COMPUTATIONAL FINANCE in Spring 2019 (BA4020)

Course Code	BA4020	**Professor(s)**	James Noel Ward
Prerequisites	None	**Office Number**	
Class Schedule	TF: 09:00-10:20 in G-102	**Office Hours**	Monday, period 1 & 2
Credits	4	**Email**	jward@aup.edu
Semester	Spring 2019	**Office Tel. Ext.**	06 15 34 35 33

Course Description

An introduction to computational methods for finance and the valuation of financial firms and elements of capital structure: equity, bonds, and options and additional methods for portfolio optimization and hedging risk. We emphasize implementation and use selected models. Aimed at providing the necessary technical and analytical skills useful for graduate school work, working in financial firms or investment banks.

You will know more about finance and practical solutions to financial problems than most MBAs. In previous finance courses you learned financial concepts and theories and techniques. This course teaches you to implement computational models. This is not an Excel course. This is a finance class where we use a tool (Excel, VBA) to make decisions about money. “Learning by model building’ gains insight into decisions about money.

Course Learning Outcomes

Build Pro-forma financial statement models, and value firms.
Price options. Price greeks.
Manage delta, gamma and theta of an options book.
Optimize portfolios of securities.
Price bonds
Build convex portfolios of bonds.

General Education

Course Outline

week	starting Tuesday the	topic	Tuesday	Friday	
1		Intro to Finance in Excel	Chapter 0, & 1 Data Tables	Chapter 1, 2, & 3 Homework Due: C.V.	
2			Chapter 4 & 5	quiz 1 HW Chap 1 2 3	Chapter 6
3		Bonds & Duration	Chapter 20	Quiz 2 HW Chap 6	Chapter 21
4		Term Structure, etc.	Chap 23	HW Chap 20, 21	Test 1
5		Benford	Benford Material	HW Chap 23	Chap 15
		aup break			
6		Options	Chap 16 Binomial	HW Chap 15	Chap 17
7			Chap 17 (cont.)	HW 16 & 17	Chap 18
8		Portfolios	Chap 8	HW 18	Chap 9
9			Chap 10: MMVP	HW 9	Chap 11
10		Restrictions	Chap 12 : no shorts	HW 10, 11	Chap 13: Black
11			Chap 14: Event studies	HW 13 14	Alternative
12		Unusual	Valuation of Banks	HW Project	Hedge Funds
13		Topics	High Frequency	May Day - AUP closed	
14		Review	Exam Review	classes over	
15		exam week	final examination: cumulative and comprehensive; on the computer.		

Textbooks

Title	Author	Publisher	ISBN	Required
Financial Modeling., 4th Ed.	Benninga, Simon	MIT	9780262027281	Yes

Attendance Policy

Attendance & Absence Policy: Students studying at AUP are expected to attend ALL scheduled classes. A maximum of four (4) excused absences per semester may be requested for this course. Students are responsible for compliance.

Attendance at all exams is mandatory.

Student Affairs will recommend that a professor excuse an absence only for involuntary absences due to illness or personal emergencies, upon presentation of documentary proof of illness or emergency. Due to the large number of nationalities and faiths represented at the University, religious and national holidays will not be excused by Student Affairs. Academic Affairs will excuse an absence for students' participation in study trips related to their courses. If a student arrives at course meetings more than 10 minutes late without documentation for one of the above scenarios, it will be considered an unexcused absence.

NOTE: I will not be pleased, encouraged, or favorably disposed towards students who exhibit tardiness, absences, leave early, or vegetate. Being rude to me in the above-described manners exponentially increases my scrutiny for errors in your work. **Do not risk it.** Prof. WARD very strictly enforces the Attendance Policy and the Policy on Academic Integrity of the American University of Paris.

Grading Policy

Teaching Method: There are three main vectors of learning in this course:

1. *Reading* the **Textbook**;
2. *Doing* the **Homework**;
3. *Attending* the **Lectures**.

If you read the book, work the examples along with the author, do the homework, and attend class, you will master this material and acquire these skills.[1]

Academic Habits: Besides attending classes, each student is expected to read the appropriate chapters before each session, participate in class, and hand in homework at deadline. Expect to work or do readings for three to four hours (3 – 4) for each hour of class (i.e. total class time = 26 hours, therefore total reading and homework time ˜ 78 to 124 hours over the course of the semester….yes, I am serious).

[1] People who have these skills work with interesting and intelligent people at well-paid jobs. They have exciting careers. They get to travel the globe, and they have bright futures. This is your chance to be one of them.

Policy on Academic Integrity: Please read the University policy on Academic Integrity.

<u>I HAVE A MORE RESTRICTIVE POLICY ON CHEATING</u>.

No one who cheats ever passes my course. **I AM UNFORGIVING AND IMMOVABLE ON THIS ISSUE.** If you cheat you earn an “F” for the course and I will petition the Academic Integrity Board to have you removed from the University. **I AM VERY SERIOUS.** This is your senior year and **YOU KNOW CHEATING IS NOT ALLOWED**. **<u>Do.Not.Risk.It</u>**.

How you earn your grades: There are weekly homework assignments (25%), a comprehensive assessment exam (5%), a mid-term exam (30%), and a final exam (40%).

I am an easy grader to those who respect this subject. ‘A’s are earned by students who are not perfect all the time. You do not spring full-grown from Zeus’s forehead being a Spreadsheet Samurai and I do not expect you to, but each assignment/exam should be better than the last.

If you work you will have no worries about getting an ‘A.’ If you slack off you should not be in this class. You will not survive in a financial institution without these skills.

Homework must be your individual effort. All Homework **MUST** be submitted **by class time** in my e-mail, or on disk submitted to me in class (floppy or storage key). **No late homework will be accepted (grade = 0).** This is a firm deadline. You bear all risk. I accept no excuses of: “my e-mail was down.” “my disk didn’t work” etc. **Repeat: you bear all risk.**

Homework is extremely easy but it does take time: all you have to do is reproduce the exercises, the answers to which are contained in the compressed download file that comes with your textbook. No, don’t just cut-and-paste the exercises (I can tell, and this constitutes cheating). Set up your own spreadsheet, values, etc. and plug away. Try to do it on your own and then look at the solutions ONLY when you get stuck.

Assessment: IBA4020 Computational Finance is the “Capstone course” for the Applied International Finance major. As such, the comprehensive assessment is part of this course.

The Professor Emeritus James Clayson Prize for Computational Finance: About Professor Emeritus James CLAYSON: Professor Emeritus James Clayson is one of my heroes and my beloved colleague who guided and formed my teaching style and improved my delivery of my subject. He taught business courses and applied statistics at AUP in the International Business Administration Department and Department of Computer Science, Mathematics, and Science for over twenty-seven years. Jim holds a BS from the Massachusetts Institute of Technology and an MBA from the University of Chicago.

About the James Clayson Prize for Computational Finance: The James Clayson Prize for Computational Finance was established in 2011 and is given to the student who has demonstrated mastery of the topics covered in IBA 4020: Computational Finance, holds the highest GPA, and has submitted work superior to his or her peers. Recipients will be acknowledged by a gift consisting of a selected volume on finance inscribed to the award winner, a cash prize, and extensive career support and professional introductions. Winners may use the Award title on their resumes, and employment and graduate school applications.

The Professor Emeritus James Clayson Prize for Computational Finance			
Year	**Winner**	**Prize Cash Award**	**Prize Volume**
2011	Nayda MASSOUD	Euro 100	The Poker Face of Wall Street
2012	Lorena GABI Mark SZE	Euro 150 Euro 150	William Poundstone’s “Priceless”
2013	Penelope SHAW	Euro 200	William Poundstone’s “Priceless”
2014	Katharine CARPENTER	Euro 200	Selected volume.
2015	Paul Armand	Euro 200	Options by Sinclair
2016	Nicholas DEFRENOIS	Euro 200	Options by Sinclair
2017	Fabrice Korinienko	Euro 200	Options by Sinclair
2018	Wes Smith & Nebi Dzhabrailova	Euro 200 (2x)	Option Trading by Sinclair

Please NOTE: The top prize for Computational Finance formerly was The Professor Kate Carpenter Memorial Prize in Computational Finance, the title of which was retired in 2014.

ABOUT Professor KATE CARPENTER (Died: April 2007): Professor Kate CARPENTER was my colleague and my inspiration to teach from the perspective of a practicing professional. She taught Accounting at AUP in the International Business Administration Department for over twenty years while also maintaining an extensive private practice. She exemplified the high values and duties in teaching: treat students as adults and fairly, but demand his or her best; never compromise with mediocrity or dishonesty; and inspire a love of the discipline of your field. She was the co-founder of AUP's Applied Finance major with Professor Michel RAKOTOMAVO, and demanded and ensured that IBA 420 Computational Finance be a required course for the distinction, and also found me to teach it.

About the Kate Carpenter Memorial Prize for Computational Finance : The Kate Carpenter Memorial Prize was established in 2007 and was given to the student who has demonstrated mastery of the topics covered in IBA 420: Computational Finance, held the highest GPA, and has submitted work that is superior to his or her peers.

Year	Winner	Prize Cash Award	Prize Volume
2007	Christine GUNSENHEIMER	Euro 200	Paul Wilmott on Quantitative Finance
2008	Laura Jane PETERSON	Euro 200	Paul Wilmott on Quantitative Finance
2009	Boris PAVLOV Henrik ALMSKOUG	Euro 150 Euro 150	Paul Wilmott on Quantitative Finance
2010	Ivan IVANOV	Euro 150	Paul Wilmott on Quantitative Finance
2011	Radoslav RATCHEV	Euro 200	Options Futures and Other Derivatives
2012	Lorena GABI and Mark SZE	Euro 200	Priceless by William Poundstone
2013	Mohammad Bourji	Euro 200	Option Pricing by Euan Sinclair
2014	Mahmoud EL SAID	Euro 200	Option Pricing by Euan Sinclair

Other