

MA513 – 2F Patterns, Functions, and Algebraic Reasoning

3 credit hours

Tu/Th 3:30-4:45 HHB Room 226

Course Syllabus Spring 2025

Instructor Information

Instructor Name: Tami Puchta

Email: tpuchta@uab.edu

Phone: 205 934-2154

**Office Location: Room 4039
University Hall**

Email is the preferred method of contact if you have questions. Include **MA513-2F** in the subject line of your email for a faster response. Please expect a response within 24 hours on weekdays and a slower response on weekends.

Available office times for students:

- **In-person office hours** will be in **Room 4039 of University Hall** on **Tuesdays** and **Thursdays** between **2:00 & 3:10** and after class at **4:45 (by appointment)**.
- **Zoom meetings** (by appointment only) are scheduled for the Central Time Zone and may be accessed using this Zoom link:

<https://uab.zoom.us/j/5447109945>

This course helps fulfill the math requirements for ECE and ELE majors and is required for mathematical reasoning students. It may not be used to fulfill the general studies math requirement of UAB. MA102 (Intermediate Algebra) should be considered as a prerequisite.

This class meets Face-to-Face meaning it will be conducted in person, on campus, on the days and times listed in the course schedule. There will also be assigned tasks submitted both on paper and electronically on Canvas.

Divisive Concepts

All University faculty, instructors, and teaching staff have the academic freedom to explore, discuss, and provide instruction on a wide range of topics in an academic setting. This class may present difficult, objectionable, or controversial topics for consideration but will do so through an objective, scholarly lens designed to encourage critical thinking. Though students may be asked to share their personal views in the academic setting, no student will ever be required to assent or agree with any concept considered “divisive” under Alabama law, nor penalized for refusing to support or endorse such a concept. All students are strongly encouraged to think

Note: Print a copy of this syllabus for easy reference about due dates, grading scale, and helpful links for student support. The syllabus is the official document, but dates may change for various reasons. If there are changes, you will be notified.

independently and analytically about all material presented in class and may express their views in a time, place, and manner consistent with class organization and structure, and in accordance with the University's commitment to free and open thought, inquiry, and expressions.

Shared Values Statement

Collaboration, integrity, respect, and excellence are core values of our institution and affirm what it means to be a UAB community member. A key foundation of UAB is diversity. At UAB, everybody counts every day. UAB is committed to fostering a respectful, accessible, and open campus environment. We value every member of our campus and the richly different perspectives, characteristics, and life experiences that contribute to UAB's unique environment. UAB values and cultivates access, engagement, and opportunity in our research, learning, clinical, and work environments. Our [School] aims to create an open and welcoming environment and to support the success of all UAB community members.

Course Information

Course Description

The focus of this course will be to help enhance your mathematics background so that you may teach a rich K-8 grade curriculum as specified by the National Council of Teachers of Mathematics' *Principles and Standards for School Mathematics* and the *Alabama State Course of Study: Mathematics*. **This course will be taught differently from perhaps any mathematics course you have ever taken.** It is guided by UAB's participation and collaboration in the Greater Birmingham Mathematics Partnership. This is a joint venture between UAB (Schools of Education, Engineering, and Dept. of Mathematics), Birmingham Southern College, the Mathematics Education Collaborative (MEC), and several local school systems.

The goal of this course is that you become mathematically powerful students and that you become *competent* and *confident* problem solvers. My role will be to provide guidance and support as *you* make sense of mathematics. True understanding will only come when *you* make sense of a situation. My role is not to tell you everything about the subject, nor is it to answer all the questions that arise as you engage in problem solving. You will at times experience confusion and perhaps frustration. This is a natural part of the learning process. I will try to help *you* reflect and work your way out of confusion before your frustration becomes debilitating to your learning. Don't be afraid of wrong answers. Sometimes learning occurs by multiple attempts down wrong paths until you find a correct path.

You will learn while working in groups and as an individual as you solve problems. Engaging with others in collaborative problem solving will help you see several ways of solving a problem and appreciate a variety of points of view. In groups, you are **not** to 'teach' someone how to solve a problem and you are not to direct others to think in a certain way. Each person must think for her/himself and make sense of the situation. For many problems, I will insist that you not be satisfied with simply finding one way to solve a problem. Instead, I will push you solve problems in multiple ways. **While getting the right answer is a goal in solving a problem, understanding how you got to the answer is also important, as is being able to communicate**

your understanding to others. While collaborative learning is desired, you are at the same time individually accountable for learning the material.

The content of the course will include problem solving experiences, inductive and deductive reasoning, patterns and functions, and some concepts and applications of geometry. The patterns and functions examined will include linear and quadratic relations, as well as some functions of a higher order such as cubic or exponential functions. This is not a course in the usual formal methods of algebra as you may know it. You won't be doing extensive polynomial manipulations. Instead, you will be developing algebraic thinking and reasoning.

Course Objectives:

1. Apply inductive and deductive reasoning to problems.
2. Identify and solve problems involving patterns that form linear and quadratic functions.
3. Create and thoroughly explain expressions for patterns involving summations and/or figurate numbers.
4. Apply a variety of problem-solving strategies to solve both geometric and word problems involving patterns.
5. Identify patterns on Pascal's Triangle. Write an expression that works for multiple patterns identified.
6. Identify properties of geometric figures and apply these in problems.
7. Demonstrate knowledge of concepts of number and number relationships, number systems, number theory, estimation, and computation in the context of problem solving.
8. Communicate mathematical ideas orally and in writing including making mathematically convincing arguments.
9. Demonstrate a positive disposition toward persistence and reflection in doing mathematics.
10. Demonstrate the ability to interact within groups, and with the class as a whole, while demonstrating cognizance of working with students at different levels.

Course Requirements

1. **Attendance and active participation in all sessions.** Significant points are deducted from your participation grade for absences. Official university activities, documented illness, and jury or military duty are excused. Because active group participation is an essential component of this course, **missing 25% of classes or more will result in a grade of F for this course.**
2. You may collaborate on solving Menu tasks. However, it is imperative that you can solve problems on your own on tests. A good guideline is that after you have solved a problem, you should be confident that you are able to explain your solution to the class.
3. Complete individual menus of problems, group tasks, and homework problems. If you must miss class, it is expected that you will complete any missed group work or tasks from the missed class.
4. Complete article reviews and other readings. Directions and expectations for these assignments are on Canvas or given in class.

5. **Actively** participate in course discussions.
6. Complete an in-class Midterm performance assessment near the middle of the semester and a Final performance assessment at the end of the semester.
7. Develop a final Mathematics Portfolio. Full directions and expectations for this assignment will be available on Canvas and discussed in class.
8. 513 Only - Complete a final mathematics task to be included in your Portfolio. This task will be distributed in class and is in addition to the Portfolio tasks described on Canvas.
9. Have a positive and productive disposition toward yourself, your classmates, and mathematics. Be respectful of fellow classmates and the instructor as you share ideas.

Required Text and Course Materials

There is no official textbook for this course. **You will need graph paper, a ruler, colored pencils or pens, and a way to organize handouts from class.**

Course Grading and Policies

Late Assignment Policy

Late assignments are accepted but subject to a 10% deduction of original points for each day that they are late, up to five days. You must have a legitimate reason to receive a deadline extension, and you should contact me as soon as you know that you will not be able to meet the deadline.

Since participation is an essential component of this course, missing more than 25% of classes will result in a grade of F for this course.

Grading Scale & Assignments

| Assignments | Percent of Final Grade | Points Value (out of 480) | | Percent Earned | Final Grade |
|-----------------------------------|------------------------|---------------------------|--|----------------|-------------|
| Math Menus (2) | 20 | 48 each | | 92-100 | A |
| Article Reviews | 10 | 24 each | | 82-91 | B |
| Midterm | 25 | 120 | | 72-81 | C |
| Mathematics Portfolio | 10 | 48 | | <72 | F |
| Engagement/In-Class Assignments** | 7.5 | 36 | | | |
| Final | 27.5 | 132 | | | |

**** The Engagement/In-Class Assignments grade is intended to recognize those who put forth a maximum effort and demonstrate persistence in problem solving.** The instructor will use her best professional judgment in awarding the 7.5% for this item based on a student's full participation in class activities, attempts at completion of challenging tasks, and may be influenced by a student's attempts or non-attempts at dessert items from the menu problems. **7.5 percent will be awarded to students who: have few or no absences (and make up the work for any absences), actively participate in all group and independent tasks, demonstrate persistence in pursuing challenging problems and tasks, show craftsmanship in solving**

problems and seek to extend their thinking on problems, stay on task without reminders during class activities, show the ability to work independently on tasks, demonstrate the ability to work with others on tasks without providing too much assistance, complete all required tasks on the menus and give good faith attempts at some of the desserts on the menus. If in the judgment of the instructor a student fails to meet all of the above, the instructor will assign a score between 0 and 7.5% with appropriate credit given for partial successes in meeting course goals. The instructor's decision here is based on her professional experience and is the final judgment.

Rounding Policy

Individual assignment grades will not be rounded up. Final grades will be rounded up from 0.5 for students who have excellent attendance and who have completed all assignments.

Student Access to Grades

Grades for most written assessments will be available one week after the due date. Assignments will be described in detail during class and are also described on the appropriate Canvas assignment pages.

Time Commitment

You are expected to spend a substantial amount of time working through the course activities and assignments every week. Please know that time management and self-motivation are key components for success in this course and courses in general. There is a lot to be gained in this course so approach it with an open mind! In addition to class time, you should spend about 6 hours per week reading, studying, preparing for class discussions, and completing assignments and assessments.

Attendance

The Undergraduate Catalogue policy on attendance states, "*UAB recognizes that the academic success of individual students is related to their class attendance and participation.*"

Class participation, contribution, and communicating ideas are crucial for learning to reason mathematically. Therefore, class attendance is mandatory. The following attendance policy will be applied:

For every unexcused absence above two, a student's final grade will be reduced by 2 points. More than 7 absences will result in an automatic "F."

Example:

- Final grade = 90
- 6 unexcused absences (4 above maximum permitted)
 - $90 - 8 = 82\%$ final grade

Success in this course requires you to be present and fully engaged. Therefore, you are expected to attend class, participate in discussions by sharing your ideas while also being respectful of other's ideas. Additionally, you are expected to refrain from distractions during class (texting, websites not pertinent to the discussion, etc.).

Inclement Weather

Classes will be canceled for weather only if the University cancels classes. Otherwise, you are expected to be present in class. [UAB Emergency Management](#) will be the official source of UAB information during any actual emergency or severe weather situation. The UAB Emergency Management Team will use B-ALERT, the university's emergency notification system, to communicate through voice calls, SMS text messages and emails to the entire campus all at the same time. To register for B-ALERT or update your existing information in the system, go to uab.edu/balert. All registration is connected to your BlazerID.

Weekly Course Schedule

The course schedule with assignments is located on the Canvas home page.

UAB Policies and Resources

Add/Drop and Course Withdrawal

Drop/Add: Deadlines for adding, dropping, or withdrawing from a course and for paying tuition are published in the [Academic Calendar](#). Review the [Institutional Refund Policy](#) for information on refunds for dropped courses. It is the student's responsibility to initiate add/drop procedures. Students may drop and add courses online after they have registered and until the drop/add deadline using BlazerNET.

- Withdrawal: To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and receive a grade of "W" (withdrawn). Failure to attend class does not constitute a formal drop or withdrawal. The official course withdrawal must be completed online in BlazerNET.

Academic Integrity Code

Your success while at UAB and after graduation is valued by the University. To gain and grow in the knowledge and skills needed for your future career, it is vital that you complete your own work in your courses and in your research. The purpose of the [Academic Integrity Code](#) is to support our academic mission and to maintain and promote academic integrity. All students in attendance at UAB are expected to pursue all academic endeavors with integrity, honor, and professionalism and to observe standards of conduct appropriate to a community of scholars.

Please be sure you understand the different forms of "academic misconduct" covered by the code. See what UAB students say about academic integrity and review the FAQs about the code on the [Student Academic Integrity webpage](#).

Academic Policy Appeal

Students should request an Academic Policy Appeal when the student cannot continue in a course for reasons that are outside of the strict qualifications under this policy. Students need to submit supporting documentation showing why they cannot continue in a course. Learn more about the Academic Policy Appeal and how to submit an appeal form by visiting the [Academic Policy Appeal webpage](#).

Grading Policies and Practices

UAB provides many Grading Policies to students such as Study Abroad Grading Policy, Grade Change Policy, Course Repeat, and University Forgiveness Policy. View more about the policies in the Grading Policies and Practices section of the [Undergraduate Catalog](#).

Artificial Intelligence Use

Academic Integrity

Academic misconduct is present in an academic work wherever AI assistance has been used when unauthorized, or when authorized, has not been disclosed as required. Such behavior is considered deceit and a violation of UAB's shared commitment to truth and academic integrity. Deceit constitutes academic misconduct and is subject to review according to UAB's Academic Integrity Code.

AI for Written Assignments in this course:

- **The use of generative AI tools is *not* permitted on writing assignments in this course.**
By submitting a writing assignment, you attest that you are the only and original author.

Student Conduct Code

The purpose of the University of Alabama at Birmingham ("University") student conduct process is to support the vision, mission, and shared values of the University and the tenets of the University's creed, The Blazer Way. Through a student-focused and learning-centered lens, the process strives to uphold individual and community standards; foster an environment of personal accountability for decisions; promote personal growth and development of life skills; and care for the well-being, health, safety, and property of all members of the University community.

The [Student Conduct Code](#) ("Code") describes the standards of behavior for all students and student organizations and outlines students' rights and the process for adjudicating alleged violations. It is set forth in writing in order to give general notice of non-academic prohibited conduct. The Code should be read broadly and is not designed to define non-academic conduct in exhaustive terms. All students and student organizations are expected to conduct themselves in accordance with the Code. The current version of the Code, which may be revised periodically, is available from the Office of Community Standards & Student Accountability.

Intellectual Property

My lectures and course materials, including PowerPoint presentations, quizzes, exams, outlines, and similar materials, are protected by copyright. You may take notes and make copies of course materials for your own use. You may not and may not allow others to reproduce or distribute lecture notes and course materials publicly, whether or not a fee is charged, without my expressed written consent.

DSS Accessibility Statement

Accessible Learning: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act, and you require

accommodations, please contact Disability Support Services for information on accommodations, registration, and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact me to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call (205) 934-4205 or visit [the DSS website](#).

Title IX Statement

In accordance with Title IX, the University of Alabama at Birmingham does not discriminate on the basis of gender in any of its programs or services. The University is committed to providing an environment free from discrimination based on gender and expects individuals who live, work, teach, and study within this community to contribute positively to the environment and to refrain from behaviors that threaten the freedom or respect that every member of our community deserves. For more information about Title IX, policy, reporting, protections, resources, and supports, please visit the [UAB Title IX webpage](#).

Violence Prevention and Response Policy

The University of Alabama at Birmingham (UAB) is committed to maintaining a safe and secure educational environment and workplace, one which seeks to ensure the well-being and safety of faculty and staff, employees, students and visitors. Violence and threatened violence are prohibited by UAB. Each member of the UAB community has the responsibility to understand, prevent, and respond appropriately to campus/workplace violence. For more information, view the [Violence Prevention and Response Policy](#).

Technology

Access technical support and view privacy policies and accessibility statements for Canvas and other technologies on the [Student Learning Technologies website](#). Additionally, view information about the [Minimum System Requirements and Technical Skills](#).

Canvas Alerts

I may send alerts to students based on Canvas course information, such as current grades in the course, online attendance (login records), assignment due dates, and assignment scores. The alert is sent as an email to the student's UAB email address.

Health and Safety

UAB is very concerned for your continued health and safety. Please consult the [Student Health Services webpage](#) for up-to-date guidance because the following information is subject to change as circumstances require.

We strongly urge you to be fully vaccinated. Mask-wearing has proven to be one of the most successful mitigation strategies used to combat spread of the various variants of the COVID-19 virus. View information on the Immunization Requirements and Policies of the University on the [Student Health Services Immunizations webpage](#).

Student Academic and Support Services

One Stop Student Services provides a single point of professional integrated service to students. The One Stop serves students who need assistance with academic records, financial aid, registration, student accounting, ONE card, and other related topics.

- **Student Assistance and Support** provides individualized assistance to promote student safety and well-being, collaboration and resilience, personal accountability, and self-advocacy. The Care Team consults and collaborates with campus partners to balance the needs of individual students with those of the overall campus community. **The UAB Care Team** helps find solutions for students experiencing academic, social, and crisis situations including mental health concerns.
- **Disability Support Services** assists students with reaching accommodations for their educational experiences at UAB that ensure that they have equal access to programs, services, and activities at UAB.
- The **Vulcan Materials Academic Success Center** provides tutoring, supplemental instruction, and other services that encourage goal achievement and degree completion.
- The **University Writing Center** offers free writing assistance for all UAB students. Get help at any stage of the writing process and with any type of writing. Students may meet with a tutor in person or via Zoom. Students may also upload a paper for feedback (called eTutoring in the online system). During in-person and Zoom sessions, tutors can help you understand your assignment, develop and organize your ideas, use and cite sources, revise and edit your draft, and more. When you upload a draft for eTutoring, tutors can provide feedback on both big-picture issues and detail-oriented concerns; please note that you must upload a draft and assignment sheet to use eTutoring.

To make an appointment or get more information, please see the **UWC website**, email **writingcenter@uab.edu**, or call 205-996-7178. Follow the UWC on **Facebook**, **Instagram**, and **LinkedIn** for daily news and quick writing tips.

- **UAB Student Health Services** delivers comprehensive, high quality, confidential, primary healthcare to students. Student Health provides testing services and vaccination clinics.
- **Student Counseling Services** offers students a safe place to discuss and resolve issues that interfere with personal and academic goals. UAB has created a new app (available in the App Store and Google Play) called **B Well**, that is designed to easily access resources on mobile devices and build a self-care plan. **Kognito** is a free, interactive simulation-based platform designed to help you talk with someone when you are worried about your mental health.
- **UAB Blazer Kitchen at the Hill Student Center** provides food and basic supplies for any UAB student in need through in-person or online shopping. Students who can are also able to donate food and supplies to assist their peers. To get more information, call 205-

975-9509, email studentoutreach@uab.edu, or visit the [Student Assistance & Support website](#).

- The [Office of Learning Technologies](#) provides numerous academic technologies and learning resources for students.
- [UAB Emergency Management](#) will be the official source of UAB information during any actual emergency or severe weather situation.

The following are the various websites describing additional student academic and technology resources:

- [UAB Policies for Students](#)
- [Student Academic and Support Services](#)
- [Technology Resources](#)

See also the [Student Assistance & Support](#) website of Student Affairs for a description of Covid-19-related resources, including the laptop loaner program.

Peers' Contact Information

I encourage students to reach out and obtain contact information of up to three classmates. This will be helpful in the event of an absence, forming study groups, or communicating schedule changes, etc.

| Contact 1 | Contact 2 | Contact 3 |
|---------------|---------------|---------------|
| Name: | Name: | Name: |
| Email: | Email: | Email: |
| Phone Number: | Phone Number: | Phone Number: |

Syllabus: This syllabus is subject to changes announced in class and/or on Canvas.