

MATH 429

History of Mathematics

Spring 2016

Pre-Requisite: Math 307
Time: MWF 12.10 – 1:00
Place: Math 103
Instructor: Dr. Sriraman
Office: Math 301
Office Hours: MWF: 11.10-12.00
Phone & E-mail: 243-6714; sriramanb@mso.umt.edu

Texts: There are several texts used for this course which are all provided to the students. We will read selections of these texts.

Smorynski, C. (2008). *History of Mathematics: A supplement*. Springer Science and Business
Gonzalez-Velasco, E. (2010). *Journey through mathematics: Creative episodes in its history*. Springer Science and Business
Joseph, G. G. (2011). *The Crest of the Peacock: Non-European Roots of Mathematics*. Princeton University Press.

Learning Goals

1. To imbue a sense of the development of mathematical ideas over time.
2. To develop a knowledge of the times and places where ideas developed, and the ways in which such ideas were transmitted across cultures and time.
3. To learn about the people behind mathematics that is taught today, and to understand the contributions of other cultures to mathematics.
4. To improve the students ability to write in the context of mathematics; i.e., expository and scientific writing skills.

To further the learning outcomes over the course of the semester, lectures and readings will cover

- Historical techniques/methods for computing trigonometric functions and original series representations.
- algebra (closed solution of the cubic and quartic using Tschirnhaus transformations), analysis (approximating roots and irrational numbers such as π and logarithms), and Calculus (finite differences, geometric techniques developed by Archimedes, Fermat, Newton and Leibniz).
- Assignments that involve expository and scientific writing skills

In addition students will develop a critical stance in

- assessing popular myths about mathematics (science) or competing histories of the origins and/or models of the development of mathematics (science)
- assessing whether mathematics (science) is value-free; [consider gender, class, race, nonwestern approaches and contributions, etc.]

Note: The course satisfies the upper-division writing requirement for Math majors.

Important Dates: (For detailed Add/Drop dates, Spring deadlines, refer to the last page of this syllabus)

January 25, 2016
February 15, 2016

April 4 – 8, 2016
May 6, 2016
May 9 – 13, 2016

Spring classes begin
President's Day Holiday – no classes, offices closed
Spring Break – no classes
Last instructional day of Spring
Spring Final Examinations

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:

In class Contributions:	120
3 Formative Writing Assignments:	120
1 Mid-term:	100
Research Paper:	160
Total:	500

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

In class contributions

In order to succeed in this course, it is important to complete the reading assignments and come to class prepared. There will be 2 targeted readings assigned to groups [to be determined]. For each reading, your group will:

- A. Prepare a summary for the class with several “specific” questions for discussion. The summary will be typed and include the relevant history [and time period], the relevant individual(s) and the relevant mathematics (with attention to specific techniques). The summary will be approximately 3 pages [single spaced].
- B. The group will lead a class discussion [Yes- the class will also have to read your selection]
- C. Presentation of specific techniques. Each member of the group will present/solve problems using the relevant mathematical technique learned from the reading.

[Two class periods will be allotted to each group]

Formative Writing Assignments

The only way to become proficient at expository scientific writing is to write and rewrite and rewrite until your ideas become coherent and accessible to the reader. Writing in the mathematics community is a necessary activity, one in which ideas are subjected to scrutiny in the form of peer-review. This may seem intimidating at first but with time, you will become comfortable and proficient. The two formative writing assignments are as follows:

1. A 1000 word biography of a 20th century female mathematician [details will follow]. Due 02/12
2. An obituary of a non-Western mathematician. Please refer to the Washington Post or the New York Times or The Economist for guidance in writing. Use one as your model and turn it in with your own work. (800-1000 words). Due 02/29
3. A 2000 word historical research paper proposal [details will follow]. Due 03/25

Mid-term

A mid-term will be given in March. It will cover the content from the lectures.

Research Paper

The research paper is a major component of this course. The paper should be written in APA style [6th edition or higher]. Please refer to the appropriate manual for guidelines. All papers must be typed and submitted both in paper and electronically as a word document. You will have the opportunity to rewrite your paper two times provided you adhere to the deadlines. The point of submitting earlier drafts is for you to receive feedback in improving your writing. Papers that are submitted on May 05, without any prior feedback from me will receive a 20% deduction. The history of a mathematics topic should be chosen from a list that I will provide to you. It can focus on tracing the evolution of a topic across time, or it can be a period piece that focuses on the development of a mathematical topic or area, and puts it in the context of the period of its development. This is a broad paper that includes appropriate events in the world of mathematics during that time, and also the cultural history of the time period. The final paper should be around 5000 words.

Due dates for first draft- 04/11, second draft- 04/25, and final draft 05/06

Important Notes

SOME “FREE” ADVICE

Factors that affect your grade

- Readings/Lecture notes: 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.
- This class is a lecture-discussion class and an upper division writing class. Your grade therefore depends on attendance and participation in class, and also depends on your completing the readings in the books, your work on in-class assignments, and finally your research and writing for your papers. Come to class, work hard, participate in the planned activities, and you will do well in this course. Good luck and welcome to 429.

Official Dates and Deadlines for Spring Semester & Wintersession 2016

Registration, Adding, & Dropping Classes

Dates	Description
Early October, 2015	Spring Semester/Wintersession advising numbers and class schedule available.
October 19 – October 30, 2015	Spring Semester/Wintersession registration begins for continuing students according to class standing within alphabetical schedule.
October 31, 2015 – February 2, 2016	Open registration for Spring continues on CyberBear. Wintersession open registration ceases January 4 th @5pm. Limited outages will be announced on the CyberBear home page.
January 4, 2016 (5:00pm)	Wintersession classes begin. Last day to add Wintersession classes via CyberBear without consent.
January 6, 2016 (5:00pm)	<ul style="list-style-type: none"> ✓ Last day to drop individual Wintersession classes on CyberBear with refund (only partial refund if <i>not</i> taking Spring classes per Semester Withdrawal policy – see Business Services). ✓ Last day to add Wintersession classes with Registration Override slip. ✓ Last day to change Wintersession credits in variable credit courses & switch grade mode in CyberBear. ✓ Last day to change Wintersession grading option to or from audit.
January 7 - 13, 2016 (5:00pm)	Through Wintersession Day 8: <ul style="list-style-type: none"> ✓ Wintersession course adds & drops require a Course Add/Change or Course Drop form with instructor's signature. \$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 signature.
January 14 - 21, 2016 (5:00pm)	After Wintersession Day 8: <ul style="list-style-type: none"> ✓ Wintersession adds require a Course Add/Change form with instructor's signature. \$10 fee applies. ✓ Wintersession drops require a Course Drop form with instructor's and 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 signature.
January 21, 2016	Last day of Wintersession instruction. Last chance to make changes or withdraw from Wintersession by 5pm.
January 22, 2016	Wintersession finals.
January 22, 2016 (5:00pm)	Friday prior to start of Spring classes: Last day to withdraw from <u>all classes</u> for Spring Semester without "W"s on transcript. See refund policy below. Withdrawal forms available at Griz Central Registration Counter in the Lommasson Center or online.
January 25, 2016	Spring classes begin.
January 29, 2016	Residency reclassification questionnaires for Spring 2016 must be received in time to have review completed prior to 15 th Class Day. Residency reclassifications may affect tuition and fee assessment.
February 2, 2016 (5:00pm)	Spring Class Day 7: Last day for students to add Spring classes via CyberBear without consent.
February 3, 2016	Instructors must approve all Spring class adds via paper or electronic Registration Override on CyberBear.
February 12, 2016 (5:00pm)	Spring Class Day 15: <ul style="list-style-type: none"> ✓ Last day to drop individual Spring classes on CyberBear with refund ✓ Last day to withdraw from Spring (drop all classes) with a partial refund – see Withdrawal Policy below. ✓ Last day to add Spring courses with Registration Override slip or Electronic Override on CyberBear. ✓ Last day to change Spring credits in variable credit courses & switch grade mode in CyberBear. ✓ Last day to change Spring grading option to or from audit. ✓ Last day to buy or refuse student health insurance or add clinical health fee.
February 13 – March 28, 2016 (5:00pm)	Through Spring Class Day 45: <ul style="list-style-type: none"> ✓ Spring 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 courses. 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.
March 29 – May 6, 2016 (by 5:00pm)	After Spring Class Day 45: <ul style="list-style-type: none"> ✓ Spring adds require a Course Add/Change form with instructor's & advisor's signatures. \$10 fee applies. ✓ Spring 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.
May 6, 2016	Last day of Spring instruction and last day to withdraw from Spring semester (drop all classes) by 5:00pm
May 9 – May 13, 2016	Spring finals week.

Bill Payment & Cancellation Deadlines

Dates	Description
December 7, 2015	Registration Bills available to view and pay on CyberBear at 1:00pm
January 4 – January 18, 2016	<p>“Save My Classes” button available in CyberBear. If you can’t pay by January 18th, 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 February 2, 2016 will be subject to the first \$80.00 Late Registration Fee assessed at 12:01am on February 3, 2016.</p>
January 18, 2016 By midnight	<p>SPRING/WINTERSESSION PAYMENT DEADLINE - Students must pay by this date or have clicked the “Save My Classes” button in CyberBear to avoid class cancellation. Print or save the confirmation screen for your records!</p> <p>IMPORTANT! - If financial aid, VA Benefits, or other outside funds cover all costs, 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 cancellation of classes. Print or save the confirmation screen for your records!</p>
January 18, 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.
January 18 – February 12, 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.
January 20, 2016	<p>SPRING 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>
January 20, 2016	First refund file processed for Spring 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.
February 2, 2016 @ 11:59pm	Registration Bill payment due to avoid \$80 late registration fee assessment at 12:01am on February 3rd.
February 3, 2016 @ 12:01am	\$80 Late Registration Fee assessed to students who have not paid their Registration Bill.
February 3 – February 12, 2016	\$80 Late Registration Fee in effect for all newly registering students! Newly registering students between February 3 & February 12, 2016 (Class Day 15) will automatically be assessed the \$80 Late Registration Fee.
February 15, 2016 By midnight	<p>PAYMENT DEADLINE for Spring Semester 2016.</p> <p>IMPORTANT! - If financial aid, VA Benefits, or any other funding is covering all costs, 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>
February 17, 2016	Any student who has not completed the Registration Bill payment process will be cancelled from classes.
February 17, 2016	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.

Spring Withdrawal Procedures & Refund Information

- ✓ **Withdrawal definition:** Dropping all courses in a semester after payment process is complete.
- ✓ 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 pm** on the deadlines listed below to receive appropriate refund of tuition & fees. More information at umt.edu/withdrawal.

Withdrawal Deadlines	Refund Percentage on Tuition & Fees (less \$30 Registration Fee)	Period of Withdrawal	Comments
January 22, 2016 by 5:00pm	100%	On or before 1/22/16	Withdrawing from <u>all courses</u> for Spring Semester 2016 is a 100% refund of tuition and fees.
January 29, 2016 by 5:00pm	90%	1/23 – 1/29/16	Withdrawing from <u>all courses</u> for Spring Semester 2016 is a 90% refund of tuition and fees.
February 5, 2016 by 5:00pm	75%	1/30 – 2/5/16	Withdrawing from <u>all courses</u> for Spring Semester 2016 is a 75% refund of tuition and fees.
February 12, 2016 by 5:00pm	50%	2/6 – 2/12/16	Withdrawing from <u>all courses</u> for Spring Semester 2016 is a 50% refund of tuition and fees.
On or after February 13, 2016	0%	2/13/16 and after	Withdrawing from all courses for Spring Semester 2016 on or after February 13, 2016 is a 0% refund of tuition and fees.

Deferred Payment Plan Deadlines

Dates	Description
October 19, 2015 – February 10, 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 5:00pm February 10.
December 7, 2015 – February 15, 2016	1 st Deferred Payment Due upon initial payment of Registration Bill.
March 1, 2016	2 nd Deferred Payment Due
March 2, 2016	\$15 late fee charged if 2 nd DPP installment not paid in full
April 1, 2016	3 rd Deferred Payment Due
April 2, 2016	\$15 late fee charged if 3 rd DPP installment not paid in full
May 1, 2016	4 th Deferred Payment Due
May 3, 2016	\$15 late fee charged if 4 th DPP installment not paid in full

Graduation Application Deadlines & Commencement Information

Dates	Description
October 31, 2015 – March 7, 2016	Spring 2016 Late Graduation Applications accepted with \$40 fee and additional \$15 late fee. Applications received after March 7 will be reviewed for the next term.
February 26, 2016	Summer 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>
February 27 – June 6, 2016	Summer 2016 Late graduation applications accepted with \$40 fee and additional \$15 late fee. Applications received after June 6 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>
April 30 – October 3, 2016	Autumn 2016 Late Graduation Applications accepted with \$40 fee and additional \$15 late fee. Applications received after October 5 will be reviewed for the next term.
May 14, 2016	Commencement Ceremonies 2016
October 28, 2016	Spring 2017 Graduation Applications Due – Department approved undergraduate degree applications for graduation are due with a \$40 application fee paid at treasury (Lommasson 237). <i>Applications should be submitted to departments 14 days in advance of this deadline.</i>

Instructional Days & Holidays

Dates	Description
January 4, 2016	Wintersession classes begin
January 18, 2016	Martin Luther King, Jr. Day Holiday – no classes, offices closed
January 22, 2016	Wintersession Final Examinations
January 25, 2016	Spring classes begin
February 15, 2016	President's Day Holiday – no classes, offices closed
April 4 – 8, 2016	Spring Break – no classes
May 6, 2016	Last instructional day of Spring
May 9 – 13, 2016	Spring Final Examinations

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