

ACMAT 117: Pre-Calculus 1 (3 Credits)
Arrupe College, Fall 2025 (Class Number: 4833)
Meetings: Tu, Fr 9:45am-11:15am, Maguire Hall 404

Course Description: This course covers algebraic topics ranging from functions and their applications to complex numbers to inverse functions to the fundamental theorem of algebra.

Outcomes: Students who plan to study calculus will obtain the algebraic background needed to enroll in precalculus.

Prerequisite: "C-" or better in ACMAT 100 or by test placement.

Class Website: All necessary information will be available via Sakai, but in the event of an outage, they will also be made available at krystinmg.com/fall2025/math117

Instructor Information

Name: Krystin Manguba-Glover
(Professor MG)
Email: kmangubaglover@luc.edu
Office: JFMH 238

Office Phone: 312-915-8919
Office Hours: T/F 11:30am-1:00pm,
and by appointment

Appointments can be made through Calendly or through email. Office hours will be held until the last day of instruction. Arrupe College Math Fellows hold daily math workshops in Maguire Hall 303. Their schedule for the semester is available in Sakai.

Course Materials

MathXL (optional): Access to online practice problems and other resources. First-time math students will be, or have already been, provided with a 1-year MathXL access code as part of their Arrupe College technology packet. Other non-qualifying students will be instructed on how to pay for a subscription to MathXL with a credit card during the first day of class.

To register for MathXL and enroll in your section of Math 117 on MathXL, please follow the guidelines provided for you by your professor. You will need an access code and the Course ID below:

- The course name is: ACMAT 117: Manguba-Glover Fall 2025
- The course ID is: XL51-H1BB-3022-0M42

Optional Textbook: "PRECALCULUS", by Rockswold, sixth edition, Pearson. (ISBN 13: 978-0-13-441803-2; ISBN 10: 0-13-441803-4)

Students have the option of purchasing a hard-copy of the text if they wish. Hard-copies of the text will not be available at the bookstore but can be purchased from common online sources. A hard-copy of the text is neither required nor recommended.

Additional Material: A binder or folder is recommended for keeping papers organized. A notebook (or loose-leaf paper) is needed for notes and classwork/homework. Calculators (scientific) are highly-recommended.

Students must have access to the internet to complete work for this course. If there is no access to internet at home, students must plan to complete assignments at Arrupe or at another location that provides access to internet.

Course Objectives

- (1) Students will be able to recognize the difference between relations and functions and determine when a relation is a function both with sets of ordered pairs as well as with graphs.
- (2) Students will recognize different types of functions and identify the domain and range of functions including linear, quadratic, polynomial and rational.
- (3) Students will be able to identify the properties, characteristics, and graphs of functions such as linear, quadratic, polynomial and rational.
- (4) Students will graph transformations and calculate compositions of functions such as linear, quadratic, polynomial and rational and be able to determine domain and range of these functions and relations.
- (5) Students will be able to identify inverse functions and find the inverse of given functions.
- (6) Students will be able to identify the rational and real zeros of polynomial functions using the graphs of these functions and by using algebra along with the Factor Theorem and the Remainder Theorem.
- (7) Students will be able to use the Fundamental Theorem of Algebra to identify complex zeros of polynomial functions.
- (8) Students will be able to identify and determine the equation of a circle and use this to graph a circle in the coordinate plane.

Methods of Learning & Evaluation

Regular class sessions will consist of lecture and group work (in the form of group activities and/or worksheets). At the end of the course, your progress will be evaluated based on:

- Homework
- Practice Exams
- Group Work
- Exams

Each of these items are covered in more detail below.

Homework

Written homework problems will be assigned after each class period and are due at the **start** of the next class. For written assignments, you must write down all work required to complete each problem and submit it to Professor MG in order to receive credit. Students who do a homework problem incorrectly will be given the chance to correct their work for full credit, as long as solutions have not been posted. Students who turn in late work forfeit their ability to do rewrites.

It is encouraged that you do practice problems on your own. You may work together on homework but the final product needs to be your own work.

In-Class Group Work

Throughout the semester, students will be given class time to complete a problem set in groups. These problems should be submitted by the end of class for credit, unless otherwise stated. If you are absent on any given day, you may complete the worksheet at home before the deadline to make it up.

Practice Exams

Before each exam, you will be provided with a practice exam. You will need to complete these and submit the corresponding written work on, or before, the day of the exam.

Exams

There will be three written exams given throughout this course: two midterms and one final. Exams will be given in-class and will be closed book. The final exam will be cumulative. Here are the tentative exam dates:

Exam 1: September 30

Exam 2: November 11

Final Exam: December 9

While studying for an exam, you should work to understand the concepts being covered, not memorize problems. Showing your understanding on paper is key to receiving a good grade.

If you cannot make it to any given exam, you must contact Professor MG before the exam (or in cases of emergency, within 24 hours after) to determine if you are eligible for a make-up. Exams must be made up within a week of the exam date (if eligible). There are no make-up tests for the final exam.

Grading

30% Homework

10% Practice Exams

15% Exam 2

10% Group Work

15% Exam 1

20% Final Exam

A grading curve will be applied if necessary. Accurate course grades can be found in Sakai. Final grades will be assigned based on the Arrupe College grading scale:

A+ 4.00 97–100	B+ 3.33 87–89	C+ 2.33 77–79	D+ 1.33 67–69	F 0.00 ≤ 64
A 4.00 93–96	B 3.00 83–86	C 2.00 73–76	D 1.00 65–66	
A– 3.67 90–92	B– 2.67 80–82	C– 1.67 70–72		

Attendance Policy

Attendance will be taken at the start of every class session, and students are expected to show up on time. Any student who misses a class has the responsibility to make up any missed work. If a student misses a lecture, they are expected to obtain notes from a classmate.

As a Jesuit, Catholic university, Loyola University Chicago invites people of all faiths and traditions to be a part of our community and we are committed to supporting students to grow in their faith traditions. At Loyola, faculty members will make efforts to accommodate students if the observance of a major religious holiday interferes with a student's academic work. If a student is unable to attend a class, participate in a test or quiz, be present for a presentation, or complete an assignment on a specific day because of the observance of a religious holiday, the student will be excused and

provided the opportunity to make up the work. Students will continue to be responsible for all assigned work and should notify their professors in advance through Loyola email of the religious observance(s) that conflict with their classes.

Academic Integrity

My assumption is that all students enrolled in this course are sincere in their commitment to ethical academic inquiry and growth through participation in a rigorous and cooperative learning community. Academic misconduct is an offense against Arrupe College and Loyola University Chicago. For a fuller articulation of Loyola's academic integrity policy, see

<https://catalog.luc.edu/academic-standards-regulations/undergraduate/>

Acts of misconduct include but are not limited to:

- Cheating: The use or attempted use of any unauthorized assistance in taking a test or exam, or any other assignment.
- Fabrication: Deliberate falsification in completing an assignment.

A grade of zero will be assigned to a test or assignment where there is evidence of academic misconduct; this includes using a phone, smart watch, or other communication device when directed not to do so.

Math Homework Apps do more harm than good. If you rely on an app or website to find the answers to homework problems, it is unlikely that you will be able to successfully answer those same questions on a test. If you are struggling with homework, please come and talk to me. Arrupe has many resources for you to help you find ways to master the material. We want you to be successful in this course and into the future. Success comes with hard work, which takes time and practice.

Student Accessibility Center (SAC)

Loyola University provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with Student Accessibility Center (SAC), located in Sullivan Center, Suite 117. Professors receive the accommodation notification from SAC via Accommodate. Students are encouraged to meet with their professor individually in order to discuss their accommodations. All information will remain confidential. Please note that in this class, software may be used to record class lectures in order to provide equal access to students with disabilities. Students approved for this accommodation use recordings for their personal study only and recordings may not be shared with other people or used in any way against the faculty member, other lecturers, or students whose classroom comments are recorded as part of the class activity. Recordings are deleted at the end of the semester.

For more information about registering with SAC or questions about accommodations, please contact SAC at 773-508-3700 or SAC@luc.edu

Equal Access to Education

Loyola University offers a range of resources to meet student needs and to ensure that all Arrupe students have equal access to education.

- Wellness Center: Our physical and mental wellbeing impacts our ability to do academic work. Loyola's Wellness Center offers students a range of physical and mental health services, mostly for free. See <http://www.luc.edu/wellness/>

- Arrupe’s social workers, Nicole Sumida and Ernest Fernandez, are located in Maguire 216 and 218. You can also reach them by phone or email (nsumida@luc.edu, efernandez1@luc.edu, or 312-915-8945)

Title IX Services

Under Title IX federal law, “no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance.” If you or someone you know has been sexually harassed or assaulted, please use one or more of the following resources:

- The Community Coalition on Gender-Based Violence (<https://www.luc.edu/coalition/>)
- Loyola Sexual Assault Advocacy Hotline 773.494.3810 (The hotline is open Monday - Friday, 8am to 4:30pm and 24 hours on the weekend when school is in session.)
- Anonymous EthicsLine Reporting Hotline (www.luc.edu/ethicsline or 855-603- 6988)
- Campus Safety (773-508-6039)
- Center for Student Assistance & Advocacy: www.luc.edu/csaa
- The Title IX coordinator: Timothy Love; Office (773) 508-7766; tlove@luc.edu

Loyola University Chicago faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. Therefore, if a student chooses to confide in a member of Loyola’s faculty or staff regarding an issue of gender-based misconduct, that faculty or staff member is obligated to tell Loyola’s Title IX Deputy Coordinator. The Title IX Deputy Coordinator will assist the student in connecting with all possible resources for support and reporting both on and off campus. Please visit <https://www.luc.edu/equity/titleixequitylaws/titleix/> for more information regarding the University’s response to notifications of gender or sexuality-based misconduct.

Notice of Reporting Obligations for Responsible Campus Partners

As an instructor, I am considered a Responsible Campus Partner (“RCP”) under Loyola’s Comprehensive Policy and Procedures for Addressing Discrimination, Sexual Misconduct, and Retaliation (located at www.luc.edu/equity). While my goal is for you to be able to share information related to your life experiences through discussion and written work, I want to be transparent that as a RCP I am required to report certain disclosures of sexual misconduct (such as sexual assault, sexual harassment, intimate partner and/or domestic violence, and/or stalking) to the University’s Title IX Coordinator. As an instructor, I also have a mandatory obligation under Illinois law to report disclosures of or suspected instances of child abuse or neglect.

The purpose of these reporting requirements is for the University to inform students who have experienced sexual/gender-based violence of available resources and support. Such a report will not generate a report to law enforcement (no student will ever be forced to file a report with the police). Furthermore, the University’s resources and supports are available to all students even if a student chooses that they do not want any other action taken. Please note that in certain situations, based on the nature of the disclosure, the University may need to take additional action to ensure the safety of the University community. If you have any questions about this policy, you may contact the Office for Equity & Compliance at equity@luc.edu or 773-508-7766.

If you wish to speak with a confidential resource regarding gender-based violence, I encourage you to call The Line at 773-494-3810. The Line is staffed by confidential advocates from 8:30am-5pm M-F and 24 hours on the weekend when school is in session. Advocates can provide support, talk through your options (medical, legal, LUC reporting, safety planning, etc.), and connect you with additional

resources as needed. More information can be found at luc.edu/coalition or luc.edu/wellness.

****Contents of this syllabus are subject to change. Any changes will be announced and shared with students via the class website and/or email.****

Tentative Schedule

#	Date	Topic	Due
1	Tues, Aug 26	Introduction to Math 117 College Algebra Review	
2	Fri, Aug 29	Visualizing and Graphing Data (1.2)	First Day HW
3	Tues, Sep 2	Functions and their Representations (1.3)	1.2 HW
4	Fri, Sep 5	Types of Functions and Rates of Change (1.4)	1.3HW
5	Tues, Sep 9	Equations of Lines (2.1)	1.4HW
6	Fri, Sep 12	Linear Equations (2.2) Linear Inequalities (2.3))	2.1 HW
7	Tues, Sep 16	Modeling with Functions (2.4)	2.2-2.3HW
8	Fri, Sep 19	Quadratic Functions and Models (3.1)	2.4 HW
9	Tues, Sep 23	Quadratic Functions and Models (3.1) Quadratic Equations (3.2)	3.1 HW
10	Fri, Sep 26	Exam 1 Review	3.1-3.2 HW Unit 1 CW
11	Tues, Sep 30	Exam 1	Unit 1 Rewrites
12	Fri, Oct 3	Flex Day	
	Tues, Oct 7	Mid-Semester Break: No Classes	
13	Tues, Oct 10	Complex Numbers (3.3)	
14	Tues, Oct 14	Quadratic Inequalities (3.4)	3.3 HW
15	Fri, Oct 17	Tranformations of Graphs (3.5)	3.4 HW
16	Tues, Oct 21	More Nonlinear Functions and Their Graphs (4.1)	3.5 HW
17	Fri, Oct 24	Polynomial Functions and Models (4.2)	4.1 HW
18	Tues, Oct 28	Division of Polynomials (4.3)	4.2 HW
19	Fri, Oct 31	Real Zeros of Polynomial Functions (4.4)	4.3 HW
20	Tues, Nov 4	The Fundamental Theorem of Algebra (4.5)	4.4 HW
21	Fri, Nov 7	Exam 2 Review	4.5 HW Unit 2 CW
22	Tues, Nov 11	Exam 2	Unit 2 Rewrites
23	Fri, Nov 14	Rational Functions (4.6)	
24	Tues, Nov 18	More Equations and Inequalities (4.7)	4.6 HW
25	Fri, Nov 21	Radical Equations and Power Functions (4.8)	4.7 HW
26	Tues, Nov 25	Combining Functions (5.1)	4.8 HW
26	Fri, Nov 28	Thanksgiving Break: No Classes	
27	Tues, Dec 2	Inverse Functions and Their Representations (5.2)	5.1 HW
28	Fri, Dec 5	Final Exam Review	5.2 HW Unit 3 CW/HW
	Tues, Dec 9	Cumulative Final Exam	