DCG Student Assignment Guide

Cover Page:

- ❏ Title
- ❏ 2 images (from other outputs of both modelled artefacts)
- ❏ Exam number
- ❏ Not included in page count once no additional info or new view of photorealistic images are shown
- ❏ This page can be done at the end of the project

DCG Student Assignment Guide

Part (A):

(a) Carry out a design investigation of existing items highlighted in the brief, in graphic format. Your investigation should include an analysis of physical forms and shapes, geometry, materials, innovation, etc.

Output 1:

Page 1 & 2 (15 marks)

Design Research	Exploration of brief and presentation of existing artefacts in graphic format, using primary and secondary research.

Design Research - Exploration of main design features using primary & secondary research; Selection of appropriate graphics; Effective layout and presentation of information combining images, sketches & annotations	
a) Extensive range of relevant criteria considered - excellent presentation	**13 - 15**
b) Most relevant criteria considered - very good presentation	**10 - 12**
c) Some relevant criteria considered - good presentation	**7 - 9**
d) Limited criteria considered - fair presentation	**4 - 6**
e) At least one criterion considered - poor presentation	**0 - 3**

- ❏ Lowest marks awarded compared to other outputs in part (a)
- ❏ Primary research - photos taken by student
  - sketches (original or scanned)
- ❏ Secondary research - googled sources (must be referenced on final page)
- ❏ Include Design Brief: highlight key words - possibly colour coded throughout output
- ❏ Key words from the brief are analysed - this is the guide for the entire project
- ❏ Good quality images and graphics that are all to scale
- ❏ Well thought through layout and neat annotation
- ❏ Timeline of artefact: include what has happened for artefact to come to about - developments in technology etc.
- ❏ Reflection on the brief
- ❏ Links between headings from part (a) description on brief i.e. “shape, size, material etc.” - have something for “etc”
- ❏ The information on page should flow from one thing to the next
- ❏ Evidence of critical thinking - why is the artefact a certain shape/material/colour etc
  - how higher understanding
- ❏ Text should be to the point and explain inclusion of image (no waffle)
- ❏ Word Cloud: key words graphic - wordle.net (optional)
- ❏ Font size 11 (or whatever is legible when printed)

Output 1:

Page 3 (15 marks)

Design Feature Comparison	Select 2 images and illustrate/explain the main design features. Insert the main dimensions. Compare and contrast the main design features of both using suitable freehand sketches and other presentation techniques.

Design Feature Comparison - Selection of two appropriate images; Main dimensions inserted; Comparison of main design features; Contrasting of main design features; Effective layout and presentation of information combining images, sketches & annotations	
a) Extensive range of relevant criteria considered - excellent presentation	**13 - 15**
b) Most relevant criteria considered - very good presentation	**10 - 12**
c) Some relevant criteria considered - good presentation	**7 - 9**
d) Limited criteria considered - fair presentation	**4 - 6**
e) At least one criterion considered - poor presentation	**0 - 3**

- ❏ Two images of artefacts chosen from output 1, one of which you intend on using for the rest of outputs for part a. Both should have featured in output 1.
- ❏ Should be able to model one on SolidWorks
- ❏ Access to physical model
- ❏ Demonstrate critical thinking in analysis of artefacts
- ❏ Demonstrate understanding of design
- ❏ Include dimensions
- ❏ Freehand sketches (original or scanned) used effectively to show features of artefact in comparison. Sketches need to show more info about the artefact to justify inclusion
- ❏ Use arrows to demo functions/movement rather than a long text
- ❏ Image of artefact in hand or next to a coin/pen/ruler for scale
- ❏ Analyse/Compare/Contrast the following in depth: physical form (ergonomics), shape (form), colour, weight, material (durability, aesthetics), finish, texture, style (link to a time period), other features, etc

Output 2:

Page 4 (20 marks)

Freehand Graphical Representation	Choose one of the artefacts and make a detailed graphical presentation of this artefact. This should include a rendered freehand presentation quality drawing in 3D format.

Freehand Graphical Representation – Proportion; Form/Volume; Use of Tone/Line for effective rendering; Detailed communication of main design features to include 3D presentation quality drawing; Layout & presentation	
a) Extensive range of relevant criteria considered - excellent presentation	**17 - 20**
b) Most relevant criteria considered - very good presentation	**13 - 16**
c) Some relevant criteria considered - good presentation	**9 - 12**
d) Limited criteria considered - fair presentation	**5 - 8**
e) At least one criterion considered - poor presentation	**0 - 4**

- ❏ Freehand sketches (originals)
- ❏ Sketches in the corner of the key geometric shapes that make up the artefacts
- ❏ Show mechanisms or any info the main sketch does not convey. Needs to give reader a full sense of how the artefact works
- ❏ Sketches should focus on function and form
- ❏ Demo different sketching techniques (pencil, shading, rendering, etc)
- ❏ Key notes justifying inclusion of detailed sketches
- ❏ Rendering not colouring (rendering shows how light interacts with artefact)
- ❏ Sketches with and without coloured and pencil render
- ❏ Possibly leave the isometric box used to sketch artefact if it enhances the sketch
- ❏ Photocopy sketch and practice rendering on photocopies
- ❏ Sectional views
- ❏ 1 page

Output 3:

Solidworks Files (35 marks)

SolidWorks Parts, Assembly, Drawing, and eDrawing files	Generate computer model, comprising at least 5 parts, an Assembly, Drawing and an eDrawing of the selected artefact. Ecomomy of design, design intent and the required filing structure will be considered in the marking process.	Electronic SolidWorks files

SolidWorks Parts, Assembly, Drawing and eDrawing files		
• **Adherence to required filing structure**	**4**	
• **Creation of a minimum of 5 Part files**	**2**	
• **Part models –** Proficiency in Parametric CAD, including economy of design and design intent; Selection of most appropriate profiles; Sketches fully defined; Features renamed; Appropriate type of extrusions/end conditions used	**10**	
• **Assembly –** Creation of Assembly environment; Accuracy of parts to facilitate correct assembly; Correct mating of parts; Application of appropriate appearances	**5**	
• **Factor of difficulty**	**5**	
• **eDrawing of CAD model**	**2**	

- ❏ Part files (5 parts minimum in HL, 3 in OL) **Maximum of 10 parts**
- ❏ Assembly file
- ❏ Solidworks drawing files (for output 4)
- ❏ eDrawing of assembly
- ❏ Name the part files at the beginning of drawing part
- ❏ Rename all features as you work on them. If you leave this until later the assembly and drawing files will not open.
- ❏ Part sketches should have no blue lines (under defined), or red lines (over defined)
- ❏ Sketch - add relation - add dimension - fully define
- ❏ Display CAD skills by using a variety of features not creating many many parts.
- ❏ Only 5 marks for “factor of difficulty”

Output 4:

Page 5 (15 marks)

Hardcopy output from Solidworks	Detailed orthographic views Rendered pictorial view Exploded View

Hardcopy outputs from SolidWorks - Detailed orthographic views of the selected artefact; Section/Detail views where appropriate; Rendered pictorial view of the Assembly; Exploded view of the CAD model; Inclusion of main dimensions, notes and symbols; Appropriate scaling, layout and presentation to be considered	
a) Extensive range of relevant criteria considered - excellent presentation	**13 - 15**
b) Most relevant criteria considered - very good presentation	**10 - 12**
c) Some relevant criteria considered - good presentation	**7 - 9**
d) Limited criteria considered - fair presentation	**4 - 6**
e) At least one criterion considered - poor presentation	**0 - 3**

- ❑ Create a drawing template
- ❑ Plan sheet in advance to convey information
- ❑ There should be a reason for selected views
- ❑ All views do not have to be to the same scale but do this if possible
- ❑ Views should be labelled
- ❑ Include 5 dimensions
- ❑ Detailed orthographic - no colour
- ❑ Rendered pictorial
- ❑ Exploded view
- ❑ Detailed views
- ❑ Section views
- ❑ All drawings to be generated from solidworks (no screen grabs)
- ❑ 1 page

Part (B):

Develop and graphically communicate a new concept design for a bedside alarm clock based on a selected theme or target market.

Output 5:

Page 6 & 7 (25 marks)

7	Graphical exploration of design solutions	Analysis of brief and graphical illustration of possible solutions. Justification for chosen solution(s) including aesthetics, functionality and environmental sustainability.

Graphical exploration of design solutions - Exploration of theme/possible solution(s); Justification of chosen solution(s); Use of appropriate images/graphics; Effective layout and presentation of information combining images, sketches & annotations	
a) Extensive range of relevant criteria considered - excellent presentation	**21 - 25**
b) Most relevant criteria considered - very good presentation	**16 - 20**
c) Some relevant criteria considered - good presentation	**11 - 15**
d) Limited criteria considered - fair presentation	**6 - 10**
e) At least one criterion considered - poor presentation	**0 - 5**

- ❏ Lowest marks awarded compared to other outputs in part (a)
- ❏ Students create a brief (mini brief, theme, impose a few constraints to be met)
- ❏ No link to part (a) design brief other than what the artefact actually is
- ❏ Analyse brief - personal theme/statement, identify problem/purpose, research (what, why, who, where)
- ❏ It's all about how the design is communicated. Does not have to be ground breaking design or be completely practical/realistic
- ❏ Moodboard/theme used to develop ideas
- ❏ Images convey inspiration and flow from there (could use shape, colour, theme etc)
- ❏ Outline of thought process in communication of solution
- ❏ "Telling a story" from brief to images to initial ideas and final idea on output 6.
- ❏ Evolution of design - pulling different aspects/ideas together (shape/theme etc) in a metamorphosis to come up with final solution
- ❏ Inspiration (features, observations, themes, images, questions posed) -> Progression of ideas (sketches, annotations, CAD, ICT) -> Development/Realisation of physical form (final solution)
- ❏ 2 pages

Output 6:

Page 8 (10 marks)

Presentation of Modification/ Concept Design	Detailed graphical presentation of the design Modification/Concept Design. This should include a rendered freehand presentation quality drawing in 3D format.

Presentation of Modification/Concept Design – Proportion; Form/Volume; Use of Tone/Line for effective rendering; Detailed communication of modified/concept design features; Layout and presentation	
a) Extensive range of relevant criteria considered - excellent presentation	**9 - 10**
b) Most relevant criteria considered - very good presentation	**7 - 8**
c) Some relevant criteria considered - good presentation	**5 - 6**
d) Limited criteria considered - fair presentation	**3 - 4**
e) At least one criterion considered - poor presentation	**0 - 2**

- ❑ Same as Output 3
- ❑ Freehand sketches (originals)
- ❑ Show mechanisms or any info the main sketch does not convey. Needs to give reader a full sense of how the artefact works
- ❑ Sketches should focus on function and form
- ❑ Demo different sketching techniques
- ❑ Key notes justifying inclusion of detailed sketches
- ❑ Rendering not colouring (rendering shows how light interacts with artefact)
- ❑ Sketches with and without coloured render
- ❑ Possibly leave the isometric box used to sketch artefact if it enhances the sketch
- ❑ Sectional views
- ❑ Sketches in the corner of the key geometric shapes that make up the artefacts
- ❑ 1 page

Output 7:

Page 9 & 10 (25 marks)

9	Hardcopy output from Solidworks	CAD Model (Part/Assembly, Drawing & eDrawing) and associated hardcopies to include appropriately detailed orthographic, rendered pictorial and photorealistic views to communicate your chosen design.

Hardcopy outputs from SolidWorks – CAD Model; Detailed orthographic views of the proposed solution; Section/Detail views where appropriate; Rendered pictorial view of the CAD model; Photorealistic image; Inclusion of main dimensions, notes and symbols; Appropriate scaling, layout and presentation to be considered		
• **Application of CAD skills**	**5**	
a) Extensive range of relevant criteria considered - excellent presentation	**17 - 20**	
b) Most relevant criteria considered - very good presentation	**13 - 16**	
c) Some relevant criteria considered - good presentation	**9 - 12**	
d) Limited criteria considered - fair presentation	**5 - 8**	
e) At least one criterion considered - poor presentation	**0 - 4**	

- ❏ Page 9 - Solidworks drawing
- ❏ Page 10 - Photorealistic
- ❏ Not necessary to show exploded view
- ❏ Model as an assemble
- ❏ Detailed orthographic view with dimensions
- ❏ Rendered pictorial view - show exploded view if necessary
- ❏ eDrawing of assembly
- ❏ 1 page

Reference page:

- ❏ References websites, books etc where information was found
- ❏ Do not need url for images
- ❏ Identification symbol for primary sources
- ❏ Not included in page count