

## Carson a dh'ionnsaichear Ceimig ?



Eadar gu bheil sibh ga thuigsinn no nach eil, tha sinn uile nar ceimigearan. A h-uile turas a lasas sinn maidse, a bhruiteas sinn ugh no fiù a tharraingeas sinn ar n-anail a-steach 's a-mach, tha sinn a' coileanadh iom-obrachadh ceimigeach. Tha ar bodhaigean a' fàs, a' leasachadh agus a' gnìomhachadh gu dìreach mar thoradh air na modhan ceimigeach a tha a' dol air adhart nam broinn. Tha ar n-aodach agus cha mhòr a h-uile nì co-cheangailte ri ar beatha làitheil dèanta tro chruth-atharrachadh ceimigeach de na bun-stuthan leithid ola no clach-meinnir iarainn, no tro làimhseachadh ceimigeach air toraidhean nàdarach leithid fiodh no clòimh.

Tha a' chuid as motha den bhiadh a bhios sinn ag ithe air fhàs le cuideachadh bho thodhar ceimigeach agus air a chumail bho lobhadh le stuth-gleidhidh ceimigeach. Ma tha sinn a' dol a dhìon na planaid bho bhuidhean millteach ghnìomhachdan daonna, feumaidh sinn tuigsinn ann an dòigh cho soilleir 's a ghabhas na siostaman ceimigeach ioma-fhillte a tha a' dèanamh suas ar n-àrainneachd de thalamh, muir agus èadhar.

Am measg nan raointean anns am faighear ceimigearan tha:

- gach raon de ghnìomhachas, bho na companaidhean ola, ceimigeach agus cungaidheanleigheis gu grunn mhòr de dh'iomairtean nas lugha a bhios a' dèanamh stuthan ùra no spèisealta
- slàinte phoblach no dìon àrainneachd
- rannsachadh sna h-oilthighean, aitreabhan riaghaltais, gnìomhachas agus buidhnean prìobhaideach
- teagasg aig gach ìre
- buidhnean sgrìobhaidh còrach, naidheachdas saidheansail
- saidheans dligh-eòlach
- mòran dreuchdan eile a bhios a' dèanamh feum dìreach den cuid eòlais saidheansail

## Ceimig Ìre Choitcheann (ÀS3/ÀS4)

'S e amas a' chùrsa ùidh an sgoileir a thogail ann an Ceimig agus mar a chuirear an cèill e sa bheatha làitheil. A thuilleadh air a bhith a' còmhdach raon fharsaing de dh'fhiosrachadh fìor, thathar cuideachd a' cuimseachadh air leasachadh chomasan practaigeach agus sgilean fuasglaidh cheistean.

Tha 15 chuspairean ann a tha air an gabhail a-steach dha na raointean ionnsachaidh a leanas:

*Iom-obrachadh Ceimigeach / Luaths an Iom-obrachaidh*

*Ataman agus an Clàr Greiseagail / Mar a bhios Ataman a' Co-aontachadh*

*Connaidhean agus Haidro-gualan*

*Buadhan Shusbaintean agus a' Dèanamh Dealain*

*Searbhagan agus Alcalaidhean / Iom-obrachadh Shearbhagan*

*Metailtean agus Meirgeadh*

*Plastaigean agus Snàithleachain Co-thàthte*

*Todhair*

*Gualaisgean agus Stuthan Co-cheangailte*

*Measadh*

Tha 3 eileamaidean measaidh sa chùrsa:

Fiosrachadh agus Tuigse (K.U.)

Fuasgladh Cheistean (P.S.)

Comasan Practaigeach (P.A.)

Aig deireadh a' chùrsa ionnsachaidh, bidh oileanaich a' suidhe dà phàipear deuchainn SQA .i. SÀR-ÌRE agus MEADHAN-ÌRE (Tha gach pàipear a' mairsinn 1 uair a thìde agus 30 mionaid)

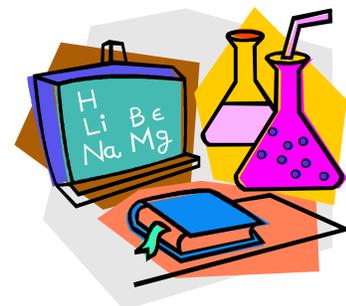
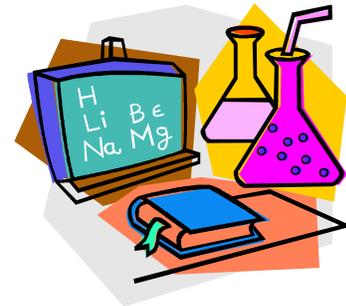
Tha an dà chuid Fiosrachadh is Tuigse agus Fuasgladh Cheistean air am measadh an taobh astaigh nan deuchainnean Meadhan-Ìre agus Sàr-Ìre a tha air an deasachadh le SQA. Tha Comasan Practaigeach air am measadh bhon taobh a-staigh thairis air mairsinneachd a' chùrsa. Tha ìre Chomasan Practaigeach a' cur 20% ris an ìre dheireannach a thathar a' buileachadh.

Ceimig Àrd-Ìre (ÀS5)

Ìre Inntigidh: Bu chòir do sgoilearan Ìre 1 no 2 ann am Fiosrachadh is Tuigse agus Fuasgladh Cheistean a ruighinn ann an Ceimig aig Ìre Choitcheann. A thuilleadh air an sin, bu chòir do sgoilearan a bhith air Ìre 1 no 2 a choileanadh ann am Matamataig aig Ìre Choitcheann.

Tha an cùrsa Àrd-Ìre ag amas air stèidh bhunaiteach a thoirt do sgoilearan ann am fiosrachadh agus teòiridh Ceimig gus cothrom a thoirt dhaibh tuilleadh ionnsachaidh a dhèanamh aig ìre nas àirde. Tha barail àrd air comharran matha ann an Ceimig Àrd-Ìre airson faighinn a-steach gu cùrsaichean foghlaim adhartach agus àrd-ìre cho math ri bhith luachmhor annta fhèin.

Tha an cùrsa air a dhèanamh suas de 3 Aonadan:



### *Aonad 1 – Cùisean Lùtha.*

Nam measg: Reataichean Iom-obrachaidh, Eantalpaidh, an Clàr Greiseagail, Seòrsaichean Tàthaidh, Buadhan co-cheangailte ri Structar agus am Mòl.

### *Aonad 2 – Saoghal a' Ghualain*

Nam measg: Connaidhean, Structar & Ainmeachadh, Iom-obrachadh & Cleachdadh Cothàthaidhean Gualain, Poilimearan agus Stuthan Nàdarrach.

### *Aonad 3 – Iom-obrachadh Ceimigeach*

Nam measg: An Gnìomhachas Ceimigeach, Lagh Hess, Co-Choithroman, Searbhagan & Bunaitean, Iom-obrachadh Redox agus ceimig Niùclasach.

Bidh gach Aonad a' mairsinn mu ochd seachdainean – le obair dhearbhadh na pàirt chudromach dheth.

Bu chòir a thoirt fa-near gu bheil frithealadh sàr-mhath, obair chruaidh agus dealas fìor dheanamach a thaobh soirbheachadh sa chuspair seo.

### Measadh

Feumaidh sgoilearan faighinn tro mheasadh deireadh-aonaid airson gach aonaid agus aithisg a sgrìobhadh air pìos obrach practaigeach Bidh an ìre dheireannach air a dearbhadh leis an dòigh coileanaidh san deuchainn bhon taobh a-muigh mar a chaidh a chur sìos leis an SQA. An lùib a' mheasaidh bhon taobh a-muigh tha:

Pàipear I (1 uair a thìde) 40 ceistean iom-roghainneach (40% den chomharra dheireannaich)  
Pàipear II (1uair a thìde agus 30 mionaid) na seòrsaichean cheistean le freagairtean fada (60% den chomharra dheireannaich)

Cuiridh pàirt den sgrùdadh bhon taobh a-muigh deuchainn air eòlas / fiosrachadh an sgoileir ann an naoi gnìomhachdan sònraichte practaigeach, a tha air an gabhail os làimh leis an sgoilear san obair-lann.

Am measg cuid de làraich-lìn a tha feumail airson ath-obair / ùidh, tha:

[www.evans2chemweb.co.uk](http://www.evans2chemweb.co.uk)

[www.bbc.co.uk/scotland/bitesize](http://www.bbc.co.uk/scotland/bitesize)

[www.rsc.org](http://www.rsc.org)

Gu h-ìosal tha earrann bho 'Journal of Chemical Education' agus tha e a' toirt seachad sealladh inntinneach air mar a tha ceimig mar fhìor phàirt de ar beatha làitheil.

### **Carson a Dh'fheumas mi Ceimig Ionnsachadh?**

**(Barker, G.K. (2000). Carson a dh'fheumas mi ceimig ionnsachadh? *Journal of Chemical Education*, 77(10),1300.**

O bhalaich, sin an rabhadh-gleoc agam. Leth-uair an dèidh a sia, a' mhadainn a tha air a bhith a' cur oillt orm fad na seachdaine. Latha a' chiad deuchainn mòr ceimig agam. Bu chòir dhomh dèanamh deiseil. Càite a bheil an t-uachdar-fhiaclan? Chuala mi mu fhluaraid; ach eil fhios carson a tha sin a-staigh ann? Tha sòda arain agus pearocsaid ann cuideachd. Carson a chuireadh iad iad sin ann an uachdar-fhiaclan? Tha an t-àm ann airson fras-nighe. Saoil carson

a tha siabann agus uisge a' glanadh tòrr nas fheàrr na dìreach uisge leis fhèin. Ciamar a tha failcean eadar-dhealaichte bho shiabann? Saoil carson a tha mi a' faireachdainn cho fuar mus tiormaich mi mi fhìn. Tha isobutàin sa mhùs seo. Saoil a bheil coltas aig an sin ris a' bhiutàin ann an lasadairean. Carson a bhiodh rudeigin mar sin san stuth stoidhlidh fuil seo? Tha an t-àm ann airson beagan ciùil. Tha na naidheachdan air. Tha iad ag ràdh gun tèid a' mhadainn àlainn samhraidh seo na latha obair-osòin. Ach eil fhios dè a th' ann an osòin. Ciamar a tha e a' faighinn dhan èadhar? Carson a tha sin na thrioblaid? Bidh iad an-còmhnaidh ag iarraidh oirnn gun a bhith a' fuireach a-muigh sa ghrèin ro fhada oir tha an sreath osòin a' dol à sealladh. Ciamar a thèid e dìreach à sealladh, agus ciamar a tha an sreath osòin eadar-dhealaichte bhon osòin a tha iad ag iarraidh oirnn gun a tharraing a-steach air ar n-anail? Saoil ciamar a tha acainn-grèine ag obair. B' fheàrr dhomh an solas a chur air. Ach eil fhios dè a th' ann am bolgan solais a tha a' leigeil leis fàs cho teth ach nach eil ga leaghadh no ga chur na theine. Tha an tàm ann coimhead ris an aodach a tha ri nighe agus m' aodach-latha a chur orm. Ciamar a bhios stuth-glanaidh ag obair? 'S dòcha gun cuir mi orm an T-lèine a tha air a dathadh. Saoil ciamar a bhios iad a' dath aodaich? Ciamar a bhios dathan a' fuireach san aodach gun a bhith a' tighinn dheth air mo chraiceann? Bhalaich ort, tha na dineachan sin air an dath a chall gu tur. Saoil dè thug orra an dath a chall uimhir. Thàinig mo stocainnean a-mach gu snog geal. Dè th' ann an gealachadh agus ciamar a tha e ag obair? Tha mo bhrògan ùra trèanaidh cofhurtail dha-rìribh. Saoil ciamar a rinn iad an rubair-cop sin.

Bu chòir dhomh mi fhìn a neartachadh le beagan bracaist. 'S dòcha gum fraighig mi ugh. Saoil carson a tha blas uighe air a fhraighigeadh mòran nas fheàrr na ugh amh. Ciamar a tha còcaireachd ag atharrachadh an uighe? Tha e a' fàs fadalach; cha ghabh mi ach sùgh orainsear agus biadh grànach. Fuirich ort, a h-uile turas a dh'òlas mi sùgh orainsear às dèidh dhomh m' fhiacian a bhruisigeadh, tha blas uabhasach neònach air. Ach eil fhios carson a tha sin? Tha mi a' smaoinichadh dìreach gun gabh mi am biadh grànach agus gum fàg mi an sùgh orainsear. Tha fios agam gu bheil beothaman C ann, ach dè tha sin a' dèanamh dhomh co-dhiù? Tha an gràn seo air a 'neartachadh le iarann'. Saoil dè an seòrsa iarainn a bhios iad a' cur ann; chan urrainn gur e na sliseagan iarainn sin a bha sinn a' cleachdadh san obair-lann ceimig, an e? Tha cailcium sa bhainne seo; 's cinnteach nach e na cnapan beaga sin a chunnaic sinn a' builgeanachadh ann an uisge an latha roimhe sa chlas. Tha am bainne ag ràdh gu bheil beothaman D air a chur ris. Saoil dè th' ann am beothaman D agus carson a tha e math dhomh. Chan eil calaraidhean sam bith ann. Ach saoil a bheil gnothaich sam bith aig an sin ris na tomhaisean lùths sin mun do leugh sinn san leabhar ceimig. Tha an t-àm ann fàgail airson na sgoile. Tha mi an dòchas gun tòisich an càr an-diugh. Saoil ciamar a tha bataraidh ag obair. O, mìorbhaileach, tha feum aig a' chàr air connadh. Stadaidh mi aig a' mheanbh-bhùth agus lìonaidh mi an tanc. Tha am pumpa ag ràdh rudeigin mu dheidhinn ìre oictèan. Saoil dè th' ann an oictèan agus dè a' chiall dha-rìribh a th' aig ìre oictèan. Chan eil luaidhe sa chonnadh seo; ciamar as urrainn dhaibh luaidhe a chur ann an connadh? Carson a chleachdar e ann an connadh co-dhiù? Tha coltas gu bheil an taidhear sin caran ìosal. Tha an tomhais bruthaidh seo a' leughadh nas ìsle na bha e feasgar an-dè. Saoil an ann a chionn 's gu bheil e cus nas fionnaire a' mhadainn-sa. Mus fhàg mi, tha mi a' smaoinichadh gum faigh mi canastair sòda. O-o, leig mi leis tuiteam; 's fheàrr dhomh gun fhosgladh gus a-rithist. Ach eil fhios dè na builgeanan a tha sin agus mar a tha iad gan cur a-steach an sin. Thug mi an sgoil a-mach ann an àm. Tha còir aige a bhith glè theth an-diugh. Tha mi air cluinntinn mu dheidhinn uinneagan chàraichean a bhith a' briseadh nuair a dh'fhàsas e anabarrach teth, agus mar sin 's fheàrr dhomh am fàgail beagan fosgailte. Saoil carson a bhios iad a' briseadh uaireannan nuair a dh'fhàsas an càr fìor theth. Tha mi toilichte gu bheil na h-uinneagan air an còmhdach gus an taobh a-staigh a chumail san dubhar. Bu chòir sin cuideachadh cuideachd. Ach eil fhios dè a th' anns a' chòmhdach agus ciamar a gheibh iad air a chur air a' ghlainne. Tha e soilleir dha-rìribh a-muigh an-diugh; tha mi toilichte gu bheil mo speuclairean a' fàs dorch sa ghrèin. Saoil ciamar

a bhios sin a' tachairt dhaibh. Bidh an fhuar-èadhar a' faireachdainn fìor mhath an-diugh. Tha mi toilichte gun d' fhuair mi an fhuar-èadhar agam air a chàradh. Dè an t-inneal fuarachaidh a dh'ath-lìon an teicneòlaiche? Saoil ciamar a tha fhuar-èadhar ag obair. Uill, seo mi a-nis sa chlas ceimig. Tha iomgain mun deuchainn seo a' toirt losgadh-bràghad orm. Saoil ciamar a tha an tana-shearbhag seo ag obair. Carson a tha agam ri ceimig ionnsachadh co-dhiù? Cuin achleachdas mi ceimig nam bheatha làitheil co-dhiù? Dè am feum a th' ann dhomh?



## Why Study Chemistry ?

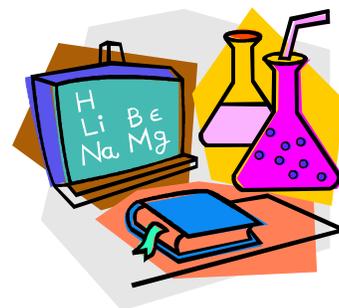


Realise it or not, deep down we are all chemists. Every time we light a match, boil an egg or simply breathe in and out, we perform a chemical reaction. Our bodies grow, develop and function entirely as a result of the chemical processes that go on within them. Our clothes and nearly all the objects of our everyday life are manufactured by the chemical transformation of raw materials like oil or iron ore, or by the chemical treatment of natural products like wood or wool.

Most of the food we eat is grown with the help of chemical fertilisers and kept from rotting with chemical preservatives. If we are to protect the planet from the harmful effects of human activity, we need to understand as clearly as possible the complex chemical systems which make up our environment of land, sea and air.

Some of the areas where chemists are to be found include:

- all areas of industry, from the oil, chemical and pharmaceutical companies to a host of smaller enterprises producing new and specialist products
- in public health and environmental protection
- in research in universities, government institutes, industry and private agencies
- in teaching at all levels
- in patent agencies, scientific journalism
- in forensic science
- in numerous other occupations which make direct use of their scientific knowledge



## Standard Grade Chemistry (S3/S4)

The aim of the course is to develop the student's interest in Chemistry and its application to everyday life. In addition to covering a wide range of factual information, there is also a focus on developing practical abilities and problem solving skills.

There are 15 topics which are incorporated within the following areas of study :

*Chemical Reactions / Speed of Reactions*

*Atoms and The Periodic Table / How Atoms Combine*

*Fuels and Hydrocarbons*

*Properties of Substances and Making Electricity*

*Acids and Alkalis / Reactions of Acids*

*Metals and Corrosion*

*Plastics and Synthetic Fibres*

*Fertilisers*

*Carbohydrates and Related Substances*

### Assessment

There are 3 assessed elements in the course:

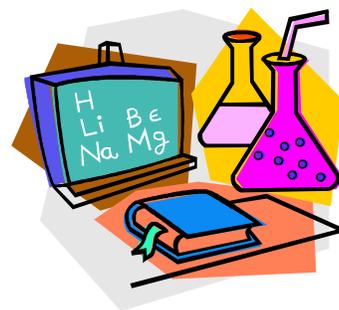
Knowledge and Understanding(K.U.)

Problem Solving (P.S.)

Practical Abilities(P.A.)

At the end of the course of study students sit two SQA examination papers i.e. CREDIT LEVEL and GENERAL LEVEL (Each paper is 1 hour and 30 minutes duration)

Both K.U. and P.S. are assessed within the General and Credit level examinations set by the SQA. PA is assessed internally over the duration of the course. The P.A. grade contributes to 20% of the final grade awarded.



## Higher Chemistry (S5)

Entry Level: Student's should have gained Grade 1 or 2 for Knowledge and Understanding and Problem Solving in Standard Grade Chemistry. In addition, students should have gained Grade 1 or 2 in Standard Grade Mathematics.

The Higher Chemistry course aims to provide students with a sufficient grounding in the knowledge and theory of chemistry to allow further study at a more advanced level. A good pass in Higher Chemistry is highly regarded for entry to further and higher education courses as well as being valuable in its own right.

### The course consists of 3 Units:

#### *Unit 1 - Energy Matters.*

Including: Reaction rates, Enthalpy, the Periodic Table, Types of Bonding, Properties relating to Structure and the Mole.

#### *Unit 2 - The World of Carbon.*

Including: Fuels, Structure & Naming, Reactions & Uses of Carbon Compounds, Polymers and Natural products.

#### *Unit 3 - Chemical Reactions.*

Including: The Chemical Industry, Hess's Law, Equilibria, Acids & bases, Redox Reactions and Nuclear chemistry.

Each Unit will last approximately eight weeks – with experimental work playing an important part of the course.

It should be noted that excellent attendance, hard work and commitment are essential requirements for success in this subject.

### Assessment

Students must pass an end-of-unit assessment for each unit and a written report on a piece of practical work. /

## / Assessment (Continued)

The final grade will then be determined by performance in the external examination set by the SQA. The external assessment involves:

Paper I (1 hour) 40 multiple choice questions (40% of final mark)

Paper II (1 hour 30 minutes) extended answer type questions (60% of final mark)

Part of the external examination will test the student's experience / knowledge of nine specified practical activities which have been undertaken by the student in the laboratory.

Some useful websites for revision / interest include:

[www.evans2chemweb.co.uk](http://www.evans2chemweb.co.uk)

[www.bbc.co.uk/scotland/bitesize](http://www.bbc.co.uk/scotland/bitesize)

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Below is an extract from the 'Journal of Chemical Education' and provides a interesting glimpse into the way chemistry really is part of our everyday lives.

### **Why do I Have to Study Chemistry?**

**(Barker, G.K. (2000). Why do I have to study chemistry? *Journal of Chemical Education*, 77(10),1300.**

Oh boy, there's my alarm. Six-thirty, the morning I've dreaded all week. The day of my first big chemistry exam. I should get ready. Where's the toothpaste? Fluoride sounds familiar; I wonder why that's in there? There's baking soda and peroxide too. Why would they put those in toothpaste? It's time for a shower. I wonder why soap and water clean so much better than just plain water. How is shampoo different from soap? I wonder why I feel so cool before I dry off. There's isobutene in this mousse. I wonder if that's anything like the butane in lighters. Why would something like that be in this hair styling stuff? It's time for some tunes. The news is on. They say this beautiful late summer morning will become an ozone action day. I wonder what ozone is. How does it get into the air? Why is it a problem? They keep telling us not to stay out in the sun too long because the ozone layer is disappearing. How can it just disappear, and how is the ozone layer different from the ozone they tell us we shouldn't breathe? I wonder how a sunblock works. I had better turn on the light. I wonder what's in a light bulb that lets it get so hot and still not melt or catch on fire. It's time to check the laundry and get dressed. How does a detergent work? Maybe I'll wear that tie-dyed T-shirt. I wonder how they tie-dye clothing. How do dyes stay on the clothes without coming off onto my skin? Boy, these jeans are really faded. I wonder what made them fade so much. My socks came out nice and white. What is bleach, and how does it work? My new cross training shoes sure are comfortable. I wonder how they made that foam rubber. /

/

I should fuel up with some breakfast. Maybe I'll fry an egg. I wonder why a fried egg tastes so much better than a raw egg. How does cooking change the egg? It's getting late; I'll just have some orange juice and cereal. Wait, every time I drink orange juice after I brush my teeth, it tastes really strange. I wonder why that is. I think I'll just try the cereal and skip the juice. I know it has vitamin C, but what does that do for me anyway? This cereal is 'fortified with iron'. I wonder what kind of iron they put in there; it couldn't be those iron filings we used in chemistry lab, could it? This milk has calcium in it; it surely isn't those little lumps we saw bubbling in water the other day in class. The milk says that it has vitamin D added. I wonder what vitamin D is and why it's good for me. There's the calorie count. I wonder if that has anything to do with those energy measurements we read about in the chemistry book. Time to leave for school. I hope the car starts this morning. I wonder how a battery works. Oh great, the car needs gas. I'll pull in to the mini-mart and fill up the tank. The pump says something about octane rating. I wonder what octane is and what the octane rating really means. This gas is unleaded; how could they put lead in gasoline? Why would it be used in gasoline anyway? It looks like that tire is a little low. This pressure gauge is reading lower than it did yesterday afternoon. I wonder if it's because it's so much cooler this morning. Before I leave, I think I'll get a can of soda. Oops, I dropped it; I better not open it until later. I wonder what those bubbles are and how they get them in there. I made it to school on time. It's supposed to be really hot today. I've heard of car windows popping when it gets really hot, so I'd better open them a little bit. I wonder why they sometimes break when the car gets really hot. I'm glad the windows are coated to shade the inside. That should help, too. I wonder what the coating is, and how they get it in the glass. It sure is bright out this morning; I'm glad my glasses darken in the sun. I wonder how they do that. The air conditioning sure will feel good this afternoon. I'm glad I had my air conditioner fixed. What is the refrigerant that the service technician refilled? I wonder how air conditioning works. Well, here I am in chemistry class. Worrying about this exam is giving me heartburn. I wonder how this antacid works. Why do I have to study chemistry anyway? When will I ever use chemistry in my everyday life? What good is it to me?



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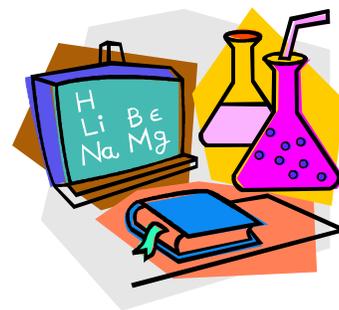


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- in public health and environmental protection
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- in teaching at all levels
- in patent agencies, scientific journalism
- in forensic science
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*Metals and Corrosion*

*Plastics and Synthetic Fibres*

*Fertilisers*

*Carbohydrates and Related Substances*

### Assessment

There are 3 assessed elements in the course:

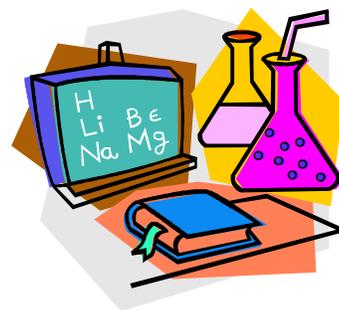
Knowledge and Understanding(K.U.)

Problem Solving (P.S.)

Practical Abilities(P.A.)

At the end of the course of study students sit two SQA examination papers i.e. CREDIT LEVEL and GENERAL LEVEL (Each paper is 1 hour and 30 minutes duration)

Both K.U. and P.S. are assessed within the General and Credit level examinations set by the SQA. PA is assessed internally over the duration of the course. The P.A. grade contributes to 20% of the final grade awarded.



## Higher Chemistry (S5)

Entry Level: Student's should have gained Grade 1 or 2 for Knowledge and Understanding and Problem Solving in Standard Grade Chemistry. In addition, students should have gained Grade 1 or 2 in Standard Grade Mathematics.

The Higher Chemistry course aims to provide students with a sufficient grounding in the knowledge and theory of chemistry to allow further study at a more advanced level. A good pass in Higher Chemistry is highly regarded for entry to further and higher education courses as well as being valuable in its own right.

### The course consists of 3 Units:

#### *Unit 1 - Energy Matters.*

Including: Reaction rates, Enthalpy, the Periodic Table, Types of Bonding, Properties relating to Structure and the Mole.

#### *Unit 2 - The World of Carbon.*

Including: Fuels, Structure & Naming, Reactions & Uses of Carbon Compounds, Polymers and Natural products.

#### *Unit 3 - Chemical Reactions.*

Including: The Chemical Industry, Hess's Law, Equilibria, Acids & bases, Redox Reactions and Nuclear chemistry.

Each Unit will last approximately eight weeks – with experimental work playing an important part of the course.

It should be noted that excellent attendance, hard work and commitment are essential requirements for success in this subject.

### Assessment

Students must pass an end-of-unit assessment for each unit and a written report on a piece of practical work. /

## / Assessment (Continued)

The final grade will then be determined by performance in the external examination set by the SQA. The external assessment involves:

Paper I (1 hour) 40 multiple choice questions (40% of final mark)

Paper II (1 hour 30 minutes) extended answer type questions (60% of final mark)

Part of the external examination will test the student's experience / knowledge of nine specified practical activities which have been undertaken by the student in the laboratory.

Some useful websites for revision / interest include:

[www.evans2chemweb.co.uk](http://www.evans2chemweb.co.uk)

[www.bbc.co.uk/scotland/bitesize](http://www.bbc.co.uk/scotland/bitesize)

[www.rsc.org](http://www.rsc.org)

Below is an extract from the 'Journal of Chemical Education' and provides an interesting glimpse into the way chemistry really is part of our everyday lives.

### **Why do I Have to Study Chemistry?**

**(Barker, G.K. (2000). Why do I have to study chemistry? *Journal of Chemical Education*, 77(10),1300.**

Oh boy, there's my alarm. Six-thirty, the morning I've dreaded all week. The day of my first big chemistry exam. I should get ready. Where's the toothpaste? Fluoride sounds familiar; I wonder why that's in there? There's baking soda and peroxide too. Why would they put those in toothpaste? It's time for a shower. I wonder why soap and water clean so much better than just plain water. How is shampoo different from soap? I wonder why I feel so cool before I dry off. There's isobutene in this mousse. I wonder if that's anything like the butane in lighters. Why would something like that be in this hair styling stuff? It's time for some tunes. The news is on. They say this beautiful late summer morning will become an ozone action day. I wonder what ozone is. How does it get into the air? Why is it a problem? They keep telling us not to stay out in the sun too long because the ozone layer is disappearing. How can it just disappear, and how is the ozone layer different from the ozone they tell us we shouldn't breathe? I wonder how a sunblock works. I had better turn on the light. I wonder what's in a light bulb that lets it get so hot and still not melt or catch on fire. It's time to check the laundry and get dressed. How does a detergent work? Maybe I'll wear that tie-dyed T-shirt. I wonder how they tie-dye clothing. How do dyes stay on the clothes without coming off onto my skin? Boy, these jeans are really faded. I wonder what made them fade so much. My socks came out nice and white. What is bleach, and how does it work? My new cross training shoes sure are comfortable. I wonder how they made that foam rubber. /

/

I should fuel up with some breakfast. Maybe I'll fry an egg. I wonder why a fried egg tastes so much better than a raw egg. How does cooking change the egg? It's getting late; I'll just have some orange juice and cereal. Wait, every time I drink orange juice after I brush my teeth, it tastes really strange. I wonder why that is. I think I'll just try the cereal and skip the juice. I know it has vitamin C, but what does that do for me anyway? This cereal is 'fortified with iron'. I wonder what kind of iron they put in there; it couldn't be those iron filings we used in chemistry lab, could it? This milk has calcium in it; it surely isn't those little lumps we saw bubbling in water the other day in class. The milk says that it has vitamin D added. I wonder what vitamin D is and why it's good for me. There's the calorie count. I wonder if that has anything to do with those energy measurements we read about in the chemistry book. Time to leave for school. I hope the car starts this morning. I wonder how a battery works. Oh great, the car needs gas. I'll pull in to the mini-mart and fill up the tank. The pump says something about octane rating. I wonder what octane is and what the octane rating really means. This gas is unleaded; how could they put lead in gasoline? Why would it be used in gasoline anyway? It looks like that tire is a little low. This pressure gauge is reading lower than it did yesterday afternoon. I wonder if it's because it's so much cooler this morning. Before I leave, I think I'll get a can of soda. Oops, I dropped it; I better not open it until later. I wonder what those bubbles are and how they get them in there. I made it to school on time. It's supposed to be really hot today. I've heard of car windows popping when it gets really hot, so I'd better open them a little bit. I wonder why they sometimes break when the car gets really hot. I'm glad the windows are coated to shade the inside. That should help, too. I wonder what the coating is, and how they get it in the glass. It sure is bright out this morning; I'm glad my glasses darken in the sun. I wonder how they do that. The air conditioning sure will feel good this afternoon. I'm glad I had my air conditioner fixed. What is the refrigerant that the service technician refilled? I wonder how air conditioning works. Well, here I am in chemistry class. Worrying about this exam is giving me heartburn. I wonder how this antacid works. Why do I have to study chemistry anyway? When will I ever use chemistry in my everyday life? What good is it to me?

