

**School of Mathematics****Course 472 — Information Theory**

2007-08

(JS/SS Mathematics, SS Theoretical Physics, MSc in HPC. )

**Lecturer:** Conor Houghton.**Requirements/prerequisites:** There are no formal pre-requisites, but the course will assume a knowledge of Freshman mathematics.**Duration:** Half-year course running in the second term.**Number of lectures per week:** 3**Assessment:** There will be a number of small projects.**End-of-year Examination:** 2-hour end of year exam.**Description:**

Information theory is the mathematical study of the statistical structure of data, typical questions addressed by information theory include "how much can English language text be compressed" or "how similar are these two probability distributions". As a discipline in mathematics it overlaps with electronic engineering, computer science and neuroscience.

This course will provide an introduction to information theory based in the standard text book Cover and Thomas, it will cover chapters 2, 3 and 4, along with material from chapters 5 and 6. Information theory uses many ideas from statistics but no previous knowledge of statistics will be assumed.

October 8, 2007