



Lahore University of Management Sciences

MATH 230 - Probability

Fall 2015-2016

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Course URL	LMS

Course Basics				
Credit Hours	3			
Lecture(s)	Nbr of Lec(s) Per Week	2	Duration	75 minutes
Course Distribution				
Core	Core for all SSE majors			
Elective				
Open for Student Category	All students			
Close for Student Category	None			

Course Description	
<p>This is a first course in probability which provides preparation for further courses in stochastic processes, statistics, and statistical mechanics and an understanding of probability concepts essential for students who want to pursue their studies in physical sciences, social science, economics and engineering. The course starts with an introduction of probability terms and methods of computing simple and conditional probabilities. The concept of discrete and continuous random variables is taught; special discrete and continuous probability distributions are explored with their real life applications.</p>	
Course Prerequisite(s)	
	Calculus-I (MATH 101)



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Learning Outcomes			
Compute simple probabilities, expectations and variances			
Compute conditional probabilities			
Understand and use common discrete and continuous probability distributions			
Understand and use central limit theorem			
Grading Breakup and Policy			
Quizzes (7 announced quizzes): 25% (Best 5)			
Midterm Examination: 35%			
Final Examination: 40 %			
Examination Detail			
Midterm Exam	Duration: 90 minutes Exam Specifications: Closed book, closed notes; help sheet will be provided if needed; calculator is allowed		
Final Exam	Duration: 120 minutes Exam Specifications: Closed book & closed notes; help sheet will be provided if needed; calculator is allowed		
Course Overview			
Week	Topics	Readings	Practice Problems
1,2	Counting, Permutations and Combinations	Chapter 1: Sec 1.1-1.5	7, 9, 15, 22, 30, 32
3,4	Sample Space and Events, Axioms of Probability Probability of Events	Chapter 2: Sec 2.1-2.5	15, 38, 43, 45, 48, 55
5,6	Conditional Probability, Bayes's Rule	Chapter 3: Sec 3.1-3.4	10, 13, 26, 28, 45, 47, 56
7,8	Concept of Random Variable, Discrete Random Variable and Discrete Probability Distributions	Chapter 4: Sec 4.1-4.8	1, 10, 14, 17, 18, 19, 21, 38



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9,10	Continuous Random Variables Continuous Probability Distributions	Chapter 5: Sec 5.1-5.5	3, 6, 7, 11, 15, 18, 37, 38
11,12	Joint Distributions	Chapter 6: Sec 6.1-6.5	2, 8, 12, 15, 18, 22, 27, 29
13,14	Properties of Expectation Central Limit Theorem	Chapter 7: 7.1-7.5 Chapter 8: Sec 8.1-8.3	Chapter 7: 7, 9, 10, 16, 21, 26, 51 Chapter 8 : 4, 5, 6, 7, 8, 10, 13, 15

Textbook(s)/Supplementary Readings

Text:

A First Course in Probability, 8th Edition, by Sheldon Ross, Pearson Education

Supplementary Reading:

Introduction to Probability Models, 10th Edition, by Sheldon Ross, Academic Press