

A group of five students are in a computer lab. Two women are seated at a desk with a computer monitor, looking at the screen and talking. A man is seated next to them, also looking at the screen. Another woman is standing behind them, smiling. A man is seated at a desk in the background, also looking at the screen. The room has large windows with a view of green trees outside.

Computing and Communications
Undergraduate Degrees 2024

Welcome

Imagine possessing the computing skills to bring your creative ideas into a reality, and to literally have the power to transform other people's lives.

Computing and Communications is at the heart of a digital revolution that is touching all aspects of science, healthcare, business, entertainment and society, and Lancaster's set of computing programmes reflect that incredible breadth. Across this landscape our degree programmes cover areas of immense innovation and importance - Computer Science, Software Engineering, Cyber Security, and Data Science. Within these programmes you will see a carefully curated core set of skills across the first two years, alongside a rich pool of module choices in some of today's most exciting topics, from deep learning to computer vision and advanced cyber security.

Our degree programmes will push your ability to solve complex problems, develop your data analysis skills and create safe, secure software and systems that provide new, genuinely valuable technologies to society. A computing degree is so much more than just computing as a technology, which is why we are passionate about helping you discover a fascinating and wide-ranging set of skills to unlock your potential.

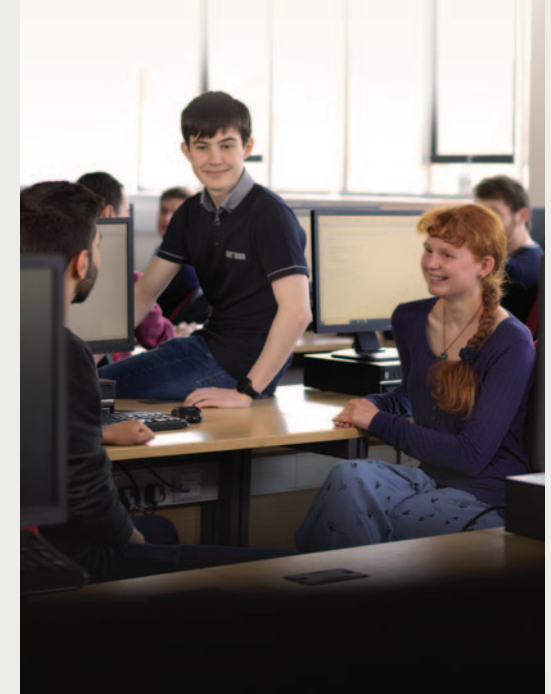
University is so much more than just the academic programme, so we strongly recommend that you visit us or join one of our digital events to find out why we believe Lancaster is a great place to study!



Professor Nigel Davies
Head of School

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Disclaimer

The information in this brochure relates primarily to 2024/25 entry to the University and every effort has been taken to ensure the information is correct at the time of printing in June 2023. The University will use all reasonable effort to deliver the course as described but the University reserves the right to make changes after going to print. You are advised to consult our website at lancaster.ac.uk/study for up-to-date information before you submit your application.

Please see lancaster.ac.uk/compliance/legalnotice for further information.

A place for the innovator

At no point in history has computing and communications been more central to innovation.

In 2020 the world suddenly changed, and with it, our reliance on computers increased exponentially. Software kept us connected at a time when we couldn't see friends or family. Data science kept us safe as the pandemic numbers grew and fell. Computer games kept us entertained when we couldn't go out. Cyber security experts worked to protect systems we depended on more and more. From our own planet, software landed a new Rover on Mars. It's safe to say the last few years would have been very different without the work of computer scientists.

As a computing graduate you'll be in high demand across a wide range of industries. Technology is constantly evolving and your degree will help to prepare you for future roles that don't even exist yet. It's a really exciting time to be a computer scientist!

Alongside your academic studies at Lancaster you will have the opportunity to enhance your CV through internships and placements throughout your degree. Dedicated staff match you with businesses for placements and internships, or even help you start your own business!

InfoLab21 houses our School of Computing and Communications, and is the region's leading centre for ICT research and commercial innovation, collaborating with companies such as Google, BBC, Samsung and Microsoft.



Your learning, your course

You'll be learning on a balanced programme which combines deeper theory with plenty of hands on experience. This blend equips you for a highly dynamic workplace and ensures immediate value to you and employers on graduation, as well as a lasting foundation for the future.

We want you to understand computing, from where it's been, to where it's going, why it matters and how it can help with all sorts of real-world problems. Our courses take you from programming, analysis and computational thinking, through system architecture, networking, graphics, extended reality, human interface and interaction design, artificial intelligence and cyber-security, sustainable computing, digital health, and beyond, to creating robust, secure, useable software to meet real people's needs.



A future for Sophia

“

Before joining Lancaster University I was, unfortunately, unable to attend any open days due to the travelling distance. Instead, I made use of the virtual channels available to me so I could communicate with the University and current students. The Unibuddy platform was particularly helpful in allowing me to engage with students on the course, and their insights and experiences played a pivotal role in solidifying my choice. Unlike other universities I applied to, Lancaster was proactive in following up on my mention of having a DSA (Disabled Students' Allowance) and expressed a genuine interest in supporting me. This gesture made me feel seen and assured in their commitment to student wellbeing.

I had very little experience with computer science prior to starting the course which was something I was worried about. However, right off the bat, the lecturers made it known that the degree is taught assuming that students harboured no knowledge about computer science which was reassuring. This also does not come as a disadvantage to more experienced students as there are always "extra credit" tasks in any assessed work to allow students to go beyond the required coursework and ensure that they are challenged.

One of my favourite and most valuable, modules was the second-year Group Project module. This large-scale, long-term project provided me with a wealth of useful skills applicable to working life and programming in group settings. While we were taught Git in first year, I believe we really put that knowledge into practice in this module. I gained both technical and interpersonal skills such as organising and managing the Github repository, accommodating different abilities, fostering inclusivity within the group, and addressing conflicts. Operating in a group dynamic can be difficult but the experience as a whole was so rewarding, especially witnessing the final developed product up and running.

While computer science is often associated with video game development, complex algorithms, and programming, this degree has expanded my understanding of its diverse applications. I delved into topics such as distributed systems, databases, computer networks, languages and compilation, which broadened my perspective on programming. Furthermore, the inclusion of ethical discussions and teachings surrounding computer science topics in certain modules stimulated engaging debates among students and has massively enhanced my understanding of those topics.

By exploring a broad spectrum of areas in computer science, this course has provided me with the necessary foundation to excel in my future endeavours. Further, it has helped me discover and identify my areas of interest and preference of things I would love to pursue as a career. While I was in my first term of my third year, I undertook the job of searching process for graduate schemes. Fortunately, I was accepted as an incoming Junior Software Engineer at a rapidly evolving technology company based in London. I am excited to be starting a new chapter after I graduate knowing that my experiences at Lancaster have played a crucial role in helping me achieve this milestone.

”

Sophia Quesada



3rd Year BSc Computer Science



Somewhere to be involved!

Computer Science Society

We work closely with the School to provide exciting opportunities for you to engage with alongside your degree. We facilitate talks from industry, guest lectures, career development opportunities and more! Join us and get involved in a range of projects, from the small and simple to the long-term and ambitious. You can even get funding for your own idea if you have one! All students benefit from our peer-led support sessions for your academic studies, ranging from workshops to lectures.

Women++@InfoLab

Women++@InfoLab supports marginalised groups of staff and students within the School Of Computing and Communications. There are opportunities to meet up, as well as networking lunches, talks from industry representatives and academics, and workshops. This year we hosted the annual British Computing Society Lovelace Colloquium, and many of our undergraduates had the opportunity to present posters.

LUHack

Founded in 2014, the Lancaster University Ethical Hacking Group (LUHack) is a group of individuals who meet weekly to learn and practise ethical hacking in a safe (and legal!) environment. Anyone can learn the basics of hacking in the first semester before moving onto advanced topics and regularly attending conferences and competing in Capture the Flag competitions.



New experiences for Luke

“

I admit, I had never been to Lancaster before applying due to a very last-minute application, however to this day, I consider it one of the best decisions I was ever lucky enough to make. Lancaster has an incredible campus and atmosphere that genuinely makes it feel more like a community than a university, and it is one I felt welcomed into from my very first day.

The opportunities provided by different societies on campus alone makes it an incredible experience. While at Lancaster I have been able to do things like get involved with the LGBTQ+ community on campus (including getting to run the University's Instagram story at pride last year) and also take up fencing, a sport that I have enjoyed throughout my time at Lancaster. The University has so many opportunities to not only develop your academic skills, such as the Computer Science Society or Ethical Hacking Society, but also the opportunities to develop other interests. Whether it is sports, activism or even baking, Lancaster has a group and a community just waiting to welcome you. And with such a great campus with plenty of facilities and open space, the opportunities are purely limited by if someone has had the idea yet.

However, even with all these incredible opportunities, one of the most welcoming environments at Lancaster has undoubtedly been my department. As a student with ADHD and Autism, I have always felt supported by the

department who do everything they can to help students with disabilities get the most out of their time at university and encouraging them to take part in extra opportunities. One of the ways they do this is by always looking for feedback on how to make things better by talking to students and involving them in the process to ensure everyone gets heard. Things like the academic rep scheme, or the departments Equality Diversity and Inclusivity committee are just some of the ways the staff work to ensure students are given opportunities to make their voices heard by the department.

My course hasn't always been easy as I had not done computer science at college, but the academics who teach us soon changed that. The support they provide and enthusiasm they have for their subjects helped to provide insight and inspiration to help me now really love my subject. My department and the University has helped me grow in ways I never could have even imagined!

”

Luke Halpin



PhD student
BSc Software Engineering Graduate



Lancaster Success Programme

The Lancaster Success Programme (LSP) is designed to support students from backgrounds that are traditionally underrepresented at university, who may not always be aware of the breadth of support and opportunities available to them.

Eligible applicants will be invited to join the scheme in the summer prior to starting university and are offered a programme of activities to enable them to thrive during their studies and successfully progress into graduate employment or postgraduate study. More information can be found at: www.lancaster.ac.uk/student-success



For more information please visit lancaster.ac.uk/scc



Support every step of the way

There's a whole host of different types of support available to you when you come to university, whether it's helping you settle into your new accommodation by talking to your College Advisory Team, or getting some help with your course by coming to one of the School's weekly drop in sessions run by our Senior Teaching Associates.

You'll meet your Academic Advisor in your first week of university, and they will be here to help you with any course issues or queries you may have.

Our Computer Science Society also provides peer-led support sessions and weekly internet cafes.

A home away from home for **Frolynnne**

“

I have had a wonderful three years studying Computer Science at Lancaster University, I've liked it so much I decided to stay for another year! The department has been great at offering support for the years of study I have completed so far. My first year at Lancaster was all done online due to COVID-19, however I still managed to get the most out of my degree by engaging with the content and the practical sessions available to me where I was really able to test my skills. For my second and third year I studied a large range of topics from ethics to advanced programming which I wasn't expecting but it's been great, every module offers something different but of equal value to the rest. Being able to engage with other Computer Science students has been great, I've made a lot of friends on the course which has made the experience even better. It's really nice having other people relate to me academically. I am really looking forward to my fourth year at Lancaster!

I engaged myself a lot with societies and I joined a few that really interested me. I became a part of the Taylor Swift society and the Filipino society; it has really helped me branch out and make more friends! I was worried before coming to university that I wouldn't find any societies that I was interested in, but that has not been the case at Lancaster, they really do have a society for everyone!

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Lancaster also has a great system called ERS for helping students find flexible part-time jobs and internships whilst they study. I've definitely taken advantage of this resource and it's been really great; I have time to study and to gain more work experience without feeling overwhelmed!

I instantly felt at home when I moved to Lancaster, and even though I live in the city now, I really loved living on campus in my first year! I loved the accommodation it was so comfortable; I still miss my first-year bedroom sometimes! I felt very safe on campus because there were always people walking around, at all hours of the day.

Frolynnne Salido



3rd Year BSc Computer Science

Degree schemes



BSc Hons Computer Science G400

You will obtain a broad yet rigorous grounding in this innovative discipline, with a strong emphasis on experimental computer science.

In the first year, you will receive a comprehensive understanding of the fundamental principles of the discipline, combined with their modern day application.

Throughout your study, you will gain skills and experience from a range of modules, and you'll be taught from all five main themes of computer science, studying topics such as Software Development, Data Engineering, Secure Cyber Systems, and Professionalism in Practice. Taking a practical approach to learning, you are encouraged to build and analyse systems and software, as well as work with end user feedback to refine and adapt solutions.

After gaining an overview of the subject in the first year, you will be motivated by topics that become progressively deeper and more specialised as your skills develop throughout second and third year. From term two in your second year, most of your modules become optional choices, allowing you to tailor your studies to your own interests and future career aims. These include modules such as Concurrent and Parallel Systems, Sustainable Computing, Deep Learning, Embedded Systems, and Secure Artificial Intelligence.

Your final year gives you the opportunity to explore a range of well-constructed and enriching modules, as well as undertaking an individual project with one of our academics, allowing you to use and further develop the skills acquired throughout your degree.

As well as these options, you will undertake a dedicated group project in second year and an individual project with one of our academics in your final year. These allow you to use and further develop the skills acquired throughout your degree and demonstrate your ability to work on real-world tasks for post-graduation employment.

MSci Computer Science G404

Your first three years will be spent alongside your companions on the BSc, but as they graduate, you'll be preparing for your fourth year, where you'll be studying Master's-level modules, and undertaking an industry placement, giving you an advantage in the global job market.

Your modules will include Research Methods and Innovation, to teach the more advanced skills expected of Master's students in your future research or industry destinations, and for your placement we will set you up with a partner organisation or research group, which fits your skill set and builds on your existing knowledge.

Our degrees are built from a range of modules encompassing five main themes of computer science

Software covering programming languages and how to make software

Data and Algorithms covering the theoretical foundations of computer science, data engineering, and different types of artificial intelligence

Systems covering how software and hardware interact within computers and across networks

Interactions and Implications covering professionalism, ethics, computing's impact on the world, and how people interact with computer systems

Cyber Security covering the theory and techniques to identify and protect physical, software, and AI systems

Can't decide whether to apply for the BSc or MSci?

That's fine! You can use just one of your UCAS choices - those students who do not achieve their conditional offer for the MSci will automatically be offered a place on the BSc, providing these entry criteria have been met (see page 24). You can also change when you get here from one to the other anytime through to Easter of your 3rd year, providing you are achieving the minimum required grades as you go along.

Can't decide which degree scheme to apply for?

That's fine! Our Computer Science, Software Engineering, Cyber Security, and Data Science* degree schemes all have a common first year to provide the broad foundation that any computing professional should know. This means you can switch to a different scheme during first year!

*Switching to Data Science requires having taken a Mathematics & Statistics minor option during first year.



BSc Hons Software Engineering G602

Your first year will provide you with the fundamentals of computer science, software development, professionalism, and digital systems, allowing you to gain the essential knowledge needed for analysis and design. In addition to developing your foundational understanding, programming, and software design skills, you will explore social, ethical and professional issues related to the discipline, which will allow you to develop the working knowledge and skills to overcome the challenges of designing, developing and evaluating real-world software systems.

Your second and third years offer advanced topics including Algorithm, Operating Systems, Computer Graphics, Deep Learning, and Advanced Networking. You will also undertake a variety of software engineering specific design studio modules, ensuring you gain a broad and robust level of skills and experience in team-based software development. These projects will also develop your data analysis, graphical, report writing and presentation skills.

MSci Hons Software Engineering G601

Your first three years will be spent alongside your companions on the BSc, but as they graduate, you'll be preparing for your fourth year, where you'll be studying Master's-level modules, and undertaking an industry placement, giving you an advantage in the global job market. For your placement we will set you up with a partner organisation or research group, which fits your skill set and builds on your existing knowledge.





BSc Hons Cyber Security

The importance of Cyber Security is widely recognised in modern society. Skilled experts are in high demand, and as a NCSC recognised Academic Centre of Excellence in Cyber Security Research and in Cyber Security Education, we have extensive expertise in the field.

If you're an aspiring cyber security systems engineer or architect looking to exploit the latest cutting-edge cyber security research to build modern, resilient and secure computing platforms then this is the degree designed for you.

As with our other degrees, in your first year you will receive a comprehensive grounding in computer science and cyber security fundamentals covering both theory and practice.

In your second and third years you will begin to specialise in areas that inspire you. You will choose six focused cyber security modules from topics that include Security and Penetration Testing, Digital Forensics, Cryptography, Network Security and Resilient Distributed Systems. You will begin to design software and systems solutions to specific problems using appropriate methodologies and tools, and demonstrate, analyse and design different approaches to undermine security and recover from security failures in modern systems based on an understanding of attackers.

This programme also includes advanced and emergent cyber security fields that draw on the expertise of our world-class research academics such as Security of Autonomous Systems, Secure AI, Secure Cyber Physical Systems and Security Metrics.

Practical sessions are supported by a 'dynamic lab' where members of staff and teaching assistants are available in-lab during the majority of the week to provide assistance with module content as required. This will support you in addressing small problems quickly and help your understanding.

Excitingly, the North West is receiving extensive, large scale national cyber security investment from GCHQ and NCF which will create around 5000 job opportunities. The University is building effective partnerships with these organisations who will inform this programme.

MSci Hons Cyber Security

Your first three years will be spent alongside your companions on the BSc, but as they graduate, you'll be preparing for your fourth year, where you'll be studying Master's-level modules, and undertaking an industry placement, giving you an advantage in the global job market. For your placement we will set you up with a partner organisation or research group, which fits your skill set and builds on your existing knowledge.





BSc Hons Data Science

Data science plays a vital role in all aspects of the modern world. Our BSc programme will ensure you have a strong foundation in this rapidly expanding, highly in-demand field. You will gain cutting-edge knowledge and skills through state-of-the-art equipment and excellent teaching offered by both the School of Computing and Communications and the Department of Mathematics and Statistics, delivered by academics who are leaders in their field.

In your first year, you will receive a comprehensive grounding in the theory and practical skills of computer science and gain an understanding of mathematical methods and concepts. You will also enhance your data analysis, problem-solving and quantitative reasoning skills.

In the second and third year, our academic experts will teach the significant contemporary developments in research, practice, and technology. This means you will further deepen your knowledge in linear algebra, probability and statistics, as well as computer science modules in our *Software* and *Data and Algorithm* themes. You will also take part in interesting group and individual projects designed for data scientists.

Your final year will also give you the opportunity to specialise in a range of enriching research-informed optional modules, as well as undertaking a substantial data science individual project. This will be great experience for you to draw upon in an interview and in your career.

Importantly, you will learn to recognise and apply the legal, social, ethical, and professional codes of conduct relevant to a practicing computing professional, including equality, diversity, inclusion, and sustainability principles.

MSci Hons Data Science

Your first three years will be spent alongside your companions on the BSc, but as they graduate, you'll be preparing for your fourth year, where you'll be studying Master's-level modules, and undertaking an industry placement, giving you an advantage in the global job market. For your placement we will set you up with a partner organisation or research group, which fits your skill set and builds on your existing knowledge.



Entry requirements

All our courses require GCSE Grade B/6 in Mathematics and GCSE Grade C/4 in English

Students applying with an A level in Computing or Mathematics will be considered to receive a lower offer.

	A levels	International Baccalaureate	BTEC	Combined BTEC and A levels **
G400 BSc Hons Computer Science	AAB	35 points, with 16 from best three HL courses	DDD	DDB / DAB
G404 MSci Hons Computer Science (With Industrial Experience)	AAA	36 points, with 16 from best three HL courses	DDD	DDA / DAA
G402 BSc Hons Computer Science (Study Abroad) *	AAA	36 points, with 16 from best three HL courses	DDD	DDA / DAA
I900 BSc Hons Cyber Security	AAB	35 points, with 16 from best three HL courses	DDD	DDB / DAB
I902 MSci Hons Cyber Security (with Industrial Experience)	AAA	36 points, with 16 from best three HL courses	DDD	DDA / DAA
I901 BSc Hons Cyber Security (Study Abroad)*	AAA	36 points, with 16 from best three HL courses	DDD	DDA / DAA
G900 BSc Hons Data Science	AAB †	35 points, with 16 from best three HL courses	Considered alongside A level Mathematics	DDA/DAB †
G903 MSci Hons Data Science (with Industrial Experience)	AAA †	36 points, with 16 from best three HL courses	Considered alongside A level Mathematics	DDA / DAA †
G902 BSc Hons Data Science (Study Abroad) *	AAA †	36 points, with 16 from best three HL courses	Considered alongside A level Mathematics	DDA / DAA †
G901 BSc Hons Data Science (Placement Year)	AAA †	36 points, with 16 from best three HL courses	Considered alongside A level Mathematics	DDA / DAA †
G602 BSc Hons Software Engineering	AAB	35 points, with 16 from best three HL courses	DDD	DDB / DAB
G601 MSci Hons Software Engineering (With Industrial Experience)	AAA	35 points, with 16 from best three HL courses	DDD	DDA / DAB
G603 BSc Hons Software Engineering (Study Abroad) *	AAA	36 points, with 16 from best three HL courses	DDD	DDA / DAA

*Our Study Abroad courses require an A level in either Computing or Mathematics (or Grade 6 HL in either subject for IB)

** Combination should be either a BTEC Diploma with 1 A level, or a BTEC Subsidiary Diploma/ Extended Certificate with 2 A levels

† Including Mathematics or Further Mathematics grade A



For those with multiple passions

Our combined honours degrees are ideal for those of you who like to have a few varied projects on the go at once. You can study modules from two different departments, allowing you to study where your interests lie.

BSc/MSci Hons Computer Science and Mathematics

AAA

You'll be studying modules from two of the country's leading research and teaching specialists in computer science and mathematics – learning about computing fundamentals like languages, logic, and software engineering; whilst building your pure mathematics knowledge with algebra and analysis.

MSci students will write an additional dissertation in fourth year, under the supervision of an academic from one of the two departments. You'll be proficient to Master's-level in mathematics, computing, research methods and professional skills.

BSc Hons French/German/Spanish Studies and Computing

AAB

You'll be studying between the Department of European Languages and Culture, and the School of Computing and Communications.

Your third year will be spent living in the country whose language you've been studying, either working in a placement, or studying at a partner institution, immersing yourself in their culture, and progressing your language skills.

BSc Hons Management and Information Technology

AAB

Lancaster's Management and Information Technology (MIT) degree has been created in partnership with business professionals to give you the ability to apply IT to business situations, evaluate technical knowledge and confidently take on project and team management in IT-related business scenarios.

You will gain a sound academic basis in management, with an understanding of the concepts, debates and issues in the areas of:

- + Change Management
- + Project Management
- + Information Technology Management
- + Information Systems Development

Accredited as a Tech Industry Gold Degree, this course helps you to stand out in the job market and opens up careers with any of our sponsor organisations.

If you're not sure about doing a combined degree, don't forget that you get the chance to do a Minor subject in your first year of most degrees at Lancaster University too!



Computing and Communications

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2064124
Carbon Captured Material

Printed on FSC paper
using vegetable based inks

