

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Undergraduate Programs</b>	UUPC Approval <u>1-31-22</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department _____ College _____	
<b>Current Course Prefix and Number</b>		<b>Current Course Title</b>
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Template</a>. Please consult and list departments that may be affected by the changes; attach documentation.</i>		
<b>Change title to:</b>  <b>Change prefix</b> From: _____ To: _____ <b>Change course number</b> From: _____ To: _____ <b>Change credits*</b> From: _____ To: _____ <b>Change grading</b> From: _____ To: _____ <b>Change WAC/Gordon Rule status**</b> Add _____ Remove _____ <b>Change General Education Requirements***</b> Add _____ Remove _____ <small>*Review <a href="#">Provost Memorandum</a></small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See <a href="#">WAC Guidelines</a>.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See <a href="#">GE Guidelines</a>.</small>		<b>Change description to:</b>    <b>Change prerequisites/minimum grades to:</b>    <b>Change corequisites to:</b>    <b>Change registration controls to:</b>  Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).
<b>Effective Term/Year for Changes:</b>		<b>Terminate course? Effective Term/Year for Termination:</b>
<b>Faculty Contact/Email/Phone</b>		
<b>Approved by</b> Department Chair <u>Monica Escaleras</u> College Curriculum Chair <u>Ethlyn Williams</u> College Dean <u>Paul Hen</u> UUPC Chair <u>Ethlyn Williams</u> Undergraduate Studies Dean <u>Daniel Meeroff</u> UFS President _____ Provost _____		<b>Date</b> <u>12/21/2021</u> <u>1/19/2022</u> <u>1/31/2022</u> <u>1-31-22</u> <u>1-31-22</u> _____ _____

Email this form and syllabus to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.



**ECO 4401-001**

**15546**

**Mathematical Modelling in a Connected World**

**Fall 2021 Term**

**College of Business 104; Boca Raton Campus**

**Wednesday, Friday 12:30 PM – 1:50 PM**

**Professor Information**

Kuntal Banerjee

105 Barry Kaye Hall

kbanerje@fau.edu

561-297-1313

**Office Hours**

Wednesday: 2pm-5pm and Thursday: 10am-11pm

**Required Text and Materials**

All essential material will be provided in class. No additional purchase required.

**Course Description**

What do the problems of matching students to dorm rooms and medical interns to hospitals have in common? Does the introduction of a new road between two locations necessarily reduce traffic congestion? Do markets where buy and sell orders are executed by an intermediary, like the NY stock exchange, function differently from markets without an intermediary? Mathematical economics can provide insights to seemingly complex social situations. In this course, you will learn the art of modelling human behavior in a connected world using techniques from mathematics and economics.

## **Course Prerequisites and Credit Hours and Class Time Commitments**

ECO 3101 and MAC 2233, or equivalent

This is a 3 credit hours course.

## **Course Learning Objectives**

This course will be a review and development of the mathematics needed to study standard models of economic theory. As a sign of success (beyond a good grade in the course), I expect you to be able to walk into a graduate math economics class and not be lost.

## **Exams and Problem Sets**

There will be three exams (of which one will be an end of term final exam). Each exam will count for 30% of your final grade and there will be problem sets/quizzes that count towards 10% of the grade. **The final exam is compulsory**, you will **not** receive a letter grade unless you take the final exam. In summary:

Problem Set/Quiz: 10%

Exam 1: 30%

Exam 2: 30%

Final Exam: 30%

## **Grading Scale**

Grades will be assigned after the final exam according to the following scheme:

A	93+	A-	90 to 92	B+	87 to 89
B	83 to 86	B-	80 to 82	C+	77 to 79
C	73 to 76	C-	70 to 72	D+	67 to 69
D	63 to 66	D-	60 to 62	F	below 59

## **Additional Course Policies**

### **Missing Exams and Makeup Exams**

The makeup option is only reserved for true emergencies. What is judged as such is my discretion.

## **Attendance Policy**

Attendance in class is **not** compulsory.

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

## **Problem Set and Exam Policy**

The Problem Sets will be announced in class and will be due in a week. With a few exceptions we will mostly have quizzes. These will be in class on **Fridays**.

Students should be in compliance with the code of academic integrity. Please see the section of the syllabus titled "Code of Academic Integrity Policy Statement" of this syllabus. Any violation of the code (including plagiarism of homework and take home exams) will be subject to scrutiny at the college and university level.

The exam dates have not been finalized yet (except for the final exam). The in-class exam dates will depend on the pace of progress. **However, the dates for the exams will be announced at least one week in advance.** It is expected that you remain up-to-date with the material, and avoid last minute panic attacks.

## **Course Outline**

The course outline below is not intended to be definitive. I reserve the right to make any changes, which will be announced in class. In particular the list is ambitious.

**Week 1:** Basic Set Theory, Logic and Solving Quadratic Equations,

**Week 2:** Review of Single Variable Calculus

**Week 3:** Introduction to Multivariate Calculus

**Week 4:** **Exam 1** and Introduction to Game Theory

**Week 5:** Theory of Networks

**Week 6:** Stable Marriage (Gale-Shapley Algorithm)

**Week 7:** Strong and Weak Ties

**Week 8:** **Exam 2** and Introduction to Modelling Network Traffic using Game Theory

**Week 9:** Modelling Network Traffic using Game Theory

**Week 10:** Auctions - Basics

**Week 11:** Auctions – First and Second Price

**Week 12:** Models of Trade in Networks

**Week 13:** Externalities

**Week 14:** Tragedy of the Common

**Final Exam: December 7, 2018 Friday 10:30 AM – 1:00 PM.**

### **Code of Academic Integrity Policy Statement**

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

### **Disability Policy Statement**

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly

execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at <http://fau.edu/sas/>

### **Counseling and Psychological Services (CAPS) Center**

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

### **Religious Accommodation Policy Statement**

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices **and beliefs with regard to admissions, registration, class attendance and the scheduling of** examinations and work assignments. For further information, please see FAU Regulation 2.007 at: <http://www.fau.edu/regulations/chapter2/Reg%202.007%208-12.pdf>

### **University Approved Absence Policy Statement**

In accordance with rules of the Florida Atlantic University, students have the right to reasonable accommodations to participate in University approved activities, including athletic or scholastics teams, musical and theatrical performances and debate activities. It is the student's responsibility to notify the course instructor at least one week prior to missing any course assignment.

### **College of Business Minimum Grade Policy Statement**

The minimum grade for College of Business requirements is a "C". This includes all courses that are a part of the pre-business foundation, business core, and major program. In addition, courses that are used to satisfy the university's "Writing Across the Curriculum" and Gordon Rule math requirements also have a

minimum grade requirement of a “C”. Course syllabi give individualized information about grading as it pertains to the individual classes.

### **Incomplete Grade Policy Statement**

A student who is passing a course, but has not completed all work due to exceptional circumstances, may, with consent of the instructor, temporarily receive a grade of incomplete (“I”). The assignment of the “I” grade is at the discretion of the instructor, but is allowed only if the student is passing the course.

The specific time required to make up an incomplete grade is at the discretion of the instructor. However, the College of Business policy on the resolution of incomplete grades requires that all work required to satisfy an incomplete (“I”) grade must be completed within a period of time not exceeding one calendar year from the assignment of the incomplete grade. After one calendar year, the incomplete grade automatically becomes a failing (“F”) grade.

### **Withdrawals**

Any student who decides to drop is responsible for completing the proper paper work required to withdraw from the course.

### **Grade Appeal Process**

A student may request a review of the final course grade when s/he believes that one of the following conditions apply:

- There was a computational or recording error in the grading.
- Non-academic criteria were applied in the grading process.
- There was a gross violation of the instructor’s own grading system.

The procedures for a grade appeal may be found in Chapter 4 of the University Regulations.

### **Disruptive Behavior Policy Statement**

Disruptive behavior is defined in the FAU Student Code of Conduct as “... *activities which interfere with the educational mission within classroom.*” Students who behave in the classroom such that the educational experiences of other students and/or the instructor’s course objectives are disrupted are subject to disciplinary action. Such behavior impedes students’ ability to learn or an instructor’s ability

to teach. Disruptive behavior may include, but is not limited to: non-approved use of electronic devices (including cellular telephones); cursing or shouting at others in such a way as to be disruptive; or, other violations of an instructor's expectations for classroom conduct.

### **Faculty Rights and Responsibilities**

Florida Atlantic University respects the right of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions which do not impede their exercise. To ensure these rights, faculty members have the prerogative:

- To establish and implement academic standards
- To establish and enforce reasonable behavior standards in each class
- To refer disciplinary action to those students whose behavior may be judged to be disruptive under the Student Code of Conduct.