**Sample Assessment Tasks**

Engineering Studies

ATAR Year 11

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# Sample assessment task

# Engineering Studies – ATAR Year 11

## Task 1 – Unit 1

**Assessment type:** Design

**Conditions**

Period allowed for completion of the task: 2 weeks

**Task weighting**

5% of the school mark for this pair of units

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**Design project one: Students investigate design needs, different sources of inspiration, and products with specific performance criteria, and then use a design process to design and make a product based on their design research. (25 marks)**

**What you need to do**

Develop the first part of a design folio; include the following:

* Investigate, develop ideas and include in your design folio:
* performance criteria related to needs
* different sources of inspiration
* existing ideas and products
  + include supporting images
* limitations
  + list available materials and equipment
* Prepare a design brief
* outline: function, aesthetics, safety, cost considerations and limitations
* Develop ideas and concepts through collected and annotated images, incorporating comments about design fundamentals and factors affecting design, with references back to the design brief
* Include references and your sources of information.

|  |  |
| --- | --- |
| **What needs to be submitted for assessment** | **Due dates** |
| * Research on design needs, different sources of inspiration, and products with specific performance criteria |  |
| * Design brief |  |
| * Annotated design concept images showing concept development |  |
| * Listing of materials |  |

Marking key for sample assessment task 1 — Unit 1

|  |  |  |
| --- | --- | --- |
| **Design folio – Investigation, design brief and concept development** | **Maximum possible mark** | **Allocated mark** |
| Provides information on performance criteria and sources of inspiration   * detailed comparisons, using design considerations, between a selected number of performance criteria and sources of inspiration, supported by suitable images * a number of different examples with notes describing the differences * a selection of ideas from a single performance criteria /inspiration with some notation about likes/dislikes * collection of ideas, dissimilar images and few notes | 7–8  5–6  3–4  1–2 | **/8** |
| Provides information about existing products   * appropriate number of existing similar products, with source referencing, using the design considerations to make detailed comparisons * comparisons between an appropriate number of images against the design considerations * a number of different products with notes describing the differences * a selection of ideas of a single product with limited annotation about likes and dislikes * collection of dissimilar images and few notes | 5  4  3  2  1 | **/5** |
| Provides information about the situation, defining a need or purpose for the product in the design brief   * includes clear statements about function, aesthetics, safety, cost considerations and limitations * includes general statements about the likes and dislikes * covers broad areas of the design problem in limited general terms only | 5–6  3–4  1–2 | **/6** |
| Provides ideas and concepts through collected and annotated images, including list of materials   * clear development of ideas and concepts showing concept development with annotations on images referring to design fundamentals, materials list and design brief * concept development in the annotated images, with reference to design factors, materials and design brief * concept development is limited by few images and simple annotations, little or some reference to ideas in the design brief | 5–6  3–4  1–2 | **/6** |
| **Total** | | **/25** |

# Sample assessment task

# Engineering Studies – ATAR Year 11

## Task 2 – Unit 1

**Assessment type:** Design

**Conditions**

Period allowed for completion of the task: 3 weeks

**Task weighting**

10% of the school mark for this pair of units

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**Research the definitions of energy, power and work. Define and compare forms of energy by providing common examples (24 marks)**

**Core Content — Engineering in Society**

**Energy**

|  |  |
| --- | --- |
| * define and describe relationships between | * define and compare forms of energy |
| * + kinetic |
| * + energy | * + potential |
| * + power | * + thermal |
| * + work | * + chemical |
|  | * + electrical |
|  | * + electro-chemical |
|  | * + electromagnetic (light) |
|  | * + sound   + nuclear |

**Task description**

* Research the definitions of energy, power and work, then produce a detailed paragraph for each definition and a final paragraph on the relationships between the three
* Research sources of information to define and compare the different forms of energy
* for each form of energy, identify and compare **two (2)** common examples or uses; the two examples should be described in approximately 100 words
* images may be included and referred to, when comparing the forms of energy
* Include all references in an appropriately set out reference list.

|  |  |
| --- | --- |
| **What needs to be submitted for assessment** | **Due dates** |
| * Definitions of energy, power and work |  |
| * Comparison of the different forms of energy |  |

**Some suggested references:**

**Engineering fundamentals: an introduction to engineering / Saeed Moaveni.**

Moaveni, Saeed. Toronto: Thomson, 2005. 0-534-42459-7

**Engineering Mechanics:** an introduction to statics, dynamics and strength of materials **/**

**Val Ivanoff.**

McGraw-Hill Higher Education, 1996. 0074702394, 9780074702390

**Engineering studies: the definitive guide. Volume 1, the preliminary course / Paul L. Copeland.**

Copeland, Paul L. Allawah, N.S.W.: Anno Domini, 2000. 0-646-39459-2

**Engineering studies: the definitive guide. Volume 2, the HSC course / Paul L. Copeland.**   
Copeland, Paul L. Allawah, N.S.W.: Anno Domini, 2001. 0-9578770-0-5

**Engineering studies communication: a student's workbook / by John Rochford.**

Rochford, John. Gosford, N.S.W.: K.J.S., 1999

# Marking key for sample assessment task 2 – Unit 1

|  |  |  |
| --- | --- | --- |
| **Research the definitions of energy, power and work. Define and compare forms of energy, by providing common examples** | **Maximum possible mark** | **Allocated mark** |
| Documents definitions and relationships of energy, power and work   * accurate detailed definitions and correct use of terminology * minor/small errors or some details missing in each definition, uses terminology correctly to define of each term * terminology incorrect and/or critical information missing | 5–6  3–4  1–2 | **/6** |
| * different forms of energy, with two examples or uses of each form of energy * accurate identification of each energy type and correct descriptions of two common examples, using appropriate terminology * correct terminology in identifying each energy type but has minor/small errors in some descriptions of the examples * some energy types defined in general terms, with minor errors in some descriptions of the examples * incorrect use of terminology to identify and describe examples of the energy types | 13–16  9–12  5–8  1–4 | **/16** |
| * appropriate reference list * limited or no reference list provided | 2  0–1 | **/2** |
| **Total** | | **/24** |

# Sample assessment task

# Engineering Studies – ATAR Year 11

## Task 5 – Unit 1

**Assessment type:** Production

**Conditions**

Period allowed for completion of the task: 2 weeks

**Task weighting**

5% of the school mark for this pair of units

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**Skills development, as per context specific skills and techniques**

You are to complete skills development exercises, as demonstrated by your teacher, prior to the production of the proposed product.

Keep a daily work log/time sheet to record your skills development. **(20 marks)**

**What you need to do**

**Document and include the following in your daily work log/time sheet**

* notes on the processes involved in the skills development exercises
* list appropriate machines and tools to make the project

**Use the following list of procedures to complete the project**

* Follow Occupational Health and Safety (OHS) practices when using appropriate tools and Equipment
* Follow instructions to complete skills development in a production process:
* mark out details of parts on materials from a plan using appropriate tools
* select and use appropriate tool/s to accurately cut required parts
* if required use appropriate tools to shape parts
* select and use appropriate tools to assemble parts
* check fit, modify if needed
* check appearance of assembled skill exercise
* apply a finish, if required.

|  |  |
| --- | --- |
| **What needs to be submitted for assessment** | **Due dates** |
| * Documented daily work log/time sheet |  |
| * Completed skill exercises |  |

# Marking key for sample assessment task 5 – Unit 1

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| --- | --- | --- |
| **Skills development exercises** | **Maximum possible mark** | **Allocated mark** |
| Setting out of daily work log/time sheet   * well recorded detailed and correct description of workshop practices * main steps of procedure recorded with correct description of work practices * inconsistent notes, partly correct work practices | 3  2  1 | **/3** |
| Marking out required from plan, with correct selection and use of tools   * marking out completed correctly * marking out completed, minor errors made * marking out completed but required correction | 3  2  1 | **/3** |
| Parts cut and shaped, with correct selection and use of tools   * all parts cut accurately, well-shaped * parts cut, but some minor unevenness * parts cut, but required second attempts | 5–6  3–4  1–2 | **/6** |
| Final presented skill exercise   * assembled/fitted correctly, appearance shows accurate finished detail * assembled/fitted, with an acceptable finished detail * assembled/fitted, appearance shows minor detail flaws * assembled, but poorly fitting parts, appearance shows detail flaws | 7–8  5–6  3–4  1–2 | **/8** |
| **Total** | | **/20** |

# Sample assessment task

# Engineering Studies – ATAR Year 11

## Task 6 – Unit 1

**Assessment type:** Production

**Conditions**

Period allowed for completion of the task: 6 weeks

**Task weighting**

30% of the school mark for this pair of units

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**Use safe production methods to produce the product**

Document a daily work log/time sheet including record of production with photographs of each stage of the production. **(30 marks)**

**What you need to document and include in your daily work log/time sheet**

* complete an ongoing record of production with photos at each stage of production
* take photographs of completed project

**Use the following procedures, complete the product**

* Follow proposed production plan
* Use a timeline to construct and test the solution
* maintain safety requirements
* record changes to materials lists or costing
* record regular journal/diary entries
* Construct solution by selecting and using appropriate tools and machines, following safe work practices
* Use ongoing evaluation techniques: diary, journal or folio notes and use of photography to record ongoing progress/decision changes made to the product.

|  |  |
| --- | --- |
| **What needs to be submitted for assessment** | **Due dates** |
| * Stages of production (teacher observation) |  |
| * Production stage photos/daily work log for making process |  |
| * Completed product |  |

# Marking key for sample assessment task 6 – Unit 1

|  |  |  |
| --- | --- | --- |
| **Production of proposed product** | **Maximum possible mark** | **Allocated mark** |
| Contents and records in daily work log/time sheet   * records ongoing correct workshop practices * inconsistent records of work practices | 2  1 | **/2** |
| Completed marking out of material/s as required from plan and cut parts to required shapes using appropriate tools   * marking out completed correctly, all parts correct size and square * marking out completed, parts correct size * marking out completed with minor corrections, parts correct size * marking out required correction, adjusted parts re-sized * marking out required correction, replacement piece cut | 5  4  3  2  1 | **/5** |
| Completed assembly/fitting of product parts   * all parts and joints assembled, even and square fit * all parts and joints assembled, minor corrected unevenness * all parts and joints assembled minor shape unevenness * all parts and joints assembled, but some required second attempt, some poor fit * parts fitted, joints show poor fit, and some require additional material for second attempt | 9–10  7–8  5–6  3–4  1–2 | **/10** |
| Completed product and ongoing record of production   * correctly assembled/fitted product, presented as per design proposal. Detailed record of production clearly showing each stage of the process * correctly assembled/fitted product, easily identified from the design proposal. Well explained stages of the process in the record of production * completed product, appearance shows minor detail flaws. Limited record of production * assembled product with poorly fitting parts. Appearance and production notes show a deviation from the design and production plan | 7–8  5–6  3–4  1–2 | **/8** |
| Completed functioning product   * completed functioning product * inconsistent functioning product requiring adjustments * production causes a non-functioning product | 4–5  2–3  0–1 | **/5** |
| **Total** | | **/30** |

# Sample assessment task

# Engineering Studies – ATAR Year 11

## Task 7 – Unit 1

**Assessment type:** Design

**Conditions**

Period allowed for completion of the task: 1 week, completed during the final week of the term.

**Task weighting**

5% of the school mark for this pair of units

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**Evaluation of completed product**

Test and evaluate your finished product by responding to evaluation questions. **(20 marks)**

**What you need to do**

Write clear statements to evaluate the project

Comment on the following key points, using some relevant or all minor dot points:

Test the solution for correct function and document using checklists and test data

* Did the product meet the design requirements?
* compare product against design ideas and final drawings
* comment on appearance, function and safety
  + shape and size
  + finish
  + operating efficiency
  + safe usage
* Did the manufacturing processes achieve a quality product?
* comment on success of manufacturing skills
  + correct shape and size as per design
  + proportion and fit
  + accurate joins, no gaps
  + manufacturing influences on appearance
* comment on the production procedure
* Could the shape, size and design features of the product be improved?
* comment on variations and changes to the design – aesthetics, materials and function.

|  |  |
| --- | --- |
| **What needs to be submitted for assessment** | **Due dates** |
| * Completed tested product and evaluation report |  |

# Marking key for sample assessment task 7 – Unit 1

|  |  |  |
| --- | --- | --- |
| **Evaluation of completed product** | **Maximum possible mark** | **Allocated mark** |
| Evaluation comments with regards to the specifications and design considerations of aesthetics, function and safety   * clear comments referring to specific design considerations combined with justification of design fulfilling design brief requirements * comments outlining major uses and function, and referring to points within design brief * comments linked to design brief expressing personal likes and dislikes about finished project * comments outlining use of project, but little reference to statement of intent * comments reflect superficial evaluation | 9–10  7–8  5–6  3–4  1–2 | **/10** |
| Comments on the manufacturing processes   * clear flow of evaluation of all procedures with reference to specific procedures, improvements with little or no variation of process * appropriate reporting and/or comment on procedures with some logical evaluation of operations, with little or minor variation of process * comments on procedures with limited evaluation of operations, and some major correction of process * brief comments with few references to major changes to process * comments reflect superficial evaluation | 5  4  3  2  1 | **/5** |
| Evaluation comments with regards to the shape and size – improvements   * clear comments referring aesthetics, function and safety influenced by shape and size and suggested improvements * comments suggesting improvements referring to major design considerations * comments expressing personal likes and dislikes about improvements * brief reference to design changes to improve function or aesthetics * few comments/superficial notes on improvements | 5  4  3  2  1 | **/5** |
|  | **Total** | **/20** |