

MAT100 PRECALCULUS (SPRING 2016)

Credit: (1-2)2

Frequency: Fall/Spring Terms

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.

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: [Erhan Gürel](#) (office: TZ-32, phone: x3425, email: egurel_at_metu.edu.tr)

ODTÜ-Class: [\[MAT 100 All Sections\]](#)

Course grades and general course announcements will be posted on ODTÜ-Class. It also contains links to WeBWork and further course resources.

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

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, class participation, and/or project completion.

- **Homeworks:** 20 % ([WeBWork](#))
 - **Midterm:** 40 %
 - **Final Exam:** 50 %
 - **Short Exams:** 10 %
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- **TOTAL:** 120 %

Letter grades will follow the scheme below.

- 90% & Up: **AA**
 - 85% - 89%: **BA**
 - 80% - 84%: **BB**
 - 75% - 79%: **CB**
 - 70% - 74%: **CC**
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- 65% - 69%: **DC**
- 60% - 64%: **DD**
- 40% - 59%: **FD**
- 00% - 39%: **FF**

Homework: Course homework will be assigned and graded using the online [WebWork system](#).

Math Help Room: Office hours will be held in the [mathematics help room](#) (T-103). Students are encouraged to visit the help room both at the office hours of their own instructors, and others. The room can also be used for studying and for working in groups. *Students are also encouraged to seek out instructors in their offices.*

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.**

Cheating Policy: Cheating on any exam will result in any of the following:

1. immediate score of 0 on that exam,
2. immediate grade of **FF** in the course,
3. forwarding the case to the university disciplinary committee.

Lectures		
S1 - M. Poddar	Wed 9:40-10:30 Thu 10:40-11:30	TZ-20
S2 - E. Gurel	Tue 10:40-11:30 Fri 13:40-15:30	TZ-20
S3 - R. Koudenburg	Tue 10:40-11:30 Fri 13:40-15:30	TZ-21
S4 - R. Koudenburg	Tue 11:40-12:30 Fri 10:40-12:30	TZ-21
S5 - M. Poddar	Mon 11:40-12:30 Wed 10:40-12:30	TZ-21

Important Dates

- **February 22:** Classes Start
- **February 29-March 4:** Add-Drop period
- **April 25-29:** Withdrawal period
- **May 19:** HOLIDAY (Thursday)
- **May 27:** Classes End
- **May 30-June 11:** Finals Period
- **June 18:** Grades Announced
- **June 22-24:** Resit Exams

<p><u>Week 1:</u> Feb.22-26</p>	<p>1</p>	<p>Chapter R. Basic Algebraic Operations</p> <p>§R.1: Algebra and Real Numbers. §R.2: Exponents and Radicals. §R.3: Polynomials: Basic Operations and Factoring. §R.4: Rational Expressions.</p>
<p><u>Week 2:</u> Feb.29- Mar.4</p>	<p>2</p>	<p>Chapter 1. Equations and Inequalities</p> <p>§1.1: Linear Equations and Applications. §1.2: Linear Inequalities. §1.3: Absolute Value in Equations and Inequalities.</p>
<p><u>Week 3:</u> Mar.7-11</p>	<p>3</p>	<p>§1.4: Complex Numbers. §1.5: Quadratic Equations and Applications. §1.6: Additional Equation-Solving Techniques.</p>
<p><u>Week 4:</u> Mar.14-18</p>	<p>4</p>	<p>Chapter 2. Graphs</p> <p>§2.1: Cartesian Coordinate System. §2.2: Distance in the Plane. §2.3: Equation of a Line. §2.4: Linear Equations and Models.</p>
<p><u>Week 5:</u> Mar.21-25</p>	<p>5</p>	<p>Chapter 3. Functions</p> <p>§3.1: Functions. §3.2: Graphing Functions. §3.3: Transformations of Functions.</p>
<p><u>Week 6:</u> Mar.28- Apr.1</p>	<p>6</p>	<p>§3.3: Transformations of Functions. §3.4: Quadratic Functions. §3.5: Operations on Functions; composition.</p>
<p><u>Week 7:</u> Apr.4-8</p>	<p>7</p>	<p>§3.6: Inverse Functions.</p> <p>Chapter 4. Polynomials and Rational Functions</p> <p>§4.1: Polynomial Functions, Division and Models.</p>
<p><u>Week 8:</u></p>	<p>8</p>	<p>§4.1: Polynomial Functions, Division and Models. §4.2: Real Zeros and Polynomial Inequalities.</p>

Apr. 11-15		
<u>Week 9:</u> Apr. 18-22	9	<p>§4.4: Rational Functions and Inequalities.</p> <p>Chapter 5. Exponential and Logarithmic Functions</p> <p>§5.1: Exponential Functions.</p>
<u>Week 10:</u> Apr. 25-29	10	<p>§5.3: Logarithmic Functions.</p> <p>§5.5: Exponential and Logarithmic Functions.</p>
<u>Week 11:</u> May 2-6	11	<p>Chapter 6. Trigonometric Functions</p> <p>§6.1: Angles and Their Measure.</p> <p>§6.2: Trigonometric Functions: A Unit Circle Approach.</p> <p>§6.3: Solving Right Triangles.</p> <p>§6.4: Properties of Trigonometric Functions.</p>
<u>Week 12:</u> May 9-13	12	<p>§6.5: More General Trigonometric Functions and Models.</p> <p>§6.6: Inverse Trigonometric Functions.</p> <p>Chapter 7. Trigonometric Identities and Conditional Equations</p> <p>§7.1: Basic Identities and Their Use.</p>
<u>Week 13:</u> May 16-20	13	<p>§7.2: Sum, Difference and Cofunction Identities.</p> <p>§7.3: Double Angle and Half Angle Identities.</p> <p>§7.4: Product-Sum, Sum-Product Identities.</p>
		Holiday: Thursday, May 19
<u>Week 14:</u> May 23-27	14	<p>§7.5: Trigonometric Equations.</p> <p>Chapter 8. Additional Topics in Trigonometry</p> <p>§8.1: Law of Sines.</p> <p>§8.2: Law of Cosines.</p>
FINAL EXAMS May 30 -- June 11		