2023 ASSESSMENT REPORT
AGR315117 AGRICULTURAL SYSTEMS

Part A – Assessment Report Feedback

The external assessment consists of a folio of two main sections:

1. The Agricultural Technologies – Engineering Solution Project Folio
2. The Agribusiness case study

The AGR315117 External Assessment Specifications in the supplementary documentation on the TASC course website provides the minimum word limit for the Agribusiness case study and the maximum page length for the Engineering Solution Project Folio; in both instances the word and page limit does not include references.

The folio will be assessed against:

Agricultural Technologies – Engineering Design Solution Project Folio

- Criteria 6 (Elements 1, 2, 7) – Examine technologies and technological innovations employed in the production and marketing of agricultural products.
- Criterion 8 (all Elements) – Apply appropriate engineering principles to agricultural problems and situations.
- Criterion 9 (Elements 6, 7, 8, 9) – Explain the impact of innovations, ethics and current issues on Australian agricultural systems.

Agribusiness Case Study

- Criterion 2 (Elements 3, 4, 5, 7) – Analyse physical and biological systems that support sustainable agricultural production.
- Criterion 5 (All Elements) – Assess general business principles and decision-making processes involved in sustainable farm management and marketing of farm products.
- Criterion 9 (Elements 2-5, 7, 8, 9) – Explain the impact of innovation, ethics and current issues on Australian agricultural systems.

From the outset it is essential to understand and incorporate the four STEM dimensions – Science, Technology, Engineering, and Mathematics – in Agricultural Systems for successful completion of the external examinable elements of this course. Integrating all these dimensions ensures a well-rounded perspective is evident. All four STEM elements should be specifically referenced, not only describing how they were used, but how the project leveraged these elements to make informed decisions based on these scientific principles to contribute to sustainable and productive agricultural systems.

A further general comment applicable to all parts of the portfolio concerns accurate and methodical application of Level 3 standard referencing conventions. Students who were highly successful typically included a contents list with page references for figures, images and tables; in-text conventions in acknowledging sources, communications or research, labelling on the figures and tables, internet-sourced

images and hand drawn sketches; within the body of the text and end of paper full reference lists or bibliographies. Overall, recognition of these conventions of academic style created a folio presentation that was a pleasure to read.

Engineering Solution Project Folio

Excellent achievements by candidates involved their demonstration of their understanding of each of the Elements of the three (3) criteria externally assessed. Specifically, there are seven (7) distinct parts of this folio which must be addressed: the Brief, Background, Research (must include analysis/comparison, survey, feedback) Design Development, Final Design, Evaluation and References. At a very minimum each of these seven parts must be evident. Successful candidates' work reflected a sound combination of theory and research combined with practical application.

It was evident that highly successful students had made good use of the TASC specifications to consider the requirements of their engineering solution to:

- generate a design solution
- use technology skills, processes and systems
- apply management and planning skills to an engineering challenge
- implement risk assessment and mitigation strategies
- evaluate and justify engineering solutions
- suggest modifications and improvements to the engineered solution.

Having considered these elements and made observations and recorded important features of the project, successful candidates then went on to record and translate this into the finished product, their project folio.

The project folio will outline and explain the engineering design and development and must reflect:

- a design brief (problem/challenge, background, requirements and limitations)
- research (analysis/comparison, survey, feedback)
- concept sketches, notes, annotations
- tools, materials, techniques and experiments/prototype/testing
- production stages
- evaluation of outcomes (of requirements from initial design brief).

In documenting this part of the portfolio, successful students provided a well-considered design brief. Careful referencing back to the TASC specifications was evident in highly successful candidates who often provided an introduction or overview to the problem and the environment, and a statement of the problem to be solved before writing the design brief. The design brief is an important element in the overall success of the project and it is worth researching and considering what makes a good design brief. It is the design brief that will help map out the requirements of the project and clarify what is required. Ultimately, the design brief is how the success of solution can be judged. Successful students had spent time on this preparation, and this equipped them to proceed with certainty.

As noted above, the project portfolio must contain the six elements listed. Generally, these elements were evident in all cases. Highly successful students were able to provide detailed commentary on each of these parts. These students took each element and described how it had been considered and could be achieved. For example, they considered the possible benefits of the design solution as including the environmental impact, or cost savings such as labour, energy bills; or improvements to animal welfare; or meeting Government targets. These students provided detailed timelines of the project. Many students provided a project management tool such as a Gantt chart to plan and schedule their project. Highly successful students enhanced this representation with a commentary. Commentary provides an opportunity to contextualise the data, explain the significance of the information and aide the reader's understanding of the information presented. Figures alone do not convey the full depth of the presented data. The examiners' concern with the use of figures was evident in the Design Solution and the Agribusiness Case Study and will be further explored in that section of this report.

Having designed and implemented the design project the more successful students took the opportunity to fully evaluate and justify their evaluation. These students provided feedback and evaluative comments gained from reviewing their solution with others, whether this was teachers, others working in the field, neighbours or family members to enhance the credibility and feasibility of the design project. Successful candidates also provided measurement data which evaluated the solution's improvement and accompanied this with a commentary and reflection. These high achieving students provided a conclusion detailing what the design set out to achieve and how effective it was in doing so.

Overall, highly successful students were able to write with clarity and conciseness. These students demonstrated their communication skills by providing a well-crafted report that reflected their own voice and concerns.

Agribusiness Case Study

Highly successful students had taken into account the three core criteria associated with the case study and presented sound interpretation of these in their report:

- Criterion 2 (Elements 3, 4, 5, 7) – Analyse physical and biological systems that support sustainable agricultural production.
- Criterion 5 (All Elements) – Assess general business principles and decision-making processes involved in sustainable farm management and marketing of farm products.
- Criterion 9 (Elements 2-5, 7, 8, 9) – Explain the impact of innovation, ethics and current issues on Australian agricultural systems.

Weaker responses appeared possibly to rely on a teacher–generated template derived from these criteria and these responses tended to be more generalised and lack the required specificity to gain higher awards. Successful students in this element of the portfolio had referred to the knowledge, understanding and skills learnt in the course work, and apply these to the case study. These students had a good command of the agricultural terms and key words that are essential in this field and were then able to contextualise it to their own agribusiness discussion.

With highly successful students it was evident that their final product was a refinement of what they had learnt and observed throughout the year and now presented in their case study. The work of these students took into account the specifications described in the syllabus to describe the farm or enterprise in the wider agribusiness sector. They included the decision-making processes and management strategies in some detail including the financial pressures on the business. By considering all the elements outlined in the syllabus, where there are nine components outlined under business design, for example, and a further sixteen component parts under marketing is an important element of the highly successful students. Too often, the less successful student would provide a single paragraph description under marketing. These students would typically include a diagram of the marketing chain but provide no context or explanation relevant to their case study.

As noted in the commentary in the Engineering Design Solution the use of graphical information is encouraged. Successful candidates included diagrams, charts or graphs to illustrate key points and to enhance the overall understanding of the project. These students used their commentary to serve as a bridge between raw data and the reader's comprehension. By offering clarifications and insights these students ensured that the audience understood the context. Weaker students presented data and figures in isolation without clarification, narrative, or explanation. The examiners noted that highly successful students were able to analyse the data, identifying patterns, drawing conclusion, forming conclusions, and in doing so demonstrated that they had actively thought about and understood the implications of the presented figures, thus showing a higher level of intellectual engagement. These students demonstrated an engagement in critical thinking which was able to be rewarded with higher assessments. Less successful candidates appeared to be 'going through the motions', that is, seeking to fulfil a criterion with broad statements that lacked specific reference to their agribusiness.

The UTAS Harvard guide to referencing is a useful guide for students to ensure their compliance with academic integrity and to fulfil the referencing elements of criteria 9 which are assessed in both sections of the portfolio. Weaker students created an inadequately brief set of references and failed to adhere to the referencing conventions. Personal communications and photographic images must be referenced, and these images, information, ideas and words clearly differentiated as the learner's own. Criteria 9 not only requires adherence to the referencing conventions and methodologies but the essential exploration of the impacts of innovation, ethics and current issues on Australian agricultural systems. Weaker students' responses were brief and cursory in this regard.