



Course and Examination Fact Sheet: Spring Semester 2022

8,194: Derivatives Modeling in Excel VBA

ECTS credits: 4

Overview examination/s

(binding regulations see below)

Decentral - Written examination (with defined exam duration) (70%, 90 mins.)

Examination time: term time

Decentral - examination paper written at home (in groups - all given the same grades) (30%)

Examination time: term time

Attached courses

Timetable -- Language -- Lecturer

[8,194,1.00 Derivatives Modeling in Excel VBA](#) -- Englisch -- [Ammann Manuel](#)

Course information

Course prerequisites

As a prerequisite, the MBF-courses "Financial Markets" and "Quantitative Methods" must have been completed. The MBF-course "Derivatives" must be attended in parallel to this course. No previous knowledge of VBA is necessary.

Learning objectives

- Students acquire a thorough understanding of how derivative models and pricing algorithms are implemented in practice.
- Students learn how to translate mathematical formulas and algorithms into readily runnable computer code using Excel VBA.

Course content

The primary objective of this course is to give students an introduction into how derivative models and pricing algorithms are implemented in practice and to demonstrate industry applications of option pricing theory. Students will also learn how to translate mathematical formulas and algorithms into readily runnable computer code, a qualification that is not limited to derivative theory but can be applied to a wide range of financial modeling applications. The course is designed as a computer workshop. Guided by the instructors, students will solve specific problems related to derivative applications by writing their own computer code. Excel and VBA will be employed throughout the whole course. VBA is easily accessible through Excel and it is widely used in practice. It also bears close resemblance to other programming languages which aids the transition to other programming environments. Furthermore, being able to handle a programming language and thereby being able to automate financial applications is a qualification that is highly sought after in the finance industry and very beneficial when applying for a job. This course implements the models introduced in the course "Derivatives (8,152)" using Excel VBA. This helps students to gain a deeper understanding of the topic and its applications. For further information, please refer to the **course syllabus** (available on StudyNet).

Course structure and indications of the learning and teaching design

The course is structured as follows:

1. Introduction to VBA
2. Binomial Model
3. Black-Scholes and Greeks
4. Risk Management with Simulations
5. Exotic Options
6. Model Calibration
7. Parameter Estimation



- 8. Implied Densities
- 9. Volatility Derivatives
- 10. Credit Derivatives

Course literature

Required reading:

Handouts and additional readings will be provided on StudyNet.

Additional course information

Independent Studies

The exercises are to be solved individually and will be discussed in the respective modules.

Information

Information and announcements regarding the course as well as Excel files will be made available on StudyNet.

SARS-CoV-2 Pandemic

In the case of the President's Board having to implement new directives due to the SARS-CoV-2 pandemic in the spring semester 2022, the course information listed above will be changed as follows:

- The course is conducted entirely online via the platform Zoom;
- The recordings of the course are available for 30 days;
- The lecturer informs via StudyNet and e-mail on the changed implementation modalities of the course.

The examination information listed below would be changed as follows:

- The written examination is conducted online;
- The topics, deadline, scope, allowed examination aids and further information are communicated via StudyNet.

Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination time and form

Decentral - Written examination (with defined exam duration) (70%, 90 mins.)

Examination time: term time

Remark

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Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are exhaustively listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.



Supplementary aids

One double-sided A4-cheat-sheet (handwritten or machine-printed), Excel, VBA

Examination languages

Question language: English

Answer language: English

2. Examination sub part (2/2)

Examination time and form

Decentral - examination paper written at home (in groups - all given the same grades) (30%)

Examination time: term time

Remark

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Examination-aid rule

Term papers

Written work must be written without outside help according to the known citation standards, and a declaration of authorship must be attached, which is available as a template on the StudentWeb.

Documentation (quotations, bibliography, etc.) must be carried out universally and consistently according to the requirements of the chosen/specified citation standard such as e.g. APA or MLA.

The legal standard is recommended for legal work (cf. by way of example: FORSTMOSER, P., OGOREK R., SCHINDLER B., Juristisches Arbeiten: Eine Anleitung für Studierende (the latest edition in each case), or according to the recommendations of the Law School).

The reference sources of information (paraphrases, quotations, etc.) that has been taken over literally or in the sense of the original text must be integrated into the text in accordance with the requirements of the citation standard used. Informative and bibliographical notes must be included as footnotes (recommendations and standards e.g. in METZGER, C., Lern- und Arbeitsstrategien (latest edition)).

For all written work at the University of St.Gallen, the indication of page numbers is mandatory, regardless of the standard chosen. Where page numbers are missing in sources, the precise designation must be made differently: chapter or section title, section number, article, etc.

Supplementary aids

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Examination languages

Question language: English

Answer language: English

Examination content

For further information on the exam details, please refer to the **course syllabus** (available on StudyNet).

Examination relevant literature

For further information on the exam details, please refer to the **course syllabus** (available on StudyNet).



Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are binding and takes precedence over other information, such as information on StudyNet (Canvas), on lecturers' websites and information in lectures etc.

Any references and links to third-party content within the fact sheet are only of a supplementary, informative nature and lie outside the area of responsibility of the University of St.Gallen.

Documents and materials are only relevant for central examinations if they are available by the end of the lecture period (CW21) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 12 are relevant for testing.

Binding nature of the fact sheets:

- Course information as well as examination date (organised centrally/decentrally) and form of examination: from bidding start in CW 04 (Thursday, 27 January 2022);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 21 March 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 12 (Monday, 21 March 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 15 (Monday, 11 April 2022).