

Birmingham City University
Technology Innovation Centre

BSc (Hons) Computer Aided Automotive Design



Formerly UCE Birmingham



BSc (Hons) Computer Aided Automotive Design

Introduction

Changes in the global automotive industry are causing automotive component suppliers to adopt more new technologies and increase the level of design activity undertaken on new model development. As a result there is a growing shortage of engineers with the skills of virtual modelling and simulation of components and whole vehicle assemblies.

This course combines a study of the advanced computer technologies of visualisation for styling and concept evaluation, virtual modelling and simulation of both engine and vehicle performance, with aspects of the international nature of the automotive business.

Course Aims

To provide graduates with the following skills and knowledge:

- A fundamental understanding of the major elements of the automotive design process
- An understanding of the factors that affect the behaviour of vehicles
- The ability to critically analyse the automotive product development process
- The ability to apply modern computer based technologies to the automotive product development process
- The ability to apply modelling and simulation tools and techniques to the validation of automotive design
- An understanding of automotive industry corporate structures and management procedures within a global operating context
- A knowledge and comprehension of the social, technical and commercial factors that influence the automotive sector

Career Prospects

The course equips graduates for careers in the following areas of major automotive companies and the automotive supply chain:

- Design and product development
- Testing and evaluation
- Product data management
- Supplier and customer relations
- Marketing

Technology Innovation Centre

Courses at Birmingham City University's Technology Innovation Centre are designed with industry to produce highly employable graduates across a wide spectrum of Advanced Engineering, Design, Interactive Media and Information and Communications technologies.

Students will benefit from both the outstanding resources and facilities at our Millennium Point campus and our unique engagement with industry, which ensures that our courses equip students with up-to-date skills, relevant to the needs of employers. Located in Birmingham City Centre, **tic** students also enjoy all the facilities of a thriving international city, including culture and entertainment for all tastes and excellent local, regional and national transport links.

Industrial Placement

Students are encouraged to further enhance their career prospects by including an industrial placement in their course. This takes place after the second year of study and extends the course duration to four years.

As well as providing the workplace experience sought by many employers, a placement provides an invaluable opportunity for students to further develop their practical expertise, earn money and try out a potential career path. The **tic** placements team supports students throughout the placement process.

Learning approaches and Assessment

Students experience a wide variety of subjects and many different types of learning environment including lectures, tutorials, practicals and computer laboratories. Learning methods include the use of the latest networked computer systems and commercial standard software platforms. All courses incorporate a significant amount of project work to provide students with the opportunity to develop and apply their knowledge and are assessed through a combination of assignments, case studies, in-class tests, presentations and examinations.

Accreditation

The BSc (Hons) Computer Aided Automotive Design course is accredited by the Institution of Incorporated Engineers as satisfying academic requirements for IEng.

Entry Requirements

Applicants will be expected to have successfully completed at least one of the following or an equivalent qualification:

- Five GCSEs/GCEs with at least two GCE 'A2' levels, or an AVCE double award. Maths, English Language and a Science subject to at least GCSE Grade C.
- An Edexcel National Certificate/Diploma in a relevant subject with a significant Merit profile. Maths, English Language and a Science subject to at least GCSE Grade C.
- A Degree Foundation Certificate, Access to HE Qualification, or equivalent, in a relevant subject.

A typical tariff point offer is 220 to 240 with AS qualifications used towards the tariff where appropriate.

Mature applicants who are able to demonstrate proficiency in Mathematics and written English will be considered for entry at Foundation Level.

Course Length

Full Time: 3 years
Sandwich: 4 years

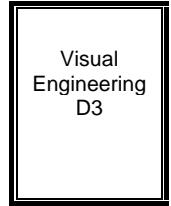
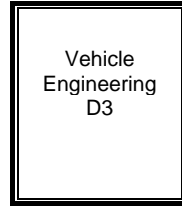
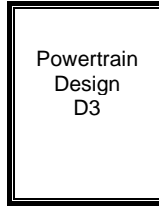
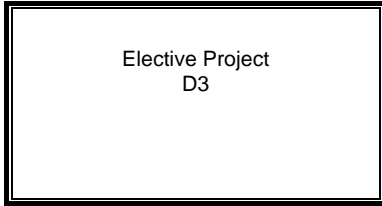
For further Information

Course Enquiries
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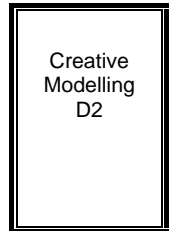
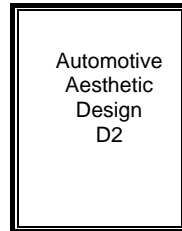
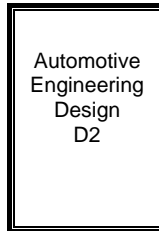
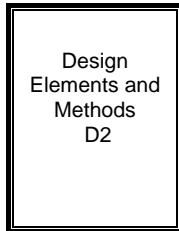
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Module Grid

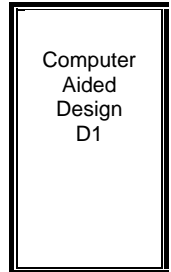
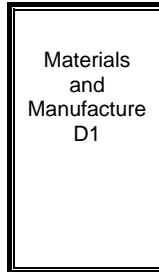
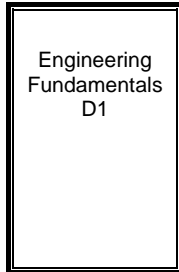
Year 3



Year 2



Year 1



**Business
Theme**



**Engineering
Design
Theme**



**Powertrain
Theme**



**Vehicle Body
Theme**



CAD Theme

Brief Module Description

Year 1

Design in Business D1

Sketching, drawing; computer image manipulation; market-led business; report writing; presentations. Design modelling and modelling techniques; study skills; business environments.

Engineering Fundamentals D1

Mechanical fundamentals, Free Body diagrams, introductory dynamics, strength of materials, analytical techniques. Electrical circuitry, energy storage and conversion. Simple power transmission by torsion. Bending in structural members.

Materials and Manufacture D1

Materials properties and characteristics, mechanical testing methods, materials selection methods, manufacturing processes. Characteristics of polymers and composites, polymer and other processing techniques, surface modification techniques, origin and identification of common defects.

Automotive Industrial Studies D1

History of the automotive design process. Growth of design custom and practice. Key factors influencing the development of automotive design: cultural, economic and environmental. Vehicle homologation processes, performance assessment techniques, automotive industry structures, industry trends.

Computer Aided Design D1

CAD drawing and modelling, 2D and 3D; orthographic drawing systems, projections and standards. Design process, CAD drawing systems, dimensioning, parts listing.

Year 2

Market-led Enterprise D2

Business enterprise and careers, marketing planning, business environment and resource analysis, objective setting and basic strategy. Work planning. Financial planning: market-based budgets, risk analysis, financial forecasts and statements. Project planning.

Design Elements and Methods D2

Mechanisms, design and redesign, concepts, materials and manufacturing processes, component selection, joining methods, ergonomics, and presentation of design solutions. Design for manufacture, problem solving, economic decision making.

Automotive Engineering Design D2

Modern automotive design custom & practice. Globalisation of design, and control of design process. Vehicle packaging, body materials, ride & handling, road systems. Steering and braking systems

Automotive Aesthetic Design D2

Automotive design process, principles of aesthetic theory and practice, historical studies, design visualisation of vehicles. Principles of physiological human factors.

Design studies of vehicles. Vehicle interior with regard to design practice, legislation, development, influencing factors from customers, material selection and manufacturing processes

Creative Modelling D2

CAD as an advanced design and visualisation tool, wire-frame, formwork, surfacing, shading, rendering, applied graphics, creating CAD models of engineering/design solutions. Surface modelling, solid modelling systems. Colour, texture, reflections, shadows. Constructing large complex assemblies.

Year 3

Elective Project D3

A major product design project from inception to realisation, involving research, analysis, problem identification, objectives setting, product design specification, concept generation and selection, selected concept development and evaluation, design detailing and finalisation, deliverables preparation and presentation.

Powertrain Design D3

Engine geometry, combustion, fuel handling, and exhaust characteristics, noise.

Vehicle Engineering D3

Vehicle packaging, vehicle body materials, crash design, vehicle ride, vehicle handling, structural suspension design.

Visual Engineering D3

Computer Aided Design systems, CAD/CAM, rapid prototyping.

Disclaimers

Birmingham City University's Disability Service aims to enable students with disabilities or learning support needs to make the most of their time at university. We regard disclosure of a disability as a positive thing and think it is important that students feel they can tell us about any disability they may have so we can try to support their individual needs.

If students have not made us aware of their disability or they feel they may have a disability please contact the Disability Service on 0121 331 5128, or email disability@bcu.ac.uk

This information is intended as a general guide to the University's (Faculty's) courses and facilities and forms no part of any contract between students and the University. Although reasonable steps are taken to provide the courses as described, the University cannot guarantee the provision of any course or facility. Any course may be altered or withdrawn owing to circumstances beyond the University's control. It is strongly recommended that prospective students contact the (relevant) faculty to obtain the most up-to-date course information. For full terms and conditions please log on to www.bcu.ac.uk/misc/legal.html

Birmingham City University promotes equality of opportunity in respect of every aspect of its provision. University policy and practice will seek to provide an environment that is free from discrimination against students, staff and others. The University and its staff will ensure that all prospective students are treated solely on the basis of their merits, abilities and potential.

The University will seek to prevent discrimination on the grounds of race, colour, ethnic origin, nationality, religious belief, gender, sexual orientation, disability, age, marital status, family circumstances, citizenship, social and economic status, or any other irrelevant individual differences.

For full details of the University's Equal Opportunities Policy please log on to www.bcu.ac.uk

All courses described as being delivered by Birmingham City University include those provided or delivered by the University and by companies within the Birmingham City University group.

Notes

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A member of the Birmingham City University Group

Qualification awarded by Birmingham City University