

SYLLABUS – MATH 4030 – FALL 2024

FOUNDATIONS OF ALGEBRA

Description: This course focuses on the algebra you will be teaching in school. We will discuss:

- Pre-algebra. Natural numbers, sets, place value, prime numbers, real numbers.
- Algebra. Equality, inequality and manipulating equations, linear and quadratic functions and the quadratic formula, factoring, permutations and combinations, Pascal’s polynomials and the binomial theorem. logarithms, scientific notation and financial algebra.
- Post-algebra. Plane geometry, equivalences, physics, vectors and trigonometry.

Time: Monday, Wednesday, Friday 4:10-5:00pm.

Location: LCB 225

Instructor: Aaron Bertram

Contact information:

- email: bertram@math.utah.edu
- office: JWB 302
- website: <http://www.math.utah.edu/~bertram/math4030>

Office hours: TBD. Most likely MWF afternoons and after class.

References. Letters from an Algebraist (posted on the website) and secondary school curricula.

Grade: Pre-discussion materials, two presentations and an algebra portfolio.

Pre-discussion. (30%) A topic will be assigned (in the order above) to be discussed. You should come to class with one page of your thoughts of the topic in the following format:

- Experience. How did you learn the math under consideration?
- Context. In what class(es) would you expect to teach the topic?
- Examples. What additional (worked!) examples/materials would you use to clarify the topic?
- Comments. What are the problems you think students will have with the topic?
- Applications. Can you think of “real world” applications for the topic?

Presentation. (30%) You (and a partner) take over the class for 1/2 hour and teach one topic.

Portfolio. (40%) You assemble your own portfolio of “algebra letters” to yourself out of class materials, including your pre-discussion thoughts, compiled notes on class discussions and presentations.

Prerequisites: You should be familiar with groups, rings and fields at the undergraduate level.

Academic Integrity: All University of Utah policies regarding ethics and honorable behavior apply.

Official matters

The following have been provided by the Department and University.

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, veterans 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

Office of the Dean of Students: The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. To contact the Office of the Dean of Students, please email deanofstudents@utah.edu or call 801-581-7066. There is more information at <https://deanofstudents.utah.edu/>

Note: If you are unable to attend class in person due to a positive COVID test, quarantine, etc., I will ensure that you are not penalized from the grade perspective and will do my best to make sure you don't fall behind. I will not, however, be recording any of the lectures.