

EDUCATION AND EXAMINATION COMMITTEE OF THE SOCIETY OF ACTUARIES (SOA)

SPRING 2013

FINANCIAL ECONOMIC THEORY AND ENGINEERING EXAM

INTRODUCTORY STUDY NOTE

1. The Financial Economic Theory and Engineering examination for Spring 2013 will be given on **Thursday, May 2nd, from 8:30 a.m. - 11:45 a.m. and 1:30 p.m. – 4:45 p.m.** The examination will consist of six hours of written answer questions. A read-through time will be given prior to the start of the exam, 15 minutes in the morning session and 15 minutes in the afternoon session.
2. The following link shows a recommended FSA module/exam sequence for the Finance/ERM track: <http://www.soa.org/Education/Exam-Req/edu-fsa-recommended.aspx>

This order is NOT mandated. Each candidate will determine the appropriate sequence based on factors including readiness to sit for an exam, exam administration schedules, or study time available.

3. Any changes in the Syllabus for this exam will be published under “Updates” in this exam’s home page on the SOA Web site.

Past exams, solutions and case studies are available at:

<http://www.soa.org/education/exam-req/syllabus-study-materials/edu-multiple-choice-exam.aspx>

The Syllabus material includes textbooks, online readings, as well as the study notes listed below. A complete listing of the Syllabus and Learning Objective is located in this exam’s home page on the SOA Web site.

Code	Title
	Case Study (Available on Syllabus page of Web site)
FET-106-07	Chapters 5 & 6 of <i>The Oxford Guide to Financial Modeling</i>
FET-108-07	Chapter 13 of <i>Integrated Risk Management</i>
FET-114-07	Capital Allocation in Financial Firms
FET-148-08	Securitization of Life Insurance Assets and Liabilities
FET-149-08	Are You Paying Too Much for That Acquisition?
FET-151-08	Real and Illusory Value Creation by Insurance Companies
FET-153-08	Current Issues: Options—What Does an Option Pricing Model Tell Us About Option Prices?

Code	Title
FET-158-08	Chapter 11 of <i>Investment Management for Insurers</i>
FET-160-08	Chapter 9 of <i>Corporate Finance Theory</i>
FET-161-08	Chapter 5 of <i>Life, Health & Annuity Reinsurance</i>
FET-162-08	Chapter 18 of <i>Financial Markets and Corporate Strategy</i>
FET-163-08	Chapter 19 of <i>Financial Markets and Corporate Strategy</i>
FET-165-08	Chapter 16 of <i>Integrated Risk Management</i>
FET-166-09	Chapter 2 of <i>Corporate Finance Theory</i>
FET-167-09	How to Use the Holes in Black-Scholes
FET-169-09	Empirical Properties of Asset Returns: Stylized Facts and Statistical Issues
FET-170-09	Theory of Risk Capital in Financial Firms
FET-174-10	Stochastic Calculus for Finance I: The Binomial Asset Pricing Model, Chapters 1, pp. 1–15, 2 pp. 25–45, 3 pp. 61–71
FET-175-10	Models
FET-176-11	<i>Handbook of the Economics of Finance</i> , Vol. 1, Part 2, Chapter 18
FET-177-11	<i>The Known, the Unknown, and the Unknowable in Financial Risk Management: Measurement and Theory Advancing Practice</i> , Chapter 3
FET-178-12	Economic Capital Modeling: Practical Considerations
FET-179-12	Chapter 12, Sections 1-4 and Appendices A & B of <i>Handbooks in Operations Research and Management Science</i>

5. ERRATA: See attached errata.
6. Exam booklets in both the morning and afternoon will include a cumulative normal distribution table identical to the one posted on the syllabus page of the Web site.

A formula package will also be available for this exam. It will be posted on the syllabus page of the Web site.

Morning and afternoon exam booklets will include a formula package identical to the one attached to this study note. The exam committee felt that by providing many key formulas, candidates would be able to focus more of their exam preparation time on the application of the formulas and concepts to demonstrate their understanding of the syllabus material and less time on the memorization of the formulas. The formula package was developed sequentially by reviewing the syllabus material for each major syllabus topic. Candidates should be able to follow the flow of the formula package easily. We recommend that candidates use the formula package concurrently with the syllabus material. Not every formula in the syllabus is in the formula

package. **Candidates are responsible for all formulas on the syllabus, including those not on the formula sheet.** In general, formulas not in the package are either relatively fundamental or uncomplicated, or are part of the derivative of formulas that are in the package.

Candidates should carefully observe the sometimes-subtle differences in formulas and their application to slightly different situations. For example, there are several versions of the Black-Scholes-Merton Option Pricing formula to differentiate between instruments paying dividends, tied to an index, etc. Candidates will be expected to recognize the correct formula to apply in a specific situation of an exam question.

Candidates will note that the formula package does not provide names or definitions of all the formulas or symbols used. With the wide variety of references and authors of the syllabus, candidates should recognize that the letter conventions and use of symbols may vary from one part of the syllabus to another and thus from one formula to another.

We trust that you will find the inclusion of the formula package to be a valuable study aide that will allow for more of your preparation time to be spent on mastering the learning objectives provided as part of this study note.

7. A case study that will be used as a basis for questions on the examination. Be sure to answer the questions asked by referring to the case study. For example, if asked for advantages of a particular plan design to a company referenced in the case study, limit your response to the specifics for that company. Other advantages should not be listed as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given for either answer. Candidates are advised to familiarize themselves with the case study. A copy will be included in the examination booklet. Candidates will not be allowed to bring their study note copy of the case study into the examination room.
8. Several book distributors carry some or all of the textbooks for the Society of Actuaries exams. A list appears on the SOA Web site <http://www.soa.org/education/exam-req/resources/edu-txt-manuals.aspx>.
9. The examination questions for this exam will be based on the required readings for this exam. If a conflict exists (in definitions, terminology, etc.) between the readings for this exam and the readings for other exams, the questions should be answered on the basis of the readings for this exam.
10. Candidates may ONLY use the battery or solar-powered Texas Instruments BA-35 model calculator, the BA II Plus* the BAII Plus Professional* or TI-30Xa or TI-30X II* (IIS solar or IIB battery) or TI-30X MultiView (XS solar or XB battery). Candidates may use more than one of the approved calculators during the examinations.

Calculator instructions may not be brought into the exam room. During the exam, the calculator must be removed from its carrying case so the supervisor can confirm that it is an approved model. Candidates using a calculator other than the approved models will have their exams disqualified.

Candidates can purchase calculators directly from: Texas Instruments, Attn: Order Entry, PO Box 650311, Mail Station 3962, Dallas, TX 75265, phone 800/842-2737 or <http://epsstore.ti.com>.

**The memory of TI-30X II, TI-30X MultiView, BA II Plus and BAII Plus Professional will need to be cleared by the examination supervisor upon the candidate's entrance to the*

examination room.

11. A list of various seminars/workshops and study manuals appears on the SOA Web site <http://www.soa.org/education/exam-reg/resources/edu-sem-workshops.aspx> and <http://www.soa.org/education/exam-reg/resources/edu-txt-manuals.aspx>. These seminars/workshops and study manuals do not reflect any official interpretation, opinion, or endorsement of the Society of Actuaries or its Education Committee.
12. The Society of Actuaries provides study notes to persons preparing for this examination. They are intended to acquaint candidates with some of the theoretical and practical considerations involved in the various subjects. While varying opinions are presented where appropriate, limits on the length of the material and other considerations sometimes prevent the inclusion of all possible opinions. These study notes do not, however, represent any official opinion, interpretation or endorsement of the Society of Actuaries. The Society is grateful to the authors for their contributions in preparing study notes.

The American Academy of Actuaries, the Canadian Institute of Actuaries, the Conference of Consulting Actuaries, and the Society of Actuaries jointly sponsor the examinations administered by the Society of Actuaries.

Errata for FETE syllabus

Study Note FET-177-11, Chapter 3, "Mild and Wild Randomness"

On page 52, second paragraph, first sentence, the number 16 should be 18.

"Variance of the CTE Estimator" by Manistre and Hancock (NAAJ 2005)

Page 145, the formulas in the middle of the page must be normalized as follows:

$$1 - \alpha = \frac{\int_{\hat{v}ar_n}^{\infty} Wd\hat{G}_n}{\int_{-\infty}^{\infty} Wd\hat{G}_n}$$
$$\widehat{CTE}_n = \frac{\int_{\hat{v}ar_n}^{\infty} x \cdot Wd\hat{G}_n}{(1 - \alpha) \int_{-\infty}^{\infty} Wd\hat{G}_n}$$

Page 147, the formula just after the superscript for footnote 19 should be

$$\sum_1^i W_j \leq (1 - \alpha)n$$

Financial Theory and Corporate Policy, Fourth Edition

Page 565, formula 15.9, B^o should be B^n