POPH90148 Probability and Distribution Theory

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught online/distance. Semester 2, Parkville - Taught online/distance.
Time Commitment:	Contact Hours: None Total Time Commitment: 170 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website.
Coordinator:	Prof John Carlin

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	Melbourne School of Population and Global Health
	
	OR
	
	Currently enrolled students:
	
	  # General information: **https://ask.unimelb.edu.au (https://ask.unimelb.edu.au)**
	
	  # Email: **enquiries-STEM@unimelb.edu.au (mailto:enquiries-STEM@unimelb.edu.au)**
	
	Future Students:
	
	  # Further Information: **http://mspgh.unimelb.edu.au/ (http://mspgh.unimelb.edu.au/)**
	
	  # Email: **Online Form (http://mspgh.unimelb.edu.au/study/degrees/master-of-public-health/overview)**

Subject Overview:	This subject begins with the study of probability, random variables, discrete and continuous distributions, and the use of calculus to obtain expressions for parameters of these distributions such as the mean and variance. Joint distributions for multiple random variables are introduced together with the important concepts of independence, correlation and covariance, and marginal and conditional distributions. Techniques for determining distributions of transformations of random variables are discussed. The concept of the sampling distribution and standard error of an estimator of a parameter is presented, together with key properties of estimators. Large sample results concerning the properties of estimators are presented with emphasis on the central role of the normal distribution in these results. General approaches to obtaining estimators of parameters are introduced. Numerical simulation and graphing with Stata are used throughout to demonstrate key concepts.
Learning Outcomes:	This subject will focus on applying the calculus-based techniques learned in POPH90015 Mathematical Background for Biostatistics (MBB). These two subjects, together with the subsequent POPH90017 Principles of Statistical Inference (PSI) unit, provide the core

	prerequisite mathematical statistics background required for the study of later units in the Postgraduate Diploma or Masters degree.
Assessment:	Two written assignments to be submitted mid semester and end of semester worth 35% each (approx 12 hours work each). Four practical written exercises to be submitted during semester worth 7.5% each (approx 4 hrs work each).
Prescribed Texts:	Wackerly DD, Mendenhall W, Scheaffer RL. Mathematical Statistics with Applications, 7th Edition, 2008, Duxbury Press, USA. (ISBN 978-0-495-11081-1) Special Computer Requirements: Stata Statistical Software Resources Provided to Students: Printed course notes and assignment material by mail, email, and online interaction facilities.
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Independent problem solving, facility with abstract reasoning, clarity of written expression, sound communication of technical concepts.
Links to further information:	http://www.mspgh.unimelb.edu.au
Notes:	This subject is not available in the Master of Public Health.
Related Course(s):	Graduate Certificate in Biostatistics Graduate Diploma in Biostatistics Master of Biostatistics Postgraduate Diploma in Biostatistics