



Fakultas Ekonomi, Universitas Gadjah Mada  
Faculty of Economics, Gadjah Mada University

## **COURSE OUTLINE**

### **MATHEMATICS FOR BUSINESS I**

### **(MATRIX AND CALCULUS)**

Course code and Session: **EKU 1101, Semester I 2005/2006**

Credit units: **3 units**

Lecturer: **Dr. Bagus Santoso. M.Soc.Sc.**

Office: Faculty of Economics UGM

Jl. Humaniora No. 1 Bulaksumur, Yogyakarta

Phone: +62 (274) 548 511 - 548 515 Ext: 188

**Drs. Sutjiana, M.Sc.**

Office: Faculty of Mathematics and Science, UGM

Sekip Utara, Jogjakarta 55281

Mentor: **Diny Ghuzini, S.E., M.Ec.**

Office: Faculty of Economics UGM

Jl. Humaniora No. 1 Bulaksumur, Yogyakarta

Phone: +62 (274) 548 510 - 548 515 Ext.: 242

Class schedule: **Friday, 13:15 - 15:30**

Mentor schedule: **Monday, 9:40 - 11:10**

Class venue: **T212 FE UGM**

### **Course Materials**

This course will introduce mathematical concepts and their applications on economics and business. Materials in this course will emphasize on three topics, i.e. matrices and calculus. In modern times, calculus and matrix are widely used to almost all branches of sciences, including business and economics. Therefore, this course is designated to provide strong mathematical foundations. This course also aims to give you practical skills by providing tutorial classes and computer lab sessions to solve mathematical problems.

### **Rule of Conducts**

This course has simple rule of conducts. It is not compulsory for students to attend classes. To attend or not to attend classes is students' interest and responsibility. Even

This course has simple rule of conducts. It is not compulsory for students to attend classes. To attend or not to attend classes is students' interest and responsibility. Even though attendance is not compulsory, please be aware that lectures and tutorials of this course will contain quite different level of materials to those in your high school maths. You might have difficulties to understand next subjects if you miss the classes. Class assignments/tests cannot be substituted by other assignments/tests unless you face unfortunate events (proved by valid letters). Students are required to dress appropriately, not to wear slippers/sandals, to silent mobile phones and not to make noise during the class.

### **Grading**

Assignments and tests will be administered regularly. Tests will be announced a week in advance to allow students to prepare for the tests. Assignments are intended to develop your skills in understanding and communicating mathematics. We agree with the proverb "if you can't explain it, you don't understand it".

Students are required to sit in mid-term and final-term exams. Failure to sit in the exams will cause you fail in this course. Your grading will be composed from three components:

Tests and assignments	40%
Mid exam	30%
Final exam	30%

### **Exams**

Mid-term and final-term exam timetable will be arranged by the faculty administrative office. There will be no replacement exams. Students are reminded not to cheat in the exams or in carrying out assignments/tests. Any kinds of cheating will result Triple-F mark. Students are reminded to go to toilets before the exams are commenced. During the exams, students are not allowed to go to the toilets without being accompanied by exam attendance.

### **Topics Covered**

1. Introduction: Relations and Functions (Klein Ch. 1, Ch 2, Ch 3, Chiang Ch 1, Ch 2)
2. Equilibrium Analysis in Economics (Chiang Ch 3)
3. Linear Models and Matrix Algebra #1 (Klein Ch. 4, Chiang Ch. 4)
4. Linear Models and Matrix Algebra #2 (Klein Ch. 4, Chiang Ch. 5)

5. Linear Models and Matrix Algebra #3 (Klein Ch 5, Chiang Ch 5)
6. Comparative Statics and Concepts of Derivatives (Klein Ch 6, Chiang Ch 6)
7. Rules of Differentiation and Their Use in Comparative Statics #1 (Klein Ch 7, Chiang Ch 7)
8. Rules of Differentiation and Their Use in Comparative Statics #2 (Klein Ch 8, Chiang Ch 7)
9. Comparative-Static Analysis of General-Function Models (Klein Ch 8, Chiang Ch 8)
10. Optimization #1 (Klein Ch 9, Chiang Ch 9, Ch 11)
11. Optimization #2 (Klein Ch 10, Ch 13, Chiang Ch 10)
12. Integral Calculus (Klein Ch 12, Chiang Ch 13)

### **Textbooks**

Michael **Klein**, 1998, *Mathematical Methods for Economics*

Alpha **Chiang**, 1984, *Fundamental Methods of Mathematical Economics*

Michael **Hoy** et. al., 2001, *Mathematics for Economics*, 2 Ed.

R.G.D. **Allen**, 1938, *Mathematical Analysis for Economists*

### **Note:**

Allen and Hoy et. al. will be used as a complementary source especially for problem solving and applications.

Sequence of topics delivered in the class will depend on dynamics of class.