

faculty of it society
>wired_

IT GUIDE

2ND ED.

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CREDITS

DESIGNERS

Jasmine Subroto

Kristofer Astro

Amelie Dyer

INTRODUCING THE DEGREE

A degree is an academic qualification awarded to a student by a university upon a successful completion of a specific course of study. Typical examples of a degree include Bachelor of Information Technology (undergraduate), or Master of Cybersecurity (graduate). Amongst many other reasons, it also serves as a tangible proof of your educational achievements, presenting valuable credentials to potential employers. Monash University offers a wide range of degree options, including several predetermined double degrees (i.e. Bachelor of IT & Commerce).

Let's look at some degrees under the Faculty of IT!

THE BACHELOR OF IT

As you would know, the Information Technology ('IT') industry stands as one of the most rapidly developing sectors in Australia. Due to IT becoming an intrinsic aspect in our everyday lives, there are escalating demands for people equipped with technological skills.

At Monash University, studying the Bachelor of IT means you will be gaining necessary knowledge and skills to use IT effectively — as well as develop and manage its systems — and learn about the application of computer-based technologies and systems to meet societal needs.

You will be exposed to a broad range of disciplines in the field before choosing your area of interest. Below you will find a long and expansive list of majors and minors you may select during your studies:

Majors:

- > Business Information Systems
- > Applied Cybersecurity
- > Games and Immersive Media
- > Software Development

Minors:

- | | |
|--------------------------------|---------------------------|
| > 3D Modelling and Animation | > Games Design |
| > Business Information Systems | > Games Development |
| > Computer Science | > Mobile Apps Development |
| > Cybersecurity | > Software Development |
| > Data Science | > Software Engineering |
| > Games and Immersive Media | > Web Development |

For more information about majors, minors and specialisations, please refer to **page 15**.

THE BACHELOR OF COMPSCI

Short for Computer Science, this Bachelor is offered at Monash University as a separate undergraduate degree as it involves a more theoretical and foundational focus to computing. In this 3-year program, you will delve into the intricacies of computational theory and its mathematical foundations, learning to design algorithms, data structures and practical programming skills to implement solutions.

There are three specialisations offered in a Monash Computer Science Degree:

Algorithms and Software.

which involves learning about advanced aspects of computer science such as programming paradigms (i.e. object-oriented programming, parallel computing, etc.) and constructing, manipulating and analysing performance of complex algorithms and data-structures.

Data Science and Artificial Intelligence.

which involves learning how to capture, manage and use huge volumes of data generated by businesses, organisations and science. It spans over several technical areas – such as programming and databases through modelling, visualisation and analysis – and also includes legal and ethical issues.

Cybersecurity.

focuses on the safeguarding of computer systems, networks, and data from theft, damage, and unauthorised access. This broad major introduces you to concepts of software security, cryptography, ethical hacking, and privacy-enhancing technologies, and the analysis of them through practical, legal and ethical perspectives

The digital world is ever-evolving, and the latest advancements of Large Language Models such as ChatGPT, DalleE, Sora, etc... have created a large demand for people skilled and knowledgeable in Data Science and Artificial Intelligence. This specialisation is highly valued in the digital industry as, for example, being able to transform data into information helps make important strategic decisions.

Likewise, skills and knowledge gained under the cybersecurity and algorithms and software specialisations are equally as remarkable. Although more challenging due to its focus on the technical aspects of programming, understanding algorithms, and etcetera, algorithms and software will lead you to a more flexible path in your career because the skills and knowledge nurtured in this specialisation can be applied in programming, software and the wider digital landscape.

Furthermore, when selecting your specialisations, you may also choose other majors and minors — for example, Game Development — and enhance your learning experience.

✦ **COMPSCI VS SOFTWARE ENGINEERING** ✦

Bachelor of Software Engineering ('Software Eng') is managed by the Faculty of Engineering, rather than the Faculty of IT. The degree involves delving into engineering principles to systematically analyse, develop and improve software (like iOS, Android, Photoshop etc.) and digital systems, and ensure they run effectively, safely and securely.

Software Eng shares many similarities with CompSci, and can actually be somewhat seen as an extension. Many of the units listed under Software Eng, such as FIT2099 Object Oriented Programming' under the Algorithms and Software specialisation, overlap with CompSci. In fact, almost all of the units required for Software Eng are run and managed by the Faculty of IT.

Where the two degrees differ are the foundational units you must study for Software Eng; you must complete engineering fundamentals and specialised units (i.e. Engineering methods, design, smart systems, etc.)

Hence, You **DO NOT** have to study Software Eng to pursue a career as a software engineer. CompSci students can learn almost all the knowledge and skills covered in Software Eng programs. In fact, CompSci graduates and Software Eng graduates often end up working in very similar positions.

DOUBLE DEGREES

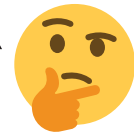
Monash University offers one of the most extensive selections of double degrees in Australia, featuring over 140 unique combinations across all major study fields. This program allows you to study two degrees simultaneously and graduate with two separate qualifications.

Here are some predetermined double degrees combinations offered at Monash:

with the BACHELOR OF IT	with the BACHELOR OF COMPSCI
<ul style="list-style-type: none"> > Bachelor of Arts > Bachelor of Business > Bachelor of Commerce > Bachelor of Criminology > Bachelor of Design > Bachelor of Engineering (Honours) * > Bachelor of Fine Art > Bachelor of Global Studies > Bachelor of Laws (Honours) * > Bachelor of Science <p>For more information about these double degrees, please refer to this link.</p>	<ul style="list-style-type: none"> > Bachelor of Commerce > Bachelor of Laws (Honours) * > Bachelor of Engineering (Honours) * > Bachelor of Science > Bachelor of Business and Commerce <p>For more information about these double degrees, please refer to this link.</p>
<p>* for more about Honours, please refer to page 12.</p>	



SHOULD YOU DO A DOUBLE DEGREE?

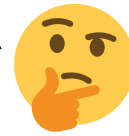


There are many advantages and disadvantages to studying a double degree program. If you find yourself contemplating between two degrees, or are interested in combining your single degree with IT, CompSci or etc., here are some things to consider:

✓ PROS	CONS ✗
<p>> <u>Shorter length:</u> Studying A double degree allows you to finish two years earlier compared to pursuing each consecutively.</p> <p>> <u>Diversified Skill-set:</u> Studying two different subjects means you gain two (or more) diverse skills and knowledge. This not only makes you more unique and employable, but also provides you with the flexibility to change or adapt according to your interests, strengths and weaknesses.</p> <p>> <u>Dual Opportunities:</u> If you are uncertain about what to do in the future, a double degree is beneficial because you get to experience both fields. You will have the opportunity to get involved in twice as many projects and initiatives at university, and meet many different people.</p>	<p>> <u>Longer Length:</u> Whilst it would be shorter than if you do two degrees consecutively, you do graduate later than your peers who do a single degree. A double degree with IT / Comp-Sci takes around 4 to 5 years (depending on combination) with a full-time load.</p> <p>> <u>Costly:</u> It is undeniable that since you are studying an extra degree, it will be more costly than if you studied one. Due to the extra units you must complete, financial burdens should be considered.</p>



SHOULD YOU DO A DOUBLE DEGREE?



✓ PROS

> A break from a subject:

Focusing on one particular area of study can sometimes be very exhausting and draining. Burnout, or even boredom, is a very common experience students face. Studying a double degree can actually be refreshing because you are learning two different subjects.

> Developing Industry:

It is obvious that technology is one of the fastest developing industries in the world, playing an intrinsic role in our everyday lives. Even if you pursue other professions like Law, Commerce, etc., having knowledge in CompSci / IT can complement your prowess as an individual and open up hidden pathways like, for example, Cybersecurity Lawyer.

CONS ✗

> Limited Focus:

While a double degree provides a broader skill-set, it may lack the depth of expertise that a single degree offers. Specifically, since you are dividing your attention between two degrees, you may not have as much time to focus on an area, compared to a student who does a single degree.

> Importance of Experience:

Experience and familiarity is valued not just in the IT industry but also every field. Studying a double degree does not necessarily mean you are more employable than other single degree students. Demonstrating that you are capable in the workplace indicates to employers that you "know what you are doing".



HOW DO I KNOW A DOUBLE DEGREE IS RIGHT FOR ME?



Contrary to expectations, a double degree is not an indication of your abilities. Studying a single degree (IT, CompSci, or otherwise) does not mean you are less skilled or less intelligent than a student who does a dual degree. A double degree is simply an opportunity for students to explore their interests and, amongst many other reasons, provide them some flexibility.

A double degree is an ideal choice for individuals seeking to develop a more rounded skill set, whether for personal enjoyment, academic or professional reasons. A double degree is most valuable when each degree complements the other. For example, a science degree with a specialisation in mathematics paired with a computer science degree can be particularly valuable and appealing to prospective employers. If you are keen on having strong foundations in both theory and practicality, a double degree can be a way to utilise that interest.

If you are struggling to choose between two degrees, enrolling in a double degree program allows you to experience both fields. It is worth noting, as mentioned elsewhere in this guide, that changing courses is a common experience. If you start with a single degree but are considering switching to a double degree, it's beneficial to use electives from the single degree that align with the interest areas of the proposed double degree. If these electives prove engaging and promising, you can later enrol in a double degree program and credit the electives towards the double degree. This means that enrolling in a double degree later on does not result in lost opportunities. At worst, you've simply enjoyed some interesting electives!

HONOURS (& MASTER THESIS)

Honours typically refers to a one-year program undertaken after completing a bachelor's degree. It involves a more in-depth study and often includes a thesis or a research project. Monash University offers a number of Honours programs across different disciplines which includes:

Undergraduate

- > Bachelor of Computer Science (Honours)
- > Bachelor of Computer Science Advanced (Honours) *
- > Bachelor of Science (Honours) in Computational Science
You need to [apply to the Faculty of Science](#) to enrol in this Honours course.
- > Bachelor of Software Engineering (Honours) *
Bachelor of Engineering is automatically under the Honours program

Postgraduate

- > Master of Artificial Intelligence
- > Master of Business Information Systems
- > Master of Data Science
- > Master of Information Technology
- > Master of Cybersecurity

Please note that to be eligible for the postgraduate research stream, students must fulfil a number of requirements. For more information, please refer to [this link](#).

As you would notice, there is a difference between Bachelor of CompSci (Honours) and Bachelor of CompSci Advanced (Honours).

For the **Bachelor of CompSci (Honours)**, you **MUST** complete the standard undergraduate CompSci course before you can apply for an Honours program. To satisfy Monash University's minimum entry requirements, you must successfully complete a Bachelor of CompSci with an "average of at least 70% overall or equivalent qualifications and experience approved by the faculty". Entry can be competitive, hence admission is not guaranteed; the Faculty will consider not just your academic records but also your candidate statement.

Whereas for the **Bachelor of CompSci Advanced (Honours)**, you can be admitted via your ATAR, through course transfer (where your study credits will be used accordingly) or other similar ways. **To put it more simply, consider this degree a completely different one from that of a standard Bachelor of CompSci. It is akin to the Bachelor of Engineering (Honours) (thereby extending to Software Engineering (Honours)) and Bachelor of Laws (Honours).**

HONOURS GRADING SYSTEM (OVERALL)

Code	Grade	WAM
H1	First Class Honours	80+
H2A	Second Class Honours Division A	70 to <80
H2B	Second Class Honours Division B	60 to <70
H3	Third Class Honours <i>Applies only to students who started before 2021</i>	50 to <60
P	Pass <i>Applies only to students who started on or after 1 January 2021</i>	50 to <60

For more information, please refer to this [link](#).



SHOULD YOU DO AN HONOURS PROGRAM?



Honours is quite research-oriented and involves a more academic approach to a subject than a standard degree program. High-achieving students who seek to further develop their knowledge and understanding will undertake research methodology training and carry out independent research under the guidance of a supervisor.

If you are a standard CompSci student, you may apply to complete the program after you finish your bachelor's degree if you are interested in research and enhancing your knowledge. **OR** you may want to work immediately after your degree if research is not for you.

However, you can always do the one-year Honours program later on if you want to further your studies or would like to do research. So **you can finish the standard CompSci degree, work for a few months or year, then apply for the Honours program.**

MAJORS, MINORS & SPECIALISATIONS

You will come across these words quite often throughout your degree. So what are they?

MAJORS	<p>Majors refer to a study in a single discipline (eg. IT) where there is a specially defined set of units — around 48 credit points, with no more than 12 credit points at level 1 and no less than 18 points at level 3 — listed under each area of study (eg. Cybersecurity).</p> <p><i>Please refer to [insert page] for the full list. For more information, please refer to this link.</i></p>
MINORS	<p>A minor consists of 4 units of study (24 credit points). You may pick a minor to broaden your education alongside your major to significantly enhance your knowledge in another area of study. The Faculty of IT offers a wide array of minors.</p> <p><i>Please refer to [insert page] for the full list. For more information, please refer to this link.</i></p>
SPECIALISATIONS	<p>A specialisation refers to a specific set of units that caters to a particular stream of learning. For the Faculty of IT, the Bachelor of Computer Science offers three specialisations you may choose from: Algorithms and Software, Cybersecurity and Data Science.</p> <p><i>Please refer to [insert page] for more explanation on specialisations. For more information, please refer to this link.</i></p>

If you find yourself conflicted when it comes to choosing a major, minor or specialisation, please refer to [insert page].

CREDITING UNITS

If you have experience in a related field or similar study to the course you wish to enrol in, you should consider applying for credit towards your Monash course. Crediting refers to the recognition of previous study or learning that can be counted towards a qualification. Monash can assess a wide range of learning types for equivalency to Monash study which includes formal learning taken through a structured program and work-related, social, family and leisure activities and experiences. Doing this can reduce the number of units required to complete your course of study.

Commencing and current students

If you are Monash University's current student, you may visit this [website](#) to apply for credit transfer for previous study, Recognition of Prior Learning (RPL) or etc.

Ideally, you should apply as early as possible, well before starting your course because it gives you time to change your enrollment if you need to. Applying too late might mean you may not be able to take advantage of credit awarded towards your course.

If you have already enrolled, you can change your enrollment once you have been given credit. However, you can only change enrollment before the [cut-off dates for adding or withdrawing units](#).

Future students

How you are assessed for credit depends on whether you are applying for your course through VTAC or directly to Monash.

For VTAC application, you need to apply for the course you want via VTAC and wait for an offer. To accept your course offer, you need to enrol in first year units before you can change accordingly after applying for credits.

For direct Monash application, you can indicate that you want to be considered for credit in your application. Ensure that you upload supporting documents as evidence of your studies. If you would like credit for work experience, you can apply for a credit assessment once you've received and accepted your course offer.

For more information on crediting units, please visit this [website](#).

MONASH HANDBOOK

Ever wonder how you'll find all your relevant information to set yourself for your first year at Monash University? Meet the Monash Handbook.

The [Monash Handbook](#) is a reference guide that covers all the essential information on various units offered by Monash. It provides details on the course structure, assessment types, prerequisites and other additional information to assist you in identifying and selecting the most appropriate units. Utilise the handbook to explore the units offered throughout the year and start to organise your roadmap to success in your degree!

UNIT CODES

Each unit has a 3 letter prefix, followed by 4 unique combination of numbers (eg. FIT1045: Introduction to Programming). The prefix helps us understand what faculty the unit is under. You may encounter these common faculty abbreviations codes below:

- > FIT - Faculty of IT
- > MTH - Math unit

The numbers after the prefix acts as a unique identifier. The very first number helps students identify the unit level. First-year targeted units are represented with a number 1 for the start of the unit code (FIT1008) whilst the second year and third year units are represented with the number 2 and 3 respectively (FIT2081 or FIT3171).

FIRST YEAR UNITS

“Level-one” or “first-year units” are designed to help students gain confidence and understand the expectations and the university system within the first year. Credit points for these units are slightly reduced (0.5 credit points) as these units are often introductory and foundation units that will provide fundamental knowledge for the years ahead. During the course of your degree, you have the opportunity to fulfil 48 first year credit points or a maximum of 60 credit points of first year.

Overview of common IT first-year units:

FIT1045/FIT1053: Introduction to Programming

- » Fundamental programming language in Python
- » You will be supplied with pre-workshop, applied, workshop and post-workshop activities every week on the Ed Discussion platform
- » You will learn everything from variables, control flows (i.e conditional statements), functions, data structure to create your first python projects
- » Requires no previous coding knowledge but will be a bonus if you do have some!

FIT1047: Introduction to computer system and network security

- » This unit will introduce how computers understand binary code (zeros and ones) from digital circuits using logic gates
- » Introducing low-level programming language in MARIE (Machine Architecture that is Really Intuitive and Easy) to understand how high-level code is translated into machine code
- » Gain an insight on network protocols, communication technology and security measures to protect information transmission over networks

FIT1049: IT professional practice

- » Develop skills related to workplace communication, ethics, teamwork and project management
- » Building bridges between theoretical knowledge gained in academic settings and applying them into real-world scenario

FIT1058

- » This unit has been designed to be the combination of MAT1830 and MTH1841 core units from pre-2025 CS course maps, however with a much larger focus on the MAT1830 discrete maths aspects.
- » This unit focuses on abstractions such as trees, graphs, relations, sequences that are fundamental in developing skills in abstract modelling, logical reasoning, rigorous proof and formal analysis.

COMPUTER SCIENCE ELECTIVES WORTH CONSIDERING:

MTH1035: Techniques for modelling (Advanced)

- » This unit is the advanced version of the level 1 science sequence and introductory mathematics unit, MTH1030: Techniques for Modelling.
- » This unit encourages good problem solving skills and develops an understanding for proofing, compared to similar introductory maths units, such as MAT1830, which varies in topics and techniques substantially every week.
- » If you complete all applied sheets and questions diligently, and learn content through online resources such as Mathologer (<https://www.youtube.com/c/Mathologer>), you should be able to perform exceptionally well in this unit
- » This applies to CS students, for their core unit: FIT2014: Theory of Computation: Completing MTH1035 will prepare you for the abstract thinking and problem solving skills required for FIT2014, more than any other introductory maths unit.

MTH3170: Network mathematics

- » This unit provides an introduction to graph theory, which is the mathematics of networks. If you've never heard of graphs, they are abstract representations of information, and are fundamental to algorithms and data structures.
- » The mathematical lens in which you will study graph theory in this unit will help you develop an incredibly nuanced and rigorous understanding of this fundamental topic
- » Algorithms and problem solving in CS heavily relies on graphs, and understanding the math of more complex graphs can allow you to solve the harder algorithmic problems you will inevitably encounter in job interviews and algorithm units

FIT3139: Computational modelling and simulation

- » "This unit covers the role of computational tools and methods in 21st century science, emphasising modelling and simulation. It introduces a variety of models, providing contrasting studies on: continuous versus discrete models; analytical versus numerical models; deterministic versus stochastic models; and static versus dynamic models. Applications are drawn from disciplines including Physics, Biology, Bioinformatics,

Chemistry and Social Science.” - Monash Handbook (<https://handbook.monash.edu/2020/units/FIT3139>)

- » While the projects associated with this unit are interesting, please note that the workload for final assessments in this unit can become quite substantial

FIT3171/FIT2094: Databases

- » This unit will give you a fundamental understanding of databases and their design, as well as teaching you SQL, Oracle and other technical skills in order to create and implement effective databases.
- » ***If you are considering Industry Based Learning (IBL), you must complete this unit during the summer period in order to avoid having to overload in a semester.***
- » If you are considering Industry Based Learning (IBL), you may be aware that you will have to either overload in a semester, or complete a summer/winter unit in order to complete your degree in time. This is because IBL is worth 3 units worth of credit points, but takes up one full 4-unit semester, leaving one unit less for a semester (You are not allowed to complete any units while on placement). Hence, completing FIT3171/FIT094 over the summer can circumvent this issue of overloading in a semester.

COMPLETING A MATHS MAJOR UNDER CS/MATHS MINOR:

Computer Science degrees in general, and this applies to Australia, lack much computer science theory, and consist plainly of a software engineering degree.

Hence, completing a mathematics minor/major alongside a degree in IT will develop your skills in mathematics more rigorously, and primes you to perform exceptionally well in units that require problem solving skills (i.e. most FIT units).

For example; graph theory units (i.e. MTH3170 - Network Mathematics) help with algorithms regularly and hard problem solving, while algebra units can be used in reasoning and some forms of data theory, Partial Differential Equations and Ordinary Differential Equations for modelling and more.

Furthermore, completing these extra units gives you more tools to build with the code you already are learning, and allows you to coast through more of the mathy/theory content units in FIT (Such as the notorious FIT2004 and FIT3155).

Moreover, it prepares you for a harder workforce, and it is generally appealing to have some mathematics qualifications when applying for jobs in IT. Doing a mathematics major under CS also provides the exact same research pathways as a Maths Major under a Science Degree; hence if you would like to keep an academic path open, completing this major can open more doors in these research/academic pathways.

Listed below are the units required to attain a major/minor:

Mathematics Minor:

- » 2x Level 1 Science Sequence Math units
- » 1x Multivariable Calculus Unit
- » 1x Mathematics elective unit (Linear Algebra, Group Theory, Number Theory, etc...)

Mathematics Major:

- » 2x Level 1 Science Sequence Math units
- » Multivariable Calculus Unit
- » Linear Algebra Unit
- » 4x Mathematics elective unit (Linear Algebra, Group Theory, Number Theory, etc...)

IMPORTANT NOTE:

Contrary to popular belief, it is actually possible to complete a Mathematics major under a Computer Science single degree. You will have to exploit rule 2.13.6 from the [Course Design Procedure](#):

Double counting units towards majors, minors and extended majors

No more than 12 credit points can be credited towards two majors, or a major and a minor, within a course (including a double degree course). The same credit points cannot be credited towards more than one minor. Exceptions can be approved by the dean (or delegate) of the managing faculty. (See 2.12.7 of the [Course Design Procedure](#)).

No more than 12 credit points can be credited towards both a specialisation and a major or minor within a course (including a double degree course). The same credit points cannot be credited towards more than one minor. Exceptions can be approved by the dean (or delegate) of the managing faculty. (see 2.13.6 of the [Course Design Procedure](#)).

- » *If pursuing a mathematics major, you will get no free elective slots. You must complete FIT2014 and MTH3170. Both these units will count as “double credit” as per 2.13.6, i.e. they credit towards both a Mathematics Major (These two units fall under “Mathematics electives” section under the [Mathematics Major handbook](#)-) and Computer Science Single Degree (These two units fall under a core unit: FIT2014, and a Computer Science Level 3 Elective: FIT3170)*
- » *Everyone’s course is different, and completing IBL will disqualify you from completing FIT3170, hence it is always best to contact Monash Connect for any clarification and advice on how best to pursue a Mathematics Major*

COURSE MAP

Your **course map** is a roadmap of the journey you will take in the lead up of your completion of your degree. You have the flexibility to customise your academic experience by determining the unit load for each academic year (either part-time or full-time). Additionally, single-degree students may select elective units from various faculties to enhance their learning experience.

To complete your degree, you will need to complete a total of:

- » **Single degree:** 24 units or 144 credit points*
- » **Double degree:** 28 units or 192 credit points*

*Each unit is worth 6 credit points, unless specified.

To understand your course map, the shaded units signify mandatory courses for your chosen major, while unshaded units are considered “core” units which are the general requirements for all students within a particular faculty.

[Refer to MonPlan to help create your personalised course map – under ‘Surviving University’]

FEELING INDECISIVE?

It’s completely normal in your initial year to be unsure about your preferred major or minor. Take your time and engage with the first-year core units. Since many of these units are core requirements, you’ll have the flexibility to transition within your major if you uncover your true interests later on.