City & Guilds level 2 Diploma in Engineering

(Please make sure you read the second section regarding your task for the holiday)

This qualification has been designed as a one-year, full-time course that supports progression to an apprenticeship in engineering or to a possible further 2 years of study at Level 3.

The subjects will be delivered by a number of different tutors throughout the week.

Mandatory subjects being:

201: Working in Engineering

202: Principles of engineering technology

203: Principles of manufacturing technology

Optional units being:

204: Machine components using milling techniques

205: Machine components using turning techniques

206: Using bench fitting techniques

Unit 201/202 result in a multiple-choice exam which has a possible pass, merit or distinction grade each.

Unit 203-206 consist of short written answer papers with pass merit or distinction grades each.

Units 204-206 Have practical exam tasks that have pass, merit or distinction.

In the BTEC National units there are opportunities during the teaching and learning phase to give learners practice in developing employability skills. Where employability skills are referred to in this specification, we are generally referring to skills in the following three main categories:

• cognitive and problem-solving skills: use critical thinking, approach non-routine

Preparation for the course

All students will require the following in order to make the most of their learning experience:

Note pad, Pen, Pencil, ruler, rubber, scientific calculator.

When in the workshop doing practical activities it is a mandatory requirement for everyone to equipped with PPE. The minimum for the learner to bring to each session are safety boots and a lab coat (best to be a dark colour). Other kit (safety glasses, ear plugs) will be provided.

Lockers will be provided for learners to store their kit.

Other sessions for tutorials will be timetabled into the week and these must be attended. Students that need to attend maths or English GCSE lessons which will be timetable at other times during the week.

During the first week of the first term all new groups will be inducted into the things necessary to make their time at the college safe and equipped to do well.

We hope this brief booklet has given you a little more insight into the course and we hope to see you at Worthing College in September.

Student name:

While you are having a well-earned summer break we have set you some homework to work through. Please complete as much as you can and return it during induction week in September for marking.

An important part of engineering is understanding about materials, their properties and where they can be best employed.

TASK 1: Research into the following materials and find out about what their strengths and weaknesses are, where they are used in products and why. Try and list at least three properties for each if you can and examples of products they would be made out of.

1. Titanium 6AL-4V alloy

2. High Modulus Carbon Fibre Reinforced Polymer

3. Invar

The first and third materials listed are classified as alloys. What does this term mean and why are pure metals rarely used in engineering.

TASK 2: Engineering like any other industry has its own technical language. Below are some of the terms that you will need to be fluent with especially when using them in your assignments. Find out about and record a definition for each of the following:

Tensile Strength

Compressive Strength

Toughness

Hardness

Thermally conductive

Ductility

Malleability

Sonorous

Density

TASK 3: The legs of the Worthing pier are made of iron it was built in 1862. In view of the fact that it sitting permanently in salt water all year round why haven't the legs rusted away?

What are the key properties of iron that made it ideal for the pier construction.

Task 4: Previously you have been asked to research about different materials. Now you are being asked to invent a new unheard-of material. Think about what properties it would possess, maybe ones that currently do not exist!