

cyberdiscovery

cyberstart *elite*

Welcome Pack

Cyber Discovery Elite Camp
Lancaster
29th July – 3rd August 2019



HM Government



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Introduction

Congratulations on earning your place and welcome to the Cyber Discovery Elite camp! Your hard work, dedication, and enthusiasm have paid off. Out of the 28,000+ students who started the programme, you are one of the few who have made it all the way to CyberStart Elite.

We've worked hard to create a fun, educational event that will broaden your cyber security skills and experience. By the end of the camp, we hope you'll feel ready to tackle your next challenge, whether that's taking on further study or stepping into the workplace.

We encourage you to work together, share ideas, ask questions, and most importantly have a great time.

Congratulations once again on a fantastic achievement!

The Cyber Discovery Team



Welcome from Agent J

You've made it all the way to Elite! Congratulations. That's a serious achievement that you should be immensely proud of. Cyber Discovery exists to uncover the talents of people like you. You've shown the skills, knowledge, aptitude, and determination that the cyber security industry needs. Every challenge that you've powered through, struggled over, and ultimately completed has brought you here. We're thrilled to have you on board.

Take the time to get to know your fellow Elite students. You never know who might one day be a big name in the industry – this is your chance to network, make friends, and pave the way for your future. You're now training with the best of the best, so make the most of it.

Stay ethical

Throughout the Cyber Discovery programme, you've gained some serious technical skills. These skills can be used for good or evil.

This is a reminder to stay ethical. The line between lawful and unlawful practice in cyber security is very easy to cross. Especially when you're testing your new skills in the real world. During Elite, you're going to be able to flex your new skills even further. But don't forget that you have been taught these to protect against crime, not to perform it. Otherwise, you might find yourself in a situation you can't hack your way out of.

This is the beginning of an awesome journey that we hope will result in you forming new friendships, gaining opportunities, and developing new skills. Cyber security is an incredibly exciting discipline to learn and it can offer you a range of fantastic career paths. We're here to support your success and can't wait to see what you go on to do in the future.

Go forth and Discover!

James Lyne





“Congratulations on making it to the Elite phase
of Cyber Discovery 2019!

Your hard work has made you one of the top performers in the programme, which is a tremendous achievement. We want to inspire the cyber security talent of tomorrow, and you have shown us that you could have what it takes to become an excellent cyber security professional. At the Elite Camp you will be faced with challenging and stretching exercises so you can continue your journey and develop your cyber security skills even further.”

**Yasmin Brooks, Director of Cyber Security and
Data Policy at the Department for Digital,
Culture, Media and Sport**

Schedule

MONDAY

Time	Activity
08:00 – 09:30	Arrival and Registration
09:30 – 10:00	Welcome; Staff and student introductions; Aims and objectives of the camp; Safeguarding Brief
10:00 – 11:30	Classroom Session
11:30 – 11:50	Break
11:50 – 13:20	Classroom Session
13:20 – 14:20	Lunch
14:20 – 15:50	Classroom Session
15:50 – 16:10	Break
16:10 – 17:40	Classroom Session
17:40 – 17:45	Safeguarding Briefing
17:45 – 18:00	Walk to Accommodation Block
18:00 – 18:30	Check in to Accommodation
18:30 – 19:30	Evening Activity – Career Hacking Session
19:30 – 20:30	Dinner
20:30 – 22:00	Free Time
22:00 – 22:30	All to rooms
22:30	Lights Out



Schedule

TUESDAY

Time	Activity
07:30 – 08:30	Breakfast
08:45 – 09:00	Safeguarding Brief & Recap of previous day
09:00 – 11:00	Classroom Session
11:00 – 11:20	Break
11:20 – 13:20	Classroom Session
13:20 – 14:20	Lunch
14:20 – 15:50	Classroom Session
15:50 – 16:10	Break
16:10 – 17:40	Classroom Session
17:40 – 17:45	Safeguarding Briefing
18:00 – 18:30	Free Time
18:30 – 19:30	Dinner
19:30 – 21:00	Evening Activity – Social
21:00 – 22:00	Free Time
22:00 – 22:30	All to rooms
22:30	Lights Out

Schedule

WEDNESDAY

Time	Activity
07:30 – 08:30	Breakfast
08:45 – 09:00	Safeguarding Brief & Recap of previous day
09:00 – 11:00	Classroom Session
11:00 – 11:20	Break
11:20 – 13:20	Classroom Session
13:20 – 14:20	Lunch
14:20 – 15:50	Classroom Session
15:50 – 16:10	Break
16:10 – 17:40	Classroom Session
17:40 – 17:45	Safeguarding Brief
18:15 – 19:15	Evening Activity – Industry Panel
19:15 – 20:15	Dinner
20:15 – 22:00	Free Time
22:00 – 22:30	All to rooms
22:30	Lights Out

Schedule

THURSDAY

Time	Activity
07:30 – 08:30	Breakfast
08:45 – 09:00	Safeguarding Brief & Recap of previous day
09:00 – 11:00	Classroom Session
11:00 – 11:20	Break
11:20 – 13:20	Classroom Session
13:20 – 14:20	Lunch
14:20 – 15:50	Classroom Session
15:50 – 16:10	Break
16:10 – 17:40	Classroom Session
17:40 – 17:45	Safeguarding Brief
18:15 – 19:15	Evening Activity – A day in the Life of a Cyber Security Practitioner – NCC
19:15 – 20:15	Dinner
20:15 – 22:00	Free Time
22:00 – 22:30	All to rooms
22:30	Lights Out

Schedule

FRIDAY

Time	Activity
07:45 – 08:30	Breakfast
08:45 – 09:00	Safeguarding Brief & Recap of previous day
09:00 – 11:00	Classroom Session
11:00 – 11:20	Break
11:20 – 13:20	Classroom Session
13:20 – 14:20	Lunch
14:20 – 15:50	Classroom Session
15:50 – 16:10	Break
16:10 – 17:40	Classroom Session
17:40 – 17:45	Safeguarding Brief
18:15 – 19:15	Evening Activity – Social / Free Time
19:15 – 20:15	Dinner
20:15 – 22:00	Free Time
22:00 – 22:30	All to rooms
22:30	Lights Out

Schedule

SATURDAY

Time	Activity
07:45 – 08:30	Breakfast
08:30 – 08:45	Check out of accommodation
09:00 – 09:15	Safeguarding Brief & Recap of previous day
09:15 – 11:00	Classroom Session
11:00 – 11:20	Break
11:20 – 13:20	Classroom Session
13:20 – 14:20	Lunch
14:20 – 15:50	Classroom Session
15:50 – 16:10	Break
16:10 – 17:00	Classroom Session
17:00 – 17:15	Certificates and Feedback, Goodbyes and Closes
17:15 – 17:30	Depart from Camp / Collected by parents



ELITE CAMP TRAINING

SANS Course information

SEC504: Hacker Tools, Techniques, Exploits, and Incident Handling

Learn how to turn the tables on computer hackers! In this course, you'll discover how to understand attackers' tactics and strategies in detail and gain hands-on experience finding security vulnerabilities and intrusions. Plus, you'll be equipped with a comprehensive incident handling plan. Learn about the latest cutting-edge insidious attack vectors, the "oldie-but-goodie" attacks that are still prevalent, and everything in between.

Learning Objectives

- How to best prepare for an eventual breach
- The step-by-step approach used by many computer attackers
- Proactive and reactive defences for each stage of a computer attack
- How to identify active attacks and compromises
- The latest computer attack vectors and how you can stop them
- How to properly contain attacks
- How to ensure that attackers do not return
- How to recover from computer attacks and restore systems for business
- How to understand and use hacking tools and techniques
- Strategies and tools for detecting each type of attack
- Attacks and defences for Windows, UNIX, switches, routers, and other systems

- Application-level vulnerabilities, attacks, and defences
- How to develop an incident handling process and prepare a team for battle
- Legal issues in incident handling

Training Outcomes

- Memory analysis
- Metasploit attack and detect
- Nmap and Nessus
- SQL Injection
- Cross-Site Scripting
- Covert channel analysis
- Detecting an insider with built-in Windows commands
- Windows Command Line Kung-fu
- Working with backdoors
- Detecting Denial-of-Service attacks
- Shell history analysis
- Linux attack detection
- Full day Capture the Flag event



FINAL DAY ACTIVITY

Over the years, the security industry has become smarter and more effective in stopping hackers. Unfortunately, hacker tools are becoming smarter and more complex too. One of the most effective methods to stop the enemy is to actually test the environment with the same tools and tactics an attacker might use against you.

This workshop lets you put what you have learned over the past week into practice. You will be connected to one of the most hostile networks on earth. This network simulates the Internet and allows you to try actual attacks against live machines and learn how to protect against these attacks. The workshop will supplement the classroom training that you have already received and will give you flight time with the attack tools to better understand how they work.

The instructor will provide guidance on exactly what is happening as exploits and defensive measures are running. As you work on various exploits and master them, the environment will become increasingly difficult, so you will have to master additional skills in order to successfully complete the exercises.

Additionally, you can participate in the workshop's Capture-the-Flag event. By penetrating systems, discovering subtle flaws, and using puzzle-solving techniques, you can test the skills you have built over the week in this engaging contest. The Capture-the-Flag victors will win the coveted SEC504 challenge coin.



The background is a solid dark red color. It features several abstract geometric elements: thin, light red lines forming various rectangular and parallelogram shapes, some of which are nested or overlapping. There are also small clusters of light red dots, arranged in vertical columns or small groups, scattered across the page. The overall aesthetic is modern and tech-oriented.

INSTRUCTOR BIO

Christian Nicholson

Currently Christian holds 5 GIAC certifications and is also an active member of the SANS community, assisting in question writing and course audits for the SANS OnDemand courses for the last few years. He is also an active member in the wider security community, participating and assisting in the running and organisation of many security conferences and events.

Christian has presented and been a participant at Blackhat, Defcon, MPOWER, RSA, Pacific Hackers Conference, Anycon, and was offered a position to keynote at RFUN; a threat intelligence conference run by Recorded Future. Christian has also presented on behalf of himself and KPMG at a variety of schools and charity events to help promote cyber security and protect against cyber bullying.



EVENING ACTIVITY AND SPEAKERS' BIOS

MONDAY

Career Hacking Session

How to create a great impression, interview tips & tricks and how to get experience for your portfolio. Advice given by Outsource UK, CERIS Approved Cyber Recruitment Agency.

Rosie Anderson
Cyber Manager
Outsource UK

Rosie manages the Cyber Recruitment Team for Outsource UK, and with her team is responsible for matching the best security talent with critical and often challenging projects and roles. Rosie builds relationships for life, becoming a true recruitment partner, and can advise clients and candidates on a true picture of the cyber market, in terms of the talent and skills available, and what great opportunities are out there.

Rosie is also part of Outsource's Diversity Matters team, helping to raise awareness of tech careers, particularly cyber. As well as involvement in STEM Outreach with RMA Sandhurst, she has helped businesses with both women in cyber, and military hiring schemes. Rosie began her 15-year recruitment career working for Omnium IT Recruitment, acquired by Outsource in 2011. Rosie is a working mum and is passionate about helping businesses achieve truly inclusive working practices, that help both candidates and clients, and make a difference to the cyber skills shortage.

TUESDAY

Social Evening

Relax and enjoy socialising with your fellow Elite students. You will also have the opportunity to play with classic consoles such as Nintendo 64, PS1, Sega MegaDrive and the Atari 2600, or the latest PSVR + PS4, NES Mini and SNES Mini.

WEDNESDAY Industry Panel

Discussion: Cyber Career Pathways

Hear from industry professionals about their own pathway into the cyber profession and delve into the potential opportunities available to you! Take the chance to ask questions about why they chose the career they have, or what their typical roles from day-to-day entail. The panel will include:

NCSC

You have shown elite ability and aptitude in cyber but maybe you don't know where to start with choosing what to do in the future? Hear from a government expert who will help you understand where your skills fit into the jobs of tomorrow!

This can cover the type of people who would make good ethical hackers, forensic analysts, or would be suited to working in investigations. Hear about bursaries, apprenticeships and clubs in this session, and how the skills you develop now will strengthen your experience for your future career.

Richard Jones

PwC

Richard is a Cyber Security Manager at PwC, based in Leeds. Richard has worked with clients in a number of sectors, and recently worked as a temporary CISO at a challenger bank, helping them to improve their cyber security controls. Prior to PwC, he worked at the National Crime Agency (NCA), managing international operations to deter and disrupt cyber criminals, and he even appeared on the BBC One Show. Richard has a particular interest in understanding cyber criminal behaviour and motivations.

Ben Kelly

NCCU

Ben is part of the NCCU's (National Cyber Crime Unit) Prevent team within the National Crime Agency (NCA). The NCA deals with serious and organised crime across the UK, also working with international partners to lower the threat to the UK. Ben has now been at the NCA for just over a year, having been recruited from university as an intern into the NCCU. Ben's role within the Prevent team is to create and develop ways of diverting, deterring, degrading and disrupting cyber dependent criminality. Ben works with both national and international partners to develop new initiatives to deliver the NCCU Prevent objectives around cyber dependent crime. Ben has also spent time on the NCCU Tactical Partnerships team and working directly for the Deputy Director of the NCCU.

Lee Cramp

Red Cross

Lee is passionate about ensuring security and data services allow the user to do what they need to do. Lee is Head of Information Security for the British Red Cross. From his first job as a paper boy, Lee has worked across multiple industries undertaking various roles before moving into the rock-and-roll world of data and security. With over 20 years of leadership experience at board and operational level across a range of disciplines, Lee has led generic and specific skill teams, including Information Security, Governance, Technology, Audit and Legal enforcement delivering innovative user centric services. His expertise includes the planning, integration, installation and maintenance of end-to-end data and security solutions in line with common frameworks such as PCI-DSS, ISO27001, GDPR, DPA 2018, NIST and CNI. In his spare time, he's an endurance athlete! And his mantra is: *You can quit, no one will care, but you will know for the rest of your life!*

Vasileios Giotsas

Lancaster University

Vasileios is a Lecturer at the Computer and Communications department of Lancaster University since 2018. Previously, he worked as research scientist at the Internet Measurement and Analysis group of Technischen Universität Berlin (2017), and as a postdoctoral researcher at CAIDA (Center of Advanced Internet Data Analysis) at the University of California San Diego (2013 – 2017). He has led the work of multiple mission-critical research projects funded by the US Department of Homeland Security (DHS), and the Space and

Naval Warfare Systems Command (SPAWAR), through which he developed expertise in the operational aspects of risk assessment and mitigation for national cyber-defence and security. Vasileios has served as organiser and reviewer for top-tier networking conferences and journals. He has contributed multiple open-source tools and publicly accessible datasets for the collection and analysis of routing data and security incidents, which are being used by over 100 companies and research groups around the world.

THURSDAY

A Day in the Life of a Cyber Security Practitioner – NCC Group

Spend an evening learning about the day-to-day working life of an experienced cyber security professional at NCC Group – a global expert in cyber security and risk mitigation. This session will allow you to ask questions and delve deeper into what it is really like to work within the cyber security profession and explore what this could look like for you!

Jonathan Lindsay

Jonathan is an experienced security consultant at NCC Group, who has spent the majority of his 15 year career working within the cybersecurity industry. His strong drive to understand how things work has powered his analysis of a wide variety of technologies, including metamorphic kernel-mode rootkits, a crypto-currency exchange, a containerization system, femtocell firmware, a biometric identification system, and an entire JavaScript engine.

When not breaking clients' products, he works on training and education, particularly alternative ways to teach source code review. Jonathan has also taken significant time away from work to travel, and to study statistical modelling as applied to ecological problems such as the effect of fire on herbivore movement in the Serengeti ecosystem.

FRIDAY

Social Evening

Enjoy some free time on your final evening at the Elite Camp. The Cyber Discovery team will provide a variety of activities for you to take part in if you still have the energy, or simply relax and enjoy a movie.



GIAC Exams

You will be given the opportunity to sit a GIAC exam after the camp. GIAC certifications provide the highest and most rigorous assurance of cyber security knowledge and skill available to industry, government, and military clients across the world.

You can choose to take your exam at any one of the following locations:

Birmingham

Thursday 5th September 2019

Lancaster

Thursday 12th September 2019

London

Thursday 19th September 2019

If you are unable to attend any of the above, you will also have the option to attend a Pearson Vue Test Centre to take the exam on a date of your choosing.

Full instructions will be sent to you on successful completion of the course.



Venue information



Lancaster Conference Centre Bailrigg, Lancaster, LA1 4YX

Lancaster Conference Centre can be found in the Green Zone on the campus map and is marked by the letters LCC. <http://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/maps/campus-map.pdf>

DIRECTIONS BY CAR to LA1 4YX

Leave the M6 motorway at Junction 33 and take the A6 north towards Lancaster.

For Lancaster Conference Centre, turn right at the roundabout at the top of the main university driveway. Follow the road down to by the netball courts and Management School.

We recommend using Visitor Car Parking Zones H, G or F. There are parking machines located in each of these zones and the machines accept cash or card payment.

Please do not park within the grounds of Lancaster House Hotel.

Lancaster Conference Centre can be found in the Green Zone on the campus map and is marked by the letters LCC.

DIRECTIONS BY RAIL AND BUS

Lancaster train station is a five-minute walk from the city centre.

The 4 and 4X bus services operate between Lancaster Railway Station (Platform 3 exit) and Lancaster University every 30 minutes Monday to Saturday daytimes. There is also a limited service from 20:25 on Sunday evenings in term time (4X) to meet popular trains from the south. The journey time is around 25 minutes. Taxis are also available at the station.

Venue Accommodation

Accommodation will be provided by Cyber Discovery throughout the duration of the camp. Each student will be assigned a single room, which includes a private en-suite bathroom. Rooms will be located within the student accommodation of Lancaster University.

Registration Process & General Information

Drop off and Pick up

If you are being dropped off by a parent/carer/teacher, please make sure they bring a form of ID with them and you register at the drop off point.

Your **drop off** and **pick up** location is: Lancaster Conference Centre. (Green Zone on the campus map – marked by the letters LCC). Campus Map – <https://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/maps/campus-map.pdf>

The event will start at 9:30am on Monday morning, please arrive between **8am and 9.30am to register**. You do not need to bring any technical equipment or prepare anything in advance of the camp.

The final day will finish at 5:30pm.

Dress Code

The dress code is casual for the Cyber Discovery Elite camps. You will be supplied with Cyber Discovery branded clothing to wear during the event.

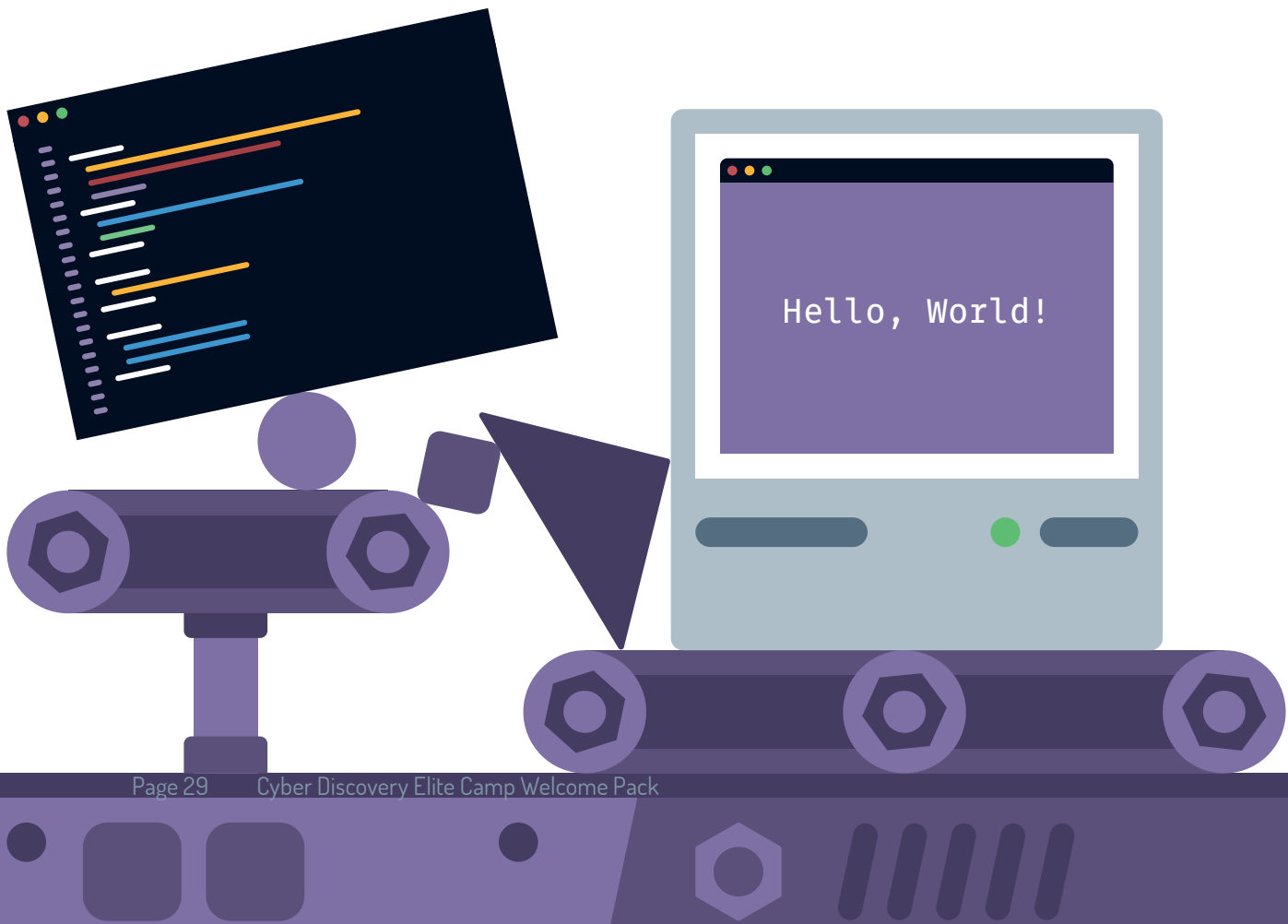


Essential Contacts

Should you have any problems or require any assistance during your time at the Cyber Discovery Elite camps, here are some useful points of contact:

Event Manager
Harriett Johnson
hjohnson@sans.org
07939 555805

Safeguarding Lead
Jason Stanton
jstanton@sans.org
07939 555897



Social Media

If you aren't already following us, be sure to check us out on Twitter, Facebook and Instagram. Here we provide programme updates, run special competitions and release extra challenges – you don't want to miss out!

You can also find our latest blog posts. These cover programme information, interesting interviews with industry experts, competition details and much more.

During the camp, be sure to share your experience by using **#CDElite**

Our social media usernames are:

 [@CyberDiscUK](#)

 [@CyberDiscUK](#)

 [@CyberDiscUK](#)

Blog:
medium.com/cyber-discovery

Code of Conduct

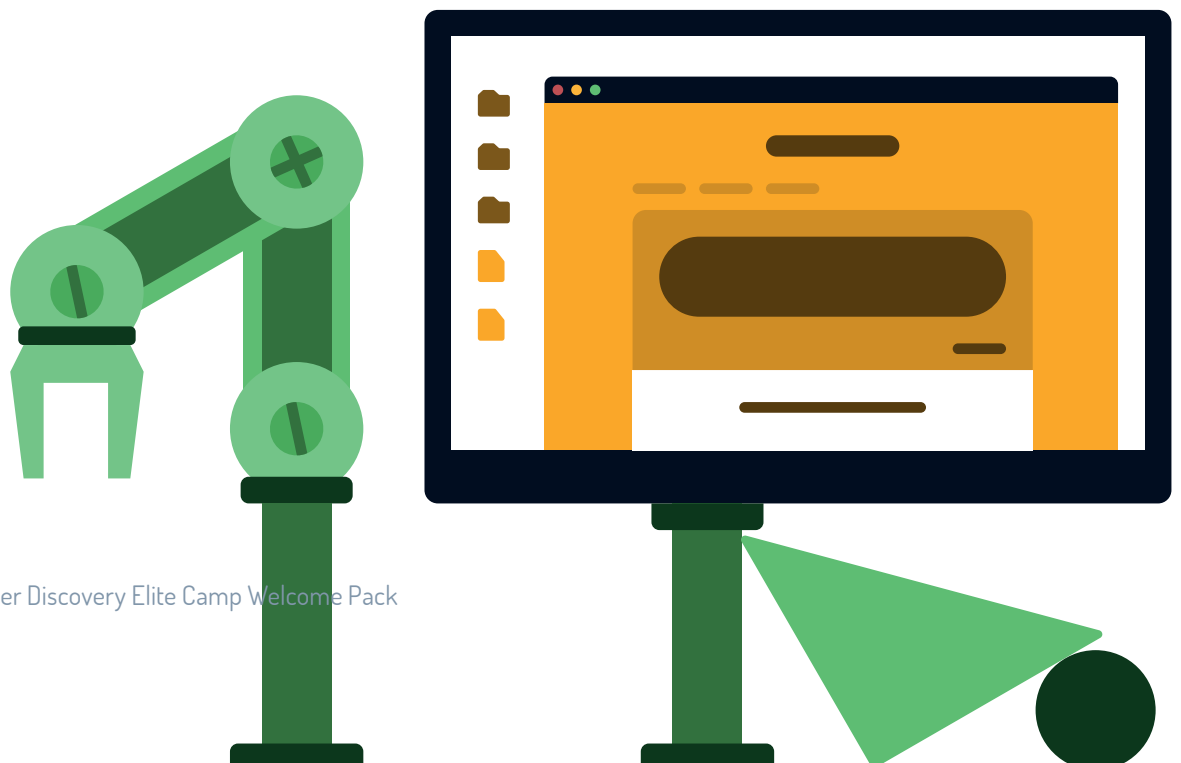
Cyber Discovery Elite camps are part of a programme for 14 to 18 year-olds. We want all of those attending to have a great time, enjoy the experience, and develop their cyber security skills and knowledge.

To achieve this, we expect high standards of behaviour from attendees, and therefore require you to abide by the Code of Conduct below, which you and a parent or guardian must read.

The 2019 camps will take place over a three-day period on a residential basis in a university with classroom, catering and accommodation facilities all onsite. The camps, including all accommodation and food/refreshments, are funded by Cyber Discovery so are free of charge for students.

No alcohol, drugs, or smoking are allowed during the camp (including in the evenings), and no conduct is permitted that is inappropriate for an under 18 age group. We expect inclusive behaviour throughout the camp and there will be zero tolerance of any forms of bullying or discrimination. We expect all students to abide by the Code of Conduct while attending the camps, whether they are under or over 18 years of age.

Each student will be assigned a room at the university for their sole use. Rooms will not be shared unless a student requires additional support from a parent, guardian or carer, and has obtained prior permission.



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LEARNING