Welcome to the Department of Mechanical Engineering Sciences

Dr Andrew Viquerat
Why Engineering?

A recent report...

‘Engineers are crucial to the economy and society as a whole. Engineers are the innovators and problem-solvers who really make a difference to people’s lives.

Engineers are the people behind innovations such as driverless cars, bionic limbs and space travel.

However the UK is facing an engineering skills shortage. Recent figures indicate that we need 69,000 more engineers in the UK every year just to meet industry demand.’
Award winning facilities

- Open 24hrs 365 days
- Digital resources
- Hive (campus support centre)
- SurreyLearn virtual learning
- Workshops
- Additional learning support
Opportunities at Surrey

- Professional Training placement year
- 66% Students go on Placement (2016/17)
- 30%+ receive job offer from placement (PTY Survey)
- Study Abroad
- Global Graduate Award
- Research Placements
Sports and Societies

- Faith
- Departmental
- Arts
- Political and campaign
- International
- Special Interest

Sports clubs
- Cheerleading
- Football
- Rugby Union
- Snowsports
- Ultimate Frisbee
- Mixed Martial Arts
Accommodation
https://www.surrey.ac.uk/accommodation and virtual tour app
Exploring Surrey – Guildford is only 34 minutes from London
Why Mechanical Engineering Sciences?

» The department in numbers

» 35 academic staff; 12 research fellows
» 7 technical staff and 4 administrators

» ~750 undergraduates studying:
  • BEng/MEng Aerospace Engineering
  • BEng/MEng Automotive Engineering
  • BEng/MEng Mechanical Engineering
  • BEng/MEng Biomedical Engineering

» ~30 full-time PGT students studying:
  • MSc in Biomedical Engineering

» ~30 PhD and ~20 EngD research students
Mechanical Engineering Sciences

» Engineering is about making the world a better place.

Centre for Biomedical Engineering

» We are working with amputees to develop better outcomes, developing equipment and technologies to give early detection of cancer and Alzheimer's disease

• Biomedical signal processing
• Microengineering – lab on a chip
• Osseointegration
• Cerebrospinal fluid dynamics
• Engineering materials
• Human movement analysis
• Tissue engineering
Centre for Aerodynamics & Environmental Flow

Home to the Rolls-Royce supported Thermo-Fluid Systems University Technology Centre, which was established in 2003, and EnFlo, the Environmental Flow Research Centre, which was opened in 1993 as a focus for UK research activities based on laboratory scale simulation of atmospheric flow and pollutant dispersion. Its unique capabilities are recognised by its status as a NERC-NCAS (National Centre for Atmospheric Sciences) facility.
Mechanical Engineering Sciences

» Engineering is about making the world a better place.

» Centre for Automotive Engineering

» The group has research interests in hybrid vehicles, vehicle dynamics and control and terrestrial mobile and space robotics. We are working with colleagues in the 5G Innovation Centre on autonomous driving.

» The group also oversees the Formula Student activity.
Mechanical Engineering Sciences

» Engineering is about making the world a better place.

Centre for Engineering Materials

» Our activities range from saving lives through better armour, to designing and manufacturing bespoke miniature energy harvesting devices for the internet of things.

» Home to the EPSRC Centre for Doctoral Training in Micro- and NanoMaterials and Technologies.
Biomedical Engineering Applicant Day

Dr Daniel Abasolo
Programme Leader Biomedical Engineering
Department of Mechanical Engineering Sciences
Programme organization

Year 1
- Common First Year
  - Mechanical Engineering
  - Biomedical Engineering
  - Aerospace Engineering
  - Automotive Engineering

Year 2
- Mechanical Engineering
- Biomedical Engineering
- Aerospace Engineering
- Automotive Engineering

Professional Training Year (optional)
- Mechanical BEng
- Mechanical MEng
- Biomedical BEng
- Biomedical MEng
- Aerospace BEng
- Aerospace MEng
- Automotive BEng
- Automotive MEng

Year 3
- Mechanical MEng
- Biomedical MEng
- Aerospace MEng
- Automotive MEng

Year 4
- Mechanical MEng
- Biomedical MEng
- Aerospace MEng
- Automotive MEng
Choosing between MEng and BEng

**MEng**  
*Master of Engineering, 4 or 5 years*
- More analytical: greater breadth and depth in support of R&D roles
- Fastest route to chartered status
- Fuller preparation for the workplace

**BEng**  
*Bachelor of Engineering, 3 or 4 years*
- Fastest degree completion
- Shortest path to industry
- Good if you're planning a further degree such as a specialist M.Sc. or M.B.A.
Programme Detail

» Common First Year

Year 1 (FHEQ level 4)
Modules include:
- Mathematics 1 and 2
- Experimental and Transferable Skills
- Fluid Mechanics and Thermodynamics
- Materials and Statics
- Design and Component Production
- Solid Mechanics 1
- Electronic Instrumentation 1

You will be enrolled in 120 credits of modules each year. This roughly equates to four modules per semester.

Later Years

Year 2+ (FHEQ level 5+)
Modules include:
- Electronic Instrumentation 2
- Human Biology
- Biomechanics
- Biomedical Signal Processing
- Biological and Tissue Engineering
- Clinical Rehabilitation
- Engineering Management
- Advanced Stress Analysis
- Medical Implants and Biomaterial Applications
Learning and Teaching is by a variety of approaches:

- Lectures
- Workshops and laboratory work
- Team design projects
- Virtual learning environment
Programme Detail

» Year 2 Design Project (Group Project: Design, Make, and Evaluate)
Learning and Teaching

Individual Projects

Some recent project titles:

- Use of body worn accelerometers to measure physical activity
- Printed smart textile health monitoring devices
- Early detection of cardiac autonomic neuropathy in diabetic patients from electrocardiograms - a study with entropy metrics
- Design, fabrication and testing of a grasping robot tool with sensor skin
- The effect of a healed bone fracture on the surrounding stresses experienced by the femur
- Novel methods of sample preparation for improved detection of oral cancer by dielectrophoresis
Advantages of a Surrey degree

Teaching quality is our priority:
» You are our future!

Focus on graduate employability:
» One of the very highest graduate employment rates

Programmes are fully accredited
» Institution of Mechanical Engineers
» The Institution of Engineering and Technology

Integrated professional training
» For those things you just can't learn in a lecture
Integrated Professional Year

» Huge range of opportunities

- Normally done between second and third year of study
- Normally salaried positions: typically £16K - £21K
- Substantially reduced student fees during placement year
- A member of academic staff visits the student on-site
- Placements made at more than 100 companies in UK & overseas
Global Graduate Award

- Arabic
- British Sign Language
- Chinese Mandarin
- French
- German
- Italian
- Japanese
- Korean
- Portuguese
- Russian
- Spanish

- Free language courses open to all students.
- Sustainability module.
- Start every year in October and run for 19 weeks, two hours per weekly session, over two semesters.
- Assessed modules and the final module mark is based on assessed coursework tasks (60%) and a final test (40%).
- Award 15 co-curricular credits to undergraduate students, which will appear on undergraduate student records.