

Subject Information Guide

Topology – MATH703

Semester 2, 2018

Administration and contact details

Host Department	Department of Mathematics
Host Institution	Macquarie University
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Subject details

Handbook entry URL	http://www.handbook.mq.edu.au/2018/Units/ResearchUnit/MATH703
Subject homepage URL	To be advised
Honours student hand-out URL	To be advised
Start date:	30/07/2018
End date:	2/11/2016
Contact hours per week:	2
Lecture day and time:	To be advised
Description of electronic access arrangements for students (for example, WebCT)	To be advised

Subject content

1. Subject content description

The course is devoted to topology of metric spaces and abstract set topology. The basic concepts of compact, complete and connected spaces are discussed.

2. Week-by-week topic overview

Weeks 1, Topology of the real line.

Weeks 2 and 3, Metric spaces.

Week 4 and 5, Complete spaces, Baire category theorem.

Weeks 6 and 7, Set Topology, Product spaces.

Weeks 8 and 9, Compact spaces, Tychonoff's theorem.

Week 10 and 11, Connected spaces, Separation axioms.

Weeks 12 and 13: Functional analysis, week topology.

3. Assumed prerequisite knowledge and capabilities

The course requires a significant level of mathematical maturity to understand abstract concepts.

4. Learning outcomes and objectives

1. Understanding logical arguments and recognising any gaps or faults in such arguments.
2. Solving problems, including: formulating a precise mathematical question from a "real world" problem; identifying and applying appropriate mathematical techniques.
3. Expressing yourself clearly and logically in writing.
4. More broadly, you are expected to improve your generic skills in the following areas: literacy and numeracy, self-awareness and interpersonal skills, communications, critical analysis, problem solving and creative thinking.

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
K1	Coherent and advanced knowledge of the underlying principles and concepts in one or more disciplines
K2	Knowledge of research principles and methods
S1	Cognitive skills to review, analyse, consolidate and synthesise knowledge to identify and provide solutions to complex problems with intellectual independence
S2	Cognitive and technical skills and 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
A1	With initiative and judgement in professional practice and/or scholarship
A2	To adapt knowledge and skills in diverse contexts

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

Learning resources

John B. Conway “A Course in Point Set Topology”.

Volker Runde “A Taste of Topology”

5. Assessment:

There are 5 assignments, worth 20% each. No final exam.

Exam/assignment/classwork breakdown					
Exam		Assignment	100 %	Class work	Enter %
Assignment due dates		TBA			
Approximate exam date				Not applicable.	

Institution Honours program details

Weight of subject in total honours assessment at host department	12.5% of BPhil
Thesis/subject split at host department	1-year BPhil has no thesis; Thesis is 50% of 2-year MRES



Honours grade ranges at host department:	
H1	85
H2a	75
H2b	65
H3	50