

Program Code

BMSAD

Program Minimum Units

72

Standard Duration

3 Years

Program Faculty

Faculty of Engineering, Computer and Math Sciences

AQF Level

07

Academic Year

2022

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

Overview

The Bachelor of Mathematical Sciences (Advanced) is designed for high achieving students seeking mathematical and statistical training with a strong emphasis on research skill development. Students undertake a structured program of study that introduces the fundamentals of mathematics and statistics and leads to a specialisation in at least one of the major areas of applied mathematics, pure mathematics or statistics. Exposure to the research culture across the breadth of the mathematical sciences is developed through the courses Advanced Mathematical Perspectives I, Advanced Mathematical Perspectives II and Advanced Mathematical Perspectives III, which are specific to this program. Students in this program will have the early opportunity to engage with the academic and research culture within the School of Mathematical Sciences through participation in the School colloquium and seminar series. Students completing the Bachelor of Mathematical Sciences (Advanced) will be automatically eligible for entry to the Bachelor of Mathematical Sciences (Honours) program.

Students must earn and maintain a GPA of no less than 5.0/7.0 in each Teaching Period to remain in the Program. The Bachelor of Mathematical Sciences (Advanced) is an AQF Level 7 qualification with a standard full-time duration of 3 years.

Conditions

Condition of enrolment

Interruption of program: Students must apply for permission from the Executive Dean or delegate before taking a Leave of Absence. Any extension of the leave without approval will result in the loss of place in the program but an application may be made to be re-admitted to the program subject to the admission procedures in place at the time.

Academic Program Rules for Bachelor of Mathematical Sciences (Advanced) (BMaSc(Adv))

There shall be a Bachelor of Mathematical Sciences (Advanced) (BMaSc(Adv)).

Qualification Requirements

Academic Program

Bachelor of Mathematical Sciences (Advanced) (BMaSc(Adv))

To qualify for the degree of Bachelor of Mathematical Sciences (Advanced), the student must complete satisfactorily a program of study consisting of the following requirements with a combined total of not less than 72 units, comprising:

1. Level I courses to a maximum value of 30 units,
2. Level III courses to the value of at least 24 units, with Mathematical Sciences courses to the value of at least 18 units. (Note: MATHS 3025 Professional Practice III is not considered a Mathematical Sciences course for the purpose of this clause.)
3. Broadening Electives to the value of 9 units from subject areas other than the following: APP MTH, COMP SCI, MATHS, PURE MTH and STATS. The course ENG 1002 Programming (Matlab & C) may not be presented as a Broadening Elective.
4. A major to the value of 24 units may be taken in one of the following:
 - Applied Mathematics
 - Pure Mathematics
 - Statistics
5. A double major to the value of 24 units may be taken in one of the following:
 - Applied Mathematics and Pure Mathematics
 - Applied Mathematics and Statistics
 - Pure Mathematics and Applied Mathematics
 - Pure Mathematics and Statistics
 - Statistics and Applied Mathematics
 - Statistics and Pure Mathematics
6. MATHS 3020 Advanced Mathematical Perspectives III may be presented towards a double major in the discipline of the project.

Courses Not Permitted

The following courses cannot be presented as electives:

ECON 1008 Data Analytics I

ECON 1010 Introduction to Mathematical Economics (Advanced) I

ECON 2503 Intermediate Mathematical Economics II

ECON 2504 Intermediate Econometrics II

Bachelor of Mathematical Sciences (Advanced)

To satisfy the requirements for Bachelor of Mathematical Sciences (Advanced) students must complete courses to the value of 72 units.

Core

All of the following courses must be completed:

ENG 1002 [Programming \(Matlab and C\)](#) (3 units)

MATHS 1011 [Mathematics IA](#) (3 units)

MATHS 1012 [Mathematics IB](#) (3 units)

MATHS 1015 [Advanced Mathematical Perspectives I](#) (3 units)

MATHS 2100 [Real Analysis II](#) (3 units)

MATHS 2101 [Multivariable & Complex Calculus II](#) (3 units)

MATHS 2102 [Differential Equations II](#) (3 units)

MATHS 2103 [Probability & Statistics II](#) (3 units)

MATHS 2203 [Advanced Mathematical Perspectives II](#) (3 units)

MATHS 3020 [Advanced Mathematical Perspectives III](#) (3 units)

MATHS 3025 [Professional Practice III](#) (3 units)

STATS 1005 [Statistical Analysis and Modelling I](#) (3 units)

STATS 2107 [Statistical Modelling and Inference II](#) (3 units)

Electives

Electives to the value of 33 units including:

Level I, II or III Electives from any discipline (15 units)

Level III Electives from any discipline (3 units)

Level III Mathematical Sciences Electives (15 units)

Electives may be chosen from courses offered by the School of Mathematical Sciences, School of Computer Sciences or any other undergraduate courses offered by the University that are available to the student.

Applied Mathematics Courses

APP MTH 2105 Optimisation and Operations Research II (3 units)

APP MTH 3001 [Applied Probability III](#) (3 units)

APP MTH 3002 [Fluid Mechanics III](#) (3 units)

APP MTH 3014 [Optimisation III](#) (3 units)

APP MTH 3016 [Random Processes III](#) (3 units)

APP MTH 3021 [Modelling with Ordinary Differential Equations III](#) (3 units)

APP MTH 3022 Optimal Functions and Nanomechanics III (3 units)

APP MTH 3023 [Partial Differential Equations and Waves III](#) (3 units)

APP MTH 3124 [Decision Science III](#) (3 units)

Mathematical Sciences Courses

MATHS 1005 [Critical Evaluation in Data Science](#) (3 units)

MATHS 1006 [Data Taming & Prediction](#) (3 units)

MATHS 2104 [Numerical Methods II](#) (3 units)

MATHS 3012 [Financial Modelling: Tools & Techniques III](#) (3 units)

MATHS 3026 [Cryptography III](#) (3 units)

Pure Mathematics Courses

PURE MTH 2106 [Algebra II](#) (3 units)

PURE MTH 3002 [Topology and Analysis III](#) (3 units)

PURE MTH 3007 [Groups and Rings III](#) (3 units)

PURE MTH 3009 [Integration and Analysis III](#) (3 units)

PURE MTH 3019 [Complex Analysis III](#) (3 units)

PURE MTH 3022 Geometry of Surfaces III (3 units)

PURE MTH 3023 Fields and Modules III (3 units)

PURE MTH 3024 Finite Geometry III (3 units)

Statistics Courses

STATS 3001 [Statistical Modelling III](#) (3 units)

STATS 3005 Time Series III (3 units)

STATS 3006 [Mathematical Statistics III](#) (3 units)

STATS 3008 Biostatistics III (3 units)

STATS 3022 [Data Science III](#) (3 units)

STATS 3023 [Computational Bayesian Statistics III](#) (3 units)

Applied Mathematics Major

To satisfy the requirements for Applied Mathematics Major students must complete courses to the value of 24 units.

Courses to the value of 12 units from the following:

APP MTH 3001 [Applied Probability III](#) (3 units)

APP MTH 3002 [Fluid Mechanics III](#) (3 units)

APP MTH 3014 [Optimisation III](#) (3 units)

APP MTH 3016 [Random Processes III](#) (3 units)

APP MTH 3021 [Modelling with Ordinary Differential Equations III](#) (3 units)

APP MTH 3022 Optimal Functions and Nanomechanics III (3 units)

Bachelor of Mathematical Sciences (Advanced) (BMaSc(Adv))

APP MTH 3023 [Partial Differential Equations and Waves III](#) (3 units)

APP MTH 3124 [Decision Science III](#) (3 units)

and

Mathematical Sciences courses to the value of 12 units.

Pure Mathematics Major

To satisfy the requirements for Pure Mathematics Major students must complete courses to the value of 24 units.

Courses to the value of 12 units from the following:

PURE MTH 3002 [Topology and Analysis III](#) (3 units)

PURE MTH 3007 [Groups and Rings III](#) (3 units)

PURE MTH 3009 [Integration and Analysis III](#) (3 units)

PURE MTH 3019 [Complex Analysis III](#) (3 units)

PURE MTH 3022 Geometry of Surfaces III (3 units)

PURE MTH 3023 Fields and Modules III (3 units)

PURE MTH 3024 Finite Geometry III (3 units)

and

Mathematical Sciences courses to the value of 12 units.

Statistics Major

To satisfy the requirements for Statistics Major students must complete courses to the value of 24 units.

All of the following courses must be completed:

STATS 3001 [Statistical Modelling III](#) (3 units)

STATS 3006 [Mathematical Statistics III](#) (3 units)

and

Courses to the value of 6 units from the following:

STATS 3005 Time Series III (3 units)

STATS 3008 Biostatistics III (3 units)

STATS 3022 [Data Science III](#) (3 units)

STATS 3023 [Computational Bayesian Statistics III](#) (3 units)

APP MTH 3001 [Applied Probability III](#) (3 units)

APP MTH 3016 [Random Processes III](#) (3 units)

APP MTH 3124 [Decision Science III](#) (3 units)

and

Mathematical Sciences courses to the value of 12 units.

Applied Mathematics and Pure Mathematics Double Major

To satisfy the requirements for Applied Mathematics and Pure Mathematics Double Major students must complete courses to the value of 24 units.

Courses to the value of 12 units from the following:

APP MTH 3001 [Applied Probability III](#) (3 units)

APP MTH 3002 [Fluid Mechanics III](#) (3 units)

APP MTH 3014 [Optimisation III](#) (3 units)

APP MTH 3016 [Random Processes III](#) (3 units)

APP MTH 3021 [Modelling with Ordinary Differential Equations III](#) (3 units)

APP MTH 3022 Optimal Functions and Nanomechanics III (3 units)

Bachelor of Mathematical Sciences (Advanced) (BMaSc(Adv))

APP MTH 3023 [Partial Differential Equations and Waves III](#) (3 units)

APP MTH 3124 [Decision Science III](#) (3 units)

plus

Courses to the value of 9 units from the following:

PURE MTH 3002 [Topology and Analysis III](#) (3 units)

PURE MTH 3007 [Groups and Rings III](#) (3 units)

PURE MTH 3009 [Integration and Analysis III](#) (3 units)

PURE MTH 3019 [Complex Analysis III](#) (3 units)

PURE MTH 3022 Geometry of Surfaces III (3 units)

PURE MTH 3023 Fields and Modules III (3 units)

PURE MTH 3024 Finite Geometry III (3 units)

and

Mathematical Sciences courses to the value of 3 units.

Applied Mathematics and Statistics Double Major

To satisfy the requirements for Applied Mathematics and Statistics Double Major students must complete courses to the value of 24 units.

Courses to the value of 12 units from the following:

APP MTH 3001 [Applied Probability III](#) (3 units)

APP MTH 3002 [Fluid Mechanics III](#) (3 units)

APP MTH 3014 [Optimisation III](#) (3 units)

APP MTH 3016 [Random Processes III](#) (3 units)

APP MTH 3021 [Modelling with Ordinary Differential Equations III](#) (3 units)

APP MTH 3022 Optimal Functions and Nanomechanics III (3 units)

APP MTH 3023 [Partial Differential Equations and Waves III](#) (3 units)

APP MTH 3124 [Decision Science III](#) (3 units)

plus

All of the following courses must be completed:

STATS 3001 [Statistical Modelling III](#) (3 units)

STATS 3006 [Mathematical Statistics III](#) (3 units)

and

Courses to the value of 3 units from the following:

STATS 3005 Time Series III (3 units)

STATS 3008 Biostatistics III (3 units)

STATS 3022 [Data Science III](#) (3 units)

STATS 3023 [Computational Bayesian Statistics III](#) (3 units)

APP MTH 3001 [Applied Probability III](#) (3 units)

APP MTH 3016 [Random Processes III](#) (3 units)

APP MTH 3124 [Decision Science III](#) (3 units)

and

Mathematical Sciences courses to the value of 3 units.

Note the following courses may only be presented towards a major in Statistics or a major in Applied Mathematics but not both:

APP MTH 3001 Applied Probability III

APP MTH 3016 Random Processes III

APP MTH 3124 Decision Science III

Pure Mathematics and Applied Mathematics Double Major

To satisfy the requirements for Pure Mathematics and Applied Mathematics Double Major students must complete courses to the value of 24 units.

Courses to the value of 12 units from the following:

- PURE MTH 3002 [Topology and Analysis III](#) (3 units)
- PURE MTH 3007 [Groups and Rings III](#) (3 units)
- PURE MTH 3009 [Integration and Analysis III](#) (3 units)
- PURE MTH 3019 [Complex Analysis III](#) (3 units)
- PURE MTH 3022 Geometry of Surfaces III (3 units)
- PURE MTH 3023 Fields and Modules III (3 units)
- PURE MTH 3024 Finite Geometry III (3 units)

plus

Courses to the value of 9 units from the following:

- APP MTH 3001 [Applied Probability III](#) (3 units)
- APP MTH 3002 [Fluid Mechanics III](#) (3 units)
- APP MTH 3014 [Optimisation III](#) (3 units)
- APP MTH 3016 [Random Processes III](#) (3 units)
- APP MTH 3020 Stochastic Decision Theory III (3 units)
- APP MTH 3021 [Modelling with Ordinary Differential Equations III](#) (3 units)
- APP MTH 3022 Optimal Functions and Nanomechanics III (3 units)
- APP MTH 3023 [Partial Differential Equations and Waves III](#) (3 units)

and

Mathematical Sciences courses to the value of 3 units.

Pure Mathematics and Statistics Double Major

To satisfy the requirements for Pure Mathematics and Statistics Double Major students must complete courses to the value of 24 units.

Courses to the value of 12 units from the following:

- PURE MTH 3002 [Topology and Analysis III](#) (3 units)
- PURE MTH 3007 [Groups and Rings III](#) (3 units)
- PURE MTH 3009 [Integration and Analysis III](#) (3 units)
- PURE MTH 3019 [Complex Analysis III](#) (3 units)
- PURE MTH 3022 Geometry of Surfaces III (3 units)
- PURE MTH 3023 Fields and Modules III (3 units)
- PURE MTH 3024 Finite Geometry III (3 units)

plus

All of the following courses must be completed:

- STATS 3001 [Statistical Modelling III](#) (3 units)
- STATS 3006 [Mathematical Statistics III](#) (3 units)

and

Courses to the value of 3 units from the following:

- STATS 3005 Time Series III (3 units)
- STATS 3008 Biostatistics III (3 units)
- STATS 3022 [Data Science III](#) (3 units)
- STATS 3023 [Computational Bayesian Statistics III](#) (3 units)

Bachelor of Mathematical Sciences (Advanced) (BMaSc(Adv))

APP MTH 3001 [Applied Probability III](#) (3 units)
APP MTH 3016 [Random Processes III](#) (3 units)
APP MTH 3124 [Decision Science III](#) (3 units)

and

Mathematical Sciences courses to the value of 3 units.

Statistics and Applied Mathematics Double Major

To satisfy the requirements for Statistics and Applied Mathematics Double Major students must complete courses to the value of 24 units.

All of the following courses must be completed:

STATS 3001 [Statistical Modelling III](#) (3 units)
STATS 3006 [Mathematical Statistics III](#) (3 units)

and

Courses to the value of 6 units from the following:

STATS 3005 Time Series III (3 units)
STATS 3008 Biostatistics III (3 units)
STATS 3022 [Data Science III](#) (3 units)
STATS 3023 [Computational Bayesian Statistics III](#) (3 units)
APP MTH 3001 [Applied Probability III](#) (3 units)
APP MTH 3016 [Random Processes III](#) (3 units)
APP MTH 3124 [Decision Science III](#) (3 units)

plus

Courses to the value of 9 units from the following:

APP MTH 3001 [Applied Probability III](#) (3 units)
APP MTH 3002 [Fluid Mechanics III](#) (3 units)
APP MTH 3014 [Optimisation III](#) (3 units)
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APP MTH 3021 [Modelling with Ordinary Differential Equations III](#) (3 units)
APP MTH 3022 Optimal Functions and Nanomechanics III (3 units)
APP MTH 3023 [Partial Differential Equations and Waves III](#) (3 units)

and

Mathematical Sciences courses to the value of 3 units.

Note the following courses may only be presented towards a major in Statistics or a major in Applied Mathematics but not both:

APP MTH 3001 Applied Probability III
APP MTH 3016 Random Processes III
APP MTH 3124 Decision Science III

Statistics and Pure Mathematics Double Major

To satisfy the requirements for Statistics and Pure Mathematics Double Major students must complete courses to the value of 24 units.

All of the following courses must be completed:

STATS 3001 [Statistical Modelling III](#) (3 units)
STATS 3006 [Mathematical Statistics III](#) (3 units)

and

Courses to the value of 6 units from the following:

STATS 3005 Time Series III (3 units)
STATS 3008 Biostatistics III (3 units)
STATS 3022 [Data Science III](#) (3 units)
STATS 3023 [Computational Bayesian Statistics III](#) (3 units)
APP MTH 3001 [Applied Probability III](#) (3 units)
APP MTH 3016 [Random Processes III](#) (3 units)
APP MTH 3124 [Decision Science III](#) (3 units)

plus

Courses to the value of 9 units from the following:

PURE MTH 3002 [Topology and Analysis III](#) (3 units)
PURE MTH 3007 [Groups and Rings III](#) (3 units)
PURE MTH 3009 [Integration and Analysis III](#) (3 units)
PURE MTH 3019 [Complex Analysis III](#) (3 units)
PURE MTH 3022 Geometry of Surfaces III (3 units)
PURE MTH 3023 Fields and Modules III (3 units)
PURE MTH 3024 Finite Geometry III (3 units)

and

Mathematical Sciences courses to the value of 3 units.

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