

Analytical Finance Overview

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1 Background on Analytical Finance

Analytical Finance is a new major at the Kellogg School. The existing Finance Major provides a solid grounding in basic finance, and is designed to prepare students for a career in general management. There are a growing number of students who plan to take specialized finance jobs upon graduation, in areas such as banking, investment management, and consulting. These students often wish to acquire a more rigorous understanding of financial modeling and the theory and tools which underlie modern finance practice. The Analytical Finance Major is intended to provide such students a deeper knowledge of finance than is obtained through the normal Finance Major.

Course requirements for the Analytical Finance Major are more extensive than those for the Finance Major. Futures and Options is required, and students must take 3 out of a set of 5 advanced electives. In addition, the Analytical Finance Major includes a practicum during the Spring quarter of the second year. The plan is for students to work in depth on a problem, culminating in a general presentation before all interested students as well as practitioners.

2 The Practicum and Firm Participation

The practicum will be offered in the Spring quarter (beginning the week of March 26). Groups of at most 4 students will work intensively on a problem for 4 weeks. The class will meet weekly to hear progress reports from the students and to provide feedback. At the end, projects will be presented publicly.

The problem—posed by a participating firm—should be one that might be handed to a first-year finance associate, who has recently graduated from a leading business school. The problem needs to be interesting and challenging, with enough definition so that it is appropriate for a group of ambitious finance students, but not so much definition that it is obvious how to solve it.

Any finance-related area is feasible for a project. For example, projects could be in the areas of

- Evaluation of new lines of business, R&D, spinoffs, or acquisitions

- Assessment of portfolio strategies, sector and country asset allocation, performance attribution
- Derivatives and risk management, development of hedging strategies, pricing exotic instruments

In addition to receiving an analysis of their problem, participating firms will gain exposure and contact with Kellogg students and faculty. We ask that participating firms agree to

- propose one or more problems
- provide assistance with institutional knowledge and, if appropriate, unique data
- provide limited opportunity for the students to ask questions as they work through the problem
- attend the student presentation

Although some minimal participation by the firm is essential, participation beyond that is at the discretion of the firm. If unusual data resources are required, we would ask that firms assist with this.¹ Note that because the number of students and participating firms is uncertain, we cannot promise that a particular problem will be used for a project.

Depending upon the number of students electing the major, there will be one or more evening sessions in which the problems and solutions are presented.

3 Course Work

The Analytical Finance major requires that students take at least 6 Finance courses, most of which are upper-level electives and one of which is the practicum. Following are brief descriptions of the courses which satisfy requirements for the major.

3.1 Required Courses

The following course descriptions are taken from the course catalog.

Finance I and Finance II or Turbo Finance (I/II) The first courses study basic discounting, stock and bond valuation, capital budgeting, asset pricing models, portfolio theory, efficient markets, and corporate financial policy.

Futures and Options This course covers the pricing of futures, options, and swaps, and the use of these instruments in risk management and hedging.

Practicum Described above.

¹One firm asked about having students on-site for a period of time. This would be up to the students and the firm, although most students will have other courses which would likely preclude a 3-week visit beyond the Chicago area.

3.2 Electives

Students take 3 out of the following 5 courses:

Financial Decisions or International Financial Decisions These are both “capstone” courses in which students solve cases applying a broad range of concepts from previous classes. The courses are designed to improve problem-solving skills, problem definition, and the gathering and organizing of relevant information.

Financial Strategy and Tax Planning This course studies the economics of tax planning: what kinds of issues arise in organizing, financing, and operating domestic and international firms. How do taxes affect investment decisions? This is a conceptual course, not a code-based tax course.

Investments A comprehensive study of investment theory. optimal portfolio selection, the determinants of expected rates of return in financial markets, and the evaluation of relevant empirical research. Major attention is devoted to the capital asset pricing model and the arbitrage pricing theory.

Fixed Income Securities Covers fixed income valuation, markets, and fixed income derivatives. The course also surveys some of the institutional features of these markets.

Derivative Securities This is a sequel to Futures and Options, offering broader and deeper coverage of derivatives, including the foundations of option-pricing, Monte Carlo valuation, exotic options, fixed income derivatives, and risk management.