COURSE SYLLABUS

ANGLO AMERICAN UNIVERSITY

Introduction to Econometrics

Course code: MTH 250/ 550
Semester and year: Spring 2021
Day and time: Wednesday, 14:45-17:30
Instructor: Ing. Arshad Hayat, MA. MSc. Ph.D.
Instructor contact: arshad.hayat@aauni.edu
Consultation hours: Wednesday 17:30-18:30

Credits US/ECTS	3/6	**Level**	Introductory
Length	15 weeks	**Pre-requisite**	MTH111, MTH 222
Contact hours	42 hours	**Course type**	Bachelor Required, Masters Elective

1. Course Description

The course is designed to show and master the principles of the econometric model building with emphasis on economic interpretation and verification of results. Students will get a chance to practice the techniques of econometric evaluation and also to solve a rich set of practical real-life problems.

2. Student Learning Outcomes

Upon completion of this course, students will be able to:

- Formulate an appropriate and clear research question;
- Find and process adequate data;
- Correctly implement hypotheses testing and interpret the results;
- Correctly implement correlation analysis and interpret the results;
- Correctly implement regression analysis and interpret the results;
- Do the sensitivity tests.

3. Reading Material

Required Materials

- Studenmund, A. H.: Using Econometrics A Practical Guide, 6th edition, Pearson (2014)
- Levine et al.: Business Statistics, Pearson (2010), selected chapters refer to 6th edition– see schedule below
- Wooldridge, Jeffrey M., 1960-. (2012). Introductory econometrics: a modern approach. Mason, Ohio: South-Western Cengage Learning
- **Gujarati**, D. N., & Porter, D. C. (2009). **Basic econometrics**. Boston, Mass: McGraw-Hill.
- Saunders, M., Lewis, P., Thornhill, A.: Research Methods for Business Students (2000), selected chapters - only for week 1

Recommended Materials

- Nicholson, W., Snyder, C., Microeconomic theory: basic principles and extension, Mason, OH: Cengage Learning; 11th edition, 2012 (older editions can be used)
- Frank, R., Bernanke, B., Principles of Economics, The Mcgraw-Hill Series in Economics, 2012

- Economic blogs & news sites (e.g. marginalrevolution.com, gregmankiw.blogspot.com, freakonomics.com/blog, qz.com, fivethirtyeight.com, etc.), other articles assigned during the class

4. Teaching methodology

Lectures will combine theoretical sessions with presentation of application examples: new concepts will be followed by practical applications and hands-on practice in the computer lab. Active participation is mandatory and graded. Problem sets, data as well as slides will be available in NEO. Apart from explicit home assignments such as projects, students are expected to study the relevant textbook chapter at home prior to each lecture. Feedback to all assignment procedures will be provided.

5. Course Schedule

Date	Class Agenda
February 10 Session 1	**Topic:** Administration, Course Requirements, Introduction, Methodology and Basic Principles; Introduction to empirical research **Reading:** Saunders Ch. (1,2,3) 6, 7
February 17 Session 2	**Topic:** From Data to knowledge; Descriptive Statistics, Useful distributions **Reading:** Saunders Ch. 11; Studenmund Ch. 15 **Assignments: Working Paper project**-In this class I will explain to students the requirement and expectations of this WP-Students will be required to submit this WP complete with concept, literature, methods and estimation of results and conclusion on **MAY 15, 2020**
February 24 Session 3	**Topic:** Sampling and Confidence Interval Estimation **Reading:** Levine Ch. 7, Ch. 8
March 3 Session 4	**Topic:** Hypotheses Testing **Reading:** Levine Ch. 9; Ch. 10.1-10.3; Studenmund Ch. 5
March 10 Session 5	**Topic:** Introduction to the Nature of Econometrics Data + Simple Linear Regression I **Reading:** Studenmund Ch. 2.1; Levine Ch. 12.1-12.3 Wooldridge Ch.1, 2
March 17 Session 6	**Topic:** Simple Linear Regression II **Reading:** Studenmund Ch. 3; Levine Ch. 12.4-12.8, Wooldridge Ch. 2 **Assignment:** Working paper check-up (introduction, development of conceptual framework, data and methods), PC lab session
March 24 Session 7	**Topic:** Mid-term Exam
March 31 Session 8	**Topic:** Multiple regression I **Reading:** Studenmund Ch. 2.2-2.5; Levine Ch. 13.1-13.4, Wooldridge Ch. 2 **Assignment:** Homework 1
April 7	**MID-TERM BREAK**
April 14 Session 9	**Topic:** Multiple regression II: Specification: Choosing a functional form + Specification: Choosing the independent variables **Reading:** Studenmund Ch. 6, 7; Levine Ch. 13.5, Wooldridge Ch. 3 **Deadline:** Homework 1 Submission

April 21 Session 10	**Topic:** Multiple regression IV – Violations of classical assumptions I (Multicollinearity, Heteroskedasticity and serial correlation) **Reading:** Studenmund Ch. 8, Ch. 9 **Assignment:** Working paper check-up 2 (theoretical part – literature review, practical part), PC lab session
April 28 Session 11	**Topic:** Qualitative Variables and Use of Dummy dependent variables techniques **Reading:** Studenmund Ch. 10, Ch. 13 **Assignment:** Homework 2
May 5 Session 12	**Topic:** Introduction to time series modelling **Lab session-**Students would be provided data to produce forecasting results based on the lecture. **Reading:** Wooldridge Ch. 10 **Deadline:** HW 2 submission
May 12 Session 13	**Topic:** Summary and review for the final exam, Presentations of Working papers **Deadline: Working Paper** submission
May 19 Session 14	**Topic:** Final Exam (the test covers the entire course)

6. Course Requirements and Assessment (with estimated workloads)

Assignment	Workload (average)	Weight in Final Grade	Evaluated Course Specific Learning Outcomes	Evaluated Institutional Learning Outcomes*
Attendance	42	10%	Understanding of key concepts, ability to describe and explain the learned concepts in the class	1,2
Working Paper	25	25 %	Ability to write clearly and concisely, ability to research and identify key issues, develop methodology and estimate results and reach conclusions	1, 3
Presentation of WP	3	5%	Presentation skills, ability to explain the studied topic to peers	1
Homework	10	10%	Ability to understand and apply basic theoretical concepts	1,2
Midterm Exam	30	20%	Ability to understand and retain knowledge, Discipline	1
Final Exam	40	30 %	Ability to understand and retain knowledge, Discipline	1
TOTAL	**150 h**	**100%**		

*1 = Critical Thinking; 2 = Effective Communication; 3 = Effective and Responsible Action

7. Detailed description of the assignments

• **Active class participation:** Readiness to answer questions raised in the class gives you extra points to the total maximum of 10 in this section.

• **Homework**: There are two homework assignments. Students will be provided data and students will be required to select the most suitable models based on the theoretical understanding and provide estimations with interoperation. Students are supposed to provide estimation output from the system (excel/stata etc).

- **Midterm exam**: Midterm exam is based on lectures and readings on topics 1-6 (see the syllabus). Understanding of acquired concepts and theories is tested. Questions include a mix of approximately 20 multiple choice and open-ended questions.
- **Final exam**: Final exam is based on lectures and readings on topics 8-12 (see the syllabus) but some. Understanding of acquired concepts and theories is tested. Questions include a mix of approximately 30 multiple choice and open-ended questions.

Working paper + its presentation: 10 pages long structured project should be written according to a Short Guide provided. Topic and hypothesis of the project should be related to one of the weekly topics in this syllabus. Part of one class will be specifically dedicated to the structure and methods that should be used.

Working paper - Assessment breakdown

Assessed area	Percentage
Theoretical part including critical review of literature	30%
Practical part including source data table, graphs of relevant functions, equations.	50%
Quality of writing (grammar, structure, references)	20%

8. General Requirements and School Policies

General requirements

All coursework is governed by AAU's academic rules. Students are expected to be familiar with the academic rules available in the Codex and Student Handbook and to maintain the highest standards of honesty and academic integrity in their work.

Electronic communication and submission

The university and instructors shall only use students' university email address for communication. It is strongly recommended that any email communication between students and instructors take place in NEO LMS.

Each e-mail sent to an instructor that is about a new topic (meaning not a reply to an original email) shall have a new and clearly stated subject and shall have the course code in the subject, for example: "COM101-1 Mid-term Exam. Question".

All electronic submissions are carried out through NEO LMS. No substantial pieces of writing (especially take-home exams and essays) can be submitted outside of NEO LMS.

Attendance

Attendance, i.e., presence in class in real-time, is expected and encouraged. However, the requirement that students miss not more than 35% of real-time classes is temporarily suspended due to the COVID-19 pandemic.

Absence excuse and make-up options

Should a student be absent from classes for relevant reasons (illness, serious family matters), s/he can submit to the Dean of Students an Absence Excuse Request Form supplemented with documents providing reasons for the absence. These must be submitted within one week of the absence. If possible, it is recommended the instructor be informed of the absence in advance. Should a student be absent during the add/drop period due to a change in registration this will be an excused absence if s/he submits an Absence Excuse Request Form along with the finalized add/drop form.

Students whose absence has been excused by the Dean of Students are entitled to make up assignments and exams provided their nature allows. Assignments missed due to

unexcused absences which cannot be made up, may result in a decreased or failing grade as specified in the syllabus.
Students are responsible for contacting their instructor within one week of the date the absence was excused to arrange for make-up options.

Late work: No late submissions will be accepted – please follow the deadlines.

Electronic devices
Any electronic devices (phones, tablets, laptops...) may be used only for class-related activities (taking notes, looking up related information...). Any other use will result in being marked absent and/or being expelled from the class. No electronic devices may be used during the tests.

Eating is not allowed during classes.

Cheating and disruptive behavior
If a student engages in disruptive or other conduct unsuitable for a classroom environment of an institution of learning, the instructor may require the student to withdraw from the room for the duration of the activity or for the day and shall report the behavior to the Dean.
Students engaging in behavior which is suggestive of cheating (e.g. whispering or passing notes) will, at a minimum, be warned. In the case of continued misbehavior, the student will be expelled from the exam and the exam will be marked as failed.

Plagiarism and Academic Tutoring Center

Plagiarism is "the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work." (Random House Unabridged Dictionary, 2nd Edition, Random House, New York, 1993)
Turnitin's White Paper 'The Plagiarism Spectrum' (available at http://go.turnitin.com/paper/plagiarism-spectrum) identifies 10 types of plagiarism ordered from most to least severe:
1. CLONE: An act of submitting another's work, word-for-word, as one's own.
2. CTRL-C: A written piece that contains significant portions of text from a single source without alterations.
3. FIND–REPLACE: The act of changing key words and phrases but retaining the essential content of the source in a paper.
4. REMIX: An act of paraphrasing from other sources and making the content fit together seamlessly.
5. RECYCLE: The act of borrowing generously from one's own previous work without citation; To self-plagiarize.
6. HYBRID: The act of combining perfectly cited sources with copied passages—without citation—in one paper.
7. MASHUP: A paper that represents a mix of copied material from several different sources without proper citation.
8. 404 ERROR: A written piece that includes citations to non-existent or inaccurate information about sources
9. AGGREGATOR: The "Aggregator" includes proper citation, but the paper contains almost no original work.
10. RE-TWEET: This paper includes proper citation, but relies too closely on the text's original wording and/or structure.

At minimum, plagiarism from types 1 through 8 will result in a failing grade for the assignment and shall be reported to the Dean. The Dean may initiate a disciplinary procedure pursuant to the Academic Codex. Allegations of bought papers and intentional or consistent plagiarism always entail disciplinary hearing and may result in expulsion from AAU.
If unsure about technical aspects of writing, students are encouraged to consult with the tutors of the AAU Academic Tutoring Center. For more information and/or to book a tutor, please contact the ATC at: http://atc.simplybook.me/sheduler/manage/event/1/.

Course accessibility and inclusion

Students with disabilities are asked to contact the Dean of Students as soon as possible to discuss reasonable accommodations. Academic accommodations are not retroactive. Students who will be absent from course activities due to religious holidays may seek reasonable accommodations by contacting the Dean of Students in writing within the first two weeks of the term. All requests must include specific dates for which the student requests accommodations.

9. Grading Scale

Letter Grade	Percentage*	Description
A	95 – 100	**Excellent performance**. The student has shown originality and displayed an exceptional grasp of the material and a deep analytical understanding of the subject.
A–	90 – 94	
B+	87 – 89	**Good performance**. The student has mastered the material, understands the subject well and has shown some originality of thought and/or considerable effort.
B	83 – 86	
B–	80 – 82	
C+	77 – 79	**Fair performance**. The student has acquired an acceptable understanding of the material and essential subject matter of the course, but has not succeeded in translating this understanding into consistently creative or original work.
C	73 – 76	
C–	70 – 72	
D+	65 – 69	**Poor**. The student has shown some understanding of the material and subject matter covered during the course. The student's work, however, has not shown enough effort or understanding to allow for a passing grade in School Required Courses. It does qualify as a passing mark for the General College Courses and Electives.
D	60 – 64	
F	0 – 59	**Fail**. The student has not succeeded in mastering the subject matter covered in the course.

* Decimals should be rounded to the nearest whole number.

Prepared by and when: Arshad Hayat,Ph.D. January 18, 2021.

Approved by: Ing. Hana Prosdócimo Hajová, PhD, MBA, Chair of Mathematics and Computer Science, 22nd January, 2021
Jan Vašenda, Ph.D., Dean of School of Business Administration, February 5, 2021