papers for review and receive detailed video comments from writing consultants in various disciplines. Students can also request a phone consult. Best results are achieved when students plan early for multiple rounds of feedback and revision.

Math Center

Learning mathematics is challenging for many students. Students who struggle with math can access the [CWU Math Center](#). Students can connect with a math tutor for live help sessions that deal with all Quantitative Reasoning, 100-level, and other math courses. Zoom meetings, whiteboards, and other tools are used to promote deeper understanding of mathematics.

UNIVERSITY POLICIES

Academic Honesty

Consult university policies ([CWUP 5-90-040\(22\)](#), [CWUR 2-90-040\(22\)](#), and [WAC 106-125-020](#)) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.

Diversity

As a member of a peer learning community, a high degree of professionalism is necessary. **CWU expects every member of the university community to contribute to an inclusive and respectful classroom culture.**

Disability Support Services

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations: Hogue Hall 126, [509.963.2214](tel:509.963.2214), DS@cwu.edu

Religious Holiday Absences - Is my absence excused?

Excused absences will not lower your overall grade in this class and are determined on a case-by-case basis. In compliance with RCW 28B.137.010, Central Washington University makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at [\(509\) 963-1515](tel:509.963.1515) for further information or questions.