



## ACE Network Subject Information Guide

**STAT4528 – Probability and Martingale Theory**

**Semester 1, 2022**

### Administration and contact details

Host department	School of Mathematics and Statistics
Host institution	Sydney University
Name of lecturer	Alexander Fish and Benjamin Goldys
Phone number	(02) 9351 2976
Email address	benjamin.goldys@sydney.edu.au
Homepage	<a href="https://www.sydney.edu.au/units/STAT4528">https://www.sydney.edu.au/units/STAT4528</a>
Name of honours coordinator	Marek Rutkowski
Phone number	(02) 9351 4860
Email address	marek.rutkowski@sydney.edu.au
Name of masters coordinator	Holger Dullin
Phone number	(02)93514083
Email address	<a href="mailto:pg-director@maths.usyd.edu.au">pg-director@maths.usyd.edu.au</a>

### Subject details

Handbook entry URL	<a href="https://www.sydney.edu.au/units/STAT4528">https://www.sydney.edu.au/units/STAT4528</a>
Subject homepage URL	<a href="https://www.sydney.edu.au/units/STAT4528">https://www.sydney.edu.au/units/STAT4528</a>
Honours student hand-out URL	<a href="https://www.maths.usyd.edu.au/u/UG/HM/coordinator/financial2022.pdf">https://www.maths.usyd.edu.au/u/UG/HM/coordinator/financial2022.pdf</a>
Start date:	<b>21/02/2022</b>
End date:	<b>27/05/2022, end of lectures</b>
Contact hours per week:	<b>3 lectures and 1 tutorial (13 weeks)</b>
ACE enrolment close date:	<b>07/03/2022</b>
Lecture day(s) and time(s):	<b>Tuesdays and Fridays 11-1</b>
Description of electronic access arrangements for students (for example, WebCT)	All teaching material will be available on the Canvas page of this course and access to ED will be made through this page.

### Subject content

Subject content description: See: <https://www.sydney.edu.au/units/STAT4528>

1. **Week-by-week topic overview:** <https://www.sydney.edu.au/units/STAT4528/>

2. **Assumed prerequisite knowledge and capabilities**

**Familiarity with mathematical proofs**

**Probability theory:** events and sample spaces, operations on events, definition of probability and computation of probabilities, discrete and continuous probability distributions, independence of random variables, expected value of a random variable

**Analysis:** limits, Riemann integral, computation of simple integrals

3. **Learning outcomes and objectives:** <https://www.sydney.edu.au/units/STAT4528>

**AQF specific Program Learning Outcomes and Learning Outcome Descriptors (if available):**

AQF Program Learning Outcomes addressed in this subject	Associated AQF Learning Outcome Descriptors for this subject
Insert Program Learning Outcome here	Choose from list below
Insert Program Learning Outcome here	Choose from list below
Insert Program Learning Outcome here	Choose from list below
Insert Program Learning Outcome here	Choose from list below
Insert Program Learning Outcome here	Choose from list below
Insert Program Learning Outcome here	Choose from list below
Insert Program Learning Outcome here	Choose from list below

**Learning Outcome Descriptors at AQF Level 8**

**Knowledge**

K1: coherent and advanced knowledge of the underlying principles and concepts in one or more disciplines

K2: knowledge of research principles and methods

**Skills**

S1: cognitive skills to review, analyse, consolidate and synthesise knowledge to identify and provide solutions to complex problem with intellectual independence

S2: cognitive and technical skills to demonstrate a broad understanding of a body of knowledge and theoretical concepts with advanced understanding in some areas

S3: cognitive skills to exercise critical thinking and judgement in developing new understanding

S4: technical skills to design and use in a research project

S5: communication skills to present clear and coherent exposition of knowledge and ideas to a variety of audiences

**Application of Knowledge and Skills**

A1: with initiative and judgement in professional practice and/or scholarship

A2: to adapt knowledge and skills in diverse contexts

A3: with responsibility and accountability for own learning and practice and in collaboration with others within broad parameters

A4: to plan and execute project work and/or a piece of research and scholarship with some independence

#### 4. Learning resources

All the resources will be available on the Canvas page of the course

#### 5. Assessment

Exam/assignment/classwork breakdown					
Exam	60%	Assignment	2x20%=40%	Class work	
Assignment due dates		14/04/22	20/05/22	Click here to enter a date.	Click here to enter a date.
Approximate exam date			15/06/2022		

#### Institution honours program details

Weight of subject in total honours assessment at host department	12.5%
Thesis/subject split at host department	50/50
Honours grade ranges at host department	
H1	80-100%
H2a	75-79%
H2b	70-74%
H3	65-69%

#### Institution masters program details

Weight of subject in total masters assessment at host department	One out of six coursework units
Thesis/subject split at host department	2/3 coursework + 1/3 thesis in 2nd year
Masters grade ranges at host department	
H1	80-100%
H2a	75-79%
H2b	70-74%
H3	65-69%