Aeronautical Engineering
MEng/BEng
Pre-entry pack

WORLD CHANGERS WELCOME

gla.ac.uk/schools/engineering
Glasgow UAS
IMechE UAS Grand Challenge 2016 competition

The UAS Challenge asks teams of undergraduates to undertake a full design and build cycle of a UAS with specific mission objectives before competing in a final ‘fly-off’ and judging.

Glasgow UAS performed extremely well at 2016’s year’s fly-off competition. The team won two awards – most promising design and best environmental design, and also received a special commendation for manufacturing because of our use of 3D printing technology in the schools MAST lab.

Kenneth Maguire

The aim of the competition is to give students the experience of working on a real industrial level project as well as giving students an opportunity to network with industry professionals with representatives from some of the leading names in the engineering industry.

One thing we learnt was the value of team work; each person was assigned to a role they excelled at and together we were able to efficiently and effectively produce a quadcopter that helped us win not one but two awards.

Kenneth Maguire
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Programme Structure:

MEng and BEng programmes follow the same curriculum up to the end of third year. Students must attain a GPA of at least 14.0, at the end of year 3, in order to progress onto the MEng. Students who fail to attain this level may only be permitted to study for the BEng.

Please note: The curriculum as outlined may be subject to change prior to the start of the programme. Full course descriptors can be found at: www.gla.ac.uk/coursecatalogue

Programme Structure:

Year 1
- Aerospace Engineering 1
- Analogue Electronics 1*
- Design and Manufacture
- Dynamics 1*
- Engineering Mathematics 1*
- Engineering Skills 1*
- Materials 1*
- Statics 1*
- Thermodynamics*

Year 2
- Aerospace Design Project 2
- Introduction to Aerodynamics 2
- Mathematics AE2X
- Power Electronics 2
- Mechanics of Structures 2A
- Dynamics 2
- Fluid Mechanics 2
- Engineering Mathematics 2
- Microeconomics E1
- Thermodynamics 2
- Engineering Skills 2

Year 3
- Aerodynamics & Fluid Mechanics 3
- Aircraft Design 3
- Dynamics & Control 3
- Instrumentation & Data Systems M3
- Simulation of Engineering Systems 3
- Propulsion & Turbomachinery 3
- Aircraft Performance 3
- Flight Mechanics 3
- Aircraft Structures & Materials 3
- Aircraft Structural Analysis & Design 3

Year 4 BEng
- Aerospace Design Project 4
- Individual Project 4
- Elements of Law for Engineers

Year 4 MEng
- Aerospace Design Project 4M

- Aircraft Structures and Materials 4
- Aircraft Vibration and Aeroelasticity 4
- Computational Fluid Dynamics 4
- Flight Dynamics 4
- High Speed Aerodynamics 4
- Integrated System Design Project 4
- Physics of Fluids 4

Options
- Control 4
- Industrial Aerodynamics 4
- Lasers and Electro-Optic Systems M4
- Robotics 4
- Space Flight Dynamics 4
- Renewable Energy 4
- Autonomous Vehicle Guidance Systems 4
- Advanced Thermal Engineering 4
- Navigation Systems 4
- Radar and Electro-Optic Systems 4

BEng options only
- Aircraft Structures and Materials 4
- Aircraft Vibration and Aeroelasticity 4
- Computational Fluid Dynamics 4
- Physics of Fluids 4
- Flight Dynamics 4
- High Speed Aerodynamics 4

Year 5 MEng
- Aircraft Handling Qualities and Control 5
- Individual Project 5
- Elements of Law for Engineers

Options
- Robust Control 5
- Autonomous Vehicle Guidance Systems
- Fault Detection, Isolation and Reconfiguration
- Introduction to Wind Engineering
- Radar and Electro-Optic Systems M
- Spacecraft Systems 2
- Rotorcraft Aeromechanics 5
- Advanced Aerodynamics 5
- Turbulent Flows 5
- Composite Airframe Structures
- Computational Fluid Dynamics 5
- Advanced Thermal Engineering 5

* Included in the common curriculum

Our Aeronautical Engineering programme is fully accredited by the IMechE and the Royal Aeronautical Society
Timetable
Sample timetables show an average schedule. You will have lectures every day probably, between 2 and 4 hours per day. In addition you will have laboratories or tutorials which allow you to develop what you have learnt in the lectures. The number of laboratory sessions or tutorials you have over the term will depend on the subject, but in the first year there will typically be 1-2 laboratories and 2-3 tutorials per week and these will all start in the third week of term.

A definitive copy of your timetable will be available on MyCampus, once you have registered. You should check this regularly as updates will be made.

www.gla.ac.uk/students/myglasgow/

Please note that you are expected to do several hours of independent study per week, for each subject, throughout the term. In fact studying engineering is like a full time job, you’ll require good time management to balance study and other commitments.

Most teaching is done in 50 minute lectures and each lecturer will present in their own style. Most will give handouts or make notes available online but you will be expected to take notes during the lecture.

Wider reading
Due to the nature of the programme we don’t provide a specific reading list, below is a suggestion of wider reading:

1. Figure 1(a) shows a widely used circuit called a potential divider formed by two resistors. The input and output voltages are given in terms of the resistances by

\[ V_{\text{out}} = \frac{R_2}{R_1 + R_2} V_{\text{in}}. \]

Use this to find the unknown quantities in figures 1(b)–(e). [0.5 V, 500 Ω, 12 V, 16 kΩ]

2. A remote control draws 10 mA while it is being used and 10 µA when it is idle. (Make sure that you know the powers of 10 for the prefixes in mA and µA. How about kA and nA?) What is the average current drawn, assuming that it is used for 5 minutes per day? Which is more significant, the current drawn when it is operating or idle? [45 µA]

The control’s batteries are rated at 100 mAh. This means that the product of the current in mA and lifetime in hours is 100. For example, they will provide 100 mA for 1 hour or 0.1 mA for 1000 hours. How long will they last in the remote control? [About 3 months]
Student Advising System in the School of Engineering

The purpose of this short note is to make you aware of the Undergraduate Advising System we have in the School which is available to support you in your studies. As soon as you register with us you will be allocated an Adviser of Studies. You can easily find out who this is by logging in to your MyCampus account.

I should make it clear that your adviser is not a tutor – he/she will not be able to help you with problems relating to your course material (you should contact the course lecturer for this). Your adviser of studies is there to help you with any other problems you might experience which affects your ability to study. They will also help you with issues relating to academic progress, curriculum choices and career matters.

During the first two weeks of the semester you will be contacted by your adviser and invited to meet him/her. This is simply to give you a chance to meet your adviser for the first time, and should only take a few minutes – please attend this meeting.

Our intention is that you should keep the same adviser throughout your degree study and he/she will be able to provide you with reference letters and recommendations when you come to apply for a placement, internship or a permanent job after graduation.

During the semester if you should have problems, medical or personal, for example, you can ask for an appointment to see your adviser (usually by e-mail). If your adviser can’t help you directly, the University has many central student support services (counselling, financial advice chaplaincy etc) and your adviser will point you to the correct service to help you. Anything you tell your adviser will be held in the strictest confidence.

If you miss any classes (say due to illness) please report them using the Student Absence system on MyCampus. If during the exam period you are ill and this causes you to miss an exam or you feel your performance has been affected, please use the Good Cause reporting system on MyCampus.

Advisers are also busy academics and may have commitments with teaching and research or may indeed be off-campus for periods of time. If you cannot contact your adviser of studies please contact the Teaching Office (see contact details opposite) who will direct you to the Senior Adviser for your discipline.

Useful Contacts:

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<tr>
<th>Discipline</th>
<th>Senior Adviser</th>
<th>e-mail</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Aerospace</td>
<td>Dr Richard Green</td>
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ENGINEERING SOCIETIES

At the school of Engineering, we strongly encourage student-led activity wherever possible. This past year alone we have seen the launch of three new student-led initiatives. Below is a list of our current engineering student associations. Don’t be discouraged if you feel that there is a gap – it’s an opportunity to start your own…

- Design, Build, Fly
- EWB (Engineers Without Borders)
- FEMEng (Female Engineering Society)
- Formula Student (Racing Car Construction)
- GUBMES (Glasgow University Biomedical Engineering Society)
- GUES (Glasgow University Engineering Society)
- GUIEEE (IEEE Student Branch)
- GURobotics
- iGEM (Synthetic Biology)
- JetX (Jet Engine Enthusiasts)

For more information visit: www.gla.ac.uk/engsoc

Design Build Fly

The University of Glasgow’s Design Build Fly team aims to take part in the cutting edge competition held by American Institute of Aeronautics and Astronautics which challenges engineering students from across the globe to design remote controlled aircraft, build, then fly them at the contest site in the USA.

Last year, the team enjoyed success in Arizona coming 19th out of 100. The team are currently preparing to compete in Kansas during the spring.

For more information or details about how to get involved contact:

Email: management@ugdbf.co.uk
Web: www.ugdbf.co.uk
The Aeronautical Engineering Induction Event
Wednesday 13th September

10:00 - 11:30 Welcome Session, Sir Charles Wilson Building
11:30 - 11:45 Lunch, Sir Charles Wilson Building
11:45 - 14:00 Ice-breaker session, James Watt South Building

glasgow.ac.uk/engineering

James Watt South Building, University of Glasgow, Glasgow G12 8QQ
General switchboard: +44 (0)141 330 2000
The University of Glasgow, charity number SC004401