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Moderators' Report/ Principal Moderator Feedback

June 2011

GCE Engineering

Unit 6936_01

Applied Design, Planning and Prototyping

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Unit 6936
Applied Design, Planning and Prototyping

General

Moderators report that overall, the quality of work seen continues to improve and that more candidates are evidencing scientific and mathematic information to support their engineering design and make decisions. Almost all choices of coursework were appropriate to the demands of this unit and included a wide range of topics such as wave machines, lifting/jacking devices, motorbike and bicycle servicing racks, electronic timing devices, water level indicators, air engines and many others. Unfortunately there are still a few candidates who submitted very low level work that was no more than simple metalwork, and a few worked in materials such as MDF or softwood to produce projects that could not be considered 'engineering' outcomes.

Teachers of this unit should be congratulated on the improved guidance given to candidates as most of them appear to have a better understanding of what evidence is required in each of the assessment criteria.

Assessment Criteria (a)

All candidates presented research that related to the problem in hand and many were successful in producing focused, succinct and selective information that was useful in informing the product specification. However, there still appears to be a culture among some, of 'the more the better' regardless of its direct relevance to the intended product. Research that is generic and superficial is worthy of little or no credit. Research should support the writing of a product specification and design ideas, so it is important that information is usable.

As was the case last year, specification writing improved, with more statements focusing on technical and measurable points that were justified. Many specifications were well structured under sub-headings and this allowed candidates to make statements in an organised and logical manner. Weaker specifications contained superficial and general points that could not be used as a guide to design and development.

Assessment Criteria (b)

Year on year, moderators make the same basic comments regarding this assessment criterion and this year was no exception. Some excellent work was produced by some candidates. However, it was the exception to see high level design skills being displayed that explored a range of alternative ideas before developing one through continued design input and refinement of details. Most

candidates were happy to settle on a single idea and add little or no development to this before presenting it as a final design proposal. There was little flair or attention to detail seen in most designs, or willingness to explore sub systems. Many candidates did use their product specification to evaluate design proposals against but this was sometimes superficial or brief, especially where weak specifications were in existence.

There was evidence of some good modelling, but there was usually little design development beyond specifying materials and processes. Development means 'change', and this should be illustrated by candidates through their ability to bring together the best or most appropriate features of their design ideas into a coherent and refined final design proposal that meets all of the requirements of the product specification. There should be evidence of the developed design having moved on from an original idea through the results of evaluation against measurable specification points and peer feedback. It is not acceptable to simply take an initial idea and make superficial or cosmetic changes to it and then present it as a final developed proposal.

Assessment Criteria (c)

Quality of work in this section was mixed. In some cases, meetings held with peers/engineers focused on progress to date and information gathered was recorded and acted upon to improve final design proposals, which is very good practice. Other evidence presented however described brief meetings and general discussions being held in an ad hoc manner with no formality or recording of outcomes. Some teacher assessors marked candidates leniently in this section, crediting any meetings between candidates and peer group as appropriate evidence for marks.

Assessment Criteria (d)

Plans for production were generally well done, outlining a sequence of events, use of processes and materials and referring to time and deadlines. The best examples of planning included quality control and health and safety issues.

In this assessment criterion, planning for manufacture should include reference to time management, consideration of commercial methods of production including sequencing for batch/mass production and quality control. Health and safety issues should also be considered.

An appreciation of the application of relevant standards and regulations to the production of candidates' work was not well done and many candidates offered no evidence in this assessment section, which is surprising as a study of standards and regulations is required as part of Unit 6935.

Assessment Criteria (e)

In this assessment section some very high quality work was seen that was challenging and complex in construction. It was obvious that candidates felt comfortable working in this section, judging from the level of completion of projects and the comments recorded during testing and evaluation. Almost all candidates chose potentially appropriate tasks that would allow them full access to the marks available, and present opportunities to demonstrate the skills and competencies gained over the two year course of study in this qualification. There were examples of very good skill levels being shown, but on unchallenging work, where the level of demand limited access to higher mark bands.

In this assessment criterion**,** candidates are asked to produce a high quality product that meets the requirements of the specification and fully matches the final design proposal in terms of function, sizes, finish etc. The quality and complexity of manufacture should reflect the gains made in skill levels one year on from AS work. During manufacture, candidates should demonstrate their understanding of a range of materials by selecting, using and justifying those that are appropriate to their needs in terms of properties and working characteristics that were detailed in the specification and work-plan. Candidates must show demanding and high-level making skills in order to achieve the high category of marks, so it is essential that the product under construction offers enough complexity to allow access to high marks. The level of complexity will already have been established at the design development stage, so it is important that candidates who have high potential are guided towards appropriate levels of response at an early stage in their work to ensure their success.

High quality photographic evidence is essential in conveying the quality and complexity of product manufacture, and most centres are adept at producing ranges of excellent images in support of the marks awarded. However, a number of centres failed to submit appropriate images and some submitted no photographic evidence of practical outcomes at all. Where this is the case, centres cannot expect to have their marks agreed.

Assessment Criteria (f)

All candidates presented evidence of some testing and evaluation, which ranged from thorough and well described field tests carried out under realistic conditions, to superficial, subjective statements. In the best examples of testing and evaluation, candidates evaluated their products against the specification and photographed evidence of their field trials. User or peer group involvement and feedback were also in evidence, which led to realistic suggestions and designs for modifications. However, a significant number of candidates produced

superficial evaluative comments, which did not involve third-party input and were not set against points of specification.

Administration

Most centres submitted the sample of work on time, but some failed to include authentication sheets. Most centres submitted marks appropriately, but some used copies of the assessment criteria photocopied from the subject specification and wrote marks on these. Where this occurred, there was no accompanying annotation. Moderators reported poor packaging of samples from some centres.

Assessment within centres was generally very good and teacher assessors should be congratulated on their knowledge and understanding of the requirements of this unit. Some candidates were awarded marks slightly inaccurately but consistently, which is understandable where large numbers of marks are attached to some assessment criteria and the tolerance level is tight. Photographic evidence was usually good, but some centres are still failing to submit a range of images to show the quality of manufacturing skills displayed by candidates and the range of processes used by them.

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