Mat 100 Precalculus (Fall 2013)

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.

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: SZ-32, phone: x2942, email: egurel@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, class participation, and/or project completion.

- Homeworks: 10 % (x2) = 20 % (WeBWork)
- **Midterm:** 30 %
- Final Exam: 50 %
- **Bonus:** Pop-up quizzes will provide bonus points.

Homework: Course homework will be assigned and graded using the online WeBWork .

Course Website: <u>http://math.ncc.metu.edu.tr/math100</u> (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. **Students are also invited to seek out instructors in their offices.**

| Lectures | | | | |
|-----------|-----------------|--------|--|--|
| Section 1 | Wed 9:40-10:30 | TAZ-11 | | |
| Section 2 | Mon 14:40-15:30 | TAZ-10 | | |
| Section 3 | Mon 13:40-14:30 | TAZ-10 | | |
| Section 4 | Mon 10:40-11:30 | TAZ-8 | | |
| Section 5 | Mon 8:40-9:30 | TAZ-11 | | |

| Recitations | | | | |
|--------------|-----------------------------------|--------|--|--|
| Recitation 1 | Thr 15:40-16:30 | TAZ-11 | | |
| Recitation 2 | Tue 10:40-12:30 | TAZ-10 | | |
| Recitation 3 | Thr 8:40-10:30 | TAZ-10 | | |
| Recitation 4 | Wed 10:40-12:30 | TAZ-8 | | |
| Recitation 5 | Mon 10:40-11:30, Wed 8:40-9:40 | TAZ-11 | | |

| Instructor | Section | Office | Phone | E-Mail |
|-------------|------------------|--------|-------|--------------------|
| Kürşat Aker | Sections 2, 3 | S-131 | 2959 | kaker@metu.edu.tr |
| Erhan Gürel | Sections 1, 4, 5 | SZ-32 | 2942 | egurel@metu.edu.tr |

| | | Chapter R. Basic Algebraic Operations | | | |
|--------------------------|--|--|--|--|--|
| Week 1: Sep.23-27 | §R.1: Algebra and Real Numbers. | | | | |
| | 1 | §R.2: Exponents and Radicals. | | | |
| | | §R.3: Polynomials: Basic Operations and Factoring. | | | |
| | <u> </u> | 9R.4: Rational Expressions. | | | |
| Week 2: | | Chapter 1. Equations and Inequalities | | | |
| Sep.30- 2 Oct.4 | §1.1: Linear Equations and Applications. | | | | |
| | | §1.2: Linear inequalities. §1.3: Absolute Value in Equations and Inequalities | | | |
| | | §1.5. Absolute Value III Equations and mequanties. | | | |
| Week 3: | 2 | §1.4: Complex Numbers. | | | |
| Oct.7-11 | 3 | §1.5: Quadratic Equations and Applications. | | | |
| | | §1.0: Additional Equation-Solving Techniques. | | | |
| | | HOLIDAY (Kurban Bayram) Tuesday-Friday, 15-18 October | | | |
| | | Chapter 2. Graphs | | | |
| Wook 1. | | §2.1: Cartesian Coordinate System. | | | |
| Oct 21-25 | 4 | §2.2: Distance in the Plane. | | | |
| | | §2.3: Equation of a Line. | | | |
| | | §2.4: Linear Equations and Models. | | | |
| Week 5 | | Chapter 3. Functions | | | |
| Oct 28- | 5 | §3.1: Functions. | | | |
| Nov.1 | | §3.2: Graphing Functions. | | | |
| | | §3.3: Transformations of Functions. | | | |
| Week 6 | | §3.3: Transformations of Functions. | | | |
| Nov. 4-8 | 6 | §3.4: Quadratic Functions. | | | |
| | | §3.5: Operations on Functions; compositon. | | | |
| Week 7. | | §3.6: Inverse Functions. | | | |
| Nov. 11-15 | 7 | Chapter 4. Polynomials and Rational Functions | | | |
| | | §4.1: Polynomial Functions, Division and Models. | | | |
| Week 8: | 8 | §4.1: Polynomial Functions, Division and Models. | | | |
| Nov.18-22 | 0 | §4.2: Real Zeros and Polynomial Inequalities. | | | |
| Week Q. | | §4.4: Rational Functions and Inequalities. | | | |
| Nov 25-29 | 9 | Chapter 5. Exponential and Logarithmic Functions | | | |
| 1101.25 27 | | §5.1: Exponential Functions. | | | |
| Week 10: | 10 | §5.3: Logarithmic Functions. | | | |
| Dec.2-6 | 10 | §5.5: Exponential and Logarithmic Functions. | | | |
| West 11. | | Chapter 6. Trigonometric Functions | | | |
| | | §6.1: Angles and Their Measure. | | | |
| Dec 9-13 | 11 | §6.2: Trigonometric Functions: A Unit Circle Approach. | | | |
| Dec. 7 15 | | §6.3: Solving Right Triangles. | | | |
| | | §6.4: Properties of Trigonometric Functions. | | | |
| Week 12: Dec.16-20 12 | §6.5: More General Trigonometric Functions and Models. | | | | |
| | §6.6: Inverse Trigonometric Funtions. | | | | |
| | 12 | Chapter 7. Trigonometric Identities and Conditional Equations | | | |
| | §7.1: Basic Identities and Their Use. | | | | |
| Week 13: Dec.23-27 | | §7.2: Sum, Difference and Cofunction Identities. | | | |
| | 13 | §7.3: Double Angle and Half Angle Identities. | | | |
| | ļ | §7.4: Product-Sum, Sum-Product Identities. | | | |
| Week 14. | | §7.5: Trigonometric Equations. | | | |
| Dec.30- Jan.3 | 14 | Chapter 8. Additional Topics in Trigonometry | | | |
| | | §8.1: Law of Sines. | | | |
| | | §8.2: Law of Cosines. | | | |
| | FINAL EXAM | | | | |