**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
 | 7–85–63–41–2 | **/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
 | 54321 | **/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
 | 5–63–41–2 | **/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
 | 5–63–41–2 | **/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
 | 5–63–41–2 | **/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
 | 13–169–125–81–4 |  **/16** |
| * appropriate reference list
* limited or no reference list provided
 | 20–1 | **/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

|  |  |  |
| --- | --- | --- |
| **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
 | 321 | **/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
 | 321 | **/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
 | 5–63–41–2 | **/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
 | 7–85–63–41–2 | **/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
 | 21 | **/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
 | 54321 | **/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
 | 9–107–85–63–41–2 | **/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
 | 7–85–63–41–2 | **/8** |
| Completed functioning product* completed functioning product
* inconsistent functioning product requiring adjustments
* production causes a non-functioning product
 | 4–52–30–1 | **/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
 | 9–107–85–63–41–2 | **/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
 | 54321 | **/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
 | 54321 | **/5** |
|  | **Total** | **/20** |