Course and Examination Fact Sheet: Autumn Semester 2015

3,607: An introduction to MATLAB

ECTS credits: 2

Overview examination/s
(binding regulations see below)
Decentral - Group examination paper with presentation (all given the same grades) (50%)
Decentral - Written examination (50%, 60 mins.)

Attached courses
Timetable -- Language -- Lecturer
3,607,1.00 An introduction to MATLAB -- English -- Gruber Peter

Course information

Course prerequisites
No programming experience is required. Students should be interested in quantitative problem solving and should know basic highschool mathematics (functions, derivatives, integrals, sums, vectors) as well as basic statistics.

Course content
Writing a simple program is a skill that every economics student should posses. Programming is not very difficult - a program is just a list of precise guidelines that the computer should follow - and it can be a lot of fun. Most important: a little programming helps you to get your work done much faster.
The goals of this course are

- Learn a simple programming language: MATLAB
- Manage data with MATLAB and create beautiful graphs
- Use MATLAB to simplify and speed up course work
- Understand how computers solve problems in a different way than humans

This course takes place in the PC lab and it is 100% learning-by-doing. Grading is based on mini-quizzes as well as a group project towards the end of the semester.

Course structure
The course is organized in 8 blocks of 3 hours. The course is organized along computational concepts, not applications. For example, one lecture focuses on handling data. This skill can be used for everything from macroeconomics to finance.

Each block starts with a new concept that is presented by studying a given MATLAB program. We then extend and modify this program and try to understand the underlying idea(s). The first 15 minutes of each block are dedicated to a mini-quiz, i.e. implementing a small task in MATLAB.

The topics covered in the course include

- MATLAB as a pocket calculator
- Data: finding, organizing, processing and storing it
- Working with vectors and matrices (no prior knowledge of matrices required)
- 2D and 3D plotting
- Simple numeric algorithms

Contextual Studies are considered part of Contact Learning; thus, taking part properly implies regular attendance. It is the students’ own responsibility to ensure that there is no timetable clash between the courses they have chosen.
Course literature

This course is based on sample programs, PC labs and in part on slides. All relevant material will be made available on the StudyNet.


Additionally, students have access to the 200-page script for my master course.

Additional course information

Buying MATLAB is not a requirement for this course, but a student version is available for approx. CHF 100. If you buy it, make sure to include the following toolboxes

- Statistics Toolbox
- Optimization Toolbox
- Symbolic Math Toolbox

Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination time and form

Decentral - Group examination paper with presentation (all given the same grades) (50%)

Remark

Programming project in groups of 2 students

Examination-aid rule

Term papers

- Term papers must be written without anyone else's help and in accordance with the known quotation standards, and they must contain a declaration of authorship.
- The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the APA or MLA standards. The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into the text in accordance with the precepts of the applicable quotation standard, while informative and bibliographical notes must be added as footnotes (recommendations and standards can be found, for example, in METZGER, C. (2013), Lern- und Arbeitsstrategien (11th ed., 3rd printing). Aarau: Sauerländer).
- For any work written at the HSG, the indication of the page numbers both according to the MLA and the APA standard is never optional.
- Where there are no page numbers in sources, precise references must be provided in a different way: titles of chapters or sections, section numbers, acts, scenes, verses, etc.
- For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B. (2014, Juristisches Arbeiten: Eine Anleitung für Studierende (5. Auflage), Zürich: Schulthess, or the recommendations of the Law School).

Supplementary aids

Please note that the quotation rules also apply to program code.

Examination languages

Question language: English
Answer language: English
2. Examination sub part (2/2)

Examination time and form
Decentral - Written examination (50%, 60 mins.)

Remark
Mini-Programming Quiz during each class

Examination-aid rule
Extended Closed Book
The use of aids is limited; any additional aids permitted are *exhaustively* listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments TI-30 series and bilingual dictionaries without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

Supplementary aids
The mini-Quiz will be held at the PC-Lab. Students can use any printed material (e.g. the script, the slides, sample codes) and all functionality of MATLAB (including the help function). Use of any other program (web browser, email, etc) is not allowed.

Examination languages
Question language: English
Answer language: English

Examination content
At the beginning of each three-hour class, there will be a Mini-Quiz which takes approx. 15 min. Students have to solve tasks by writing a small MATLAB program. Four of the quizzes will be graded, the respective dates will be announced by the lecture. Points are given for:

- Technical correctness of the program (program does not crash)
- Mathematical/economical correctness of the solution (it gives the correct result)
- Conformity to the rules of good programming style (it is written in a structured and elegant way)
- Extra points are awarded for speed (i.e. handing in the answers early).

Examination relevant literature
This course more is about mastering a technique than reproducing facts, therefore any literature can only be indicative.

- The slides and all sample programs as published on the StudyNet (published by November 17th at the latest).
- MATLAB getting started guide (version 8.3), sections 1, 2, 3-1 to 3-63, 5 available at http://www.mathworks.com/help/pdf_doc/matlab/getstart.pdf
Please note
We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc.

When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 20 August 2015
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 12 October 2015
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 02 November 2015

Please look at the fact sheet once more after these deadlines have expired.