MATH 251 Abstract Algebra I (3-credit)

**Fall Semester - 2020**

**Mode of Instruction:** Online

**Time:** MWF 2:20 – 3:10 PM

**Class Room:** NA

**Course Website:** www.uvm.edu/~tdupuy

**Instructor:** Taylor Dupuy

**Office:** Innovation 439E

**E-mail:** [tdupuy@uvm.edu](mailto:tdupuy@uvm.edu)

**Office Hours:** TBD office hourse will be held on Zulip. (or Microsoft Teams as a backup)

**COURSE CATALOG DESCRIPTION:**

**Math 251 – Abstract Algebra I.** Basic theory of groups, rings, fields, homomorphisms, and isomorphisms. Prerequisites: [MATH 141](http://catalogue.uvm.edu/search/?P=MATH%20141) or [MATH 151](http://catalogue.uvm.edu/search/?P=MATH%20151) or C- or better in [MATH 052](http://catalogue.uvm.edu/search/?P=MATH%20052); [MATH 122](http://catalogue.uvm.edu/search/?P=MATH%20122) or [MATH 124](http://catalogue.uvm.edu/search/?P=MATH%20124).

# TEXT: Abstract Algebra, 3rd edition, by Dummit and Foote, John-Wiley, ISBN 0-471-43334-9

# Errata pages for the book:

# --As an Adobe Acrobat PDF file: [errata.pdf](http://www.cems.uvm.edu/%7Efoote/errata_3rd_edition.pdf)

# --As a TeX DVI file: [errata.dvi](http://www.cems.uvm.edu/%7Efoote/errata_3rd_edition.dvi)

# COURSE OBJECTIVES and LEARNING OUTCOMES:

This course will cover the material in Chapters 1-5 (the basic theory of groups, subgroups, and quotient groups), portions of Chapter 6 (some topics in greater depth dealing with finite groups, including solvable and nilpotent groups). This course forms the basis for the continued study of the basic algebraic structures (groups, rings, and fields) in the sequel: Math 252.

In addition to learning about group theory, you will also learn about the mathematical review process.

Collaboration on homework is both allowed and encouraged - discussing solutions to mathematics problems is one of the best ways to learn mathematics. Any work submitted must be your own and honest - for example, you must write up your own solutions and be prepared to publicly defend in class any solution you submit. Any joint work should be acknowledged explicitly. Solutions simply copied from some other source without attribution are intellectually dishonest and can be the grounds for dismissal.

**Meeting Pattern, attendance and expectations**

This course is designated as online.

**Classroom Environment Expectations:**

The [Green and Gold Promise](https://www.uvm.edu/deanofstudents/green-and-gold-promise) clearly articulates the expectations that UVM has for students, faculty, and staff to remain compliant with all COVID-19 recommendations from the federal CDC, the State of Vermont, and the City of Burlington. This include following all rules regarding facial coverings and social distancing when attending class. If you do not follow these guidelines, I will ask you to leave the class. If you forget your mask, you cannot enter the class and should go back and retrieve your mask. The [Code of Student Conduct](https://www.uvm.edu/sites/default/files/UVM-Policies/policies/studentcode.pdf) outlines policies related to violations of the Green and Gold Promise. Sanctions for violations include fines, educational sanctions, parent notification, probation, and suspension.

**Quarantine / Isolation:**

If you need to isolate or quarantine, Student Health Services will inform the Dean’s office. I recommend contacting me and the [CEMS Office of Student Services](https://www.uvm.edu/cems/student-services) as early as possible to make arrangements to discuss any missed work.

**Recording Class Sessions:**

Our sessions will *not* be audiovisually recorded although we reserve the right to do so if we feel it will be beneficial to students later. My initial thoughts are that we shouldn’t do this in order to encourage question asking and participation.

**GRADING:**

Participation 20%

Homework 80%

-----------------------------

Total 100%

The minimum passing grade is 60%. Other grades will be assigned as shown below.

|  |  |
| --- | --- |
| **Letter Grade** | **Numerical Grade** |
| A+ | 97-100 |
| A | 94-97 |
| A- | 90-93 |
| B+ | 87-89 |
| B | 83-86 |
| B- | 80-82 |
| C+ | 77-79 |
| C | 73-76 |
| C- | 70-72 |
| D+ | 67-69 |
| D | 63-66 |
| D- | 60-62 |
| F | <60 |

A statistical scale may be used at instructor’s judgment in addition to the above scale.

**COURSE ACTIVITIES:**

We will meet at 2:20-3:10 every MWF on Zulip. Activities will vary, but I’m hoping to get a lot of interaction. Here are some sample activities I have planned.

* Group meetings with randomized groups.
* Puzzles like the “prisoner problem’’, “picture frame problem”, and “Rubik’s cube”
* YouTube live streams.
* YouTube premieres.

I’m hoping to mix things up enough to keep you all engaged.

**HOMEWORK:**

# I have poured many hours this summer developing some software for double blind peer reviewing of assignments and that software is available here:

<https://github.com/tdupu/submission_tools>

# The intention here is two fold: 1) to keep the course flexible for the inevitable chaos that will be Fall 2020. 2) To introduce you to the peer review process in Mathematics.

# The system has been designed to respect your time during the pandemic. There will be bugs and I thank you in advance for your patience.

--Your homework score is the average of your assignment scores.

--Each assignment is going to be subdivided into problems. And each assignment score is the average of the three best problem scores for that assignment.

--You may submit as many problems as you would like. But for each submission you will need to review two others (and will be notified by email of reviews)

\* btw this is the ratio referee papers in real life.

\* the review process has been designed to be brief.

-- Every submission will be reviewed twice and final scores on problems are calculated as follows: an initial score is given which is the raw average of two reviewer scores. After this is calculated a weighted average based on how each reviewer performed is computed.

(initial score) = s1 = (r1 + r2)/2

(final score) = s2 = w1\*r1 + w2\*r2

where

ri = score from reviewer i where i=1,2

wi = ti/(t1+t2) for i=1,2

ti = reviewer’s initial score on the assignment.

**PARTICIPATION:**

To mimic real lift, participation scores are

1. based on attendance of group meetings
2. promptness of reviews.

Each such event is given a 1 or a 0 and your final participation score is the average of each of these event. If you submit your reviews within a week you get a 1 per review. If you simply state that you are in your Zulip meeting a bot will record your presence in the chat.

**THE UPLOAD PROCESS:**

The upload page that processes submissions and reviews is located here:

https://tdupuy.w3.uvm.edu/algebra-one/20/f/upload.html

Since the upload page only accepts PDFs we recommend that you use LaTeX or some sort of scanning app for your homework. [Genius Scan (on iOS) or TinyScanner (on Android)] *NOTE THAT ALL SUBMISSIONS MUST BE UNDER 2MB (which is generous)!*

Submissions are locked at 12AM after submission.

Reviews are locked 12AM after posting.

Reviews will be due one week from when they are received.

Although due dates are not currently impose we reserve the right to impose due dates if it seems like the class as a whole is not making progress.

**REQUIRED SOFTWARE AND PLATFORMS:**

Please read this technology check list to make sure you are ready for classes. <https://www.uvm.edu/it/kb/student-technology-resources/>  
Students should contact the Helpline (802-656-2604) for support with technical issues.

This course uses resources in different formats. Please make sure that you can open a PDF document and watch a YouTube video. Adobe Acrobat Reader is needed to view PDF documents. If you do not have adobe reader on your computer you can download it for free from the Adobe website at <http://www.adobe.com>.

**Zulip**

(1) deliver synchronous material, (2) participate in discussions and group activities, and (3) hold weekly office hours. I have some python scripts I have written for random groupings of students which I am hoping will facilitate discussion. If this doesn’t work we have MS Teams as a backup plan.

**MS Teams**

This is our backup plan should Zulip fail. In the event of a Zulip failure, MS Teams will be used to (1) deliver synchronous lectures, (2) participate in discussions and group activities, and (3) hold weekly office hours. Please [follow this link](https://www.uvm.edu/it/kb/article/teams/) for instructions to download MS Teams. When you login, you should be able to see *MATH 251* MS Team.

**YouTube**

The asynchronous material will be provided by YouTube. A list of material and how it relates to each topic can be found on YouTube.

**LaTeX or Genius Scan**

All homework is going to be submitted via PDF on the course submission page. Because of this students will need to either use LaTeX to typeset their homework or use a scanning app like Genius scan to scan their handwritten assigments: https://apps.apple.com/us/app/genius-scan-pdf-scanner/id377672876

**Netiquette**

Netiquette stands for Network Etiquette. It refers to proper behavior while interacting online. The golden rule of netiquette is essentially to treat people as you would want to be treated. Please be polite and considerate. Think about whether your comment could cause hurt feelings. Be careful about how your words can come across because misunderstandings can be common online. [Read this](http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf) to learn more about netiquette.

**Inclusive Learning Environment**

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

**Academic Integrity**

Offences against the **Code of Academic Integrity** are deemed serious and insult the integrity of the entire academic community. This policy addresses plagiarism, fabrication, collusion, and cheating. [https://www.uvm.edu/sites/default/files/UVM-Policies/policies/acadintegrity.pdf (PDF link)](https://www.uvm.edu/sites/default/files/UVM-Policies/policies/acadintegrity.pdf).

Any suspected violations of the code are taken very seriously and will be forwarded to the [Center for Student Conduct](https://www.uvm.edu/sconduct) for further intervention.

**Code of Student Conduct:**

[https://www.uvm.edu/policies/student/studentcode.pdf (PDF link)](https://www.uvm.edu/policies/student/studentcode.pdf)

**COVID-19 Policy Statements**

**General statement regarding potential changes during the semester:**  
<http://catalogue.uvm.edu/>  
The University of Vermont reserves the right to make changes in the course offerings, mode of delivery, degree requirements, charges, regulations, and procedures contained herein as educational, financial, and health, safety, and welfare considerations require, or as necessary to be compliant with governmental, accreditation, or public health directives.

**Green and Gold Promise:**The [Green and Gold Promise](https://www.uvm.edu/deanofstudents/green-and-gold-promise) clearly articulates the expectations that UVM has for students, faculty, and staff to remain compliant with all COVID-19 recommendations from the federal CDC, the State of Vermont, and the City of Burlington.

The [Code of Student Conduct](https://www.uvm.edu/sites/default/files/UVM-Policies/policies/studentcode.pdf) outlines policies related to violations of the Green and Gold Promise. Sanctions for violations include fines, educational sanctions, parent notification, probation, and suspension.

## **Intellectual Property Statement/Prohibition on Sharing Academic Materials:**

Students are prohibited from publicly sharing or selling academic materials that they did not author (for example: class syllabus, outlines or class presentations authored by the professor, practice questions, text from the textbook or other copyrighted class materials, etc.); and students are prohibited from sharing assessments (for example homework or a take-home examination). Violations will be handled under UVM’s Intellectual Property policy and Code of Academic Integrity.

**Student Learning Accommodations:**

In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Student Accessibility Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. A student’s accommodation letter lists those accommodations that will not be implemented until the student meets with their faculty to create a plan. Contact SAS: A170 Living/Learning Center: [802-656-7753](tel://802-656-7753) (phone link).

**Contact Student Accessibility Services (SAS):**

A170 Living/Learning Center  
[802-656-7753](tel://802-656-7753) (phone link)  
[access@uvm.edu (email link)](mailto:access@uvm.edu)  
<https://www.uvm.edu/academicsuccess/student_accessibility_services>

**UVM’s policy on disability certification and student support:**

[https://www.uvm.edu/policies/student/disability.pdf (PDF link)](https://www.uvm.edu/policies/student/disability.pdf)

**Health and Wellbeing**

The Center for Health & Wellbeing (CHWB) offers a wide range of services to support your mind, body, and soul while you're at UVM. The Student Health Services staff of board certified physicians, physician assistants, nurse practitioners, nurses, and dietitians work with patients and collaborate with other CHWB providers to ensure personalized and timely care to UVM students. Counseling & Psychiatry Services (CAPS) offers short-term individual counseling, urgent needs counseling, group counseling, outreach and education, psychiatry, referrals, and consultation services.

Please visit their website at: <http://www.uvm.edu/~chwb/> to find out more.

At Living Well they believe that mental and physical health go hand in hand. They have a variety of programs that offer you the space to create a wellness practice that will support your goals and positive intentions. I highly recommend you to visit their LivingWell website at <http://www.uvm.edu/~chwb/livingwell/> and checkout the meditation and yoga videos.

Extensive research has shown the benefits of meditation towards the learning process.

<http://www.huffingtonpost.com/2013/04/08/mindfulness-meditation-benefits-health_n_3016045.html>

**Counseling & Psychiatry Services (CAPS)**

Phone: (802) 656-3340  
If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at <https://www.uvm.edu/deanofstudents>.  
Counseling and Psychiatry Services: <https://www.uvm.edu/health/CAPS>

**Tips for Success:**

***Course-specific study/preparation tips***Checklist for success in <https://learn.uvm.edu/about/support-for-students/checklist-online-credit-courses/>

* Academic support for online courses: <https://www.uvm.edu/academicsuccess/online-learning-student-resources-remote-instruction>
* 30-minute webinar on online learning success (Mar 2020): <https://www.youtube.com/watch?v=Xp_MYsqQyvE>

Helpful resources other than the professor (e.g. [Undergraduate/Graduate Writing Center](https://www.uvm.edu/uwi/writingcenter), [Supplemental Instruction, Learning Co-op tutors](https://www.uvm.edu/academicsuccess/tutoring_center), supplemental course materials)

**Religious Holiday Policy Statement**

Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the first week of classes. You will be permitted to make up work within a mutually agreed-upon time.

**Grading:**

Your grades will be emailed to you periodically through python scripts. I’m currently working on a feature that will allow your grades to be given to you “on demand”. Here one would just check a box with your username and password and a bot will email you your grade. For information on grading and GPA calculation, go to the Registrar’s page on grading. <https://www.uvm.edu/registrar/grades> .

**Grade Appeals:**

If you would like to contest a grade, please follow the procedures outlined in this policy: [https://www.uvm.edu/policies/student/gradeappeals.pdf (PDF link)](https://www.uvm.edu/policies/student/gradeappeals.pdf)

**FERPA Rights Disclosure:**

The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974. [https://www.uvm.edu/policies/student/ferpa.pdf (PDF link)](https://www.uvm.edu/policies/student/ferpa.pdf)

**Final exam policy:**

There is currently no plans for a final exam. I reserve the right to implement one should the technology or COVID situation require and I promise that I will never implement one if I think it will hurt the class.

**Statement on Alcohol and Cannabis in the Academic Environment**

As a faculty member, I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. It is important to note that alcohol and cannabis have no place in an academic environment. They can seriously impair your ability to learn and retain information not only in the moment you may be using, but up to 48 hours or more afterwards. In addition, alcohol and cannabis can:

* Cause issues with attention, memory and concentration
* Negatively impact the quality of how information is processed and ultimately stored
* Affect sleep patterns, which interferes with long-term memory formation

It is my expectation that you will do everything you can to optimize your learning and to fully participate in this course.