



Standard Course Outline

FIN 640 Seminar in Quantitative Analysis

I. General Information:

Units: 3 credits

Prerequisites: Graduate business standing.

SCO prepared by: Dr. Mengming Dong

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II. Catalog Description:

Financial and economic analysis for financial managers and investors. Application of quantitative analysis and statistical models to economic and financial data in the decision-making process of firms, financial institutions, and investors. Letter grade only (A-F).

III. Curriculum Justification:

The course addresses a number of [COB Graduate Program Learning Goals](#):

General

- ♦ **Critical Thinking:** Students will be able to demonstrate conceptual learning, critical thinking, and problem-solving skills regarding traditional and forward-looking topics.
 - Students will be able to (a) identify and demonstrate the use of suitable quantitative techniques and statistical inferences in the decision-making process of firms and financial institutions. (b) apply current and relevant analytical and forecasting methods to corporate, industry, financial, and macro-economic data.
- ♦ **Ethics:** Students will be able to demonstrate awareness and knowledge of ethical, social responsibility, social impact, and citizenship issues in the local, regional, and world communities.
 - Students will be able to demonstrate the importance of statistical inference on business decision making and practice statistical analysis in a rigorous and ethical manner.
- ♦ **Interpersonal, Leadership & Team Skills:** Students will be able to demonstrate interpersonal and leadership skills for working in a dynamic and diverse world, both independently and in a team environment.
 - Students will be able to develop these skills as result of group homework assignments, case assignments and/or research projects.

Management Specific

- ♦ **Business Functions:** Students will be able to demonstrate understanding of all business functions, practices and related theories and be able to integrate this functional knowledge in order to address business problems.
 - Students will be able to practically use and apply quantitative analysis skills and financial econometric principles in the decision-making process of corporations and investors.
- ♦ **Quantitative & Technical Skills:** Students will possess quantitative and technological skills enabling them to analyze, interpret, and communicate business data effectively and to improve business performance.



- Students will be able to compute relevant quantitative measures and estimate relevant statistical models that help firms and financial institutions make sound business decisions.
- Students will be able to apply one commonly used statistical or programming language to the quantitative analysis and business decision process.
- ♦ **Domestic & Global Environment:** Students will be able to demonstrate knowledge of today's dynamic business environment (e.g., legal, regulatory, political, cultural, and economic), especially the links between our region and global business.
 - Students will demonstrate that they can make investment decisions in today's domestic and global marketing environment (e.g. legal, regulatory, political, cultural and economic environmental factors). Students will demonstrate introductory level knowledge of forward-looking topics, such as machine learning, cryptocurrencies, etc.

IV. Course Objectives, Student Learning Outcomes, Evaluation Instruments, and Instructional Strategies for Skill Development

OBJECTIVE - Critical Thinking:

A. MEASURABLE STUDENT LEARNING OUTCOME(S):

After taking this course, students will be able to (a) demonstrate the understanding of statistical and econometric theories and learn new statistical concepts with no difficulties and (b) apply statistical analysis to real-business and investment problems and show how they are related to the improvement of business and investment decisions and performance.

B. EVALUATION INSTRUMENTS (ASSIGNMENTS):

Specific assignments will vary by instructor, but typical assignments include multiple choice and problem-oriented exams and quizzes, short answer and essay exams, and in-class problem-solving assignments.

C. INSTRUCTIONAL STRATEGIES FOR SKILL DEVELOPMENT:

Instructors will review the key knowledge before the assignments and provide feedback on the assignments.

OBJECTIVE - Business Functions:

A. MEASURABLE STUDENT LEARNING OUTCOME(S):

After taking this course, students will be able to (a) demonstrate the advantage of disadvantage of different investment strategies by running statistical tests, and (b) demonstrate how statistical and econometric tools and techniques play an essential role in making business and finance decisions.

B. EVALUATION INSTRUMENTS (ASSIGNMENTS):

Specific assignments will vary by instructor, but typical assignments include excel or Python group case project (e.g. regressions to calculate beta and construct characteristic portfolios using Python).

C. INSTRUCTIONAL STRATEGIES FOR SKILL DEVELOPMENT:

Instructors will explain rubrics for writing expectations both before and after the valuation project, reviewing components of examples of well-written reports, incorporating feedback on reports with opportunities for revision.



OBJECTIVE - Quantitative and Technical Skills:

A. MEASURABLE STUDENT LEARNING OUTCOME(S):

After taking this course, students will be able to (a) apply probability, statistical, and econometric theories to real-world finance decisions using a statistical application or programming language (e.g. Python)(b) demonstrate a working knowledge of at least one of the major finance and economic databases (e.g. WRDS (Wharton Research Data Services), Yahoo Finance, Federal Reserve Bank website, Quandl, Bloomberg, etc.).

B. EVALUATION INSTRUMENTS (ASSIGNMENTS):

Specific assignments will vary by instructor, but typical assignments include excel group case assignment using Python or Excel (e.g. regressions to calculate beta and construct characteristic portfolios using Python).

C. INSTRUCTIONAL STRATEGIES FOR SKILL DEVELOPMENT:

Instructors will explain rubrics for writing expectations both before and after the valuation project, reviewing components of examples of well-written reports, incorporating feedback on reports with opportunities for revision.

V. Outline of Subject Matter

SUGGESTED COURSE SCHEDULE / TOPICS TO BE COVERED

Week	Topics	Required Readings Before Each Class
1	Probability Theory	Quant Ch 4 (or Level 1, Reading 8)
2	Common Probability Distributions	Quant Ch 5 (or Level 1, Reading 9)
3	Statistical Concepts and Market Returns	Quant Ch 3 (or Level 1, Reading 7)
4	Sampling and Estimation	Quant Ch 6 (or Level 1, Reading 10)
5	Hypothesis Testing	Quant Ch 7 (or Level 1, Reading 11)
6	Correlation Analysis and Regression	Quant Ch 8 (or Level 2, Reading 9)
7	Multiple Regression	Quant Ch 9 (or Level 2, Reading 10)
8	Issues in Regression Analysis	Quant Ch 9 (or Level 2, Reading 10)
9	Mid-term Exam	
10	Time-series Analysis	Quant Ch 10
11	Introduction to Multifactor Models	Quant Ch 11



12	Quantitative Analysis on Financial and Economic Data using Python: Part I	
13	Quantitative Analysis on Financial and Economic Data using Python: Part II	
14	Quantitative Analysis on Financial and Economic Data using Python: Part III	
15	Quantitative Analysis on Financial and Economic Data using Python: Part IV	
16	Final Exam	

Note:

1. “Quant” refers to Quantitative Investment Analysis book (CFA Institute Investment Series)
2. Level 1, 2 Reading refers to the 2020 CFA Level I and II SchweserNotes

VI. Methods of Instruction

INSTRUCTION MODE.

Check one or more modes of instruction that this course is authorized to use. Syllabi must also contain an explicit statement describing the mode of instructional delivery.

May refer to university policies on [Academic Technology and the Mode of Instruction](#) and [Course Syllabi and Standard Course Outlines](#) for descriptions of modes of instruction and for guidelines for non-traditional modes of instruction.

This class can be offered as an online, hybrid, or flipped class, with the approval of the department chair.

✓ Traditional ✓ Hybrid ✓ Local Online ✓ Distance Education

CLASSROOM ACTIVITIES

Method of instruction generally comprises a combination of lecture, class discussions, in- class exercises, case studies, homework assignments and research projects. When reading the book in preparation for class it is essential that the students take an *active* approach. This means that the students implement the examples discussed in the book using spreadsheet models and work through them as they read. *The best-prepared student is often the one who comes to class with questions about how the concepts and methods can be applied.* Finally, the students should expect to return to the book after class or while reviewing, in order to refine and consolidate their knowledge.

A recommendation for a pedagogical tool to apply the concepts in FIN 640 would be statistical software such as NCSS, RATS, SAS, SPSS and Stata. This learning tool provides the student with opportunities to apply and practice the skills and concepts that they have learned in the course. Another active learning approach is the use of HBR-level case discussion and written analysis. At this level of instruction, MSF students must have some type of pedagogical tools for active learning



that are beyond the undergraduate level of lecture and multiple choice examinations.

EXTENT AND NATURE OF TECHNOLOGY USE.

Instructors will require students to use WRDS (Wharton Research Data Services) and Yahoo Finance and Excel/Python for data retrieval and data processing tool as part of instruction.

If the course is conducted entirely through Alternative Modes of Instruction, both synchronous and asynchronous learning will be incorporated. Students will access the course material and activities on BeachBoard and will be required to participate in synchronous class meetings via Zoom. All students must have access to a computer or other device with Internet functionality and a webcam to access BeachBoard and Zoom, participate in class activities, and complete assignments. Students must also have access to Internet with sufficient speed in order to be able to participate in synchronous meetings.

Students who experience unexpected technical issues for a class session or assignment will be provided with the opportunity to make up missed work. Students who experience technical issues during a synchronous meeting or with an assignment should notify the instructor via email as soon as possible.

To access this course on BeachBoard and Zoom, students will need access to the Internet and a supported web browser (Safari, Google Chrome or Firefox). Log in to BeachBoard with your CSULB Campus ID and BeachID password. Once logged in, you will see the course listed in the My Courses widget; click on the title to access the course. To access Zoom, first install the latest version of the Zoom app on your device. Use the link provided and/or sign in using your CSULB Campus ID and BeachID password via Single Sign On to create or join a Zoom session. If students need technical assistance during the course or would like to report a technical issue with BeachBoard or Zoom, they should contact the Technology Help Desk.

The university is expected to provide an in-person computer lab in the University Student Union during 2020-21 and the opportunity to borrow laptops and/or wi-fi hotspots, if needed. For laptops, call 562-985-5587, Mo-Fri, 8 am – 5 pm. Click here to access A map of campus wi-fi coverage.

If you need technical assistance at any time during the course or need to report a problem with BeachBoard or Zoom, please contact the Technology Help Desk at helpdesk@csulb.edu or (562) 985-4959.

VII. Information about Textbooks/Readings

The recommended textbook, lecture slides, and Python codes, and practice questions are essential to the success in the course.

1. CFA Level 1 and 2 Schweser Notes (provided by the MSF program)
2. Quantitative Investment Analysis 3rd Edition (CFA Institute Investment Series) by Richard A. DeFusco, Dennis W. McLeavey, Jerald E. Pinto, and David E. Runkle (ISBN-13: 978-1119104223)
3. Introductory Econometrics: A Modern Approach, 7th Edition, by Jeffrey M. Wooldridge (ISBN-13: 978-1-337-55886-0)
4. Introductory Econometrics for Finance, 4th Edition, by Chris Brooks (ISBN-13: 978-1108436823)
5. Python for Finance: Mastering Data-Driven Finance, 2nd Edition, by Yves Hilpisch (ISBN-13: 978-1492024330)

As a CSULB student, you should have free access to the electronic version of this book. Below is the



link to access the eBook.

<https://www.oreilly.com/library/view/temporary-access/>

VIII. Instructional Policies Requirements

Instructor’s syllabi must contain explicit statements regarding their own policies with regard to plagiarism, withdrawal, absences, etc., which should be consistent with the university policies published in the CSULB Catalog. It is expected that every course will follow university policies on [Attendance](#), [Course Syllabi & Standard Course Outlines](#), and [Final Course Grades, Grading Procedures, and Final Assessments](#). If some or all sections of the course are to be taught, in part or entirely, by distance learning, the course must follow the provisions of university policy on [Academic Technology and the Mode of Instruction](#). Instructors should refer to the current [CSULB Catalog](#) and to the [Academic Senate](#) website for campus guidelines and policy statements as they develop their individual course policies.

Lecturing on theories & concepts of finance and applications to investments. Quantitative techniques and problem solving. Managing an investment portfolio, presentation & discussion (group project). Individual hedging strategy using derivative securities.

Instructors in planning the exams, and other grading procedures, should adhere to the relevant [University Policy on Grades, Grading Procedures, and Final Assessments](#).

The textbooks for this course should be chosen in accordance with the university policy on [Selection of Instructional Materials](#). There are many appropriate textbooks for this course; it is generally agreed that none of them is perfect. The following suggestion is based on the special nature of this core MBA course:

- Students will arrive at this course with extraordinary range of backgrounds; and therefore prior knowledge will be highly variable, however,
- Students will have a level of maturity that will enable them to look at a broader picture via more advanced cases, simulations, group projects and
- Examinations must be essay-type and/or problem solving questions and avoid the use of multiple-choice questions.

IX. Course Assessment and Grading

Grading policies, procedures, and the percentage of the course grade associated with each assessment must be explicit on each instructor’s syllabus and must be consistent with University policy on “Final Course Grades, Grading Procedures, and Final Assessments.” Instructors must develop scoring guidelines for assessments, which must be made available to students. The final course grade will be based on a descriptive scale such as the following:

Percent	Grade	Grade Description
90-100%	A	Mastery of the relevant course standards.
80-89%	B	Above average proficiency of the relevant course standards.
70-79%	C	Satisfactory proficiency of the relevant course standards.
60-69%	D	Partial proficiency of the relevant course standards.
Below 60%	F	Little or no proficiency of the relevant course standards.

X. Disabilities



The SCO and syllabi should contain a statement regarding support services for students with disabilities. Under the Office of Civil Rights and the Americans with Disability Act, students may disclose **at any time** during the academic semester that they need a classroom accommodation based on a disability. Thus, it is strongly recommended that all SCOs and syllabi use the following language, as it meets both federal and state legal standards.

D. The Bob Murphy Access Center (BMAC)

The Bob Murphy Access Center (BMAC) provides certification for students with disabilities and helps arrange relevant accommodations: [Bob Murphy Access Center](#). Any student requesting academic accommodations based on a disability is strongly encouraged to register with Disabled Student Services (BMAC) each semester. A letter of verification for approved accommodations can be obtained from BMAC. Please be sure to provide your instructor with BMAC verification of accommodations as early in the semester as possible. The phone number for BMAC is (562) 985 5401. The email address is: bmac@csulb.edu.

XI. Assistive Technology

In compliance with university policy on [Accessibility and Faculty Responsibility for the Selection of Instructional Materials](#), instructors are responsible for ensuring that their syllabi and instructional materials are accessible to all students.

XII. Sexual Assault, Rape, Dating/Domestic Violence, & Stalking

Title IX prohibits gender discrimination, including sexual harassment and sexual misconduct. If you have experienced sexual harassment, sexual assault, rape, dating/domestic violence, or stalking, the campus confidential Victim's Advocate is available to help. Jaqueline Urtez (e: advocate@csulb.edu, p: (562) 985-2668) can provide free and confidential support, accommodations, and referrals for victims without having to report the assault to campus authorities. While students are welcome to discuss assaults with faculty, both faculty and teaching assistants are mandatory reporters who are required to report all incidents of sexual harassment/misconduct to the Title IX office for follow-up and possible investigation. Students who do wish to report the assault for possible investigation may contact the confidential victim's advocate, who can help them through the reporting process, or they can report the assault directly to the [Title IX Office](#) by completing an online reporting form or contacting the Office of Equity & Diversity at OED@csulb.edu.

XIII. Consistency of SCO Standards across Sections

All future syllabi will conform to the SCO. The course coordinator should review the SCO and offer advice and/or materials to faculty member new to teaching the course. The course coordinator may offer or require regular review of instructors' course materials as well as anonymous samples of student work.

XIV. [Additional Resources for Development of Syllabi](#)