

**SCHOOL OF BUSINESS & ECONOMICS
Department of Economics**

**Course Name:** Applied Mathematics -1

**Course Code and Section:** ECO 134

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**Instructor Information**

**Instructor Name:** **NAVEEN ABEDIN**

**Office Room:** NAC 824

**Office Hours:** TBA

**Email Address:** naveen.abedin@northsouth.edu

**Links:** **http://nabedineconomicsnsu.weebly.com** **(for course Resources)**

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**Course Information**

**Class Time and Location:** ST 4:20 – 5: 50 PM; NAC 207

**Course Prerequisite(s):** ECO 101 & ECO 104

**Course Credit Hours:** 3

**Course Description:** Applied Mathematics I introduces the students to a range of mathematical theories and principles most commonly applied to solve and study quantitative economic problems. The major topics include economic models, functions and graphs, matrix algebra, continuity and differentiability of function, differential calculus and so on. In addition, the course will largely draw examples from real world scenarios and problems that are particularly relevant to Economics and Business students.

**Student Learning Outcomes:** Upon successful completion of this course, students should be able to:

* Sketch graphs for the following types of functions: linear, quadratic, cubic, exponential, logarithmic and rational
* Have basic understanding of set theory and the real number system
* Be able to solve for partial market equilibrium – both for linear and non-linear models
* Be able to solve for general market equilibrium – two goods market with complement and substitute goods
* Represent a linear system of equations in matrix form
* Find the rank of 2x2 and 3x3 matrices using row echelon
* Identify linear independence (non-singularity) using rank of a matrix
* Find determinant of 2x2 and 3x3 matrices using La Place expansion
* Identify linear independence (non-singularity) using determinant of a matrix
* Solve a linear system of equations using matrix inversion or Cramer’s rule
* Identify limits of continuous and discontinuous functions
* Find derivatives of polynomials and rational functions using power rule, product rule, quotient rule and chain rule
* Evaluate partial derivatives of functions with two or more independent variables
* Find total differentiation and total derivatives for functions with two or more independent variables

**Textbook(s)**

**Primary Reading: *Fundamental Methods of Mathematical Economics, 3rd or 4th edition, by Alpha C. Chiang and Kevin Wainwright.***

**Supplementary Reading:** It is strongly recommended that students read from the following book for extra practice and a better understanding on certain topics of the syllabus:

**Schaum’s Outline Series Introduction to Mathematical Economics, (2nd or 3rd Edition) by Edward T. Dowling**

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**Tentative Schedule**

1. Chiang Chapter 2: Economic Models
2. Chiang Chapter 3: Equilibrium Analysis in Economics

**MIDTERM 1 EXAM (Syllabus: Chapters 2 and 3)**

1. Chiang Chapter 4: Models and Matrix Algebra: Vector and Matrix Operations
2. Chiang Chapter 5: Linear Models and Matrix Algebra: Determinants of matrix and finding solutions to linear equation system

**MIDTERM 2 EXAM (Syllabus: Chapters 4 and 5)**

1. Chiang 6: Comparative Statics and the Concept of Derivative
2. Chiang 7: Rules of Differentiation and Their use in Comparative Statics
3. Chiang 8: Comparative Static Analysis of General Functions model

**FINAL EXAM (Syllabus: Chapters 6, 7 and 8)**

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**Course Evaluation**

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| **Grading categories** | **% contributing towards the final grade** |
| Quizzes/Assignments | 20%  |
| Mid-term 1 Exam | 25% |
| Mid-term 2 Exam | 25% |
| Final Exam | 25% |
| Attendance & Participation | 5% |
| **Total** | **100%** |

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**Late Submission and Make-up Policy**

Make-up Midterm Exams will **NOT** be taken unless the student faces a severe crisis. The students must submit applications in advance including all supporting documents before appearing for make-up midterm exams.

Make-up for quizzes and final exam are **NOT** allowed under any circumstances, unless advised by the authorities.

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**Rules of Conduct**

Switch off your cell phones when you enter the classroom

If you disrupt or distract the class in any way, the instructor has the right to ask you to leave the classroom. Repeated misconduct will earn you a one-way ticket to the Proctor’s Office.

BE ON TIME! Your attendance points will be heavily penalized for repeated tardiness.

Please Refer to NSU Student CODE OF CONDUCT at www.northsouth.edu/student-code-of-conduct.html