BEng (Hons) Manufacturing Engineering - Design Top Up

Department	The Department of Apprenticeships & Higher Education
Awarding Body	University of East Anglia
Additional Accreditations	None
Full-time Duration	One Year
Part-time Duration	Two Years
Full-time Annual Fee	£8,500
Part-time Annual Fee	£4,250
Entry Requirements	A level 5 qualification in an engineering discipline. An appropriate HND, Foundation Degree, or successful completion of 2 years of degree study in a relevant subject. Applicants will be asked to provide details of previous qualifications including Units / Modules of study which will be reviewed by Course Leaders to assess suitability for the course. English language requirements: IELTS (Academic) Grade 6 IELTS 6.0 overall (minimum 5.5 in all components). **Non-standard applicants who do not meet the published entry requirements maybe considered on an individual basis and we encourage such applicants to contact Universitystudiesadmissions@easterneducationgroup.ac.uk for further guidance.** *The university does not accept International Applications for this course.*
Study Location	University and Professional Development Centre, 73 Western Way, Bury St Edmunds UK
Additional Potential Costs	Outside of course fees, additional costs may include the purchase of core texts – we acknowledge individuals may prefer hard copy core texts for annotation and reference.

Course Information	Our program encourages you to question, analyse, and explore engineering challenges from multiple perspectives. You will become adept at collecting, organising, and interpreting information from diverse sources, making informed decisions and propose innovative solutions to complex problems. You will learn to identify, select, and justify appropriate techniques, methods, and development strategies while integrating ethical, sustainable, and environmental considerations. The course builds advanced technical knowledge and engineering skills to meet industry demands. You will apply engineering principles and the scientific method in operational and management contexts, planning and implementing creative solutions within cost and time constraints. Communication is key for engineers. You will develop exceptional skills to convey ideas clearly and effectively, engaging both expert and non-expert audiences with precision and confidence.
Key Course Features	The course is delivered on campus and requires students to attend one per week part-time and two days per week full-time. Delivery of the course is through a range of methods including lectures, seminars, discussions, and workshops.
Career Prospects	Graduate engineers are in high demand across the Manufacturing and Engineering sector, which spans industries such as automotive, maritime, aerospace, food and drink, biomanufacturing, electronics, energy and renewables, automation, metal fabrication, and machining. And for students interested, they can explore alternate pathways through postgraduate studies. These industries offer diverse career paths, including roles in design, management, programming, maintenance, production, quality, mechanical, electrical and electronic, research and development, materials, automation, machining, sustainability, casting, welding, and many more. As a government-designated *priority sector*, manufacturing plays a vital role in Suffolk's economy, with a mean annual gross pay of *£41,220 (ONS, 2024). Nationally, the sector is worth £518 billion and supports 7.3 million UK jobs directly and through its supply chains (Product Engineering Solutions Media, 2024). Advanced manufacturing and engineering are recognised as key growth sectors alongside clean energy. By 2035, the UK aims to be the world's leading destination to start, grow, and invest in advanced manufacturing (UK Government, 2025). *Income figures are only intended for guidance.

Module Summary

Indicative Course Content *Subject to Validation

Engineering Materials and Mechanics

This module provides a fundamental understanding of the properties and behaviour of engineering materials and the mechanical principles governing their performance under different loading conditions. The purpose of the module is to equip students with the theoretical and practical knowledge necessary to analyse and design engineering systems and components.
The principal aims are to:

- Develop understanding of the relationships between material structure, processing, properties, and performance.
- Introduce key concepts of stress, strain, elasticity, plasticity, and failure mechanisms.
- Provide the analytical tools required to evaluate and predict material and structural responses under mechanical loads.
- Prepare students for advanced study in materials selection, structural analysis, and design.

By the end of this module, students will be able to apply the principles of materials science and mechanics to solve engineering problems and make informed material and design choices in a professional context.

Advanced Manufacturing Methodologies

The ability of industries to meet the ever-changing demand of customers is heavily influenced by the development of advanced manufacturing technologies. No longer are these methods solely used for rapid prototyping. Customers expect high complexity products, on demand, and with a growing element of customisation. In adopting advanced manufacturing technologies, manufacturing companies will ensure faster time to market of new products, improve products and processes, make use of new, sustainable materials. An ability to move from the design stage to the manufacturing stage without the need for specialised tooling is a valuable cost saving.

Students will investigate the benefits and drawbacks of such technologies, looking at applications as an alternative to more established manufacturing methods as well as traditional uses in prototyping.

Further Computer Based Analysis and Simulation

Analysis of CAD products is a cost-effective way of prototyping engineering solutions. New designs can be engineered to handle loads much greater than the normal operating (service) conditions without compromising safety, fluid flow can be analysed, heat movement can be assessed.

This module aims to acquaint students with advanced tools through their systematic application in project-based learning. The module will look at dynamic load simulation, advanced analysis packages involving thermal

	stresses, frequency responses, nonlinear analysis and transient responses. The tasks are designed to link real load scenarios with simulated, investigating variations. Assessment will be via practical application in case studies. **Design for Manufacture and Assembly** This module investigates the detailed links between component design, material selection and product requirements, and examines the limitations of manufacturing processes. The key principles of Design for Manufacture, and Design for Assembly will be examined, and their effect upon the manufacturing process. Through the application of sound engineering design principles, and practical exercises, it will be shown how a product can be optimised for a given manufacturing route thereby ensuring that the optimum manufacturing process is chosen. In addition, health, safety, and sustainable industrial standards will be examined to understand their role in sustainable manufacturing. **Major Project** In the final year of your degree, you will complete your Major Project. The aim of the dissertation is for students to formulate and produce a substantial piece of independent research into an area of an engineering issue/problem of their choosing. It will develop and consolidate research skills, academic writing skills and synthesise knowledge and understanding gained throughout the degree. You will be supported by a Major Project Supervisor who will be one of your module leaders from the course team.
Staff Team	Our lecturing staff combine high level academic qualifications with industry experience, blending a range of relevant skills. Input from external experts provide a broad knowledgeable experience for students.
Assessment Methods	A variety of assessment methods are used which include written reports, written assignments, literature reviews, group presentations. Modules are assessed by the module leader and internally verified by another member of staff.

Typical Module Diet All modules are 20 credits unless stated	**Level Six** - Engineering Materials and Mechanics - Advanced Manufacturing Methodologies - Further Computer Based Analysis and Simulation - Design for Manufacture and Assembly - Major Project (40 credits)
Study Hours	**Study Hours per 20 credit Module: 200 hours** Lectures and Seminars: 36 – 48 hours Assessments: 30 hours Preparation and Independent study: 122 – 134 hours *Typically, two 20 credit modules will be studied per Semester. There are two Semesters a year.

This programme is regulated by the Office for Students under the Quality Assurance Agency framework for UK Higher Education. Where studying may incur additional incidental or optional costs these are listed on the relevant course page on our website. Our Terms and Conditions, Admissions Policy (including baseline English language requirements) can be accessed via the University Studies website at https://www.universitystudies.wsc.ac.uk/policies