Ms. Annika Mueller, Ph.D.                The Wang Yanan Institute for Studies in Economics
Dr. Brett Graham                         Xiamen University
Dr. Marcel Bluhm

## Mathematics for Economists

Course Description:

This is a course to provide fundamental mathematical tools for economics. In particular, the objective of this course is to give the necessary mathematical foundation needed for the EGEI lectures in Advanced Econometrics, Advanced Macroeconomics, and Advanced Microeconomics. The course covers, among other things, derivatives, constrained and unconstrained optimization, exponential and logarithmic functions, and linear algebra. You will also be introduced to Matlab programming language. Therefore, the course also has a hands-on component, involving numerically solving mathematical and statistical problems. Furthermore, numerous economic applications will be covered in class to clarify concepts. By the end of the course you should be familiar with the mathematical tools covered in class and be able to use these tools in formalizing and solving problems in economics. The course will be given during the first two weeks of the semester.

As an optional course it counts as 3 ECTS credits.

Course Language:

English

Topics covered:

| Section | Lecturer | Topics |
|---------|----------|--------|
| A | Dr. Mueller | Unconstrained and Constrained Optimization, Homogeneous and Homothetic Functions, Concave and Quasiconcave Functions |
| B | Dr. Graham | Linear algebra |
| C | Dr. Bluhm | Derivatives, logarithmic and exponential functions, function approximation, introduction to Matlab |

Class Time and Location:

| Section | Lecturer | Class time (location) Session 1 | Class time (location) Session 2 |
|---------|----------|--------------------------------|--------------------------------|
| A | Dr. Mueller | Monday, 2:30-4:10 (JiMei 1-104) | Wednesday, 2:30-4:10 (Tong' an 1-103) |
| B | Dr. Graham | Tuesday, 14:30-16:10 (Tong' an 1-102) | Thursday, 10:10-11:50 (Tong' an 1-103) |
| C | Dr. Bluhm | Monday, 10:10-11:50 (Tong' an 1-104) | Wednesday, 10:10-11:50 (Econ Bldg-N301) |

Course Requirements:

Since the course is split into three sections, the final grade will consist of (i) a final exam covering all three sections at the beginning of January 2014 (80%) as well as the average of three individual section grades assigned by the respective lecturers (20%). For example, if a student scores 4 in the final exam and receives scores of 5, 3, and 4 in Sections A to C, respectively, the final grade will be .8*4+.2*1/3(5+3+4)=4 which is equivalent to a B (see grading policy attached at the end of the document). The individual section grades will be based on:

| Section | Lecturer | Section Grade Components |
|---------|----------|-------------------------|
| A | Dr. Mueller | 2 pop-up quizzes |
| B | Dr. Graham | 2 quizzes written on the 26th and 10th of October, respectively |
| C | Dr. Bluhm | 2 quizzes written on the 23rd and 30th of September, respectively |

Note that class attendance is required and will be observed. Under EGEI rules, attending all lectures is mandatory. Being absent without bringing notice to the Section TA within 24 hours and medical justification or official documentation within 1 week leads to not passing the course requirement.

Course Website:
Lecture slides and material for Section A can be found on the website: www.marcelbluhm.com.

Course Logistics:
Classes emphasizing problem solving skills for Section A will be taught by Ali Husain Ahmed (alimath85@hotmail.com) in NanQiang 2-506 on Fridays from 10:10 to 11:50.
Classes emphasizing problem solving skills for Section B will be taught by Sylvia Gao in 504-Nanqiang 2 on Fridays from 14:30 to 16:10.
Classes emphasizing problem solving skills for Section C will be taught by Ali Husain Ahmed (alimath85@hotmail.com) in 506-NanQiang 2 on Fridays from 8:00am to 9:40am.

| Section | Instructor | Email | Location | Time |
|---------|-----------|-------|----------|------|
| A | Ali Husain Ahmed | alimath85@hotmail.com | NanQiang 2-506 | Friday, 10:10-11:50 |
| B | Sylvia Gao | xiaoyigaowise11ma@hotmail.com | NanQiang 2-504 | Friday, 14:30-16:10 |
| C | Ali Husain Ahmed | alimath85@hotmail.com | NanQiang 2-506 | Friday, 08:00-09:40 |

Contact and Office Hours:

| Section | Lecturer | Office | E-Mail | Office Hours |
|---------|----------|--------|--------|--------------|
| A | Dr. Mueller | A311–Economics Bldg. | amueller.wise.xmu@gmail.com | Tuesdays 8:30-10:30 or by appointment |
| B | Dr. Graham | A301-Economics Bldg. | bgraham.wise@gmail.com | Mon & Fri, 8:30-10:00 or by appointment |
| C | Dr. Bluhm | E402-Economics Bldg. | bluhm@xmu.edu.cn | Wednesdays 15:00-17:00 or by appointment |

Course Material:
The main textbook for the course is:
C. P. Simon and L. Blume (1994): *Mathematics for Economists*, W. W. Norton and Company.

Further material required for reading such as a discussion texts as well as a primer on Matlab will be provided on the respective section websites.

**WISE EGEI PROGRAM -- PROCEDURES AND POLICIES 2013-2014**

COURSE ATTENDENCE:
Regular class attendance is expected of all students. For excused absences, the student must submit a leave request to the instructor for approval and supply supporting evidence as required by the instructor.

MAKE-UP EXAMS:
The EGEI program offers students the possibility of resit examinations. These are organized in the period end of August – beginning of September 2014, and can be taken at any of the nine partner universities.

GRADING POLICY AND GRADING SCALE:
All examinations will be graded according to the ECTS convention.
       A: 'excellent' (outstanding performance with no or only minor errors);
       B: 'very good' (above the average standard but with some errors);
       C: 'good' (generally sound work with a number of notable errors);
       D/E: 'satisfactory/sufficient' (pass; performance meets the minimum requirements);
       FX: 'not sufficient' (marginal fail);
       F: 'poor' (fail).
These grades are converted, for the purpose of the calculation of overall averages, to a numerical equivalent on a scale from 5 to 0, with A corresponding to score of 5, B to a score of 4, C to a score of 3, D/E to a score of 2, FX to a score of 1, and F to a score of 0.

SCHOLASTIC DISHONESTY:
The EGEI program defines scholastic dishonesty broadly as any act by a student that misrepresents the student's own academic work or that compromises the academic work of another. Examples include cheating on assignments or exams, plagiarizing (misrepresenting as one's own anything done by another), unauthorized collaboration on assignments or exams, or sabotaging another student's work.
Students who copy assignments, allow assignments to be copied, or cheat on quizzes, will fail the assignment or quiz on the first offense, and fail the entire course on the second. Cheating on mid-term or final exams will result in automatic failure for the course.

STUDENT CONDUCT AND CLASSROOM BEHAVIOR:
Students are expected to contribute to a calm and productive learning environment.

COMPLAINTS OR CONCERNS ABOUT COURSES:
Please contact your instructor or TA if you have any complaints/concerns about the course.
If your concerns are not resolved after talking with your instructor, you can contact:
   - the local administrative and academic coordinators of the MA EGEI:
     Ms Sying Hou (syhou.wise@gmail.com),
     Mr Marcel Bluhm (bluhm.wise.xmu@googlemail.com);
   - the overall administrative and academic coordinators of the MA EGEI:
     Ms Mieke Vermeire (mieke.vermeire@uantwerpen.be),
     Mr Guido Erreygers (guido.erreygers@uantwerpen.be).