

**To be opened on receipt**

**AS GCE DESIGN AND TECHNOLOGY**

**F521/01/TN**    Advanced Innovation Challenge

**TEACHER'S NOTES**

**To be used during the F521/01 examinations on Friday 7 December 2012 and  
Wednesday 8 May 2013.**



**INSTRUCTIONS FOR TEACHERS**

- The teacher script is to be read out in the examination during sessions 1 and 2, to guide the activities of candidates as they complete the answer booklet.

**INFORMATION FOR TEACHERS**

- This document consists of **20** pages. Any blank pages are indicated.

## Updated Advanced Innovation Challenge guidelines, April 2012

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**These updated guidelines are in response to issues raised by examiners and centres.**

### General

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- This examination is to be held under normal examination conditions, as stipulated in the JCQ handbook.
- The answer book is the only paper the candidates should need. Extra paper, other than JCQ examination paper, will not be marked.
- Candidates are not allowed to talk or listen to MP3s, etc.
- The evaluation in box 18 is to be carried out by the student individually – this is not an occasion for peer review.
- Candidates who have started session 2 cannot add additional work to the boxes in session 1, however they are able to refer to this work.
- Computers are allowed, but the internet **must be disconnected**.

Candidates may find that using Pro/DESKTOP in this environment may not be very useful as it is far more time-consuming than hand sketching and **candidates risk losing marks**.

### The job bag

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The job bag is for inspirational materials/items which might aid candidates when coming up with ideas for their design.

Please remember that candidates have limited time to access and use the job bag; therefore, whole books or large quantities of materials are not appropriate.

Photocopied pages of books and printouts of webpages with material lists, swatches, iconic design etc. are all allowed.

**Materials brought into the examination which might aid candidates when sitting the F521/02 paper such as revision notes or theory notes must not be attached to the F521/01 answer paper, this paper is handed out to candidates in the F521/02 session. Any evidence of this will be treated as malpractice.**

The answer book from sessions 1 and 2 must be retained by the centre in a secure location until it is issued again for session 3, the Reflection Test.

Candidates may not take the job bag or their model into the Reflection Test examination.

## Timings

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There are two three-hour sessions for F521/01. The suggested timings within these can be adjusted by centres to suit their own or their candidates' needs.

You will need to allow a break between the two three-hour sessions; breaks need not be supervised.

It is also advisable to have a 15-minute break during each three-hour session. This does not need to be supervised in the same way as an examination, but we advise centre to remind candidates of their responsibilities not to exchange ideas or use the internet.

Candidates needing extra time are advised to take that time at the end of each three-hour session.

## Help from staff

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The teacher/invigilator reads the instructions and will not be able to give any help other than to aid safety. A technician can also be used and may be helpful when taking photographs. Technicians or teachers can cut materials to a manageable size, but must not cut out shapes or give any other help.

## Large centres

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Some centres with large numbers of students may not be able to accommodate all candidates in their workshop(s).

If this is the case, you may be able to use an alternative larger venue such as the school hall, as this is a modelling exercise and only basic modelling materials are required. You may also use, if available, an adjoining work room and/or an art room or graphics suite.

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 1	ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<p><b>IMPORTANT</b></p> <p>180 minutes are available for Session 1 plus a 15 minute break.</p> <p>The times given in this column are <b>ONLY</b> suggestions and may be adapted to suit Centre needs as long as the overall timings are allowed for each session.</p>	<p>Before the candidates enter the room:</p> <p>Arrange room for candidates to sit in groups of two / threes or fours. Candidates will need space for their job bag.</p> <p>Place a candidate Answer Booklet in each workspace.</p> <p>Ensure a wide range of appropriate materials, tools, equipment are available.</p> <p>When candidates enter the room:</p> <p>Candidates sit in working groups of 2, 3 or 4 students.</p> <p>Rules of the Innovation Challenge.</p>	<p>Session 1 – Designing / Session 2 – Modelling. Session 3 – Reflection (1 hour examination)</p> <p>Over the next two sessions you are going to be involved in a D&amp;T activity.</p> <p>By the end of sessions 1 and 2, your sketches, notes, models, prototypes should show that your ideas would work.</p> <p>You are doing this challenge to show just how good you are at coming up with new and creative ideas under examination conditions.</p> <p>You can develop your ideas in whatever ways you think best – through sketching, writing or making models.</p> <p>Use whatever ways will help show your most creative work.</p> <p>The exam board have given you each an Answer Booklet to record your progress throughout the challenge.</p> <p>Although you are not working in an examination hall you must still treat this activity as an examination. You should not talk unless you are told to do so by a member of staff.</p> <p>Part of the examination requires you to explain your work and receive comments from your workgroup. The member of staff will explain this before this activity takes place.</p>	<p>Explain the meaning of working prototypes.</p> <p>Experiments with ideas – try things out to see if they work/function.</p> <p>It is important that you try your best and feel that you can try any idea out – however crazy or impossible it might seem to start with. Be creative.</p> <p>Use it to record everything. <b>Follow instructions carefully.</b></p> <p>In the world of work, many companies share ideas and discuss possibilities. They are often called ‘think tanks’.</p>

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 1	ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
		<p>Teaching staff are here to monitor health and safety and organise the running of the challenge. Staff are not allowed to give advice or guidance or assist modelling activity. However, candidates are allowed to ask for clarification if they are not sure about a task.</p> <p>We will explain everything as we move through the three sessions.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>PLEASE REMEMBER THAT THE EXAMINER WILL ONLY SEE THE ANSWER BOOKLET.</b></p> <p><b>IT IS IMPORTANT THAT EVIDENCE OF ALL THINKING, 2D DESIGNING, AND 2D/3D MODELLING, (EVIDENCED BY PHOTOGRAPHS), IS INCLUDED IN THIS ANSWER BOOKLET.</b></p> </div>	
	<p><b>Candidates fill in the following information on page 1 of the Answer Booklet:</b></p> <p>Candidate name, Centre number, Candidate number.</p>	<p>There will be times when you will be asked to draw or write particular things in your booklet.</p> <p>We will be taking photographs of your models as they develop. These photos will be stuck in your booklet.</p> <p>You must develop your own ideas during these sessions. The 'reflect and record' activity will allow you to take advice and suggestion from others in your group. If you think the suggestions are suitable you will be able to modify your design and incorporate their design.</p>	

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 1		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
5 mins			<p>You must complete your own booklet and your own model. You must not move forward in the workbook until instructed to do so, you are allowed to return to previously completed boxes in Session 1 but you will not be allowed to return to Session 1 once you have started Session 2.</p> <p>Read through the challenge sheet. Select one Design Challenge from the list, which you will solve during this examination activity. Cross out the Design Challenges that you are not undertaking. You should have your 'job bag' available for session one and two of this examination.</p>	
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 1 AND 2 IN YOUR ANSWER BOOKLET</b>				
10 mins	Box 1. Initial Thoughts.		<p>The first thing we would like you to do is to put some of your first thoughts down on paper.</p> <p>Remember, we want you to be as creative as possible, so sketch and add notes of any ideas you have, even if they seem a bit risky or outrageous at this stage.</p> <p>We really want you to feel able to 'let your mind go out to play'.</p> <p>In this box put down your initial thoughts. You have 10 minutes, so work quickly. Try and remain focused.</p> <p>Look at your initial thoughts. Think about the Design Challenge. Which of your 'initial thoughts' has the greatest potential to be taken further. Why?</p>	<p>You could show these thoughts through sketches or notes. Don't be afraid to put things down, remember this is the Advanced Innovation Challenge.</p>
5 mins	Box 2	Open your Answer Booklet and find box 1.		

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 1		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 3, 4 AND 5 IN YOUR ANSWER BOOKLET</b>				
3 mins	Box 3. Decision time	Open up the last page to reveal boxes 3, 4 & 5 Complete the following in box 3  A design brief.	Think before you fill out the boxes. Consider your options. Select a design brief that you will enjoy doing. One that will show your creative ability.	
7 mins	Box 4. Key Points	Examine the contents of your job bag remembering your design brief. Identify 'Key Points' which will help you write your specification.	Explain that Box 3, 4 and 5 will be visible throughout the challenge and they should refer to them from time to time.	
12 mins	Box 5. Your design specification	Produce a detailed and justified specification.		
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 6 IN YOUR ANSWER BOOKLET</b>				
35 mins	Box 6 Start Designing	In a moment you can start Designing. You can sketch, make notes, make models and use photographs.  From now on you may use any of your resources at any time. Think about your job bag. Use this as a source of inspiration.  If you use 2D/3D modelling, or trialling & testing to develop ideas, take photographs and stick them into box 6. Ensure these photographs are fully annotated.  If there are materials you need that are not here, ask.  Remember, from now on you are developing your own ideas.		

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 1		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 7 IN YOUR ANSWER BOOKLET</b>				
10 mins	Box 7		Think carefully about your job bag and/or other resources. How have these resources helped with your designing? Use annotated sketches and/or annotated photos to explain how they have been used.	
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 8 IN YOUR ANSWER BOOKLET</b>				
5 mins	Box 8		Which is your best idea? Justify your decision.	
15 mins	BREAK. Allow candidates 15 mins to have a drink, use the toilet, and get some fresh air if possible. They may stay in the same room as the challenge if supervised, but are not allowed to work in their booklets.		Close the booklets. You now have a break of 15 minutes. You may not work on your booklet during this period.	
2 mins	PRESENTATIONS. Teacher Introduction to the presentations. Same working group arrangements as before.		You will have the opportunity to tell others what you are designing (students only). You can present drawings and/or models if it helps to communicate your idea. Students in your working group can ask you questions. Students in your working group can suggest improvements / developments to your idea.	Explain about the presentations. The value of sharing ideas. Suggesting modifications. Discussing further possibilities.



# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

## SESSION 1 ORGANISATIONAL INSTRUCTIONS

## MUST SAY

## SAY IN YOUR OWN WORDS

### THE FOLLOWING SECTION SHOULD BE DONE IN BOX 9 IN YOUR ANSWER BOOKLET

7 mins	Box 9. Reflect and Record.	Use the space provided in Box 9 to plan your presentation. Think about your brief, specification and key factors of your design. The presentation should last no more than 5 minutes, including feedback.	
<b>GROUPWORK</b>			
10 mins	<p>Within working groups. (2, 3 or 4 students)</p> <p>Candidates give presentations of their ideas and receive feedback.</p> <p>Staff to overview process and encourage candidates to be positive, constructive and fair with time allocation.</p>	<p>You should now have completed the planning of your presentation.</p> <p>You should present your ideas to your working group.</p>	

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

## SESSION 1 ORGANISATIONAL INSTRUCTIONS

## MUST SAY

## SAY IN YOUR OWN WORDS

### THE FOLLOWING SECTION SHOULD BE DONE IN BOX 10 IN YOUR ANSWER BOOKLET

8 mins	Box 10. Feedback	Record any suggestions made by students within your working group.  How might you modify your idea in response to feedback?	
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### THE FOLLOWING SECTION SHOULD BE DONE IN BOX 11 IN YOUR ANSWER BOOKLET

35 mins	Box 11. Developing your idea, improvements and modifications	<p>You have 35 minutes to develop your idea, you can use sketching 2D and 3D modelling and you can refer to your job bag.</p> <p>Use annotated sketches and/or annotated photographs to communicate your thoughts.</p> <p>Make clear reference to your specification.</p> <p>If you use 2D/3D modelling, or trialling &amp; testing to develop ideas, take photographs and stick them into box 11. Ensure these photographs are fully annotated.</p>	
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# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 1		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 12 IN YOUR ANSWER BOOKLET</b>				
9 mins	Box 12. Your Model.	Think about your design proposal. What are the main components? What modelling materials/ ingredients are required to model your prototype product?  What tools/equipment will be required? How will these components be joined/combined together?	Think about how you will make your model/prototype. What are your choices? What would be the best? Why?	
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 13 IN YOUR ANSWER BOOKLET</b>				
8 mins	Box 13. Action Plan for Session 2.  Booklets collected in and returned to exams officer. Details given of any additional modelling material available in Session 2.  This is not a teaching opportunity. Candidates may find things out for themselves – they must not be taught at this stage.	In Session 2 of the Advanced Innovation Challenge you will be modelling your design proposal.  Plan what you need to do in the second session.  This is the end of Session 1.		

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 2		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<p><b>IMPORTANT</b></p> <p>180 minutes are available for Session 2.</p> <p>The times given in this column are <b>ONLY</b> suggestions and may be adapted to suit Centre needs.</p>	<p>Before the candidates enter the room. Arrange room for candidates to sit in the same groups as Session 1.</p> <p>Place the candidate's booklet in each workspace. Ensure a wide range of appropriate materials, tools, equipment are available.</p> <p>When candidates enter the room. Candidates sit in the same working groups. Rules of the Challenge.</p>	<p>In Session 2 of the innovation challenge you will be modelling your design proposal.</p> <p>You will have longer periods of uninterrupted time so that you can model your idea.</p> <p>You will be modelling your design so that you and the examiner can see your ideas.</p> <p>Although you are not working in an examination hall you must still treat this activity as an examination. You should not talk unless you are told to do so by a member of staff.</p> <p>We will continue to explain everything as we move through each stage of this challenge.</p> <p>You will be using tools and equipment, so your normal workshop risk assessments must apply.</p> <p>Photographs will be taken at the end of each modelling session. Additional photos can be taken at any time and included in your workbook. Additional photographs should be annotated.</p>	<p>Explain if necessary the department's expectations with regard to health and safety.</p>	

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 2		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 14 IN YOUR ANSWER BOOKLET</b>				
10 mins	Box 14. Review of Session 1	<p>Look back over the work you did in Session 1.  <b>Do not add anything to boxes 1–13.</b>            Look carefully at Box 3, 4 and 5. Read your design brief and specification.            Are you still on track?            Fill out box 14 with any new thoughts about your design. Use annotated sketches and/or notes. You have 10 minutes.</p>		
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 15 IN YOUR ANSWER BOOKLET</b>				
40 mins	Box 15. Modelling	<p>You have 40 minutes to start modelling your design proposal.            A photograph (photo 1) will be taken by a member of staff at the end of 40 minutes to record your progress. Do not annotate this photograph.            If you require additional photographs please ask. Additional annotated photographs may be placed into box 15 or additional space pages.</p>		
5 mins	Box 15. Progress report 1	<p>Fill in progress report 1.            Be honest about the problems you have experienced. What decisions have you made? What were the solutions to your problems?</p>		

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 2		ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 16 IN YOUR ANSWER BOOKLET</b>				
40 mins	Box 16. Continue Modelling		<p>You have 40 minutes to continue modelling your product.</p> <p>A photograph (photo 2) will be taken by a member of staff at the end of 40 minutes to record your progress. Additional annotated photographs may be placed in box 16.</p>	
5 mins	Box 16. Progress report 2		<p>Fill in progress report 2.</p> <p>Did your solutions work and why? Which areas have been successful? Check that your model is photographed.</p>	
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 17 IN YOUR ANSWER BOOKLET</b>				
5 mins	Box 17. Planning		<p>Plan what you need to do in the last 50 minutes time allocation.</p>	
50 mins	Complete Modelling	<p>After 40 minutes tell the candidates they have 10 mins to finish their models.</p>	<p>You have 50 minutes to finish modelling your product.</p> <p>A photograph (photo 3) will be taken by a member of staff at the end of 50 minutes to record your final product.</p>	

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 2	ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>THE FOLLOWING SECTION SHOULD BE DONE IN BOX 18 IN YOUR ANSWER BOOKLET</b>			
25 mins	<p>Box 18. Evaluation of Developed Design proposal.</p> <p>Regroup the candidates at their tables.</p>	<p>Describe the effectiveness of your developed design proposal and how it meets the needs of the original Design Challenge.</p> <p>Look at your original specification in box 5. Evaluate your final proposal against your original specification.</p> <p>You may use annotated sketches and/or annotated photographs.</p> <p>This session is due to finish at .....</p>	<p>Explain there is no more time for modelling, but they can still communicate via their booklets.</p> <p>Use sketches and notes to show how your design could be improved.</p>

# DESIGN AND TECHNOLOGY: UNIT F521 TEACHER GUIDANCE

SESSION 3	ORGANISATIONAL INSTRUCTIONS	MUST SAY	SAY IN YOUR OWN WORDS
<b>EXAMINATION SESSION 3</b>			
Session 3 is an hour long exam	Reflection.	<p>The challenge has now been completed. You now have time to think about what you have designed.</p> <p>The reflection paper Session 3 will be taken on.....</p> <p>Your Answer Booklet will be available during this session.</p>	









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