



ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

Course Specifications

Institution: King Saud University	Date:
College/Department: Science, Mathematics	

A. Course Identification and General Information

1. Course title and code: Insurance mathematics ACTU. 476	
2. Credit hours: 4(3+2+0)	
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Actuarial and Financial Mathematics Program	
4. Name of faculty member responsible for the course:	
5. Level/year at which this course is offered: 8/4	
6. Pre-requisites for this course (if any):	
7. Co-requisites for this course (if any):	
8. Location if not on main campus:	
9. Mode of Instruction (mark all that apply):	
a. traditional classroom	<input checked="" type="checkbox"/> What percentage? <input type="text" value="100"/>
b. blended (traditional and online)	<input type="checkbox"/> What percentage? <input type="text"/>
c. e-learning	<input type="checkbox"/> What percentage? <input type="text"/>
d. correspondence	<input type="checkbox"/> What percentage? <input type="text"/>
f. other	<input type="checkbox"/> What percentage? <input type="text"/>
Comments:	

B Objectives

1. What is the main purpose for this course?

The aim of the course is to present the basic concepts, models and methods in non-life insurance mathematics, in particular those regarding premium calculation, practical aspects of rate making and the estimation of the technical reserves. With respect to the topics dealt with, the course aims letting the students to get the ability to apply models and techniques to real cases; in particular, to evaluate, on the base of data, the main technical indexes and the premium in general insurance.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

Use LMS (Bb) or Webinar to interact with student (discussions, forums, virtual class room).
Use updated syllabus of C and Exams from SOA/CAS website.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
1. Insurance Market Overview <ul style="list-style-type: none"> a. Characteristics of the main various lines of insurance business, and their inherent risks. b. Risk and insurance <ul style="list-style-type: none"> i. Introductory remarks on risk and insurance. ii. A brief description of non-life insurance contracts and products. 	1	3
2. Insurance contracts and random financial transactions <ul style="list-style-type: none"> a. Preference orders on random amounts. b. The expected value criterion. c. The expected utility criterion. d. Risk aversion. Some applications in insurance. e. Safety loading. 	1	3

3. The premium in non-life insurance a. Premium structure, equivalence premium, pure premium, office premium. b. Premium principles.	1	3
4. Description and evaluation of the aggregate claim amount a. Basic insurance arrangements. b. Theoretical framework for the evaluation of the aggregate claim amount. c. Models for the distributions of the number of claims, of the loss amount of a single claim and of the total claim amount for a single contract and for a portfolio. d. Compound distributions.	2	6
5. Premium evaluation on the base of statistical data a. Indexes that summarize the claim experience. b. Risk premium, claim frequency, average claim severity, premium rate.	1	3
6. Basics on a priori rating a. Risk classification. b. Additive and multiplicative tariff models.	1	3
7. Experience rating a. Basics on Bayesian, credibility and bonus-malus approaches.	1	3
8. Basics on reinsurance a. Main reasons for reinsurance. b. Reinsurance arrangements.	1	3
9. Annual technical result and technical reserves a. Premium reserve and claims reserve. b. Earned premiums. c. Incurred claim amount. d. Basics on the balance sheet of a non-life insurance. e. Indexes/ratios of the portfolio performance.	2	6
10. Motor third party liability insurance a. Generalities. Direct reimbursement scheme	1	3

11. Reserving for Non-life Insurers and Reinsurers	2	6
<ul style="list-style-type: none"> a. Introduction to Reserving and basic models b. The non-life insurance market c. The claims process d. Chain Ladder models e. Bornhuetter-Ferguson models f. Average Cost models g. Allowing for inflation, reinsurance and expenses 		
Revision and preparation for the final exam	1	3

2. Course components (total contact hours and credits per semester):							
		Lecture	Tutorial	Laboratory/ Studio	Practical (visit to companies)	Other:	Total
Contact Hours	Planned	42			3		45
	Actual	42			3		45
Credit	Planned	42			3		45
	Actual	42			3		45

3. Additional private study/learning hours expected for students per week.	6
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Describe the Insurance Market, its Characteristics, lines of insurance business, and their inherent risks.	Traditional lecture classroom	Quizzes Midterm and final exams

	Identify risks in insurance industries Describe non-life insurance contracts and products.		
1.2	Introduce basics on Bayesian, credibility and bonus-malus approaches. Introduce basics on reinsurance, main reasons for reinsurance activities.	Traditional lecture classroom	Quizzes Midterm and final exams
1.3	Recall basics on the balance sheet of a non-life insurance. Introduce indexes/ratios of the portfolio performance		
1.4	Introduce motor third party liability insurance Describe generalities on direct reimbursement scheme		
1.5	Introduce reserving technics and basic models, Introduce non-life insurance market		
2.0	Cognitive Skills		
2.1	Describe insurance contracts and quantify random financial transactions Compare random amounts. Apply expected value criterion and expected utility criterion.	Problem solving, flipped classroom	Quizzes Midterm and final exams
2.2	Apply premium structure, equivalence premium, pure premium, office premium and premium principles.	Problem solving, flipped classroom	Quizzes Midterm and final exams
2.3	Describe and evaluate the aggregate claim amount for basic insurance arrangements. Evaluate the aggregate claim amount.	Problem solving, flipped classroom	Quizzes Midterm and final exams
2.4	Evaluate premium based on statistical data Summarize the claim experience. Model distributions of the number of claims	Problem solving, flipped classroom	Quizzes Midterm and final exams

	amount for a single contract and for a portfolio. Use compound distributions		
2.5	Classify risks for additive and multiplicative tariff models.	Problem solving, flipped classroom	Quizzes Midterm and final exams
2.6	Calculate earned premiums Calculate premium reserves and claims reserves. Calculate incurred claim amount.	Problem solving, flipped classroom	Quizzes Midterm and final exams
2.7	Understand and claims process Apply Chain Ladder methods for reserves Apply Bornhuetter-Ferguson methods for reserves Apply average cost models	Problem solving, flipped classroom	Quizzes Midterm and final exams
3.0	Interpersonal Skills & Responsibility		
3.1	Study, learn and work independently.	Encourage students to: - participate in class discussion. - participate in college and university activities. - be members of department committees and college committees.	
3.2	Work effectively in teams.		
3.3	Meet deadlines and manage time properly.		
3.4	Exhibit ethical behavior and respect different points of view.		
4.0	Communication, Information Technology, Numerical		
4.1	Exchange with others, notions and pricing and estimation premiums and reserve techniques both in oral and written form clearly and in a well-organized manner	Encourage students to: - Interact with local insurance and reinsurance companies in the Saudi Arabia. - use department and college computing facilities. - use e-mail, LMS internet, college and department websites, and KSU	
4.2	Use IT facilities of the university to exchange ideas around the world		
4.3	Use SDL (libraries) to get updated with new developments about the course		

		central library.	
5.0	Psychomotor		
	Not applicable	Not applicable	Not applicable

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Tests, Quizzes	4	5%
2	First Midterm exam	7	25%
3	Tests, Quizzes	10	5%
4	Second Midterm exam	13	25%
5	Final	15 or 16	40%

D. Student Academic Counseling and Support

<p>1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)</p> <p>Office hours, exchange questions and answers by email: 10 hours per week</p>

E Learning Resources

<p>1. List Required Textbooks</p> <p>1. A. Olivieri, E. Pitacco, Introduction to Insurance Mathematics. Technical and Financial Features of Risk Transfers, (Second Edition), (2015), Springer</p>
<p>2. List Essential References Materials (Journals, Reports, etc.)</p>
<p>3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.</p> <p>1. https://www.soa.org</p> <p>2. http://www.casact.org/</p>
<p>4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.</p> <p>LMS (Bb), Webinars, TeamViewer, google apps, virtual classroom,</p>

F. Facilities Required


Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classrooms, Virtual classroom, TeamViewer
2. Technology resources (AV, data show, Smart Board, software, etc.) Smart Board, LMS (Bb), TeamViewer, Email, Kahoot
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching Surveys, Exams, quizzes 1. Evaluation sheets to be completed by students at the end of each semester. 2. Take the students' opinion about the course under consideration. 3. Revise course syllabus with instructors who teach the same course (if any).
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department 1. The level of the students in solving homework and quizzes 2. Colleagues' opinions about students' performance in this course.
3. Processes for Improvement of Teaching 1. Encouraging students to get involved in the lecture. 2. Getting the use of tutorial classes. 3. Encouraging the students to read about the subject.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) 1. Common Examination 2. Team grading. 3. Exchanging experience by comparing students' results in other departments. 4. Students who believe they are under graded can have their papers checked by a second reader.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

1. Providing reviews to develop the assigned textbook content.
2. Providing a discussion for the course subject by a specialized committee.
3. Compare the program with other well-known established universities.
4. Consulting some course specialists for course evaluation.

Name of Course Instructor: ___Prof. Dr. Mhamed ED DAHBI _____

Signature: _____  _____ Date Specification Completed: March 12, 2018

Program Coordinator: _____

Signature: _____ Date Received: _____