#TRANSFORMINGLIVES

Hartlepool College of Further Education

SCHOOL OF ENGINEERING

LEVEL 3 CITY & GUILDS 2850 ENGINEERING (FABRICATION & WELDING)

TRANSITION PACKAGE

WELCOME & COURSE INFORMATION

Hartlepool College of Further Education has a long and successful record of training Fabrication and Welding engineers, technician and crafts people in a variety of locations and environments. With a great tradition with working with all the Fabrication and Welding companies in the region, and further afield and delivering high quality apprenticeship programs in this and many other fields.

The City & Guilds Level 3 Certificate in Engineering is designed for students who wish to take their further steps towards a career in the fascinating world of Fabrication and Welding engineering. This programme has been designed to give learners a good grounding in fundamental subjects across the Fabrication & Welding discipline, whilst at the same time developing a wide range of practical skills and abilities utilising a range of technologies.

Learners should have, 5 GCSEs including Maths and English or the City & Guilds Level II Certificate in Fabrication and Welding.

Learners who successfully complete this programme of study may have the option to complete a further year to acquire more extensive understanding and gain a Level 3 BTEC Award in Engineering, which then allows entry to the HNC program or progress to employment and apprenticeships.

WHAT WILL I STUDY?

Learners will attend different classroom-based and workshop focused sessions, to cover the following units:

- Health and Safety covering the legislation, regulations and applications of safety systems and procedures in an engineering environment.
- Engineering Principles, covering technical documentation and engineering drawing, science, and the application of mathematics, material science and Quality Assurance and Quality Control.
- Fabrication & Welding Principles, covering welding terms and symbols, defects, mechanical fasteners, bolted connections and destructive and non-destructive testing methods.
- Plate Fabrication, covering thermal ad mechanical cutting processes and bending, forming and assembly techniques.
- MMA welding, covering power source, electrode types classification and application, welding techniques and defects.
- Pattern development, covering Radial line, parallel line, triangulation methods and cutting planes and common central sphere techniques of pattern making.

Learners will also complete an extended workshop period across the year covering the following areas:

- Plate Fabrication
- MMA Welding
- Pattern Development

Personal protective equipment (PPE) will be provided to all new engineering students for use in the workshops.

HOW CAN I PREPARE FOR THIS COURSE?

Prospective learners need to be hard-working, motivated and have an enquiring mind. Organisation is a key skill; learners will be expected to maintain a file of the work they complete in class and meet deadlines for assessed tasks and a scientific calculator and drawing equipment will be essential.

Prospective learners should complete the key tasks below before September and bring them to their induction period when they start the course.

TASK 1: ENGINEERING INFORMATION

Fabrication and Welding Engineering is a complex discipline and technical information is vital to the industry. Pieces of information in engineering, whether facts, properties, instructions or warnings, are often conveyed by symbols.

Use internet resources to produce a data sheet for common welding symbols to BS EN 22553. Write a short paragraph, explaining why you think symbols are used instead of written instructions.

Then select a common welding process and write a brief description about how it works, from the following option;

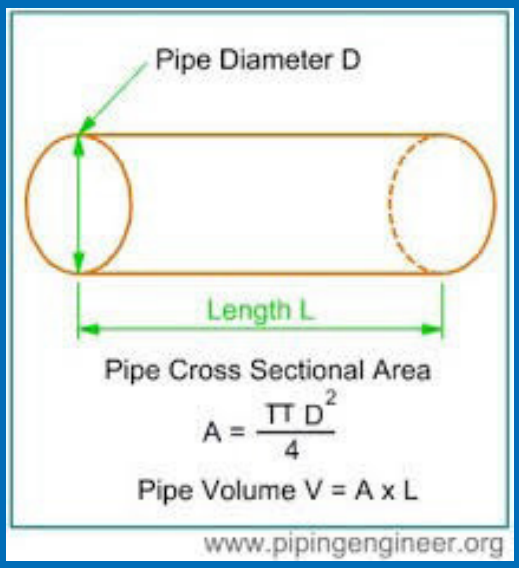
a) MMA Welding
b) MAGS welding
c) TIG welding

TASK 2: ENGINEERING MEASUREMENT

Dimensional accuracy is vital in Fabrication and Welding, it can lead to failure of the engineered product in question and this may have more serious consequences, in terms of safety and company success.

Using the correct formulae, you will have used at school or college, calculate the volume of the vessel shown below, when its diameter is 950 mm and its length is 2500 mm.

Then determine the surface area of steel needed to make the vessel shown.



TASK 3: AWARENESS OF MATERIALS

Materials science is vitally important to the Fabrication and Welding industry; therefore, a clear and cogent understanding of the topic is at the heart of this discipline.

Produce a list of 10 metallic and 10 Non-metallic atoms found on the periodic table. Then produce a neat sketch of an atom detailing the key component particles encountered in all atoms. Then name and define 10 properties that all materials exhibit.

ADDITIONAL INFORMATION

Learners will have the opportunity to take part in our work experience programme, completing placements with local engineering companies.

KEY CONTACTS:
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