

## Marshall Honors Research Seminar Syllabus and Timeline

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### Faculty and Contact Information

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Class Hours: M 04:00-05:50 P.M. Room HOH 706

Email is the best way to reach me.

### Course Scope and Objectives

The Marshall Honors program is a selective program offering students the opportunity to work closely with Marshall faculty to design and execute a research project of the students' choosing. BUAD 493 is the first course in the sequence of 493-494 and has two goals.

1. Help the students find out about the process of doing their own research
  - Cover some material about how to do research at this level
  - Read and present senior theses from peer and aspirational universities
  - Learn how to read and critique academic papers
  - Present and discuss students' own research ideas in class
2. Introduce the students to research tools commonly used in economics and finance
  - Introduce the students to the language and methods of multivariate econometrics in economics and finance
  - Present an introduction to the industry standard language Matlab

Upon successful completion of the Marshall Honors program, and conditional on maintaining the Marshall and overall GPA standards, students are awarded Marshall Departmental Honors at graduation. At graduation, departmental honors students wear a departmental honors sash and are invited to sit on stage during the commencement ceremony. Departmental honors are noted on official university academic transcripts. In most cases the project submitted for the Marshall Honors program will also be eligible for the Discovery Scholar honor from the University.

## Course Learning Objectives

The primary goal of this course is to describe how you can do research in economics and finance and to equip you with the basic research tools: modeling, econometrics, estimation, programming and graphical tools. These are widely used in consulting, analysis, banking, quantitative portfolio management, and introductory graduate studies.

First, this course will help your thinking about a new research idea/question that will form the basis of your thesis. Second, it will introduce you to key research tools that will help you to conduct your theoretical, statistical, and computational analyses. Finally, the course will guide you in writing a thesis proposal which will form the starting point of BUAD 494 in Fall 2018.

For all our estimation and computational tasks, and, generating graphs, we will use Matlab<sup>®</sup>: “... a high-level language and interactive environment used by millions of engineers and scientists worldwide. It lets you explore and visualize ideas and collaborate across disciplines including signal and image processing, communications, control systems, and computational finance.”

Once you learn the basics of Matlab, your transition to free and open source programming languages such as R (a free software environment for statistical computing and graphics), ‘python’ (<https://www.python.org/>) or ‘julia’ (<https://julialang.org/>) will be much easier.

## Course Materials

- **Suggested Text:** The Essential Guide to Doing Your Research Project, O’Leary, Zina, Sage (3rd Ed.) (2017). We will cover chapters 1, 2, and 3, but you should also read 5, 6, 13, 14, and 16 to help you prepare about doing your own research.
- **Suggested Text:** Chris Brooks, *Introduction Econometrics for Finance*, third edition, Cambridge University Press, 2014. I plan to cover the material described in chapters 3 and 4.
- **Required Software:** Matlab<sup>®</sup>. This is free for USC faculty and students. Please go to <http://software.usc.edu/matlab/> and follow the instructions to download either the Windows or the Mac version of the latest (R2017b) software and all the toolboxes. If you do not wish to download and install Matlab<sup>®</sup> on your laptop/PC, you can still access it under Teaching Applications on all Marshall LAB stations; but this requires that you must be physically at a Marshall LAB station and cannot access it remotely.
- Take the following 2-hour online tutorial: <https://matlabacademy.mathworks.com/>.
- **Articles and notes** posted on Blackboard. I will post additional articles as we make progress.

## Recommended Materials

- **Popular Press:** I suggest that you get in the habit of regularly reading economic and business news through the lens of the material covered in this course. My favorite source of weekly news is *The Economist*, a British publication with extensive U.S. and world coverage. Several high-quality daily newspapers are available such as *The Wall Street Journal* with information on both U.S. and world events, *The New York Times*, and *The Financial Times* of London. FT has a stronger international flavor and less detailed coverage of U.S. events. than either of the domestic newspapers.

## Course Requirements and Grading

The requirements for the course and the associated weights in the overall numerical grade are given below:

Requirement	Weight
Class Participation	10%
Homework Assignments (2, each 10%)	20%
Idea/Plan of Attack (M, March 5)	5%
Theses/Paper Presentations	20%
Progress Report (M, April 9)	5%
Proposal Presentation (M, April 23)	10%
Thesis Proposal (T, May 8)	30%
Total	100%

Each individual course requirement receives a numerical score but not a letter grade. The overall numerical score in the course is converted into a letter grade at the end of the semester in accordance with the Marshall School's guidelines. There is no official quota for the number of A's, B's, C's, etc., although the average grade in elective undergraduate courses can be expected to be close to 3.3 (corresponding to a B+) out of 4.0. However, this is not a regular elective course and the average GPA may be higher if the instructor deems appropriate.

### **Class Participation (10%)**

Class contribution will be assessed based on the relevance, depth, and consistency of participation. Attendance is a necessary part of contribution (being absent makes it extremely difficult to contribute in class) but it is not sufficient. When discussions take place, both quality and quantity of your contribution is important. I value quality more than quantity.

Class contribution also takes into account student activities that disrupt and/or hamper good class discussion. Engaging in disruptive activities will lower one's class participation grade, regardless of how valuable other contributions may be. In particular, the use of cell phones, texting, tablets, laptops will lead to a loss of participation points, unless their use is approved by the instructor.

### **Homework Assignments (20%)**

There will be two individual homework assignments with due dates given in the schedule below. Each homework assignment involves the use of Matlab<sup>®</sup> with economic and financial data. Each homework is worth 10% of the course grade, so 20% of the course grade is determined by these computer assignments/applications.

More detailed information, the data sets to be used, and further guidelines are posted on Blackboard. I will also give you a sample Matlab code that executes the commands contained in the homework assignments for different data sets.

If an assignment is late for any reason, then for every 24-hour period that an assignment is late I will deduct 20% from the maximum allowable points before grading. I accept assignments submitted over the internet, provided that they are well-formatted (not too long) Word or, preferably, PDF documents. In addition, for each assignment, I require the accompanying Matlab<sup>®</sup> code that generated the numerical results/graphs.

There is a document preparation system widely used in academia, both for technical writings, and, for organizing/publishing theses/books called LaTeX: A document preparation system. LaTeX is a high-quality typesetting system; it includes features designed for the production of technical and scientific documentation. LaTeX is the de facto standard for the communication and publication of scientific documents. LaTeX is available as free software. See <https://www.latex-project.org/>

### **Theses/Paper Presentations (20%)**

Each student will make two presentations of senior theses (from Stanford and Princeton) and academic papers in class. Presenting and discussing someone else's research is a good first step in organizing one's own ideas and research. The papers will be uploaded on Blackboard after the first week of classes.

### **Idea/Plan of Attack (5%)**

A 2-page initial idea proposal is due on Monday, March 5.

### **Progress Report (5%)**

A progress report that expands on your initial, short proposal with a brief literature review and a description of your study design and data is due on Monday, April 9.

### **Proposal Presentation (10%)**

This presentation (no more than 10 minutes) will be on Monday, April 23. It will be the student's own final research idea, motivation, basic literature survey, methodology and data/resources needed to execute research.

### **Thesis Proposal (30%)**

The main project in this class is to develop a full-length research paper. Your proposal should describe a new theoretical or empirical study on any topic in the area of economics and finance. In addition to motivating your research question and providing an extensive literature review, you have to contribute to knowledge by proposing original hypotheses and designing a way to test these hypotheses. In particular, you will need to provide an in-depth review of the selected topic, develop a methodology to study your question, gather data needed, formalize your hypotheses, and outline the expected results. Although you may not yet collect data and conduct your analysis, your proposal should clearly show a path to completion of an honors thesis with additional work.

A typical research paper includes the following sections:

1. Introduction and Motivation
2. Literature Review
3. Methodology and Hypotheses
4. Description and Data
5. Results
6. Concluding Remarks

In your thesis proposal, you should have most of the first three sections at a minimum. This proposal is likely to be between no less than 10 pages long, probably longer especially if you have some progress in the data/analysis sections. Also, please make sure that the format follows the academic research papers you will have presented. This proposal is due on Tuesday, May 8, 04:00 PM.

## Expectations and Classroom Etiquette

An active and productive classroom is essential for the success of this course. Cultivating and maintaining such an environment is the responsibility of the instructor and the students. This responsibility imposes several obligations on all of us. It is very important that each of us comes prepared for each and every session. It is not necessary that you know the material 'cold' before each class, but it is important that you expend sufficient effort to gain some grasp of the ideas we will be discussing. To be more specific, prior to every session, 1) read all of the assigned materials, 2) attempt to address and answer some of the questions found at the end of each chapter, and 3) give some thought to the broader managerial implications of the materials.

It is very important that you appreciate the interactive nature of the classroom environment. Although all class sessions will be conducted in lecture format, that does not mean I discourage classroom interaction. On the contrary, I encourage your active participation in the discussion through observations and questions. When I ask a question, it is almost never rhetorical: I expect an answer. And I encourage relevant questions from the class as well.

Please observe the following procedures:

- Please arrive on time.
- Please turn off your cellular phones before entering the class.
- NO CELL PHONES, LAPTOPS OR OTHER INTERNET ACCESS DEVICES MAY BE USED IN CLASS UNLESS SPECIFICALLY REQUESTED BY THE INSTRUCTOR.
- NO TEXT MESSAGING IS ALLOWED DURING CLASS.
- Videotaping faculty lectures is not permitted, due to copyright considerations. Audiotaping may be permitted if approved by the professor. Use of any recorded material is reserved exclusively for USC Marshall students.
- Private discussions among students are disruptive to others. If you have a question or something to contribute to the class discussion, please share it with all of us.
- If you have to leave early on a particular day for a valid reason, please let me know in advance. Also, try to find a seat near an exit to minimize disruption to others. You may not come and go as you please.
- For the exams, please arrive on time and take your seat promptly. You may start only when I announce the start of the exam and you must stop and hand in your exams when the exam ends. Examination time includes writing your name and transferring your answers to the scantron.
- You are expected to attend the section you are registered in. You must take all tests in your registered section.

## Communication Protocols

### Consultation with Instructor

If you have questions on course material or other course-related issues, please do not hesitate to contact me by email or in person. Contact information appears on page 1 above.

Economics is an analytical discipline in which concepts build logically on one another. It may be more difficult to recover from failure to keep up with the material in this course than in some others. If you believe

you are failing to gain a basic grasp of fundamental course concepts, please contact me so that we can try to resolve these difficulties sooner rather than later.

### Distribution of Class Information

- **Blackboard:** I will use Blackboard for several purposes:
  - To distribute various documents, including class slides and readings that become available during the semester.
  - To post announcements relevant to the course. Please check Blackboard regularly for new announcements.
  - To send email messages. It is your responsibility to make sure either that your Blackboard email address is the one you regularly check or that email sent to your Blackboard email address is forwarded automatically to your favorite address. You should also make sure that your inbox does not become full.
  - To post grade information.

### Sharing of Course Materials

It is a violation of USC's Academic Integrity Policies to share course materials with others without permission. **No student may record any lecture, class discussion, or meeting with me without my prior express written permission.** The word "record" or the act of recording includes, but is not limited to, any and all means by which sound or visual images can be stored, duplicated, or retransmitted whether by an electro-mechanical, analog, digital, wire, electronic or other device or any other means of signal encoding. I reserve all rights, including copyright, to my lectures, course syllabi and related materials, including summaries, class presentation slides, prior exams, answer keys, and all supplementary course materials available to the students enrolled in my class whether posted on Blackboard or otherwise. They may not be reproduced, distributed, copied, or disseminated in any media or in any form, including but not limited to all course note-sharing websites. **Exceptions are made for students who have made prior arrangements with DSP and me.**

### STATEMENT OF ACADEMIC CONDUCT AND SUPPORT SYSTEMS

USC seeks to maintain an optimal learning environment. Students are expected to submit original work. They have an obligation both to protect their own work from misuse and to avoid using another's work as their own. All students are expected to understand and abide by the principles of academic honesty outlined in the University Student Conduct Code (see University Governance, Section 11.00) of SCampus (<https://policy.usc.edu/student/scampus/>). The recommended sanctions for academic integrity violations can be found in Appendix A of the Student Conduct Code.

#### **Students with Disabilities:**

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs ([www.usc.edu/disability](http://www.usc.edu/disability)). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in GFS (Grace Ford Salvatori

Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: [ability@usc.edu](mailto:ability@usc.edu).

### **Support Systems:**

*Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call*

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

*National Suicide Prevention Lifeline - 1-800-273-8255*

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

*Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call*

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

*Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086*

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

*Student Support & Advocacy – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

*Diversity at USC – <https://diversity.usc.edu/>*

Tab for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students.

## Course Schedule and Reading List

You are responsible for all reading assignments

Week	Date	Topic	Textbook Sections	Deliverable Due
1	M - 01/08	Introduction to Research & Matlab <sup>®</sup>	O'Leary Ch. 1	
	M - 01/15	<b>No Class – MLK Day</b>		
2	M - 01/22	Getting Started	O'Leary Ch. 2, Brooks Ch. 3	
3	M - 01/29	Research Question	O'Leary Ch. 3, Brooks Ch. 3	
4	M - 02/05	Hypothesis Testing and Interpretation	Brooks Ch 3, 4	<b>HW1</b>
5	M - 02/12	Theses Presentations		
	M - 02/19	<b>No Class – Presidents' Day</b>		
6	M - 02/26	Theses Presentations		
				<b>HW2</b>
7	M - 03/05	Theses Presentations		
	M - 03/12	<b>No Class – Spring Recess</b>		
8	M - 03/19	Theses Presentations		
9	M - 03/26	Academic Paper Presentations		
10	M - 04/02	Academic Paper Presentations		
11	M - 04/09	Individual advising		<b>Progress Report</b>
12	M - 04/16	Individual advising		
13	M - 04/23	Proposal Presentations		
	T - 05/08	<b>Research Proposal Due 04:00 p.m.</b>		

Note: All details in this handout are subject to change with adequate notice. The University's official "Schedule of Classes" supersedes all items such as final exam schedules, etc., which are reproduced here only for your convenience.