COURSE SPECIFICATION FORM

for new course proposals and course amendments

Department/School:	**Mathematics**	**Academic Session:**	**2015-16**
Course Title:	Inference	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 unit
Course Code:	MT4320	**Course JACS Code:** (Please contact Data Management for advice)	G100
Availability: (Please state which teaching terms)	Term 2	**Status:**	Optional Condonable
Pre-requisites:	MT2320	**Co-requisites:**	-
Co-ordinator:	-		
Course Staff:	-		
Aims:	To provide the theory underlying the main principles and methods of statistics, in particular, to provide an introduction to the theory of parametric estimation and hypotheses.		
Learning Outcomes:	1. demonstrate a familiarity with the theoretical background of the concepts and results in the theory of estimation and hypothesis testing; 2. formulate statistical problems in mathematical terms; 3. demonstrate a breadth of understanding appropriate for an M-level course.		
Course Content:	Estimation: Maximum likelihood, method of moments, Bayes estimators, sufficiency, unbiasedness, efficiency, asymptotic properties of maximum likelihood estimators. Hypothesis testing: Neyman-Pearson framework, uniformly most powerful tests, likelihood ratio tests. Introduction to decision theory: Formulation, Bayes and minimax rules.		
Teaching & Learning Methods:	The total number of notional learning hours associated with this course are 150. 3 hours of lectures per week over 11 weeks. 117 hours of private study, including work on problem sheets and examination preparation. This may include discussions with the course leader if the student wishes.		
Key Bibliography:	Statistical Inference – G Casella and R L Berger (Duxbury 2001) Library reference 518.1 CAS Mathematical Statistics and Data Analysis – J A Rice (Duxbury 2006) Library reference 518.3 RIC John E Freund's Mathematical Statistics – I Miller and M Miller (Prentice Hall 2003) Library reference 518.3 FRE Probability and Statistical Inference – R V Hogg and A T Tanis (Prentice Hall 2005) Library reference 518.1 HOG		
Formative Assessment & Feedback:	Formative assignments in the form of 8 problem sheets. The students will receive feedback as written comments on their attempts.		
Summative Assessment:	**Exam:** 100% Written exam. A two hour paper. **Coursework:** None		

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