Welcome to ARU

Faculty of Science and Engineering

School of Engineering & The Built Environment

with

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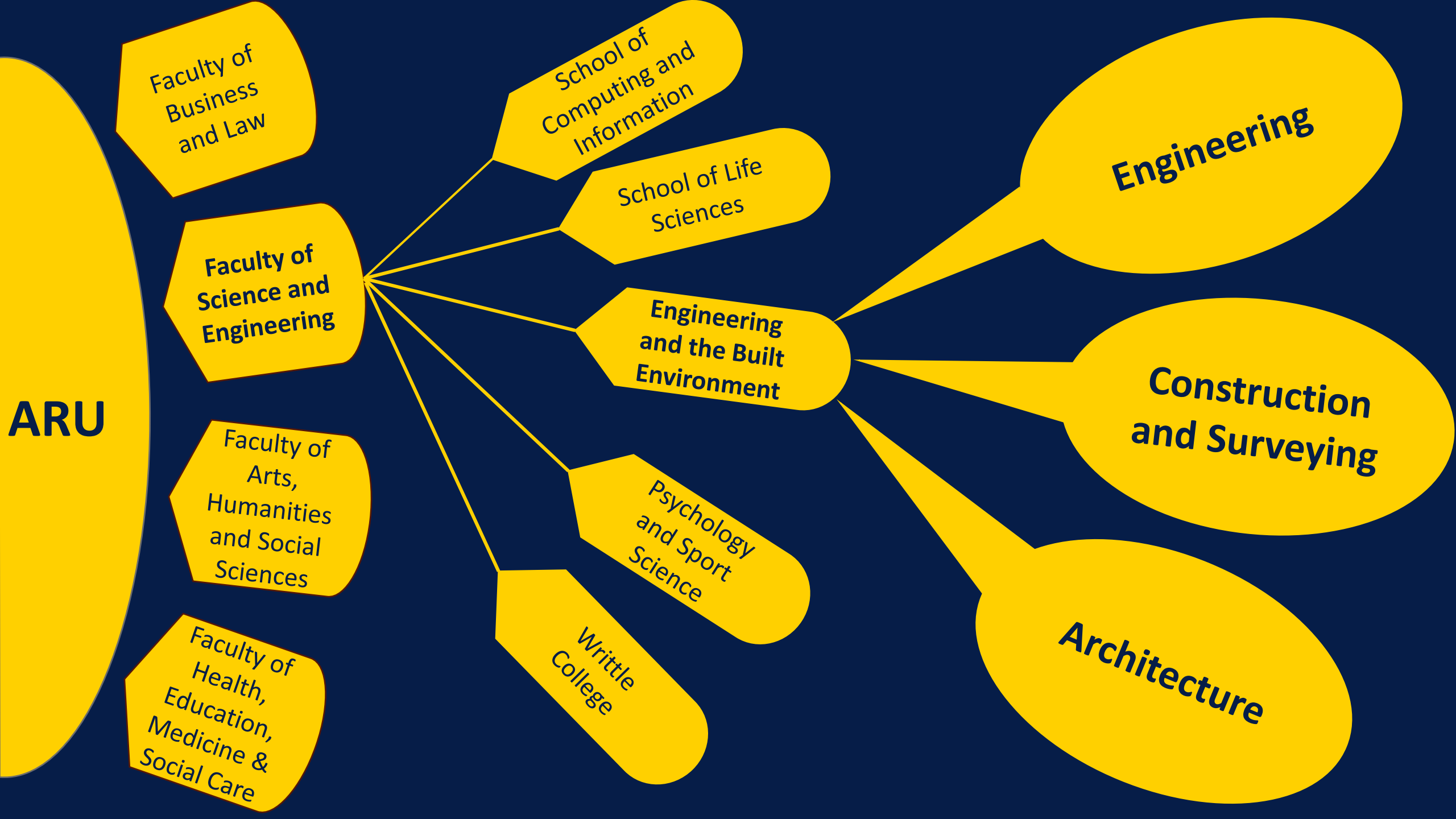
#ARUProud.

ARU ranked in the top 25% in the country, and first in our region, for full time graduate employment.

Source to reference: Graduate Outcome Survey: All UK full-time undergraduates. Country refers to mainstream HEIs in England, excluding specialist institutions and those with fewer than 500 students. Contains HESA Data © HESA 2021 (www.hesa.ac.uk).


ARU
Faculty of Business and Law
Faculty of Science and Engineering
Faculty of Arts, Humanities and Social Sciences
Faculty of Health, Education, Medicine & Social Care
School of Computing and Information
School of Life Sciences
Engineering and the Built Environment
Psychology and Sport Science
Writtle College
Engineering
Construction and Surveying
Architecture

Engineering - our Courses @ ARU

- Civil Engineering BEng
- Biomedical Engineering BEng/Meng
- Electrical and Electronic Engineering BEng/MEng
- Mechanical Engineering BEng/MEng
- Mechatronics and Robotics Engineering BEng/MEng

ARU Engineering Course Information...

- Our courses adopts a **Project Based Learning (PBL)** approach.
- While lectures efficiently transfer technical knowledge, the core learning arises from **hands-on engineering projects**. These projects serve as the primary medium for understanding throughout the course, supplemented by laboratory experiences, manufacturing practices, and industry visits.
- A considerable emphasis is placed on **collaboration with the industry**, ensuring students grapple with **real-world problems** and graduate as **industry-ready professionals**.
- Group work is pivotal, and communication with diverse stakeholders is integral. Problem-solving and theory application are essential components.

Engineering– study modes

- Full time (3 years)
- Full time with placement (4 years)
- Part-time (5 years)
- Degree apprenticeship (5 years) – Currently only Civil Engineering

- Switching between mode of study and course is possible (depending on study stage)

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Types of assessment @ ARU…

- Coursework/ report writing
- Exam
- Presentation (group/individual)
- Live Briefs
- Industry engagement

Civil Engineering – Project-based Learning

Flood risk and the built environment

PROJECT PLANNING

This project-based module will help you to prepare for real life Civil Engineering projects. You will learn how to plan efficiently for a design project and manage time and resources.

ENGINEERING SURVEYING

You will learn the fundamentals of engineering surveying. You will primarily be working on the field, where you are doing profile surveying to accurately find out the layout of a Civil Engineering infrastructure and the surrounding topography.

GROUND INVESTIGATION

Ground investigation is the means to determine ground conditions for an optimised design. This is a hands-on topic where you will learn and perform soil sample collection, analysis, and interpretation.

FEASIBILITY STUDY AND FLOOD HYDROLOGY

You will work on identifying alternative engineering solutions for a real-world problem and assess their suitability from various points of view. You will learn about the UK flood risk assessment approaches and their applications.

CIVIL ENGINEERING MATERIALS

You will establish an overarching design for the project considering the client needs. It sets the groundwork upon which the detailed engineering analysis is built.

FUNDAMENTALS OF STRUCTURES

As part of the project, you will assess your suggested innovative engineering solutions from a structural point of view, to do so, you will lear and and perform structural analysis.

CONSTRUCTION PROCESSES

This is a hands-on whole-week on-site construction in which you will build your designed timber walkway on the university's ground. You will learn how to prepare for such a task, be part of the process, managing risks, and reflect on performance.

CLIENT REPORT AND STAKEHOLDER ENGAGEMENT

You will learn how to identify stakeholders, design a communiation plan and build iyour communication skills by engaging with different stakeholders. As part of the Live Brief programme, you will closely work with our industrial partners and learn how to prepare industry-standard technical reports and presentations.

Geotechnical Engineering @ ARU

Hydraulics Engineering @ ARU

Structures & Material Engineering

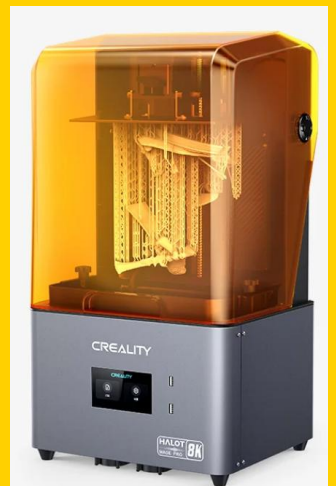
- Concrete lab

Mechanical Engineering

You will develop technical, practical, and intellectual skills through the projects. Working in groups and communicating with a variety of stakeholders and industries. Problem-solving and theoretical applications will be a significant component of the projects.

Additive Manufacturing Facilities @ ARU

CNC Lathe, CNC Milling machine



Rapid prototyping facilities

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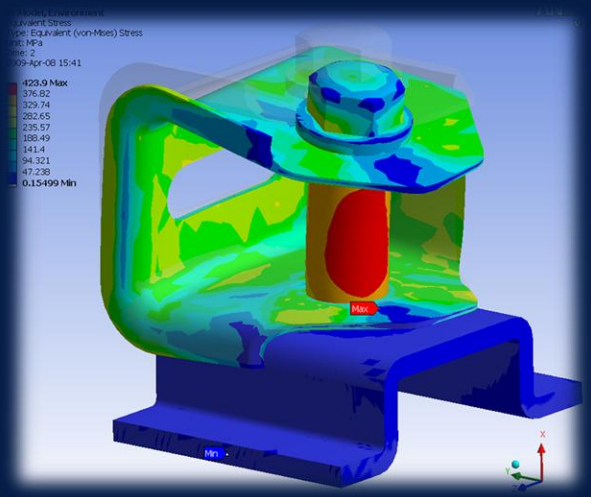
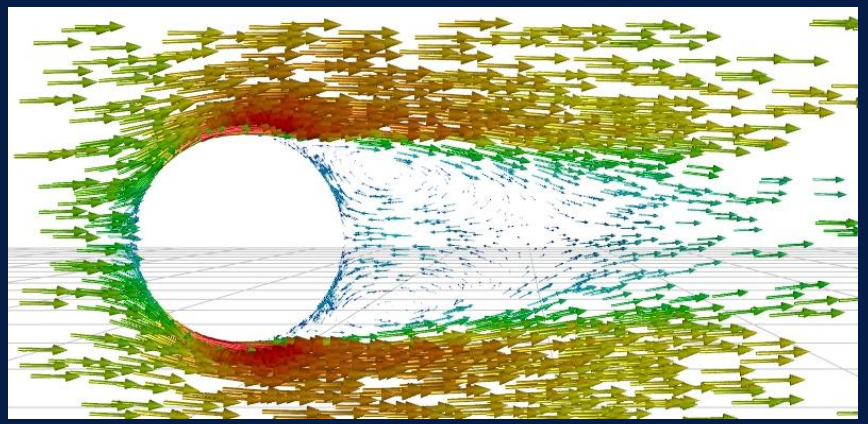
Simulation and Analysis @ ARU

Inventor and CAD Modelling

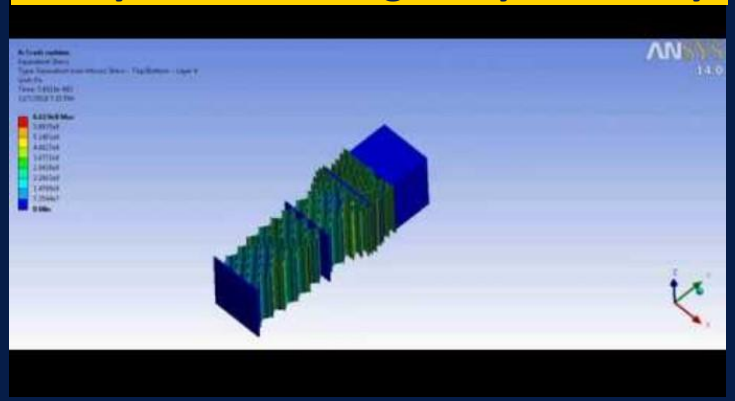
FE and stress analysis



Computational Fluid Dynamics (Fluid flow)



Honeycomb crushing analysis in Ansys



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Electronic & Electrical Engineering @ ARU

We teach industry-standard software including

- Xilinx ISE,
- Multisim,
- LabVIEW,
- Ansys,
- Matlab,
- SPICE and
- VHDL-AMS.

"The department has a fully equipped electronics laboratory staffed by a specialist technician. This allows for practical experimentation using real components and hardware, on an open access basis."

Sidath - BEng Electronic and Electrical Engineering

Mechatronics & Robotics Engineering @ ARU

Robotics Stations

The MPS Robot station consists of the following:

Robot 6 axis RV-2FB with robot controller
Maximum payload: 4 kg
Maximum range: 649 mm
- Multi-function gripper
- Robot handling module
- Robot assembly module
- Profile plate
- Trolley
- Control console

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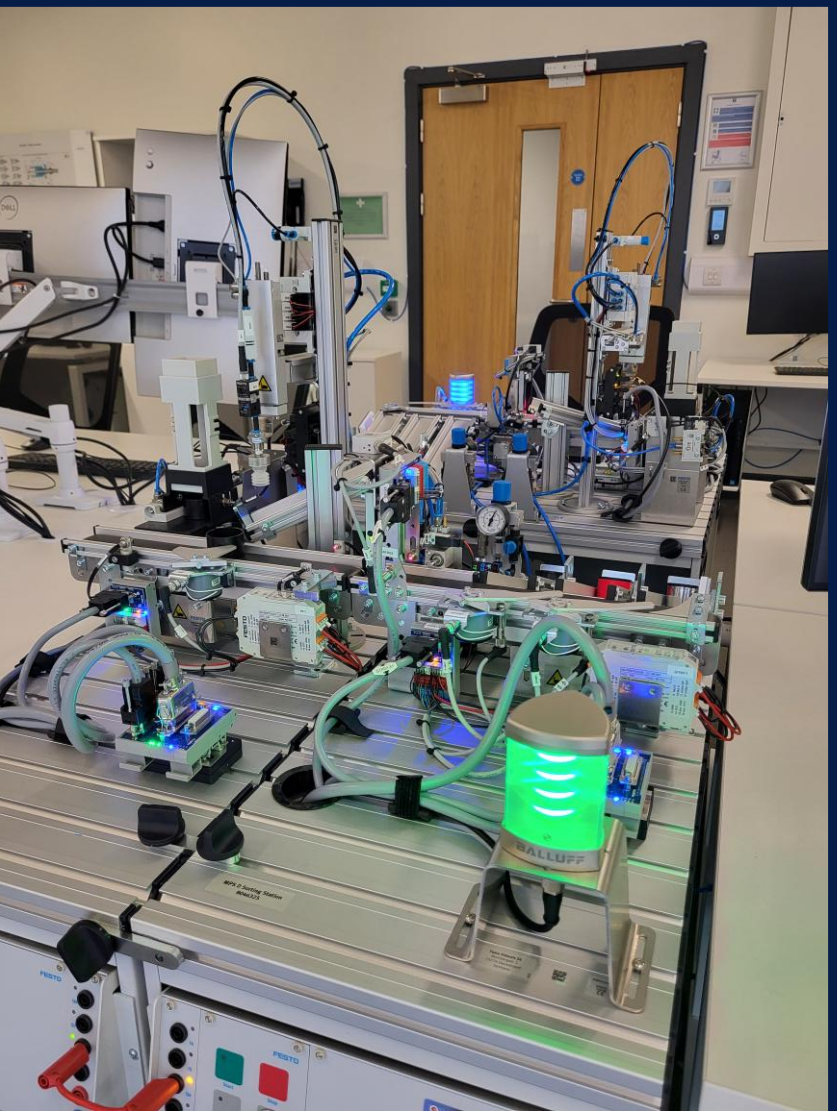
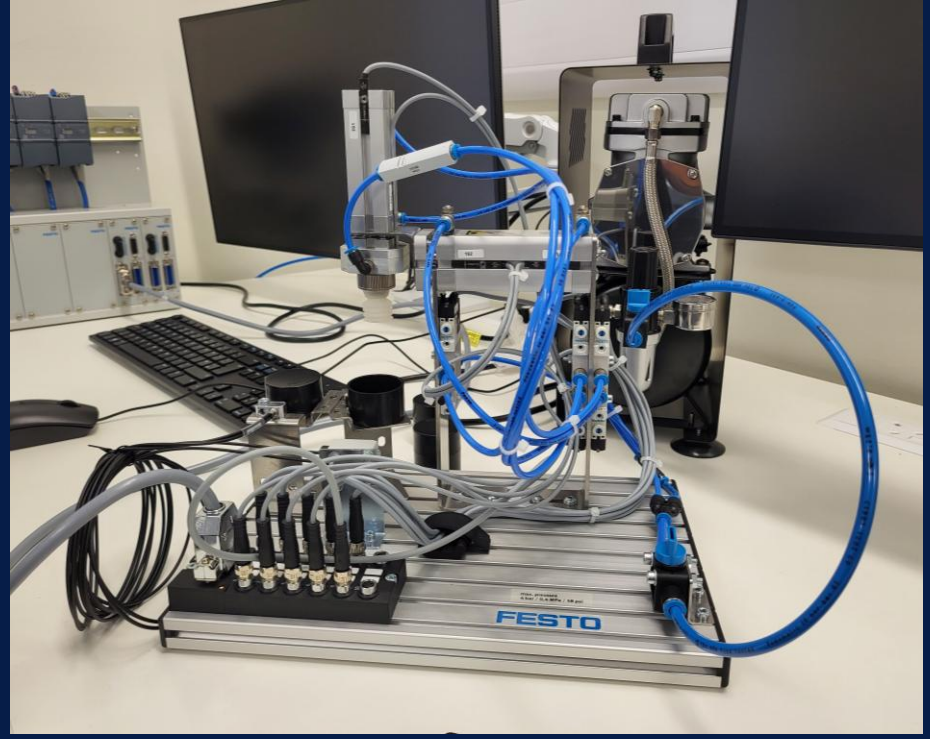
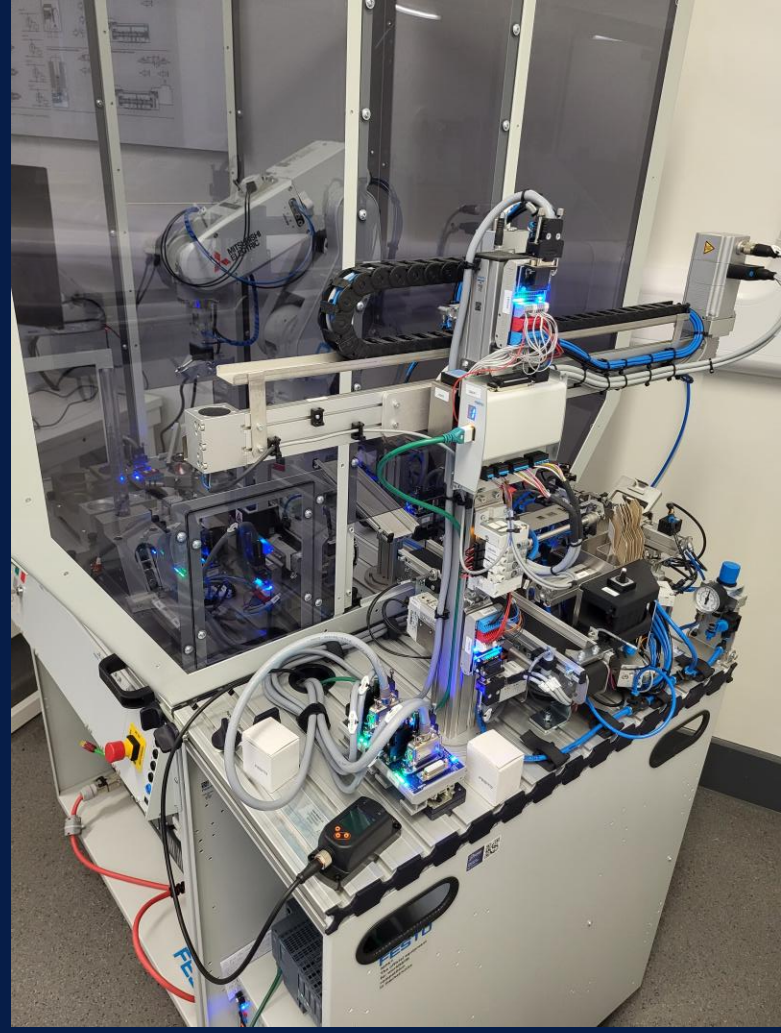
Sorting Station





Pick and Place Station



Packaging station

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Biomedical Engineering

- Integrates engineering and medical science to design, develop, and improve medical devices and treatments.
- Focused on three core areas: Biomaterials, Bioinstrumentation, and Biomechanics.
- Provides strong practical, laboratory, and problem-solving skills to address real clinical challenges.
- Prepares graduates for diverse careers in healthcare, industry, and academia within a rapidly growing field.

Engineering at ARU and Future Job Prospects

- We emphasis on Industry 4.0 concepts, and the latest developments and techniques in a variety of cutting-edge areas of engineering

Mechanical Engineering	Electronics and Electrical Engineering	Mechatronics Engineering	Automation and Robotics Engineering	Biomedical Engineering
• Mechanical Engineer • Automotive Engineer • Aerospace Engineer • Manufacturing Engineer • Maintenance Engineer	• Electrical and Electronics Engineer • Control Systems Engineer • Power Systems Engineer • Telecommunications Engineer • Instrumentation Engineer	• Mechatronics Engineer • Automation Engineer • Control Systems Engineer • Robotics Engineer • Embedded Systems Engineer	• Robotics Engineer • Automation Engineer • Control Systems Engineer • Artificial Intelligence Engineer • Machine Learning Engineer • Industrial Automation Engineer • Vision Systems Engineer	• Biomedical Engineer • Clinical Engineer • Bioinformatics Specialist • Biomechanical Engineer • Biomaterials Engineer • Medical Device Designer • Rehabilitation Engineer

Future Jobs Civil Engineering

- Geotechnical Engineer
- Structural Engineer
- Engineering Surveying
- Materials Engineer
- Water Resource Engineer
- Water/wastewater Engineer
- Hydraulic Engineer
- Highway Engineer
- Transportation Engineer

ARU Chelmsford Campus