

Mat 100 Precalculus (Spring 2013)

Syllabus

Frequency: Fall/Spring Terms

Credit: (1-2)2

Catalog description: Mat 100 is a preparatory course for calculus courses. Topics include: Functions and their inverses, operations with functions and graphing techniques, polynomial functions, rational functions, exponential and logarithmic functions, trigonometric functions, trigonometric identities and trigonometric equations, systems of equations, inequalities and solving techniques.

Justification for the Course Proposal: This course is meant to prepare students for success in the calculus series (MAT 119-120).

Course Objectives: A successful student will: become comfortable with the language of functions; gain an understanding of polynomial, rational, exponential, logarithmic and trigonometric functions and ability to describe their graphs; be able to solve linear and quadratic equations and equations with exponential and logarithmic functions; and gain problem solving skills analyzing the quantitative aspects of real- world problems and creating mathematical models.

Course Coordinator/Instructor: [İbrahim Ünal](#) (office: RZ-33, phone: x2902, email: uibrahim_at_metu.edu.tr)

Exams and Grading: Course grades are determined by (online) homework completed in recitations, a midterm exam, and a final exam, as well as a small number of bonus points awarded on the basis of attendance.

- **Short Exams:** 5x5 =%25 ([WeBWork](#))
- **Midterm:** 30 %
- **Final Exam:** 40 %
- **WebWork:** 5%
- **Bonus:** 5 % (3% for 80% attendance, 4% for 90% attendance, 5% for %100 attendance)
- **Homework:** Course homework will be assigned and graded using the online [WeBWork system](#).

Course Website: <http://math.ncc.metu.edu.tr/math100>

(You are responsible for regularly checking the course web page for updates and announcements.)

Textbook: Barnett, Ziegler, Syleen and Sobecki. *Precalculus* 7th ed. Mc Graw Hill, 2010.

Make-up Policy: In order to be eligible to enter the make-up examination for a missed examination, a student must have a documented or verifiable and officially acceptable excuse. **It is not possible to make up multiple missed exams.** The make-up examination for all exams will be after the final exam, **and will include all topics.**

Math Help Room: The [mathematics help room](#) in T-103 is a room staffed by mathematics faculty and teaching assistants where students may gather to ask questions, work on homework, and view exams.

NA Grade Policy: Students who attend less than 50% of lectures (< 6 classes) will not be eligible to take the final exam and will automatically be given an NA grade for the course. This will also apply to students who miss more than 2 short exams and the final exam without a valid excuse

Lectures

Section 1	Wed 13:40-14:30	TAZ-08
Section 2	Wed 14:40-15:30	TAZ-08

Recitations

Recitation 1	Fri 10:40-12:30	I-103
Recitation 2	Fri 13:40-15:30	I-103

ASSISTANT	OFFICE	PHONE	E-Mail
Münevver Çelik	SZ-43	2953	mucelik_at_metu.edu.tr
Arda Buğra Özer	RZ-40	2907	abozzer_at_metu.edu.tr
Yakut Dosi (formerly Dosieva)	RZ-31	2900	dyagut_at_metu.edu.tr

Important Dates

- February 14: Classes Start (Tuesday Schedule)
- February 15: (Wednesday Schedule)
- February 25-March 1: Add-Drop
- April 23: HOLIDAY (Tuesday)
- April 26: Last day for WITHDRAWAL
- May 1: HOLIDAY (Wednesday)
- May 24: Classes End
- May 27-June 8: Finals Period
- June 17: Grades Announce
- June 19-22: Resit Examinations

LECTURES

There will be 14 lectures given by the instructors, each lasting 1 class hour. Besides these lectures there will be 2 hours of recitation per week. The table below is a rough guideline for the content of course lectures. Professors may reorder content as necessary/desired. The section numbers below are from the textbook, *Precalculus*, (7th ed.) by Barnett, Ziegler, Syleen and Sobecki.

Week 1: Feb.11-15	1	Chapter R. Basic Algebraic Operations §R.1: Algebra and Real Numbers. §R.2: Exponents and Radicals. §R.3: Polynomials: Basic Operations and Factoring. §R.4: Rational Expressions.
Week 2: Feb.18-22	2	Chapter 1. Equations and Inequalities §1.1: Linear Equations and Applications. §1.2: Linear Inequalities. §1.3: Absolute Value in Equations and Inequalities.
Week 3: Feb.25-Mar.1	3	§1.4: Complex Numbers. §1.5: Quadratic Equations and Applications. §1.6: Additional Equation-Solving Techniques.
Week 4: Mar.4-8	4	Chapter 2. Graphs §2.1: Cartesian Coordinate System. §2.2: Distance in the Plane. §2.3: Equation of a Line. §2.4: Linear Equations and Models.
Week 5: Mar.11-15	5	Chapter 3. Functions §3.1: Functions. §3.2: Graphing Functions. §3.3: Transformations of Functions.
Week 6: Mar.18-22	6	§3.3: Transformations of Functions. §3.4: Quadratic Functions. §3.5: Operations on Functions; composition.
Week 7: Mar.25-29	7	§3.6: Inverse Functions. Chapter 4. Polynomials and Rational Functions §4.1: Polynomial Functions, Division and Models.
Week 8: Apr.1-5	8	§4.1: Polynomial Functions, Division and Models. §4.2: Real Zeros and Polynomial Inequalities.
Week 9: Apr.8-12	9	§4.4: Rational Functions and Inequalities. Chapter 5. Exponential and Logarithmic Functions §5.1: Exponential Functions.
Week 10: Apr.15-19	10	§5.3: Logarithmic Functions. §5.5: Exponential and Logarithmic Functions.
Midterm: Sunday, April 21 at 9:40am		
Week 11: Apr.22-26	11	Chapter 6. Trigonometric Functions §6.1: Angles and Their Measure. §6.2: Trigonometric Functions: A Unit Circle Approach. §6.3: Solving Right Triangles. §6.4: Properties of Trigonometric Functions.
Week 12: Apr.29-May.3	12	No Classes due to Holiday (LABOUR DAY, May 1st, Wednesday)
Week 13: May.6-10	13	§6.5: More General Trigonometric Functions and Models. §6.6: Inverse Trigonometric Functions. Chapter 7. Trigonometric Identities and Conditional Equations §7.1: Basic Identities and Their Use.
Week 14: May.13-17	14	§7.2: Sum, Difference and Cofunction Identities. §7.3: Double Angle and Half Angle Identities. §7.4: Product-Sum, Sum-Product Identities.
Week 15: May.20-24	15	§7.5: Trigonometric Equations. Chapter 8. Additional Topics in Trigonometry §8.1: Law of Sines. §8.2: Law of Cosines.
FINAL EXAM		