УКРАЇНСЬКО-АМЕРИКАНСЬКИЙ
УНІВЕРСИТЕТ КОНКОРДІЯ

UKRAINIAN-AMERICAN
CONCORDIA UNIVERSITY

Україна, 01030, м. Київ, вул. Пирогова, 9
+380(44)236-19-16; 486-06-66; +380(50)331-42-95

www.concordia.edu.ua
info@uacu.edu.ua

9, Pirogov street, Kyiv, 01030, Ukraine
+380(44) 236-19-16, 486-06-66; +380(50)331-42-95

Modeling and forecasting of the economy

Syllabus

ВПП 2.23
CSCI-345

Quarter/Year: <u>Fall/2022</u>

ECTS Credits: 6

Instructor: Ruslana Selezneva

US Credits: 3

Contact information:
Ruslana.seleznova@uacu.edu.ua

Prerequisites: Mathematics, Statistics, CS, Microeconomics, Macroeconomics, Introduction to Business

Course Description

The most widespread in the construction of development forecasts in the practice of commercial activity are economic and statistical models that describe the dependence of the economic indicator under study on one or several factors that have a significant impact on it.

Regularities in economics can be expressed in the form of mathematical models of connections and dependencies of economic indicators. Such dependencies and models are obtained only by processing real statistical data, taking into account internal communication mechanisms and random factors. The availability and quality of information support, the real possibilities of collecting and processing primary information largely determine both the scope of practical application of statistical modeling in economics and the choice of various types of applied models.

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: international software, international textbooks, studying in English

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.

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.

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%.

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:

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

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	

C	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
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

Maximum total possible points – 225 points incl. (Midtermand Final exam are 60% of overall evaluation, where Midterm – 20% and Final – 40%)
·Test / Assignment / Project – 3/3 points (several times during the course)
·Midterm exam – 45 points
·Final exam – 90 points

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 1-6). It included multiple choice questions and cases (essays) and took about 1.5 hours.
•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.

Academic dishonesty

·Academic integrity is submitting one's own work and properly acknowledging the contributions of others. Any violation of this principle constitutes academic dishonesty and is liable to result in a failing grade and disciplinary action. 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.
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.

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	Topic Introduction to modeling and forecasting of the economy	Review Lecture Test / Assignment	3/3
Lecture 2 Date **Time**	Topic The concept of the model. Types of models	Review Lecture Test / Assignment	3/3
Lecture 3 Date **Time**	Topic Models based on differential equations	Review Lecture Test/Project	3/3
Lecture 4 Date **Time**	Topic Forecasting Analysis methods and models	Review Lecture Test / Assignment	3/3
Lecture 5 Date **Time**	Topic Least square method	Review Lecture Test / Assignment	3/3
Lecture 6 Date Time	Topic Moving average method	Review Lecture Test / Assignment	3/3
Lecture 7 Date	Topic Cluster Analysis	Review Lecture Test / Assignment	45

Time			
Lecture 8 Date Time	Mid Term (20%)	Review Lecture Test / Assignment	3/3
Lecture 9 Date Time	MS Word Project	Review Lecture Test / Assignment	3/3
Lecture 10 Date Time	Topic Network diagram method	Review Lecture Test / Assignment	3/3
Lecture 11 Date Time	Topic Mathematical programming techniques	Review Lecture Test / Assignment	3/3
Lecture 12 Date Time	Topic Statistical dynamic models in economics	Review Lecture Test / Assignment	3/3
Lecture 13 Date Time	Topic Forecasting methods in economics	Review Lecture Test / Assignment	3/3
Lecture 14 Date Time	Topic Project	Review Lecture Test / Assignment	3/3
Lecture 15 Date Time	Topic Software for modeling and forecasting of the economy	Review Lecture Test / Assignment	3/3
Lecture 16 Date Time	Topic Project	Review Lecture Test / Assignment	3/3
Lecture 17 Date Time	Final Exam (40%)		90
Total			225

 Recommended Materials

1. Mathematical Modeling in Economics and Finance: Probability, Stochastic Processes, and Differential Equations Steven R. Dunbar, 2019
2. Mathematical Modelling in Economics Essays in Honor of Wolfgang Eichhorn, 2020
3.Mathematical Methods and Models for Economists by Angel de la Fuente 2020
 Mathematical   Modeling   in   Economics,   Ecology   and   the Environment/ Hritonenko, Natali, Yatsenko, Yuri, 2013

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

Протокол засідання кафедр № 4 від 23.08.2022 року

Проректор з навчально-методичної роботи		Л.І.Кондратенко
Завідувач кафедри		А.В.Кінаш
Викладач		Р.В.Селезньова