



*Leaving Certificate Examination, 2016*

## ***Design and Communication Graphics***

### ***Student Assignment***

*Ordinary Level and Higher Level  
160 marks*

*Details of the Student Assignment for the Leaving Certificate Examination, 2016 are given overleaf.*

***The Student Assignment must be completed by Friday 15<sup>th</sup> January, 2016.  
The work should be submitted following the issue of candidate examination numbers to schools.***

# **Design and Communication Graphics (DCG)**

## **Student Assignment**

### **Leaving Certificate 2016**

#### **Instructions to candidates:**

1. Your coursework submitted for assessment must consist of two components:

- A bound A3 design portfolio
  - The portfolio should contain a maximum of 12 pages at Ordinary Level and a maximum of 14 pages at Higher Level.
- An individual **CD or USB flash drive** containing:
  - All of the SolidWorks files relating to the completed assignment
  - An electronic copy of the completed portfolio in **PDF format**

All coursework submitted for assessment must be clearly identified with your examination number which will be issued to your school early in 2016. It is **your** responsibility to ensure that all electronic materials submitted are free from viruses, so that examiners can open all required files for assessment. **Please note that the portfolio and CD/USB flash drive will not be returned at the end of the assessment process.**

2. The **CD/USB flash drive** must contain one main folder. The name of this folder should contain your candidate examination number in the following format “DCG SA 2016 (Exam number)”.
3. The main folder, referred to above, must contain 2 sub-folders. One of these sub-folders will contain all the pages from the completed assignment in **PDF format**. The other sub-folder must contain 2 sub-folders. One of these sub-folders must contain all of the SolidWorks electronic files associated with Part A of the assignment and the second subfolder must contain all of the SolidWorks electronic files associated with Part B of the assignment. No other files should be included on the **CD/USB flash drive**.  
*(All required CAD files must be in SolidWorks format. The version of SolidWorks used to complete your assignment should be indicated on the front cover of your design portfolio.)*
4. It is your responsibility to ensure that all of the required files are contained on the **CD/USB flash drive** prior to submission of the work. You will **lose marks** under the relevant headings in the marking scheme if required files are omitted. Marks will be awarded for conforming to the filing structure outlined above.  
A backup copy of the **submitted files** must be retained in your school until the assessment process is complete.
5. For protection during transit, the **CD/USB flash drive** must be placed in a protective sleeve or envelope. This should be fixed **close to the bound edge** on the inside cover of the design portfolio.
6. You must submit your **original sketches** for Outputs 3 and 8 – scanned images will not suffice.
7. The coursework submitted for assessment must be **your own individual work** and must be **completed in school** under the supervision of the class teacher.
8. When using research sources, including the Internet, the sources must be acknowledged. Research material copied directly from the Internet or from other sources and presented as your own work will not receive marks.
9. The coursework presented for assessment must be displayed in an attractive manner and marks will be awarded for presentation.
10. The coursework must be completed by **Friday 15<sup>th</sup> January 2016**.

# Ordinary Level Student Assignment - Leaving Certificate 2016

Salt and pepper shakers can be found on most tables at mealtimes. The shakers are often produced as a matching set or their design may reflect a pair of related objects. They can be made from a variety of materials, including plastic, wood, glass, metal, and ceramic. The number of holes on the shakers can differentiate between them as well as influencing the consumption of salt and pepper.

- (A) Carry out a design investigation of an existing salt and pepper shaker set in graphic format. Your investigation should include an analysis of physical shape, features, materials, colour, etc.

*and*

- (B) Show graphically how you would physically modify your chosen salt and pepper shaker set to improve its overall design.

*or*

Develop and graphically communicate a new concept design for a salt and pepper shaker set based on a selected theme or target market.

The assignment should follow the structure outlined in the marking considerations below.

## Student Assignment - Ordinary Level

	No.	Section Heading	Description	Suggested no. of A3	Marks
Presentation, thought process, reflection and factor of difficulty will be considered throughout.	1	Design Research	Exploration of brief and presentation of existing artefacts in graphic format, using primary and secondary research.	1-2	50
	2	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.	1-2	
	3	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.	1	
	4	SolidWorks Parts, Assembly, Drawing and eDrawing files	Detailed computer model, comprising at least 3 Parts, an Assembly, Drawing and an eDrawing of the selected artefact. The required filing structure will be considered in the marking process.	Electronic SolidWorks files	
	5	Hardcopy output from Solidworks	Detailed orthographic views Rendered pictorial view Exploded View	1-3	
	6	Photorealistic Representation	Computer generated photorealistic image(s) of the artefact	1	
Part (B) Design Modification or Concept Design	7	Graphical exploration of design solutions	Analysis of brief and graphical illustration of possible solution(s) Justification for chosen solution(s)	1-2	50
	8	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.	1	
	9	Hardcopy output from Solidworks	CAD Model (Part/Assembly, Drawing & eDrawing) and associated hardcopies to include appropriately detailed orthographic and rendered pictorial views to communicate your chosen design	1-3 (Plus electronic SolidWorks files)	
				Total	160

# Higher Level Student Assignment - Leaving Certificate 2016

Taps are used to dispense a variety of liquids. Through time, tap design has developed to improve their functional and aesthetic qualities. Improvements also include increased flow and temperature control, filters to reduce contaminants, electronic control, integrated lighting, product marketing potential, etc.

- (A) Carry out a design investigation of existing taps in graphic format. Your assignment should begin with a brief exploration of the development of taps over the ages. Its main focus should include an analysis of contemporary taps in relation to their physical form, shape, ergonomics, materials, features, etc.

*and*

- (B) Show graphically how you would physically modify a chosen tap to improve its overall design.

*or*

Develop and graphically communicate a new concept design for a tap based on a selected theme or aimed at a particular target market.

The assignment should follow the structure outlined in the marking considerations below.

## Student Assignment - Higher Level

	No.	Section Heading	Description	Suggested no. of A3 Pages	Marks
Part (A) - Existing Artefacts  Presentation, thought process, reflection and factor of difficulty will be considered throughout.	1	Design Research	Exploration of brief and presentation of existing artefacts in graphic format, using primary and secondary research.	1-2	50
	2	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.	2-3	
	3	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.	1	
	4	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. Economy of design, design intent and the required filing structure will be considered in the marking process.	Electronic SolidWorks files	
	5	Hardcopy output from Solidworks	Detailed orthographic views. Rendered pictorial view. Exploded View.	2-4	
	6	Photorealistic Representation	Computer generated photorealistic image(s) of the artefact.	1	
Part (B) Design Modification or Concept Design	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.	2-4	60
	8	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.	1	
	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.	2-4 (Plus Electronic SolidWorks files)	
				Total	160

	Lion leh A3	Treideal	na Roimhe	Tuarisc	Lion leh A3	Mare
50	1	Taighede Dearaidh	N a treoracha dearaidh a thaiscéalaigh le taighede Promhull agus tainisteach, agus déantúisim atá ann cheana féin a chur i láthair i agus	1-2	Roghainnígigh 2 ionáha leitigh/míleáigh na Promhghnáithe dearaidh.	Cuir isteach na Promhthoisiúil Cuir Promhghnáithe dearaidh an da seicestí saorlaimhe oirinnacha agus as tecnicí cur i láthair éile.
50	2	Comparaid idir na Gníomhaíche Dearaidh	Roghainnígigh 2 ionáha leitigh/míleáigh na Promhghnáithe dearaidh. Cuir isteach na Promhthoisiúil Cuir Promhghnáithe dearaidh an da seicestí saorlaimhe oirinnacha agus as tecnicí cur i láthair éile.	2-3	Saorlaimhe	Roghainnígigh ceann amháin de na déantúisim agus déan leitíu mionsonraíthe gráfaich den déantúisim in. Ba chóir go meádach mionsonraíthe gráfaich den déantúisim san. Ba chóir go meádach mionsonraíthe gráfaich den déantúisim san áireamh sa marca la.
50	3	Leitíu Grafaich	Roghainnígigh ceann amháin de na déantúisim agus déan leitíu mionsonraíthe gráfaich den déantúisim in. Ba chóir go meádach mionsonraíthe gráfaich den déantúisim san. Ba chóir go meádach mionsonraíthe gráfaich den déantúisim san áireamh sa marca la.	1	Samhail mionsonraíthe fromharéactha ina meidh s phardt ar a laghad, Cúimeál, Lmiocht agus Drawing den déantúisian roghainníthe.	Comhaid SolidWorks Parts, Cúimeál, Lmiocht SolidWorks, Comhaid SolidWorks
50	4	Comhaid SolidWorks Parts, Cúimeál, Lmiocht SolidWorks, Comhaid SolidWorks	Samhail mionsonraíthe fromharéactha ina meidh s phardt ar a laghad, Cúimeál, Lmiocht agus Drawing den déantúisian roghainníthe.	2-4	Comhaid SolidWorks	Strucchtúr baráimneacht maidir le dearaidh, trin an dearaidh agus an laghad, Cúimeál, Lmiocht agus Drawing den déantúisian roghainníthe.
60	5	Leitíu Fotáireálaíoch	Clonna míonsonraíthe ortagrafacha.	1	Clóna míonsonraíthe picílúthra.	Comhaid SolidWorks
60	6	Leitíu Fotáireálaíoch	Clóna míonsonraíthe ortagrafacha.	1	Clóna míonsonraíthe picílúthra.	Comhaid SolidWorks
60	7	Taiscéalaíoch	Anaills ar na teoracha dearaidh agus leitíu gráfaich ar reiligh theideartha. An reilteach/ná reiligh a roghainiodh a chosaint, aeisteoir.	2-4	Ghrafálaíoch	Ánaills ar na teoracha dearaidh agus leitíu gráfaich ar reiligh theideartha. An reilteach/ná reiligh a roghainiodh a chosaint, aeisteoir.
60	8	Dearadh Athraíoch	Cur i láthair mionsonraíthe gráfaich ar an Dearadh Athraíoch / Dearadh Dearaidh	1	Dearadh Athraíoch	Cur i láthair mionsonraíthe gráfaich ar an Dearadh Athraíoch / Dearadh Dearaidh
60	9	Aschur crucachóipe	Samhail CAD (Pait/Cóiméáil, Lmiocht agus Drawing) agus na curachóipeanna a bhainmann leí, clomha ortagrafach a leis na sonrait (Móide comhaid leictreanaíochta san a chur in iúil)	2-4	Aschur crucachóipe	Samhail CAD (Pait/Cóiméáil, Lmiocht agus Drawing) agus na curachóipeanna a bhainmann leí, clomha ortagrafach a leis na sonrait (Móide comhaid leictreanaíochta san a chur in iúil)

Beidh an cur i láthair, an próiseas smaoiointeoireachta, an machnamh & an chéim dleacrachta á mbeithniú i rith an ama.

Ba chóir an strucchtúr a thugtar sna nótáí marcála thíos a leanúnait sa tasc.

Déan Cúimheap nua dearaidh do bhúacaire a thorbairt agus a chur in iúil go gráfaich. Bioldh sé bunaithe ar theama roghainníthe nua dearaidh do dhíthíe ar spriocmharragadh áitíthe.

nu

(B) Taispeáin go gráfaich coinsí a dhéanfa aithriú fisiceach ar bhúacaire a roghainíonn tu chun an dearadh

agus

leis na habhair as a ndéantar iad, lena n-ugnáithe, etc.

ar bhúacairt comhaimseartha i dtacaí lena bhfoirm fisiceach, lena gcruth, lena n-eirgeamálaíocht,

(A) Déan imscríduit dearaidh i bhformáid ghrafacháit maragálochta, etc. Ba chóir do thasc a thosú le tuarisc achomair ar thorbairt bhúacairt in imeacht na mbílanta. Ba chóir dírití go promhá ar manáis soláistí misuite, feidearthacháit maragálochta, etc.

Ar na feabhsúithe a rimneadh ta stílth níos fearr, trialtú teochta, scagáint le heisíontais a laghdú, trialtú leictreanaíoch, buacairt buacairt leagachta leachtmanna a dháileadh amach. Tá forbairt taréis teacht ar dearadh

Usáidtear buacairt chun éagsúilacht leachtmanna a dháileadh amach. Tá forbairt taréis teacht ar dearadh soláistí misuite, feidearthacháit maragálochta, etc.

Tasc an Daila - Gnáthleibheal					
	Teideal na Roinne	Tuarisc	Lion lch A3	a mholtar	Marc
50	1	Taighde Dearaidh	Na treoracha dearaidh a thaiscealaíodh le taighde priomhúil agus tamaisteach, agus déantúisim atá ann c'cheinéar agus bhorfóid gnáthleibheal.	1-2	
50	2	Gníomhaíodh Dearaidh	Cuir isteach na priomhphointeoibh. Cuir Protomhghnéithe dearaidh an dá cheann i gcomparaid agus i gcodaransacht le cheile agus úsáid a baint as scéilí saorlaimhe oiriúnacha agus as teicnicí cur i láthair eile.	1-2	
50	3	Léiriti Gráfaích	Roghsmaigh 2 ionmha agus léiríte/mingíte na priomhphointeoibh dearaidh. Roghsmaigh ceann amham é de na déantúisim agus déan leiriti miotsonsoráithe graífeadh den déantúisim sin. Ba chóir go mbéadh miotsonsoráithe saorlaimhe 3D dardeaghdéan san áireamh sa liainc.	1	
60	4	Comháid SolidWorks Parts, Gímeáil Limiocht	Samhail mhoinsorsoráithe riomháiteacaíta ma mbéidh 3 pháist ar a laghad, Gímeáil Limiocht agus eDrawing den déantúisim roghnaíthe. Cuirfeá an stuchtúr tracbháinach comhthúcháin san Limiocht. Comháid Leictreanaacha.	1-3	
60	5	Aschur crúachóipe	Clínna mhoinsorsoráithe ortagraífeacha. Clínna scátháilte picitirítha. Cíle scártha.	1-3	
30	6	Léiriti Fotáilleálaíoch	Íomhá(nna) f(h)otáilleálaíoch(a) den déantúisim a rinneadh ar formháit.	1	
30	7	Taiscéalaíochta	Anaills ar na treoracha dearaidh agus leiriti graífeach ar réigiúch fhéideartha. An réitiúach/nra réigiúch a roghnaíodh a chosaint.	1-2	
30	8	Dearadh Athraithe / Comhcheap Dearaidh	Cur i láthair miotsonsoráithe graífeach ar an Dearadh Athraithe / ar an a chur i láthair. Ba chóir go mbéadh limiocht scátháilte a chur i láthair.	1	
30	9	Aschur crúachóipe	Samhail CAD (Part/Cosmetic, Limiocht agus eDrawing) agus na 1-3 (Móide comháid leictreanaacha culta agus ionmhamna scátháilte picitirítha san áireamh chun do dhaearadh a chur in iúl.	1-3	

Beidh an cur i láthair, an próiseas smaointeoireachta, an machnamh & an chéim dheacrachta á mbreithinní i rith an ama.

Ba chóir an struchtúr a thugtar sna nótáí marcaíla thíos a leanúint sa tasc.

Déan comhcheap nua dearaidh do sháilitéar agus do phíobáran a thorbait agus a chur in iúl go graífeach, bunaithe ar théama roghnáithe no diríthe ar spriocmhargadh sírtíthe.

no

(B) Taispeáin go graífeach consas a dhéanfaí ailtíu fisiceach ar an síltéar agus ar an bpíobáran a roghnáinn tú chun an dearaidh foriomláin a fhéabhsú.

agus

(A) Déan imscruáid dearaidh i bhformáid gnáthleibheal ar sháilitéar agus ar phíobáran den saghas sin atá ann ar na habhair as a ndéantair iad, ar an daith, etc.

cheana fein. Ba chóir go mbéadh anailís san áireamh i d'imscruáid ar an gcruth fisiceach, ar na ghnéithe,

chun an dearaidh foriomláin a fhéabhsú.

iad a dhéanamh as easgánlaíocht abhar, pláisteach, adhamd, glóine, móitíil agus cre san áireamh. Is feidir leas a bhaint as línion na bpoll iontu le haitheinit eatarthu agus bionn tionchar ag línion na bpoll ar a oiread saláim agus a phíobáran a chaitheann daonimé chomh maith.

Bionn sílltear agus píobáran le fail ar beagnach gach tabla ag am béili. Is minic a dhéantar iad ina bpéitr ag meáitseáil a cheile no d'fhéadfadh péire de riadáil gaothmharra a bhéith le feiceáil sa dearadh orthu. Is feidir iad a dhéanamh as easgánlaíocht abhar, pláisteach, adhamd, glóine, móitíil agus cre san áireamh. Is feidir leas a bhaint as línion na bpoll iontu le haitheinit eatarthu agus bionn tionchar ag línion na bpoll ar a oiread saláim agus a phíobáran a chaitheann daonimé chomh maith.

1. Ni mór dha chuid a bhéith san obar churasa a chuitreoir isteach le haghaidh measáin:
- Filleann ceangalaithe A3 d'obar d'hearráidh
  - Ni cír níos mó ná 14 leathainach a bhéith ann ag an Ardleibheal.
  - Dúthdhiosca nō mearóg chumhne (USB) ar leith ar a mbéidh:
    - Na comhaid SolidWorks go leir a bháinneann leis an tasc crocháin obair churasa go leir a chuitreoir isteach le haghaidh measáin.
    - Céip leictreonaach i bhformáid PDF den obar go leir san fhiltean.
  - Ni mór aon phrómhfiltean amháin a bhéith ar an dúthdhiosca/méaróg. Ba chóir do scrúdumhír a bhéith ina cuid dháilis d'aimm an fhilteain, san phormáid seo: "DCG SA 2016 (Scrúdumhír)".
  - 2. Ni mór 2 fhóthiltean a bhéith sa phrómhfiltean a lúaitear thusa. Ni mór na leathanáigí go leir on tasc crocháin obair churasa go leir a chuitreoir isteach le haghaidh measáin ná an dúthdhiosca nō an mhéaróg chumhne i ndíreach phrosesas na measáinachta.
  - 3. Ni mór na comhaid CAD go leir atá ag teastáil a bhéith i bhfoirmáid SolidWorks. Ba chóir leictreonaacha SolidWorks a bháinneann le Cuid A den tasc i gceann de na fóthilteain sin agus beidh na comhaid ar bith éile a bhéith ar an dúthdhiosca/méaróg.
  - 4. Is ortsa atá an fhreagracht a chinniú go mbéidh na comhaid go leir atá ag teastáil ar an dúthdhiosca mearóg suíla gcuireann tu isteach an obar. **Cailíodh tu maraná** faoi na ceantaeidil ábhartha sa scéim mhacaila má bhíonn comhaid tráchtanacha in easnamh. Bronnfaid maraná as cloi leis an strucúthair comhdúcháin a bhfuil cur síos air thusa.
  - 5. Lena chosaint le linn dō a bhéith a ionpair, ba chóir an **dúthdhiosca/mhéaróg** a chur i gclúdach cosanta. Ba chóir an clúdach sin a bhéith gréamaithe den taobh istigh de chlúdach an fhilteain dearráidh, gar don chumhais cheangalaithe.
  - 6. Ni mór do chuid **bunscoití** do na hAiscuití 3 agus 8 a chur isteach – ni leor iomhána scanta.
  - 7. Do chuid oibre fein ba chóir a bhéith i ngach cuid den obar churasa a chuitreoir isteach le haghaidh measáin agus ní mór i mór i a **dheanamh sa scoil** faoi theoir mhúinteoir an rangága.
  - 8. Ni mór na foinsí taghde a usáidear, an tdirilion san áireamh, a admháil. Ni ghnóthofar marc ar bith as abhar taghde a choipeáil go direach ón Ldirilion ná as foinsé ar bith éile agus a chur i láthair mar do chuid oibre fein.
  - 9. Ni mór an obar churasa le haghaidh measáin a chur i láthair ar bhealach tarraingtéach agus bronntar marcanna as an gcur i láthair.
  - 10. Ni mór an obar churasa a bhéith crocháinthe faoi **De haoine, 15 Eanáir 2016**.

## Treoracha d'iarthóir:

**Grafaitc Dhearráidh agus Chumarsáide**  
**Tasc an Dala**  
**An Ardteistiméireacht, 2016**

do na scóilteanna.

Ba chóir an obair a chur isteach tar éis eisílinit scrúdúimhreacha na n-iarrthóir.  
Ni mór Tásc an Dafta a bhfeith crochinnithe faoi DÉ hAoine, 15 Eanáir 2016.

Tá súráit maidir le Tásc an Dafta do Scrúdú na hArdeisiméireachta, 2016 le fáil thall.

160 marrc

Gnáthleibhéal agus Ardeibhéal

Tásc an Dafta

**Gráfaic Dhearaidh agus Chumarsáide**

Scrúdú na hArdeisiméireachta, 2016

State Examinations Commission

Coimisiún na Scrúdúimhreacha Stáit

