ADVANCED COURSES FOR NON-MAJORS

Because of the fundamental role that mathematics plays in all types of scientific and technical endeavor, the advanced course offerings of the Mathematics Department must serve a group considerably larger than those preparing for a career in mathematics exclusively.

Economics, Business Administration and Computer Science

The following basic subjects are recommended to master’s degree candidates as preparation for work in their profession; they also provide a solid background for students who intend to pursue doctoral studies after completion of the master’s program:

### Numerical Methods
- **MAT 5100** Numerical Methods I 3
- **MAT 5110** Numerical Methods II 3

### Algebra
- **MAT 5420** Algebra I 4

### Operations Research
- **MAT 5770** Mathematical Models in Operations Research 3

### Probability Theory
- **MAT 5700** Introduction to Probability Theory 4

### Statistical Methods, Applied Time Series and Design of Experiments
- **MAT 5800** Introduction to Mathematical Statistics 4
- **MAT 5830** Applied Time Series 3

### Engineering and Physical Applications

The Mathematics Department has several sequences in applied mathematics that provide experienced engineers and scientists from industry and government the means to acquire and maintain the technical competence needed to work at the frontiers of their fields (for additional courses to those listed below, see the Graduate Bulletin):

### Numerical Methods
- **MAT 5100** Numerical Methods I 3
- **MAT 5110** Numerical Methods II 3

### Applied Analysis
- **MAT 5220** Partial Differential Equations 4
- **MAT 5230** Complex Variables and Applications 4

### Probability Theory and Random Processes
- **MAT 5700** Introduction to Probability Theory 4

### Differential Geometry
- **MAT 5530** Elementary Differential Geometry and its Applications 3

Students who feel that they eventually would like to pursue mathematical studies beyond the level of the above sequences should make every effort to take the mathematics sequences that begin with **MAT 5600**, **MAT 5420**, respectively, and **MAT 6600**. These courses will help them to understand and work with abstract concepts in advanced courses.

### Statistics

Students requiring only an introduction to basic statistics are referred to **STA 1020** or **MAT 2210**. Those whose work demands a good foundation in mathematical statistics are referred to **MAT 5700** and **MAT 5800**. **MAT 5830** is useful for students interested in applied statistics.

In addition to the interdepartmental course listed below, specialized courses in statistics are offered by individual departments:

- **ECO 5100** Introductory Statistics and Econometrics 4
- **ECO 6100** Introduction to Econometrics 4
- **MAT 2210** Probability and Statistics 4
- **MAT 5700** Introduction to Probability Theory 4
- **MAT 6830** Design of Experiments 3
- **PSY 3010** Statistical Methods in Psychology 4