

City University of Hong Kong

Information on a Course offered by Department of Management Sciences with effect from Semester A in 2010 / 2011

Part I

Course Title: Introduction to Probability Models

Course Code: MS8944

Course Duration: One Semester

Credit Units: 3

Level: R8

Medium of Instruction: English

Prerequisites: Nil

Precursors: Nil

Equivalent Courses: Nil

Exclusive Courses: Nil

Part II

Course Aims

To introduce PhD students to the fundamental knowledge of stochastic modelling and processes with focus on Markov chains, renewal theory, and queuing systems, Brownian motion, and elements of reliability and stochastic simulation. Applications to probability models in operations management.

Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILO
1	Familiar with the basic definitions in stochastic modelling and processes
2	Understand and prove key results in stochastic processes
3	Be able to analyze basic stochastic systems
4	Be able to apply the theory to operations management related applications

Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

No.	TLA
CILO 1,2,3,4	<i>Interactive lecture</i> Basics of the topics will be covered in a typical lecture setting.
CILO 1,2,3,4	<i>Tutorials</i> Assignments will be provided for students to explore the concepts in further detail.

Assessment Tasks/Activities

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

No.	Type of assessment tasks/activities	Weighting (if applicable)
CILO 1,2,3	<i>Tutorial assignments</i> Six assignments (5 % each)	30%
CILO 1,2,3	<i>Mid-term test</i>	30%
CILO 1,2,3	<i>Final examination (2 hours)</i>	40%

Grading of Student Achievement:

Mid-term test/ Final examination

Letter Grade	Grade Point	Grade Definitions	
A+ A A-	4.3 4.0 3.7	Excellent	Strong evidence of knowledge of subject matter and capability to formulate, analyze the fundamental probability models and their applications
B+ B B-	3.3 3.0 2.7	Good	Evidence of knowledge of subject matter and capability to formulate, analyze the fundamental probability models and their applications.
C+ C C-	2.3 2.0 1.7	Adequate	Some evidence of knowledge of subject matter and capability to formulate, analyze the fundamental probability models and their applications.
F	0.0	Failure	Very little evidence of knowledge of subject matter and capability to formulate, analyze the fundamental probability models and their applications.

Part III

Keyword Syllabus

- Random variables, expectation, moment generating functions, limit theorem, conditional probability, conditional expectation
- Markov chains, Poisson process, birth-death process, uniformization
- Renewal reward processes,
- Queuing theory: networks of queues, M/M/1, M/G/1, M/M/k queues
- Simulation
- Other applications in operations management

Text Book

- Introduction to Probability Models, Academic Press, Tenth Edition

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