ATTACHMENT 5.

T6. COURSE SPECIFICATIONS

ACTUARIAL PROBABILITY

STAT 216

Institution: **King Saud University**   Date:

College/Department : **Faculty of Science / Department of Statistics and Operations**

A. Course Identification and General Information

1. Course title and code: **ACTUARIAL PROBABILITY**   Code # **STAT 216**
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): **B. Sc of ACTUARIAL MATH STUDENTS**
4. Name of faculty member responsible for the course: **Dr. Wissem Jedidi**
5. Level/year at which this course is offered: **4/ Year 2**
6. Pre-requisites for this course (if any): **STAT 101 + MATH 206 or MATH 201**
7. Co-requisites for this course (if any): **NA**
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply):

a. traditional classroom	X	What percentage?	100
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

B. Objectives

1. What is the main purpose for this course?

Know how to handle a sequence of events
Know how to handle real random variables, their distributions and the expectations
Know how to handle the bivariate case and marginal distributions
Understand the concept of conditional expectation
Understand the order statistics
Know how to handle the limit of a sequence of random variables

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)
Using modern and diverse text books and references.

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

To introduce intermediate theoretical bases in the field of Probability and Mathematical Statistics

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
• Set functions including set notation and basic elements of probability • Mutually exclusive events • Addition and multiplication rules • Independence of events	1	3
• Combinatorial probability • Conditional probability • Bayes Theorem / Law of total probability	2	6
• Random variables and distributions • Mode, median, percentiles, and moments • Variance and measures of dispersion (including coefficient of variation) • Moment generating functions • Transformations	3	9
• Joint probability functions and joint probability density functions • Joint cumulative distribution functions • Conditional and marginal probability distributions • Moments for joint, conditional, and marginal probability distributions • Joint moment generating functions	3	9
• Variance and measures of dispersion for conditional and marginal probability distributions • Covariance and correlation coefficients • Transformations and order statistics • Probabilities and moments for linear combinations of independent random variables	3	9
• Central Limit Theorem	2	6

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	45	30				75
	Actual	45	30				75
Credit	Planed	3	2				5
	Actual	3	2				5

	3. Additional private study/learning hours expected for students per week.		4

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	Knowledge of the probability spaces and events	Development of the theory along with examples	Homework assignments. Two mid-term tests, and one final examination.
1.2	Hpw to count the cardinal of finite samples spaces - Baye's formula	Development of the theory along with examples	Homework assignments. Two mid-term tests, and one final examination
	Knowledge of random variables - Distributions and transformations	Development of the theory along with examples	Homework assignments. Two mid-term tests, and one final examination
	Knowledge of joint distributions and marginal calculs		
	Central limit theorem and - normal approximation	Development of the theory along with examples	Homework assignments. Two mid-term tests, and one final examination
2.0	**Cognitive Skills**		
2.1	Students are encouraged to do questions by themselves without depending on teaching assistant in the lab.	Examples, and Solved Problems.	Two mid-term tests, and one final examination.
3.0	**Interpersonal Skills & Responsibility**		
3.1	Working homework jointly and individually		
4.0	**Communication, Information Technology, Numerical**		
4.1		Students are encouraged to discuss their ideas and raise questions	Students are encouraged to participate in the class, to be on time in the class and not to miss a lecture.

5.0	**Psychomotor**		
5.1	NA	NA	NA

	5. Schedule of Assessment Tasks for Students During the Semester		
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First mid-term test	6/7	25%
2	Second mid-term test	11/12	25%
3	Home Work	1-15	10%
4	Final exam	After 15	40%

D. Student Academic Counseling and Support

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)

Office Hours

E Learning Resources

1. List Required Textbooks
   Probability and Statistical Inference, 9th edition,. ISBN 978-0-321-92327-1, by Robert V. Hogg, Elliot A. Tanis, and Dale L. Zimmerman, published by Pearson Education , 2015

2. List Essential References Materials (Journals, Reports, etc.)

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

https://www.soa.org/Education/Exam-Req/Syllabus-Study-Materials/edu-exam-p-online-sample.aspx

https://special.moodle.wisc.edu/prod/course/view.php?id=120

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

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.)

2. Technology resources (AV, data show, Smart Board, software, etc.)

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
Course evaluation by students
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department
3. Processes for Improvement of Teaching
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) - The course material and learning outcomes are periodically reviewed and the changes to be taken are approved in the departmental and higher councils. - The head of department and faculty takes the responsibility of implementing the proposed changes.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. –The contents of the course and its outputs are reviewed periodically and any changes are approved by the council of the department and the higher councils. - The chairman of the department and the faculty members are responsible for implementing the proposed amendments.

Name of Course Instructor: Dr. Wissem Jedidi

Signature: *Dr. Wissem Jedidi*   Date Specification Completed: **22/1/2018**.

Program Coordinator: _____

Signature: _____   Date Received: _____