

Math.3379 - Introduction to Higher Geometry

Course Syllabus, Spring 2021

Instructor Information

Instructor: Dr. Blerina Xhabli

Email: bxhabli@uh.edu

Lecture Time/Place: MWF 2:30pm - 4:00pm/[MATH3379-SP21-SYNC TEAM](#)

Office Location & Hours: [Office Hours TEAM](#), MWF 1:00pm-2:00pm

Course Homepage: <https://www.math.uh.edu/~blerina/Math3379SP21.html>

Course Online Platform: [MATH3379-SP21-SYNC TEAM](#) and www.casa.uh.edu

Course Description

This course is designed for the future mathematics teachers in secondary education.

MATH 3379 is designed to provide advanced treatment of standard topics in Euclidean geometry using informal and axiomatic approaches. Includes proof-making techniques, traditional and transformational geometry, finite geometries, and an introduction to other geometries. In addition, the course is intended to present additional topics that will expand students' content knowledge of geometry.

The instruction in this course is meant to serve as a model of standards-based teaching addressing both content and practice standards as set forth by the National Council of Teachers of Mathematics and the Common Core State Standards.

Course Materials

Required Software: GeoGebra (which can be downloaded for free onto your computer at <https://www.geogebra.org>). Geogebra Classic is the sufficient for this class. You can sign up for access to the Geogebra Teaching Materials at <https://www.geogebra.org/materials?lang=en> for access to a variety of helpful resources.

Other Required Materials:

- Access to online resources as the instructor provides
- Access to a high school geometry textbook
- Access to the basic three modules that contain the relevant coursework such as handouts, pre-class homeworks etc will be displayed clearly in your MATH3379-SP21-SYNC team.
 - Module 1: Axiomatic Development
 - Module 2: Transformations
 - Module 3: Analytic Geometry and Measurement
- Textbook: Foundations of Geometry, Second Edition by Gerard Venema.

Course Objectives

Content Standards: Through whole-class instruction, cooperative learning groups, student to class presentations, and hands-on activities with concrete materials and computer software, students will be able to:

- Demonstrate genuine understanding of fundamental concepts of Euclidean and non-Euclidean geometries.
- Demonstrate genuine understanding of the fundamentals of solid, coordinate, and transformational geometries.
- Apply problem-solving skills to geometric situations.
- Acquire new methods for making geometry comprehensible to school mathematics students.
- Enhance spatial skills by constructing, transforming and modeling figures.
- Demonstrate the ability to formulate conjectures and to prove geometric generalizations.

Process Goals (based on the Standards for Mathematical Practice from the Common Core State Standards):

- Students will make sense of problems and persevere in solving them.
- Students will reason abstractly (representing quantities symbolically and manipulating those symbolic representations) and quantitatively (attending to the meaning of quantities, and not just how to compute them).
- Students will use appropriate tools (e.g. manipulatives, calculator) strategically to solve mathematical problems.
- Students will develop and extend understanding through active communication (reading, writing, speaking, and listening) of mathematics, attending to precision of mathematical language.
- Students will construct viable mathematical arguments and critique the reasoning of others.

Main Topics: Topics for discussion will be selected from but not limited to:

- Undefined terms, definitions, postulates, axioms, and theorems as they relate to Euclidean and non-Euclidean geometries.
- The formulation of generalizations: Proofs using formal and informal methods.
- Concepts involving congruency and similarity.
- Measurement involving two- and three-dimensional shapes.
- Constructions with compass, straightedge, and GeoGebra.

Academic Expectations

In effort to create a learning environment that is aligned with current recommendations for teaching and learning mathematics in K-12 settings, the following practices will be applied for instruction in this course:

- **Use of Technology:** We will use dynamic geometry programs such as GeoGebra for the exploration of ideas generated in class and through assignments. In addition, students will be directed to particular internet sites and to selected chapters of the textbook to read about the concepts of study. However, it is prohibited to do general internet searches when completing homework. Instead, the students are encouraged to problem-solve and communicate with peers in order to work as mathematicians work when pursuing new ideas.
- **Participation Assignment:** All student are required to attend the live lectures and to have completed their pre-lecture assignments in order to be able to engage in the class activities.

- **Handouts:** In-class activities for students and homework assignments are listed as handouts. The students are required to print them out in advance (single page print recommended) and bring to class every day. The links to these handouts will be posted in MATH3329-SP21-SYNC team.
- **Homework:** In many cases, homework assignments are structured so that they generate discussion for the next or an upcoming lesson. The homework will be completed prior to coming to class, and the provided work by each student will anticipate questions for the upcoming class discussions.

Course Delivery Format For Synchronous Online Courses:

This course is taught **synchronously**, which means there will be live lecture sessions on the designated day and time assigned to the course. Synchronous instruction generally imitates face to face instruction but on a virtual classroom. There is no face-to-face component to this course The instructor provides course materials such as lecture notes and other important content ahead of time, schedules the online live lecture sessions and delivers the live lecture on the provided day and time.

Every live lecture session will be recorded and a student will be able to access this video through the MS Team. Every student is automatically put on the MS Team of this course. If you can't attend the live lecture session, make sure you watch the recorded video. The best approach is to watch the missed lecture video before the next upcoming live lecture session. **Attendance is not mandatory but is recommended.**

- Live Lecture Sessions will take place on MS TEAMS; Make sure you are a member of this team.
- Students are expected to behave professionally during live sessions. Any students who do not follow the university's code of conduct might be removed from the session.
- Turn off your webcam and microphone before joining the live session.
- By joining a live session, students give consent to be recorded on the live session video.

Recording of The Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the [Center for Students with DisABILITIES](#). If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Resources for Online Learning

University of Houston is committed to student success, and provides information to optimize the online learning experience through our [Power-On](#) webpage. Please visit this webpage for a comprehensive set of resources, tools and tips including: obtaining access to the internet, AccessUH; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

Grade Components for this Course

Final course grades are assigned according to student performance, using the guidelines below:

Participation/Engagement/Group Work/Homework/Reading: 15%

Students are expected to be prepared ahead of time with course readings and assignments.

Students are also required to write up reports and summaries for lessons as groups.

3 Formal Writing Assignments (FWA): 15%

The three written FWAs will be 1-2 page reports where the student shows the understanding of the topic by answering different questions asked. They go along with the following lessons:

FWA: • Axiomatic Systems • Composing Isometries • Transformations

3 Simulations of Practice Writing Assignments (SOPWA): 15%

In these assignments, the student will show how he plans to facilitate a discussion with their “students” about the given geometry concept while addressing given questions about certain lessons. The three writing SOPs go along with the following lessons:

SOPWA: • Axiomatic Systems • Reflections • Dilations and Similarity

3 Simulations of Practice Video Assignments(SOPVA): 15%

The student will complete these assignments by submitting a short video (5-7 minutes) of themselves responding to a mock teaching situation. The three video SOPs go along with the following lessons:

SOPVA: • Axiomatic Systems • Rotations • Dilations

3 Exam(s): 30%

There will be one midterm exam at the end of each Module. There is no final exam

Final Project: 10%

As a final project for the geometry course, students choose a situation to model based on their own preferences and what they find interesting to end the course. Options will be given to choose from or students may choose their own topic. This assignment can be done as a group of two or individually.

Letter Grades will be assigned as follows:

A	$93 \leq x \leq 100$	B-	$80 \leq x < 83$	D+	$67 \leq x < 70$
A-	$90 \leq x < 93$	C+	$77 \leq x < 80$	D	$63 \leq x < 67$
B+	$87 \leq x < 90$	C	$73 \leq x < 77$	D-	$60 \leq x < 63$
B	$83 \leq x < 87$	C-	$70 \leq x < 73$	F	$0 \leq x < 60$

Excused Absence Policies

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston [Undergraduate Excused Absence Policy](#) for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Additional policies address absences related to [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

Religious Holy Days

Students whose religious beliefs prohibit class attendance or completion of specific assignments on designated dates may obtain an excused absence. To do so, please make a written request for an excused absence and submit it to your instructor as soon as possible, to allow the instructor to make arrangements. For more information, see the Student Handbook. <http://catalog.uh.edu/index.php>

Dropping/Withdraw

If a student wants to drop or withdraw the class, it is his/her responsibility to do so by logging on <http://access.uh.edu> and completing the drop process before the drop deadline. Instructors cannot drop students for any reason.

Incompletes

An incomplete (I) may be awarded to you by your teacher if the reason is a compelling NONACADEMIC reason, you have completed virtually all course assignments AND you have a passing grade on this work.

Incompletes are NOT available to students who have done little of the coursework nor for students who have failing grades on what they have done. See your teacher to discuss eligibility and to fill out and sign the Incomplete contract. This is also required and must be signed in advance of an I being posted. Imminent failure is not an acceptable reason to be awarded an incomplete.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible on CASA or in class.

Communication via EMAIL and/or TEAMS

Email communications related to this course will be sent to your [Exchange Email Account](#) which each University of Houston student receives and will be posted on TEAMS. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your Cougarnet credentials or through Access UH. They can also be configured on [IOS](#) and [Android](#) mobile devices. Additional assistance can be found at the [Get Help](#) page.

Your instructor will be sending class emails using PeopleSoft; you are responsible for checking your UH email. Per UH Policy, notices properly addressed and so sent via PeopleSoft shall be presumed to have been received by the student. Thus, you are responsible for the content in emails sent to your UH account, regardless if your external (non-UH) email provider filters or blocks them. When emailing your instructor, it is recommended that you use a professional email address and include the course name on the subject line so that your instructor can address your questions accordingly.

Honor Principle

University of Houston students are expected to adhere to the Academic Honesty Policy as described in the UH Undergraduate Catalog. "Academic dishonesty" means employing a method or technique or engaging in conduct in an academic endeavor that contravenes the standards of ethical integrity expected at the University of Houston or by a course instructor to fulfill any and all academic requirements.

Academic dishonesty includes, but is not limited to, the following: Plagiarism; Cheating and Unauthorized Group Work; Fabrication, Falsification, and Misrepresentation; Stealing and Abuse of Academic Materials; Complicity in Academic Dishonesty; Academic Misconduct. Refer to UH Academic Honesty website and the UH Student Catalog for the definition of these terms and university's policy on Academic Dishonesty. Anyone caught cheating will receive sanctions as explained on these documents and will be reported to the department for further disciplinary action. The sanctions for confirmed violations of this policy shall be commensurate with the nature of the offense and with the record of the student regarding any previous infractions. Sanctions may include, but are not limited to: a lowered grade, failure on the examination or assignment in question, failure in the course, probation, suspension, or expulsion from the University of Houston, or a combination of these. Students may not receive a W for courses in which they have been found in violation of the Academic Honesty Policy. If a W is received prior to a finding of policy violation, the student will become liable for the Academic Honesty penalty, including F grades.

Accommodations

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students who have a disability. In accordance with Section 504 and ADA guidelines, University of Houston strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please visit The Center for Students with DisABILITIES (CSD) website at <http://www.uh.edu/csd/> for more information.

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Accommodation Forms: Students seeking academic adjustments/auxiliary aids must, in a timely manner (usually at the beginning of the semester), provide their instructor with an approved current Student Accommodation Form (paper copy or online version, as appropriate) before an approved accommodation can be implemented. Details of this policy, and the corresponding responsibilities of the student are outlined in The Student Academic Adjustments/Auxiliary Aids Policy (01.D.09) document under (STEP 4: Student Submission (5.4.1 & 5.4.2), Page 6). For more information please visit the Center for Students with Disabilities FAQs page.

Additionally, if a student is requesting a (CSD approved) testing accommodation, then the student will also complete a Request for Individualized Testing Accommodations (RITA) paper form to arrange for tests to be administered at the CSD office. CSD suggests that the student meet with their instructor during office hours and/or make an appointment to complete the RITA form to ensure confidentiality.

***Note:** RITA forms must be completed at least 48 hours in advance of the original test date. Please consult your counselor ahead of time to ensure that your tests are scheduled in a timely manner. Please keep in mind that if you run over the agreed upon time limit for your exam, you will be penalized in proportion to the amount of extra time taken.

UH CAPS Statement

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by

calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the “Let’s Talk” program, a drop-in consultation service at convenient locations and hours around campus.

http://www.uh.edu/caps/outreach/lets_talk.html

ADDITIONAL HELPFUL INFORMATION

TECHNOLOGY REQUIREMENTS:

Computer and internet access is required for this course. For the current list of minimum technology requirements and resources, copy/paste/navigate to the URL <http://www.uh.edu/online/tech/requirements>. For more information, contact the office of Online & Special Programs at UHOnline@uh.edu or 713-743-3327. In summary, students will need:

- a Functioning (updated) Computer (with microphone, speaker or earphones, and webcam)
- Reliable Internet Connection
- PDF viewer
- Ability to log in to CASA for online exams.
- Ability to watch mp4 files.
- Ability to access Microsoft TEAMS platform.
- Note that all UH students have access to MS teams with their cougarnet ID.

COVID-19 UPDATES: <https://uh.edu/covid-19/>

COOGS CARE: <https://www.uh.edu/dsaes/coogscare/>

LAPTOP CHECKOUT REQUESTS:

<https://www.uh.edu/infotech/about/planning/offcampus/index.php#do-you-need-a-laptop>

HEALTH FAQs: <https://uh.edu/covid-19/faq/health-wellness-prevention-faqs/>

STUDENT HEALTH CENTER:

<https://uh.edu/class/english/lcc/current-students/student-healthcenter/index.php>