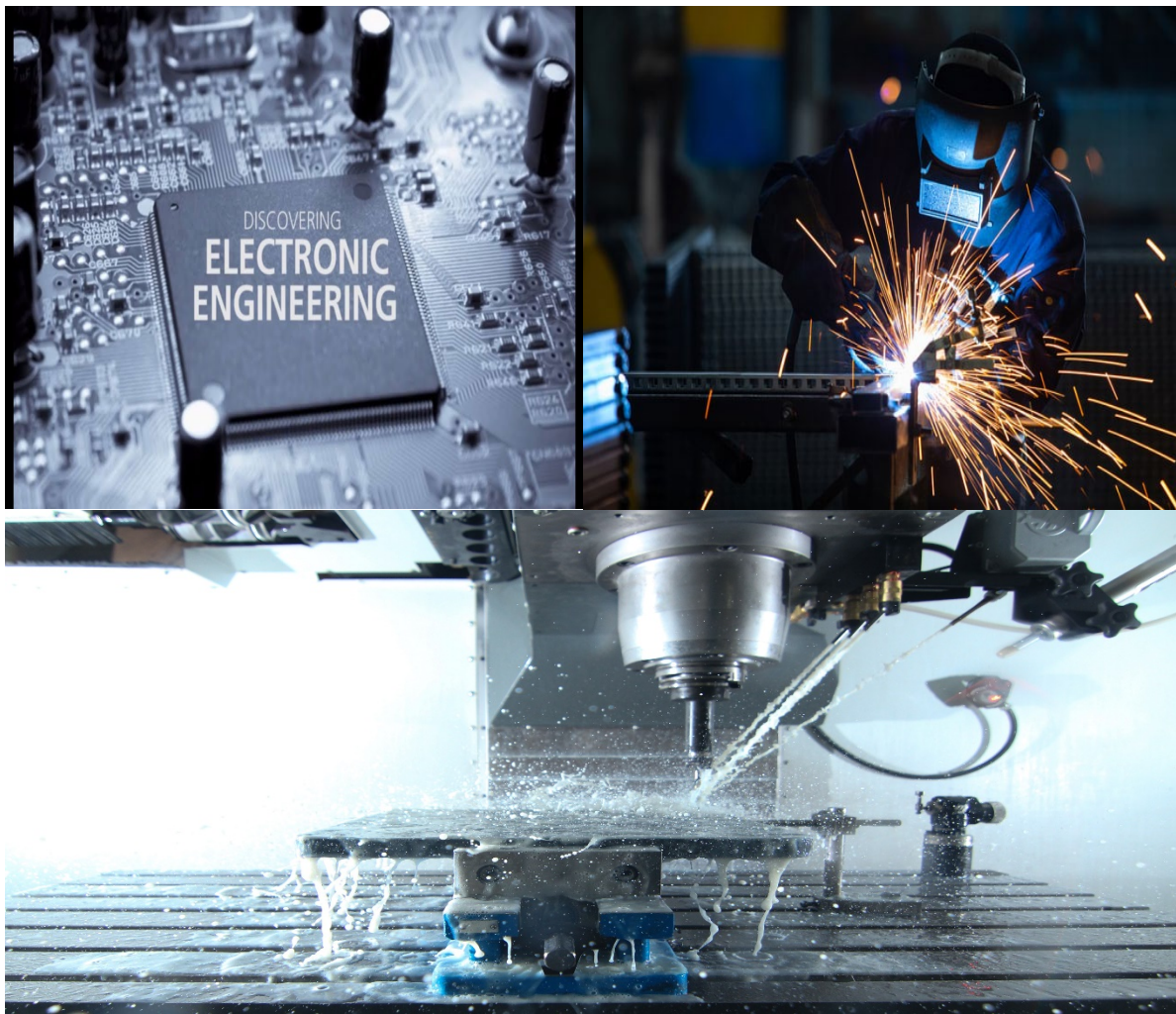


Welcome to the Engineering, Welding and Electronics Department



Activity Starter Pack

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We are The Bournemouth & Poole College

We are the largest provider of Further Education (FE) and Apprenticeships in the area. Our core focus is on developing the work skills of our students, so that when they leave us, they are ready to start or to progress within their chosen career.

Our mission

Through inspiring teaching and learning, we develop our students' work skills, life skills and knowledge, and so help to build a thriving local economy and community.

Our values

- A passion for learning and success
- Supportive and caring
- Respectful and considerate
- A champion for equality through learning
- Ambitious and tenacious

Meet the team

The Engineering department covers a wide range of full time, part time and apprenticeship courses to help you progress and achieve your aspirations. We have a wide variety of personal experience and knowledge. We have excellent facilities to provide both excellent theory and practical sessions.

Phil Hutchinson - Learning Manager

Craig Robinson - Apprenticeship Manager

Mathew Fry - Engineering Lecturer (Electronics)

Wayne Weedon - Engineering Lecturer (Mechatronics)

Kevin Mortimer - Engineering Lecturer (Machining)

Richard Harvey - Engineering Lecturer (Fabrication and Welding)

Paul Harman - Engineering Lecturer (Health and Safety)

Mathew King - Engineering Lecturer (Machining)

Gabriel Gligor - Engineering Lecturer (Machining)

Jeremy Thomas - Engineering Lecturer (Electronics)

Tristram Harris - Engineering Lecturer (Computer Aided Design)

Geoff Wingfield - Engineering Lecturer (Electronics)

Robert Atkins - Engineering Lecturer (CAD and Engineering)

Kanika Barman - Engineering Lecturer (Engineering Science and Mathematics)

David Waight - Engineering Lecturer (Fabrication and Welding)

Rob Macduff - Engineering Lecturer (Engineering Science and Mathematics)

Dafydd Rees - Engineering Lecturer (Mechatronics)

Ken Roberts - Engineering Lecturer (Fabrication and Welding)

Useful Contacts

Engineering office: 01202 205315

Apprenticeships: 01202 205958

Wellbeing: 01202 205242

Safeguarding: 07714851103 (Fulcrum & NR) 07774974781 (Lansdown & APP)

Student finance: 01202 205660

Work Placement Office: 01202 205197

Curriculum Admin: 01202 205622

IT Support: 01202 205566 Option 1

Careers advise: 01202 205312

Level 2 Full Time Course Overview

Name: BTEC Extended Certificate in Electronics

Level: 2

Awarding Body: Pearson

Progression: Level 3 or Apprenticeship

Course Content

While undertaking the Level 2 Electronics qualification you will study: How electronic components and devices work, and what they do; Testing and measurement using industry-standard equipment; Circuit design and construction, including soldering and other assembly techniques; Investigating the operation and maintenance of different electronic systems

Name: Technical Certificate in Mechanical Engineering

Level: 2

Awarding Body: EAL or City & Guilds

Progression: Level 3 or Apprenticeship

Course Content

While undertaking the Level 2 Mechanical Engineering Qualification you will study: Science and Mathematics in Engineering, Milling and Turning, Fabrication and Welding, Health and Safety and Engineering Awareness.

Name: Engineering Operative Apprenticeship Standard

Level: 2

Awarding Body: EAL

Progression: Level 3 Apprenticeship (Engineering Fitter, Fabricator or Technician)

Course Content

While undertaking the Level 2 Engineering Operative Standard you will undertake a preselected pathway such as Fabrication and Welding, Maintenance or Machining. You will study units specific to your pathway plus mandatory units which include: Working effectively and efficiently in advanced manufacturing engineering; Complying with statutory regulations and organisational safety requirements; Using and interpreting engineering data and documentation; Engineering Environmental Awareness.

Engineering Safety Rules

The following are safety rules that must be obeyed when working in the workshops:

- Wait outside the room quietly at the beginning of the lesson
- Only enter a room if a member of staff is present
- Listen carefully to instructions
- Always walk, never run
- Wear appropriate safety clothing:
 - Steel toe capped boots
 - Your Engineering Overalls
- Keep bags and stools out of the way during practical work
- Clean up any spills or pick up any dangerous items from the floor immediately
- Be aware of the fire drill for the area
- Report any accidents to the instructor immediately
- Check tools and equipment are not damaged before use
- Ensure inductions have taken place to ensure safe operation of mechanical and electrical equipment before they are switched on.
- Never handle electrical equipment with wet hands or when standing in water
- Always concentrate when using electrical equipment / sharp instruments / tools
- Operate equipment / machines on your own, avoid crowding around equipment / machines
- Switch off and if necessary unplug electrical equipment after use.
- Replace tools and clean equipment when you have finished using them
- Always leave the working area clean and tidy

You are responsible for your Health & Safety and the safety of others!!

Activities

Please follow and complete the below tasks that will enable you to hit the ground running and get some useful skills and knowledge built in preparation for your start date.

Watch some videos

YouTube is a wonderful resource that we can use for research and learning!! It can be entertaining and resourceful
Please have a look at some of the following videos/channels to prepare for the start of your qualification:

Health & Safety

- Flirting with Disaster - <https://www.youtube.com/watch?v=WavEcAsI2AY>
- Machine Operation and Maintenance - https://www.youtube.com/watch?v=hiFL-Qr5xl0&list=PLMNR-rOEMXB8n_AmBX70MoAqeKkoyHSVU&index=7
- Maintenance of Machine Safety Guard - https://www.youtube.com/watch?v=n51R8sYiz54&list=PLMNR-rOEMXB8n_AmBX70MoAqeKkoyHSVU&index=5

Fire Safety

- Fire Safety Video - <https://www.youtube.com/watch?v=ult6Biaf7oM&list=PLMNR-rOEMXB9xY3zO72s72MtcedFjQiUy&index=3&t=7s>
- How not to use a fire extinguisher - https://www.youtube.com/watch?v=IIwResK9VBc&list=PLMNR-rOEMXB8n_AmBX70MoAqeKkoyHSVU&index=18&t=0s

Tools & Equipment

- Engineers tools list - <https://www.youtube.com/watch?v=htQqkU0oBwA>
- Basic Engineering Tools- <https://www.youtube.com/watch?v=1H63--50hr4>

Materials

Create a Poster outlining all the different types of materials there are!

Materials are widely used in Engineering and come in different shapes, colours, smells and properties.

Can you find out what the different types of materials are and list examples. Use the following link to support you: <https://www.thewarren.org/ALevelRevision/engineering/Materialclasses.html>

Include description and of course pictures!

Toolbox

Begin building a list of tools and equipment you think every Engineer needs!! This can be in a word document or PowerPoint. List your tools, explain where you might use them and of course a picture!!

For bonus points include the price of each tool and add the end total up the cost of your tool box.

Lists

- Write a list of all the hazards that you may find in an engineering workplace
- Write a list of all the different types of Personal Protecting Equipment that may need to be worn in an engineering workplace

Research

Search the internet or read some books from your local library on the subjects you will be studying such as:

- Fabrication and Welding
- Engineering Machining
- Milling
- Turning
- Computer Aided Design
- Electronics
- Engineering Maintenance

Work Experience

During your full time course (not an apprenticeship) you will need to undertake a work placement in an engineering company, find out what companies are in your local area and if they would be willing to provide you with a couple of weeks work experience when you start college:

Maths and English

Mathematics and English are important skills in an engineering workplace and so are part of all of our courses. Find out what type of mathematic calculations an engineer may need to carry out and what type of measuring equipment they may use. You will need to complete a number of written assignments on your course using the correct spelling, punctuation and grammar. Find out how to correctly spell engineering technical words.

Engineering Glossary

Assembling: A process done by welding, binding with adhesives and bending in the form of a crimped seam

Base metal: The metal to be welded or cut

Bending: A process done by hammering or via press brakes

Blanking: A part is cut out of the sheet metal, and the material around the part is discarded

Brittle: Materials that have a tendency to break easily or suddenly without stretching or bending first.

CAD design: An acronym for computer-aided design

Ceramics: Ceramics are not shiny unless glazed, hard, often brittle, heavy, can be any colour (often white, pale brown to dark brown), cold to the touch.

CNC cutters: An acronym for computer numerical computer cutters; the automation of machine tools that are operated by precisely programmed commands encoded on a computer instead of operated manually by hand wheels or levers

Conductivity: How well a material conducts heat and electricity.

Corrosion resistance: The ability to withstand environmental attack and decay.

Cutting: A process done by sawing, shearing, or chiselling with manual and power tools, or torching with hand-held plasma torches using CNC cutters like lasers

Cutting torches: A tool that is capable of cutting large sections of sheet metal with little effort

Density: Density is mass per unit volume. The unit of density is the Kg per metre cubed.

Die cutting: A process that cuts metal pieces without the formation of chips or the use of burning or melting; also known as shearing

Ductility: The ability to be pulled into a thin wire or threads. Good examples are gold, copper and brass.

Elastics: The ability of a material to return to its original shape after a force has been applied and removed.

Fab shops: An abbreviation for fabrication shops

Flexibility: The ability to cope with bending forces without breaking.

Hardness: A measure of how easily a material can be scratched or dented.

Malleability: The ability to shape a material by applying pressure or a force. Good examples are lead, gold and copper.

Metal punching: When metal fabrication equipment punches holes, louvers or a predetermined shape out of sheet metal

Metals: Metals are shiny, hard, heavy, good conductors, can be polished and are cold to the touch.

Milling: The process of using rotary cutters to remove material from a metal piece advancing in a direction at an angle with the axis of a tool

Oxy-acetylene torch: A tool used to straighten significantly warped steel in a slow, linear fashion

Plastics: Materials that change shape permanently when small forces are applied. Plasticine and clay are good examples.

Roll forming: A constant bending process in which sheet metal, coil, bar or strips of metal pass through rolls that form the metal

Sheet metal fabrication: The process of cutting, shearing, rolling, bending and punching sheet metal to fabricate parts and pieces

Stamping: A high production process in which single or multiple punches, bends and embossing are performed at one time or in a progressive die

Stiffness: The ability to resist bending.

Strength: The ability of a material to withstand forces.

Tough: Materials that absorb forces - the opposite to brittle materials.

Welding: The main focus of sheet metal fabrication; a process of using a blow torch or electric arc to join together two or more metal pieces or parts by heating the surfaces of the parts to the point of melting then uniting them by pressing, hammering or other techniques