

## HIGHER EDUCATION COURSES BTEC HNC - HIGHER NATIONAL CERTIFICATE

## MANUFACTURING ENGINEERING

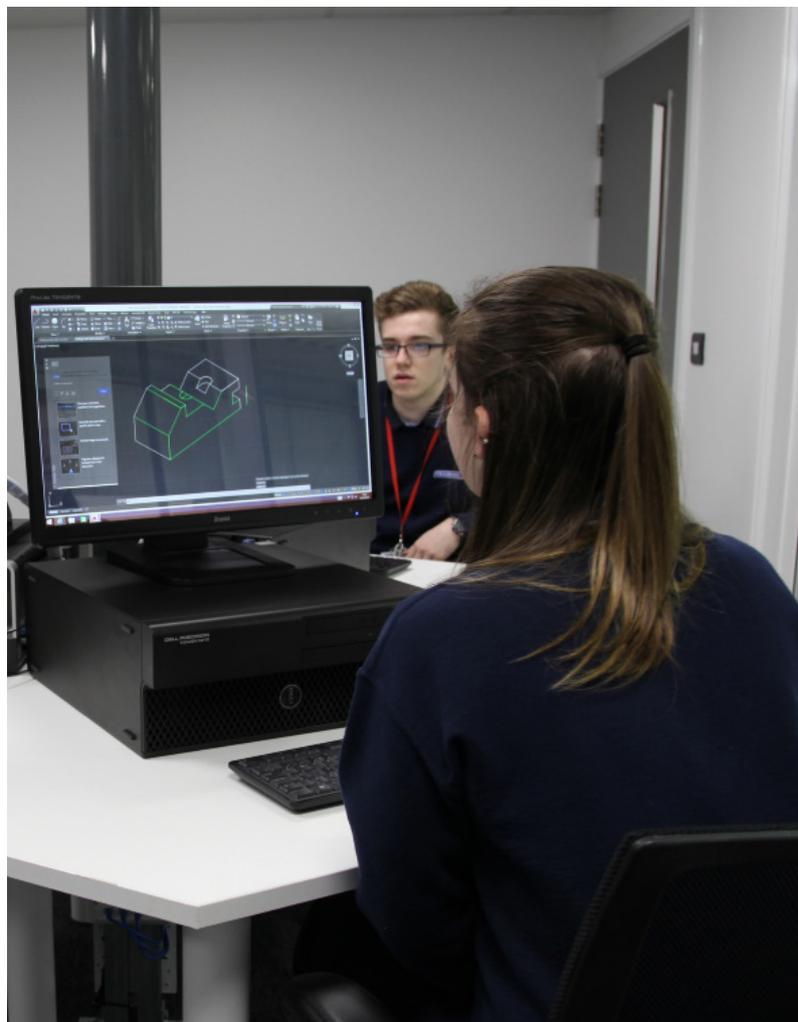
Entry Qualifications: Level 3 diploma in Engineering/Manufacturing or equivalent

Our flexible Higher Education delivery model includes:

- Face-to-face tutorials
- Flexible day delivery to minimise effect on employer
- Opportunities to develop workplace projects within employers
- Study at Blackburn

Our enhanced HNC in Manufacturing Engineering is obtained by studying up to six units per year – enhancing your career opportunities.

If a learner completes the HNC with us, they can top up to a HND in one year.



## YEAR ONE:

### ENGINEERING MATHS

The aim of this unit is to develop students' skills in the mathematical principles and theories that underpin the engineering curriculum. Students will be introduced to mathematical methods and statistical techniques in order to analyse and solve problems within an engineering context.

### ENGINEERING SCIENCE

This unit introduces students to the fundamental laws and applications of the physical sciences within engineering and how to apply this knowledge to find solutions to a variety of engineering problems. Among the topics included in this unit are: international system of units, interpreting data, static and dynamic forces, fluid mechanics and thermodynamics, material properties and failure, and A.C./D.C. circuit theories.

### ENGINEERING DESIGN

The aim of this unit is to introduce students to the methodical steps that engineers use in creating functional products and processes; from a design brief to the work, and the stages involved in identifying and justifying a solution to a given engineering need.

### MANAGING A PROFESSIONAL ENGINEERING PROJECT

This unit introduces students to the techniques and best practices required to successfully create and manage an engineering project designed to identify a solution to an engineering need. While carrying out this project students will consider the role and function of engineering in our society, the professional duties and responsibilities expected of engineers together with the behaviours that accompany their actions.

### MECHANICAL PRINCIPLES

The aim of this unit is to introduce students to the essential mechanical principles associated with engineering applications. Topics included in this unit are: behavioural characteristics of static, dynamic and oscillating engineering systems including shear forces, bending moments, torsion, linear and angular acceleration, conservation of energy and vibrating systems; and the movement and transfer of energy by considering parameters of mechanical power transmission systems.

## YEAR TWO:

### QUALITY AND PROCESS IMPROVEMENT

This unit introduces students to the importance of quality assurance processes in a manufacturing or service environment and the principles and theories that underpin them. Topics included in this unit are: tools and techniques used to support quality control, attributes and variables, testing processes, costing modules, the importance of qualifying the costs related to quality, international standards for management (ISO 9000, 14000, 18000), European Foundation for Quality Management (EFQM), principles, tools and techniques of Total Quality Management (TQM) and implementation of Six Sigma.

### COMPUTER AIDED DESIGN AND MANUFACTURE (CAD/CAM)

This unit introduces students to all the stages of the CAD/CAM process and to the process of modelling components using CAD software specifically suitable for transferring to CAM software. Among the topics included in this unit are: programming methods, component set-up, tooling, solid modelling, geometry manipulation, component drawing, importing solid model, manufacturing simulation, data transfer, CNC machine types and inspections.

### ELECTRO, PNEUMATIC AND HYDRAULIC SYSTEMS

The aim of this module is to develop students' knowledge and appreciation of the applications of fluid power systems in modern industry. Students will investigate and design pneumatic, hydraulic, electro-pneumatic and electro-hydraulic systems. This unit offers the opportunity for students to examine the characteristics of fluid power components and evaluate work-related practices and applications of these systems.

### PRODUCTION ENGINEERING FOR MANUFACTURE

This unit introduces students to the production process for key material types; the various types of machinery used to manufacture products and the different ways of organising production systems to optimise the production process; consideration of how to measure the effectiveness of a production system within the overall context of the manufacturing system; and an examination of how production engineering contributes to ensuring safe and reliable operation of manufacturing.

### FURTHER MATHEMATICS

The unit will prepare students to analyse and model engineering situations using mathematical techniques. Among the topics included in this unit are: number theory, complex numbers, matrix theory, linear equations, numerical integration, numerical differentiation, and graphical representations of curves for estimation within an engineering context. Finally, students will expand their knowledge of calculus to discover how to model and solve engineering problems using first and second order differential equations.

**COURSE COSTS  
FOR 2019/20  
ACADEMIC YEAR:  
£2000  
+ VAT**

**For more information or to enquire  
about booking a place:**

**[www.training2000.co.uk](http://www.training2000.co.uk),**

**email [info@t2000.co.uk](mailto:info@t2000.co.uk) or call 01254 54659**

 **Twitter @training2000**  **Like us on Facebook**  **Find us on LinkedIn**



**PART OF THE  
UNIVERSITY  
OF CENTRAL  
LANCASHIRE**