

Historical Note:

After 1542, candidates for the Master of Arts degree at the University of Paris had to take an oath that they had read the first 6 books of the Elements

Pre-Requisite: Math 307

Time: MWF 11.00 – 11:50

Place: M 306

Instructor: Dr. Sriraman

Office: Math 301

Office Hours: MW: 9.00-9.50

Phone & E-mail: 243-6714; sriramanb@mso.umt.edu

Texts: Thirteen Books of Euclid's Elements. Text is provided free as a pdf file.

What are The Elements?

Some Definitions, 5 Common notions and 5 Postulates to deduce an orderly chain of 467 theorems!

Other Material: Compass, protractor and straightedge. Geometer's Sketchpad.

Learning Outcomes: Upon completion of this course, a student will be able to:

- Construct mathematical proofs using the axioms of Euclidean geometry;
- Explore, conjecture, and prove mathematical ideas and theorems;
- Develop a facility with geometric theorems and proofs, through hands-on exploration;
- Explain different geometries and their development, through comparisons of their axioms, and the validity of basic theorems in different geometries.

To further the learning outcomes this is the course agenda:

Agenda: We will survey different geometries with a firm basis in axiomatic Euclidean geometry. The following topics will be covered

- Geometry Explorations/Constructions using Sketchpad
- Geometry and Numbers
- Axiomatic Euclidean Geometry
- Various Non-Euclidean Geometries such as
 - Spherical Geometry
 - Fractal Geometry [time permitting]

Important Dates:

Dates	Description
August 29, 2016	Autumn classes begin
September 5, 2016	Labor Day Holiday – no classes, offices closed
November 8, 2016	Election Day, no classes, offices closed
November 11, 2016	Veteran's Day Holiday – no classes, offices closed
November 23, 2016	Student Travel Day – no classes
November 24 – 25, 2016	Thanksgiving Break – no classes, offices closed
December 13, 2016	Study Day, no classes

December 14 – 20, 2016 Final Examinations

For detailed Add/Drop dates and deadlines, refer to the last page of this syllabus

Other Information:

Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. Academic misconduct is defined as all forms of academic dishonesty and the Student Conduct Code. In particular, Student Conduct Code Section IV.a.5 identifies the following violations: Submitting false information: Knowingly submitting false, altered, or invented information, data, quotations, citations, or documentation in connection with an academic exercise

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). “Reasonable” means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, please consult <http://www.umt.edu/disability>

Grading Distribution:

Sketchpad Activities:	100
In Class contributions:	100
2 Mid-term exams	200
Final exam	100
Total:	500

Grading Scale:90-100 A ; 80-89.9 B ; 70-79.9 C ; 60-69.9 D ; Below 60 F

Sketchpad Activities

Sketchpad activities allow for a dynamic and empirical exploration and discovery of various invariant properties of objects in Euclidean geometry. Explorations and results are to be documented in a journal (a folder), which will be periodically examined. The format for each journal entry is as follows. Most of the sketches will be made available to you via Moodle.

- A. Statement of problem (Date)
- B. Investigation [Question # Answer #]
- C. Deductive Proof /Reflection : A proof of the discovered result and a paragraph summary of what you have found through your Sketchpad investigation.

In class contributions

The only way to become proficient at proofs is to write and present a lot of them. Proof in the mathematics community is a “social” activity. One presents ideas and subjects them to scrutiny. Students will be assigned to groups of 2-3 and will read/present various proofs from the Books of the Elements. This may seem intimidating at first but with time, students will become comfortable and proficient. Students will also be accountable for the assigned readings and classroom participation.

3. Mid-terms and Final

Mid-terms 1 and 2 will be given approximately 1/3 and 2/3, respectively, of the way through the semester. The final will be cumulative in the traditional sense. It will be longer than the mid-term exams and will feature some questions relating directly to material taught earlier in the course. I will assign one mid-term (as a take home) over Moodle.

SOME “FREE” ADVICE

Factors that affect your grade

- Homework: There will be homework assigned on a regular basis in the form of Sketchpad Activities and readings from the Elements, which will be reviewed periodically in class. It is your prerogative to keep up with the material.
- Attendance: Students are expected to attend class, and although class attendance is NOT a component of the course grade, absences will impact your performance since you will miss the material covered in the lectures. Late assignments will not be accepted.
- Make-ups:
- THERE ARE NO MAKE-UPS regardless of the reason. Exam make-ups will ONLY be given under

special and extenuating circumstances, such as a death in the family or illness, provided that: a note from the Health Service or doctor is furnished by the student AND permission is given by me prior to the exam. The final exam is compulsory and no exceptions can be made about the date/time at which it is held- this is decided a priori by the University Administration.

The Final Exam is scheduled for Wednesday, December 14^h, 8.00-10.00

Official Dates and Deadlines for Autumn Semester 2016

(See Bill Payment & Cancellation dates on page 2)

Instructional Days & Holidays

Dates	Description
August 29, 2016	Autumn classes begin
September 5, 2016	Labor Day Holiday – no classes, offices closed
November 8, 2016	Election Day Holiday – no classes, offices closed
November 11, 2016	Veteran’s Day Holiday – no classes, offices closed
November 23, 2016	Student Travel Day – no classes
November 24 – 25, 2016	Thanksgiving Break – no classes, offices closed
December 13, 2016	Student study day – no classes
December 14 – 20, 2016	Autumn Final Examinations, Wednesday – Tuesday (Saturday & Sunday are study days, except for Saturday-only classes which meet Saturday, December 17)

Registration, Adding, & Dropping Classes

Dates	Description
March, 2016	Autumn Semester advising numbers and class schedule available.
April 11 – April 22, 2016	Autumn semester registration begins for continuing students according to class standing within alphabetical schedule.
April 23 – September 7, 2016	Open registration for Autumn continues on CyberBear. Limited outages announced on the CyberBear home page.
August 26, 2016 (5:00 p.m.)	Friday prior to start of Autumn classes: Last day to withdraw from <u>all classes</u> for Autumn Semester without “W”s on transcript. See refund policy below. Withdrawal forms available at Griz Central Registration Counter in the Lommasson Center or online.
August 29, 2016	Autumn classes begin.
September 2, 2016	Residency reclassification questionnaires for Autumn 2016 must be received in time to have review completed prior to 15 th Class Day. Residency reclassifications may affect tuition and fee assessment.
September 7, 2016 (5:00 p.m.)	Autumn Class Day 7: Last day for students to add Autumn classes via CyberBear without consent of instructor.
September 8, 2016	Instructors must approve all Autumn class adds via electronic Override on CyberBear or paper Override form .
September 19, 2016 (5:00 p.m.)	Autumn Class Day 15: <ul style="list-style-type: none"> ✓ Last day to drop individual Autumn classes on CyberBear with refund ✓ Last day to withdraw from Autumn (drop all courses) with a partial refund – see Withdrawal Policy below. ✓ Last day to add Autumn classes with electronic Override on CyberBear or paper Override form. ✓ Last day to change Autumn credits in variable credit courses & switch grade mode in CyberBear. ✓ Last day to change Autumn grading option to or from audit. ✓ Last day to buy or refuse UM’s student health insurance coverage.
September 19, 2016 (5:01pm)	Any student not registered for at least one course (on schedule in CyberBear) must submit a Petition to Register & Pay After the Deadline . Petitions are reviewed weekly by committee and are not guaranteed approval.
September 20 – October 31, 2016 (5:00 p.m.)	Through Autumn Class Day 45: <ul style="list-style-type: none"> ✓ Autumn course adds & drops require a Course Add/Change or Course Drop form with instructor’s & advisor’s signatures. \$10 fee applies. ✓ A ‘W’ will appear on the transcript for dropped classes. No refunds. ✓ Students can change variable credit amounts and grading options (except audit) using a Course Add/Change form with instructor’s & advisor’s signatures.
September 20, 2016	Any student cancelled for non-payment must submit a Petition to Register & Pay After the Deadline . Petitions are reviewed weekly by committee and are not guaranteed approval.
October 10, 2016	Spring 2017 priority registration begins for continuing students according to class standing within alphabetical schedule. See Registrar’s Office website for the registration timetable in late September.
November 1 – MONDAY, December 12, 2016 (by 5:00 p.m.)	After Autumn Class Day 45: <ul style="list-style-type: none"> ✓ Autumn adds require a Course Add/Change form with instructor’s & advisor’s signatures. \$10 fee applies. ✓ Autumn drops require a Course Drop form with instructor’s, advisor’s, & Dean’s signatures. \$10 fee applies. ✓ A ‘WP’ or ‘WF’ will appear on the transcript for dropped classes. No refunds. ✓ Students can change variable credit amounts, or change grading options, (except audit) using a Course Add/Change form with instructor’s & advisor’s signatures.
December 12, 2016	Last day of Autumn instruction and last day to withdraw from Autumn semester (drop all classes) by 5:00 p.m.
December 13, 2016	Student study day – no classes
December 14 – 20, 2016	Autumn finals week (Wed. – Tues.; Sat. & Sun. are study days, except for Saturday-only classes which meet Sat.)

Bill Payment & Cancellation Deadlines

Dates	Description
July 25, 2016	Registration Bills available to view and pay on CyberBear at 1:00 p.m.
August 8 – August 21, 2016	<p>“Save My Classes” button available in CyberBear. If you can’t pay by August 21st, the “Save My Classes” function lets us know you still plan to attend, but need some extra time to pay.</p> <p>NOTE: Registration Bills that are SAVED AND NOT paid by midnight September 7, 2016 will be subject to the first \$80.00 Late Registration Fee assessed at 12:01 a.m. on September 8, 2016.</p>
August 21, 2016 By midnight	<p>AUTUMN PAYMENT DEADLINE - Students must pay by this date or have clicked the “Save My Classes” button in CyberBear to avoid class cancellation.</p> <p>IMPORTANT! - If financial aid, VA Benefits, or other outside funds cover all costs (owe \$0 or negative balance), you must still click the “Pay Registration Bill” button in CyberBear to be considered “Paid”. Failure to do this by the deadline will result in class cancellation. Print or save the confirmation screen for your records!</p>
August 22, 2016	<p>AUTUMN SEMESTER CANCELLATION FOR NON PAYMENT OF REGISTRATION BILL</p> <p>Any student who has not paid their registration bill <u>or</u> used the “Save My Classes” function will have their classes cancelled. This includes financial aid, VA benefit, and other outside funding recipients.</p>
August 22, 2016	Financial aid begins to disburse nightly to student accounts. Students must have met all financial aid requirements and completed the Registration Payment process before aid will disburse.
August 22 – September 19, 2016	Students with financial aid who drop, add, change classes or withdraw from all classes may see an adjustment of their financial aid and may be required to repay a portion of it. Call (406) 243-2223 for info.
August 23, 2016	First refund file processed for Autumn Semester 2016. Refunds are processed on Tuesdays and Fridays throughout the term. Exceptions may occur due to holidays. Must have completed registration payment process and met all financial aid requirements for financial aid to disburse and refund to be issued.
September 8, 2016 @ 12:01am	\$80 Late Registration Fee assessed to students who have not paid their Registration Bill.
September 8 – September 19, 2016	\$80 Late Registration Fee in effect for all newly registering students! Newly registering students between September 8 & September 19, 2016 (Class Day 15) will automatically be assessed the \$80 Late Registration Fee.
September 19, 2016 By midnight	<p>PAYMENT DEADLINE for Autumn Semester 2016.</p> <p>IMPORTANT! - If financial aid, VA Benefits, or any other funding is covering all costs (owe \$0 or negative balance), you must still click the “Pay Registration Bill” button in CyberBear. Failure to do this by the deadline will result in class cancellation. Print or save the confirmation screen for your records!</p>
September 20, 2016	Any student who has not completed the Registration Bill payment process will be cancelled
September 20, 2016 and beyond	ADDITIONAL \$80 late registration fee (for a total of \$160) assessed to any student approved to re-register or newly register via the Petition to Register & Pay After the Deadline .

Autumn Withdrawal Procedures & Refund Information

- ✓ **Withdrawal definition:** Dropping all courses in a semester.
- ✓ Withdrawals cannot be done by dropping all classes on CyberBear. Students must turn in a [Semester Withdrawal form](#).
- ✓ Withdrawal forms must be **RECEIVED** at Griz Central Registration Counter by **5:00 p.m.** on the deadlines listed below to receive appropriate refund of tuition & fees. More information at (406)243-2223.

Withdrawal Deadlines	Refund Percentage on Tuition & Fees (less \$30 Registration Fee)	Period of Withdrawal	Comments
August 26, 2016 by 5:00 p.m.	100%	On or before 8/26/16	Withdrawing from <u>all courses</u> for Autumn Semester 2016 is a 100% refund of tuition and fees.
September 2, 2016 by 5:00 p.m.	90%	8/27 – 9/2/16	Withdrawing from <u>all courses</u> for Autumn Semester 2016 is a 90% refund of tuition and fees.
September 12, 2016 by 5:00 p.m.	75%	9/3 – 9/12/16	Withdrawing from <u>all courses</u> for Autumn Semester 2016 is a 75% refund of tuition and fees.
September 19, 2016 by 5:00 p.m.	50%	9/13 – 9/19/16	Withdrawing from <u>all courses</u> for Autumn Semester 2016 is a 50% refund of tuition and fees.
On and after September 20, 2016	0%	9/20/16 and after	Withdrawing from all courses for Autumn Semester 2016 on or after September 20, 2016 is a 0% refund of tuition and fees.

Deferred Payment Plan Deadlines

Dates	Description
June 22, 2016 – September 15, 2016	Deferred Payment Plan application available in CyberBear (Payment and Account menu). A \$30 administrative fee will be charged. Deferred Payment Plan application will be unavailable after 5:00 p.m. September 15.
July 25, 2016 – September 19, 2016	1 st Deferred Payment Due upon initial payment of Registration Bill.
October 1, 2016	2 nd Deferred Payment Due
October 4, 2016	\$15 late fee charged if 2 nd DPP installment not paid in full
November 1, 2016	3 rd Deferred Payment Due
November 2, 2016	\$15 late fee charged if 3 rd DPP installment not paid in full
December 1, 2016	4 th Deferred Payment Due
December 2, 2016	\$15 late fee charged if 4 th DPP installment not paid in full

Graduation Application Deadlines

Dates	Description
March 1, 2016 – June 6, 2016	Summer 2016 Late graduation applications accepted with \$40 fee and additional \$15 late fee. Applications received after deadline will be reviewed for the next term.
April 29, 2016	Autumn 2016 Graduation Applications Due – Department approved undergraduate degree applications for graduation are due with a \$40 application fee paid in treasury (Lommasson 237). <i>Applications should be submitted to departments 14 days in advance of this deadline.</i>
May 2, 2016 – October 3, 2016	Autumn 2016 Late Graduation Applications accepted with \$40 fee and additional \$15 late fee. Applications received after deadline will be reviewed for the next term.
October 28, 2016	Spring 2017 Graduation Applications Due – Department approved undergraduate degree applications for graduation are due with a \$40 application fee paid in treasury (Lommasson 237). <i>Applications should be submitted to departments 14 days in advance of this deadline.</i>
October 31, 2016 – March 6, 2017	Spring 2017 Late Graduation Applications accepted with \$40 fee and additional \$15 late fee. Applications received after deadline will be reviewed for the next term.

For assistance or questions about dates and deadlines, please call the Registrar's Office at (406)243-2995 or email registration@umontana.edu.

ⁱ The previous version of this document stated Spring 2017 priority registration was tentatively slated to begin October 17. This date has been amended to the official start time of October 10.