Chemistry Curriculum Overview – Year 12 (Teacher A)

Sequencing of topics	What knowledge will students develop? (Including key	What skills will students develop? (Including	Assessment opportunities	Homework opportunities	Personal development (Ursuline Values,	Curriculum links
	terminology)	literacy & numeracy)			Catholic Social Teaching,	
					Cultural Capital, Cross-	
					curricular, Careers)	
		Aut	tumn Term 1			
Nomenclature	 Give the empirical, molecular, general, structural, displayed and skeletal structure of organic molecules Describe the characteristics of a homologous series Draw the structure of, and name organic molecules with chains and rings with up to six carbon atoms each. Write mechanisms for free radical reactions (free radical substitution of alkanes) Draw mechanisms with curly arrow diagrams (electrophilic addition, nucleophilic substitution at AS level). Define structural isomerism and stereoisomerism 	 Visualise and represent 2D and 3D forms including 2D representations of 3D objects). Make models of organic compounds Name molecules given their structure, or draw the structure given the name Write mechanisms for the reactions shown Students suggest a mechanistic step in an unfamiliar reaction Make models of isomers – visualise and represent 2D and 3D forms including 2D representations of 3D objects 	 AFL Summative assessment Formative assessment CPAC skills assessment Scientific report writing 	 Research Task Exam questions Write up of practical Prepare a presentation Flipped learning Make notes 	 United in harmony when we consider the wider uses drugs, medicines and plastics Grateful for medicine/vaccination Faith-filled and hopeful when seeing beyond the naked eye and the advancements of medicine Discerning and joyful at the possibilities of science and medicine Leading others in pursuit of justice when planning and carrying out a practical Service and sacrifice when we recognise the scientific work that has been done before us Dignity of the human person when considering 	 KS4 Yr 9 Bonding Yr 9 Some simple organic chemistry, eg alkanes and Yr 11 alkenes. Yr 10 Empirical and molecular formulas KS4 Yr 9 Bonding Yr 9 Some simple organic chemistry, eg alkanes and 0 Yr 9 Some simple organic chemistry, eg alkanes and 0 Yr 11 alkenes. Yr 10 Empirical and molecular formulas

Isomerism	0	Draw the structure of and				0	Courageous and	
		name chain, position and	0	Draw and name			resilient when we	
		functional group isomers		isomers, including			consider how	
	0	Explain the cause of <i>E–Z</i>		using CIP rules to			vaccines were	
		isomerism		name E–Z isomers–			developed and new	
	0	Draw the structure of and		visualise and			drugs are trialled	
		name <i>E–Z</i> isomers (using		represent 2D and 3D		0	Loving and	
		Cahn–Ingold–Prelog priority		forms including 2D			compassionate	
		rules).		representations of 3D			when we think about	
				objects).			those who have	
	0	Explain that alkanes are	0	Identify pairs (or			suffered serious	
		saturated hydrocarbons		groups) of			illness and the	
	0	Explain how the alkanes in		compounds which			The impact of our	
		crude oil are separated by		exhibit each type of			actions on our	
Alkanes		fractional distillation.		isomerism			environment	
	0	Understand how fractional						
		distillation can be used to	0	Draw and name		0	Care of God's	
		separate the alkanes in		alkanes visualise			creation	
		crude oil		and represent 2D and		0	Dignity of God's	
				3D forms including			people	
				2D representations of		0	Community and	
				3D objects).			participation	
			0	Describe and explain		0	Dignity in work	
				how alkanes in crude		0	Solidarity	
				oil are separated by		0	Personal	
				fractional distillation		0	Cultural	
			0	Practical opportunity:		0	Social	
				Separate some		0	Art	
				alkanes into fractions		0	History	
				from a crude oil		0	Geography	
				substitute mixture		0	PE	
						0	Maths	
			0	Safely and carefully		0	DT	
				handle solids and		0	Doctor	
	0	Explain the commercial		liquids, including		0	Analytical Chemist	
		benefits of cracking		corrosive, irritant,		0	Chemical Engineer	
	0	Describe how thermal and		flammable and toxic		0	Environmental	
		catalytic cracking are		substances).			Chemist	

Know/consider	completed and the types of	• Practical opportunity:		• Research Scientist	
how pollution	compounds that are	Crack some		 Patent Attorney 	
nrohlems from	produced	kerosene/naraffin			
hurning alkanes	produced.	\sim Construct a table to		 Veterinary scientist 	
can be reduced		compare thermal and		 Midwife 	
can be reduced.				Dismodical scientist	
				• Biomedical scientist	
		terms of conditions		o Dentist	
	 write equations for the 	and products		• Forensic Scientist	
	complete and incomplete			• Nanotechnologist	
	combustion of alkanes	o Write balanced		• Geoscientist	
	 Explain how a number of 	equations for the		• Food scientist	
	pollutants including NO _x , CO,	complete and		 Pathologist 	
	C and unburned	incomplete		 Pharmacist 	
	hydrocarbons are formed in	combustion of alkanes			
	the internal combustion	\circ Construct a table to			
	engine and how their	show why pollutants			
	emissions can be reduced	may be formed when			
	\circ Why SO ₂ may be formed	fuels are burned and			
	when fuels are burned and	how these can be			
	how it can be removed from	reduced			
	flue gases.	 Analyse, interpret and 			
		evaluate scientific			
	 Equations and mechanism 	information.			
	for reaction of alkanes with				
	halogens.	\circ Write balanced			
	C C	equations for reactions			
		of alkanes with			
		halogens			
		\circ Write balanced			
		equations to show the			
		stens in the			
		mechanism for these			
		reactions			
		 Research the 			
		halogenoalkanos as			
		anaosthotics			
		0			

		Aut	tum	n Term 2						
Halogenoalkanes	 Draw and name 	\circ Draw and name	0	AFL	0	Research	0	United in harmony	KS4	4
	halogenoalkanes	halogenoalkanes	0	Summative		Task		when we consider		
	 Mechanisms for reactions of 	\circ Write equations and		assessment	0	Exam		the wider uses drugs,	0	Yr 9 Bonding
	halogenoalkanes with OH [,]	mechanisms for	0	Formative		questions		medicines and		
	CN [–] and NH ₃	reactions of		assessment	0	Write up of		plastics	0	Yr 9 Some
	\circ Explain the relative rate of	halogenoalkanes with	0	CPAC skills		practical	0	Grateful for		simple organic
	reaction of halogenoalkanes	OH [,] CN [−] and NH ₃		assessment	0	Prepare a		medicine/vaccination		chemistry, eg
		\circ Practical opportunity:	0	Scientific		presentation	0	Faith-filled and		alkanes and
	\circ Write equations and	Students carry out		report	0	Flipped		hopeful when seeing		
	mechanisms for elimination	test-tube hydrolysis of		writing		learning		beyond the naked	0	Yr 11 alkenes.
	reaction of halogenoalkanes	halogenoalkanes to			0	Make notes		eye and the	0	Yr 10 Empirical
	using OH ⁻	show their relative						advancements of		and molecular
	\circ Understand the concurrent	rates of reaction						medicine		formulas
	nature of elimination and	\circ Safely and carefully					0	Discerning and joyful		
	substitution when	handle solids and						at the possibilities of	KS4	4
	halogenoalkanes react with	liquids, including						science and medicine	0	Yr 9 Bonding
	OH⁻	corrosive, irritant,					0	Leading others in		
	\circ Understand the different	flammable and toxic						pursuit of justice	0	Yr 9 Some
	roles of the OH [–] in these	substances.						when planning and		simple organic
	reactions.	\circ Practical opportunity:						carrying out a		chemistry, eg
		Students prepare a						practical		alkanes and
		chloroalkane, purifying					0	Service and sacrifice		
		the product using a						when we recognise	0	Yr 11 alkenes
		separating funnel and						the scientific work	0	Yr 10 Empirical
		distillation (; AT - Use						that has been done		and molecular
		appropriate apparatus						before us		formulas
		to record mass, and					0	Dignity of the human		
		boiling points ; AT b -						person when		
		Use water bath or						considering		
		electric heater or sand						healthcare		
		bath for heating ; AT d					0	Courageous and		
		- Use laboratory						resilient when we		
		apparatus for a variety						consider how		
		of experimental						vaccines were		
		techniques including						developed and new		
		distillation and heating						drugs are trialled		
		under reflux,								

	\circ write equations and		\circ	Loving and	
	mechanisms for		0	compassionate when	
	reactions of			we think about those	
	halogenoalkanes with			who have suffered	
	OH^- both for			serious illness and	
	elimination and			the	
				The impact of our	
	Substitution reduitons			actions on our	
	• Students investigate			actions on our	
	of erece in the			Pignity of Cod's	
- Understand the value of server	of ozone in the		0	Dignity of God S	
o understand the role of ozone	atmosphere			people	
In the atmosphere	o write equations and		0	Care for Creation	
 Understand how chlorine 	mechanisms for the		0	Community and	
tree radicals can be formed in	tormation of chlorine			participation	
the atmosphere from	tree radicals and the		0	Dignity in work	
compounds such as CFCs	destruction of ozone		0	Solidarity	
\circ Understand the mechanism	\circ Understand why		0	Personal	
for the depletion of ozone by	suitable replacements		0	Cultural	
chlorine free radicals	for CFCs do not		0	Social	
\circ Evaluate the role of chemists	destroy ozone		0	Art	
in the introduction of	\circ Students investigate		0	History	
legislation to ban the use of	the role of chemists in		0	Geography	
CFCs and to find	the introduction of		0	PE	
replacements.	legislation to ban the		0	Maths	
	use of CFCs and in		0	DT	
 The role of ozone in the 	finding replacements		0	Doctor	
atmosphere.	○ Rich question – CFCs		0	Analytical Chemist	
	are still used in some		0	Environmental	
 How Cl free radicals are 	countries – how can			Chemist	
formed in the atmosphere	we stop this?		0	Research Scientist	
and how they destroy ozone.			0	Patent Attorney	
			0	Nurse	
• How research evidence led to			0	Veterinary scientist	
the end of use of CFCs and			0	Midwife	
alternatives found.			0	Biomedical scientist	
			0	Dentist	
			0	Forensic Scientist	
			0	Nanotechnologist	
			-		

Alkenes		 Draw and name 		• Geoscientist	
Polymerisation	○ Draw alkenes	alkenes, including <i>E–Z</i>		 Food scientist 	
-	• Understand that the double	isomers		 Pathologist 	
	bond is an area of high	 Use angles and 		• Pharmacist	
	electron density.	shapes in regular 2D			
	 Write equations and 	and 3D structures of			
	mechanisms for reactions of	alkenes).			
	alkenes with HBr. H ₂ SO ₄ and	 Write equations for 			
	HBr	reactions of alkenes			
	\circ Explain the potential	with HBr. H_2SO_4 and			
	formation of major and minor	HBr			
	products in these reactions.	\circ Draw mechanisms for			
	 Describe what a polymer is 	reactions of alkenes			
	\circ Identify the repeating unit of	with HBr. H₂SO₄ and			
	an addition polymer given	HBr, including			
	the monomer structure and	explaining why there			
	vice versa	may be major and			
	\circ Name polymers from the	minor products			
	name of the monomer	 Practical opportunity: 			
	 Explain how polymers have 	Students test organic			
	developed over time	compounds for			
	\circ Give some uses of PVC and	unsaturation using			
	how plasticisers can change	bromine water and			
	its properties	record their			
	\circ Explain why addition	observations			
	polymers are unreactive	 Safely and carefully 			
	\circ Explain the nature of the	handle solids and			
	intermolecular forces	liquids, including			
	between polyalkene	corrosive, irritant,			
	molecules.	flammable and toxic			
		substances).			
		\circ Students could each			
		make a model of a			
		monomer using			
		Molymods and then			
		, students collectively			
		join them together to			

chain chain	
○ Draw the structure of	
the monomer,	
repeating unit of the	
polymer and a section	
of the polymer chain	
given one of the	
others; students	
should also be able to	
name the polymer	
from the monomer	
name and vice versa	
• Students should	
consider now polymer	
developed over time	
\circ Students should	
research uses of PVC	
and how plasticisers	
change its properties	
• Practical opportunity:	
Students make	
poly(phenylethane	

		Sp	oring	; Term 1						
	\circ Write equations and give	\circ Write equations for	0	AFL	0	Research	0	United in harmony	KS4	
Alcohols	conditions for the production	the production of	0	Summative		Task		when we consider	0	Yr 9 Bonding
	of alcohols by hydration of	alcohols from alkenes		assessment	0	Exam		the wider uses drugs,		
	alkenes	 Produce a summary 	0	Formative		questions		medicines and	0	Yr 9 Some
	\circ Outline the mechanism for	table to compare and		assessment	0	Write up of		plastics		simple
	formation of ethanol from	contrast the two	0	CPAC skills		practical	0	Grateful for		organic
	reaction of ethene with	methods of making		assessment	0	Prepare a		medicine/vaccination		chemistry,
	steam with an acid catalyst	ethanol	0	Scientific		presentation	0	Faith-filled and		eg alkanes
	 Write an equation, give and 	• Outline the mechanism		report	0	Flipped		hopeful when seeing		and
	justify conditions for the	to make ethanol from		writing		learning		beyond the naked		
	production of ethanol by	reaction of ethene			0	Make notes		eye and the	0	Yr 11
	fermentation of glucose	with steam with an						advancements of		Empirical
	 Compare the two methods of 	acid catalyst						medicine		and
	producing ethanol	 Students could 					0	Discerning and Joyful		molecular
	 Explain the meaning of the target biofical 	produce ethanol by						at the possibilities of		formulas
	Erm bioruer	fellowed by						science and medicine	0	aikenes.
		Tollowed by					0	Leading others in	0	Biofueis
	as a bioluei	fractional distillation						when planning and	0	of other
	o show using equations now	AT d - Use Jaboratory						carrying out a	0	Of ethanol.
	fermentation can be	annaratus for a						nractical	0	nolymers
	regarded as carbon neutral	variety of					0	Service and sacrifice		polymers
	but that in reality it is not	experimental					0	when we recognise	K55	
	\circ Classify alcohols as primary	techniques including						the scientific work	0	Yr 13 Esters
	secondary or tertiary.	distillation and						that has been done	Ŭ	11 15 25(215
	\circ Identify products and write	setting up glassware						before us		
	equations for oxidation	using retort stand					0	Dignity of the human		
	reactions of alcohols.	and clamps;						person when		
	\circ Use chemical tests to	\circ Evaluate the use of						considering		
	distinguish aldehydes and	biofuels						healthcare		
	ketones.	 Show by use of 					0	Courageous and		
		chemical equation						resilient when we		
	\circ Identify products of alcohol	that the formation of						consider how		
	elimination reactions	ethanol by						vaccines were		
	\circ Write equations and	fermentation can be						developed and new		
	mechanism for alcohol	thought of as being						drugs are trialled		
	elimination reactions									

○ Understand how addition	carbon neutral but	\circ	Loving and	
nolymers can be made from	why it is not in reality	Ŭ	compassionate when	
alkenes made this way	\sim Draw and name		we think about those	
without using monomers	alcohols and classify		who have suffered	
derived from crude oil	thom as primary		sorious illoss and	
	chem as primary,		the	
o Core Practical 5: Distillation			the impost of our	
of a product from a	o while equations to			
reaction	snow oxidation		actions on our	
	reactions of alcohols		environment Diactional Contra	
	• Practical opportunity:	0	Dignity of God's	
	Carry out test-tube		people	
	reactions to distinguish	0	Care of Creation	
	tertiary alcohols from	0	Community and	
	primary and secondary		participation	
	by reaction with	0	Dignity in work	
	acidified potassium	0	Solidarity	
	dichromate(VI) (AT b -	0	Personal	
	Use water bath or	0	Cultural	
	electric heater or sand	0	Social	
	bath for heating; AT d -	0	Art	
	Use laboratory	0	Biology	
	apparatus for	0	History	
	qualitative tests for	0	Geography	
	organic functional	0	PE	
	groups; AT k - Safely	0	Maths	
	and carefully handle	0	DT	
	solids and liquids,	0	Doctor	
	including corrosive,	0	Analytical Chemist	
	irritant, flammable and	0	Environmental	
	toxic substances).		Chemist	
	• Practical opportunity:	0	Research Scientist	
	Carry out test-tube	0	Patent Attorney	
	reactions to	0	Nurse	
	distinguish aldehydes	0	Veterinary scientist	
	from ketones by	0	Midwife	
	reaction with Tollens'	0	Biomedical scientist	
	reagent and Fehling's	0	Dentist	
	solution	0	Forensic Scientist	

			0	Nanotechnologist	
	• Practical opportunity:		0	Geoscientist	
	The preparation of		0	Food scientist	
	ethanal; AT b - Use		0	Pathologist	
	water bath or electric		0	Pharmacist	
	heater or sand bath for				
	heating; AT d - Use				
	laboratory apparatus				
	for a variety of				
	experimental				
	techniques including				
	distillation and heating				
	under reflux, including				
	setting up glassware				
	using retort stand and				
	clamps; AT k				
	\circ Students should				
	identify alkenes				
	formed from				
	elimination of alcohols				
	and write equations				
	and mechanism for				
	their production.				
	• Practical opportunity:				
	Students could carry				
	out the preparation				
	of cyclohexene from				
	cyclohexanol,				
	including purification				
	using a separating				
	funnel and by				
	distillation ; AT b -				
	Use water bath or				
	electric heater or				
	sand bath for				
	heating; AT d - Use				
	laboratory apparatus				

	for a variety of		
	experimental		
	techniques including		
	distillation and		
	heating under roflux		
	in aludia a aattin a uu		
	including setting up		
	glassware using		
	retort stand and		
	clamps; AT g - Purify		
	a liquid product,		
	including use of		
	separating funnel; AT		
	k - Safely and		
	carefully handle		
	, solids and liquids.		
	including corrosive		
	irritant flammable		
	and toxic substances		
	and toxic substances.		

		Sp	ring	; Term 2	-		-			
Organic analysis: Practical skills- Mass spectrometry Infra red	 Carry out test-tube reactions in the specification to distinguish alcohols, aldehydes, alkenes and carboxylic acids, and interpret the observations from these reactions. Observing and recording results accurately Carry out risk assessment for a practical Core practical 6: Tests for alcohols, aldehydes, alkenes and carboxylic acid. Periodicity 	 Practical opportunity: Students carry out test-tube reactions in the specification to distinguish alcohols, aldehydes, alkenes and carboxylic acids AT b Use water bath or electric heater or sand bath for heating; AT d - Use laboratory apparatus for qualitative tests for organic functional groups; AT k - Safely and carefully handle solids and liquids, including corrosive, irritant, flammable and toxic substances; PS 2.2 - Present results of reactions in appropriate ways; PS 2.3 - Evaluate results and draw conclusions Write equations for the reactions occurring. Use precise atomic masses to calculate the precise molecular mass of a compound 		AFL Summative assessment Formative assessment CPAC skills assessment Scientific report writing		Research Task Exam questions Write up of practical Prepare a presentation Flipped learning Make notes		United in harmony when we consider the wider uses drugs, medicines and plastics Grateful for medicine/vaccination Faith-filled and hopeful when seeing beyond the naked eye and the advancements of medicine Discerning and joyful at the possibilities of science and medicine Leading others in pursuit of justice when planning and carrying out a practical Service and sacrifice when we recognise the scientific work that has been done before us Dignity of the human person when considering healthcare Courageous and resilient when we consider how vaccines were developed and new drugs are trialled	0	KS3-4 Working scientifically Yr 12 Introduction to Mass spectrometry

					1
 Identify functional groups 	in order to determine		0	Loving and	
from infra-red spectra	the molecular formula			compassionate when	
\circ understand how the	 Use an appropriate 			we think about those	
"fingerprint" region of a	number of significant			who have suffered	
spectrum can be used	figures.			serious illness and	
\circ Understand the link				The impact of our	
between absorption of	\circ Students identify			actions on our	
infrared radiation by bonds	functional groups from			environment	
in CO ₂ , methane and water	infra-red spectra		0	Dignity of God's	
vapour and global warming	\circ Students research the			people	
	relative effect of		0	Community and	
	different gases on			participation	
	global warming		0	Dignity in work	
			0	Solidarity	
			0	Personal	
			0	Cultural	
			0	Social	
			0	Art	
			0	History	
			0	Geography	
			0	PE	
			0	Maths	
			0	DT	
			0	Doctor, Nurse	
			0	Analytical Chemist	
			0	Environmental	
				Chemist	
			0	Research Scientist	
			0	Patent Attorney	
			0	Pathologist	
			0	Veterinary scientist	
			0	Midwife	
			0	Biomedical scientist	
			0	Dentist, Pharmacist	
			0	Forensic Scientist	
			0	Nanotechnologist	
			0	Geoscientist	
			0	Food scientist	

		Sur	nme	er Term 1					
Group 7	\circ Describe and explain the	\circ Students plot data on	0	AFL	0	Research	0	United in harmony	KS4
	trends down Group 7 in	graphs for	0	Summative		Task		when we consider	Year 9 Periodic table
	electronegativity and boiling	electronegativity and		assessment	0	Exam		the wider uses drugs,	
	points	boiling point and	0	Formative		questions		medicines and	KS5
	\circ Describe and explain the	explain those trends		assessment	0	Write up of		plastics	Yr 12
	trends in oxidising power of	 Practical opportunity: 	0	CPAC skills		practical	0	Grateful for	 Ionic equations
	the halogens, illustrated by	Students carry out test-		assessment	0	Prepare a		medicine/vaccination	• Electronegativity
	displacement reactions of	tube reactions of	0	Scientific		presentation	0	Faith-filled and	 Bonding
	halide ions	solutions of the		report	0	Flipped		hopeful when seeing	 Oxidation states
	\circ Describe and explain the	halogen (Cl ₂ , Br ₂ , I ₂)		writing		learning		beyond the naked	and redox
	trends in reducing power of	with solutions			0	Make notes		eye and the	equations
	the halide ions, illustrated by	containing their halide						advancements of	
	reactions of concentrated	ions (eg KCl, KBr, KI);						medicine	
	sulfuric acid with solid	 Practical opportunity: 					0	Discerning and joyful	
	sodium halides	Students record						at the possibilities of	
	\circ Describe and explain how	observations from						science and medicine	
	halide ions can be identified	reactions of NaCl,					0	Leading others in	
	using acidified silver nitrate	NaBr and Nal with						pursuit of justice	
	and the solubility of silver	concentrated sulfuric						when planning and	
	halides in ammonia	acid.						carrying out a	
	$_{\odot}$ Explain why the silver nitrate	 Present results of test- 						practical	
	used is acidified.	tube reactions in					0	Service and sacrifice	
		appropriate ways).						when we recognise	
		 Practical opportunity: 						the scientific work	
		Students could carry						that has been done	
	$_{\odot}$ Know the reactions of	out tests for halide						before us	
	chlorine with water	ions using acidified					0	Dignity of the human	
	$_{\odot}$ Know how and why chlorine	silver nitrate, including						person when	
	is used in water treatment	the use of ammonia to						considering	
	$_{\odot}$ Evaluate advantages and	distinguish the silver						healthcare	
	disadvantages of adding	halides formed AT d -					0	Courageous and	
	chemicals to water	Use laboratory						resilient when we	
	$_{\odot}$ Know the reaction of sodium	apparatus for						consider how	
	hydroxide with water and	qualitative tests for						vaccines were	
	uses of the solution formed.	ions; AT k -						developed and new	
		 Use laboratory 						drugs are trialled	
		apparatus for							

	qualitative tests for		\circ Loving and
	ions: AT k - Safely		compassionate when
	and carefully handle		we think about those
	solids and liquids.		who have suffered
	including corrosive.		serious illness and
	irritant, flammable		the
	and toxic substances		The impact of our
	 Students investigate 		actions on our
	and evaluate the		environment
	treatment of drinking		 Dignity of God's
	water with chlorine		people
	 Students investigate 		 Community and
	and evaluate the		participation
	addition of sodium		 Dignity in work
	fluoride to water		• Solidarity
	supplies (AO3 -		• Personal
$_{\odot}$ Know and explain trends in	Analyse, interpret and		o Cultural
atomic radius, first ionisation	evaluate scientific		o Social
energy and melting point	information).		○ Art
from Mg–Ba	 Students plot data on 		• History
\circ Know the role of Mg in the	graphs for atomic		• Geography
extraction of Ti	radius, first ionisation		• PE
\circ Describe and write equations	energy and melting		o Maths
for the reactions of Mg–Ba	point and explain		o DT
with water	those trends		o Doctor
\circ Know the solubility of	 Plot two variables 		• Analytical Chemist
Group 2 sulfates and	from experimental or		o Environmental
hydroxides	other data).		Chemist
\circ Know uses of Mg(OH) ₂ and	 Practical opportunity: 		 Research Scientist
BaSO ₄ in medicine; BaSO ₄ in	Students test the		• Patent Attorney
testing for sulfate ions;	reactions of Mg–Ba		o Nurse
Ca(OH) ₂ in agriculture; Mg in	with water and Mg		 Veterinary scientist
the extraction of Ti;	with steam and record		• Midwife
$CaO/CaCO_3$ in removing SO_2	their results		 Biomedical scientist
from flue gases.	\circ Test the solubility of		• Dentist
	Group 2 hydroxides by		• Forensic Scientist
	mixing solutions of		 Nanotechnologist
	soluble Group 2 salts		• Geoscientist

	Core Practical 4. Carry out test	with sodium hydroxide		0	Food scientist	
	tube reactions to identify	and record their		0	Pathologist	
	cations an	results		0	Pharmacist	
		 Practical opportunity: 				
		Test the solubility of				
		Group 2 sulfates by				
		mixing solutions of				
		soluble Group 2 salts				
		with sulfuric acid and				
		record their results				
		 Practical opportunity: 				
		Test for sulfate ions				
		using acidified barium				
Group 2		chloride and record				
		their results				
		 Research uses of the 				
		following: Mg(OH) ₂				
		and BaSO₄ in				
		 O Medicine; BaSO₄ in 				
		testing for sulfate ions;				
		$Ca(OH)_2$ in agriculture;				
		Mg in the extraction of				
		II; CaO/CaCO ₃ In				
		Dractical opportunity:				
		Students identify				
		some "unknown"				
		group 2 compounds				
		by their reactions				
		with NaOH and				
		sulfate ions				

Summer Term 2								
Period 3 Elements A2 Content Properties of Period 3 elements and their oxides	 Classification Physical properties of Period 3 elements Reactions of Na and Mg with water. Reactions of Na, Mg, Al, Si, P and S with oxygen. Melting points of period 3 oxides. Reactions of period 3 oxides with water. 	 Classify an element as an s, p,d or f block element using its electron structure Plot data on graphs for atomic radius, first ionisation energy and melting point and explain those trends Describe and write equations for reactions of Na and Mg with water Describe and write equations for reactions of Na, Mg, Al, Si, P and S with oxygen Describe and explain the trend in melting points of period 3 oxides Write equations for the reactions of period 3 oxides with water and describe the pH of the solutions formed Predict reactions of period 3 elements Describe the structure and bonding of period 3 oxides, and link this to how they react with water. 	 AFL Summative assessment Formative assessment Formative questions Grateful for medicine/vaccination Scientific presentation Flipped learning Make notes After and service and medicine Discerning and joyful at the possibilities of science and medicine Leading others in pursuit of justice when verecognise the scientific work that has been done before us Dignity of the human person when consider ing healthcare Courageous and resilient when we consider how vaccines were developed and new drugs are trialled 	KS3/4 Yr & 8 Periodic table Yr 9&12 Bonding KS5 Yr 12 Group 2 and 7 Electron structure Ionisation energy Bonding				

0	Revision	The whole of Year 12 content		0	Loving and	
	for QFE				compassionate when	
					we think about those	
0	Required				who have suffered	
	practicals				serious illness and the	
					The impact of our	
0	Possible				actions on our	
	start of A2				environment	
	Content:			0	Dignity of God's	
	Isomerism				people	
	Optical			0	Community and	
	Isomerism				participation	
				0	Dignity in work	
				0	Solidarity	
				0	Personal	
				0	Cultural	
				0	Social	
				0	Art	
				0	History	
				0	Geography	
				0	Maths	
				0	DT	
				0	Doctor	
				0	Analytical Chemist	
				0	Environmental	
					Chemist	
				0	Research Scientist	
				0	Patent Attorney	
				0	Veterinary scientist	
				0	Midwife/Nurse	
				0	Biomedical scientist	
				0	Dentist	
1				0	Forensic Scientist	
1				0	Nanotechnologist	
				0	Geoscientist	
1				0	Food scientist	
1				0	Pathologist	
				0	Pharmacist	