# ACE Network Subject Information Guide

## PMTH432 Abstract Algebra

## Semester 2, 2021

## Administration and contact details

| | |
|---|---|
| **Host department** | School of Science and Technology |
| **Host institution** | University of New England |
| | |
| **Name of lecturer** | Dr Bea Bleile |
| **Phone number** | +61 (0)458 752 680 |
| **Email address** | bbleile@une.une.edu.au |
| **Homepage** | https://www.une.edu.au/staff-profiles/science-and-technology/bbleile |
| | |
| **Name of honours coordinator** | Dr Adam Harris |
| **Phone number** | +61 (0)2 6773 2210 |
| **Email address** | aharris5@une.edu.au |
| | |
| **Name of masters coordinator** | Dr Adam Harris |
| **Phone number** | +61 (0)2 6773 2210 |
| **Email address** | aharris5@une.edu.au |

## Subject details

| | |
|---|---|
| **Handbook entry URL** | https://handbook.une.edu.au/units/2021/PMTH432?year=2021 |
| **Subject homepage URL** | na |
| **Honours student hand-out URL** | na |
| | |
| **Start date:** | 28th June 2021 |
| **End date:** | 24th September 2021 |
| **Contact hours per week:** | 4 |
| **Census date:** | 19th July 2021 |
| **Lecture day(s) and time(s):** | TBA |
| | |
| **Description of electronic access arrangements for students (for example, WebCT)** | TBA |

## Subject content

1. **Subject content description**

This unit provides an introduction to the theory of groups and rings covering basic properties, subgroups and subrings, quotient structures, products of groups and rings, isomorphism theorems, cyclic groups, the Fundamental Theorem of Finitely Generated Abelian Groups, the Sylow Theorems, polynomial rings and fields of quotients. PMTH432 offers a further advanced topic in abstract algebra to be covered in the mini project which will be chosen in negotiation with the unit coordinator.

## 2. Week-by-week topic overview

na

## 3. Assumed prerequisite knowledge and capabilities

na

## 4. Learning outcomes and objectives

Upon completion of this unit, students will be able to:

1. demonstrate an understanding of advanced topics in algebra;

2. demonstrate an understanding of central concepts of modern algebra;

3. develop advanced theoretical understanding and computational methods;

4. prepare themselves for further studies in number theory, commutative algebra, Lie algebras, algebraic geometry, representation theory, algebraic topology, homological algebra, category theory;

5. apply their knowledge and communication skills to illustrate, demonstrate and teach modern mathematics;

6. demonstrate autonomy, well-developed judgement and adaptability to critically analyse and evaluate information and transmit solutions to complex problems.

**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

## 5. Learning resources

Students will receive an electronic copy of the lecture notes. Additional texts are recommended but not required.

## 6. Assessment

| Exam/assignment/classwork breakdown | | | | | |
|---|---|---|---|---|---|
| **Exam** | 60 % | **Assignments** | 30 % | **Project** | 10 % |
| | | | | | |
| **Assignment due dates** | TBA | | | | |
| | | | | | |
| **Approximate exam date** | | | | Before 15th October 2021 | |

# Institution honours program details

| | |
|---|---|
| **Weight of subject in total honours assessment at host department** | Click here to enter text. |
| **Thesis/subject split at host department** | Click here to enter text. |
| **Honours grade ranges at host department** | |
| **H1** | Enter range % |
| **H2a** | Enter range % |
| **H2b** | Enter range % |
| **H3** | Enter range % |

# Institution masters program details

| | |
|---|---|
| **Weight of subject in total masters assessment at host department** | 6/96 (Master of Scientific Studies) |
| **Thesis/subject split at host department** | 24/96 (Master of Scientific Studies) |
| **Masters grade ranges at host department** | |
| **H1** | 85 - 100 |
| **H2a** | 75 - 84 |
| **H2b** | 65 - 74 |
| **H3** | 50 - 64 |