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## MODELING AND FORECASTING OF THE ECONOMY

Syllabus

III 2.19

CSCI-345

Specialty: 073 "Management"

Educational program "Information Technology Management"

Quarter/Year: Spring/2025

ECTS Credits: 6

Instructor: Seleznova Ruslana, Ph.D

US Credits: 3

Contact

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Prerequisites: Microeconomics, Macroeconomics, Computer Science, Statistics (Business Statistics)

### Course Description

Modeling and Forecasting of the Economy includes several methods of economic forecasting available. They include causal, qualitative methods, and the examination of time series methods, among others. Causal models often use regression analysis, from simpler models to multiple regression. Economic forecasting models work by following the idea that it's possible to determine its future prosperity by analyzing data about the economy. Economic forecasting makes use of historical data points that have been released in previous economic reports for countries or geographical regions.

### Course Outcomes

- PH1. Know personal rights and responsibilities as a member of society, be aware of the values of civil society, the rule of law, human and civil rights and freedoms in Ukraine.
- PH3. Demonstrate knowledge of theories, methods and functions of management, modern concepts of leadership.
- PH4. Demonstrate skills to identify problems and justify management decisions.
- PH6. Identify skills of search, collection and analysis of information, calculation of indicators to justify management decisions.
- PH8. Apply management methods to ensure the effectiveness of the organization.
- PH9. Demonstrate skills of interaction, leadership, teamwork.
- PH10. Have the skills to justify effective tools to motivate the staff of the organization.

PH11. Demonstrate skills of situation analysis and communication in various areas of the organization.

PH12. Assess the legal, social and economic consequences of the organization.

PH17. Perform research individually and/or in a group under the guidance of a leader.

### **Competencies**

3K1. Ability to realize their rights and responsibilities as a member of society, to understand the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine.

3K3. Ability to abstract thinking, analysis, synthesis.

3K8. Skills in the use of information and communication technologies.

CK5. Ability to manage the organization and its departments through the implementation of management functions.

CK7. Ability to choose and use modern management tools.

CK12. Ability to analyze and structure the problems of the organization, to form sound decisions.

**Internationality:** The international aspect of the course includes international textbooks, international software ...

### **Communications**

For individual issues, students should contact the professor **ONLY** by given e-mail or by Moodle. In the Subject line they should put: UACUFirstNameLastName. E-mail messages will normally be answered within 24 hours.

Note! Only emails sent from the student's corporate email address will be answered.

Attention! Official and only language used for assessment activities is English. Official and only languages used for communication within the University are Ukrainian and English.

### **Student Responsibilities**

#### **Time Commitment**

The study of technical courses is cumulative (i.e., an understanding of earlier material is necessary to grasp concepts covered later). Past experience has shown a high correlation between procrastination and low grades. Students must be committed to completing tasks on time.

Students are responsible for following the schedule, attending classes, completing assignments on time and to the required standards, and maintaining academic integrity. These responsibilities are not open for discussion with instructors or the dean's office.

#### **Technical Aspects**

The student is obliged to provide himself/herself with all the necessary technical equipment for the educational process (laptop or computer, webcam, headsets or headphones and microphone), as well as access to the Internet.

Only students signed-in with their own first and last name are allowed into video lectures in Zoom.

### **Grading Policy**

The course is based on mastery of course outcomes. Student grades for this course will be calculated based on performance.

Note: the minimal grade to pass a subject is 60% (70% for Master courses).

## Graduate Grading Guidelines

The assignment of a letter grade for a course is an indication of the student's overall success in achieving the learning outcomes for the course. The course letter grade may be viewed as a summary statement of the student's achievement in individual assessments (assignments & activities). These assessments are intended to identify for students their strengths as well as those areas in need of improvement. Student work is assessed according to the guidelines below.

### Course-level Grading guidelines:

#### Bachelor

Grade	ECTS Grade	International Grade
90% - 100%	A	5 (Excellent)
83% - 89%	B	4 (Very Good)
75% - 82%	C	4 (Good)
70% - 74%	D	3 (Good)
60% - 69%	E	3 (Acceptable)
35% - 59%	FX	Not acceptable, possible repetition of course

#### Master

Grade	ECTS Grade	International Grade
90% - 100%	A	5 (Excellent)
83% - 89%	B	4 (Very Good)
75% - 82%	C	4 (Good)
70% - 74%	D	3 (Good)
35% - 69%	FX	Not acceptable, possible repetition of course

### Criteria for grading:

ECTS grade	Requirements for the student
A	The student demonstrated a comprehensive systemic and in-depth knowledge of program material; processed basic and additional literature; obtained a solid grasp of the conceptual apparatus, methods, techniques and tools provided by the program; found creative abilities in the presentation of the educational program material both on this issue and on related modules of the course and related courses, or the student had a current control of 90-100 points
B	The student demonstrated good knowledge of program material; processed the basic literature, mastered the conceptual apparatus, methods, techniques and tools provided by the program, but with some inaccuracies
C	
D	The student showed mediocre knowledge of the core program material; learned information mainly from a lecture course or just one textbook; mastered only certain methods, techniques and tools provided by the program
E	

FX	The student has significant gaps in knowledge of the main program material; fragmentary mastered the basic concepts, techniques and tools; significant mistakes are made when using them
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Maximum total possible points – 180 points incl. (Midterm and Final exam are 50% of overall evaluation, where Midterm – 20% and Final – 30%)

Test / Assignment / Project – 3/3/3/ points (35-40% of the total for the course are tasks taken or presented exceptionally during the class)

Midterm exam – 36 points

Final exam – 54 points

### **Student Workload**

It is assumed that for each out of 17 class sessions a student spends about 10.5 academic hours of work. This includes 3.5 academic hours of lectures with the instructor and 7 academic hours of personal work. Personal work includes projects and personal assignments.

Please pay attention that 1 academic hour equals to 40 minutes.

### **Assignment Format**

All work should be shown in time. If the student misses the deadline – the task is failed.

Midterm covered topics from previous lectures (weeks 1-7). It included multiple choice questions and cases (essays) and took about 45 min.

The Final exam covered all course material and included multiple choice questions and cases (essays). It lasts for 1.5 hours. Admission to the Final exam is possible only if all the tasks of the curriculum are covered.

After the Midterm and Final is graded a student has access to the grade only. Access to the attempt, corrects answers and information whether the answer is correct cannot be granted.

### **Academic dishonesty**

Academic integrity is submitting one's own work and properly acknowledging the contributions of others. Forms of academic dishonesty include:

1. Plagiarism – submitting all or part of another's work as one's own in an academic exercise such as an examination, a computer program, or written assignment.
2. Cheating – using or attempting to use unauthorized materials on an examination or assignment, such as using unauthorized texts or notes or improperly obtaining (or attempting to obtain) copies of an examination or answers to an examination. Including the use of artificial intelligence and pre-prepared answers to the questions of tasks is prohibited (unless otherwise specified in the task itself or allowed by the instructor).
3. Facilitating Academic Dishonesty – helping another commit an act of dishonesty, such as substituting for an examination or completing an assignment for someone else.
4. Fabrication – altering or transmitting, without authorization, academic information or records.

Any violation of these rules constitutes academic dishonesty and is liable to result in a failing grade and disciplinary action. In case of any academic dishonesty a student is not allowed to continue or retake the assessment activity and for the Final the unsatisfactory grade (“0”)

is assigned for the course total. Cases of the academic dishonesty are not considered by the Academic Council.

Midterm and Final are valid only if they are taken on-campus (room defined by the dean's office) and on UACU's computer/laptop or online on the student's computer/laptop using Zoom and other conditions defined by the dean's office to avoid the cases of academic dishonesty. Students who will not meet this requirement will be expelled from the course with grade "0".

In case of missed Midterm or Final exam (for a valid reason like sickness or an emergency) a request to repeat the exam is possible. Permit to repeat a midterm or final exam is done through a letter to the dean's office with request and approval of subject lecturer.

Submission or retaking of any assessment activities after deadlines are forbidden.

### Submission & Return Policy

Assignments must be submitted to the professor on or before the due date indicated in the Course Schedule. The assignments submitted after the due dates receive zero points.

\*\*\*\* NO MAKE –UP QUIZZES AND EXAMS \*\*\*\*

### Schedule

Week #	Research Projects	Assignments Due	Points
Lecture 1	Introduction to Models of Economic Forecasting	Assignment/Test	3/3
Lecture 2	Types of economic models	Assignment/Test	3/3
Lecture 3	Statistical background for economic models. Examples of outstanding economic models	Assignment/Test	3/3
Lecture 4	Software review for economic models	Assignment/Test	3/3
Lecture 5	Moving average method for economic models	Assignment/Test	3/3
Lecture 6	Qualitative methods of economic models	Assignment/Test	3/3
Lecture 7	<u>Project</u> . Create economic model, choose software for modelling, create presentation for <u>project</u> (Topics 1-6)	<u>Project</u>	6
Mid Term	Midterm 20% out of total amount of points for the course	Test	36
Lecture 8	Examination of time series methods	Assignment/Test	3/3
Lecture 9	Correlation analysis for economic models	Assignment/Test	3/3
Lecture 10	Regression analysis for economic models	Assignment/Test	3/3
Lecture 11	Economic forecasting models. Trend's analysis	Assignment/Test	3/3
Lecture 12	Judgmental forecasting models	Assignment/Test	3/3
Lecture 13	Econometric models	Assignment/Test	3/3
Lecture 14	Delphi method	Assignment/Test	3/3
Lecture 15	<u>Project</u> . Create economic model, choose software for modelling, create presentation for <u>project</u> (Topics 8-14)	<u>Project</u>	6
Final	Final (17 <sup>th</sup> class) 40% out of total amount of points for the course	Test	54

## Recommended Materials

1. [Data Bases and Statistical Systems: Economics \(Macroeconomics\)](#) Thomas P Hill, in [International Encyclopedia of the Social & Behavioral Sciences \(Second Edition\)](#), 2013
2. [Directions for adaptive planning](#) Jamie O'Brien, in [Shaping Knowledge](#), 2022
3. [Expectations, Economics of](#) George W. Evans, Seppo Honkapohja, in [International Encyclopedia of the Social & Behavioral Sciences \(Second Edition\)](#), 2013
4. [Handbook of Economic Forecasting](#) Sune Karlsson, in [Handbook of Economic Forecasting](#), 2022. Edition 2.0
5. [Handbook of Economic Forecasting](#) Todd Clark, Michael McCracken, in [Handbook of Economic Forecasting](#), 2022. Edition 2.0

\* *The above schedule and procedures are subject to change in the event of extenuating circumstances.*

Протокол засідання кафедр № 1 від 28.01.2025 року

Проректор з навчально-методичної роботи

Л.І.Кондратенко

Зав.кафедри

А.В.Кінаш

Викладач

Р.В.Селезньова

