Technology Studies (2013)
Sample work program

June 2013
A work program is the school’s plan of a course of study based on the relevant syllabus. Work programs allow for the characteristics of a school and its students to be considered when implementing the syllabus. School work programs must demonstrate that syllabus dimensions and objectives inform student learning.

Work programs provide information about the school’s plan for course organisation, an outline of intended student learning and the assessment plan as outlined in the work program requirements for that syllabus.
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<th>Year 11</th>
<th>Unit</th>
<th>Time</th>
<th>Design factors</th>
<th>Description of a sample design problem</th>
<th>Assessment technique (Year 11 formative)</th>
<th>Dimensions</th>
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</table>
|         | Developing ideas                         | 7 hrs (2 wks) | • Design strategies  
• Communication  
• Manufacturing technologies | Context: individual, domestic  
Example need or opportunity: a flat pack lamp shade is required that fits in an A4 envelope for postage  
Design process:  
• developing Ideas  
• producing products | 1. Report  
• Analysing design problems  
• Applying design factors and communicating  
• Synthesising and evaluating designs | 2 weeks class time and independent student time  
600 words | |
|         | Exploring design problems: reduce, reuse, recycle | 13 hrs (4 wks) | • User-centred design  
• Sustainable design  
• Communication | Context: community, environment  
Example need or opportunity: a community needs to improve its recycling and recovery of packaging waste  
Design process:  
• exploring a design problem and communicating a design brief | | 8 weeks class time and independent student time  
800 words  
design brief  
annotated sketches, drawings and photos  
evaluation of the final product | |
|         | Designing for an individual: carrying equipment | 35 hrs (10 wks) | • User-centred design  
• Legal responsibilities  
• Communication  
• Materials  
• Manufacturing technologies  
• Project management skills | Context: individual, commercial  
Example need or opportunity: identify a person whose job requires them to carry equipment or goods; design and make an improved purpose built carrier  
Design process:  
• exploring a design problem  
• developing ideas  
• producing products | 2. Design folio  
• Analysing design problems  
• Applying design factors and communicating  
• Synthesising and evaluating designs | 8 weeks class time and independent student time  
800 words  
design brief  
annotated sketches, drawings and photos  
evaluation of the final product |
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| Semester 2 | Designing for a community: reducing poverty through technology | 55 hrs (16 wks) | ● User-centred design ● Sustainable design ● Elements and principles of design ● Legal responsibilities ● Design strategies ● Communication ● Manufacturing technologies ● Materials ● Project management skills | **Context:** community, transport  
**Example need or opportunity:** identify a community in a developing country that uses bicycles; design a bicycle modification to suit their needs  
**Design process:**  
● exploring a design problem  
● developing ideas  
● producing products (prototype) | **3. Design folio**  
● Analysing design problems  
● Applying design factors and communicating  
● Synthesising and evaluating designs | ● 8 weeks class time and independent student time  
● 1000 words  
● design brief  
● annotated sketches, drawings and photos  
● evaluation of the final product | ● 8 weeks class time and independent student time  
● 1000 words  
● design brief  
● annotated sketches, drawings and photos  
● evaluation of the final product |
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<tr>
<th>Year 12</th>
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<th>Assessment instrument (Year 12 summative)</th>
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|         | Designing for an individual | 42 hrs     | • User-centred design  
• Legal responsibilities  
• Sustainable design  
• Elements and principles of design  
• Design strategies  
• Communication  
• Manufacturing technologies  
• Materials  
• Project management skills | **Context**: individual, personal  
**Example need or opportunity**: identify a person with a specific need, e.g. access, mobility, safety, health, learning etc. Design and prototype a solution to suit their needs.  
**Design process**:  
• exploring a design problem  
• developing ideas  
• producing products (prototype) | 5. Design folio | • Analysing design problems  
• Applying design factors and communicating  
• Synthesising and evaluating designs | • 10 weeks class time and independent student time  
• 1200 words  
• design brief  
• annotated sketches, drawings and photos  
• evaluation of the final product |
| Semester 4 | Designing for a community | 42 hrs     | • User-centred design  
• Sustainable design  
• Elements and principles of design  
• Legal responsibilities  
• Design strategies  
• Communication  
• Manufacturing technologies  
• Materials  
• Project management skills | **Context**: community (student-identified field)  
**Example need or opportunity**: students identify a real-world local community need  
**Design process**:  
• exploring a design problem  
• developing ideas  
• producing products | 6. Design folio | • Analysing design problems  
• Applying design factors and communicating  
• Synthesising and evaluating designs | • 12 weeks class time and independent student time  
• 1500 words  
• design brief  
• annotated sketches, drawings and photos  
• evaluation of the final product |
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|         | Product analysis      | 26 hrs (8 wks) | • Elements and principles of design  
• Design strategies  
• Communication  
• Materials  
• Sustainable design | **Context**: individual, domestic  
**Example need or opportunity**: analyse a domestic product and propose a redesign to include an additional use and improve its sustainability  
**Design process**:  
• exploring a design problem  
• developing and communicating ideas | 7. Report  
• Analysing design problems  
• Applying design factors and communicating  
• Synthesising and evaluating designs | • 4 weeks class time and independent student time  
• 800 words  
• sketches |
**Outline of intended student learning**

**Sample design problem and design process**

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<th>Designing for an individual — carrying equipment</th>
<th>Year 11 Semester 1</th>
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**Design problem:**
People in nearly every occupation are required to carry a wide variety of equipment or goods to carry out their jobs. Investigate the problem of carrying equipment.

**Context:** individual, commercial

**Need or opportunity:** identify a person (user) whose job requires them to carry equipment or goods. Design and make an improved purpose built carrier.

**The dimensions and objectives developed in design problem.**

**Dimension 1: Analysing design problems**
- describe design problems and identify design criteria
- interpret design problems using design factors
- analyse the impacts of design factors on decisions

**Dimension 2: Applying design factors and communicating**
- apply design factors to develop ideas
- use manufacturing technologies, materials and project management skills to produce products in response to design criteria
- use communication suited to modes and audiences.

**Dimension 3: Synthesising and evaluating designs**
- synthesise ideas to develop concepts that respond to design problems
- justify decisions and recommendations
- evaluate ideas and products using design criteria

**Students will experience these learning experiences while engaging in the design process.**

**Exploring a design problem may involve:**
- identifying and describing the person, their occupation and items required to be carried
- evaluating how well existing storage and carrying equipment meets the person’s needs, identifying areas for possible improvement (annotated photographs)
- writing a description of the design problem
- investigating user-centred design (purpose and function), by accessing information from primary sources (e.g. interviews with the identified person [user] and /or other members of the same occupation) and secondary sources (e.g. books, internet search of other carrying equipment used by related occupations) to understand the nature of the design problem
- analysing the impact of user-centred design, materials and manufacturing technologies to make informed decisions
- developing and communicating a design brief
- interpreting the design brief and identifying design criteria that are used to determine the suitability of ideas, processes and products.

**Developing ideas may involve:**
- practising freehand sketching in classroom exercises
- using the communication design factor to generate and represent ideas (e.g. sketches, graphic organisers and annotated drawings)
- evaluating ideas in relation to the design criteria (e.g. gathering the user’s feedback on initial ideas)
- collecting data and information about relevant aspects of user-centred design (purpose and function, including physical needs, comfort, accessibility, ergonomics and anthropometric data, safety and trends) to progress and evaluate ideas and inform the selection of a concept (e.g. annotations, test results)
- teacher demonstration of a wide variety of available materials to show students suitable possibilities at this stage of the course
- selecting and refining a concept that meets the design criteria, available materials, manufacturing technologies and the student’s project management skills at this stage of the course
- justifying the concept.
Sample design problem and design process

**Producing products may involve:**
- producing working drawings (sketches)
- teacher demonstration of a production plan including a time plan and cost analysis
- developing a basic production plan of the expected key stages of production
- investigate the “real” human resource cost of production by recording the actual time taken to construct and produce the item and applying an hourly rate
- teacher demonstration of appropriate and safe use of tools, processes and equipment as required
- producing a product by applying knowledge and skills of manufacturing technologies and materials
- giving the product to the user for testing
- making and justifying decisions to modify the product based on user feedback
- evaluating and describing (e.g. using text, photographs, annotations) how the final product meets the design criteria
- making and justifying recommendations for improvement to the design process and product.
# Student profile

## Year 11 — Formative

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<th>D3 Synthesising and evaluating designs</th>
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Interim standards (Monitoring)

Interim level of achievement (Monitoring)
## Year 12 — Summative

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