

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department
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Study plan No.	2021/2022	University Specialization	Software Engineering
Course No.	0114357	Course name	Software Economics
Credit Hours	3	Prerequisite Co-requisite	Systems Analysis and Design
Course type	<input type="checkbox"/> MANDATORY UNIVERSITY REQUIREMENT <input type="checkbox"/> UNIVERSITY ELECTIVE REQUIREMENTS	<input type="checkbox"/> FACULTY MANDATORY REQUIREMENT <input type="checkbox"/> Support course family requirements	<input type="checkbox"/> Mandatory requirements <input checked="" type="checkbox"/> Elective requirements
Teaching style	<input type="checkbox"/> Full online learning	<input type="checkbox"/> Blended learning <input checked="" type="checkbox"/>	<input type="checkbox"/> Traditional learning
Teaching model	<input type="checkbox"/> 2Synchronous: 1asynchronous	<input type="checkbox"/> 2 face to face : 1synchronous <input checked="" type="checkbox"/>	<input type="checkbox"/> 3 Traditional

Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Division number	Time	Place	Number of students	Teaching style	Approved model

Brief description

In Chapter. 1, we give an overview of the finance domain and of financial services and markets. In Chapter 2, we consider in more detail some key financial products such as bonds and shares and describe how these are modelled and analyzed. Chapter 3 introduces the software lifecycle, modelbased development (MBD) and agile development. In Chapter 4, we describe techniques for financial system specification using UML, and in Chapter 5 techniques for financial system design.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	1. Finance Software Engineering, Kevin Lano and Howard Haughton Publisher: Springer (2019) ISBN 978-3-030-14049-6
Supportive learning resources (Books, databases, periodicals, software, applications, others)	<p>1. Internet Marketing: Strategy, Implementation and Practice, 4/E Dave Chaffey Fiona Ellis-Chadwick, University of Derby Kevin Johnston, Derbyshire Business School, University of Derby Richard Mayer, University of Derby ISBN-10: 0273717405 • ISBN-13: 9780273717409 ©2009 • Financial Times Press • Paper, 736 pp Published 08 Dec 2008</p> <p>2. E-Commerce Essentials Kenneth Laudon and Carol Traver ISBN-10: 0133544982 • ISBN-13: 9780133544985 ©2014 • Prentice Hall • Paper, 504 pp</p> <p>3. E-commerce 2013 (9th Edition) by Kenneth Laudon and Carol Guercio Traver</p>

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	4.E-Business and E-Commerce Management: Strategy, Implementation and Practice (5th Edition) by Dave Chaffey (Oct 24, 2011)			
Supporting websites	None			
The physical environment for teaching	<input type="checkbox"/> Class room <input checked="" type="checkbox"/>	<input type="checkbox"/> Labs <input checked="" type="checkbox"/>	<input type="checkbox"/> Virtual educational platform	<input type="checkbox"/> Others
Necessary equipment and software	Microsoft Excel 2013 or above			
Supporting people with special needs				
For technical support	E-learning Center and Computer Center Department			

Course learning outcomes (S= Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
Knowledge		
K1	Knowing some finance concepts and discussing the current state of software engineering in finance	MK1
K2	Explaining some of the analyses which can be performed to value the products and defining strategies for trading in them	MK2
K3	Describing software specification techniques and development approaches which can be used for financial applications (UML , MDB ,...)	MK2
K4	Understanding Class diagrams: classes, attributes, associations, inheritance, Operations , Use Case models, OCL (Object Constraint Language).	MK2
Skills		
S1	An ability to conduct an economic feasibility study for any software engineering project	MS1
S2	An ability to use the Microsoft excel to calculate the cost of benefit of project a software project.	MS3
Competences		
C1	Ability to develop web application systems in one or more significant application domains.	MC2
C2	An ability to communicate with, and learn from, experts from different domains related to project management.	MC3

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	30%	40%	30%
Participation / practical applications	0	0	10%	30%
Asynchronous interactive activities	30%	30%	0	0

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Final exam	40%	40%	50%	40%
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Note: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	Chapter 1 : Financial Services and Markets <ul style="list-style-type: none"> Introduction to software Economics 	Lecture + Activity	Textbook 1 Page: 1-9
2	Chapter 2: Financial Products and Analyses. <ul style="list-style-type: none"> Introduction to Economics Financial Engineering Bonds 	Lecture + Activity	Textbook 1 Page: 11 – 18
3	Chapter 2: Financial Products and Analyses. <ul style="list-style-type: none"> Shares and Stocks Derivative Securities Collateralised Debt Obligations 	Lecture + Activity	Textbook 1 Page: 19 – 21
4	Chapter 2: Financial Products and Analyses. <ul style="list-style-type: none"> Essential Calculus Combinatorics and Statistical Properties 	Lecture + Activity	Textbook 1 Page: 21 – 28
5	Chapter 3: Model-Based and Agile Development <ul style="list-style-type: none"> The Software Development Lifecycle EVM 	Lecture + Activity	Textbook 1 Page: 29- 33
6	Chapter 3: Model-Based and Agile Development <ul style="list-style-type: none"> EVM Software Modelling Using UML 	Lecture + Activity	Textbook 1 Page: 33- 41
7	Chapter 3: Model-Based and Agile Development <ul style="list-style-type: none"> Model-Based Development (MBD) 	Lecture + Activity	Textbook 1 Page: 41- 45
8	Chapter 3: Model-Based and Agile Development <ul style="list-style-type: none"> Agile Development Methods 	Lecture + Activity	Textbook 1 Page: 45- 50

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9	Midterm and Revision	Lecture + Activity	
10	Chapter 4: Financial System Specification Using UML <ul style="list-style-type: none"> Class Diagrams 	Lecture + Activity	Textbook 1 Page: 53 – 59
11	Chapter 4: Financial System Specification Using UML <ul style="list-style-type: none"> Use Case Models OCL (Object Constraint Language) The Financial Specification Process 	Lecture + Activity	Textbook 1 Page: 59 – 68
12	Chapter 4: Financial System Specification Using UML <ul style="list-style-type: none"> Case Study: Estimating Internal Rate of Return (IRR) Case Study: Macaulay Duration of a Bond Specification Revision and Refactoring 	Lecture + Activity	Textbook 1 Page: 68 – 75
13	Chapter 5: Financial System Design <ul style="list-style-type: none"> Agile Development Process Optimisation Libraries and Reuse 	Lecture + Activity	Textbook 1 Page: 77- 82
14	Chapter 5: Financial System Design <ul style="list-style-type: none"> Design Quality Flaws Design Patterns 	Lecture + Activity	Textbook 1 Page: 82- 94
15	Chapter 5: Financial System Design <ul style="list-style-type: none"> Design Quality Flaws Design Patterns Software Architectures 	Lecture + Activity	Textbook 1 Page: 94- 100
16	Final Exam		

* Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.

** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1			
2	Assignment 1	Textbook 1 Page: 1-9	Knowing the concept of software economics and finance services and market
3	Assignment 2	Textbook 1 Page: 11 – 18	Knowing the type of finance product and

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			calculating the production function
4	Assignment 3	Textbook 1 Page: 19 – 21	Knowing the concept of Share and Stocks Derivative Securities
5	Assignment 4	Textbook 1 Page: 21 – 28	Knowing how to calculate maximum profits and the marginal production of labor
6	Assignment 5	Textbook 1 Page: 29- 33	Knowing the SDLC
7	Assignment 6	Textbook 1 Page: 33- 41	Knowing to calculate the EVM
8	Assignment 7	Textbook 1 Page: 41- 45	Knowing the concept of Model-Based Development MBD
9	Assignment 8	Textbook 1 Page: 45- 50	Knowing the Agile Method development
10	Assignment 9	Textbook 1 Page: 53 – 59	Understanding the class diagram
11	Assignment 10	Textbook 1 Page: 59 – 68	Understanding Use case, OCL and finance processing
12	Assignment 11	Textbook 1 Page: 68 – 75	Calculating NPV, Payback period , profitability index and IRR
13	Assignment 12	Textbook 1 Page: 77- 82	Understanding Agile methodology in finance
14	Assignment 13	Textbook 1 Page: 82- 94	Understanding the design pattern types
15	Assignment 14	Textbook 1 Page: 94- 100	Understanding the software Architectures
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