Course Number and Title: Math 6310 Modern Algebra I  
Semester and Year: Fall 2020  
Instructor: Gordan Savin  
   Email: savin@math.utah.edu  
   Zoom Handle: html address  
   Office: LCB 205  
   Phone: 801 809 4817  
Accessibility & Support: Office hours: MWF 11-12 by zoom. You can also contact me by phone or email, and we can arrange a zoom meeting at other time.

COURSE DESCRIPTION
3 Credit Hours. Prerequisites: "C" or better in MATH 5320.

COURSE DETAILS
➢ Course Type: In-person,  
➢ Location & Meeting Times: MWF 12:55PM - 01:45PM, SFEBB 130.  
➢ Recommended In-Person Attendance In-Person Attendance is strongly encouraged but not required. Students may elect not to attend class in-person with no penalty and do not need to seek an official accommodation to participate online, rather than in-person. Please do not come to class if you are experiencing COVID-19 symptoms. Remember to maintain social distancing at all times.  
➢ COVID-19 Considerations: Students must self-report if they test positive for COVID-19 via coronavirus.utah.edu. Please do not come to class if you are experiencing COVID-19 symptoms. Remember to maintain social distancing at all times. Face coverings are required for students and faculty. Based on CDC guidelines, the university requires everyone to wear face coverings in shared public spaces on campus, including our classroom. As a reminder, when I wear a face covering, I am protecting you. When you wear a face covering, you are protecting me and all of your classmates. If you forget your face covering, I will ask you to leave class to retrieve it. If you repeatedly fail to wear a face covering in class, I will refer you to the Dean of Students for a possible violation of the Student Code. Note that some students may qualify for accommodations through the Americans with Disabilities Act (ADA). If you think you meet these criteria and desire an exception to the face covering policy, contact the Center for Disability and Access (CDA). Accommodations should be obtained prior to the first day of class so that I am notified by CDA of any students who are not required to wear a face covering.  
➢ Course Materials:
➢ Additional course materials: Homework and lecture material will be available on Canvas.
➢ Technical requirements:  
   ○ You need a Zoom application on a laptop/desktop to be able to use whiteboard function.

CONTENT OVERVIEW
Math 6310 — Algebra I

• Rings: ideals, quotient rings, group rings, matrix rings, division rings, commutative rings, prime and maximal ideals, group of units, principal ideal domains, unique factorization domains, structure theorem for modules over a principal ideal domain and its applications to abelian groups and to linear algebra, rational and
Jordan forms, eigenvectors, eigenvalues, minimal and characteristic polynomials, Cayley–Hamilton Theorem.

- Module theory: free modules, submodules, quotient modules, tensor, symmetric and exterior products of modules, projective and injective modules, exact sequences, complexes, homology, connecting homomorphisms, Tor and Ext functors.

- Commutative ring theory: polynomial rings, Gauss’ Lemma, Eisenstein’s criterion, localization and field of fractions, noetherian rings, Hilbert’s Basis Theorem, integral extensions, algebraic sets, Hilbert’s Nullstellensatz.

COURSE EXPECTED LEARNING OUTCOMES
Students should acquire mastery in the above topics, to be used in the future research.

COURSE DESIGN
This will be mostly in person class. We plan to cover Parts II, III and V of the text. For the mandatory online periods I will write up lecture notes for each individual lecture and post them on canvas several days in advance. The notes will include some easy exercises. Your job is to read the notes and (try to) do the exercises. Live Zoom conference will be held during the regularly scheduled hours. This will be an informal lecture/discussion where we can go over the main points and do the exercises.

CLASS SCHEDULE & IMPORTANT DATES

Mandatory Online Instruction Periods: All classes will be online the weeks of September 28-October 10 and November 30-December 3.

Exam Dates: October 12 and November 25

Official Drop/Withdraw Dates: The last day to drop classes is September 04; the last day to withdraw from this class is October 16. Please check the academic calendar for more information pertaining to dropping and withdrawing from a course. Withdrawing from a course and other matters of registration are the student’s responsibility.

Holidays: There will be no class on Monday, September 7 (Labor Day) and November 26-29 (Thanksgiving break).

COMMUNICATION
- All course materials, such as lecture slides, assignments, solutions, grades, etc. will be posted on the Course Canvas site. Class announcements will be done via email through the Canvas server. You will be responsible for any information contained in them as well as the information announced in class.
- It is your responsibility to also regularly check your Umail (make sure you set up forwarding if you do not check it regularly), your Umail is the only way for me to communicate privately with you, there will be occasions during the semester that we may need to reach out to you individually (e.g. regarding a grade or assignment) and it is in your best interest to respond promptly.
- Feel free to contact me by email for questions at savin@math.utah.edu, I will do my best to answer emails promptly. I would like to encourage you to email me only if it is something personal that requires individual attention, if instead you have questions about logistics of the class, course material and assignments, and anything else your classmates may wonder as well, please post a question on the Discussions Board instead. This way the information is shared quickly to the entire class, and each of you can benefit from seeing other classmates’ questions.
I will always do my best to ensure the communication relevant to the course is clear and transparent, it is your responsibility as well to keep yourself updated by regularly checking: the announcements on Canvas, your Umail, the posts on the Discussions Board, and pay attention to the announcements given in class and Discussion Section.

Course Canvas Page: Students are expected to log in and check canvas everyday for posted announcements and assignments. Students are also strongly advised to set up notifications for canvas so they do not miss any important notifications.

ASSIGNMENTS, ASSESSMENT & GRADING

- The grade is based on the total points earned and the grading scale is (approximately) 91-100% = A, 81-90=B, 71-80=C, 61-70=D.
- Two exams each worth 20% and six-seven homework assignments total of 60% of the grade, approximately. Homework is due every other Monday, starting with September 07. Homework should be tex-ed and turned in in pdf format by email. Homework will be posted in both pdf and tex versions which will give you a template to work on. No final exam.
- It is the student’s responsibility to ensure the accuracy of all recorded homework, quizzes, online assignments, and exam grades. Also you should keep as record all your graded assignments. If you see any error in your grades on Canvas, reach out to the instructor as soon as possible, or at the latest within two weeks from when the assignment was returned.

Late Assignments/Missed Assignments/Regrading Policies: If you cannot make to the exam, or if you need extra time to finish the assignment, please let me know in advance, I will try to be as flexible and accommodating as possible.

Incompletes: According to university policy, to be considered for an incomplete, a student must have 20% or less of the course work remaining and be passing the course with a C or better. You must request an incomplete grade and I will consider giving that grade only under exceptional circumstances.

ACADEMIC CODE OF CONDUCT

Students are encouraged to review the Student Code for the University of Utah: https://regulations.utah.edu/academics/6-400.php. In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one’s work, and/or inappropriately collaborating. A student who engages in academic misconduct as defined in Part I.B. may be subject to academic sanctions including but not limited to a grade reduction, failing grade, probation, suspension or dismissal from the program or the University, or revocation of the student's degree or certificate. Sanctions may also include community service, a written reprimand, and/or a written statement of misconduct that can be put into an appropriate record maintained for purposes of the profession or discipline for which the student is preparing.

ADDITIONAL POLICIES AND RESOURCES

Discrimination and Harassment: If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or Office of the Dean of Students, 270 Union Building, 801-581-7066. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS). Please see Student Bill of Rights, section E http://regulations.utah.edu/academics/6-400.php. I will listen and believe you if someone is threatening you.

Names/Pronouns. Canvas allows students to change the name that is displayed AND allows them to add their pronouns to their Canvas name. Class rosters are provided to the instructor with the student's legal name as well as “Preferred first name” (if previously entered by you in the Student Profile section of your CIS account, which managed can be managed at any time). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class or on assignments. Please advise me of any name or pronoun changes so I can help create a learning environment in which you, your name, and your pronoun are respected. If you need any assistance or support, please reach out to the LGBT Resource Center. https://lgbt.utah.edu/campus/faculty_resources.php
English Language Learners. If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (http://writingcenter.utah.edu/); the Writing Program (http://writing-program.utah.edu/); the English Language Institute (http://continue.utah.edu/eli/). Please let me know if there is any additional support you would like to discuss for this class.

The Americans with Disabilities Act:
The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University’s Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS).

Campus Safety: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu