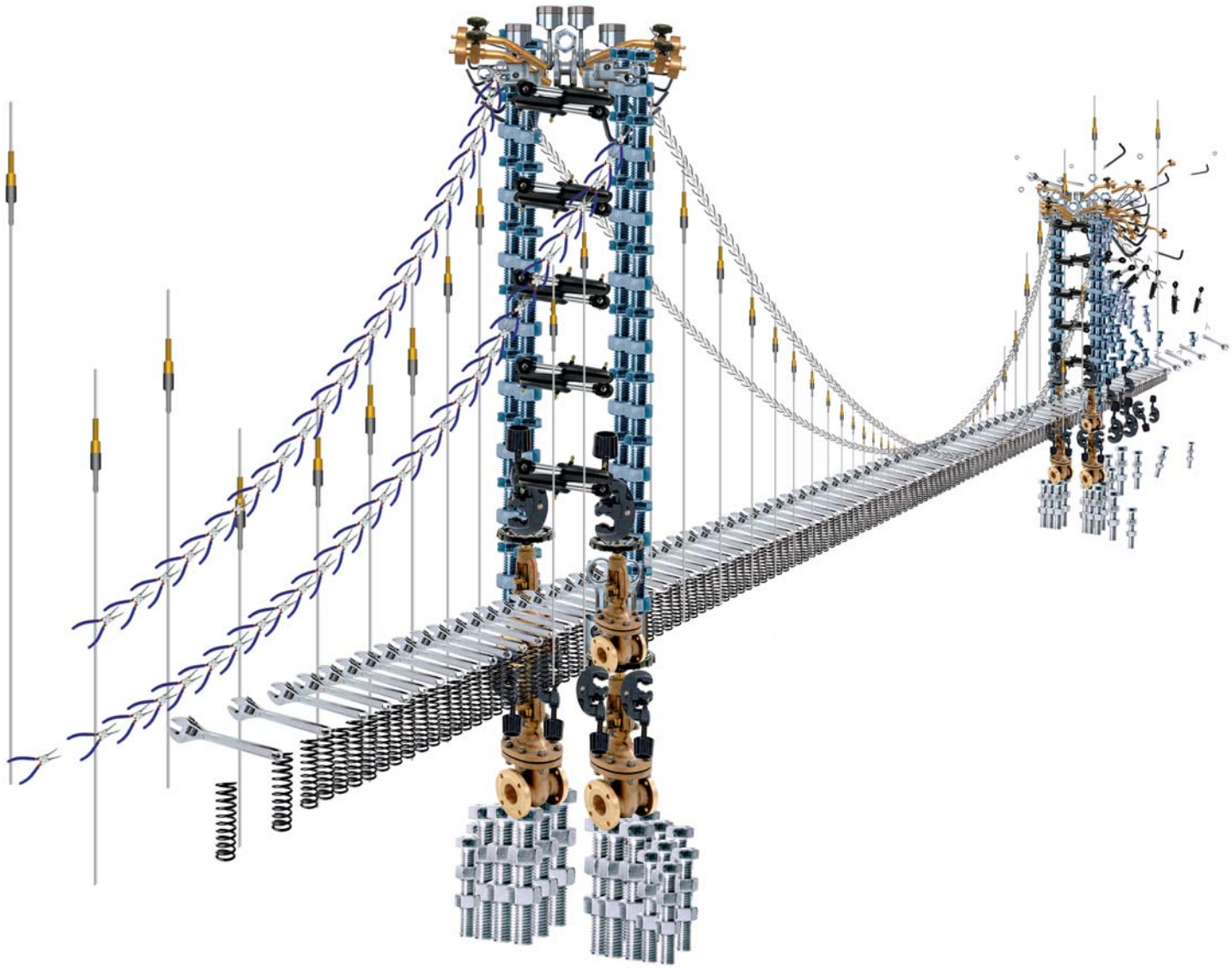
Level 2 - Principal Learning
Engineering (ENG2U2)

SAMPLE ASSIGNMENT BRIEF AND COMMENTARY

UNIT 2 - ENGINEERING DESIGN



Engineering
Level 2 Unit 2 Engineering design (ENG2U2)

Sample Assignment Brief and Commentary
(Approximately fifteen hours under controlled conditions)

Assignment Overview

In engineering, a structured approach to producing solutions is required. This assignment provides you with a design brief that you must investigate and develop to produce a design solution that can be used by a third party for the manufacture of a product.

A company manufacturing promotional materials has been asked to design a 'flat pack' assembly for a cradle or holder for either a mobile phone or an MP3 player. It should be made from a plastic material and be suitable for manufacture in batches of 200.

This assignment has been designed as a stand alone task for this unit. Given the nature of the product, where suitable CAM facilities are available for 2D cutting, it may be possible for pupils to convert the output of the project into products for their own use with minimal additional work.

This assignment could easily be extended to link to other units, such as Unit 3: Engineering applications of computers, Unit 4: Producing engineering solutions, Unit 6: Manufacturing engineering and also to Unit 8: Innovation, enterprise and technological advance. In particular, Unit 4 provides opportunities to test and evaluate ideas more conclusively, once they have been realised by building a prototype. However, using this assignment as a stand alone assessment may prevent subsequent problems in later units arising from limitations in the pupils' knowledge of engineering and manufacturing at this early stage in the diploma.

This assignment will be taken under controlled conditions. This means that you will work under the supervision of your teacher. Where this is not possible for a task or part of a task, you will need to submit evidence from others to prove that the work is your own.

Outcomes

You will produce:

1 A product specification, developed from an analysis of the provided design brief and appropriate additional research
2 A series of design ideas that could satisfy the specification and an evaluation of these ideas, to select a design proposal
3 A series of drawings of the design proposal, using appropriate drawing techniques to current standards and with recognised conventions
4 A summary of how the final design solution meets the customer brief

Assignment brief

A company manufacturing promotional materials has been asked to design a 'flat pack' assembly for a cradle or holder for either a mobile phone or an MP3 player. It should be made from a plastic material and be suitable for manufacture in batches of 200.

The final product should be manufactured from a single piece of material no larger than A4 size. It should be suitable for despatch by mail.

Time allowed for this assignment: approximately 15 hours.

Marking of this assignment is determined by completion of the assessment grid.

You must complete the following tasks:

Task 1

Development of the Specification (estimated time allowed: 3-4 hours)

1 Carry out an analysis of the provided design brief, identifying the major constraints on the design
2 On a provided sheet, describe the sources of research and the types of investigations used during the preparation of the product specification
3 Develop a product specification

Task 2

Development and Evaluation of Ideas (estimated time allowed: 3-4 hours)

4 Create up to six design ideas that could satisfy the specification
5 Evaluate the design ideas, explaining how closely they meet the design specification, any manufacturing considerations, and the reasons for selecting the preferred design

Task 3

Communicate the Design Solution (estimated time allowed: 7-9 hours)

6 Produce a series of drawings of the design proposal, using appropriate drawing techniques to current standards and with recognised conventions. These should include a presentation drawing and orthographic drawings using third angle projection
7 Produce a summary of how the final design solution meets the customer brief and the manufacturing requirements

Commentary on Sample Assignment Brief

This is an accessible assignment that clearly shows the evidence requirements.

There is a slight concern on the lack of engineering focus in the task, particularly regarding function and assembly of the product. Also more opportunity to access Assessment Criteria 1 g is really required.

The suggested time is on the upper limit, this will need to be pointed out and considered with consortia, including with regard to teaching and learning time.

The assignment allows for the production of suitable evidence that allows candidates to access all bands of the assessment criteria.

Assessment grid

Please note that the descriptions in this marking grid relate to the top of each band. Further guidance on using marking grids is available in the Assessment section of the specification.

Assessment criteria topic	Band 1	Band 2	Band 3	**Mark and Comments**
	The learner has:			
1 Plan and produce a product design specification	0 – 4 marks Superficially interpreted the design brief to produce a basic product specification with some mention of functional requirements in the specification. Relied predominantly on a single source of information. Made minimum reference to the design constraints.	5 – 8 marks Used the design brief to produce a clear product specification, which included essential information; shown some important aspects of functional requirements in the specification. Used more than one source of information Identified a few of the design constraints.	9 – 12 marks Produced a detailed and clear product specification that met the requirements of the customer design brief; explained the need for good functional design and identified the key features of the design. Obtained information from more than one source including practically dismantling engineering products. Identified many of the design constraints including existing design protection, manufacturing requirements and operating conditions.	
2 Produce engineering drawings to meet a product specification	0 – 8 marks Produced one idea from the design brief. Produced a few feasible drawings using conventional techniques. Made minimal reference to changes or modifications. Attempted to provide a basic evaluation. Produced a possible design but limited solution that met basic drawing standards.	9 – 16 marks Produced several ideas from the design brief. Used a range of drawing techniques and worked within tolerance to produce drawings. Adequately justified any modifications or alterations required and possible limitations. Provided an evaluation of the methods and techniques used. Produced a realistic design solution and showed how it met the requirements of the design brief.	17 – 24 marks Produced several viable ideas from the design brief. Used a wide range of graphical methods and techniques; produced accurate, detailed drawings; drawings conformed to current standards. Recorded in detail original design ideas and criteria for selecting preferred solution. Provided a comprehensive and justified evaluation of the methods and techniques used. Produced an effective design solution and provided an analytical evaluation of the methods and techniques used; explained its range of functions and how it could be manufactured.	
3 Present engineering designs using drawing standards and conventions	0 – 4 marks Understood the need for drawing standards and conventions. Used either CAD or conventional drawing with limited success. Made little reference to manufacturing requirements and mentioned some specification points when discussing the final solution.	5 – 8 marks Complied with some current conventions. Used either CAD or conventional drawing with success. Made reference to some manufacturing requirements and confirmed that some aspects of the final solution met the specification.	9 – 12 marks Produced drawings that met the quality standards and included most of the key details. Used both CAD and conventional drawing techniques with success. Made detailed reference to several manufacturing requirements and confirmed that the final solution met the specification.	

Any further comments