



DETAILED SYLLABUS

Derivatives Pricing and Markets

1. Information about the study program

1.1 University	Babeș-Bolyai University
1.2 Faculty	Faculty of Economics and Business Administration
1.3 Department	Finance Department
1.4 Field of study	Accounting
1.5 Program level (bachelor or master)	Master
1.6 Study program / Qualification	Accounting and Organizations

2. Information about the subject

2.1 Subject title	EME0410 Derivatives Pricing and Markets						
2.2 Course activities professor	Professor Negrea Bogdan PhD						
2.3 Seminar activities professor	Professor Negrea Bogdan PhD						
2.4 Year of study	II	2.5 Semester	4	2.6 Type of assessment	Continuous evaluation	2.7 Subject regime	Op.

3. Total estimated time (teaching hours per semester)

3.1 Number of hours per week	3	out of which: 3.2 course	2	3.3 seminar/laboratory	1
3.4 Total number of hours in the curriculum	36	out of which: 3.5 course	24	3.6 seminar/laboratory	12
Time distribution					Hours
Study based on textbook, course support, references and notes					37
Additional documentation in the library, through specialized databases and field activities					37
Preparing seminars/laboratories, essays, portfolios and reports					36
Tutoring					1
Assessment (examinations)					3
Others activities					
3.7 Total hours for individual study	114				
3.8 Total hours per semester	150				
3.9 Number of credits	6				

4. Preconditions (if necessary)

4.1 Curriculum	General Finance
4.2 Skills	Not necessary

5. Conditions (if necessary)

5.1. For course development	<ul style="list-style-type: none"> ➤ It is recommended for the master students to attend the courses; ➤ Master students aren't allowed to talk to each other during the course; ➤ Master students are encouraged to ask questions, to demand for supplementary explanations, to participate in discussions; ➤ The use of cell phones during the course is forbidden, as it is forbidden to record the course, to film the course or to take pictures.
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5.2. For seminar / laboratory development	<ul style="list-style-type: none"> ➤ It is compulsory for the students to attend the seminars; ➤ Students are allowed to discuss with each other during the seminar only if they are demanded to solve in teams certain case studies; ➤ It is compulsory for each student to possess a scientific calculator; ➤ The use of cell phones during the seminar is forbidden, as it is forbidden to record the course, to film the course or to take pictures.
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6. Acquired specific competences

Professional competences	<ul style="list-style-type: none"> ➤ Knowledge and use of advanced methods, theories and models specific to finance and banking ➤ Measure and management of financial risks ➤ Use and evaluation of financial instruments traded within the financial-banking system
Transversal competences	<ul style="list-style-type: none"> ➤ Applying methods, techniques and instruments of data collection, analysis and processing with respect to financial decision making; ➤ Ability to participate and to coordinate working teams in order to attain financial objectives ➤ Using financial theories, methods and concepts in further research: both theoretical studies and solutions to practical financial issues emerged in private and public entities

7. Subject objectives (arising from the acquired specific competences)

7.1 Subject's general objective	The main objective of this course is to deliver deep knowledge of concepts, techniques and methods applied in capital markets' specific activities in portfolio optimization, hedging, financial risk management and financial derivatives instruments.
7.2 Specific objectives	<ul style="list-style-type: none"> ➤ A profound understanding of stochastic calculus applied in finance ➤ Risk-neutral valuation for contingent financial products ➤ Presents and explains arbitrage and hedging

8. Contents

8.1 Course	Teaching methods	Observations
Financial derivatives. Concepts, types and trading. Trading strategies involving options.	Theoretical speech; Examples and explanations; Students participation in class.	Weekly lectures
Use of arbitrage in valuation of financial products. Absence of arbitrage principle. Arbitrage relationships for options. Evaluation of futures contracts.		
Stochastic calculus used in pricing contingent financial products (Wiener processes, Ito processes, Ito's lemma, martingale).		
The Black-Scholes model for European options pricing. Pricing models for European options with different underlying assets: dividend stocks, market indexes, currencies, futures contracts (Merton model, Garman-Kohlhagen model, Black model).		
Static and dynamic hedging strategies.		
Using real options in corporate valuation. The Merton model.		
The Cox-Ross-Rubinstein Model for evaluating European/American options.		
Pricing fixed-income financial instruments. The Merton model. The Vasicek model. The Cox-Ingersoll-Ross model.		

References:		
<ol style="list-style-type: none"> 1. John Hull, Options, Futures, and Other Derivatives, Pentice Hall, New Jersey, 2006, Statele Unite 2. John Hull, Risk Management and Financial Institutions, Prentice Hall, New Jersey, 2007, Statele Unite 3. Salih Neftci, An Introduction to the Mathematics of Financial Derivatives, Academic Press, London, 2000, Marea Britanie 4. Bogdan Negrea, Evaluarea activelor financiare. O introducere in teoria proceselor stocastice aplicate in finante, Economica, Bucuresti, 2006, România 5. Steven Shreve, Stochastic Calculus for Finance, Springer, New York, 2004, Statele Unite 		
8.2 Seminar/laboratory	Teaching methods	Observations
Trading strategies involving options	Applications with active implication of master students. Debates and permanent feedback from master students.	1 seminar
Arbitrage relationships for options	Applications with active implication of master students. Debates and permanent feedback from master students.	1 seminar
The binomial model (Cox-Ross-Rubinstein) for pricing European and American options	Applications with active implication of master students. Debates and permanent feedback from master students.	2 seminars
The background of stochastic calculus	Applications with active implication of master students. Debates and permanent feedback from master students.	2 seminars
The Black-Scholes model	Applications with active implication of master students. Debates and permanent feedback from master students.	3 seminars
The Merton model. Corporate valuation model.	Applications with active implication of master students. Debates and permanent feedback from master students.	1 seminar
Hedging operations. Static and dynamic hedging.	Applications with active implication of master students. Debates and permanent feedback from master students.	1 seminar
Pricing fixed-income financial instruments.	Applications with active implication of master students. Debates and permanent feedback from master students.	1 seminar
References:		
<ol style="list-style-type: none"> 1. John Hull, Options, Futures, and Other Derivatives, Pentice Hall, New Jersey, 2006, Statele Unite 2. John Hull, Risk Management and Financial Institutions, Prentice Hall, New Jersey, 2007, Statele Unite 3. Salih Neftci, An Introduction to the Mathematics of Financial Derivatives, Academic Press, London, 2000, Marea Britanie 4. Bogdan Negrea, Evaluarea activelor financiare. O introducere in teoria proceselor stocastice aplicate in finante, Economica, Bucuresti, 2006, România 5. Steven Shreve, Stochastic Calculus for Finance, Springer, New York, 2004, Statele Unite 		

9. Corroboration / validation of the subject's content in relation to the expectations coming from representatives of the epistemic community, of the professional associations and of the representative employers in the program's field.

The content of this course is to be discussed with specialists in portfolio management in order to adapt the teaching process to financial practice.

10. Assessment (examination)

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Knowledge of concepts and models of derivatives pricing	Written exam	70%
10.5 Seminar/laboratory	The master students will be required to work on a project analyzing the performance of derivatives pricing models	Evaluation of the quality of the employed data, methodology and conclusions (80% of the project's grade) Quality of the oral presentation (20% of the project's grade)	30%
10.6 Minimum performance standard			
<ul style="list-style-type: none"> • It is necessary to obtain a minimum grade of 5 (five) in order to pass this subject; • The grades being granted are between 1 (one) and 10 (ten); • The exam is written and takes approximately 120 minutes. 			