

**MATH 461 – Abstract Algebra I**  
**Dr. Boersma**  
**Fall 2020**

**Goals:** This course is an introduction to abstract algebra – a mathematical look at “structure”. We are all familiar with the structure of the real numbers (how to add, multiply, and solve equations) and some of us may be familiar with the structure of complex numbers, vectors spaces, and modular arithmetic. This course will provide an axiomatic approach to the study of additional algebraic structures and an investigation into their properties and symmetries. The first quarter of this year-long sequence will begin with the study of groups and group homomorphisms.

It is important to understand that this is a senior-level, abstract mathematics course. Unlike some of your previous mathematics classes, like calculus and differential equations, there is not much focus on computation and “getting the right answer”. Instead we care more about the detailed study of certain examples and the ability to abstract those properties which appear fundamental to the overall structure into well-worded definitions. From these definitions we will be able to build up our knowledge base in the form of theorems. Reading, understanding, and creating proofs of theorems is essential to an understanding of abstract algebra. The ability to communicate mathematics and mathematical truths will be the most essential skill needed for success in this course. Pay attention to detail – when reading the textbook and when turning in your own work.

**Office:** Samuelson 221-A, phone: 963-1395, email [Stuart.Boersma@cwu.edu](mailto:Stuart.Boersma@cwu.edu). Until further notice, I will not be holding regular office hours in person. Please see Canvas for information about getting a hold of me, office hours, etc.

**Required**

**Text** *Abstract Algebra: Theory and Applications*, by Thomas W. Judson. You may view this online or download a free pdf copy. Printed copies are available for purchase. See <http://abstract.pugetsound.edu/> for more information.

**Your Grade:** Your final grade in this course will depend on three exams (35%), collected homework (40%), and Attendance, Daily Assignments and Participation (25%).

**Exams** The exams in this course will have both a written and oral component. You must have computer access with a webcam to successfully complete the exams. More information about these exams will be given in class and on Canvas. If you anticipate any issues with technology, please contact me as soon as possible. The exams are scheduled for October 1, October 22, and November 19. Note that the third exam is held during finals week. I will

contact you to schedule the exact time for your in-person oral component of the exam.

## Collected

**Homework** About once a week I will collect written assignments to grade. When you hand in a homework assignment, I will be looking for neat, clear, and concise solutions containing complete and eloquent explanations. You should think of these turn-in homework sets as an opportunity for you to really show me your understanding of the material. All homework should be typed in  $\text{T}_{\text{E}}\text{X}$  or  $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ . Homework turned in late **WILL NOT** receive full credit and may not be graded at all.

**Attendance** Live zoom sessions will be held every Tuesday and Thursday from 10:00 - 10:50 am. This is a 400-level mathematics course. Thus, I will expect every student to make an effort to be “in class” at those times. I expect that many questions you might have will be addressed in class and I do not plan on repeating these explanations outside of class. Please let me know if a health problem forces you to miss too many classes.

## Daily

**Assignments** This is a four-credit mathematics course. I will plan on having short assignments due on most days Monday - Thursday. These must be completed by the posted due date to receive full credit. These daily assignments will give me an opportunity to give you frequent personal feedback on your understanding of the material.

**Final grades** Final grades will be assigned according to:

A <sup>+</sup> :100% – 93	C <sup>+</sup> :79 – 77
A <sup>-</sup> : 92 – 90	C :76 – 73
B <sup>+</sup> :89 – 87	C <sup>-</sup> :72 – 70
B :86 – 83	D <sup>+</sup> :69 – 67
B <sup>-</sup> : 82 – 80	D :66 – 63
	D <sup>-</sup> :62 – 60

Students who have special needs or disabilities that may affect their ability to access information or material presented in this course are encouraged to contact me or Robert A. Campbell, Director, Disability Support Services, on campus at 509-963-2171 for additional disability-related educational accommodations.