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| **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| **09/03/2020** | **10/03/2020** | **11/03/2020** | **12/03/2020** | **13/03/2020** |
| **Maths**Modelling with ExcelAngharad Ugonna*Norfolk 504***Bioscience**Organic Synthesis and AnalysisAkram Khan*STEM Labs***Engineering**Being an Expert Witness - detecting counterfeit moneyKaren Vernon-Parry*Sheaf 4226***Physics**Escape the Lab (Post-16/ Pre-16) Alex Crombie*Aspect Court 15203***Health and Wellbeing**Midwifery MasterclassJane Stephenson*RWB* | **Health and Wellbeing**Vital Signs: A Practical Insight into HealthcareAmanda Howarth*RWB***Computing** CyberMazeSCET***Hallam Hall*****Education**Marsh Monsters-InheritanceCheryl Gaughan*Cantor 9231***Health and Wellbeing**Hidden Physics in Sport-John Hart*AWRC Labs* | FantastixxPre 16 ChallengeDaySCET*Hertha Aryton***Bioscience***Molecular Biology Masterclass*Kathy Rawlinson/Kirsti Newton*STEM Lab***Health and Wellbeing**Vital Signs: A Practical Insight into HealthcareAmanda Howarth*RWB***Bioscience**Organic Synthesis and AnalysisCatherine Duckett*STEM Labs***Bioscience***Quantum Chemistry*Alex Hamilton*757 (Access through Norfolk)***Maths**Point to PointKatie Steckles*EMB 3108***Maths**Turing TumblesAngharad Ugonna*Norfolk 502***Natural Built Environment**Introduction to Natural Built EnvironmentNeil Berry *Harmer 2004* | SHUniversity ChallengePost 16 ChallengeDaySCET*Hallam Hall***Natural Built Environment**Marvellous Map MakingJosie Wilson*Cantor 9221***Bioscience***Molecular Biology Masterclass*Walid Omara*STEM Lab***Engineering**Strength of MaterialsSteve Magowan*Sheaf 4L11* | **Engineering**Fun with ElectronicsMark Thompson*Sheaf 4307***Health and Wellbeing**Hidden Physics in Sport-John Hart*AWRC Labs***Development and Society**BANG! KAPOW! The Science of Comic BooksJane Morgan*Cantor 9234***Physics**Binding Blocks: Building the Universe one Nucleus at a TimeRobin Smith*EMB 3105***Engineering**Design the Ultimate FrisbeeJonny Potts*4018, 4001, 4004, Hallam Hall* |

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| **Session** | **Dates and Times** | **Location** | **Year Group** | **Attendee Numbers** |
| **Bioscience and Chemistry** |
| Organic Synthesis and Analysis Aspirin is widely used pain killer and has been shown to be effective in reducing the incidence of heart disease and to treat fever or inflammation. In this practical students will synthesise aspirin, followed by measuring the yield of their product, testing the melting point and checking the purity using infra-red spectrometry. Technical staff will also demonstrate NMR on pre-prepared samples. | 09/03/2020: 10:00-15:0011/03/2020: 10:00-15:00 | City Campus | Year 12-13 | Max 30 |
| Molecular Biology MasterclassA hands-on scenario-based session where students will learn about PCR and gel electrophoresis. Students will get to carry out both of these techniques in one of our science laboratories, learning about the underpinning theory and application to real -life science. | 11/03/2020:10:00-12:0011/03/2020:13:00-15:0012/03/2020: 10:00-12:00 | City Campus | Year 12-13 | Max 35 |
| Quantum ChemistryThis session will introduce students to the world of quantum chemistry, without the equations… The students will get hands on experience in how to study chemistry using computational methods. There will also be a short research talk by an expert in the field, Dr Alex Hamilton. | 11/03/2020:13:00-15:00 | City Campus | Year 12-13 | Max 25 |
| **Maths** |
| Turing TumblesAs part of this interactive session, you will work with a Turing Tumble which is a physical representation of the inner workings of a computer. The challenges require setting up the machine to give particular outcomes. You will develop your logical thinking skills as you working with others to complete the tasks.  | 11/03/2020:13:00-15:00 | City Campus | Flexible | Max 35 |
| Point to PointNetworks of points and lines are studied by mathematicians, and called graphs. This session will introduce you to some of the theory behind graphs, and you'll have the chance to use them to model and solve problems. | 11/03/2020:13:00-15:00 | City Campus | Year 9+ | Max 60 |
| Modelling with ExcelWithin this session, you will use Excel to explore different mathematical models. You will then use this knowledge to make decisions about which models would be best to model real-life situations, such as modelling the temperature of a cup of tea as it cools. You'll also use your models to make future predictions in some cases. | 09/03/2020:10:00-12:0009/03/2020: 13:00-15:00 | City Campus | Year 10+ | Max 25 |
| **Health and Wellbeing** |
| Midwifery Masterclass Students will have the opportunity to get hands on with a pregnancy abdomen simulation model. They will palpate the baby's position discovering where the baby's head and back are lying. They will also have the opportunity to listen to the baby's heartbeat using a pinard stethoscope (looks like an ear trumpet!). The simulation model is very realistic and includes an audible fetal heartbeat. | 09/03/2020: 13:00-15:00 | Collegiate Campus | Y10+ | Max 20 |
| Vital Signs: A practical Insight into Healthcare Come and have a go at taking blood pressure/pule and temperature or doing a simple dressing without introducing new bacteria into a wound! | 10/03/2020: 10:00-11:0010/03/2020: 11:00-12:0010/03/2020: 13:00-14:0010/03/2020: 14:00-15:0011/03/2020: 10:00-11:0011/03/2020: 11:00-12:00 | Collegiate Campus | Flexible | Max 20 |
| The Hidden Physics of Sport This session looks at how we investigate and understand the hidden behaviours, and invisible phenomena, that influence the behaviour of sports equipment. Impact events, such as a racket impact, or ball rebound, will often occur too quickly to be viewed with the naked eye or a conventional camera. Whilst aerodynamic phenomena, such as those that can cause a well struck free kick to swerve in flight, can be completely invisible! We will be looking at how we use a variety of techniques to understand the physics; and giving hands on live demonstrations of high speed video capture.  | 10/03/2020: 13:00-15:0013/03/2020: 10:00-12:00 | Advanced Wellbeing Research Centre | Year 11-13 | Max 25 |
| **Engineering** |
| Strength of MaterialsExplore the strength of materials by using industry standard machinery that allows us to pull the materials apart, then examine what information this can give us and how it can be used. | 12/03/2020: 10:00-12:00 | City Campus | Y7-13 | Max 16 |
| Fun with ElectronicsJoin the Electronics team to build a variety of circuits; such as:Moister Tester for House Plants- so they don't get thirstyDigital Timer CircuitOr an Audio Amplifier and speaker for mobile phones- for those banging tunesYou will learn about basic circuits, as well as develop the skills to make and test them. | 13/03/2020: 10:00-12:00 | City Campus | Y7/8 | Max 25 |
| Design the Ultimate FrisbeeEver wondered about the aerodynamics of Frisbee flight? This masterclass will go in depth to the maths and physics involved in Frisbee flight before allowing students to take part in the Ultimate Frisbee challenge. Students will design and vacuum form their own Frisbee before going head to head in a distance competition. | 13/03/2020: 13:00-15:00 | City Campus | Year 9-10 | Max 20 |
| Being an Expert Witness - detecting counterfeit moneyLearn how to be an expert witness in court in the case of "the fake round pound". In this interactive session, students will work in groups to think about what needs to be met to make an "acceptable" fake coin and determine which of 5 coins is counterfeit. They will then determine the chemical composition of the coins, and see if they could beat the forgers. The session will end by looking at the new pound coins and discussing what aspects of their design makes them less likely to be counterfeited. | 09/03/2020: 10:00-12:00 | City Campus | Y9-12 | Max 24 |
| **Physics** |
| Binding Blocks: Building the Universe one Nucleus at a TimeExplore the concept and applications of binding energy of atomic nuclei through building a LEGO nuclear chart. Follow nuclear decay chains and research the uses of different isotopes. | 13/03/2020: 10:00-12:0013/03/2020: 13:00-15:00 | City Campus | Year 10-12 | Max 30 |
| Escape the Lab (Pre and Post-16) During a visit to a physics research facility, a recently received crate of unknown origin is opened and quickly sets of the detector alarms in the lab, forcing the electronic locks on the doors to close and trap everyone inside the room. Upon closer inspection, the crate’s contents have a display showing a timer counting down to an unknown fate. The only chance for escape is to determine what is causing the lab’s lockdown and reverse its effects before the timer reaches zero… | 09/03/2020:11:00-12:0009/03/2020:13:00-14:00 | City Campus | Year 7-13 | Max 20 |
| **Computing** |
| Cybermaze In CyberMaze teams of 6 pupils aided (or hindered) by an SHU student ambassador solve puzzles, riddles and mind-benders using logical and lateral thinking and educated guesswork. The answer to each puzzle provides a clue to an item or place somewhere on SHU’s City Campus where you will find a clue to be used in solving the next puzzle.This fun activity from the Department of Computing is designed so that any student with an interest in problem solving can succeed. These interactive games will test students’ skills, patience and intellect. They are designed to give insight into the types of thinking that underpins computer science, cybersecurity, cryptography and forensic analysis.This activity is for teams of 6 students from Year 7, 8 & 9. Schools may enter either the morning session (10am-12pm) or the afternoon session (1pm-3pm). More than one team from each school is allowed. A maximum of 12 teams per session is permitted, so book now to avoid disappointment. | 10/03/2020: 10:00-12:0010/03/2020: 13:00-15:00 | City Campus | Year 7 - 9 | Max 72 (teams of 6) |
| **Education** |
| Marsh Monsters- InheritanceBuild your very own Marsh Monster using awesome marshmallows, googly eyes, rainbow drops and lots more! Drop the geno-cards to create a new, random, genotype for you monster's offspring. Then use you will able to use the crazy characteristics table to see what the genotype means and then...Build your monster! This will help you to understand the basics of inheritance and explain why you have similar family features! | 10/03/2020: 13:00-15:00 | City Campus | Y5-6 | Max 40 |
| **Natural Built Environment** |
| Marvellous Map MakingMini lecture on cartography followed by a map making activity | 12/03/2020: 10:00-12:00 | City Campus | Flexible | Max 20-30 |
| Introduction to Natural Built Environment A hands on and interactive introduction to the Built Environment and the variety of careers and roles that you can undertake within it. | 11/03/2020: 14:00-16:00 | City Campus | Y10-13 | Max 15 |
| **Social Science** |
| BANG! KAPOW! The Science of Comic books!Super-heroes are in cinemas, on TV, on t-shirts, on lunchboxes and on toy shelves and are becoming more and more popular. Most people know that these characters began their lives in comic books, but may not know that comics are being looked at as ways to teach and engage students in scientific material. In particular researchers have begun to investigate what it is about comics that make them a good communication medium. In this session you will have the opportunity to find out about some of the scientific research being carried out and to explore some of the methods comic book creators use to impart scientific information to readers. | 13/03/2020: 10:00-12:0013/03/2020: 13:00-15:00 | City Campus | Year 7-11 | Max 50 |
| **Challenge Days** |
| Fantastixx Challenge Day Think like an engineer and master the Stixxs machine to turn newspaper into building material!The Challenge Day is aimed at pre-16 students and will give them an insight into thinking creatively, problem-solving, working as part of a team to overcome obstacles and reimagining what can be done with recycling. Teams will battle it out to create three different structures sturdy enough to undergo our testing. Which team will score the highest and be crowned master engineers! | 11/03/2020: 10:00-15:00 | City Campus | Year 7-11 | Max 80 |
| SHUniversity Challenge This competition invites teams of Y12 and Y13 students to test their knowledge of 7 different subject areas. Teams will compete in several different rounds including Maths, Chemistry, Environmental Science, Engineering, Physics, Biology and Computing. The top performing teams will go onto semi-final and final rounds before the winning team is announced. Question content has been inspired by the A Level curriculum. This event is open to teams of up to 8 students and schools may enter more than 1 team. A total of 8 teams can participate in this event.  | 12/03/2020: 10:00-15:30 | City Campus | Year 12-13 | Max 64 (teams of up to 8) |