

Unit A513

The task for this unit is for the candidate to design and manufacture a product. The starting point for this task **must** be selected from a theme set by OCR and listed below.

Centres are permitted to contextualise the theme and starting point appropriately to reflect centre or community resources, and access to local business and industry that may add realism to the candidates' work.

The task can be linked to a candidate's interest or such other influences as competitions, commerce or the community.

Selection of an appropriate theme for the task will be made by candidate and centre, taking account of constraints relating to resources and time available for completion of the task.

Teachers are required to ensure that candidates do not pursue the same 'theme' for their work as submitted or intended for submission for Unit A511.

Teachers must mark the task using the marking criteria provided in Appendix B (Unit A513) of this specification.

In order to design and make their prototype product skilfully, candidates should refer to the content of Unit A514 and use designing, planning, making, materials, tools, equipment and process as appropriate.

Theme	Starting point
Timers	A variable timer to be used with games of skill where each competitor must have a set time (the output must clearly indicate the end of the time period).
Alarms	An alarm to warn of tampering with a sports bag, personal security alarm. (A suitable trigger is required; discrete components or a PIC chip could be used).
4 x 4 Competition vehicle	This multi-part project offers opportunities for teamwork with a number of separate tasks. Tasks could involve mechanisms, control systems or electronics.
Robotics competition	Movement robots can be a combination of electronics and mechanisms and pneumatics and could involve a small teams.
Animated movement	Animated figures are a point of interest, mechanical and pneumatic models which climb, walk or swim, can also be used in a competition.
Charity boxes	Opportunities for mechanisms and electronics. The control system is the main part, various inputs and outputs are possible.
Sustainability	How 'appropriate technology' solutions can be applied in developing countries for moving loads/lifting loads.
Environment	How people react with the area they live in. Needs and problems for living. Encouraging responsible use of resources.
Music	Musical instruments, tuning devices.
Games and puzzles	For developing skills or for amusement.
Lighting	For entertainment or soothing effects, sound to light, light 'motion'.
Overcoming disability	Systems and devices to assist the user with a particular disability.
Batch production	Equipment to assist with achieving consistent quality in production.

Basic ability	Demonstrates ability	Works competently with independence
<p>Designing</p> <ul style="list-style-type: none"> • Demonstrate a limited response to a brief and produce a simple specification for a product. <p>[0-1]</p> <ul style="list-style-type: none"> • Produce one or two simple design ideas using a limited range of strategies. <p>[0-5]</p>	<p>Designing</p> <ul style="list-style-type: none"> • Demonstrate an appropriate response to a brief and produce a suitable specification for a product as a result of analysis. <p>[2-3]</p> <ul style="list-style-type: none"> • Produce a range of creative ideas and communicate these by using appropriate strategies. <p>[6-8]</p>	<p>Designing</p> <ul style="list-style-type: none"> • Demonstrate an appropriate and considered response to a brief and produce a detailed specification for a product as a result of analysis. (AO2) <p>[4]</p> <ul style="list-style-type: none"> • Produce creative and original ideas by generating, developing and communicating designs using a range of appropriate strategies. (AO2) <p>[9-12]</p>
<p>Making</p> <ul style="list-style-type: none"> • Plan and organise activities: <ul style="list-style-type: none"> ◦ Select and use appropriate materials ◦ Select and use equipment as appropriate to the material area • Work safely to shape, form, assemble and finish materials or components as appropriate. • Use workshop facilities as appropriate to the material area. • The product will exhibit a low standard of outcome and may not be successfully completed. <p>[0-9]</p> <ul style="list-style-type: none"> • Demonstrate a simple understanding of how to solve technical problems as they arise. <p>[0-2]</p> <ul style="list-style-type: none"> • Simply record the making of the product using notes and/or photographic evidence. <p>[0-2]</p>	<p>Making</p> <ul style="list-style-type: none"> • Plan and organise activities: <ul style="list-style-type: none"> ◦ Select and use appropriate materials ◦ Select and use equipment as appropriate to the material area • Work effectively and safely to shape, form, assemble and finish materials or components as appropriate. • Select and use workshop facilities as appropriate to the material area. • The product will be completed to a good standard and will meet most of the requirements of the final product specification. <p>[10-17]</p> <ul style="list-style-type: none"> • Demonstrate a practical understanding and ability in the solving of some technical problems as they arise. <p>[3-4]</p> <ul style="list-style-type: none"> • Record key stages involved in the making of the product; provide notes and photographic evidence. <p>[3-4]</p>	<p>Making</p> <ul style="list-style-type: none"> • Plan and organise activities: <ul style="list-style-type: none"> ◦ Select and use appropriate materials ◦ Select and use equipment as appropriate to the material area. (AO2) • Work skilfully and safely to shape, form, assemble and finish materials or components as appropriate. (AO2) • Assess and apply knowledge in the workshop facilities as appropriate to the material area. (AO2) • The product will be completed to a high standard and will fully meet the requirements of the final product specification. (AO2) <p>[18-24]</p> <ul style="list-style-type: none"> • Demonstrate a practical and thorough understanding in the solving of technical problems effectively and efficiently as they arise. (AO2/AO3) <p>[5-6]</p> <ul style="list-style-type: none"> • Record key stages involved in the making of the product; provide comprehensive notes and photographic evidence. (AO2) <p>[5-6]</p>

Basic ability	Demonstrates ability	Works competently with independence
<p>Critical evaluation</p> <ul style="list-style-type: none"> • Give a limited evaluation of the finished product with some reference to the specification. • There is no evidence of testing the product in use. • There will be little or no use of specialist terms. • Answers may be ambiguous or disorganised. • Errors of spelling, punctuation and grammar may be intrusive. <p style="text-align: right;">[0-2]</p>	<p>Critical evaluation</p> <ul style="list-style-type: none"> • Give an evaluation of the finished product with reference to the specification. • Show superficial testing and reflect on how to improve the product. • There will be some use of specialist terms, although these may not always be used appropriately. • The information will be presented for the most part in a structured format. • There may be occasional errors in spelling, punctuation and grammar. <p style="text-align: right;">[3-5]</p>	<p>Critical evaluation</p> <ul style="list-style-type: none"> • Critically evaluate the finished product against the specification. (AO3) • Undertake detailed testing; present meaningful conclusions leading to proposals for modifications to improve the prototype product. (AO3) • Specialist terms will be used appropriately and correctly. • The information will be presented in a structured format. • The candidate can demonstrate the accurate use of spelling, punctuation and grammar. <p style="text-align: right;">[6-8]</p>