Engineering Design Level 2-3

Scoping Paper

Years 9 to 12 Learning 2020 Course Development

The purpose of this scoping paper

The purpose of this paper is to provide information regarding the scope of the proposed *Engineering Design course* Level 2-3. including the:

- *Rationale*
- *Relationship to:*
  - *Senior Secondary Australian Curriculum (where applicable)*
  - *Years 9 to 12 Curriculum Framework*
  - *General Capabilities*
- Existing pathways and possible Future Provision
- Course Design

It is designed to enable all interested stakeholders to reflect and provide initial feedback on the rationale and relationships as italicised above. The additional information is included for noting.

Additionally in consideration of the information provided in this scoping paper we are seeking your suggestions for the core concepts, big ideas, essential learnings or important considerations you would like to see included in this proposed course.

Department of Education

Tasmanian Government

Consultation

Throughout the course development process there will be four opportunities for formal stakeholder consultation:

- Course Scope
- Structural Overview and Key features (November/December 2020)
- Initial Draft Course (March 2021)
- Final Draft Course (June 2021)

This scoping paper represents the first of four course consultation points for teachers to engage in the course development process for *Engineering Design* Level 2-3.

Course Rationale

The *Engineering Design* Level 2-3 course pairing enables learners to engage with engineering principles and systems through integrated Science, Technologies, Engineering and Mathematics (STEM) inquiry. STEM education integrates concepts that are usually delivered as separate subjects in different classes and emphasises the application of knowledge to real-life situations. STEM learning is typically based around finding a solution to a real-world problem and focus on project-based learning.

Engineering Design Levels 2-3 encourages students to become aware of factors that influence innovation and enterprise, and the subsequent success or failure of a product. Through these courses, learners will have the opportunity to research and appraise existing ideas, products, processes and solutions to problems. Learners will learn to generate imaginative and creative solutions of their own. They will communicate their ideas within the parameters and requirements of engineering-based tasks whilst gaining and applying knowledge of industry standards of design, manufacture and safety. Through practical, experiences, learners will learn to use technology to design, test and appraise products, systems and solutions and have the opportunity identify and articulate further improvements and developments.

Engineering Design Levels 2-3 will impart a specific skill set upon learners that will enable them to confidently identify a problem and develop a well-structured and well thought-out solution in an engineering context. This will be achieved through a rigorous design process. This means that learners will not only gain valuable experience in designing engineered components but also gain experience in project management.

Years 9 to 12 Curriculum Framework

Years 9 to 12 Education Framework informs the design of *Engineering Design* course and it fits within the Professional Studies focus area of the Years 9 to 12 Curriculum Framework.

Pathways

The *Engineering Design* Level *2-3* pairing enables learning continuity from: *Australian Curriculum Technologies* to Years 11-12 through sequenced learning pathways.

Relationship to the Senior Secondary Australian Curriculum

Not applicable

Australian Curriculum General Capabilities

The *Engineering Design Level 2-3* course pair is designed to enable teachers to design courses of study which draw on the cross curriculum priorities and develop the General Capabilities: Literacy, ICT, Critical and Creative Thinking, Ethical Understanding, Personal and Social Capability and Intercultural Understanding.

Relationship to Replacement courses

Engineering Design Level *2* is a replacement for Engineering Design 2
Engineering Design Level 3 is a new course.

Senior Secondary Accreditation Framework

This course will be developed to address the Principles and Standards of the Senior Secondary Accreditation Framework.

Course Design

This proposal is in line with the draft Integrated Policy Model. From the Articulation, extension and enrichment: section this is a Level 2-3 course pair. Each course is 150 hours and will be divided into three equally weighted modules of 50 hours each.

Relationship to possible Future Provision

Learning Area Roadmaps are available on the Years 11&12 website: https://11and12.education.tas.gov.au/learning-area-road-maps/