THE VISUAL SYLLABUS

A PLATFORM FOR INQUIRY & MASTERY LEARNING

BRIDGEWATER STATE UNIVERSITY

Policies

Attendance: Your engagement and participation in class activities is important. Please try to notify your instructor in advance of any planned absences.

Basic Needs: Any student who faces challenges securing food, housing, or other basic needs and believes this may affect their performance in this course is urged to contact Ms. Denine Rocco, Dean of Students (508-531-1276 drocco@bridgew.edu). Please also notify your instructor if you are comfortable doing so.

Collaboration: Working collaboratively with your classmates is highly encouraged. However, the work you hand in on individual assignments must be your own. Collaboration on assignments which do not permit collaboration will constitute a violation of the BSU Policy on Academic Integrity.

Coupons: Every student begins with eight (8) coupons redeemable for additional revisions, see pp. 2-3.

Disability Resources: In compliance with BSU policy and equal access law, your instructor is available to discuss appropriate accommodations you may require as a student with a disability. Requests for academic accommodation must be made during the add/drop period. Students are encouraged to register with the Disability Resources Office (Academic Achievement Center, Maxwell Library) for determination of reasonable accommodations.

Homework and Revision: No revision will be given to a student without the instructor first reviewing their progress on relevant homework. Bring your homework to each appointment.

Tutoring: Your fellow students, study groups, math department study hours in DMF 461, and your instructor are the best resources beyond the classroom.

Learning Plan for Our Course

Dates listed subject to change. Chapters reference both [J] and [G].

	Ch.	Mastery Goal	Quizzes/Exams (Earn **two** (2) to master a chapter.)			
W 1/23	0	Write soundly-structured **proofs** of implications and set arguments; Perform computations with **modular arithmetic**.	❑	❑	❑	■
F 1/25						
M 1/28						
W 1/30	1	Use **Cayley tables** to study operations.	❑	❑	❑	■
F 2/1	2	Apply the **definition of a group** to distinguish groups from other types of algebraic structures.	❑	❑	❑	■
M 2/4						
W 2/6						
F 2/8	3	Determine the **orders** of finite groups and of their elements; Apply definitions and tests to distinguish **subgroups** from mere subsets of a group.	❑	❑	❑	■
M 2/11						
W 2/13						
F 2/15						
M 2/18	No Class					
W 2/20	4	Identify generators for, and use properties to distinguish, **cyclic groups**.	❑	❑	❑	■
F 2/22						
M 2/25						
W 2/27	**Exam 1**, in class; Portfolio evaluation 1					
F 3/1	5	Compute with, identify order of, and use several notations to express, elements of **permutation groups**.	❑	❑	❑	■
M 3/4						
W 3/6						
F 3/8						
3/11–15	No Class – Spring Break					
M 3/18	6	Use the definition to distinguish whether a group function is an **isomorphism**.	❑	❑	❑	■
W 3/20						
F 3/22						
M 3/25	7	Use **cosets** of a subgroup to partition the group; Infer orders of (sub)groups from **Lagrange's Theorem**.	❑	❑	❑	■
W 3/27						
F 3/29						
M 4/1	8	Compare and contrast the structure of **direct products** of groups with that of other known groups.	❑	❑	❑	■
W 4/3						
F 4/5						
M 4/8	**Exam 2**, in class; Portfolio evaluation 2					
W 4/10	9	Use the definition and theorems to distinguish **normal subgroups** from non-normal subgroups; Compare and contrast the structure of **factor groups** with that of other known groups.	❑	❑	❑	■
F 4/12						
M 4/15	No Class					
W 4/17						
F 4/19						
M 4/22	10	Apply one or more **isomorphism theorems** to construct and characterize new groups from old.	❑	❑	❑	■
W 4/24						
F 4/26						
M 4/29	11	Classify abelian groups of a given order using the **fundamental theorem**.	❑	❑	❑	■
W 5/1						
F 5/3	**Exam 3** take-home; Portfolio evaluation 3					
M 5/6	Review, in class					
F 5/10	**Final Exam**, 11:00–[illegible]					

The final exam will include a mastery problem from each chapter. Your final exam performance is also a component of the plus/minus modifier (p.3).

Abstract Algebra I

BRIDGEWATER STATE UNIVERSITY

MATH 301–001 Spring 2019 MWF 11:15–12:05

What You'll Learn

- Identify fundamental structures and substructures in abstract algebra, particularly groups and their subgroups, and their properties.
- Construct new groups from old, and use homomorphisms to compare and contrast groups.
- Discover and communicate mathematical proofs with clarity and precision.

4

How You'll Learn It

Abstract algebra is a subtle subject that takes time to master. Our *standards-based grading* gives you several opportunities to show how your understanding of each topic is improving over time, letting you focus more on learning goals than on performance tasks.

2-3

You Should Know

Find course mastery standards, policies, important dates, and other information here.

4

Get Into the Group.

Is there mathematics beyond numbers?

What if the numbers and equations you grew up studying in all your math classes were just special cases — specific variations on a more general theme? If high-school algebra was a tree, what does the whole forest look like? And what gives the trees in that forest both life and kinship with one another?

Abstract algebra is the study of mathematical structures with the power to unify across contexts. In this first semester, those structures are called **groups**. Beginning from a surprisingly simple definition, we'll see how the theory of groups gives us tools to understand not only the arithmetic and algebra of numbers but also geometry, combinatorics, codes, and much more.

Linear Algebra (MATH 202) is prerequ[illegible]

Dr. Matt Salomone
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DMF Science, Room 433
Office Hours: MW 9:30-11:00
Web: matthematics.com

OUTSIDE: THE SALES PITCH

WHAT IS THE COURSE REALLY ABOUT, BEYOND THE COURSE DESCRIPTION?

TEASER GRAPHIC

IDEALLY, PREVIEWS AN IMPORTANT OR INTERESTING COURSE TOPIC.
(WHAT'S THIS ONE ABOUT?)

"MY" COURSE DESCRIPTION

DEFINES MY COURSE (NOT "THE" COURSE).

FRAMES THE *BIG QUESTIONS* THE COURSE WILL HELP STUDENTS ANSWER. EXPLAINS WHY I FIND THIS MATERIAL COMPELLING (AND SO WILL THEY).

ADDS VALUE TO & PERSONALIZES DRY, INSTITUTIONAL COURSE DESCRIPTIONS!

WHAT IF I'M REQUIRED TO USE CATALOG DESCRIPTIONS FOR MY COURSE?
INCLUDE IT ON THE SIDE ("WHAT YOU'LL LEARN"). OR, PLACE IN AN ATTACHMENT OR POST ONLINE.

WHY GO VISUAL?

I WANT MY STUDENTS TO WANT TO

- *READ IT* – SO IT'S CONCISE, SELF-CONTAINED
- *RETAIN IT* – SO I PRINT IT ON ONE 11X17 PAGE
- *REFER TO IT* – SO I MAKE IT AN ESSENTIAL TOOL FOR STUDENTS TO TRACK THEIR PROGRESS

IF MY TEACHING IS "DIFFERENT," MY SYLLABI SHOULD BE TOO.

PROGRESS CHECKLIST

DISPLAYS MINIMUM CRITERIA FOR EACH LETTER GRADE AND MAKES SYLLABUS A VALUABLE TOOL FOR STUDENTS TO MONITOR PROGRESS.
THE PART MY STUDENTS REMEMBER MOST.

CONTACT INFO

ASK ME ABOUT HOW I USE *SLACK* AND *TWITCH* IN MY TEACHING TOO!

BLOOM'S TAXONOMY

ORGANIZES LEARNING TASKS FROM LOWER- TO HIGHER-ORDER & SHOWS WHY SOME ARE MORE INFLUENTIAL THAN OTHERS FOR STUDENTS' GRADE!

MASTERY RUBRIC

SUMMARIZES GRADE SPECIFICATIONS FOR EACH ASSIGNMENT TYPE

COURSE POLICIES

SUMMARIZES NEED-TO-KNOW INFORMATION AND CAMPUS RESOURCES

WHERE DO I PUT THE REST OF MY REQUIRED LEGAL-ESE?
DISTRIBUTE SEPARATELY OR ONLINE. A VISUAL SYLLABUS IS LEAN & USEFUL!

LEARNING PLAN

IT'S A CALENDAR!
IT'S A LIST OF LEARNING OUTCOMES!
IT'S AN ASSESSMENT CROSSWALK!
IT EVEN SHOWS "CONTENT" BY CHAPTER!

DOES THIS CONSTITUTE INQUIRY?
DEFINING THE COURSE BY ITS "BIG QUESTIONS" AND LEARNING OUTCOMES, & GIVING STUDENTS SPACE TO REFLECT ON THEIR PROGRESS, DOES!

It looks like you need to have graphic design experience to make a visual syllabus.
Can I really pull this off?

Yes! This one was designed using a **Microsoft Word** newsletter template.

OK | Visit **matthematics.com** for Editable Copy | Say more nice things about MS Word

MORE RESOURCES & INSPIRATION:
GOOBLAR, D. "YOUR SYLLABUS DOESN'T HAVE TO LOOK LIKE A CONTRACT." *CHRONICLE VITAE*, JULY 26, 2017. CHRONICLEVITAE.COM .
NILSON, L. "THE GRAPHIC SYLLABUS: SHEDDING A VISUAL LIGHT ON COURSE ORGANIZATION." *IN TO IMPROVE THE ACADEMY* 20(1), 2002, 238–259.

INSIDE: THE WORK YOU'LL DO

HOW WILL THESE ASSIGNMENTS LEAD BOTH TO DEEP LEARNING AND A FINAL GRADE?

Progress, Not Points: Our Grading Specifications

Here are the learning activities of our course, and the specifications to which each is assessed.

Learning mathematics requires a significant amount of time and struggle. Our grading system gives many opportunities to show what you know. It's most important that you learn, not when you learn!

Does the work demonstrate understanding of the concept & meet expectations?

	YES — Full Mark ☑ Is it complete & well communicated?		NO — No Mark Yet ☐ Is there evidence of partial understanding?	
	YES Exemplary	NO Satisfactory	YES Progressing	NO Not Assessed
Document Your Success: Your **portfolio** includes copies of your best work, adding new typeset proofs. » *Individual proofs are assessed:*	Full marks (E/S) on a majority of typeset proofs, including E's on at least five (5) proof standards. *Complete, correct, carefully supported, and typeset; all without gaps/errors.*	Full marks (E/S) on at least one-third of typeset proofs, including at least one E. *Correct reasoning and support overall, small errors in logic, writing, notation.*	Full marks (E/S) on at least one-fourth of typeset proofs. ***Revise.*** *Partial understanding, but significant errors warrant revision.*	***Revise with coupon.*** *One per revision per proof after due date.*
Connect Ideas: Integrate course material across chapters via **exams**. » *Individual sections of exams are assessed:*	All full marks (E/S) on 1st attempt (no revisions). *All work is well written, logically and specifically supported, and free of all but the most trivial errors.*	Full marks (E/S) on every section of the exam. *All work is supported and easy to read; errors in logic/computation do not diminish the arguments made.*	Honest attempts on all sections, with one or more earning no mark (P/N). ***Revise.*** *All problems attempted. Solutions show partial understanding but logic/computation errors diminish the arguments.*	***Revise with coupon.*** *Significant portions omitted or inconsequential; cannot assess for understanding.*
Build Mastery: Demonstrate foundational knowledge and skills through selected **quiz** and exam problems. ***One*** *☑ in this row is earned by* ***Two*** *☑ in same chapter on p. 4.*		All problems are attempted, and at least 80% are correct. Any computations are well supported.	***Revise.*** One or more problems blank, or less than 80% correct, or has computations without support.	
Acquaint Yourself: Pre-class **Daily Work** walks you through introductory material to prepare you for in-class problem solving.		An effort was made in good faith to respond to all questions in a relevant fashion, submitted on time.		One or more responses missing, irrelevant, or inconsequential; or, submission was not received on time.

Making the Grade: Your Progress Chart

Check off your progress in each learning area *from left to right* on this chart.

Learning Progress, Attainment, & Engagement: "The Bundle"
To complete a bundle, check every box in its column.
No partial credit is awarded. No box may be checked unless all boxes to its left are checked.

Kinds of learning and thinking tasks	Beginner D	Intermediate C	Advanced B	Master A
Conjecture, Critique / *Create, (Dis-)Prove*		❑ (P)	❑ (S)	❑ (E)
Deduce, Contrast / *Compare, Relate*		❑	❑	❑ **At least one E in this row also needed to earn a grade above A–*
Apply, Construct / *Identify, Explain*	❑❑❑❑	❑❑❑	❑❑❑	❑❑
Understand, Illustrate / *Recite, Remember*	❑❑❑❑❑ ❑❑❑❑❑	❑❑❑❑	❑❑❑❑	❑❑❑❑

Grade Modifier
C– needed for prereq/transfer.

To the grade ← earned, add:

PLUS (+)
❑ and ❑
50+ XP 9/12 final

No Modifier ( )
❑ and ❑
40+ XP 6/12 final

MINUS (–)
❑ and ❑
30+ XP 3/12 final

If the above are not met, receive the next-lowest grade and +.
(For example, a B bundle would become C+.)

Revisions on quizzes and exam sections are given during office hours. Request a 30-minute appointment by visiting the *#drsoffice* board in Slack. **Subject to review of homework**. Maximum one (1) revision per week, or two (2) with a coupon.

Experience Points (XP) ⮝ are awarded for completing various tasks that enhance your and your classmates' learning environment.

Course Resources

This course makes use of Open Educational Resources.

Course Website: **matthematics.com/abstract**

Required Text: [J] Judson, T. *Abstract Algebra: Theory and Applications*. CC-BY licensed; remixed on course website. *Author's original at* **abstract.ups.edu** .
Recommended Text: [G] Gallian, J. *Contemporary Abstract Algebra* 9th Edition. Cengage. ISBN 1-305-65796-9. *Recommended for students planning advanced study.*

Online Accounts: Some free online tools are used in this course; see the course website for details on getting signed up and started.