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Welcome to the MSc Human-Computer Interaction & MSc Human Factors and Ergonomics

Dr Rob Houghton

MSc Human Computer Interaction

- Course launched in 2006
- Jointly run between Schools of Computer Science (CS) and Mechanical, Materials and Manufacturing Engineering (M3)

MSc Human Computer Interaction: course structure

Autumn

Non/limited background in programming

G54PRG (20)

Strong computing background

MM4COG (10)

MM4SHP (20)
G54DET (20)

MM4PSW, MM4SIM, G53MLE, G53CCT, G53CCD, G53MDP, G54SAN, G54DIS
[mix of 10 and 20 credits]

Spring

MM4HCI (10)
MM4AMH (10)
G54MRT (20)

G54FOP, G54GAM, G54FPP, MM4WSS, G54SPM, G54DMA, G54SOD, G53FIV, G53IVP
[mix of 10 and 20 credits]

Summer

G64HCI (60 – proj.)

Compulsory

Optional

Required options

MSc Human Factors and Ergonomics

- Running for many years within the Dept of Mechanical, Materials and Manufacturing Engineering (M3)
- Accredited with the Institute for Ergonomics and Human Factors (IEHF)
- Course team:
  - Dr Chris Bradnum (Course Director)
  - Dr Robert Houghton
  - Professor Gary Burnett
  - Dr Sue Cobb
  - Dr Brendan Ryan
  - Professor Sarah Sharples
  - …..others!

MSc HFE - Course structure

Autumn

MM4COG Cognitive ergonomics in design (10 credits)
MM4SHP Studying human performance (20 credits)
MM4SIM Simulation and digital human modelling (10 credits)
MM4PSW Physical ergonomics (10 credits)

Spring

MM4HCI Human computer interaction (10 credits)
MM4WSS Work Systems and Safety (20 credits)
MM4AMH Advanced methods in human factors (10 credits)
ENGR4002 [Project preparation modules] (10 credits)

Summer

MM4IPP Individual postgraduate project (60 credits)

Compulsory

Options (need 20 credits)

C84AMS Advanced methods in psychology (20 credits)
MM3BIO Biomechanics (10 credits)
C83APR Applied psychology: road user behaviour (10 credits)
G53FIV Fundamentals of information visualisation (10 credits)

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MMME4054: Cognitive Ergonomics in Design

Essential details

Module convenor: Prof S Sharples
10 Credits
Autumn Semester

Assessment

100% Exam

Learning format:

2 hour lecture per week

Content overview:

- Cognitive psychology and ergonomics
- The human as information processor: Memory and attention, mental models,
- Human Workload
- Displays, controls, consoles and control rooms
- Decision making, automation
- Situation awareness
- Problem solving and artificial intelligence
- Decision support systems, decision making biases,
- Situated cognition and joint cognitive systems

You can access this module to review material on Moodle

Module aims:

To provide students with a thorough understanding of cognitive ergonomics and the way in which the consideration of cognitive ergonomics can impact on human performance in the workplace. A good understanding of the way in which individuals process, interpret, understand and communicate information can ensure that control devices, products, working conditions and systems are properly designed and implemented.

Module outcomes:

- Describe how humans process information and how this applies in a variety of working contexts.
- Evaluate the range of subjective and objective assessment methods available to measure cognitive work performance.
- Critically analyse a variety of products and systems according to the extent that they support human behaviour and performance.
- Analyse data related to cognitive performance and interpret it in the context of literature.
- Recognise the variety of products and work contexts to which cognitive ergonomics design practice and guidance can be applied.

Example contexts considered include: healthcare, manufacturing and transport

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MM4SIM/MANU4015: Simulation, Virtual Reality and Advanced Human-Machine Interface

Essential details

Module convenor: Prof G Burnett
10 Credits
Autumn Semester

Assessment

50% Coursework 1
50% Coursework 2

Learning format:

2 hour lecture per week
2 hour practical per week (1st half of module)

Content overview:

For Human Factors/Ergonomics work, simulation tools can enable designers, managers and end-users to experience products and systems in realistic, interactive environments. Such advancements have significant cost implications, enabling designs and their implications to be visualised early in the development lifecycle. In addition, Virtual/Augmented Reality and other advanced Human-Machine Interfaces (HMIs) are being developed in many different industries (e.g. transport, defence, manufacturing, healthcare, media) to support different user needs (e.g. for safety, training, education, entertainment).

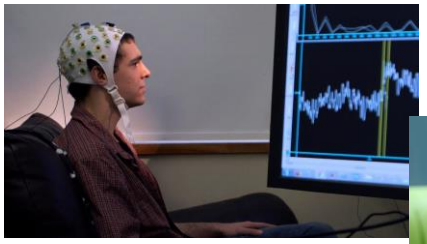
This module will provide students with the knowledge and skills required to understand and utilise computers as Human Factors tools for understanding peoples' interactions with new technology. Moreover, the module will consider HMIs that are increasingly common in modern life and frequently designed and evaluated using simulation techniques. The module is a mix of practical and research-oriented content and students will make extensive use of the simulation facilities (e.g. car, airplane, operating theatre) and on-going research projects within the Human Factors Research Group and elsewhere in the University.

Module aims:

This module aims to equip students with the knowledge and skills required to use simulation approaches in Human Factors research and design/evaluation work. Moreover, the module aims to provide students with the latest knowledge regarding advanced Human-Machine Interface solutions for different design and research contexts

Module outcomes:

- Analyse products and workplaces from a Human Factors perspective using Simulation approaches.
- Justify Simulation approaches as a means of analysing the Human Factors issues for product and workplace design; and the use of different advanced Human-Machine Interface (HMI) solutions within different Human Factors application domains.
- Critically appreciate and synthesise information concerning Simulation and HMIs from a wide range of sources.
- Demonstrate how to use Simulation tools and alternative HMIs in a range of case study application areas.
- L05 – Prepare technical reports and presentations of relevance to an engineering design audience



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MM4AMH/MANU4010: Advanced Methods in Human Factors and Human-Computer Interaction

Essential details

Module convenor: Prof G Burnett
10 Credits
Spring Semester

Assessment

75% Exam
25% Coursework

Learning format:

2 hour lecture per week (with practical sessions)

Content overview:

The syllabus covers:

- Psychophysical methods: paired comparison, method of limits, threshold measurements
- Verbal protocol analysis
- Video analysis of observation data
- Ergonomics project management
- Qualitative approaches and methodologies
- Eye tracking methodologies
- Physiological measures
- Ethic considerations in Human Factors research

Module aims:

This module aims to develop students' skills in analysis and evaluation from a Human Factors and HCI perspective. The module provides greater breadth in Human Factors/HCI methods by introducing further techniques. In addition, greater depth in understanding is sought, as methods are analysed in terms of their advantages and limitations. Considerable practical work is undertaken to enable understanding of how methods can be employed in research and development work.

Module outcomes:

- Analyse products and workplaces using a range of different methods to suit the needs, capabilities and limitations of people in their physical/social/organisational environments.
- Compare and contrast different methodological approaches when investigating Human Factors/HCI issues.
- Evaluate methods and their emergent data for use in addressing Human Factors/HCI issues.
- Demonstrate the application of specific methods in practical contexts.
- Select and execute appropriate methods to solve a Human Factors/HCI-related problem.

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MM4HCI/MANU4003: Human Computer Systems

Essential details

Module convenor: Prof G Burnett
10 Credits
Spring Semester

Assessment

Coursework 1 (worth 80%) Group report (moderated by peer assessment()
Coursework 2 (worth 20%) Individual reflective report

Learning format:

1 hour lecture per week
1 hour practical design exercise per week

Content overview:

Human-Computer Interaction (HCI) as a discipline grew from Human Factors/Ergonomics and the emergence of Computer science in the 1970s. An understanding of HCI is paramount as computers have greater functionality, and are used by diverse users within diverse environments.
This module takes a Human Factors design perspective on HCI considering the overall human-computer system. A highly practical stance is taken and the module will follow a typical user-centred design process, commencing with lectures and accompanying method-focussed sessions on understanding user requirements, progressing to design work and finally objective and subjective interface testing approaches. These sessions will align closely with the coursework areas.

Module aims:

To provide students with a thorough understanding of how to design and evaluate human-computer systems in order to produce solutions that are usable, safe, acceptable, enjoyable, fun, and so on.

Module outcomes:

- Describe the technical developments in computer systems, and the types of systems being used in the workplace now and in the future
- Understand the importance of considering human physical, cognitive and organisational characteristics in user-interface design
- Apply a range of design and evaluation approaches and techniques
- Critically analyse a variety of interface and technology types with respect to interface design guidelines
- Recognise the variety of interaction design requirements for a range of types of multimodal and VR technologies

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MMME4045: Work, Systems and Safety

Essential details

Module convenor: Dr R Houghton
20 Credits
Spring Semester

Assessment

20% Coursework
80% Exam

Learning format:

2 hour lecture per week
2 hour methods workshop per week

Content overview:

- Sociotechnical systems
- Job and work design
- Motivation
- Human Factors Integration in systems engineering projects
- Macro cognition
- Cognitive Work Analysis
- Soft Systems Methodology
- Theories of accident causation
- Theories of human error
- Methods for accident representation and analysis
- Human Error Identification and Quantification methods
- Safety management systems
- Accident Investigation

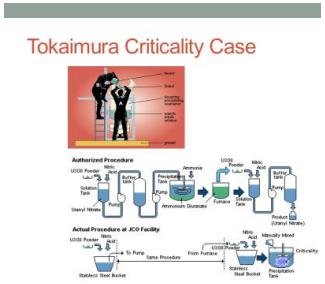
You can access this module to review material on Moodle

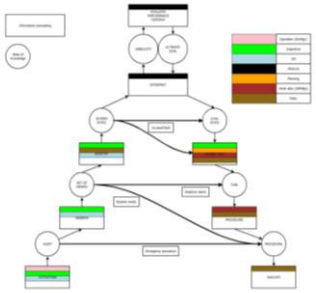
Module aims:

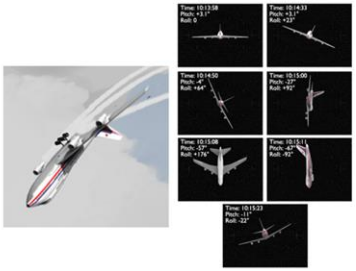
The module aims to provide to students a background in modern approaches to understanding work systems and safety science. Students will gain knowledge of a range of theories and techniques which can be applied in the real world to improve not only the safety and productivity of work, but also to improve its quality, a critical emerging issue as new forms of 21st century work and production evolve (as evidenced by the Government's Taylor Report of 2017). These skills are in wide demand in industry and further support design, management and evaluation activities within equipment, machinery and digital system procurement.

Module outcomes:

Critically select and apply human-centred techniques for systems analysis and assessment of performance and safety issues within a work system.
Evaluate, contribute to and manage organisational policies for work enhancement and safety management.
Demonstrate a rounded, critical appreciation of the need for safety science and systems ergonomics and develop informed views on social issues such as risk aversion, blame culture, "good work" and emerging forms of 21st century work.
Identify and discuss organizational and social systems design priorities for work systems design including hours of work, satisfaction, motivation, safety culture and team design
Evaluate approaches to implementing and evaluating systems changes including participatory processes







Optional module enrolment

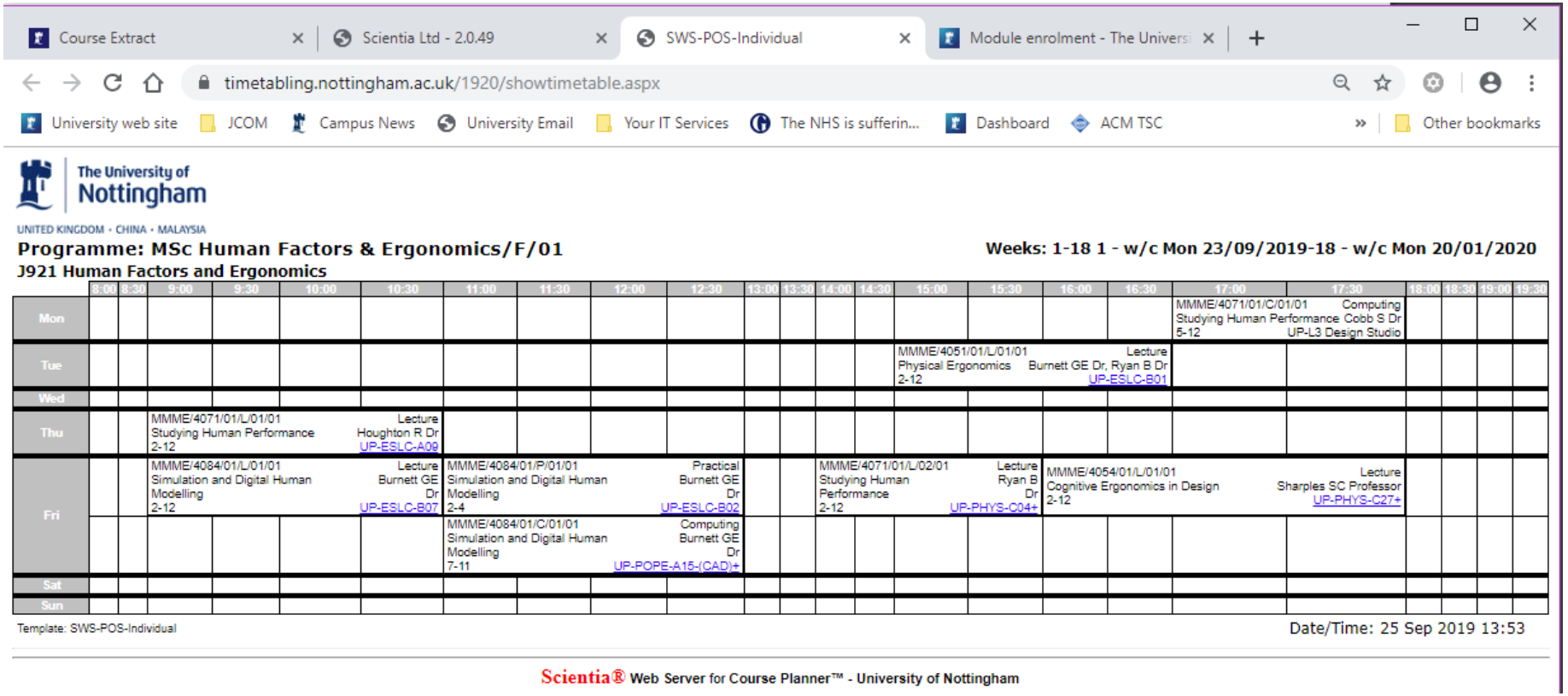
- http://www.nottingham.ac.uk/academicservices/currentstudents/moduleenrolment/moduleenrolment.aspx

Usernames and course delivery technology

- **Use your university email**
  - Use IS username (epx…)
  - University-wide Moodle system
  - Submit coursework via Student Service Centre or Moodle

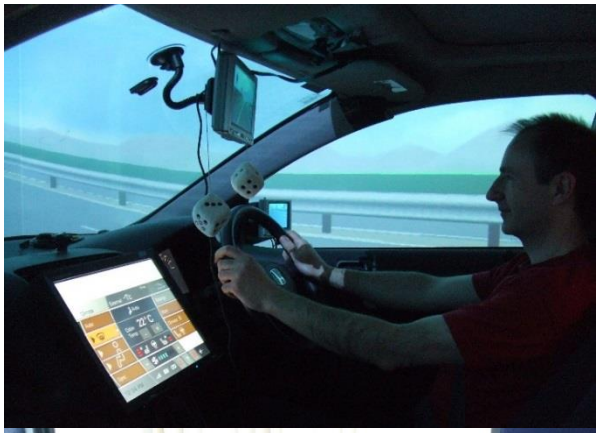
Timetable

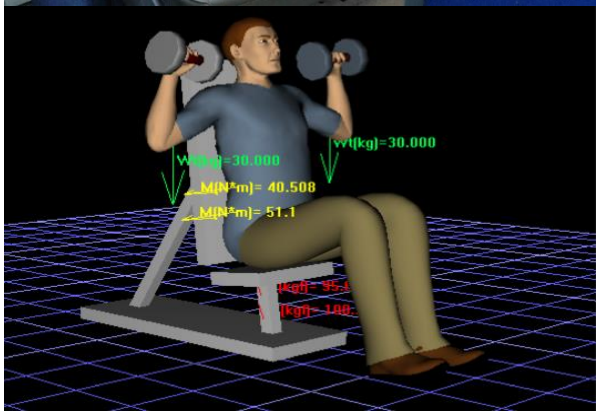
- Versions of timetable now available: mytimetable
- timetabling.nottingham.ac.uk
- You may (and are encouraged to) attend optional modules for first two weeks before selecting final module choice



Summer Projects

- Start to think about this during Autumn
- Decide on topic early 2020
- Some opportunities to do projects with industry
- Example topics from previous years:
  - Development of gesture set for in-vehicle touchscreens
  - Seat comfort for sleeping
  - Using digital human modeling to assess the physical loads on users of gym equipment



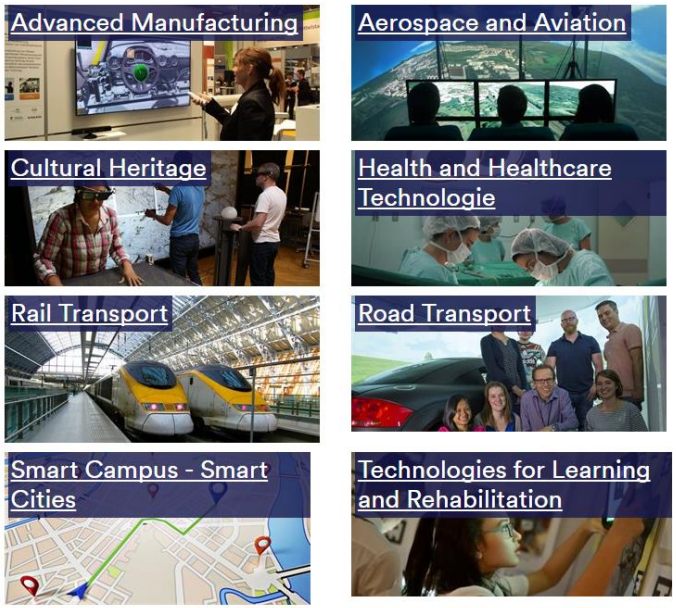


Human Factors Research Group/Mixed Reality Lab

- Where our research is done and where your project will probably be done

- HFRG - Based in the ITRC building (on main campus)
- MRL – Based in CS (1st floor)

- Access to expertise
- Extensive technical facilities



Week one activities

- Registration
  - With university
  - With department
  - With health centre
- Meet your tutor
- Use of library services
- Study skills

General issues

- Reps for PG Learning Forum
  - Volunteers welcome

What is the LCF?

- The Learning Community Forum (LCF) is a forum in which students have a constructive say about how their course operates.

Circumstances affecting your study

A number of policies and procedures in place to assist you if you have circumstances affecting your study

http://www.nottingham.ac.uk/academicservices/qualitymanual/assessmentandawards/extenuating-circumstances-policy-and-procedures.aspx

Circumstances affecting your study

- Let us know e.g. contact your Personal Tutor, Disability Support, Welfare Officer, Service Centre
- The earlier we know, the quicker we can help
- A set of guidance pages is available to help you
- If you decide you need to make extenuating circumstances claim, all claims must be submitted online
- Strict timescales apply – make sure you are aware of them

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Services for Students

- Your-Feedback
- Welcome
- Home
- Money matters
- Health and welfare
- Your studies
- Student essentials
- **A-Z of services**
  - Welfare Support
  - Academic Welfare
  - Search
- Contact us
- Support
- People

How can we help today? Search

Accessibility - Academic and Disability Support

If you describe yourself as disabled under the Equality Act 2010 then please contact the Accessibility team.

You can also access **Support for your studies** for more information about Academic and Disability support.

What you need to know if you're an applicant

Contact Accessibility ›

Coming to Nottingham - ›

https://www.nottingham.ac.uk/studentservices/support/supportforyourstudies/index.aspx

Faculty of Engineering Student Welfare Team

Offer a combination of appointments and drop in sessions to any student with any welfare concerns.

Access the welfare team either directly or book appointments through the Service Centre reception.

Matt Orton, Jack Iliffe and Claire Newbury.
Coates Building, room A8
matt.orton@nottingham.ac.uk
jack.iliffe@nottingham.ac.uk
claire.newbury@nottingham.ac.uk

Further information about local and central welfare support can also be found on the student services website:
http://www.nottingham.ac.uk/studentservices/healthwelfare/index.aspx

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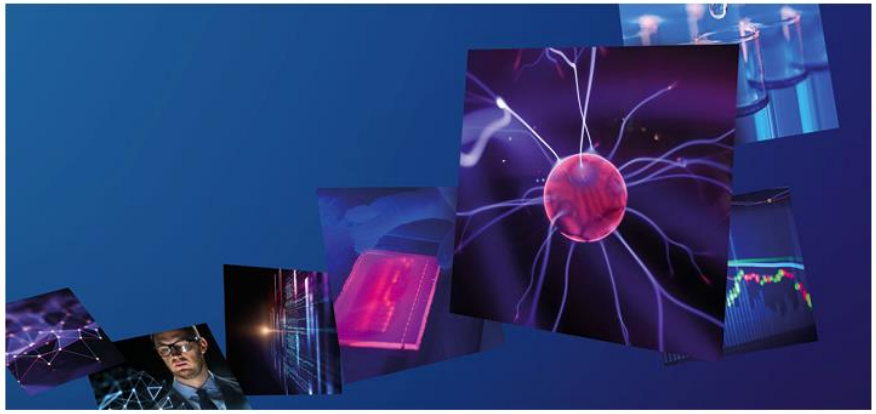
Careers and Employability Service events

Science and Technology Careers Fair



Welcome to the Science and Technology Careers Fair

As scientists and technologists, your skills are in high demand and we are excited to announce that 50+ employers will be making their way to University Park to meet you!

Date

Monday 14 October 2019

Time

12 noon – 3.30pm

! No need to book – just turn up!

Location

East Midlands Conference Centre, University Park – view the map

Engineering Careers Fairs

Welcome to our autumn term Engineering Careers Fairs.

We run seven engineering fairs in autumn term, giving you the chance to to find job and internship opportunities, and meet world-leading employers.

Find out more about the fairs below, including our app which provides details of all the employers you'll be able to meet on the day.

! **There's no need to book – just turn up on the day!**

Dates

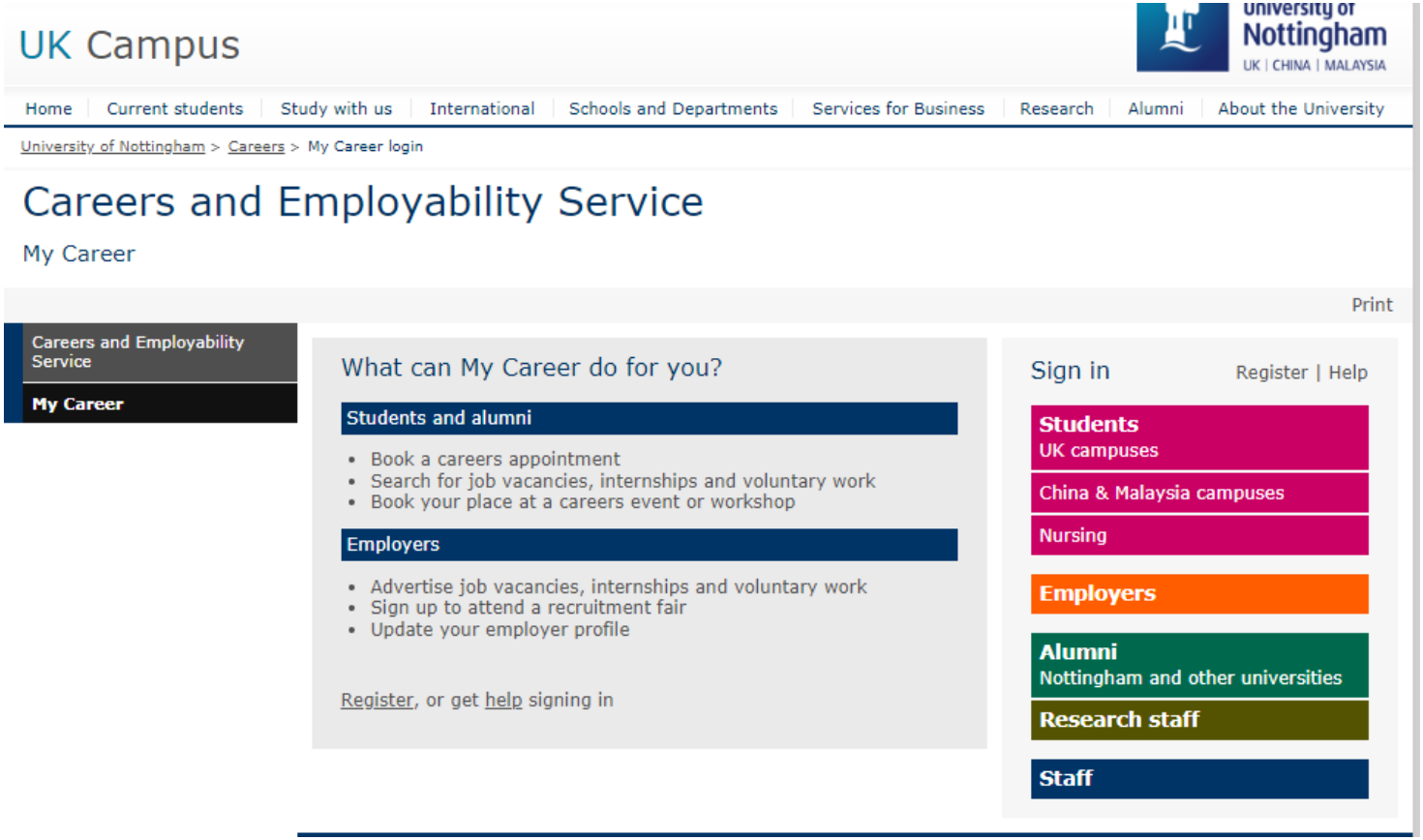
From **Tuesday 8 October** to**Tuesday 29 October 2019**

Times

11.30am–2.30pm*

(except the Engineering Internships Fairs, which are 10.30am–2.30pm)

- https://www.nottingham.ac.uk/careers/students/events/recruitmentcareersfairs/engineering-fairs.aspx
- https://www.nottingham.ac.uk/careers/students/events/recruitmentcareersfairs/science-and-technology-fair.aspx



- My Career for all graduate/summer placement opportunities - http://www.nottingham.ac.uk/careers/students/index.aspx