

School of Mathematics and Statistics

Student guidelines for the responsible use of generative AI.

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A. Introduction and AI use guidelines

Note: these guidelines are general in nature and are aimed at providing an overview of the best practices in using AI (or not) within the school. You should also refer to your course outline or supervisor regarding the allowed usage of AI. As AI is a developing area, these guidelines may also be updated from time to time.

Generative AI such as ChatGPT, Copilot, Gemini, AI summaries generated by search engines, and so forth are powerful tools that can be used in a variety of circumstances in education. However, much like any tool, they can be helpful in the right context when used correctly but can be a hindrance if used incorrectly.

This document is designed to guide you in using generative AI in your studies in mathematics and statistics and help you to be aware of the advantages and pitfalls inherent in using AI.

To begin with, it is good to have a broad understanding of what generative AI is and how it works. In a broad sense, the foundational theory behind generative AI allows it to operate like a supercharged autocomplete – it is trained on a vast number of examples from data produced by humans, and it has extracted patterns from this data. When given a prompt, it uses its learned parameters to compute probabilities for what the next “piece” of the output should be and repeatedly samples from those probabilities until it produces a complete output.

Newer models build on this foundation and add additional layers such as symbolic problem solvers, Python modules and so on to help improve the accuracy of the outputs generated.

As a result of all this, while the output from a generative AI can often appear to be correct, especially as it is usually written in confident and persuasive language, it can be reliant on the data it is trained on and the probability model associated with that (as well as the other tools described above). Thus, it can be correct but can also produce incorrect information. The level of inaccuracy can range from minor miscalculations to completely incorrect “hallucinated” outputs. As stated by one mathematical researcher, *“AI models generate outputs that look plausible and are often formatted correctly but contain nonsensical logic, invented theorems, or critical errors. They can state these falsehoods with the same confident authority as factual information”*¹

¹ (Lisa Carbone, Advancing Mathematics Research with Generative AI, ArXiv, December 2025)

As generative models produce plausible text rather than guaranteed truths, while they may produce correct responses much of the time, you should still treat their outputs as hypotheses to be tested, rather than authorities to be implicitly trusted. In this way you will ensure that you both understand the content of the output, as well as verify its accuracy. This leads to our first principle:

A.1 Verify before you rely.

This principle means that when you use AI, you should have the ability to analyse the output for accuracy and be able to identify when the output is accurate and when it has errors. You should also verify explicitly that the output is correct and be able to describe the steps and evidence you are using in that verification.

This principle also means that you should not use AI on things you do not understand or cannot verify, and this in fact leads to our second principle.

A.2 Generative AI should be used to enhance or supplement your thinking, not replace it.

Many of the AI models that you are familiar with evolved from a technology known as artificial neural networks. These networks were trained on large datasets to spot patterns. In a similar sense your role as a student in university is to train your “neural network”, i.e. your brain, by studying the material provided to enhance your own thinking. As soon as you begin to hand over that work to an AI model, you are no longer building your own capacity to engage in modes of thinking that will allow you to truly understand mathematics in a way that AI cannot. You will also lose out on the development of your own critical thinking ability which is an important outcome of your studies.

It is increasingly apparent that although AI can be a powerful tool, those who wield it most effectively already have strong expertise in their field. You are still in the training phase of becoming an expert. If you over-rely on AI during your training phase, you will miss out on the opportunity to gain this expert-level status.

As you will have probably seen, AI models are continually improving as they are refined and trained on larger data sets. One approach to this iteration is for AI models to continue to be trained on the data input by its users. While some models may allow you to opt out of using the data you input for training, this is not necessarily the case for all models. As such, data you put into an AI is not necessarily kept private, so you should avoid sharing any private or personally identifiable information with an AI, which is our third principle.

A.3 Do not share any private information with an AI model.

Summary of the AI use guidelines

A.1 Verify before you rely.

A.2 Generative AI should be used to enhance or supplement your thinking, not replace it.

A.3 Do not share any private information with an AI model.



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B. Use of AI in Assessments

While you should use the previous principles to guide your use of AI in general, you should also be aware of the rules within the university around when it is permissible to use AI.

Assessments within UNSW have different AI [permissibility levels](#) and you should ensure before you attempt to use an AI model that any usage is compliant with those rules. You should ensure that you have read your course outline, or spoken with your convenor or supervisor, before using AI for any assessment task/thesis work etc. Thus, if you wish to use AI in an assessment you should follow the first principle below.

B.1 Ensure that your AI use follows the permissibility levels allowed in the course outline.

Once you have decided that using AI is permitted, you should be transparent about its use and how you have used it. You should treat it in the same way as any source, namely it should be referenced if you have used it. UNSW has a guide on how to reference AI which you can find [here](#). For an assessment submission you should declare how you used AI if you used it. For example: *"I used ChatGPT to correct my LaTeX code only, it did not produce any mathematical content"*. You should also declare that no AI was used if that is the case. Hiding the fact that you have used AI in any way as part of your work in an assessment could be considered academic misconduct. This then leads to the second principle.

B.2 Declare your AI use.

C. Examples of where AI might be useful

- **To help revise material**

Some ways that you can use AI to help you revise material:

- Check if you have recalled a definition correctly
- Ask for an alternative explanation of a concept
- Check if your proof of a theorem has any clear logical flaws
- Apply a theorem to a particular example

These examples can be a good way to check your own work and help build your own mathematical intuition, though this is best done in conjunction with speaking to a classmate or your lecturer. It is also recommended that you do not use AI to generate the solutions before you attempt problems. Remember that learning is a process that takes time, and mistakes, and AI is not always reliable.

In the same manner you could also use AI to pose questions or problems on areas you are studying for you to solve, though you should make sure that any such questions are relevant to the course you are studying, in terms of difficulty and applicability to the course.



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- **To plan your study**

Asking AI to help create a revision schedule can help you manage your time before exams and assessments.

- **To proofread writing and check for spelling and grammatical errors**

Provided that this is permissible, asking an AI model to provide feedback on any spelling or grammatical errors can be a good way to catch any mistakes or typos that you might have missed in your work.

- **To enhance coding**

In cases where the use of AI is allowed, making use of the model to refine code you have written in languages such as R or Python, may help to improve, optimise, organise, or comment your code while also teaching you about alternative structures and

commands. You should, as always, endeavour to make sure that you understand the generated code in the output and verify that it is producing the type of output that you want.

- **To reorganise the structure of a text you have written**

When writing large tracts of text, it can be helpful to ensure that the structure of your work is coherent and follows logically if the use of AI is allowed. In cases where you are not sure that your structure flows in this manner, or for situations where you might be struggling to see how to rearrange your existing work, AI models may be able to provide you with some suggestions as to how to restructure your writing.

- **Brainstorming**

Again, provided that the use of AI is allowed, it can also be applied to help with open-ended tasks such as a course project or honours thesis. AI could be used to suggest areas of mathematics you might want to explore, or propose methods that could be applicable for analysing a dataset.

In conclusion, AI is best used when applied to small, concrete, verifiable tasks, and should always be checked and understood. For example, if you want to use AI to edit your writing, ask for suggestions one paragraph at a time. Then, consider each suggestion and decide whether to incorporate it. This approach means you will easily see if AI inserted a whole new sentence or paragraph rather than just providing suggestions on spelling, grammar, or clarity.

D. When you shouldn't use AI

- **In assessments where it is not permissible**

Assessments in courses are designed to test your understanding of a topic, provide you with clear signals as to what areas you may need to focus further on, and are also used to help you learn. If you use AI in cases where you are not meant to, you are no longer getting any useful



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information on how you are performing in that topic. Misuse of AI is also considered academic misconduct, and you run the risk of being punished for its use.

- **To generate entire sentences, paragraphs, or proofs that you would include with little or no change in an assessment where AI use is allowed**

Remember that AI is meant to be a tool that augments your abilities, it should not replace you. To maintain academic integrity, you should avoid copy and pasting AI-generated materials and then claiming them as your own. If the permissibility level of AI usage is such that you can include outputs from AI, be sure to reference it, in line with [UNSW guidance](#).

- **To generate works for you to cite**

A well-known issue with AI is its tendency to make up citations. You should ensure that any citations that you include are accurate and relevant.

- **To conduct your literature review**

Relying solely on AI to conduct a literature review runs the risk of inaccuracies and potentially leads to a shallow or incorrect analysis. As in the previous point, an AI tool might generate citations that do not exist, as well as struggle to judge the quality of articles. For example, AI tools may cite papers that have been retracted, or may miss out on more recent publications. Since the model's output selection criteria are not transparent, there is the potential for such a review to also be incomplete or skewed. The use of AI in this case also risks making your own understanding of the area less deep. Using an AI to generate a list of papers relevant to an area could be useful, but you should ensure that the papers exist, are not retracted, are relevant, and that the AI did not omit relevant papers

- **Translation**

Unless given permission to do so, you should avoid writing text in another language and then using AI to translate it into English. Instead, write your text in English, and, if it is permissible, use AI to edit for any spelling or grammar mistakes.

E. Task guidance

Below is some general advice on best practice for use of AI in relation to different tasks you might encounter in the school. These comments are general, and you should make sure that your approach matches the standard of the course you are in.

- **Tutorial problems**

A best practice, in line with developing your own thinking and skills, would be to avoid using AI to solve tutorial problems prior to attempting them yourself, and prior to when a tutorial takes place. Any problems you are confused about should be raised for discussion in the tutorial, both for your own sake, to help develop your ability to discuss mathematics, but also for the benefit of others who may learn from the discussion as well.



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Even after a tutorial it is a good idea to still raise any questions you may not fully understand on the forums, in office/consultation hours, etc. However, you could also use an AI model at this stage to ask for additional explanations of a solution or topic.

- **Tests**

Usually, AI is not allowed during invigilated tests.

You could use AI to help you revise before a test, including helping you with past exam questions. Again however, you should not just use AI to solve the problems and expect to learn from that. It is much more productive to attempt the problems, visit consultation hours, post on the forums, and so on, prior to resorting to using AI.

- **Möbius lessons**

As with tutorial problems, Möbius lessons are designed to help you think more deeply about the topic you are learning. Thus, similar advice applies here, and you should avoid using AI to solve problems presented to you in Möbius lessons prior to submitting them. Replacing your own effort with that of an AI model is both counterproductive in terms of developing your own abilities, as well as a breach of the requirements of the assessment.

Regarding using AI to solve the Möbius problems once the revision versions are made available, you are again encouraged to post on the forums to discuss the problems. However, you could at that stage use an AI model to help you revise the topics covered. You should make sure however, that this is in line with the principles of AI use and ensure that it is helping your learning and not replacing it.

- **Take home tests**

Take home tests are often designed not just as a way of assessing your knowledge of the course, but also to allow you time to deepen your thinking, and understanding, on areas of the course. Thus, unless you are explicitly allowed to, using an AI to solve the problems given prior to their submission, would be both a breach of the assignment requirements, as well as be detrimental to the learning goals of the course.

- **Writing a thesis**

The aim of writing a thesis is to demonstrate your ability to undertake independent and rigorous academic work at scale. Your thesis should therefore clearly reflect your own technical contribution and scholarly writing, including any reasoning that underpins them. Your thesis is as much about your learning experience as it is about the final output. Even if using generative AI might improve the final product, ask yourself if it is worth sacrificing the learning you would gain along the way.

Consider the following quote about using AI in mathematical research from renowned mathematician Terence Tao:



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"These problems are like distant locations that you would hike to. And in the past, you would have to go on a journey. You can lay down trail markers that other people could follow, and you could make maps.

AI tools are like taking a helicopter to drop you off at the site. You miss all the benefits of the journey itself. You just get right to the destination, which actually was only just a part of the value of solving these problems." (The Atlantic, The Edge of Mathematics, 24 February 2026)

As with other forms of assessment above, before using any AI tool, you should check your course or thesis guidelines to confirm whether, and to what extent, AI use is allowed and should consult with your supervisor if unsure.

Provided AI use is allowed, many of the applications of AI highlighted in Section 3 can be adapted to support your work in writing a thesis, once again with the aim of not having AI replace your own thinking e.g.

- Brainstorming and refining research questions or chapter structures.
- Outlining and project planning, such as timelines etc.
- Proofreading, including grammar checks.
- Code refinement and debugging, provided you can still understand and test the code.
- Visualising existing literature in an area to identify potential gaps in knowledge (see, for example, Glickman & Zhang, AI and Generative AI for Research Discovery and Summarization, HDSR, 2024).
- Creating figures, tables, or diagrams, assuming you check the veracity.
- Investigating whether a proposed idea or method already exists in the literature (see again, Glickman & Zhang, AI and Generative AI for Research Discovery and Summarization, HDSR, 2024).

However, some uses of AI are not appropriate in thesis preparation, in particular:

- You should not use AI to write large sections of your thesis, or to generate proofs, original arguments, or core analysis that you present as your own.
- You should not rely on AI to generate citations and conduct your literature review in place of your own searching, reading, and critical evaluation - in particular relying only on AI generated citations can miss more recent publications.
- You should not include references you have not personally accessed and read.
- You should not upload confidential, personal, sensitive, proprietary, or unpublished research data to AI tools that will train themselves on your data.

In line with the use guidelines, you should always verify AI outputs to ensure that you have rectified any mistakes the AI has made, or any information it may have invented. This step is particularly important for research work which may sit on the edge of current knowledge and for which the model may have no training data to rely on.



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You should keep in mind that misusing AI, or failing to disclose its use where permitted, may be treated as academic misconduct.

F. Useful links

- [Using AI in university](#)
- [Referencing AI in assessments](#)
-

G. Decision tree for using AI

