Pure Mathematics Honours

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What is pure mathematics?

- Arts?
- Philosopy?
- Science?
- Technology?

It is everything:

- Arts because we strive for elegance and completeness of statements and arguments (think of a *beautiful proof* . . .).
- Philosophy because it allows for a completely free spirit and provides a particular view of the world we live in.
- It is science in the sense that it provides an essential tool for scientists in every area of science.
- It is technology in the sense that it provides the basis of a lot of engineering and computer science.

(Pure) mathematics

- is one of the oldest human endeavours to understand the world around us.
- is timeless: old knowledge never looses its relevance but becomes part of new insights.
- frees itself from particular applications and extracts the essential structures to provide a framework that applies to many completely different contexts.
- takes inspiration from applications (astronomy, physics, engineering, computer science, biology, economics, linguistics, ...) and generously returns to even more areas.
- provides tools for future not yet known applications
- provides a unique set of thinking skills and the ability to look at facts in a more rational way than most other people do.

What to do after doing Pure Mathematics Honours?

- Do higher degree study: PhD or MPhil (locally or elsewhere)
- Take a job outside University
- Do further study (for instance education, computer science)

What is on offer?

- Recommended units to take:
  - MATH4314: Representation Theory (Sem 1)
  - MATH4313: Functional Analysis (Sem 1)
  - MATH4312: Commutative Algebra (Sem 2)
  - MATH5320: Topics in Topology (Algebraic Topology) (Sem 2)
- Catch up on units missed in third year:
  - MATH4061: Metric Spaces (Sem 1)
  - MATH4079: Complex Analysis (Sem 1)
  - MATH4068: Differential Geometry (Sem 2)
  - MATH4069: Measure Theory and Fourier Analysis (Sem 2)
- Specialized units:
  - MATH5320: Topics in Analysis (Sem 1)
- Other worthwhile units recommended depending on interest and project
  - STAT4528: Probability Theory (Sem 1)
  - DATA5441: Networks and High-dimensional Inference
  - Applied or financial mathematics unit