

Course Syllabus

 Edit

MATH 406 | Algebra for Teachers

Winter 2022

General Information

Section A01 -- **Class Time:** M W Th F, 12:00pm – 12:50pm **Location:** Zoom

[https://cwu.zoom.us/j/84584526055?
pwd=SSs3SIJHYkxwcmFjRklybUIFTmYwUT09](https://cwu.zoom.us/j/84584526055?pwd=SSs3SIJHYkxwcmFjRklybUIFTmYwUT09)
([https://cwu.zoom.us/j/84584526055?
pwd=SSs3SIJHYkxwcmFjRklybUIFTmYwUT09](https://cwu.zoom.us/j/84584526055?pwd=SSs3SIJHYkxwcmFjRklybUIFTmYwUT09)).

Meeting ID: 845 8452 6055
Passcode: 468158

Instructor: Dr. Emilie Hancock (Please refer to me as Emilie or Dr. Hancock)

Office: Samuelson 218C

Phone: 509.963.2402

Email: emilie.hancock@cwu.edu

Office Hours*: M - F 11am-12pm and by appointment

*Refer to the [course calendar](#) for any planned changes to office hours

Office hours held on Zoom: <https://cwu.zoom.us/j/84757917477?pwd=dm5seIBTOG9CSWU1R2JQUWMxL3czZz09>
(<https://cwu.zoom.us/j/84757917477?pwd=dm5seIBTOG9CSWU1R2JQUWMxL3czZz09>).

Meeting ID: 847 5791 7477 Passcode: 731004

Required Materials

- **Textbook:** Beckmann, S. *Mathematics for elementary teachers with activity manual*. Pearson.
- Access to **Zoom:** Class meetings will be held on Zoom. There is a 'Zoom' tab in the lefthand menu in Canvas, but you can also download Zoom directly to your computer, tablet, or phone. If you haven't used Zoom before, CWU has created a [Zoom Tutorial handout](https://www.cwu.edu/online-learning/sites/cts.cwu.edu/online-learning/files/documents/Zoom%20Tutorial%20for%20Students.pdf) (<https://www.cwu.edu/online-learning/sites/cts.cwu.edu/online-learning/files/documents/Zoom%20Tutorial%20for%20Students.pdf>) to help you get started. The [Zoom website](https://support.zoom.us/hc/en-us/categories/200101697) (<https://support.zoom.us/hc/en-us/categories/200101697>) also has some helpful articles and videos.
- Access to **Canvas:** All course announcements, assignments, rubrics, etc. will be available so there should be no confusion on what is expected or how your performance will be evaluated. Check the Canvas site *often* so that you are aware of any course changes.

Disability Support Services

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body.

[Disability Services](https://www.cwu.edu/disability-services/) (<https://www.cwu.edu/disability-services/>) serves students with permanent and temporary disabilities attending Central on the Ellensburg campus, online or at any of our eight University Centers. Their mission is to make university life accessible to students with disabilities. They work individually with students identifying barriers, and providing accommodations to ensure equal access. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations: Hogue Hall 126, 509.963.2214, DS@cwu.edu. (<mailto:DS@cwu.edu>).

Course Description and Learning Objectives

Reflecting [Washington State mathematics K-12 learning standards](https://www.k12.wa.us/student-success/resources-subject-area/mathematics/mathematics-k%E2%80%9312-learning-standards) (<https://www.k12.wa.us/student-success/resources-subject-area/mathematics/mathematics-k%E2%80%9312-learning-standards>), the [National Council of Teachers of Mathematics \(NCTM\) principles and standards](https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/) (<https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/>), and the [State of Washington Professional Educator Standards Board \(PESB\) endorsement standards for Algebra and Functions](https://www.pesb.wa.gov/preparation-programs/standards/endorsement-competencies/middle-level-mathematics/) (<https://www.pesb.wa.gov/preparation-programs/standards/endorsement-competencies/middle-level-mathematics/>), this course emphasizes the conceptual development of algebra and associated procedures. Additional focus is placed on fostering algebraic thinking through the development of algebraic habits of mind. Middle level mathematics content is rediscovered through problem solving¹ and mathematical modeling in an inquiry-based learning² context to support the development of mathematical [processes](https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/Process/) (<https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/Process/>) and [practices](http://www.corestandards.org/Math/Practice/) (<http://www.corestandards.org/Math/Practice/>).

Major content topics of the course include algebraic reasoning; interpreting the structure of expressions and rewriting expressions in equivalent forms; solving equations and inequalities using properties of equality and the concept of logical equivalence; and patterns, sequences, and functions. Connections will be made to elementary and high school mathematics concepts along relevant, standards-based learning progressions (e.g., elementary numbers and operations, solving systems of equations and inequalities, and polynomial algebra). Exploration of these topics will follow the outline:

- Unit 1:** Expressions and Variables
- Unit 2:** Equality, Equations, and Inequalities
- Unit 3:** Representing and Analyzing Functions

Upon successful completion of this [course](http://catalog.acalog.cwu.edu) (<http://catalog.acalog.cwu.edu>), you will be able to:

- Reason using the language and structure of algebra to investigate, represent and solve problems including using algebraic expressions, equations, inequalities and systems of equations and inequalities.
- Examine and reason about functional relationships between various representations including graphs, tables, expressions, concrete models and context.
- Analyze, extend and generalize sequences, including arithmetic and geometric sequences, both geometrically and algebraically. Write both explicit and recursive definitions for generating a sequence.
- Use and explain the patterns of change in proportional, linear, inversely proportional, quadratic and exponential functions and the types of real-world relationships these functions can model.
- Use appropriate technology to investigate and represent concepts, methods and application of mathematical concepts.
- Use principles of mathematical thinking and problem solving to explore, solve, generalize and prove mathematical problems.

Grading Scale and Method of Evaluation

Final letter grades will be determined based on your weighted percent grade, rounded to the nearest whole percent.

Letter Grade	F	D	D+	C-	C	C+	B-	B	B+	A-	A
Percent	0-59	60-66	67-69	70-72	73-76	77-79	80-82	83-86	87-89	90-92	93-100

Overall grades will be determined as a weighted average:

- 20% Attendance and Professional Participation
- 60% Standards-Based Content Mastery Exams
- 20% Algebraic Habits of Mind Portfolio

Descriptions of Evaluation Components

Attendance and Professional Participation

Your grade in this category is the percentage of class sessions you attend and participate professionally while present, recorded using Canvas [Roll Call Attendance](#). Regular attendance is essential for successful completion of this course. As a member of a peer learning community, a high degree of professionalism is necessary. CWU expects every member of the university community to contribute to an inclusive and respectful classroom culture. I measure professional participation based on the following criteria:

- **Required Zoom Etiquette:** Keep your camera on during class. (I cannot count you as 'present' without your camera on.) Please communicate with me if your circumstances prevent this.
- Arrive to class on time and stay for the entire class.
- Be present. Focus on learning by being an active participant. Limit side activities and put away cell phones. (If you are anticipating an emergency phone call, just let me know in advance.)
- Come to class prepared. You may need to finish up short activities between classes.
- Bring a positive and energetic attitude every day.
- Respect everyone, treat each other with dignity, and encourage all to participate.
- Participate in group work by asking questions, communicating your understanding to your group mates, and completing the handouts.
- Present your ideas to the class and ask questions when other students present.
- Keep handouts, assignments, and notes organized to promptly access during class.

A lack of professional participation will result in a loss of attendance/participation credit for the day. Severe or repeated lapses in professional judgment may result in disciplinary action, up to and including removal from the course.

If you will miss class:

- Get information about what will happen/happened in class.
- Communicate with me as soon as possible. If you are not in communication with me, I will immediately reach out to the [Office of the Dean of Student Success](#) [\(https://www.cwu.edu/student-success/\)](https://www.cwu.edu/student-success/).

The [Office of the Dean of Student Success](#) [\(https://www.cwu.edu/student-success/\)](https://www.cwu.edu/student-success/) provides resources and services for students to better navigate the CWU Community, including:

- FREE [in-person counseling](#) [\(https://www.cwu.edu/medical-counseling/counseling-clinic\)](https://www.cwu.edu/medical-counseling/counseling-clinic) and 24/7 [virtual counseling](#) [\(https://timely.md/schools/index.html?school=wildcatcare365&=#\)](https://timely.md/schools/index.html?school=wildcatcare365&=#)
- [On-campus health services](#) [\(https://www.cwu.edu/health-services/welcome-student-health-services-shs\)](https://www.cwu.edu/health-services/welcome-student-health-services-shs) (most services are free) and FREE 24/7 [tele-health services](#) [\(https://timely.md/schools/index.html?school=wildcatcare365&=#\)](https://timely.md/schools/index.html?school=wildcatcare365&=#).
- [\(https://www.cwu.edu/disability-services/\)](https://www.cwu.edu/disability-services/) A [wellness center](#) [\(https://www.cwu.edu/wellness/welcome\)](https://www.cwu.edu/wellness/welcome) providing support and education for life outside the classroom so you can maximize your time at CWU and build skills for the future (e.g., coaching related to stress/time management, alcohol and drugs, supporting others experiencing mental health challenges, violence prevention and response, sexual health and healthy relationships).
- See the [Student Success website](#) [\(https://www.cwu.edu/student-success/\)](https://www.cwu.edu/student-success/) for even more services, and [here is a list of o](#) [\(https://www.cwu.edu/student-success/where-go\)](https://www.cwu.edu/student-success/where-go) [ther services around campus](#) [\(https://www.cwu.edu/student-success/where-go\)](https://www.cwu.edu/student-success/where-go) you may need.

University Policy [CWUP 5-90-040\(38\)](#) [\(http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation\)](http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation) provides for reasonable accommodation of student absences for religious holidays in accordance with [RCW 28B.137.010](#) [\(https://apps.leg.wa.gov/rcw/default.aspx?cite=28B.137.010\)](https://apps.leg.wa.gov/rcw/default.aspx?cite=28B.137.010). Students seeking reasonable accommodations under this policy must provide written notice to their instructors within the first two weeks of class specifying the dates for which religious accommodations are requested. Contact the Dean of Student Success at (509) 963-1515 for further information.

Standards-Based Mastery Exams

The purpose of this evaluation component is for you to demonstrate mastery of course content standards. Each mastery exam will assess a set of performance standards. Your final grade in this evaluation category is determined by the total number of standards for

which you have demonstrated mastery. This means you will not receive a numerical score for each exam question, but a list of standards mastered and standards to-be mastered.

M	Mastered	Demonstrates understanding of the relevant target. May include some errors, but no additional study or review is needed. Correct, complete, convincing, and clear.
P	Progressing	Demonstrates partial understanding, but with a fundamental error, misunderstanding, or is incomplete. Needs review and revision.
X	Not Assessable	Not enough work to determine mastery: An insubstantial attempt, too many errors to correct each individually, or uses an inappropriate method or tool.

Learning happens over time, as we revisit ideas and reflect on them. Your final grade in this evaluation component will reflect how well you *eventually understand* each topic. This grading system rewards **growth**; you can make mistakes without penalty, as long as you eventually demonstrate mastery of the topic. See the [course calendar](#) for this quarter's exam schedule.

Algebraic Habits of Mind Portfolio

While mastery exams focus on progressions of content standards reflected in Common Core, this evaluation component focuses on the progression of students' thinking patterns toward productive algebraic thinking.

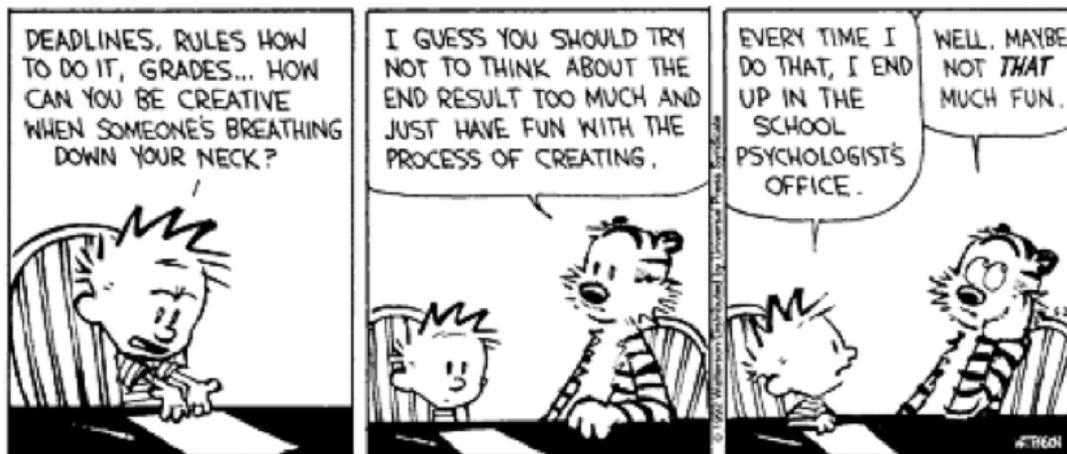
Academic Honesty and Student Conduct

Consult university policies [CWUP 5-90-040\(25\)](http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation), [CWUR 2-90-040\(24\)](http://www.cwu.edu/resources-reports/cwur-2-90-040-academic-and-general-regulations#Academic%20Dishonesty), and [WAC 106-125-020](https://apps.leg.wa.gov/WAC/default.aspx?cite=106-125-020) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.

Central Washington University is committed to providing all community members with a learning and work environment that is free from sexual harassment and assault. Students have options for getting help if they have experienced sexual assault, relationship violence, and sexual harassment, or stalking. Information can be found at <http://www.cwu.edu/wecare> and in [CWUP 2-35-050](http://www.cwu.edu/resources-reports/cwup-2-35-050): Sexual Harassment. Faculty are required to report information regarding sexual misconduct or related crimes. Students may speak to someone confidentially by contacting the CWU Wellness Center, 509-963-3213, or the CWU Student Counseling Clinic, 509-963-1391.

Changes

I reserve the right to amend, adjust, or otherwise modify the syllabus at any time during the course.



Footnotes

1. Stein, M. K., Boaler, J. & Silver, E. A. (2003). Teaching mathematics through problem solving: Research perspectives. In H. L. Schoen & R. I. Charles (Eds.), *Teaching mathematics through problem solving: Grades 6-12* (pp. 245–256). Reston, VA: National Council of Teachers of Mathematics.
2. Ernst, D. C., Hodge, A., & Yoshinobu, S. 2017. Inquiry-based learning. *Notices of the AMS*, 64(6), p. 570-574.
3. Cai, J., & Lester, F. (2010). Why is teaching with problem solving important to student learning. *National council of teachers of mathematics*, 13(12), 1-6.