Teaching with FTS

FTS is an experiential learning system that has been used in courses at educational institutions for over twenty years.   FTS is used by high schools, in undergraduate courses, in Master's level and MBA finance courses as well as in quantitative finance courses. It is used in core courses as well as specialized and capstone courses.

The teaching applications go far beyond the finance curriculum: for example, FTS is used to teach ethics in a unique way that highlights the social and economic implications of unethical behavior. It is used in accounting courses to give students a deeper understanding of financial statements and how investors use the information in these statements. It is used in economics courses to illustrate market dynamics and equilibrium, as well as to illustrate how macroeconomic events affect financial markets. We touch on the ethics application below, and also describe how FTS helps students and instructors learn how to effectively use the large amount of data now available.

FTS is designed to be a scalable, broad-based system that allows large numbers of students to benefit from it. It is designed to be used in a variety of courses and has multiple components for this purpose. It is designed to be used in traditional classroom as well as online and distance learning courses. And it comes with a large emphasis on instructor training: we provide group training; one-on-one training; help with course outlines and integration strategies; and help with deciding what parts of the system may be particularly suited to the course being taught.

Within finance, FTS is easily integrated into standard courses, such as:
- Finance 101
- Financial Management
- Corporate Finance
- International Business
- Investments
- Options and Futures
- International Finance
- Fixed Income Securities

- Corporate Financial Reporting
- Financial Statement Analysis
- Valuation

You can use either of our two trading systems, the modules, or a mixture of the three in your courses.   Here are some examples:
- Teaching bond valuation
- Teaching Duration
- Teaching portfolio diversification
- Market Microstructure
- The Real Time System Teaching Guide
- The FTS Interactive Markets Teaching Guide
- Valuation Tutor Lessons
- The FSA Module Instructors Handbook and Students Handbook

In the FTS Real Time System, the setting is real world exchanges and real world securities; the basic idea is to let students see how techniques that are commonly taught, like equity valuation, bond valuation, notions of risk and return, diversification, derivative pricing and hedging, are used in practice. Students manage portfolios where they have to apply the techniques, understand how they work, and evaluate their effectiveness. Along the way, they also learn about how markets work, how they react to information, economic policy, geopolitical events, and they also become familiar with terminology that is otherwise difficult to master. All this brings them closer to understanding the complexities of real world markets and brings them closer to understanding the practice. Our teaching guide for the FTS Real Time System contains detailed exercises and assignments that help your students bridge the gap between textbook learning and the practical application and use of concepts and techniques; a brief overview of the system and teaching applications is available here. This video explains some of the features of the system and some teaching applications.

The FTS Interactive Markets are quite different; here, the emphasis is on *price discovery.* So this is like being a participant on the floor of an exchange or in a trading pit or being a dealer who makes market in a security. These are exciting simulations where students trade against one another and determine the prices and trades. Here, the complexity comes from reacting in real time to other participants while simultaneously being able to apply concepts that have been taught.   These range from initial concepts such as the time value of money to intermediate concepts such as informational efficiency of markets to advanced risk management and hedging simulations.   They can also experience how different market structures affect market outcomes, by participating in double auction markets, call markets, quote driven markets, and order driven markets. Our teaching guide provides suggestions for how our trading cases can be used.

The FTS Modules are different from the two trading systems. They are stand-alone tools that let you and your students explore subjects in depth. For example, the **FTS Valuation Tutor** allows students to explore alternative models of stock valuation; we provide fundamental

information for all the models for over 3000 US stocks, and a variety of international stocks, so they can see how the models are applied. The **FSA module** is a step-by-step method for students to explore company filings and conduct detailed fundamental analysis. The **Interest Rate Risk module** provides a graphical and statistical analysis of historical yield curves, and includes the ability to backtest techniques such as immunization. It also contains advanced material on factor analysis applied to interest rate risk management. The **Efficient Portfolio module** takes historical data and calculates efficient frontiers (with and with short sales), allows for the backtesting of portfolios, and also lets students explore the statistical properties stock returns. The various **Option modules** lets them learn about option payoffs, option pricing models, the convergence of discrete models to continuous time models, understand the pricing and hedging of exotic options, and so on. The modules can be used in class by the instructor, but can also be assigned to students to explore the topics by themselves.

Taming "Big Data" Complexity
An article in BizEd Magazine (November/December 2012, notes that "… in today's world, where everyone can buy databases, technology alone isn't a competitive advantage. The advantage rests in how an organization uses it. …. Tomorrow's CEOs won't need to connect wires and switches---but they will need to connect the dots…" A prime example is financial data. You have enormous access to company filings, historical stock prices, research reports, and so on. Our FSA module is designed to help students connect the dots. The module combines "big data" with technology by providing a conceptual framework and step-by-step instructions for analyzing, interpreting, and understanding financial reports.

Teaching Ethics with FTS
Finally, we return to the ethics teaching mentioned at the beginning. The FTS Interactive Markets provide a unique laboratory for students to not only face ethical dilemmas but to go beyond that and think about the implications of unethical behavior for society. In the trading session, students are presented with information which may not have been obtained in accordance with the rules. The first question is whether to accept the information; the second is whether to use it; the third is whether to send the information to others. What is interesting here is that an individual's decision in each case depends on what they think others in the market are doing, and so in fact is affected by what they think the social norms are. For example, their behavior is typically different "if everyone is doing it" from when they think they may be the only person receiving the information. Further, the group behavior can have a strong effect on the market itself; for example, you could get very little participation in markets in which most participants make unethical decisions, resulting in low liquidity, high cost of capital, and so on. The impact of the individual decisions on the group outcome provides an invaluable lesson into the social costs of unethical behavior.

The paper "*Longitudinal Study of Ethics Education: Establishing the Baseline*," by researchers at Bentley University, is forthcoming in the Journal of Academic Ethics. In the paper, the researchers study the relationship between students ethical proclivity as measured by Defining Issues Test (DIT-2) scores and their behavior in a trading simulation based on the FTS Trading Case BE1.