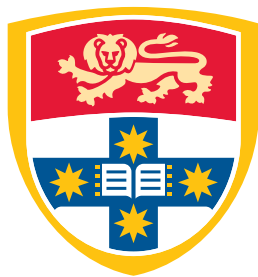


# Honours in **Data Science**

Detailed Guide for the 2024 academic year



THE UNIVERSITY OF  
**SYDNEY**

School of Mathematics and Statistics

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# 1 Entry requirements

Preliminary entrance into the honours program is through the [Faculty of Science application portal](#). The [Faculty requirements](#) which must be met include:

- a Bachelor of Science degree (or equivalent) including at least one major or program, or equivalent studies at another institution;
- a WAM of at least 65.0 in units of study, and a major or study of equivalent depth in the area of the proposed Honours subject area; or a credit average in 48 credit points in 2000-level and above units of study relevant to the Honours subject area, as determined by the School concerned;
- *securing the agreement of a supervisor.*

Please note that, in some Schools and Disciplines, the minimum WAM requirement is higher than 65.00, particularly where entry is very competitive. Please, check with the Honours coordinator and the potential supervisor about these extra-requirements.

## 1.1 Formally

The faculty offers three main Honours pathways and it can be confusing:

- Combined Bachelor of Science/Bachelor of Advanced Studies is an option if you commenced your studies after 2018 and it allows completing Honours as an embedded pathway in the final year of the program. Requires two majors.
- Standalone Bachelor of Advanced Studies (Honours) is the same as above, including the two-majors requirement, except technically this is an appended, standalone Honours year.
- The Bachelor of Science (Honours) is a standalone (appended) Honours requiring an additional year of study. It is for students who
  - are not on track to complete two majors in the Bachelor of Science, or
  - are external students with only one major, or
  - commenced before 2018 and did not choose to transfer to the new curriculum version of their degree.

## 1.2 It's important to note that:

- All acceptances into Honours (including in cases where the School's requirements are not met) are ultimately at the discretion of the School. However, a student meeting all of the above criteria (or the equivalent from another institution) should be confident of acceptance.
- The Faculty of Science Honours [application deadline](#) (for Honours commencement in Semester 1, 2024) is 15 January 2024 and for Semester 2, 2024 it is 25 June 2024.

No application will be accepted after the deadline.

## 2 Structure of Honours

An Honours year in Data Science involves

- four 6CP courses (worth 50% of the final mark) and
- and a project (worth 50%).

### 2.1 The Honours project (or thesis) (50%)

The Honours project centres around an essay/thesis consisting of roughly 60 pages<sup>1</sup> written on a particular topic from your chosen area. It does not need to contain original research (although it might) but it should clearly demonstrate that you have understood and mastered the material. The assessment of the Honours thesis is based on the scientific and quantitative content and its exposition, including the written English. The thesis is due at the end of your second semester, specifically at 5pm on Monday of Week 13.

Toward the end of the second semester (Friday weeks 9-10), each student gives a 25 minutes talk on their thesis project. The aim of the talk is to explain to a broader audience the purpose and nature of the project. The talk is followed by 5 minutes dedicated to questions from the audience which includes staff members and fellow students.

#### 2.1.1 Writing proficiency

As mentioned above your essay is also assessed based on the quality of the writing. This does not mean we look for the next Shakespeare however you should make sure you express your ideas in an organized manner using a clear and grammatically correct English. The University of Sydney offers several resources that can help you achieve this goal. The [Learning Centre offers workshops](#) for students that need help with extended written work, and a trove of online resources for improving your writing skills is also [available](#). Make sure you make use of these resources as early as possible as writing skills develop slowly over time and with much practice.

### 2.2 Course work (50%)

The Honours program in *Data Science* specifies different combinations of courses that can be taken including courses offered by the School of Mathematics and Statistics, the School of Computer Science and the School of Physics.

A list of courses that will be offered in 2024 is [available online](#). However students should carefully consult the [Data Science degree structure document](#) which outlines the combinations of courses that can be taken for credit.

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<sup>1</sup>This page number is a very rough guideline and should not be taken as binding.

## 3 Important course work information for all students

### 3.1 Selecting your courses

It is a requirement to **select your courses after consulting the Honours supervisor and the Honours coordinator!**

### 3.2 AMSI courses

Students are welcomed to check the courses offered in January at the [AMSI Summer School](#) and also courses available via the [Advanced Collaborative Environment \(ACE\)](#). These courses can possibly be taken for credit (by enrolling in the unit AMSI4001), but this can only be done in consultation with the student's supervisor and with the approvals of the specific honours coordinator as well as the School's Honours coordinator, Prof. Laurentiu Paunescu.

## 4 Program Administration

The Data Science Honours coordinator is

Dr. Clara Grazian,  
Carslaw Building, Room 822  
Email: [clara.grazian@sydney.edu.au](mailto:clara.grazian@sydney.edu.au)

The Co-director of Teaching (Statistics & Data Science) is

A/Prof. Jennifer Chan,  
Carslaw Building, Room 817, Phone 9351 4873,  
Email: [jennifer.chan@sydney.edu.au](mailto:jennifer.chan@sydney.edu.au)

The Program Coordinator is the person that students should consult on all matters regarding the Honours program. In particular, students wishing to substitute a course from another Department, School or University must get prior written approval from the Program Coordinator. Matters of ill-health or misadventure should also be referred to the Program Coordinator.

## 5 Honours courses in Data Science

The Bachelor of Advanced Studies (Honours) (Data Science) requires 48 credit points from this table including:

- 12 credit points of 4000-level and above Honours coursework selective units from List 1, and
- 12 credit points of 4000-level and above Honours coursework selective units from List 1, List 2, List 4 or List 5 with a maximum of 6 credit points of units from List 5, and
- 24 credit points of 4000-level Honours research project units

Note:

- Not all courses are offered every year. Moreover, some courses may have pre-requisites and exclusions. Please, check [the Honours page](#) for update information about offerings, pre-requisites, and exclusions.
- Some of you may want to enrol in courses which are not available under Sydney Student, but are possible under the rules of the Honours program. In this case you need to ask for a **manual enrolment**.

To do so, you need to i) have your supervisor's approval and send it to the Honours coordinator, ii) send the Honours coordinator the full list of 4 courses you are taking across the Honours year, iii) send the Honours coordinator your undergraduate transcripts, iv) get the Honours coordinator's approval, v) send it to Sydney Student.

Instructions will be provided at the beginning of the semester.

- **Under no circumstances, the Honours coordinator can approve enrolment to a course if the pre-requisites are not met without the approval of the Unit Coordinator of the course.** Enrolment in courses is subject to check of the pre-requisites. In the case the pre-requisites are not met, it is responsibility of the Unit Coordinator of the course to approve or reject the request to enrol in the course.
- Consider that Honours students can enrol in a very limited number of level 5000 courses out of the School of Mathematics and Statistics (List 5).

## 6 Project

### 6.1 General information on projects

Each student is expected to have made a choice of a project and supervisor well before the beginning of the first semester (or the beginning of the second semester for students starting in July). Students are welcome to consult on this matter with the Honours coordinator. The Honours coordinator must be informed of the choice of supervisor before the start of the program.

Work on the project should start as soon as possible but no later than the start of the semester. The break between the semesters is often an excellent time to concentrate on your research but you should make sure you make continuous progress on your research throughout the year. To ensure that, students should consult their appointed supervisor regularly, in both the researching and writing of the work.

Prospective students interested in any of these topics are encouraged to discuss them with the named supervisors as early as possible.

Students can work on a project of their own topic provided they secure in advance the supervision of a member of the University of Sydney (from any School) and provided they receive the approval of the Honours Coordinator.

The Honours project in Data Science may include synthesising and generalising results from the statistical literature, developing novel methodologies or attacking a problem in applied statistics in an innovative way.

One electronic copy of the thesis must be submitted to the Honours coordinator before the beginning of the study vacation at the end of your last semester. The exact date will be made known.

It is recommended that you go through the following checklist before submitting your thesis:

- Is there an adequate introduction?
- Have the chapters been linked so that there is overall continuity?
- Is the account self-contained?
- Are the results clearly formulated?
- Are the proofs correct? Are the proofs complete?
- Have you cited all the references?



## 7 Assessment

### 7.1 The honours grade

The student's honours grade is based on the average mark achieved by each student, over the 4 courses and the project. Courses account for 50% of the assessment and the project for the remaining 50%.

According to the Faculty of Science guidelines, the grade of Honours to be awarded is determined by the honours mark as follows:

Grade of Honours	Faculty-Scale
First Class, (possibly) with Medal	90–100
First Class	80–89
Second Class, First Division	75–79
Second Class, Second Division	70–74
Third Class	65–69
Fail	0–64

The Faculty has also given the following detailed guidelines for assessing of student performance in Honours.

95–100 Outstanding First Class quality of clear Medal standard, demonstrating independent thought throughout, a flair for the subject, comprehensive knowledge of the subject area and a level of achievement similar to that expected by first rate academic journals. This mark reflects an exceptional achievement with a high degree of initiative and self-reliance, considerable student input into the direction of the study, and critical evaluation of the established work in the area.

90-94 Very high standard of work similar to above but overall performance is borderline for award of a Medal. Lower level of performance in certain categories or areas of study above.

Note that in order to qualify for the award of a university medal, it is necessary but not sufficient for a candidate to achieve a SCIWAM of 80 or greater and an honours mark of 90 or greater. Faculty has agreed that more than one medal may be awarded in the subject of an honours course.

The relevant Senate Resolution reads: “A candidate with an outstanding performance in the subject of an honours course shall, if deemed of sufficient merit by the Faculty, receive a bronze medal.”

80-89 Clear First Class quality, showing a command of the field both broad and deep, with the presentation of some novel insights. Student will have shown a solid foundation of conceptual thought and a breadth of factual knowledge of the discipline, clear familiarity with and ability to use central methodology and experimental practices of the discipline, and clear evidence of some independence of thought in the subject area.

Some student input into the direction of the study or development of techniques, and critical discussion of the outcomes.

75-79 Second class Honours, first division – student will have shown a command of the theory and practice of the discipline. They will have demonstrated their ability to conduct work at an independent level and complete tasks in a timely manner, and have an adequate understanding of the background factual basis of the subject. Student shows some initiative but is more reliant on other people for ideas and techniques and project is dependent on supervisor’s suggestions. Student is dedicated to work and capable of undertaking a higher degree.

70-74 Second class Honours, second division – student is proficient in the theory and practice of their discipline but has not developed complete independence of thought, practical mastery or clarity of presentation. Student shows adequate but limited understanding of the topic and has largely followed the direction of the supervisor.

65-69 Third class Honours – performance indicates that the student has successfully completed the work, but at a standard barely meeting Honours criteria. The student’s understanding of the topic is extremely limited and they have shown little or no independence of thought or performance.

0-64 The student’s performance in fourth year is not such as to justify the award of Honours.

## **7.2 The coursework mark**

Students are required to attend 4 courses of 6CP during the academic year and the coursework mark is a simple average of the courses they took.

Student performance in each honours course is assessed by a combination of assignments and examinations. The assignment component is determined by the lecturer of each course and the examination component makes up the balance to 100%.

## **7.3 The project mark**

The project’s mark is split 90% for the essay and 10% for the student’s presentation. The presentation mark is determined by the stats staff attending the presentation.

The essay is assessed by three members of staff (including the supervisor). The overall final mark for the essay is a weighted average of all three marks awarded. A weighting of 50% is attached to the supervisor’s original mark, while a weight of 25% is attached to each of the two marks awarded by the other examiners.

The criteria which the essay marks are awarded by each examiner include:

- quality of synthesis of material in view of difficulty and scope of topic, and originality, if any;
- evidence of understanding;
- clarity, style and presentation;
- mathematical and/or modelling expertise and/or computing skills.

The student’s supervisor will also consider the following criteria:

- Has the student shown initiative and hard work which are not superficially evident from the written report?

- Has the student coped well with a topic which is too broad or not clearly defined?

## 7.4 Procedures

All assessable student work (such as assignments and projects) should be completed and submitted by the advertised date. If this is not possible, approval for an extension should be sought in advance from the lecturer concerned or (in the case of honours projects) from the Honours Coordinator. Unless there are compelling circumstances, and approval for an extension has been obtained in advance, late submissions will attract penalties as determined by the Board of Examiners (taking into account any applications for special consideration).

Appeals against the assessment of any component of the course, or against the class of Honours awarded, should be directed to the Head of School.

*Note:* Students who have worked on their projects as Vacation Scholars are required to make a declaration to that effect in the Preface of their theses.

## 8 Seminars

Mathematical Statistics and Data Science seminars are usually held every week on Friday afternoons. These seminars are an important forum for communicating ideas, developing critical skills and interacting with your peers and senior colleagues. Seminars are usually given by staff members and invited speakers. All Honours students are encouraged to attend these seminars. Keep in mind that attending these seminars might help develop your presentation skills.

## 9 Entitlements

Honours students enjoy a number of privileges, which should be regarded as a tradition rather than an absolute right. These include:

- Office space and a desk in the Carslaw building.
- A computer account with access to e-mail and the internet, as well as L<sup>A</sup>T<sub>E</sub>X and laser printing facilities for the preparation of projects.
- Photocopy machine for any of your work related material.
- After-hours access to the Carslaw building.
- A pigeon-hole in room 728 — please inspect it regularly as lecturers often use it to hand out relevant material.
- Participation in the School's social events.
- Class representative at School meetings.

## 10 Scholarships, Prizes and Awards

### University of Sydney Honours Scholarships

These [\\$6,000 Honours Scholarships](#) are awarded annually on the basis of academic merit and personal attributes such as leadership and creativity.

The following prizes may be awarded to statistics Honours students of sufficient merit. Students do not need to apply for these prizes, which are awarded automatically. The complete list is available [here](#).

### University Medal

Awarded to Honours students who perform outstandingly. The award is subject to Faculty rules, which require a mark of at least 90. More than one medal may be awarded in any year.

## 11 Life after Fourth Year

Students seeking assistance with post-grad opportunities and job applications should feel free to ask lecturers most familiar with their work for advice and written references. The Head of Statistics Programme, the Program Coordinator and the course lecturers may also provide advice and personal references for interested students.

Students thinking of enrolling for a higher degree (MSc or PhD) should direct all enquiries to the Director of Postgraduate Studies:

`pg-director@maths.usyd.edu.au`

Students are also strongly encouraged to discuss potential research topics with individual staff members.

Students who do well in their Honours studies may be eligible for postgraduate scholarships, which provide financial support during subsequent study for higher degrees.

Last but not least, there is a number of jobs for people with good statistical knowledge. Have a look [here](#).