Record your attendance



School of Engineering: Introduction to Y1 Modules, Warwick Enterprise, and the Warwick Award

https://welcomeweek.warwick.ac.uk/a/1716



School of Engineering: Introduction to Y1 Modules Welcome Week 2023



Progression on your course

Year 1: 9 modules (8x15 + 1x5) for 125 credits

Progression on MEng/BEng

- You need to pass every module in Year 1 >40%
- You need to pass each component at >30%
- You can resit failed components
- If you resit a component, marks get capped at **40%**

Progression on BSc (un-accredited)

- You need to pass 90 CATS in Year 1 >40%
- Must pass ES101 and ES193
- Achieve an overall mean of **40%**

Progression to MEng

You need a **60** % average over year 1 and 2 of your degree Transfers done at end of second year Another chance at end of year 3

Changing Streams

Done after Easter in year 1

You will be asked if you want to move streams

No limits on how many on each stream

ES101: Introduction to Engineering: Professionalism and Practice

Module Leader: Nigel Denton

Credit Value: 5

Module Length: 24 Weeks



ES101: Introduction to Engineering: Professionalism and Practice

Module Aims

The module aims to inform students in their choice of engineering discipline and on what it means to be an Engineer. The module provides the students with essential tools for studies in engineering, such as communication skills, professionalism and ethics and prepares them for internships and future employment.

Furthermore, the module informs engineering students about the UK-SPEC (UK-Standard for Professional Engineering Competence) which is the cornerstone of degree accreditation, continuing professional development (CPD), and eventual professional registration. Overall the aim of this module is to induct engineers into their degree, and show them that everything they are learning can be considered to support their development.

LEARNING OUTCOMES

- 1. Identify what it means to be an Engineer and being a part of the engineering community through exposure to Engineers coming from the Industry, academics of the Engineering department, recent graduate students, and fellow undergraduate students.
- 2. Understand the focus of each Engineering Discipline and then be able to make an informed choice on a direction of study.
- 3. Understand each of the Engineering Disciplines, the systems approach of the School of Engineering and how each of the Disciplines contribute to multi-disciplinary problems.
- 4. Produce professional, stylish and informative pieces of work which demonstrate their skills, experience and education
- 5. Plan self-learning and improve performance as the foundation for lifelong learning (CPD

ES101: Introduction to

Engineering: Professionalism

and Practice

Activities

Туре	Required
Lectures	7 sessions of 1 hour (14%)
Seminars	3 sessions of 1 hour (6%)
Tutorials	3 sessions of 1 hour (6%)
Other activity*	12 hours (24%)
Private study	25 hours (50%)
Total	50 hours

*4x3 hours on-line courses as defined by the department

ASSESSMENT

100% Coursework

- CV & Personal Statement (**30%**)
- My Career Path' Reflective Report (3 pages) (**30%**)
- Health & Safety online Moodle course (**10%**)
- Ethics online Moodle course (10%)
- Matlab online course (10%)
- Plagiarism online Moodle course (10%)

FEEDBACK

Individual feedback will be provided on CV and personal statement. Advice and feedback hours with Tutors will be used to provide feedback on the reflective report.

ES194: Introduction to Engineering Business Management

Module Leader: Rinkal Desai [delivered today by Nigel Denton] Credit Value: 15 Module Length: 10 Weeks



ES194: Introduction to Engineering Business Management

Module Aims

The aim of this module is to provide the engineering student with an appreciation of some of the practical problems and issues involved in competitively managing an engineering business. The module presents a systems view of the firm or business, consistent with many engineering models, where a collection of inputs are transformed into outputs which are valued by the customer. For the purposes of this module an engineering business is simply defined as a business that employs at least one engineer. The business could deliver a product or a service, it could be any size from a single consulting engineer to a global corporation and it can take a variety of legal forms from sole trader to public limited company.

LEARNING OUTCOMES

- Apply the concept of the Product Life Cycle and appreciate the importance to a company of having a balanced portfolio of products.
- Develop written, graphical and oral communication skills.
- Appreciate the impact of economic factors on the competitive performance of a business.
- Evaluate the positioning of a business within its market and economic environment and construct recommendations for its strategic development.
- Understand, review and analyse the process and importance of strategic marketing.
- Understand, review and analyse the process and importance of management accounting and costing.

ES194: Introduction to

Engineering Business

Management

Activities

Туре	Required
Lectures	27 sessions of 1 hour (18%)
Tutorials	2 sessions of 1 hour (1%)
Private study	121 hours (81%)
Total	150 hours

ASSESSMENT

50% Coursework

Individual company analysis report (50%)

50% Exam

- Online examination (50%)
 - Computer based multiple choice test
 - ~Platforms AEP,QMP

FEEDBACK

- Individual and cohort-level feedback on Company Analysis Report
- Cohort level feedback on online examination
- Support through advice and feedback hours..

ES195: Materials for Engineering

Module Leader: Ishwar Kapoor Credit Value: 15

Module Length: 10 Weeks



ES195: Materials for

Engineering

Module Aims

The focus of this module is on enabling students to undertake a systematic materials selection process, taking account of the required performance, constraints, objectives, manufacturing processes, cost and environmental implications for engineering components.

Materials selection involves: the translation of functional requirements into materials performance objectives; the screening of materials that do not meet these objectives; the development of performance indices to rank candidate materials; and refining down to a single optimal material taking manufacturing, cost and environmental factors into account.

LEARNING OUTCOMES

- Qualitatively describe the main stages of a systematic materials selection process, how it links with the Engineering Design Process, and the importance and global context of optimising materials selection for a variety of engineering applications with consideration of economic and environmental drivers C7(D) M7(D).
- Describe the characteristic properties of different major families of engineering materials such as metals, ceramics, polymers and hybrids; link these to fundamental differences in their underlying microstructure; and give examples of engineering applications in which they are used C13(D) M13(D).
- Develop and demonstrate a practical knowledge and ability to measure fundamental mechanical and electrical properties of engineering materials, and appreciate the link between experimental data and engineering design data found in data sheets and CAE tools C13 (D) M13(D).
- With the aid of a common CAE tool (such as Edupack), combine fundamental theory and performance requirements to carry out the initial stages (translation, screening and ranking) of a materials selection process and produce a shortlist of candidate materials for a given engineering application C4 (D) M4(D).
- With the aid of a common CAE tool (such as Edupack), develop and apply knowledge of manufacturing processes, cost, and simple measures of environmental impact (such as embodied energy) to refine a materials selection process down to a single optimal material for a given engineering application C4 (D) M4(D).

ES195: Materials for

Engineering

Activities

Туре	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	9 sessions of 1 hour (6%)
Practical classes	2 sessions of 2 hours (3%)
Other activity	2 hours (1%)
Private study	115 hours (77%)
Total	150 hours

ASSESSMENT

30% Coursework

One submission through term on engineering materials selection (30%)

70% Exam

- Online Examination (2 hours long) covering fundamental understanding of materials selection processes, materials properties and underlying structure, and suitable engineering applications for different materials (70%)
 - ~Platforms QMP

FEEDBACK

- For in module coursework: Text feedback on report content
- Breakdown of marks via a rubric
- For in-class test: Formative feedback from computerand in-class based tests

ES190: Dynamics and Thermodynamics

Module Leader: Peter Brommer

Credit Value: 15

Module Length: 10 Weeks



ES190: Dynamics and Thermodynamics

Module Aims

This module is designed to provide all School of Engineering students a foundation on which to build further study of bodies in motion and thermodynamics as applied to any engineering discipline.

The purpose is to present the fundamental concepts of dynamic mechanical systems and the nature of thermodynamic systems that underpin many branches of engineering science.

LEARNING OUTCOMES

- Dynamic Mechanics: To understand the basic principles that operate in dynamic mechanical systems, and to achieve an understanding of Kinematics in 1-D and 2-D space using Cartesian, polar and path co-ordinate systems.
- Dynamic Mechanics: To be able to quantify Kinetic problems in 1-D and 2-D, with some applications considering variable acceleration.
- Dynamic Mechanics: To appreciate impulse-momentum and energy methods and their application to quantify dynamic engineering systems.
- Thermodynamics: To develop an understanding of the thermodynamic properties of systems, the nature of heat, and apply this knowledge.
- Thermodynamics: To gain an understanding of the First Law of Thermodynamics, and to apply this to closed and open systems.
- Thermodynamics: To gain an understanding of the Second Law of Thermodynamics and entropy, and to apply this knowledge.
- Laboratories: To develop laboratory and data analysis skills, including an ability to make appropriate assumptions to simplify real-life Engineering problems.

ES190: Dynamics and

Thermodynamics

Activities

Туре	Required
Lectures	30 sessions of 1 hour (20%)
Practical classes	2 sessions of 4 hours (5%)
Other activity	11 hours (7%)
Private study	101 hours (67%)
Total	150 hours

*5 hours of examples lectures led by Graduate Teaching Assistants (GTAs)

*1 computer-based formative test (Dynamics)

*4 hours revision lectures

*1 hour laboratory briefings

*1 hour laboratory feedback

ASSESSMENT

30% Coursework

Inertia lab assessment and Energy Balance
Assessment (equivalent to 6 pages) (30%)

70% Exam

2 * 1-hour QMP online tests to be scheduled consecutively (70%)

FEEDBACK

- Interactive sessions with GTAs
- Model solutions to past papers.
- Support through advice and feedback hours.
- Feedback on marked laboratory assignments.
- Feedback on computer-based formative test (Dynamics).
- Cohort-level feedback on final exam.

ES191: Electrical and Electronic Circuits

Module Leader: Ryan Montague

Credit Value: 15

Module Length: 10 Weeks



ES191: Electrical and Electronic Circuits

Module Aims

To present, in context, the fundamental concepts of circuits, devices and systems that underpin all branches of Engineering. Students will study fundamental circuit analysis techniques including nodal analysis, mesh analysis, Thevenin circuits as well as transient analysis applied to 1st and 2nd order circuits. Students will study fundamental mathematical operations of DC and AC quantities including phasors, vectors and complex numbers. Students will also study basic electronic components (like diodes, transistors, operational amplifiers and filters) that make up more complex electrical and electronic circuitry.

LEARNING OUTCOMES

- Understand basic principles in electrical and electronic circuits.
- Appreciate fundamental aspects of electronic component operation.
- Make appropriate assumptions to simplify and thus model real-life electrical and electronic components
- Measure electrical components and build electrical circuits to determine parameters and behaviours.

ES191: Electrical and Electronic

<u>Circuits</u>

Activities

ASSESSMENT

100% Examination

- 2 hour QMP Test
 - 80% Lectures + 20% Laboratory

Туре	Required
Lectures	30 sessions of 1 hour (20%)
Supervised practical classes	4 sessions of 3 hours (8%)
Other activity	1 hour (1%)
Private study	107 hours (71%)
Total	150 hours

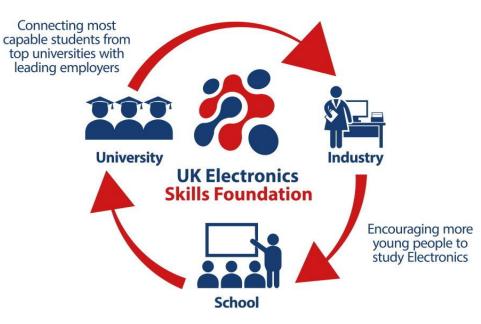
FEEDBACK

- Support through advice and feedback hours.
- Cohort-level feedback on final examination.

Student Scholarships

(~) **£10,000 ?**

Student Scholarships



ukesf.org

What is the UKESF?

We are the voice for skills in the Electronics Industry

Technology is the future. Technology depends on Electronics.



Scholarship Scheme – what's in it for me?

Develop skills, gain experience and secure graduate employment

£1,000 annual bursary per year

Workshop

professional and personal development training

Paid

summer work placements (min. 8 weeks each year)

Mentoring at your company & via a

UKESF Buddy

Networking

Opportunities to build relationships with potential employers Longer placements

Some companies offer opportunities for up to 12 month placements



BIG IDEAS

Renesas Electronics

A Global Leader in Microcontrollers, Analog, Power, and SoC Products



UK Electronics Skills Foundation

UK Electronics Skills Foundation Renesas Award for Female Students

University of Warwick female student award winner for 2023 - 2024







Suzanne Candanedo (Warwick), Automotive Electronics Competition winner

"It was fun sharing my thoughts and reflections on the future of cybersecurity in autonomous vehicles. Hopefully, those who read it found themselves reflecting on something new too! This award was a fantastic way to end my undergraduate career and culmination of my aggregated experiences."



Apply for the Scholarship Scheme

Applications Process Here:

https://www.ukesf.org/universities/scholarship-scheme/

ES192: Engineering Design

Module Leader: Yudhi Ariadi [Delivered by Chris Purssell] Credit Value: 15 Module Length: 30 Weeks



ES192: Engineering Design

Module Aims

Design is a major activity within all branches of engineering. Modern designers need to possess a range of skills, including; the ability to generate innovative designs and solutions to problems, the ability to design for a particular manufacturing process, the ability to collaborate effectively across teams and the ability deliver compelling presentations of designs.

This module aims to introduce students to the complexities of the design task and equip them with some of the techniques and experience required to design for a function and manufacturing/construction process within their discipline.

LEARNING OUTCOMES

- Imagine and create innovative products that are fit for purpose;
- Balance competing technical, commercial, regulatory, socio-environmental requirements in engineering design;
- Apply a methodical approach to the solution of design problems from design conceptualisation through to design verification;
- Use computational tools to aid the application of theoretical models to the quantitative design of functional components;
- Develop effective project management skills;
- Individually or as part of a team, develop effective communication behaviours.

ES192: Engineering Design

Activities

Туре	Required
Lectures	12 sessions of 1 hour (8%)
Seminars	3 sessions of 1 hour (2%)
Practical classes	9 sessions of 4 hours (24%)
Supervised practical classes	9 sessions of 2 hours (12%)
Private study	81 hours (54%)
Total	150 hours

ASSESSMENT

100% Coursework

- Term 1 Design portfolio (30%)
 - 13 A4 pages (or A3 equivalent)
- Term 2 Sprint 1 Group Report (35%)
 - Maximum of 15 sides of A4 and a 5-minute group video presentation. Including peer assessment.
- Term 3 Sprint 2 Group Report (35%)
 - Maximum of 15 sides of A4 and a 5-minute group video presentation. Including peer assessment.

FEEDBACK

- Verbal feedback during design seminars.
- Support through advice and feedback hours.
- Verbal and written feedback on design reports.

ES193: Engineering Mathematics

Module Leader: Michael Chappell Credit Value: 15 Module Length: 24 Weeks



ES193: Engineering Mathematics

Module Aims

To present, in context, and provide skills in the application of fundamental Mathematics concepts that underpin all of Engineering.

To encourage the development of problem solving as required in other Year 1 modules and in order that more advanced material can be tackled in modules taught in later years.

LEARNING OUTCOMES

- Recognise and be able to apply mathematical tools and techniques to solve engineering based problems.
- Recognise and be able to apply probabilistic and statistical tools and techniques to solve engineering based problems.
- Make appropriate assumptions to simplify and thus model real-life Engineering problems.
- Analyse models using basic mathematical techniques including statistical and numerical techniques.



ES193: Engineering Mathematics

Activities

Туре	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	(0%)
Tutorials	20 sessions of 1 hour (13%)
Private study	110 hours (73%)
Total	150 hours

ASSESSMENT

100% Exam

- 2HR Written Exam (100%)
 - Students may use the designated calculator
 - Engineering Data Book 8th Edition

Formative assessment

- x2 Online Moodle/QMP quizzes
 - Attendance (via taking the tests) will be monitored

FEEDBACK

- On-line tests.
- Worked examples in revision lectures.
- Model solutions to past papers.
- Support through advice and feedback hours.
- Cohort-level feedback on final examination.
- Tutorials.

ES196: Statics and Structures

Module Leader: Elia Gironacci [delivered today by Georgia Kremmyda] Credit Value: 15 Module Length: 10 Weeks



ES196: Statics and Structures

Module Aims

The aim of this module is to build fundamental knowledge of statics and behaviour of structures that underpin many branches of engineering science. This will provide the knowledge required for further study in the design and analysis of structures from buildings to spacecraft, motor vehicles and wind turbines.

The module will increase the students' ability with mathematical analysis and in particular its application to solving problems in structures. The module will further help in developing experimental skills and awareness of health and safety issues applicable to working in a supervised laboratory.

LEARNING OUTCOMES

- Demonstrate knowledge and understanding of basic theory, concepts and methodology necessary to solve problems related to structures under static loading.
- Become familiar with mathematical analysis and its application to solving engineering problems related to the behaviour of structures under static loading.
- Record and interpret the results of observed practical experiments.
- Demonstrate experimental skills.
- Demonstrate awareness of health and safety issues applicable to working in a supervised laboratory.
- Demonstrate an ability to make appropriate assumptions to simplify and thus model real-life engineering problems.

ES196: Statics and Structures

Activities

Туре	Required
Lectures	30 sessions of 1 hour (20%)
Practical classes	10 sessions of 1 hour (7%)
Other activity*	12 hours (8%)
Private study	98 hours (65%)
Total	150 hours

- *8 x 1hr = 8 hours of examples classes
- *2 x 1hr = 2 hours computer-based formative test
- *2 x 1hr = 2 hours revision lectures

ASSESSMENT

30% Coursework

Written report (6 pages in length) (30%)

70% Exam

- Online examination (70%)
 - ~Platforms AEP,QMP

FEEDBACK

- Model solutions to past papers.
- Support through office hours.
- Written feedback on marked laboratory report.
- Cohort-level feedback on computer-based formative test.
- Cohort-level feedback on final exam.

ES197: Systems Modelling, Simulation and Computation

Module Leader: James Atkinson

Credit Value: 15

Module Length: 18 Weeks



ES197: Systems Modelling, Simulation and Computation

Module Aims

Systems modelling is an essential skill which underpins all Engineering disciplines allowing the Engineer to model a variety of problems. The use of models aims to provide information necessary to make decisions in the design and development of Engineering solutions or to investigate systems which are too costly, difficult or unethical to investigate physically.

This module will focus on designing and programming models from first principles showing the application of mathematical techniques and avoidance of modelling errors.

LEARNING OUTCOMES

- Apply computational thinking to create software for solving modelling and simulation problems.
- Create and demonstrate a model developed with a user and purpose in mind.
- Simplify real engineering problems and approximate via a mathematical model.
- Derive simple models and relationships from data.
- Understand and predict the response of a system to test inputs (i.e. step, sine) using analytical and simulationbased approaches

ES197: Systems Modelling, Simulation and Computation

Activities

Туре	Required
Lectures	15 sessions of 1 hour (10%)
Project supervision	12 sessions of 1 hour (8%)
Practical classes	8 sessions of 2 hours (11%)
Other activity	34 hours (23%)
Private study	73 hours (49%)
Total	150 hours

*1x 1 hr revision lecture

*33 hours independent working on projects (33+12=45)

ASSESSMENT

60% Coursework

- Continuous Assessment of Laboratory Exercises (30%)
 - A series of laboratory exercises based on using MATLAB/Simulink to investigate various systems. Assessed via Moodle tests.
- Group Project (including Peer Assessment) (30%)
 - In groups, students develop a MATLAB/Simulink model for an engineering problem. Assessed by four deliverables: project charter (15%, 3 pages), presentation/demo (70%, 15 mins, 5-10 mins questions), team reflection (15%, 2 pages) and peer assessment.

40% Exam

• In-person examination (40%)

FEEDBACK

- Cohort level written feedback on group project
- Cohort-level written feedback on laboratory exercises
- Support through advice and feedback hours
- Cohort-level feedback on final exams

Welcome to Warwick Enterprise



WARWICK

START YOUR ENTREPRENEURIAL JOURNEY WITH US

WARWICK

ENTERPRISE

"Warwick Enterprise gave us advice, support and funding to launch and improve the business "

Tiarnán Curran-Feeney & Liam Cox

Directors - Tilliams Chocolate (Mathematics)



warwick.ac.uk/enterprise

Our innovation community Student Societies and **External** Organisations Student-led Groups Innovation Group Departments UNIVERSITY COLLEGE BIRMINGHAM Kickstart WARWICK enactus INNOVATION Warwick Entrepreneurs יווו ORFATE DENOVATE DISBURY DISTRICT **STARTUP** IATL POWERED BY INCUB/OR THE UNIVERSITY OF WARWICK SHERPAS. WARWICK BUSINESS SCHOOL Warwick warwick **STARTIUM** WARWICK WARWICK UNIVERSITY OF WARWICK 00000 SCIENCE PARK WARWICK INNOVATIONS WARWICK WARWICK MONASH University WARWICK SURGICAL MED-TECH AWARD EaL CUP STUDENT OPPORTUNITY

WARWICK

warwick.ac.uk/enterprise

Meet the team...



Warwick Enterprise



Whether you're a future innovator, business leader or just curious...

Warwick Enterprise helps students and graduates explore ideas, develop entrepreneurial skills and launch new ventures.

We're here to ensure every student has an opportunity to engage with innovation.

- ✓ Find the help and support you need.
- ✓ Share and discuss your enterprise ideas.
- ✓ Build a portfolio of enterprise skills.
- ✓ Develop your entrepreneurial mind-set.
- ✓ Access our innovation ecosystem.



Warwick Enterprise

Programme / Events / Activities

 Join our innovation community – via our Startium platform. You can then register for one of our upcoming events or programme activities or book an appointment with a member of the team to discuss a project or idea.



- 1:1 guidance and support join our innovation community and book an appointment with our team
- Tuesday drop-in session you can visit us in The Climb in Junction on Tuesdays between 12pm and 2pm to talk to a member of the team about your idea or your entrepreneurial journey.







Warwick Enterprise

Programme / Events / Activities

- Warwick Enterprise Pathway Programme our 6week course help you create and develop a solution that is innovative, viable, and scalable. This could be a start-up, social enterprise or community project, the choice is yours! You don't need an idea to join, just passion and interest. We will cover a variety of key topics including:
 - Identifying a problem
 - Ideating and generating multiple ideas
 - Testing and prototyping ideas
 - Turning your idea into a viable business
 - Managing your budget and funding your idea
 - Pitching your concept

The programme is suitable for any student, at any level of study. Attendees need no prior knowledge or experience.



WARWICK



Warwick Enterprise

Programme / Events / Activities

- **Pathway+ Workshops** covering a variety of topics that will help you to unleash your potential.
- Warwick Secret Challenge an interdisciplinary brainstorming workshop that introduces elements of design thinking. A great opportunity to meet other students and learn beyond the boundaries of a degree and department.
- Startup Sherpas a digital course where you can create your own start-up. The programme will take you through the method to lead you through all the steps needed to launch your very own business.









Warwick Enterprise

Programme / Events / Activities

- Lord Rootes Fund encourages creativity, innovation and impact through support of projects that create new enterprises, cultural initiatives and/or positive social impact.
- Graduate Support Warwick Enterprise provides support to graduates from the University of Warwick to launch their own start-up venture or social enterprise. We have two offers - a <u>Graduate</u> <u>Enterprise Support Package</u> and a <u>6-month Graduate</u> <u>Enterprise Incubator Programme</u>. We are also keen to support final year students looking to launch their own ventures.





WARWICK AWARD STUDENT OPPORTUNITY

Meet our Innovation Fellows...



- ✓ Aim to engage all students in Warwick's innovation culture on campus
- Enhance the educational potential of the student peers
- Design and deliver engagement activities that develop entrepreneurial mind-set and creative confidence





Join our innovation community



Visit us at Junction on University Road

Between Oculus and WMG, behind Faculty of Arts Building.





WARWICK AWARD STUDENT OPPORTUNITY

Dr Thomas Greenaway t.greenaway.1@warwick.ac.uk



STUDENT OPPORTUNITY



Apart from technical skills, what skills do you need to be a successful Engineer?

















SUSTAINABILITY







STUDENT OPPORTUNITY

Why join?



- The chance to recognise, reflect on and articulate skills
- Identify areas for development
- Navigate opportunities from across campus
- Try new activities
- Have fun, make friends, belong
- You need Silver in the Warwick Award to go into your 4th year

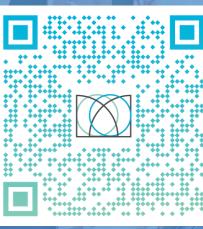


WARWICK AWARD STUDENT OPPORTUNITY

Shape your future with the Warwick Award

- A free University Award to help you develop key employability skills during your time at Warwick.
- Is officially recognised by the University
- Can be personalised to suit your training and development needs, and completed at any time during your studies

Find out more at warwick.ac.uk/warwickaward or scan the QR code



Record your attendance



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https://welcomeweek.warwick.ac.uk/a/1716