Course Syllabus

ECO4400: Strategy and Information; Section RVAA

Instructor Information Table

Professor Jesse Bull

INSTRUCTOR INFORMATION

- **Phone: 305-348-3893**
- **Office Hours: By Appointment**
- **Website: http://faculty.fiu.edu/~bullj (http://faculty.fiu.edu/~bullj)**
- **Additional Notes: See Course Communication**

Course Time Zone | Eastern Standard Time (EST). Course due dates are according to this time zone.

General Information

Welcome to Econ 4400.

I'm looking forward to this semester and am excited for you to learn the concepts we will cover. Please read through this syllabus.

Course Description and Purpose

(from the catalog) Combines neoclassical economics with game theory and the economics of information to better understand markets in the real world. Prerequisites: Calculus and ECO 3101 or permission of instructor.

Course Goal

That you learn to think strategically.

Course Objectives

By the end of this course you will be able to:

- CLO1. represent many economic situations, in which the parties behave strategically, with games.
- CLO2. analyze static and dynamic games of complete information. Specifically, you will be able to use, where appropriate, dominance, rationalizability, Nash equilibrium, and subgame perfection to predict behavior in games.
- CLO3. analyze static and dynamic games of incomplete information using Bayes-Nash equilibrium and perfect Bayesian equilibrium.
- CLO4. apply the solution concepts that you have learned to several introductory contracting problems, which include signaling, adverse selection, and the principal-agent problem.

How to Do Well

An important step for learning the material is doing lots of practice problems. I will guide you in this in several ways. In addition to recorded lectures that focus on presenting material, there are also recordings that focus on practice problems in an active learning style. I will also suggest problems from the text, and provide previous exams (with solutions). These problem solving skills can be developed, regardless of your background or preparation for this course. Just like exercise, learning a musical instrument, a sport, or foreign language, learning the material and getting better at it requires time and effort. Of course, I will provide guidance.

In my experience, working consistently on learning the course material and on practice problems is very helpful. To help and encourage this, a portion of your grade will be based on you watching the recorded lectures and problems, and reflecting on what you have learned. A portion of your grade is based on your actively working on problems from the recorded problems. Another portion will be based on you doing regular (almost weekly) homework assignments. Additionally, there are two quizzes.

Major & Curriculum Objectives Targeted

This course will focus on predicting behavior and associated applications under different informational settings in both static dynamic settings. This includes the following concepts in each general area or

module:

- Representing games, best response, rationalizability
- Nash equilibrium
- Backward induction and subgame perfection
- Bayesian equilibrium
- Perfect Bayesian equilibrium

Teaching Methodology

The course will be taught using recorded lectures. These will include both presentation of material and worked out practice problems. For the recordings where we work out practice problems, I encourage you to take an active learning approach and pause the recording to attempt each problem on your own before watching the solution to it.

This course will focus on game theory, which is a way to model and predict behavior in a strategic situation. A strategic situation is one in which the actions of one person influence the payoff of another. You will encounter many such situations in most facets of life. The coverage of material will emphasize conceptual and fundamental understanding.

I believe the concepts we will cover in this course are very useful for many situations you will face in your career (regardless of your career) and am excited to help each of you to learn these. The ways in which we will approach problems will help develop your intuition and mathematical problem solving skills.

Important Information

Policies

Before starting this course, please review the following pages:

- **Policies**
- **Netiquette** **(https://online.fiu.edu/html/canvas/policies/)**
- **Technical Requirements and Skills**
- **Accessibility and Accommodation**

- Panthers Care & Counseling and Psychological Services (CAPS)
- Academic Misconduct Statement

Course Prerequisites

This course has a prerequisites ECO2013 and ECO2023. Review the Course Catalog (http://onlineapps.fiu.edu/coursecatalog/) webpage for prerequisites information.

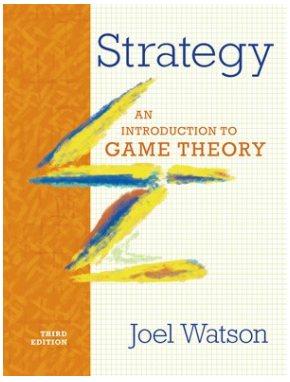
Proctored Exam Policy

Please note that the information contained in this section applies only if your course requires a proctored exam.

Through a careful examination of this syllabus, it is the student's responsibility to determine whether this online course requires proctored exams. Please visit our Student Proctored Exam Instructions (http://online.fiu.edu/currentstudents/exams) webpage for important information concerning proctored exams, proctoring centers, and important forms.

Textbook and Course Materials

Textbook Table



Strategy: An Introduction to Game Theory

Joel Watson
W.W. Norton, 3rd ed.
ISBN-13:978-0-393-91838-0
You may purchase your textbook online at the FIU Bookstore (http://fiu.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?storeId=21551&catalogId=10001) .

I believe you will find the text very helpful and it will fit very closely with how I will present the material.

Expectations of this Course

This is an online course, which means most (if not all) of the course work will be conducted online. Expectations for performance in an online course are the same for a traditional course. In fact, online courses require a degree of self-motivation, self-discipline, and technology skills which can make these courses more demanding for some students.

Students are expected to:

- **Review the how to get started information** located in the course content
- **Introduce yourself to the class** during the first week by posting a self introduction in the appropriate discussion forum
- **Take the practice quiz** to ensure that your computer is compatible with Canvas
- **Interact** online with instructor/s and peers
- **Review** and follow the course calendar
- Log in to the course 3 times per week
- Respond to discussion boards, blogs and journal postings within 2 days
- Respond to messages within 2 days
- Submit assignments by the corresponding deadline

The instructor will:

- Log in to the course 3 times per week
- Respond to discussion boards, blogs and journal postings within 2 days
- Respond to messages within 2 days
- Grade assignments within 7 days of the assignment deadline

Course Communication

Communication in this course will take place via the Canvas Inbox. Check out the **Canvas Conversations Tutorial (https://vimeo.com/canvaslms/212en)** or **Canvas Guide (https://community.canvaslms.com/docs/DOC-10574-4212710325)** to learn how to communicate with your instructor and peers using Announcements, Discussions, and the Inbox. I will respond to all correspondences within 2 days.

Course Detail

Discussion Forums

Keep in mind that your discussion forum postings will likely be seen by other members of the course. Care should be taken when determining what to post.

- Posting in the discussion forums is a requirement for the course.
- These are to be used to interact with your classmates and the professor or teaching assistants in a way that is constructive and helps you to better understand the material.

Exams

In order to mitigate any issues with your computer and online assessments, it is very important that you take the **Practice Quiz** from each computer you will be using to take your graded quizzes and exams. Assessments in this course are not compatible with mobile devices and should not be taken through a mobile phone or a tablet. For more information, please review the **important information about quizzes** page.

- There will be two exams (quizzes).
- Each exam will be available from Saturday, 12:00 am to Saturday, 11:59 pm the week it is due.
- Each quiz will be 1 hour in duration and will consist of four (4) short answer problem type questions.
- Within the week following the due date of the quiz, we will let you know your total score and score for each of the four (4) questions.

Weekly Quizzes on Recorded Problems Material

In order to mitigate any issues with your computer and online assessments, it is very important that you take the **Practice Quiz** from each computer you will be using to take your graded quizzes and exams. Assessments in this course are not compatible with mobile devices and should not be taken through a mobile phone or a tablet. For more information, please review the **important information about quizzes** page.

- There will be a quiz on the recorded problems material (6 total) each week.
- Each quiz is to be submitted by Saturday, 11:59 pm for the week it is due. However, the last week of class, the quiz for Week 6 will only be available until Friday (June 17th), 11:59pm since that is when the term ends
- There is no time limit for these quizzes. Each quiz will consist of two or three multiple choice questions.
- The questions for each quiz will be aimed at simply ensuring that you have watched the recorded

problems for that week. They will be straightforward if you have done so. You're encouraged to do the quiz as you watch the recordings (and answer after viewing the relevant solutions in the recording).
- Since it is multiple choice (and not short answer), I will drop the lowest two of your scores for this.

Assignments

- In addition to the exams and quizzes, there is one graded homework problem for each week for weeks 1 to 4. These are relatively short assignments that are primarily aimed at encouraging you to begin doing problems on your own.
- For weeks 5 and 6, there will not be an exam (there will still be a quiz over the recorded problem material each of those weeks), but there will be a more substantial homework covering the material for those two weeks.
- For the material for each exam and the major homework, you are asked do a "3-2 post" in the appropriate discussion. This is to include 3 things you learned and 2 ways you can apply it to the real world. Additionally, you are asked to respond to the posts of two of your classmates.
- Further, during the first week, you are asked to introduce yourself in the course discussion board and reply to two of your classmates who have introduced themselves.
- Some practice questions will be given. These will not be graded, but will be helpful for preparing for the quizzes. These will include problems from the text and problems from some old exam from my in-person version of this course. Some of the text problems have solutions, and my old exam problems will include solutions.

Grading

Course Grades Distribution Table

Course Requirements	Number of Items	Weight for each	Total Weight
Exam	2	15%	30%
Quizzes over recorded problems (lowest 2 are dropped)	6	5%	20%

Major Homework (over information)	1	15%	15%
Homework	4	5%	20%
Discussion Posts	4	3.75%	15%
Total			**100%**

Letter Grade Distribution Table

Letter	Range%	Letter	Range%	Letter	Range%
A	93 or above	B	84 - 86	C	71 - 76
A-	91 - 92	B-	81 - 83	D	60 - 670
B+	87 - 90	C+	77 - 80	F	60 or less

Course Calendar

Course Calendar

Date	Tasks
Module 1 **May 9-14**	**Module Learning Objectives** Upon completing this module you will be able to: • MLO1. Represent games in the extensive form and in the normal form, represent beliefs and mixed strategies (CLO1) • MLO2. Check whether a strategy is dominated by a pure strategy (CLO2) • MLO3. Check whether a strategy is dominated by a mixed strategy (CLO2) • MLO4. Compute a best response set (CLO2) • MLO5. Identify the B_i set (CLO2) • MLO6. Identify the UD_i set (CLO2) **Activities and Assignments**

	1. Introduce yourself to the course and respond to two of your classmates 2. Complete practice quiz 3. Watch relevant lectures and recorded problems 4. Complete quiz over recorded problems 5. Read chapters 1, 2, 3 , 4, 5 and 6 6. Submit homework 1
Module 2 **May 15-21**	**Module Learning Objectives** • MLO1. Predict behavior using rationalizability (CLO2) • MLO2. Find pure-strategy Nash equilibria (CLO2) **Activities and Assignments** 1. Watch relevant lectures and recorded problems 2. Complete quiz over recorded problems 3. Read chapters 7, 8, 9, and 10 4. Do relevant practice problems 5. Submit Homework 2 6. Do 3-2 post 7. Take quiz 1
Module 3 **May 22- May 28**	**Module Learning Objectives** Upon completing this module you will be able to: • MLO1. Find mixed-strategy Nash equilibria (CLO2) • MLO2. Identify strictly competitive games (CLO1) **Activities and Assignments** 1. Watch relevant lectures and recorded problems 2. Complete quiz over recorded problems 3. Read chapters 11 and 12 4. Do relevant practice problems 5. Submit Homework 3
	Module Learning Objectives

Module 4 **May 29-June 4**	Upon completing this module you will be able to: MLO1. Demonstrate sequential rationality (CLO2) MLO2. Find subgame perfect equilibria (CLO2) MLO3. Predict behavior in two-period repeated games (CLO2) MLO4. Analyze infinitely repeated games (CLO2) **Activities and Assignments** 1. Watch relevant lectures and recorded problems 2. Complete quiz over recorded problems 3. Read chapters 14, 15, 16, and 22 4. Do relevant practice problem 5. Submit Homework 4 6. Do 3-2 post 7. Take quiz 2
Module 5 **June 5-11**	**Module Learning Objectives** Upon completing this module you will be able to: MLO1. Formulate a Bayesian normal form (CLO1) MLO2. Find a Bayesian equilibrium (CLO3 and CLO4) **Activities and Assignments** 1. Watch relevant lectures and recorded problems 2. Complete quiz over recorded problems 3. Read chapters 24, 25, 26 and 27 4. Do relevant practice problem
	Module Learning Objectives Upon completing this module you will be able to: • MLO1. Update beliefs as implied by Bayes' rule (CLO3) • MLO2. Find separating and pooling perfect Bayesian equilibria (CLO3) • MLO3. Analyze signaling games (CLO4)

Module 6 June 12-17	**Activities and Assignments** 1. Watch relevant lectures and recorded problems 2. Complete quiz over recorded problems 3. Read chapters 28 and 29 4. Do relevant practice problem 5. Do 3-2 post 6. Submit major homework

Course Summary:

Date	Details	Due
Sat May 14, 2022	Introduce Yourself (https://fiu.instructure.com/courses/139785/assignments/1768144)	due by 11:59pm
	week 1 recorded problems quiz (https://fiu.instructure.com/courses/139785/assignments/1793858)	due by 11:59pm
Tue May 17, 2022	week 1 homework (https://fiu.instructure.com/courses/139785/assignments/1785068)	due by 11:59pm
Sat May 21, 2022	Exam 1 (https://fiu.instructure.com/courses/139785/assignments/1768141) (1 student)	due by 11:59pm
	Exam 1 (https://fiu.instructure.com/courses/139785/assignments/1768141)	due by 11:59pm
	Week 2 (5/15) Describing Games, Dominance, Best Response, Rationalizabiltiy, and Nash Equilibrium 3-2 Post (https://fiu.instructure.com/courses/139785/assignments/1768145)	due by 11:59pm
	week 2 recorded problems	

	quiz (https://fiu.instructure.com/courses/139785/assignments/1795712)	due by 11:59pm
Mon May 23, 2022	Exam 1 (https://fiu.instructure.com/courses/139785/assignments/1768141) (1 student)	due by 11:59pm
Tue May 24, 2022	Exam 1 (https://fiu.instructure.com/courses/139785/assignments/1768141) (1 student)	due by 11:59pm
	week 2 homework (https://fiu.instructure.com/courses/139785/assignments/1768164)	due by 11:59pm
Sat May 28, 2022	week 3 recorded problems quiz (https://fiu.instructure.com/courses/139785/assignments/1795714)	due by 11:59pm
Tue May 31, 2022	week 3 homework (https://fiu.instructure.com/courses/139785/assignments/1768165)	due by 11:59pm
Sat Jun 4, 2022	Exam 2 (https://fiu.instructure.com/courses/139785/assignments/1768143)	due by 11:59pm
	Week 4 (5/29) Mixed-Strategy Nash Equilibrium, Strictly Competitive Games, Subgame Perfection, Repeated Games 3-2 Post (https://fiu.instructure.com/courses/139785/assignments/1768147)	due by 11:59pm
	week 4 recorded problems quiz (https://fiu.instructure.com/courses/139785/assignments/1795715)	due by 11:59pm
Sun Jun 5, 2022	Exam 2 (https://fiu.instructure.com/courses/139785/assignments/1768143) (1 student)	due by 11:59pm
	week 4 homework	

Tue Jun 7, 2022	(https://fiu.instructure.com/courses/139785/assignments/1768[illegible]	due by 11:59pm
Wed Jun 8, 2022	Exam 1 (https://fiu.instructure.com/courses/139785/assignments/1768[illegible] (1 student)	due by 11:59pm
Sat Jun 11, 2022	week 5 recorded problems quiz (https://fiu.instructure.com/courses/139785/assignments/1795768)	due by 11:59pm
Fri Jun 17, 2022	Information Assignment (https://fiu.instructure.com/courses/139785/assignments/1768157)	due by 11:59pm
	Week 6 (6/12) Information 3-2 Post (https://fiu.instructure.com/courses/139785/assignments/1768148)	due by 11:59pm
	week 6 recorded problems quiz (https://fiu.instructure.com/courses/139785/assignments/1795812)	due by 11:59pm
	exam curve points (https://fiu.instructure.com/courses/139785/assignments/1768142)	