

LEVEL 3 INTERNATIONAL FOUNDATION DIPLOMA FOR HIGHER BUCATION STUDIES

NCC Education Qualification Unit Specification **2020/21** 

### **Modification History**

Version	Revision Description	
V1.10	Update entry requirements	
V1.11	Updated Ofqual link in Section 1.1	
V1.12	Corrections to DELS and AELS syllabus Aug 2020	

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# 1. About NCC Education

NCC Education is a UK awarding body, active in the UK and internationally. Originally part of the UK National Computing Centre, NCC Education started offering IT qualifications in 1976 and from 1997 developed its Higher Education portfolio to include Business qualifications, IT qualifications for school children and a range of Foundation qualifications.

With Centres in over forty countries, four international offices and academic managers worldwide, NCC Education strives to employ the latest technologies for learning, assessment and support. NCC Education is regulated and quality assured by Ofqual (the Office of Qualifications and Examinations Regulation, see <u>www.ofqual.gov.uk</u>), the English qualifications, examinations and assessments regulator.

#### 1.1 Why choose this qualification?

NCC Education's Level 3 International Foundation Diploma for Higher Education Studies (L3IFDHES) is designed for speakers of English as a foreign language who are seeking to gain entry to Higher Education qualifications taught and assessed in English.

NCC Education's Level 3 International Foundation Diploma for Higher Education Studies is:

• **Regulated** by Ofqual under the Regulated Qualifications Framework.

For more information see:

https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels

- **Quality assured** and well established in the UK and worldwide.
- A valuable university preparation qualification which allows candidates to demonstrate their English language skills (both general and academic) together with key transferrable study skills, cultural knowledge and mathematical understanding, as well as an understanding of the essential concepts of business and economics (Business electives), the essential concepts of computing and programming (Computing electives) or the essential mathematical and physics concepts required for undergraduate study in Engineering (Engineering electives).

The Level 3 International Foundation Diploma for Higher Education Studies syllabus and assessment is suitable for students aged 16-19 as well as adult learners.

- **Recognised and valued** by many universities, both in the UK and in other countries. There are over fifty university progression routes to UK and overseas universities. For more details of the universities that successful L3IFDHES candidates can progress to, see <u>www.nccedu.com</u>
- A pathway to NCC Education's Level 4 Diploma qualifications and greater employment opportunities

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# 2. Structure of the L3IFDHES Qualification

#### **Qualification Title, Credits, Units**

NCC Education Level 3 International Foundation Diploma for Higher Education Studies, 120 credits.

**Total Qualification Time: 1,200 hours** 

#### **Guided Learning Hours: 670**

Candidates must pass all core Units and two elective Units to be awarded the Level 3 International Foundation Diploma for Higher Education Studies certificate.

#### **Core Units**

Developing English Language Skills (TQT: 300 hours/ 30 credits)	Advanced English Language Skills (TQT: 200 hours / 20 credits)	English for Academic Purposes (TQT: 100 hours / 10 credits)	Study and Communication Skills (TQT: 200 hours/ 20 credits)
Culture Studies (TQT: 100 hours / 10 credits)	Foundation Mathematics (TQT: 100 hours / 10 credits)		

#### **Elective Units**

Busines	ss Units	Computing Units		
Introduction to Business (TQT: 100 hours / 10 credits) Introduction to Accounting and Economics (TQT: 100 hours / 10 credits)		Introduction to Computer Science (TQT: 100 hours / 10 credits)	Introduction to Programming (TQT: 100 hours / 10 credits)	
Engineer	ing Units	Health Scie	ences Units	
Further Mathematics (TQT: 100 hours / 10 credits)	Physics (TQT: 100 hours / 10 credits)	Chemistry (TQT: 100 hours / 10 credits)	Biology (TQT: 100 hours / 10 credits)	
Chemical Eng	ineering Units	Higher Finance Units		
Further Mathematics (TQT: 100 hours / 10 credits Chemistry (TQT: 100 hours / 10 credits)		Introduction to Accounting and Economics (TQT: 100 hours / 10 credits)	Further Mathematics (TQT: 100 hours / 10 credits)	



# 3. Assessment for the qualification

#### 3.1 Assessment objectives

All assessment for the qualification is intended to allow candidates to demonstrate they have met the relevant Learning Outcomes. Moreover, NCC Education's assessment is appropriate to the assessment criteria as stated in this specification and is regularly reviewed to ensure it remains consistent with the specification.

	Assessment Methods			
Unit	Local Examination	Global Assignment	Global Examination	
Developing English Language Skills	100%			
Advanced English Language Skills			100%	
English for Academic Purposes		100%		
Study and Communication Skills		100%		
Culture Studies		100%		
Foundation Mathematics			100%	
Introduction to Computer Science			100%	
Introduction to Programming		100%		
Introduction to Business			100%	
Introduction to Accounting and Economics			100%	
Further Mathematics			100%	
Physics			100%	
Chemistry			100%	
Biology			100%	

#### 3.2 Overview of Qualification Unit Assessment

An examination is a time-constrained assessment that will take place on a specified date and usually in an NCC Education Centre. An assignment requires candidates to produce a written response to a set of one or more tasks, meeting a deadline imposed by the Centre. Local Examinations and Global Assignments are marked by the centre.

The overall unit mark is computed from the weighted mean of its components. The pass mark for a unit is 40%.

NCC Education Centres can provide candidates with a specimen assessment paper as well as a limited number of past examination and assignment papers.

Past examination and assignment papers may be made available only following results release for the corresponding assessment cycle. Results release dates and past examination and assignment release dates can be found in the Activity Schedules area of *Connect*, NCC Education's student registration system.



# 4. Administration

#### 4.1 Assessment Cycles

1. Four assessment cycles are offered throughout the year during Spring, Summer, Autumn and Winter.

Examination dates and assignment submission deadlines are published in the NCC Education *Activity Schedule*, which is provided to Centres by Centre Support. It is also available on *Connect*, NCC Education's student registration system.

The *Activity Schedule* also gives the key dates for registering candidates for assessment cycles, the dates when Centres can expect the assessment documentation and, ultimately, the assessment results from NCC Education.

#### 4.2 Language of Assessment

All assessment is conducted in English.

#### 4.3 Candidates

NCC Education's qualifications are available to those Centre candidates who satisfy the entry requirements as stated in this specification.

#### 4.4 Qualification and Unit Entry Requirements

#### Entry Requirements

• Students must have successfully completed secondary school education.

Students must also meet the English language entry requirements of:

• IELTS (or equivalent) minimum score of 4.5 or above

#### 4.5 Eligibility Period

The maximum period of time that NCC Education allows for the completion of your programme is three years. Please contact your Accredited Partner Centre if you have any queries relating to this.

#### 4.6 Resits

If a candidate fails an assessment, they will be provided with opportunities to resit during the eligibility period.

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Candidates may only seek reassessment in a previously failed Unit.



# 5. Syllabus

# 5.1 Developing English Language Skills

Title	Developing English Language Skills	
Unit reference number	L/615/0156	
Credits	30	
Level	3	

Guided		Total	
Learning	180 hours	Qualification	300 hours
Hours		Time	

Learning Outcomes;	Assessment Criteria;
The Learner will:	The Learner can:
1. Be able to communicate	1.1 Demonstrate confident and accurate use of a range of tenses and
fluently, accurately and	grammatical structures
effectively, speaking on a	1.2 Participate in discussion of familiar issues, giving relevant and
range of topics, with	meaningful contributions appropriate to the conversation and
appropriate control of	participants
grammar, vocabulary and	1.3 Demonstrate use of natural stress and intonation
register	1.4 Demonstrate, when participating in discussion, being understood
	without any recurring or major difficulty on the part of the listener
	1.5 Prepare and present simple information to others confidently and
	clearly
2. Be able to read with	2.1 Readily grasp the essential meaning of general English texts
independence and	2.2 Locate relevant details in a long text
comprehend the main	2.3 Demonstrate the ability to understand stances, viewpoints and
content and overall	conclusions made in a range of general English texts
meaning of a range of	2.4 Understand clearly written and straightforward instructions
general texts in English	
3. Be able to write factual,	3.1 Demonstrate the ability to write a summary of information given or
descriptive and explanatory	researched
rende of linguistic structures	3.2 Demonstrate the ability to write in a range of different styles
range of linguistic structures	appropriate to tasks
and vocabulary, to complete	structures to complete written tacks on a range of familier tanics
clearly defined tasks	2.4 Demonstrate the ability to organize, develop and link points together
	for a range of clearly defined writing tasks
4. Bo able to apply a range	101 a range of clearly defined writing tasks
4. De able to apply a lange	4.1 Demonstrate the ability to pick out key information when instending to a range of speakers
order to understand spoken	4.2 Understand the main points of a linguistically complex lecture or talk
language on familiar and	4.3 Demonstrate the ability to predict the content of a conversation or
some unfamiliar topics	speech on a general topic, based on listening to a brief introduction or
	extract
	4.4 Demonstrate the ability to utilise their listening skills in order to
	participate meaningfully in discussion of familiar issues



Syllabus						
Unit No	Title	Proportion	Content			
	Intermediate Level					
1	Introductions	1/24 6 hours of class time 5 hours of private study	<ul> <li>Present continuous and present simple</li> <li>Forming questions</li> <li>Everyday activities</li> <li>Letter writing</li> </ul>			
2	Memory	1/24 6 hours of class time 5 hours of private study	<ul> <li>Past simple and past continuous tenses</li> <li>Used to</li> <li>Writing about a memorable event</li> <li>Discussing past events</li> </ul>			
3	Food and Family	1/24 6 hours of class time 5 hours of private study	<ul> <li>Understanding opinions</li> <li>Future forms</li> <li>Eating in and eating out</li> <li>Adjectives of personality</li> <li>Writing about a person</li> </ul>			
4	Money and Charity	1/24 6 hours of class time 5 hours of private study	<ul> <li>Present perfect and past simple tenses</li> <li>For and since</li> <li>Vocabulary related to money</li> <li>Strong adjectives</li> </ul>			
Review	Review 1	1 hour of class time 1 hour of private study	<ul> <li>Review the language learned in Topics 1 – 4</li> <li>Formative progress test</li> </ul>			
5	Transport and Places	1/24 6 hours of class time 5 hours of private study	<ul> <li>Comparatives and superlatives</li> <li>Linking</li> <li>Agreeing and disagreeing</li> <li>Vocabulary related to transport</li> <li>Presentations about cities</li> <li>Articles</li> <li>Designing a race around a city</li> </ul>			
6	Rules for Success	1/24 7 hours of class time 6 hours of private study	<ul> <li>Modal verbs</li> <li>Relative pronouns</li> <li>-ed –ing adjectives</li> <li>Phone language</li> <li>Sentence stress</li> </ul>			
7	Sport	1/24 7 hours of class time 6 hours of private study	<ul> <li>Past tenses</li> <li>Usually and used to</li> <li>Vocabulary related to sport</li> <li>Pronouncing the letter 's'</li> <li>Finding the meaning of key words</li> </ul>			
8	Appearing on Film	1/24 7 hours of class time	<ul> <li>Passives</li> <li>Modals of deduction</li> <li>Vocabulary related to film, TV and appearances</li> </ul>			

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		6 hours of private	Film reviews
Review	Review 2	1 hour of class	Review the language learned in
		time	Topics $5 - 8$
		1 hour of private	Formative progress test
		study	1 3
9	At Home and at	1/24	<ul> <li>Conditional sentences</li> </ul>
	School	6 hours of class	<ul> <li>Future time clauses</li> </ul>
		time	<ul> <li>Vocabulary related to home and</li> </ul>
		6 hours of private	school
		study	<ul> <li>Comprehension questions</li> </ul>
			Sentence stress
10	Working and	1/24	Reported speech
	Shopping	7 hours of class	<ul> <li>Gerunds and infinitives</li> </ul>
		time	<ul> <li>Letters of Complaint</li> </ul>
		6 hours of private	<ul> <li>Expressing an opinion</li> </ul>
		study	<ul> <li>Agreeing and disagreeing with an</li> </ul>
			argument.
11	The Modern	1/24	Quantifiers
	World	7 hours of class	Word forms
		time	Phrasal verbs
		6 hours of private	<ul> <li>Hypothetical sentences with <i>if</i></li> </ul>
		study	<ul> <li>For and against arguments</li> </ul>
			Linking words
			Planning, organising and writing an
			essay
			<ul> <li>Analysing a writer's opinion</li> </ul>
			<ul> <li>Summarising a text</li> </ul>
12	Fame and Infamy	1/24	Relative clauses
		6 hours of class	Question tags
		time	<ul> <li>Vocabulary about crime</li> </ul>
		6 hours of private	<ul> <li>Writing about a famous person</li> </ul>
		study	<ul> <li>Skimming a text for key information</li> </ul>
			Crime reports
Keview	Keview 3	i nour of class	• Review the language learned in
		time	1  opics  9 - 12
		1 nour of private	• Formative progress test
		Upper-intermediat	e l evel
13	Past, Present and	1/24	Past tenses
	Future	8 hours of class	Auxiliary verbs
		time	• Time phrases
		4 hours of private	• The verb <i>get</i>
		study	Collocations
14	Questions and	1/24	Question formation
	Answers	8 hours of class	Word formation
		time	Compound adjectives

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		4 hours of private	Working out meaning from context
		study	Use of dictionaries
15	Varieties of	1/24	Narrative tenses
	Writing	8 hours of class	Adverbs
		time	<ul> <li>Word stress and intonation</li> </ul>
		4 hours of private	<ul> <li>Writing about an exciting event in</li> </ul>
		study	the past
			<ul> <li>Introduction to IELTS writing</li> </ul>
16	Sickness and	1/24	Present perfect simple and
	Health	8 hours of class	continuous
		time	Adjectives
		3 hours of private	<ul> <li>Vocabulary about illness</li> </ul>
		study	<ul> <li>Introduction to IELTS listening</li> </ul>
Review	Review 4	1 hour of class	<ul> <li>Review the language learned in</li> </ul>
		time	Topics 13 – 16
		1 hour of private	<ul> <li>Formative progress test</li> </ul>
		study	
17	Travel and Places	1/24	<ul> <li>Past perfect and past perfect</li> </ul>
		8 hours of class	continuous
		time	<ul> <li>Irregular past tenses</li> </ul>
		4 hours of private	<ul> <li>Adverbial phrases</li> </ul>
		study	Note taking
			Presentations
			<ul> <li>Introduction to IELTS reading</li> </ul>
18	The Environment	1/24	Future perfect and future continuous
		8 hours of class	<ul> <li>Future time clauses</li> </ul>
		time	<ul> <li>Vocabulary about the environment</li> </ul>
		4 hours of private	and weather
		study	<ul> <li>Introduction to IELTS speaking</li> </ul>
19	Feelings and	1/24	Unreal conditionals
	Emotions	8 hours of class	Structures after wish
		time	<ul> <li>-ed –ing adjectives</li> </ul>
		4 hours of private	<ul> <li>Vocabulary in context</li> </ul>
		study	• Regrets
20	Music	1/24	Gerunds and infinitives
		8 hours of class	• used to
		time	Vocabulary about music
		4 hours of private	Borrowed words
		study	Sentence stress and linking
			Summarising a text
Review	Review 5	1 hour of class	Review the language learned in
		time	Topics $17 - 20$
		1 hour of private	Formative progress test
21	Making an	study	• Past modals
21	Argument	9 hours of alass	• Fast IIIUuais
		time	• Vorbs of the senses
1			



		4 hours of private study	<ul> <li>Vocabulary about the body</li> <li>Making arguments</li> <li>IELTS speaking practice</li> </ul>
22	Reporting Stories	1/24 8 hours of class time 4 hours of private study	<ul> <li>The passive</li> <li>Reporting verbs</li> <li>Vocabulary about crime and the media</li> <li>Formal and informal letters</li> <li>Word formation</li> <li>IELTS reading practice</li> </ul>
23	The Urban World	1/24 8 hours of class time 4 hours of private study	<ul> <li>Contrast and purpose</li> <li>Uncountable and plural nouns</li> <li>Prefixes and suffixes</li> <li>Listening for gist and details</li> <li>Presenting information about a city</li> <li>Writing travel reviews</li> <li>IELTS reading practice</li> </ul>
24	Science	1/24 9 hours of class time 4 hours of private study	<ul> <li>Quantifiers</li> <li>Articles</li> <li>Vocabulary about science</li> <li>Collocations</li> <li>Describing data</li> <li>Giving presentations</li> </ul>
Review	Review 6	1 hour of class time 1 hour of private study	<ul> <li>Review the language learned in Topics 21 – 24</li> <li>Formative progress test</li> </ul>

## Assessment Type

Local Examination (100%)

See also Section 3 above





## 5.2 English for Academic Purposes

Title	English for Academic Purposes	
Unit reference number	Y/615/0158	
Credits	10	
Level	3	

Guided Learning Hours	60 hours	Total Qualification	100 hours
		Time	

Learning Outcomes;	Assessment Criteria;
The Learner will:	The Learner can:
<ol> <li>Be able to utilise different 'pre', 'while' and post reading strategies to understand academic texts</li> </ol>	<ul> <li>1.1 Predict the content of various academic texts prior to reading them fully</li> <li>1.2 Identify the overall function of an academic text</li> <li>1.3 Identify the specific function of sentences, paragraphs and sections in academic texts</li> <li>1.4 Demonstrate comprehension of a range of academic texts</li> </ul>
2. Be able to demonstrate an appropriate academic vocabulary	<ul> <li>2.1 Identify subject specific vocabulary in a range of academic texts</li> <li>2.2 Demonstrate active use of a range of subject specific vocabulary</li> <li>2.3 Use subject specific vocabulary accurately</li> </ul>
3. Be able to structure sentences, paragraphs and full texts to suit academic requirements	<ul> <li>3.1 Demonstrate an understanding of what is required in a range of academic writing tasks at this level</li> <li>3.2 Demonstrate the ability to use the structure and linguistic conventions of well written academic sentences</li> <li>3.3 Demonstrate the ability to use the structure and linguistic conventions of well written academic paragraphs</li> <li>3.4 Demonstrate the ability to link sentences, paragraphs and sections together to produce overall cohesion in academic writing</li> <li>3.5 Follow a step by step process to produce a final draft piece of academic writing</li> </ul>
4. Be able to utilise 'pre', 'while' and post listening strategies to understand different speakers and academic topic information	<ul> <li>4.1 Demonstrate the ability to recognise linguistic signposts and reference markers when listening to different speakers and to different delivery styles</li> <li>4.2 Demonstrate the ability to utilise notes made whilst listening to a range of different speakers</li> <li>4.3 Identify key information when listening to a range of speakers and delivery styles</li> </ul>

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Syllab	ous		
Unit No	Title	Proportion	Content
	•	Interme	ediate Level
1	Entertainment	1/5 12 hours of class time 7 hours and 30 minutes of private study	<ul> <li>Students focus on the initial processes and strategies involved when approaching academic writing, reading and listening tasks:</li> <li>Examining structures of academic written texts</li> <li>Considering simple, compound and complex sentences</li> <li>Considering the basic elements of a paragraph</li> <li>Using the passive voice in academic writing</li> <li>Considering pre-listening strategies</li> <li>Listening for gist and for specific information</li> <li>Understanding academic word lists</li> <li>Understanding the process of reading</li> <li>Using prediction strategies as a pre-reading technique</li> </ul>
2	The Environment	1/5 13 hours of class time 7 hours and 30 minutes of private study	Students focus on detailed processes and strategies for beginning to tackle academic writing, reading and listening tasks: • Using word transformations in academic writing • Using signposting in academic writing • Practising cohesion within paragraphs • Considering the use of punctuation in academic writing • Recognising signposts in a lecture • Examining solutions to spelling difficulties • Examining strategies for exploiting Activities in a lecture • Exploiting the use of visual aids in lectures • Considering the use of visual aids in lectures • Considering the use of dictionaries • Understanding how affixes and roots show word meanings • Practising skills to extract the main idea from a text • Practising scanning skills to search for specific information in a text
3	Travel and Transport	1/5 12 hours of class time	Students focus on some of the methods involved in exploiting academic writing, reading and listening materials: • Examining paraphrasing and summarising other writers' work

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		7 hours and 30 minutes of private study	<ul> <li>Understanding the issue of plagiarism and how to reference a source</li> <li>Considering thesis statements</li> <li>Considering how to respond to questions and instructions in academic writing</li> <li>Understanding the paralinguistic features of a lecture</li> <li>Examining the use of inference in lectures</li> <li>Understanding attitude and opinion in lectures</li> </ul>
			<ul> <li>Onderstanding now to dear with ress-frequent vocabulary</li> <li>Understanding how to use the contents and index pages of a text</li> <li>Making inferences from written work</li> </ul>
4	Achievements	1/5 11 hours of class time 7 hours and 30 minutes of private study	<ul> <li>Students focus on polishing their skills in academic writing, reading and listening:</li> <li>Organising details and examples in a written text</li> <li>Providing feedback on a piece of writing</li> <li>Considering paragraph divisions within a text</li> <li>Examining how referencing is used by lecturers</li> <li>Considering the structure of academic lectures</li> <li>Working out the meaning of unknown vocabulary</li> <li>Practising intensive reading</li> <li>Considering the use of linking words in a text</li> </ul>
5	Technology	1/5 12 hours of class time 8 hours of private study	<ul> <li>Students focus on techniques for enhancing their skills in academic writing, reading, and listening:</li> <li>Examining techniques for adding and hiding opinion in writing</li> <li>Considering the importance of proof reading</li> <li>Correcting written work based on criteria</li> <li>Developing a system of abbreviations for notetaking</li> <li>Discovering how best to record new vocabulary</li> <li>Finding further reading material on a subject</li> <li>Examining connotations and opinions in writing</li> </ul>
Asses	sment Type	00()	
Global	Assignment (10	0%)	
See al	so section 3 ab	love	



## 5.3 Advanced English Language Skills

Title	Advanced English Language Skills	
Unit reference number	R/615/0157	
Credits	20	
Level	3	

Guided		Total	
Learning	120 hours	Qualification	200 hours
Hours		Time	

Learning Outcomes;	Assessment Criteria;
1. Be able to communicate fluently, accurately and effectively, speaking on a range of familiar and unfamiliar topics, with appropriate control of grammar, vocabulary and register	<ul> <li>The Learner can:</li> <li>1.1 Demonstrate confident and accurate use of the full range of tenses and grammatical structures</li> <li>1.2 Participate in discussion of a broad range of issues, giving relevant and meaningful contributions appropriate to the conversation and participants</li> <li>1.3 Demonstrate good use of natural stress and intenation</li> </ul>
2. Do oble to read with independence	1.4 Participate in discussion, and be understood without difficulty on the part of the listener 1.5 Prepare and present detailed information to others confidently and clearly
2. Be able to read with independence and comprehend the main content and overall meaning of a range of general and more unfamiliar texts in English	<ul> <li>2.1 Readily grasp the essential meaning of a range of general English texts</li> <li>2.2 Locate specific details and key information in a long and complex text</li> <li>2.3 Demonstrate the ability to understand stances, viewpoints and conclusions made in a range of complex English texts</li> <li>2.4 Demonstrate the ability to understand the inferences made in a range of general and more unfamiliar English texts</li> </ul>
3. Be able to write structured, factual, descriptive and explanatory texts, accurately using complex linguistic structures and vocabulary	<ul> <li>3.1 Demonstrate the ability to write a clear and concise summary of information given or researched</li> <li>3.2 Demonstrate the ability to write in a range of different styles appropriate to tasks</li> <li>3.3 Demonstrate the ability to accurately use a wide range of linguistic structures to produce pieces of writing on a range of familiar and some unfamiliar topics</li> <li>3.4 Demonstrate the ability to organise, develop and link points effectively in a range of written pieces of work</li> </ul>
4. Be able to apply a range of listening strategies in order to understand lengthy predicable discussions, factual presentations and more abstract conversations	<ul> <li>4.1 Demonstrate the ability to pick out specific details and key information when listening to a range of speakers</li> <li>4.2 Understand the main points and key details of a linguistically complex lecture or talk</li> <li>4.3 Demonstrate the ability to predict the content of a conversation or speech, based on listening to a brief</li> </ul>

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introduction or extract
4.4 Demonstrate the ability to utilise their listening skills in
order to participate meaningfully in discussion of a broad
range of issues

Syllabus	i		
Unit No	Title	Proportion	Content
	·	Intermediate Lev	vel
1	Globalisation	1/12	Note taking
		10 hours of class	Vocabulary related to globalisation
		time 6 hours 25	and the environment
		minutes of private	<ul> <li>Posters and leaflets</li> </ul>
		study	Debating
			• Giving and understanding opinions
2	Personality	1/12	<ul> <li>have as auxiliary and main verb</li> </ul>
		10 hours of class	Discourse markers
		time 6 hours 25	Using a dictionary
		minutes of private	
		study	
3	Learning	1/12	Narrative tenses
		10 hours of class	Education systems
		time 6 hours 25	Word building: abstract nouns
		minutes of private	Understanding accents
		study	<ul> <li>Reading exam practice</li> </ul>
4	History in the	1/12	Borrowed words
	Making	10 hours of class	<ul> <li>Adverbial expressions</li> </ul>
		time 6 hours 25	Historical films
		minutes of private	Reading for detail
		study	<ul> <li>Interviews and questionnaires</li> </ul>
5	Sound and Print	1/12	<ul> <li>Speculation and deduction</li> </ul>
		10 hours of class	Adding emphasis
		time 6 hours 25	Inversion
		minutes of private	<ul> <li>Book and film reviews</li> </ul>
		study	<ul> <li>Giving a presentation</li> </ul>



6	Time and Money	1/12	Distancing and hedging
		10 hours of class	Unreal past tenses
		time 6 hours 25	Vocabulary about time and money
		minutes of private	Cohesive devices
		study	Recognising accents      Designing a
			race around a city
7	Changes	1/12	Conditional sentences
		10 hours of class	Compound adjectives
		time 6 hours 25	Giving a speech
		minutes of private	<ul> <li>Evaluating research</li> </ul>
		study	Writing a balanced essay
8	Interesting Ideas	1/12	Permission, obligation and
		10 hours of class	necessity
		time 6 hours 25	Verbs of the senses
		minutes of private	Writing a report
		study	A letter of complaint
			IELTS writing
9	Mind and body	1/12	Gerunds and infinitives
		10 hours of class	Future plans
		time 6 hours 25	<ul> <li>Vocabulary in context</li> </ul>
		minutes of private	Homophones
		study	<ul> <li>Writing a discursive essay</li> </ul>
			IELTS speaking
10	Food	1/12	• Ellipsis
		10 hours of class	<ul> <li>Compound and possessive nouns</li> </ul>
		time 6 hours 25	<ul> <li>Vocabulary about food</li> </ul>
		minutes of private	<ul> <li>Writing questions</li> </ul>
		study	<ul> <li>An authentic lecture</li> </ul>
11	Home and	1/12	<ul> <li>Adding emphasis</li> </ul>
	Hobbies	10 hours of class	Cleft sentences
		time 6 hours 25	<ul> <li>Commonly confused words</li> </ul>
		minutes of private	Word building
		study	Intonation
12	The 21 <sup>st</sup> Century	1/12	Future changes and technology
		10 hours of class	Biographies
		time 6 hours 25	Vocabulary in context
		minutes of private	Presentations
		study	<ul> <li>IELTS speaking</li> </ul>

Assessment Type
Local Examination (100%)
See also Section 3 above



## 5.4 Study and Communication Skills

Title	Study and Communication Skills	
Unit reference number	A/504/1424	
Credits	20	
Level	3	

Guided Learning Hours	75 hours	Total Qualification Time	200 hours
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Learning Outcomes;	Assessment Criteria;	
The Learner will:	The Learner can:	
1. Be able to take effective notes from a variety of sources	1.1 Identify key information from a range of different texts	
	1.2 Record key points when listening to information being given	
	1.3 Critically review their own notes	
	1.4 Use their own notes to accurately summarise information given	
	1.5 Use their own notes to present a summary to others	
	1.6 Demonstrate using a range of sources to gather information	
2. Understand how to work out the meaning of unfamiliar content	<ul> <li>2.1 Identify unfamiliar content</li> <li>2.2 Identify a number of different strategies for working out the meaning of unfamiliar content</li> <li>2.3 Demonstrate the ability to find the meaning of unfamiliar content</li> <li>2.4 Demonstrate the application of own understanding to an unfamiliar content</li> </ul>	
3. Understand common steps in producing academic work	<ul> <li>3.1 Describe the common steps in producing academic work</li> <li>3.2 Define plagiarism</li> <li>3.3 Explain correct referencing in an academic essay</li> </ul>	



4. Be able to produce a piece of academic work suitable for this level, following a drafting process		4.1 4.2	Create a timetabled plan to meet the requirements of an academic assignment Check own work for errors
	4.3	Evaluate own work against criteria/requirements given	
		4.4	Develop sections of an assignment towards a final draft
		4.5	Demonstrate the correct use of academic referencing
		4.6	Present a completed piece of academic work to others
5.	Understand different learning styles	5.1	Explain the idea of multiple intelligences
		5.2	Describe a range of learning styles
		5.3	Identify own preferred learning style
		5.4	Identify own study strengthes and weaknesses

Syllabus Content		
Торіс	Course coverage	
Learning to Learn	<ul> <li>Learner styles and multiple intelligences</li> <li>Self study methodology</li> <li>Time management</li> <li>Goal setting</li> <li>Self analysis and critical reflection</li> <li>Keeping a learner diary</li> </ul>	
Reading Textbooks and Note Taking	<ul> <li>Reading a textbook &amp; note taking skills</li> <li>Using notes to write summaries</li> <li>Public Speaking skills &amp; Peer assessment</li> <li>Learner diaries and study skills self-assessment</li> </ul>	
Note Taking in Lectures	<ul> <li>Note taking in lectures</li> <li>Recognising key points</li> <li>Guessing meaning</li> <li>Editing and reviewing notes</li> <li>Planning a speech</li> <li>Public speaking practice and assessment</li> </ul>	
Library Research and Writing an Essay	<ul> <li>Accessing the library and reading strategies</li> <li>Note taking from books</li> <li>Essay planning and organising notes</li> <li>Public speaking practice and assessment</li> </ul>	



Journal-based Research for Essay Writing	<ul> <li>Journals and articles</li> <li>Critical reading and analysing data</li> <li>Describing data in an essay</li> <li>Academic Style</li> <li>Editing and proof reading</li> <li>Public speaking practice and assessment</li> </ul>
Internet Research for Essay Writing	<ul> <li>Using the internet for research</li> <li>Bibliographies and referencing</li> <li>Plagiarism and paraphrasing</li> <li>Editing and checking work against criteria</li> <li>Including sufficient detail</li> <li>Public speaking practice and assessment</li> </ul>
Writing a Research Report	<ul> <li>Approaching a task and making an assignment strategy</li> <li>Understanding requirements and using criteria</li> <li>Integrating evidence into a report</li> <li>Editing and proofreading</li> <li>Public speaking practice and assessment</li> </ul>
Examinations and Assessment	<ul> <li>Writing summaries and reviewing notes</li> <li>Preparing for exams</li> <li>Time Management</li> <li>Stress and anxiety management</li> </ul>

#### Assessment Type

Global Assignment (100%)

The assignment is broken into three sections:

- Learner Portfolio
- Note-taking and summary writing assignment
- Research project

#### See also Section 3 above

#### 5.5 Culture Studies

Title	Culture Studies
Unit reference number	J/615/0155
Credits	10
Level	3

Guided Learning Hours	55 hours	Total Qualification Time	100 hours
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Learning Outcome The Learner will:	es;	Assessment Criteria; The Learner can:
1. Understand th culture, cultural different cultures	ne concept of values and how s can be defined	<ul> <li>1.1 Explain the terms 'culture' and 'subculture'</li> <li>1.2 Identify a range of cultural practices and values and their unique aspects</li> <li>1.3 Explain what is meant by a 'stereotype'</li> </ul>
<ol> <li>Understand hov education syste country differs fr</li> </ol>	/ the political and em of a foreign om their own	<ul><li>2.1 Explain the general organisational structure of the education and political systems of a particular city or country</li><li>2.2 Demonstrate understanding of the application and enrolment process for studying abroad</li></ul>
3. Understand ho culture of a fore from their own	w the business gn country differs	<ul> <li>3.1 Identify variances in work culture and management stuctures</li> <li>3.2 Describe the benefits of cultural diversity for an organisation</li> <li>3.3 Assess how cultural factors impact on communication and effective working practices</li> </ul>
4. Understand t between digit communication	he relationship al technologies, and culture	<ul> <li>4.1 Understand how life online has impacted how people communicate</li> <li>4.2 Explain the impact of social media, online retail and online news on culture</li> <li>4.3 Understand aspects of digital culture.</li> <li>4.4 Explain the ways in which digital technologies have impacted on the individual and society.</li> </ul>



Syllabus Content			
Торіс	Course coverage		
What is Culture?	<ul> <li>Definition of culture</li> <li>Aspects of culture</li> <li>Personal Cultural Identity</li> <li>Cultural Practice and unique aspects</li> <li>Learning Outcome: 1</li> </ul>		
Subcultures	<ul> <li>Definition of subculture</li> <li>Aspects of subcultures</li> <li>Comparisons between different cultural aspects</li> <li>Stereotypes</li> <li>Learning Outcome: 1,3</li> </ul>		
Government	<ul> <li>Basic types of political system</li> <li>Police and Crime</li> <li>Learning Outcome: 1,3</li> </ul>		
Values	<ul> <li>Personal, familial and societal values</li> <li>Common etiquette in different countries</li> <li>Common pastimes and the values associated with these</li> <li>Learning Outcome: 1, 3, 4</li> </ul>		
Education Systems	<ul> <li>Different stages of education systems at home and abroad</li> <li>Identifying universities in different places</li> <li>Learning Outcome: 1, 2</li> </ul>		
Application to Higher Education	<ul> <li>Courses, subjects and methods of assessment at chosen universities</li> <li>The university application process</li> <li>Personal statements</li> <li>Learning Outcome: 2</li> </ul>		
Work	<ul> <li>Understanding different attitudes to work</li> <li>Work culture; organisational and management structures</li> <li>Cultural differences in international business</li> <li>Benefits of cultural diversity to an organisation</li> <li>Learning Outcome: 1,3</li> </ul>		
Digital Culture	<ul> <li>Understanding social media, online retail and online news and its impact on culture</li> <li>Digital culture and disparity in access</li> <li>Positives/ negatives of life online on the individual</li> <li>Positives/ negatives of life online on society</li> <li>Learning Outcome: 1, 4</li> </ul>		

- Assessment Type
- Global Assignment (100%)

See also Section 3 above

Education (

#### 5.6 Foundation Mathematics

Title	Foundation Mathematics	
Unit reference number	F/615/0154	
Credits	10	
Level	3	

Guided Learning Hours	50 hours	Total Qualification Time	100 hours
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Learning Outcomes;	Assessment Criteria;
The Learner will:	The Learner can:
<ol> <li>Be able to perform a range of algebraic calculations</li> </ol>	1.1 Simplify a range of algebraic expressions involving powers
	1.2 Simplify algebraic expressions by multiplying and dividing expressions
	1.3 Factorise algebraic expressions using a range of techniques
	1.4 Simplify and solve Algebraic Fractions
2. Be able to solve a range of basic	2.1 Transpose formulae
Calculations equations	2.2 Solve linear and quadratic equations
	2.3 Solve simultaneous equations
	2.4 Perform statistical calculations relating to central tendency
<ol> <li>Be able to present data in graphical form</li> </ol>	3.1 Present data using tables, pie charts and bar charts
	3.2 Construct frequency distributions
	3.3 Present data as histograms, ogives and time series graphs
	3.4 Present linear and quadratic equations in graphical form
	3.5 Provide graphical solutions to simultaneous equations
<ol> <li>Understand the fundamentals of Differential Calculus</li> </ol>	4.1 Explain the rate of change of one variable in respect of another
	4.2 Calculate the gradient of a curve using differentiation
	4.3 Plot maximum and minimum turning points using graphs
	4.4 Identify the maximum and minimum turning points using differentiation



5.	Understand the fundamentals of Integral Calculus	5.1	Recognise integration as the inverse of differentiation
		5.2	Recognise the constant of integration
		5.3	Evaluate the constant of integration
		5.4	Evaluate the definite integral
		5.5	Calculate of the area under a curve
6.	Understand Measures of Dispersion	6.1	Calculate the range, quartiles and quantiles
		6.2	Calculate the mean deviation
		6.3	Calculate the variance
		6.4	Calculate the standard deviation
7.	Understand the fundamentals of Probability	7.1	Calculate probability using the addition and multiplication rules
		7.2	Calculate the probability of compound events
		7.3	Use tree diagrams to determine probability
		7.4	Calculate probabilities of permutations and combinations

Syllabus Content		
Торіс	Course coverage	
Introduction to Algebra	Simplification of a range of algebraic expressions including those involving powers	
	<ul> <li>Simplifying a range of algebraic expressions by multiplying and dividing expressions</li> </ul>	
	Factorising algebraic expressions by using a range of techniques	
	<ul> <li>Simplify and solve a range of Algebraic Fractions</li> </ul>	
	Learning Outcome: 1	
Using Algebraic	Transposing formulae	
Equations	Solving simple linear equations	
	Solving simple quadratic equations	
	Solving simultaneous equations	
	Learning Outcome: 2	
Solving	<ul> <li>Presenting a range of linear equations in graphical form</li> </ul>	
algebraic	<ul> <li>Presenting a range of quadratic equations in graphical form</li> </ul>	
equations	<ul> <li>Solving simultaneous equations using graphical forms</li> </ul>	
Using Graphs	Learning Outcome: 3	



Introduction to Differential	<ul> <li>Using the principles of calculus to explain the rate of change of one variable in respect of another</li> </ul>
Calculus	<ul> <li>Calculation of the gradient of a curve using differentiation</li> </ul>
	<ul> <li>Plotting maximum and minimum turning points using graphical means</li> </ul>
	<ul> <li>Identification of the maximum and minimum turning points using differentiation</li> </ul>
	Learning Outcome: 4
Introduction to Integral	<ul> <li>Recognising the process of integration as the inverse of differentiation</li> </ul>
Calculus	<ul> <li>Recognition of the role played by the constant of integration</li> </ul>
	<ul> <li>Evaluation of the constant of integration</li> </ul>
	Evaluation of the definite integral
	Calculation of the area under a curve
	Learning Outcome: 5
Presentation of	<ul> <li>Present data using tables, pie charts and bar charts</li> </ul>
Data	Construct Frequency distributions
	<ul> <li>Present data as histograms, ogives and time series graphs</li> </ul>
	Learning Outcome: 3
Beginning	Calculation of the arithmetic mean for a range of data samples
Statistics	<ul> <li>Calculation of the arithmetic mean for a range of frequency distributions</li> </ul>
	<ul> <li>Calculation of the arithmetic mean for grouped data</li> </ul>
	<ul> <li>Calculation of the modal value of data sets</li> </ul>
	<ul> <li>Calculation of the median value of data sets</li> </ul>
	Learning Outcomes: 2
Understanding	<ul> <li>Calculation of the range, quartiles and quantiles</li> </ul>
Dispersion	Calculation the mean deviation
	Calculation of the variance
	Calculation of the standard deviation
	Learning Outcome: 6

# Assessment Type • Global Examination (100%) See also Section 3 above

## 5.7 Introduction to Computer Science

Title         Introduction to Computer Science	
Unit reference number	F/504/0727
Credits	10
Level	3

Guided Learning Hours	56 hours	Total Qualification	100 hours
		Time	

Learning Outcomes;	Assessment Criteria;
The Learner will:	The Learner can:
<ol> <li>Understand fundamental concepts relating to hardware and software</li> </ol>	<ul> <li>1.1 Describe the functions of a computer system</li> <li>1.2 Describe a range of computer systems or justify the use of a type of computer system for a particular purpose</li> <li>1.3 Define the term 'hardware'</li> <li>1.4 Describe the purpose or characteristics of computer hardware</li> <li>1.5 Define the term 'software'</li> <li>1.6 Identify categories of software</li> <li>1.7 Describe types of application software or justify the use of application software or justify the use of application software or justify the use of system software for a particular purpose</li> <li>1.8 Describe types of system software or justify the use of system software for a particular purpose</li> <li>1.9 Describe types of utility software for a particular purpose</li> </ul>



2. Understand the characteristics of hardware	2.1 Describe internal components of computer hardware
components	2.2 Describe the components of a central processing unit (CPU)
	2.3 Describe the functions of a CPU
	2.4 Explain the function of the fetch-decode-execute
	cycle
	2.5 Describe how hardware components communicate with each other
	2.6 Identify units of measurements of computer storage
	2.7 Describe a range of computer storage media or justify the use of a type of storage media for a
	particular purpose
	2.8 Describe a range of input devices or justify the
	use of a type of input device for a particular
	2.9 Describe a range of output devices or justify the
	use of an output device for a particular purpose
3. Understand how data is	3.1 Describe how data is represented by binary
represented in a computer	3.2 Describe how data is represented by ASCII
system	3.3 Describe how data is represented by Unicode
	3.4 Explain how encryption can be used to represent
	3.5 Explain how compression can facilitate the
	2.6 Explain the purpose of pumber systems
	2.7 Explain the bipary number systems
	3.8 Demonstrate addition or subtraction of binary
	numbers
	3.9 Demonstrate an understanding of two's
	complement
	3.10 Explain the hexadecimal number system
	3.11 Demonstrate conversion between decimal,
	binary or hexadecimal numbers
	3.12 Describe how images are represented in a
	computer system
	3.13 Describe how sound is represented in a
	computer system
	and transmission of images or sound
	3 15 Define the term 'digital logic'
	3 16 Explain the nurnose and operation of logic dates



<ol> <li>Understand the fundamental concepts of computer networks</li> </ol>	<ul><li>4.1 Explain the purpose of a computer network</li><li>4.2 Describe types of computer network or explain the criteria for selecting a particular type of network</li></ul>
	4.3 Describe the hardware used in a computer network
	4.4 Describe the software used in a computer network
	4.5 Describe the transmission media used in a computer network
	4.6 Describe types of network transmission protocols
	4.7 Describe types of computer network topology or justify the use of a topology for a particular purpose
	4.8 Describe Internet and World Wide Web technologies
	4.9 Discuss computer network issues
5. Understand cultural, ethical and legal issues relating to computing	<ul> <li>5.1 Explain what a cultural issue is</li> <li>5.2 Describe a range of cultural issues</li> <li>5.3 Explain how cultural issues can be addressed</li> <li>5.4 Explain what an ethical issue is</li> <li>5.5 Describe a range of ethical issues</li> <li>5.6 Explain how ethical issues can be addressed</li> <li>5.7 Identify laws and guidelines that relate to computing</li> <li>5.8 Describe situations where laws and guidelines have been used to deal with people using computers to commit crimes or cause offence</li> </ul>

Syllabus Content		
Торіс	Course coverage	
Introduction to Computer Systems and Hardware	<ul> <li>Definition of computer system</li> <li>Functions of a computer system</li> <li>Data and information</li> <li>An overview of a typical computer system</li> <li>Types of computer systems</li> <li>Big data</li> <li>The Internet of Things</li> <li>Definition of hardware</li> <li>The role of computer hardware</li> <li>Types of computer hardware</li> <li>Accessibility</li> <li>Learning Outcome: 1</li> </ul>	

Introduction to Application Software and System Software	<ul> <li>Definition of software</li> <li>Categories of software</li> <li>Software compatibility</li> <li>Types and uses of application software</li> <li>How to obtain software</li> <li>Software licences</li> <li>Criteria to consider when selecting application software</li> <li>System software</li> <li>operating system software</li> <li>utility software</li> <li>Criteria to consider when selecting system software</li> <li>Criteria to consider when selecting system software</li> </ul>
Internal Components of Computer Hardware	<ul> <li>Internal components: Motherboard, chips, central processing unit (CPU), clock, memory, chipset, expansion slots and cards, power supply, fan, buses, connectors</li> <li>How components communicate with each other</li> <li>How components communicate with external devices</li> <li>Learning Outcomes: 2</li> </ul>
Computer Processors	<ul> <li>The role of a computer processor</li> <li>Types of processor</li> <li>Components of a CPU</li> <li>The functions of a CPU</li> <li>How components of a CPU communicate with each other</li> <li>The fetch-execute-decode cycle</li> </ul>
Storage Devices and Input and Output Devices	<ul> <li>Computer storage</li> <li>Units of measurement of computer storage</li> <li>Computer storage media</li> <li>Storage locations</li> <li>Criteria to consider when selecting computer storage</li> <li>Input devices</li> <li>Criteria to consider when selecting input devices</li> <li>Output devices:</li> <li>Criteria to consider when selecting output devices</li> <li>Learning Outcome: 2</li> </ul>



Data Representation	<ul> <li>Binary representation of data</li> <li>ASCII representation of data</li> <li>Unicode representation of data</li> <li>Hexadecimal representation of data</li> <li>Definitions of encryption and decryption</li> <li>Examples of encryption</li> <li>Definition of compression</li> <li>Compression of data</li> </ul>
Number Representation	<ul> <li>Number systems</li> <li>Decimal number system</li> <li>Binary number system</li> <li>Why consider number systems?</li> <li>Addition of binary numbers</li> <li>Subtraction of binary numbers</li> <li>Two's complement</li> <li>Hexadecimal number system</li> <li>Converting decimal, binary and hexadecimal numbers</li> <li>Learning Outcome: 3</li> </ul>
Image and Sound Representation	<ul> <li>Image representation</li> <li>Image file formats</li> <li>Compression of images</li> <li>Sound representation</li> <li>Sound file formats</li> <li>Compression of sound</li> <li>Learning Outcome: 3</li> </ul>
Digital Logic	<ul> <li>Digital logic</li> <li>Truth Tables</li> <li>Logic gates</li> <li>AND</li> <li>OR</li> <li>NOT</li> <li>NAND</li> <li>NOR</li> <li>Learning Outcome: 3</li> </ul>

Computer Networks	<ul> <li>Definition of a computer network</li> <li>Types of network</li> <li>Criteria for selecting a network</li> <li>Network hardware</li> <li>Network transmission media</li> <li>Network transmission protocols</li> </ul>
	Network software  Learning Outcome: 4
Network Topologies and the Internet	<ul> <li>Define a network topology</li> <li>Types of topology</li> <li>Criteria for selecting a topology</li> <li>Definition of the Internet</li> <li>Definition of the World Wide Web (WWW)</li> <li>World Wide Web technologies</li> <li>Computer network issues</li> <li>Learning Outcome: 4</li> </ul>
Cultural, Ethical and Legal Issues Relating to Computing	<ul> <li>Definition of cultural issues</li> <li>Examples of cultural issues</li> <li>Addressing cultural issues</li> <li>Definition of ethical issues</li> <li>Examples of ethical issues</li> <li>Addressing ethical issues</li> <li>UK laws and guidelines</li> <li>Data Protection Act (1998)</li> <li>Computer Misuse Act (1990)</li> <li>Copyright, Designs and Patents Act (1988)</li> <li>Global laws and computers</li> <li>Examples of situations where the law has been applied</li> </ul>

## Assessment Type

• Global Examination (100%)

See also Section 3 above

## 5.8 Introduction to Programming

Title	Introduction to Programming
Unit reference number	A/504/0967
Credits	10
Level	3

Guided Learning Hours     50 hours     Qualification     100 hour       Time
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Learning Outcomes; The Learner will:	Assessment Criteria; The Learner can:
1. Create project documentation.	<ul> <li>1.1 Understand why the design, implementation and testing of a program should be supported by appropriate documentation</li> <li>1.2 Create and complete a Project Control Object Definition Sheet</li> </ul>
2. Implement a program that uses data capture and validation.	<ul><li>2.1 Write a working program which accepts and stores user input</li><li>2.2 Write a working program which validates user input and only accepts expected values</li></ul>
3. Implement a program that uses sequential programming with different data types.	<ul><li>3.1 Write a working program that uses sequential programming</li><li>3.2 Write a working program which makes use of at least two different data types</li></ul>
4. Implement a program that uses iteration and selection constructs.	<ul> <li>4.1 Write a working program that uses a for loop construct.</li> <li>4.2 Write a working program that uses an if – else construct</li> <li>4.3 Identify and document appropriate testing of loops and selection statements</li> </ul>
5. Implement a program that uses file i/o.	<ul> <li>5.1 Write code that demonstrates how to output data to an external file.</li> <li>5.2 Write code that demonstrates how to read in and store data from an external file.</li> <li>5.3 Identify and document appropriate testing of file input/output</li> </ul>
6. Implement a program that uses arrays	<ul><li>6.1 Write code that demonstrates how to declare an array</li><li>6.2 Write code that demonstrates how to manipulate an array</li><li>6.3 Write code that demonstrates how to sort an array</li><li>6.4 Identify and document appropriate testing of arrays</li></ul>



Syllabus Content		
Торіс	Course coverage	
Introduction to the IDE, VB	Introduction to Visual Studio Community 2015 IDE	
Properties and creating a GUI	<ul> <li>Introduction to GUI objects and properties</li> </ul>	
	Introduction to creating a GUI	
	Learning Outcome: 2	
Introduction to data types and	Introduction to programming	
sequential programming	Introduction to objects	
	Introduction to variables	
	<ul> <li>Assignment statements</li> </ul>	
	Introduction to data types	
	Arithmetic operations	
	Learning Outcome: 3	
Introduction to the programming	Introduction to iteration	
construct of iteration and fixed	Flow of execution	
	For loop structure	
	Variables and loops	
	Nested loops	
	Learning Outcome: 4	
Introduction to the programming construct of selection	If statement structure	
	Comparison operators	
	If-Else structure	
	If – Else – If structure	
	Compound conditionals	
	Switch statements	
	Learning Outcomes: 2, 4	
Introduction to conditional loops	Importance of data validation	
and data validation	Checking for specific values	
	<ul> <li>Checking for a range of values</li> </ul>	
	String comparisons	
	While loop structure	
	Logical comparisons	
	Multiple conditions	
	Do - While loops	
	Learning Outcomes: 2, 4	

Project Definition and Design	<ul> <li>Specification, design, implementation, test cycle</li> <li>Project Brief to Specification</li> <li>Object Definition Sheets</li> <li>Debugging and testing</li> </ul>
	Learning Outcome: 1
Case Study: Creating a GUI	<ul> <li>Consolidation of learning from topics 1 – 6</li> </ul>
selection and iteration	Student mid-course assignment
	Learning Outcomes: 1, 2, 3, 4
Introduction to Arrays	Benefits of arrays
	Declaring arrays
	<ul> <li>Initialising and filling arrays</li> </ul>
	<ul> <li>Accessing and changing values in arrays</li> </ul>
	<ul> <li>Manipulating arrays using for loops</li> </ul>
	Sorting arrays
	Learning Outcomes: 4, 6
Introduction to Methods	<ul> <li>Different method types in VB (Subs and Functions) and scope</li> </ul>
	Parameter passing
	Return statements
	Method overloading
	Learning Outcomes: 2, 3, 4, 5, 6
Introduction to File I/O	Files and data storage
	Writing to files
	Reading from files
	<ul> <li>Exception handling for file I/O</li> </ul>
	Learning Outcome: 5
Case Study: Creating a GUI	<ul> <li>Consolidation of learning from topics 1 – 10</li> </ul>
program that uses arrays,	Student end of course exam
	Learning Outcomes: 1, 2, 3, 4, 5, 6

# Assessment Type Global Assignment (100%) See also Section 3 above



#### 5.9 Introduction to Business

Title	Introduction to Business
Unit reference number	T/504/0966
Credits	10
Level	3

Guided Learning Hours	60 hours	Total Qualification Time	100 hours
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Learning Outcomes;	Assessment Criteria;	
The Learner will:	The Learner can:	
<ol> <li>Understand different types of businesses and their functions</li> </ol>	1.1 List different types of businesses found in the public and private sectors	
	1.2 Identify the various stakeholders involved with a business	
	<ol> <li>Describe how stakeholders can affect business activity</li> </ol>	
	1.4 Identify an organisation's business objectives	
	1.5 Define primary, secondary and tertiary organisations	
	1.6 Define corporate social responsibility	
	1.7 List a range of benefits of socially responsible business behaviour	
	1.8 List a range of perceived negatives of socially responsible business behaviour	
2. Understand a range of basic business	2.1 Identify different business departments	
and management structures	2.2 Explain the function of different business departments	
	2.3 Explain why organisations develop layers of authority	
	2.4 Identify a range of leadership styles	
	2.5 Explain an organisation's staffing and management structure	
	2.6 Describe a range of elements which can influence business culture	
3. Be able to demonstrate an	3.1 Define 'marketing'	
understanding of basic marketing principles in business	3.2 Define 'needs' and 'wants' in relation to marketing	
	3.3 Identify a range of market segment categories	
	3.4 Explain market research and the 'marketing mix'	
4. Understand the basic concepts of	4.1	Define 'production'
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production	4.2	Describe the steps necessary in a range of production processes
	4.3	Explain different production layouts
	4.4	Demonstrate the ability to select the most suitable production method for a particular product
5. Be able to utilise a number of key business concepts	5.1	Explain the difference between a micro and macro business environment
	5.2	Explain why quality is important in business
	5.3	Explain the 'Kaizen method' for quality control
	5.4	Present information to others, following research, on what type of business an unfamiliar organisation is
	5.5	Present information to others, following research, on the activities of an unfamiliar organisation
	5.6	Create a SWOT analysis for an organisation
	5.7	Perform a PESTLE analysis on an organisation

Syllabus Content			
Торіс	Course coverage		
Concepts of Business	<ul> <li>Business activities</li> <li>Types of business</li> <li>Learning Outcome: 1</li> </ul>		
Business Environment	<ul> <li>Macro Economy</li> <li>Competition</li> <li>Legal Environment</li> <li>Corporate Social Responsibility</li> <li>Ethics</li> <li>PESTLE</li> <li>Learning Outcome: 5</li> </ul>		
Production and Quality	<ul> <li>Production</li> <li>Manufacture vs. Services</li> <li>Quality</li> <li>Learning Outcome: 4</li> </ul>		
People and Processes	<ul> <li>Management and structures</li> <li>Organisation Design</li> <li>Leadership and Management styles</li> <li>Change and culture</li> <li>Learning Outcome: 2</li> </ul>		

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Marketing	Market analysis
	Marketing mix
	• SWOT
	Learning Outcome: 3

Аззеззінені туре
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• Global Examination (100%)

See also Section 3 above



## 5.10 Introduction to Accounting and Economics

Title	Introduction to Accounting and Economics
Unit reference number	M/504/0965
Credits	10
Level	3

Guided Learning Hours	48 hours	Total Qualification Time	100 hours
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Learning Outcomes;	Assessment Criteria;	
The Learner will:	The Learner can:	
1. Understand essential aspects of accounting	<ol> <li>1.1 Define the term 'accounting'</li> <li>1.2 Contrast the role of the accountant with the economist</li> <li>1.3 Explain a range of common accounting terms</li> <li>1.4 Describe the different forms of business unit</li> </ol>	
2. Understand essential aspects of economics	<ul> <li>2.1 Define the term 'economics'</li> <li>2.2 Explain the difference between microeconomics and macroeconomics</li> <li>2.3 Contrast the role of the economist with the accountant</li> <li>2.4 Explain a range of common Economics terms</li> <li>2.5 List a range of factors that influence supply and demand</li> </ul>	
3. Understand how markets operate	<ul> <li>3.1 Describe the different types of market that can exist</li> <li>3.2 Explain a range of factors which can determine the structure of a market</li> <li>3.3 Describe the effect of competition on the structure of a market</li> <li>3.4 Explain the term 'globalisation'</li> <li>3.5 Explain how economic growth may occur within markets</li> </ul>	
<ol> <li>Understand the role of money, interest rates and inflation within the area of accounting and economics</li> </ol>	<ul> <li>4.1 Describe the different measures of money</li> <li>4.2 Explain how governments use interest rates</li> <li>4.3 Explain how governments use monetary policy</li> <li>4.4 Explain what is meant by 'exchange rates'</li> <li>4.5 Explain the link between exchange rates and monetary policy</li> <li>4.6 Describe the effects of inflation on the economy</li> </ul>	



5. Be able to apply a number of key concepts in accounting	5.1 Process simple accounting statements using the double entry system
	5.2 Balance a business account
	5.3 Produce a trial balance
	5.4 Calculate period end adjustments
	5.5 Explain the process of preparing a financial statement
	5.6 Interpret a financial statement
	5.7 Prepare a financial statement
	5.8 Incorporate period end adjustments into a financial statement
	5.9 Prepare supply and demand curves to describe how markets work

Syllabus Content			
Торіс	Course coverage		
Introduction	<ul> <li>The economic perspective</li> <li>Types of economic system</li> <li>What is economics?</li> <li>What is accounting?</li> <li>Module overview</li> <li>Learning Outcome: 1, 2</li> </ul>		
Supply and Demand	<ul> <li>How markets work</li> <li>Describing the behaviour of sellers</li> <li>Describing the behaviour of buyers</li> <li>How prices reconcile supply and demand</li> <li>Learning Outcome: 3</li> </ul>		
Market Structures and Competition	<ul> <li>Describing markets</li> <li>Things that affect the structure of markets</li> <li>Is competition important?</li> <li>Learning Outcome: 3</li> </ul>		
Income and Output of Nations	<ul> <li>Micro and macro economics</li> <li>Describing the behaviour of national economies</li> <li>Learning Outcome: 2</li> </ul>		
Money, Interest Rates and Inflation	<ul> <li>The price of money</li> <li>The banking system</li> <li>When money loses its value</li> <li><i>Learning Outcome: 4</i></li> </ul>		
Introducing the International Dimension	<ul> <li>The international dimension</li> <li>How currencies affect international trade</li> <li>Globalisation, is this good or bad?</li> <li>Learning Outcome: 3, 4</li> </ul>		
Introduction to Accounting	<ul> <li>From economics to accounting</li> <li>Concepts and conventions in accounting</li> <li>Learning Outcome: 1</li> </ul>		



Bookkeeping	Writing things down		
	<ul> <li>Income, expenses, assets, liabilities and capital</li> </ul>		
	Learning Outcome: 5		
Period End	The accounting period		
Adjustments	<ul> <li>Accounting estimates; depreciation, inventories, payables, receivables and provisions</li> </ul>		
	Learning Outcome: 5		
Preparing Financial Statements	Putting the numbers together		
	Types of financial statement		
	How financial statements are linked		
	The annual report		
	Learning Outcome: 5		
Interpreting Financial Statements	Reasons for interpreting statements		
	Methods of interpretation		
	Reporting the results of interpretation		
	Learning Outcome: 5		
Review	The main ideas in this module		
	Economics, the big picture of markets and countries		
	Accounting, the view from the firms		
	Learning Outcome: 1, 2, 3, 4, 5		

#### Assessment Type

• Global Examination (100%)

See also Section 3 above



#### 5.11. Further Mathematics

Title	Further Mathematics
Unit reference number	H/615/2415
Credits	10
Level	3

Guided Learning Hours	60 hours	Total Qualification Time	100 hours
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Learning Outcomes;		Assessment Criteria;	
The Learner will:		The Learner can:	
1.	Understand different techniques to solve cubic equations and write expressions in terms of their partial fractions	1.1	Find the quotient of a cubic equation when divided by a linear factor, using algebraic long division
		1.2	Use the factor theorem to find roots of cubic equations
		1.3	Convert rational functions into their partial fractions
		1.4	Express improper fractions as partial fractions
2.	Be able to work with complex numbers, perform arithmetic calculations using complex numbers, solve higher order polynomials with complex roots and sketch regions in the complex plane	2.1	Solve simple quadratic equations with complex roots by completing the square or using the quadratic formula
		2.2	Represent complex numbers on an Argand diagram
		2.3	Add, subtract, multiply and divide complex numbers
		2.4	Calculate the modulus and argument of a complex number
		2.5	Solve polynomial equations with real coefficients and complex roots, appreciating that such roots occur in conjugate pairs
		2.6	Identify regions on Argand diagrams showing the area that represents solutions to inequalities involving complex numbers

3.	Be able to perform arithmetic operations using matrices,	3.1	Add and subtract matrices of the same dimension
understand basic transformations using matrices and, in addition, understand which matrices represent linear transformations and calculate the inverse of a matrix	3.2	Perform matrix multiplication, demonstrating an understanding of non-commutativity and associativity	
	linear transformations and calculate the inverse of a matrix	3.3	Find the image of points in the x-y plane under given matrix transformations
		3.4	State whether a given transformation is a linear transformation and describe a transformation in terms of its effect on a column vector in two dimensions
		3.5	Find the 2x2 matrix which represents a given linear transformation or find the linear transformation represented by a given matrix
		3.6	Use matrix products to find matrices that represent combinations of two transformations
		3.7	Calculate the determinant of a 2x2 matrix and find the inverse if it exists
4.	Understand the properties of rational functions and understand conic sections	4.1	Sketch the basic shape of quadratics, cubics, quartics, trigonometric functions and reciprocals, and understand the effect transformations have on the equations
		4.2	Sketch rational functions with a linear numerator and denominator, finding asymptotes and points of intersections with coordinate axes
		4.3	Sketch rational functions with two distinct linear factors in the denominator and repeated factors in the denominator
		4.4	Find stationary points on the graphs of rational functions
		4.5	Recognise the standard equations of parabolas, ellipses and hyperbolas in both Cartesian and parametric form and sketch the given equations, understanding the effects of transformations on the given equations
		4.6	Find the Cartesian equations of parabolas, given their focus and directrix
		4.7	Find the coordinates of the focus and an equation for the directrix of a parabola



5. Understand how to use sigma notation to calculate the sum of	5.1	Use the sigma notation, $\boldsymbol{\Sigma}$ , to calculate the sum of simple finite series
simple finite series, and appreciate the relationship between the roots polynomials and their coefficients	5.2 of	Use the formula for the sum of the first n natural numbers, and the sum of the squares and cubes of the first n natural numbers
	5.3	Use the method of differences to find the sum of a series
	5.4	Find the sum and product of the roots of a quadratic equation, and derive a quadratic equation given information about its roots
6. Understand further techniques in calculus to differentiate combinatio	6.1	Use the chain rule, product rule or quotient rule to differentiate functions
of functions, how to use these techniques to solve problems	6.2	Covert parametric equations into Cartesian form
parametrically and how to derive	6.3	Differentiate a curve whose equation is given parametrically
	6.4	Find the equations of tangents and normals of curves whose equations are given parametrically
	6.5	Use the chain and product rule to find second, third and higher order derivatives
	6.6	Derive and find the Maclaurin expansion of a given function in ascending powers of <i>x</i>
	6.7	Derive and use Taylor's series to expand a given function in ascending powers of <i>x</i>
7. Understand further trigonometry ar hyperbolic functions	nd 7.1	Solve problems involving trigonometric identities
	7.2	Understand and use compound angle formulae
	7.3	Understand and use the double angle formulae
	7.4	Write down the definitions of the hyperbolic functions, including the reciprocal hyperbolic functions
	7.5	Sketch the graphs of the main hyperbolic functions, including the reciprocal hyperbolic functions
	7.6	Solve equations using hyperbolic functions

8.	Understand Euler's relation and De Moivre's theorem and derive relations between trigonometric functions and hyperbolic functions	8.1	Calculate the product and quotient of two complex numbers in polar coordinate form
		8.2	Derive Euler's relation and write complex numbers in exponential form
		8.3	Derive de Moivre's theorem and obtain formulae for $\sin n\theta$ and $\cos n\theta$ in terms of $\sin \theta$ and $\cos \theta$
		8.4	Use the exponential form of a complex number to derive relations between trigonometric functions and hyperbolic functions

Syllabus Content				
Торіс	Course coverage			
Cubic Polynomials & Partial Fractions	<ul> <li>Products of polynomials and equating coefficients</li> <li>Algebraic long division</li> <li>Factor theorem</li> <li>Factorising cubic polynomials</li> <li>Expressing rational functions in terms of their partial fractions, given: <ul> <li>(a) Two linear factors in the denominator</li> <li>(b) A repeated root</li> </ul> </li> </ul>			
	<ul> <li>How to express improper algebraic fractions in terms of their partial fractions</li> <li>Learning Outcome: 1</li> </ul>			
Complex Numbers I	<ul> <li>Completing the square of quadratic trinomials</li> <li>An introduction to complex numbers</li> <li>Solving quadratic equations with complex roots</li> <li>Representing complex numbers on an Argand diagram</li> <li>Learning Outcome: 2</li> </ul>			
Complex Numbers II	<ul> <li>The modulus-argument form of a complex number</li> <li>Solve further problems involving complex numbers</li> <li>Solve polynomial equations with real coefficients</li> <li>Loci in the complex plane</li> <li>Inequalities with complex numbers</li> <li>Learning Outcome: 2</li> </ul>			
Matrices	<ul> <li>An introduction to matrices including performing basic operations on matrices</li> <li>Properties of matrix multiplication including non-commutativity and associativity</li> <li>Finding and using the inverse of a matrix when it exists</li> <li>Linear transformations</li> <li>Learning Outcome: 3</li> </ul>			



Graphs of Rational Functions	<ul> <li>Sketching the basic shape of quadratics, cubics, trigonometric functions and reciprocals, understanding the effects of transformations of these graphs</li> <li>Sketching rational functions with linear numerators and denominators, calculating any asymptotes</li> <li>Finding any turning points on graphs of rational functions without using calculus</li> <li>Learning Outcome: 4</li> </ul>
Series	<ul> <li>Calculating basic arithmetic series</li> <li>Use of sigma notation to calculate the sum of given series</li> <li>Use of the formula for the sum of the first <i>n</i> natural numbers (including squares and cubes)</li> <li>Method of differences</li> <li>Learning Outcome: 5</li> </ul>
Further Calculus Techniques I	<ul> <li>Further techniques in differentiation of more complex rational functions</li> <li>Use of the chain rule, the product rule and quotient rule</li> <li>An introduction to trigonometric identities and techniques to differentiate the trigonometric functions and their reciprocals</li> <li><i>Learning Outcome: 6</i></li> </ul>
Further Calculus Techniques II & Maclaurin and Taylor Series	<ul> <li>Binomial series expansion for (1 + x)<sup>n</sup></li> <li>Use of the chain and product rule to find second, third and higher order derivatives</li> <li>Maclaurin series expansion of a given function in ascending powers of x</li> <li>Taylor's series to expand a given function in ascending powers of x</li> <li>Learning Outcome: 6</li> </ul>
Trigonometric Identities & Hyperbolic Functions	<ul> <li>Solving trigonometric equations including solving problems using trigonometric identities</li> <li>Definitions of hyperbolic functions and their graphs</li> <li>Osborn's rule</li> <li>Differentiating hyperbolic functions</li> <li>Solving equations involving hyperbolic functions</li> <li>Learning Outcome: 7</li> </ul>
Euler's Relation and De Moivre's Theorem	<ul> <li>Compound angle identities</li> <li>Products and quotients of complex numbers in polar form</li> <li>Exponential form of complex numbers and Euler's formula</li> <li>De Moivre's theorem</li> <li>Relationships between trigonometric and hyperbolic functions</li> <li>Learning Outcome: 8</li> </ul>



Parametric Equations	• Drawing equations given parametrically by plotting points on the graph		
	Converting functions between their Cartesian form and parametric form		
	Differentiating curves given in parametric form		
	<ul> <li>Tangents and normals to curves given parametrically</li> </ul>		
	The second derivative		
	Learning Outcomes: 6		
Coordinate	An introduction to conic sections		
Systems	• The parabola and its transformations, including finding the equation of the parabola given its focus and directrix		
	The ellipse and its transformations		
	The hyperbola and its transformations		
	Learning Outcome: 4		

Assessment Type		
Global Examination (100%)		
See also Section 3 above		



## 5.12 Physics

Title	Physics
Unit reference number	K/615/2416
Credits	10
Level	3

Guided Learning Hours	43 hours	Total Qualification Time	100 hours
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Learning Outcomes;	Assessment Criteria;		
The Learner will:	The Learner can:		
1. Understand the mechanics of motion	1.1 Define and explain the relationships of displacement, velocity and acceleration		
	1.2 Calculate average and instantaneous velocity and acceleration		
	1.3 Solve problems involving equations of motion		
	1.4 Demonstrate the use of motion equations for non-constant acceleration		
	1.5 Describe the motion of objects in free fall and calculate their position and velocity		
	1.6 Explain the importance of circular motion		
2. Understand the mechanics of forces	2.1 Explain the concept of force and how it causes change in motion		
	2.2 State and apply Newton's three laws of motion		
	2.3 Apply Newton's laws in one- dimensional and circular motion		
	2.4 Describe the conditions and calculate the forces necessary for equilibrium		
3. Understand the mechanics of energy	3.1 Explain the meaning of work and find out the work done by constant forces		
	3.2 Evaluate the work done by variable forces with position		
	3.3 Define the concept of kinetic energy and state its relation to work		
	3.4 Find out the relation between energy and power		
	3.5 Define potential energy and calculate it dependent on conservative force as a function of position		



4.	Understand the mechanics of momentum	4.1	Explain the principle of momentum and conservation of momentum
		4.2	Describe the difference between inelastic and elastic collisions
		4.3	Find out the centre of mass for individual particles
		4.4	Calculate rotational kinetic energy
5.	Understand the mechanics of periodic	5.1	Explain the simple harmonic oscillator
	motion	5.2	Determine the maximum speed of an oscillator system
		5.3	Measure the acceleration of a simple pendulum due to gravity
6.	Understand the basic principles of thermal physics	6.1	Explain the meaning of temperature and heat
		6.2	Describe the three phases of matter and find out the energies for phase change
		6.3	Calculate thermal expansion effects in solids, liquids and gases
		6.4	State the first law of thermodynamics and explain how thermal energy is involved in the conservation of energy principle
		6.5	Describe the effects of thermodynamic processes
		6.6	Define the specific heat of an ideal gas
		6.7	Explain the second law of thermodynamics and its limitations
		6.8	Calculate the efficiencies of heat engines and refrigerators
		6.9	Explain the meaning of, or calculate, entropy

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7.	Understand the fundamentals of electrostatics	7.1	Examine the behaviour of electric charge using Coulomb's law
		7.2	Explain the meaning of, or calculate, an electric field
		7.3	Explain Gauss's law for electric fields
		7.4	Explain the concept of electric potential difference
		7.5	Calculate the potential difference between two points in a simple electric field
		7.6	Calculate the electric potential for a point in the electric field of a point charge
		7.7	Describe charge distribution on conductors
		7.8	Explain the concept of capacitance
		7.9	Find out the capacitance of a parallel plate capacitor
		7.10	Calculate the equivalent capacitance of a combination of capacitors consisting of parallel and series capacitors
		7.11	Demonstrate how dielectrics make capacitors more effective
8.	Understand the fundamentals of electrodynamics	8.1	Describe electric current and current density
		8.2	Describe electrical resistance
		8.3	Relate electrical current, voltage and resistance using Ohm's law
		8.4	Calculate electric power
		8.5	Draw a circuit with resistors in parallel and in series
		8.6	Explain the reason why the total resistance of a parallel circuit is less than smallest resistance of any of the resistors in the circuit
		8.7	Analyse a complex circuit using Kirchhoff's rules
		8.8	State the main functions of voltmeters and ammeters

9. L n	Understand the fundamentals of magnetism	9.1	Describe the meaning of magnetic field, magnetic field lines and magnetic flux
		9.2	Calculate the motion of a charged particle in a magnetic field
		9.3	Explain the relation between magnetic fields and magnetic forces
		9.4	Calculate the magnetic field of a moving charge
		9.5	Calculate the magnetic field of a current element
		9.6	Calculate the force between parallel conductors
		9.7	Understand Ampere's law
		9.8	Calculate a magnetic field using Ampere's law
		9.9	Explain electromagnetic induction
		9.10	Calculate an induced electric field using Faraday's law

Syllabus Content				
Торіс	Course coverage			
Motion	Definition of kinematics and dynamics			
	<ul> <li>Displacement, time, velocity and acceleration</li> </ul>			
	Equations of motion			
	Non-uniform motion			
	<ul> <li>Free falling bodies and projectile motion</li> </ul>			
	Circular motion			
	Learning Outcome: 1			
Forces	Types of forces			
	Newton's first law			
	Newton's second law			
	Newton's third law			
	<ul> <li>Newton's second law applied in circular motion</li> </ul>			
	• Equilibrium			
	Learning Outcome: 2			
Work and energy	Work and kinetic energy			
	The work-energy conservation law			
	Power			
	Potential energy			
	Learning Outcome: 3			



Momentum and collisions	<ul> <li>Linear momentum</li> <li>Conservation of momentum</li> <li>Collisions</li> <li>Elastic collisions</li> <li>Inelastic collisions</li> <li>Centre of mass frame</li> <li>Rotational kinetic energy</li> </ul>
	Learning Outcome: 4
Periodic motion	<ul> <li>Simple harmonic motion</li> <li>Total energy of a harmonic oscillator</li> <li>Importance of simple harmonic motion</li> <li>Motion of a simple pendulum</li> <li>Learning Outcome: 5</li> </ul>
Thermal physics	<ul> <li>Temperature and heat</li> <li>Thermal properties of matter</li> <li>The first law of thermodynamics</li> <li>The second law of thermodynamics</li> <li><i>Learning Outcome: 6</i></li> </ul>
Electrostatics I	<ul> <li>Electric charge and Coulomb's law</li> <li>Electric field</li> <li>Charge and electric flux</li> <li>Gauss's law</li> <li>Learning Outcomes: 7</li> </ul>
Electrostatics II	<ul> <li>Electric potential</li> <li>Conductors, capacitors and capacitance</li> <li>Capacitors in series and parallel connection</li> <li>Dielectrics</li> <li>Learning Outcome: 7</li> </ul>
Electrodynamics I	<ul> <li>Electric current</li> <li>Resistivity and resistance</li> <li>Electromotive force in electric circuits</li> <li>Energy and power in electric circuits</li> <li>Learning Outcomes: 8</li> </ul>
Electrodynamics II	<ul> <li>Direct current circuits</li> <li>Resistors in series and parallel</li> <li>Kirchhoff's laws</li> <li>Electrical measuring instruments</li> <li>Learning Outcome: 8</li> </ul>



Magnetism I	Magnetic field, magnetic field lines and magnetic flux
	<ul> <li>Motion of a charged particle in a magnetic field</li> </ul>
	<ul> <li>Magnetic force on a current-carrying conductor</li> </ul>
	Magnetic field of a moving charge
	Magnetic field of a current element
	Learning Outcomes: 9
Magnetism II	Magnetic field of a current-carrying conductor
	Force between parallel conductors
	Ampere's law
	<ul> <li>Induction and Faraday's law</li> </ul>
	Induced electric field
	Learning Outcome: 9
	<ul> <li>Induced electric field</li> <li>Learning Outcome: 9</li> </ul>

Assessment Type		
Global Examination (100%)		
See also Section 3 above		



## 5.13 Chemistry

Title	Chemistry
Unit reference number	R/616/8688
Credits	10
Level	3

Guided Learning Hours	52 hours	Total Qualification Time	100 hours
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Learning Outcomes;	Assessment Criteria;	
The Learner will:	The Learner can:	
1. Understand atomic structure and	1.1. Describe the basic structure of atoms.	
bonding	1.2. Explain the different models of atomic structure.	
	1.3. Deduce the electronic configuration of atoms and ions.	
	1.4. Perform calculations using relative atomic mass and relative molecular mass.	
	1.5. Perform calculations using chemical formulae, balanced equations the mole and Avogadro Constant and molar volume.	
	1.6. Demonstrate titration techniques and solve associated calculations.	
	1.7. Identify and calculate experimental uncertainties.	
	1.8. Describe metallic and intramolecular bonding and properties.	
	1.9. Describe intermolecular bonding and properties.	
	1.10. Describe and predict the shapes of covalent molecules and polyatomic ions using the Valence Shell Electron Pair Repulsion (VSEPR) Theory.	



2.	Understand energetics, rates,	2.1	Define examples of standard enthalpy
	kinetics and chemical equilibria		changes.
		2.2	Demonstrate that enthalpy change can be
			calculated from a potential energy diagram
		2.3	Explain how calorimetry can be used to
			measure enthalpy changes.
		2.4	Apply Hess's Law to calculations of
			enthalpy changes and bond enthalpy
			values.
		2.5	Describe, using collision theory, the effects
			of concentration, pressure, surface area
			(particle size), temperature and collision
			geometry on reaction rates.
		2.6	Define activation energy.
		2.7	Use energy distribution diagrams to
			explain the effect of temperature on
			reaction rate.
		2.8	Determine the order of a reaction from
			experimental data and rate equations.
		2.9	Calculate the rate constant and its units.
		2.10	Using the rate equation, predict the rate
			determining step and a possible
			mechanism.
		2.11	Describe the equilibrium chemistry of acids and bases.
		2.12	Construct equilibrium expressions
		2.13	Explain and use the terms: pH. Kw. Ka and
		2.10	pKa.
		2.8 2.9 2.10 2.11 2.12 2.13	Determine the order of a reaction f experimental data and rate equations. Calculate the rate constant and its unit Using the rate equation, predict the determining step and a poss mechanism. Describe the equilibrium chemistry of a and bases. Construct equilibrium expressions. Explain and use the terms: pH, Kw, Ka pKa.

3. Understand the key points of	3.1.	State and explain the trends in melting and
inorganic chemistry		boiling points down a group and across a period.
	3.2.	State and explain the trends in covalent
		radius across periods and down groups.
	3.3.	State and explain the trends in ionisation
		energies across periods and down groups.
	3.4.	State and explain the trends in
		aroups
	35	Understand the trends in the properties of
	0.0.	oxides, chlorides and hydrides across the
		Periodic Table.
	3.6.	Define the terms acidic, basic and
		amphoteric oxides, and know the reactions
		of some chlorides with water.
	3.7.	Deduce the electronic configurations and
		oxidation states of transition metal atoms and ions.
	3.8.	Explain what ligands are and how they
		bond in transition metal complexes.
	3.9.	Explain and deduce coordination number in a transition metal-ligand complex.
	3.10.	Name transition metal-ligand complexes
		according to IUPAC rules.
	3.11.	Explain why some transition metal
		complexes are coloured.
	3.12.	Understand how transition metals and their
		compounds can act as catalysts.

4. Understand functional groups,	4.1	Describe the concept of a functional group.
naming organic compounds and	4.2	Convert between molecular, structural and
isomerism		skeletal formulae of compounds with no
		more than ten carbons in length.
	4.3	Use the IUPAC nomenclature rules to
		name the following simple organic
		compounds: alkanes, alkenes, alcohols,
		aldehydes, ketones, carboxylic acids,
		esters and arenes (one benzene ring with
		one or more simple substituents).
	4.4	Interpret and use the general, structural,
		and skeletal formulae of the following
		classes of compound: alkanes, alkenes
		and simple arenes; haloalkanes; alcohols;
		aldehydes and ketones; carboxylic acids,
		esters and acyl chlorides.
	4.5	Explain that stereoisomers are isomers
		that have the same molecular formula but
		differ in structural formulae (a different
	1.0	spatial arrangement of their atoms).
	4.6	Understand that geometric isomers are
		stereoisomers where there is a lack of
		C-C
	47	Explain that these isomers are labelled cis
		and trans dependent on whether the
		substitutes are on the same or different
		sides of the $C=C$
	4.8	Recognise that optical isomers are non-
		superimposable mirror images of
		asymmetric molecules and are referred to
		as chiral molecules or enantiomers.
	4.9	Explain how isomers can often have very
		different physical or chemical properties
		from each other.
5 Understand ergenie ergthesie	<b>5</b> 4	Decompion and use different types of
5. Understand organic synthesis	5.1.	Recognise and use different types of
reactions		aubstitution addition alimination
		substitution, addition, emmination,
		reduction
	52	Devise synthetic routes with no more than
	0.2.	three steps from a given reactant to a final
		nroduct
	53	Deduce the reactions that compounds can
	0.0.	undergo by looking at their structures

<ul> <li>chemistry</li> <li>bonding and stability of the benzene ring.</li> <li>6.2. Name and draw various aromatic compounds.</li> <li>6.3. Describe substitution reactions of benzene: alkylation, nitration, sulfonation and halogenation as examples of electrophilic substitution in benzene and other aromatic compounds.</li> <li>6.4. Compare and contrast the electrophilic addition reaction used by alkenes, to the electrophilic substitution reaction used by benzene.</li> <li>7. Understand the techniques used in organic analysis</li> <li>7.1. Explain how mass spectrometry can be used to determine the accurate molecular mass and structural features of an organic compound.</li> <li>7.2. Explain how chromatographic techniques can be used to work out an empirical formula.</li> <li>7.3. Explain how elemental microanalysis can be used to identify certain functional groups in an organic compound and work out which compound is responsible for a spectra by identifying which functional groups are responsible for peaks.</li> <li>7.5. Explain how proton nuclear magnetic resonance spectroscopy (proton NMR) can give information about the different environments of hydrogen atoms in an organic many formula and organic mass of hydrogen atoms in an organic many setures.</li> </ul>	6.	Understand aromatic (arene)	6.1.	Describe and explain the structure,
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<ul> <li>an organic compound and work out which compound is responsible for a spectra by identifying which functional groups are responsible for peaks.</li> <li>7.5. Explain how proton nuclear magnetic resonance spectroscopy (proton NMR) can give information about the different environments of hydrogen atoms in an organic molecule and how many</li> </ul>			7.4.	used to identify certain functional groups in
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can give information about the different environments of hydrogen atoms in an organic molecule and how many				resonance spectroscopy (proton NMR)
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hydrogen atoms there are in each of these				hydrogen atoms there are in each of these
environments.				environments.



Syllabus Content				
Intermediate Level				
Торіс	Course coverage			
Atomic structure and stoichiometry	<ul> <li>Protons, neutrons and electrons; their relative charges and relative masses.</li> <li>Protons, neutrons and electrons present in atoms, isotopes and ions given mass and atomic numbers and vice versa.</li> <li>Development of the models of atomic structure from Rutherford, via Bohr to Quantum Mechanics.</li> <li>Quantum numbers, atomic orbitals and relative energies.</li> <li>Atomic orbitals, their shape and their relative energies.</li> <li>Electronic configuration of atoms 1-20 in spectroscopic notation.</li> <li>Application of chemical formulae to show the relationships between mass, moles, gram formula mass, Avogadro's constant, concentration and molar volume.</li> <li>Simple acid-base titrations, back titrations, redox and complexometric titrations</li> </ul>			
	Uncertainties in experiments.			
	Learning Outcome 1			
Chemical Bonding, Structure and Properties	<ul> <li>Metallic bonding</li> <li>Electronegativity and the bonding continuum to distinguish between covalent and ionic bonds</li> <li>Ionic and covalent intramolecular chemical bonding</li> <li>Dative covalent bonding and properties in term of melting and boiling points.</li> <li>Intermolecular chemical bonding ('van der Waals'):         <ul> <li>London dispersion forces</li> <li>Permanent dipole-permanent dipole interactions</li> <li>Hydrogen bonding</li> </ul> </li> <li>Representations using 'dot-and cross' (Lewis) diagrams, shapes in some simple molecules and ions using Valence Shell Electron Repulsion (VSEPR) Theory</li> </ul>			
Periodicity in the	Trends in melting and boiling points due to bonding.			
Periodic Table	<ul> <li>Trends in covalent radius across periods and down groups of the Periodic Table.</li> </ul>			
	<ul> <li>Trends in ionisation energies across periods and down groups of the Periodic Table.</li> </ul>			
	<ul> <li>Trends in electronegativity across periods and down groups of the Periodic Table.</li> </ul>			
	Learning Outcome 3			



Transition Metal Chemistry	<ul> <li>Electronic configuration of transition metal atoms and ions.</li> <li>Oxidation states of transition metals and ions.</li> <li>Oxidation number during oxidation or reduction reactions.</li> <li>Ligands in transition metal complexes</li> <li>Coordination number.</li> <li>Naming transition metal ligand complexes.</li> <li>Transition metal complexes and colour.</li> <li>Transition metals as catalysts.</li> </ul>
Chemical Energetics	<ul> <li>Enthalpy change (ΔH).</li> <li>Calorimetry (ΔH=cmΔT).</li> </ul>
	<ul><li>Applications of Hess's law, including Born-Haber Cycles.</li><li>Bond enthalpies</li></ul>
	Learning Outcome 2
Reaction-rates	Collision theory.
and Kinetics	<ul> <li>Factors affecting the rate of a reaction.</li> </ul>
	<ul> <li>Activation energy and the Maxwell-Boltzman energy distribution curve.</li> </ul>
	<ul> <li>Order of a reaction (0, 1, 2, 3) from experimental data and rate equations.</li> </ul>
	Rate constants and units of k.
	• Rate equation, rate determining step and possible mechanism.
	Learning Outcome 2
Chemical	Equilibrium constant, k.
Equilibria	• Composition of reaction mixtures, from the equilibrium equation.
	Use of Kc and Kp values.
	<ul> <li>Types of chemical equilibria-homogeneous and heterogeneous.</li> </ul>
	Le Chatelier's principle.
	Equilibrium and catalysts.
	<ul> <li>Definitions of acid, base, conjugate acid and conjugate base.</li> </ul>
	Kw, the ionic product of water.
	<ul> <li>Ka and the strengths of acids and bases.</li> </ul>
	<ul> <li>Calculating the pH of solutions of strong acids and bases from [H+] and the pH of solutions of weak acids from Ka values.</li> </ul>
	Learning Outcome 2



Organic	Identification of organic compounds using functional groups			
nomenclature	Conversion between molecular, structural and skeletal formulae			
and isomerism	<ul> <li>Conversion between molecular, structural and skeletal formulae of compounds with no more than ten carbons in length.</li> </ul>			
	IUPAC nomenclature rules for: alkanes, alkenes, alcohols,			
	aldehydes, ketones, carboxylic acids and esters.			
	Optical isomers			
	<ul> <li>Identifying and drawing enantiomers (R and S) using</li> </ul>			
	wedges and dashes.			
	<ul> <li>Identification of chiral carbon centres.</li> </ul>			
	<ul> <li>Identification using polarimeter</li> </ul>			
	Geometric isomerism			
	<ul> <li>Formation of sigma and pi bonds on the C=C double bond (hybridisation may be used to explain bonding but will not be specifically examined).</li> </ul>			
	<ul> <li>Identifying and drawing Cis and Trans isomers.</li> </ul>			
	<ul> <li>Restricted rotation of the double bond to geometric isomerism.</li> </ul>			
	<ul> <li>Boiling point features of Cis and Trans isomers.</li> </ul>			
	<ul> <li>Compare and explain the melting point features of Cis and Trans isomers.</li> </ul>			
	Learning Outcome 4			
Organic	Preparation and reactions of alkanes.			
Synthesis	<ul> <li>Preparation and reactions of alkenes.</li> </ul>			
Reactions- Part	<ul> <li>Preparation and reactions of haloalkanes.</li> </ul>			
	Learning Outcome 5			
Organic	Preparation and reactions of alcohols.			
Synthesis	<ul> <li>Preparation and reactions of carboxylic acids and acyl chlorides.</li> </ul>			
Reactions- Part	<ul> <li>Esters - preparation, uses, percentage vield and atom economy.</li> </ul>			
2	<ul> <li>Preparation and reactions of aldehydes and ketones.</li> </ul>			
	Learning Outcome 5			
Aromatic	The structure, bonding and stability of the benzene ring			
Chemistry	Naming and drawing aromatic compounds (one benzene ring with			
	one or more simple substituents).			
	How the pattern of electron density renders electrophilic attack			
	the dominant reaction type in benzene.			
	Drawing and discussing the mechanisms for the following     electrophilic substitution reactions: alkylation, nitration, sulfonation			
	and halogenation.			
	<ul> <li>Comparison of electrophilic addition reactions used by alkenes to the electrophilic substitution reaction used by benzene.</li> </ul>			
	Learning Outcome 6			



Organic	<ul> <li>Introduction to mass spectrometry.</li> </ul>
Analysis	<ul> <li>Interpretation of the mass spectra of various simple organic</li> </ul>
	molecules.
	Chromatographic techniques.
	Elemental microanalysis
	<ul> <li>Background to Infrared spectroscopy.</li> </ul>
	<ul> <li>Infrared spectroscopy in structure determination (functional group identification).</li> </ul>
	<ul> <li>Background on proton nuclear magnetic resonance (H-NMR).</li> </ul>
	<ul> <li>Shielding and de-shielding related to the chemical shift values.</li> </ul>
	<ul> <li>Use of tetramethysilane (TMS) as an internal standard.</li> </ul>
	Use of H-NMR in the determination of simple organic compound
	structure.
	Learning Outcome 7

Assessment Type	
Global Examination (100%)	
See also Section 3 above	



## 5.14 Biology

Title	Biology
Unit reference number	Y/616/8689
Credits	10
Level	3

Guided Learning Hours	52 hours	Total Qualification Time	100 hours
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Learning Outcomes;	Assessment Criteria;
The Learner will:	The Learner can:
1. Understand Cell Structure	1.1 Describe the components and function of cell membranes
	1.2 Explain the movement of molecule and ions across cell membranes
	1.3 Describe the main organelles found in human cells and explain their function
	1.4 Explain how cell differentiation means cells are adapted for roles in the body
2. Understand the systems involved	2.1 Describe the structures and explain
in the co-ordination and control of	functions of the CNS and PNS.
the body	across synapses.
	2.3 Describe the components of the Endocrine system.
	2.4 Explain the concept of feedback loops, with examples form the human body.
	2.5 Describe of hormones in controlling metabolism with Thyroxine as a named example.
	2.6 Explain the of hormones in controlling the
	<ul> <li>2.7 Describe the structure and function of the eyes, ears nose (in relation so smell), mouth (in relation to taste) and the skin (in relation to sensory perception).</li> </ul>





3	Understand the systems involved	3.1	Describe the structure and explain the
	movement and energy release in		functions of the skeleton.
	the body	3.2	Describe the structure and explain the
			functions of the three adult muscle types.
		3.3	Describe and explain the function,
			structure and components of human
			circulatory systems.
		3.4	Explain the specific function of the heart
			and how heart rate is governed.
		3.5	Describe the structure, function and
			control of the respiratory system.
		3.6	Explain gas exchange.
		3.7	Explain respiratory disease in relation to
			lung structure and function.
		3.8	Explain the production of energy using
			aerobic respiration and anaerobic
			respiration to meet the bodies energy
			requirements.
		3.9	Explain the use of different sources of
			energy in different circumstances, and
			how this helps the body to cope with a
			lack of food.
4	Understand how the body obtains	4.1	Describe and explain the structure of the
4	Understand how the body obtains the nutrients it needs and	4.1	Describe and explain the structure of the digestive system.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1	Describe and explain the structure of the digestive system. Describe and explain the digestive
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4 4.5	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4 4.5	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4 4.5 4.6	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4 4.5 4.6	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4 4.5 4.6 5.1	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease.
4	<ul> <li>Understand how the body obtains the nutrients it needs and disposes of waste products</li> <li>Understand the body's defences against disease and infection</li> </ul>	4.1 4.2 4.3 4.4 4.5 4.6 5.1	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease.
4	<ul> <li>Understand how the body obtains the nutrients it needs and disposes of waste products</li> <li>Understand the body's defences against disease and infection</li> </ul>	4.1 4.2 4.3 4.4 4.5 4.6 5.1 5.2	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease. Describe and explain the bodies innate immune system. Describe and explain the bodies active immune system.
4	<ul> <li>Understand how the body obtains the nutrients it needs and disposes of waste products</li> <li>Understand the body's defences against disease and infection</li> </ul>	4.1 4.2 4.3 4.4 4.5 4.6 5.1 5.2 5.2	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease. Describe and explain the bodies innate immune system. Describe and explain the bodies active immune system.
4	Understand how the body obtains the nutrients it needs and disposes of waste products	4.1 4.2 4.3 4.4 4.5 4.6 5.1 5.2 5.3 5.4	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease. Describe and explain the bodies innate immune system. Describe and explain the bodies active immune system. Explain how vaccines work.
4	<ul> <li>Understand how the body obtains the nutrients it needs and disposes of waste products</li> <li>Understand the body's defences against disease and infection</li> </ul>	4.1 4.2 4.3 4.4 4.5 4.6 5.1 5.2 5.3 5.4	Describe and explain the structure of the digestive system. Describe and explain the digestive process which occur in the different areas of the digestive system with reference to enzymes and absorption. Explain the basics of excretion through the skin, digestive system and kidneys. Explain the sources and roles of macronutrients in the body. Explain the sources and roles of example micronutrients in the body. Link nutritional imbalance to disease. Describe and explain the bodies innate immune system. Describe and explain the bodies active immune system. Explain how vaccines work. Explain how immune system faults can cause illness



6. Understand the process of	6.1 Explain cell division by mitosis, to
reproduction	produce genetically identical daughter cells.
	6.2 Explain cell division by meiosis to produce genetically distinct gametes
	6.3 Describe the main structures of the male and female reproduction systems.

Syllabus Content				
Intermediate Level				
Торіс	Course coverage			
Cell Structure	<ul> <li>Components and function of cell membranes</li> <li>Movement across cell membranes</li> <li>Cell organelles and their function</li> <li>Cell differentiation for roles in the body, e.g. nerve cells</li> </ul>			
Nervous System	<ul> <li>Structure and function of the CNS</li> <li>Structure and function of the PNS</li> <li>Transmission of impulses across synapses</li> <li>Learning outcome 2</li> </ul>			
Endocrine System	<ul> <li>Components of the Endocrine system</li> <li>Concept of feedback loops</li> <li>Role of hormones in controlling metabolism</li> <li>Role of hormones in controlling the menstrual cycle</li> <li>Roll of endocrine system during pregnancy</li> </ul>			
Sense Organs	<ul> <li>Structure and function of the eyes</li> <li>Structure and function of the ears</li> <li>Structure and function of the nose in relation so smell</li> <li>Structure and function of the mouth in relation to taste</li> <li>Sensory perception in the skin</li> </ul>			
Skeleton System and Muscles	<ul> <li>Structure and role of the skeleton</li> <li>Structure and function of the three adult muscle types</li> <li>Learning outcome 3</li> </ul>			
Circulation	<ul> <li>The blood circulation systems.</li> <li>The lymphatic circulation system</li> <li>Comparative anatomy of blood vessels, and the reasons for these differences</li> <li>Major blood vessels of the body and the key functions</li> <li>Structure and function of the heart</li> <li>Heart rhythms, blood pressure</li> </ul>			



Respiration (gas exchange) Metabolism and Cellular Respiration	<ul> <li>The structure, function and control of the respiratory system.</li> <li>Gas exchange.</li> <li>Respiratory disease in relation to lung structure and function.</li> <li>Learning outcome 3</li> <li>Production of energy using aerobic respiration</li> <li>Production of energy using anaerobic respiration</li> <li>Uses of different sources of energy in different circumstances</li> </ul>
	Learning outcome 3
Digestion and Excretion	<ul> <li>Structure of the digestive system</li> <li>Digestion and absorption in different areas of the digestive tract</li> <li>Role of the liver in digestion and excretion</li> <li>Role of the kidneys in excretion</li> <li>Role of skin in excretion</li> <li>Learning outcome 4</li> </ul>
Nutrition	<ul> <li>Main food groups and their sources</li> <li>Role of macronutrients in the body</li> <li>Role of Micronutrients in the body</li> <li>Diseases caused by diet</li> </ul>
The immune system	<ul> <li>Barriers to infection</li> <li>The Innate immune system.</li> <li>The Adaptive immune system.</li> <li>Vaccination.</li> <li>Hypersensitivity, anaphylaxis, autoimmune disease and immunodeficiency.</li> </ul>
Genetics and reproduction	<ul> <li>Cellular reproduction and growth</li> <li>Meiosis and gamete production</li> <li>Role of gametes in the mixing of genetic information</li> <li>Structure of female reproductive organs</li> <li>Structure of male reproductive organs</li> </ul>

# Assessment Type Global Examination (100%) See also Section 3 above

## 6. Results and Certificates

The grade descriptors Pass, Merit and Distinction are awarded by unit to successful candidates. A Pass is awarded for an overall unit mark of between 40 and 59. A Merit is awarded for an overall unit mark of between 60 and 69 and a Distinction is awarded for an overall unit mark of 70 and above. Candidates who obtain an overall unit mark of below 40 are classed as a fail in the unit and may resit.

A final qualification mark will be awarded upon successful completion of all units. This is calculated by finding the average mark of all units that make up the qualification. Please note that in exceptional circumstances, NCC Education may be required to change the algorithm to calculate a final qualification mark for a learner in order to secure the maintenance of standards over time. Any necessary changes to this algorithm would be shared with Centres and learners promptly by NCC Education. An example is given below:

Unit	Unit Points	Candidate Mark	Unit Points * Candidate Mark
Advanced English Language Skills	20	86	1720
Culture Studies	10	72	720
Developing English Language Skills	30	81	2430
English for Academic Purposes	10	88	880
Foundation Mathematics	10	93	930
Introduction to Business	10	90	900
Introduction to Accounting and Economics	10	90	900
Study and Communication Skills	20	82	1640
	120	682	10120
10120/potential 12,000 = 84			

Grade Descriptors incorporate characteristics intended to provide a general indication of assessment performance in relation to each unit's Learning Outcomes in this specification. The final unit grade awarded will depend on the extent to which a candidate has satisfied the Assessment Criteria. A qualification is awarded when the candidate has achieved at least a pass in all relevant units.

After each assessment cycle, results slips are issued (in electronic format) which detail the grades achieved, i.e. Fail, Pass, Merit or Distinction (see Appendix 1) and numerical marks. Certificates which contain your qualification grade and pass mark are then dispatched to Centres.

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# 7 Further Information

For more information about any of NCC Education's products, please contact <u>customer.service@nccedu.com</u> or, alternatively, please visit <u>www.nccedu.com</u> to find out more about our suite of high-quality British qualifications and programmes.



## 8. Appendix 1 Grade Descriptors

The grade descriptors *Pass*, *Merit* and *Distinction* are awarded to successful candidates. The following are characteristics intended to provide a general indication of assessment performance in relation to each Learning Outcome in this specification. The final grade awarded will depend on the extent to which a candidate has satisfied the Assessment Criteria overall.

Grade descriptors	for Developing	English Language	Skills
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Learning Outcome	Pass	Merit	Distinction
Be able to communicate confidently, speaking on a range of familiar topics, using appropriate tenses, vocabulary and register	Demonstrate adequate level of communication	Demonstrate robust level of communication	Demonstrate highly comprehensive level of communication
Be able to comprehend the main content and overall meaning of a range of general texts in English	Demonstrate adequate level of comprehension	Demonstrate robust level of comprehension	Demonstrate high level of comprehension
Be able to write factual, descriptive and explanatory texts, utilising a range of linguistic structures and vocabulary, to complete clearly defined tasks	Demonstrate ability to perform the task	Demonstrate ability to perform the task consistently well	Demonstrate ability to perform the task to the highest standard
Be able to apply a range of listening strategies in order to understand predictable discussions and basic factual presentations	Demonstrate adequate and appropriate application	Demonstrate sound and consistently appropriate application	Demonstrate detailed and highly appropriate application



## Grade descriptors for English for Academic Purposes

Learning Outcome	Pass	Merit	Distinction
Be able to utilise	Demonstrate	Demonstrate	Demonstrate highly
different 'pre', 'while'	adequate and	appropriate and	appropriate and
and post reading	appropriate use	effective use	effective use
strategies to			
understand academic			
texts			
Be able to demonstrate	Demonstrate	Demonstrate a	Demonstrate a
an appropriate	an adequate	robust	comprehensive
academic vocabulary	vocabulary	vocabulary	vocabulary
Be able to structure	Demonstrate	Demonstrate	Demonstrate ability
sentences, paragraphs	ability to	ability to perform	to perform the task
and full texts to suit	perform the	the task	to the highest
academic requirements	task	consistently well	standard
Be able to utilise 'pre',	Demonstrate	Demonstrate	Demonstrate highly
'while' and post	adequate and	appropriate and	appropriate and
listening strategies to	appropriate use	effective use	effective use
understand different			
speakers and academic			
topic information			



## Grade descriptors for Advanced English Language Skills

Learning Outcome	Pass	Merit	Distinction
Be able to communicate confidently, speaking on a range of familiar and unfamiliar topics, using appropriate tenses, vocabulary and register	Demonstrate adequate level of communication	Demonstrate robust level of communication	Demonstrate highly comprehensive level of communication
Be able to comprehend the main content and overall meaning of both general and more unfamiliar English texts	Demonstrate adequate level of comprehension	Demonstrate robust level of comprehension	Demonstrate high level of comprehension
Be able to write structured, factual, descriptive and explanatory texts, utilising complex linguistic structures and vocabulary	Demonstrate ability to perform the task	Demonstrate ability to perform the task consistently well	Demonstrate ability to perform the task to the highest standard
Be able to apply a range of listening strategies in order to understand lengthy predictable discussions, factual presentations and more abstract conversations	Demonstrate adequate and appropriate application	Demonstrate sound and consistently appropriate application	Demonstrate detailed and highly appropriate application

## Grade descriptors for Study and Communication Skills

Learning Outcome	Pass	Merit	Distinction
Be able to take	Demonstrate	Demonstrate	Demonstrate ability
effective notes from	ability to perform	ability to perform	to perform the task
a variety of sources	the task	the task	to the highest
		consistently well	standard
Understand how to	Demonstrate	Demonstrate	Demonstrate highly
work out the	adequate level of	robust level of	comprehensive
meaning of	understanding	understanding	level of
unfamiliar content			understanding
Understand	Demonstrate	Demonstrate	Demonstrate highly
common steps in	adequate level of	robust level of	comprehensive
producing academic	understanding	understanding	level of
work			understanding
Be able to produce	Demonstrate	Demonstrate	Demonstrate ability
a piece of academic	ability to perform	ability to perform	to perform the task
work suitable for	the task	the task	to the highest
this level, following		consistently well	standard
a drafting process			
Understand	Demonstrate	Demonstrate	Demonstrate highly
different learning	adequate level of	robust level of	comprehensive
styles	understanding	understanding	level of
			understanding

## Grade descriptors for Culture Studies

Learning Outcome	Pass	Merit	Distinction
	Provides	Provides critical	Provides
	consistent	interpretation and	consistently
	interpretation	evaluation of	critical
Understand the	and evaluation	relevant	interpretation and
concept of culture,	of relevant	information and	evaluation of
cultural values and	information and	ideas to complete	relevant
how different cultures	ideas to	tasks and	information and
can be defined	complete tasks	address well	ideas to complete
	and address	defined problems.	tasks and
	well defined		address well
	problems.		defined problems.
	D	Demonstrates	Description
	Demonstrates	sound ability to	Demonstrates
I ladorotop d bour the	to review	review	comprehensive
Understand now the	offectiveness of	enectiveness of	ability to review
political and education	enectiveness of	and results	mothodo actiona
system of a foreign	actions and	and results	and results
their own	rogulte	Can soundly	anu results
	results	identify select	Can coherently
	Can adequately	and use	
	identify select	ann use annronriate skille	and use
	and use	methods and	appropriate skills
Understand how the political and education system of a foreign country differs from their own	and address well defined problems. Demonstrates adequate ability to review effectiveness of methods, actions and results Can adequately identify, select and use	defined problems. Demonstrates sound ability to review effectiveness of methods, actions and results Can soundly identify, select and use appropriate skills, methods and	tasks and address well defined problems Demonstrates comprehensive ability to review effectiveness of methods, actions and results Can coherently identify, select and use appropriate skills

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	appropriate	procedures to	methods and
	skills, methods	reach well	procedures to
Understand how the	and procedures	explained and	reach well
business culture of a	to reach	appropriate	explained and
foreign country differs	appropriate	solutions	highly appropriate
from their own	solutions		solutions
		Has sound	
		awareness of	Has
	Has adequate	different	comprehensive
	awareness of	perspectives or	awareness of
	different	approaches in the	different
Understand the	perspectives or	area of study	perspectives or
relationship between	approaches in		approaches in the
digitial technologies,	the area of		area of study
communication and	study	Uses detailed	
culture		investigation to	Uses thorough
		inform actions/	and detailed
	Uses	conclusions	investigation to
	appropriate		inform well
	investigation to		explained
	inform actions/		actions/
	conclusions		conclusions



## Grade descriptors for Foundation Mathematics

Learning Outcome	Pass	Merit	Distinction
Be able to	Demonstrate	Demonstrate	Demonstrate ability
perform a range	ability to perform	ability to perform	to perform all
of algebraic	calculations	calculations	calculations to the
calculations		consistently well	highest standard
Be able to solve a	Demonstrate	Demonstrate	Demonstrate ability
range of basic	ability to perform	ability to perform	to perform
Calculations	techniques	techniques	techniques to the
equations		consistently well	highest standard
Be able to	Demonstrate	Demonstrate	Demonstrate ability
present data in	ability to perform	ability to perform	to perform
graphical form	techniques	techniques	techniques to the
		consistently well	highest standard
Understand the	Demonstrate	Demonstrate	Demonstrate highly
fundamentals of	adequate	robust	comprehensive
Differential	understanding of	understanding of	understanding of
Calculus	techniques	techniques	techniques
Understand the	Demonstrate	Demonstrate	Demonstrate highly
fundamental of	adequate	robust	comprehensive
Integral Calculus	understanding of	understanding of	understanding of
	techniques	techniques	techniques
Understand	Demonstrate	Demonstrate	Demonstrate highly
Measures of	adequate	robust	comprehensive
Dispersion	understanding of	understanding of	understanding of
	techniques	techniques	techniques
Understand the	Demonstrate	Demonstrate	Demonstrate highly
fundamentals of	adequate	robust	comprehensive
Probability	understanding of	understanding of	understanding of
	techniques	techniques	techniques



## Grade descriptors for Introduction to Accounting and Economics

Learning Outcome	Pass	Merit	Distinction
Understand	Demonstrate	Demonstrate	Demonstrate highly
essential aspects of	adequate level of	robust level of	comprehensive
accounting	understanding	understanding	level of
			understanding
Understand	Demonstrate	Demonstrate	Demonstrate highly
essential aspects of	adequate level of	robust level of	comprehensive
economics	understanding	understanding	level of
			understanding
Understand how	Demonstrate	Demonstrate	Demonstrate highly
markets operate	adequate level of	robust level of	comprehensive
	understanding	understanding	level of
			understanding
Understand the role	Demonstrate	Demonstrate	Demonstrate highly
of money, interest	adequate level of	robust level of	comprehensive
rates and inflation	understanding	understanding	level of
within the area of			understanding
accounting and			
economics			
Be able to apply a	Demonstrate	Demonstrate	Demonstrate
number of key	adequate and	sound and	detailed and highly
concepts in	appropriate	consistently	appropriate
accounting	application	appropriate	application
		application	

#### Grade descriptors for Introduction to Business

Learning Outcome	Pass	Merit	Distinction
Understand different	Demonstrate	Demonstrate	Demonstrate highly
types of businesses	adequate level of	robust level of	comprehensive
and their functions	understanding	understanding	level of
			understanding
Understand a range	Demonstrate	Demonstrate	Demonstrate highly
of basic business and	adequate level of	robust level of	comprehensive
management	understanding	understanding	level of
structures			understanding
Be able to	Demonstrate	Demonstrate	Demonstrate highly
demonstrate an	adequate level of	robust level of	comprehensive
understanding of	understanding	understanding	level of
basic marketing			understanding
principles in business			
Understand the basic	Demonstrate	Demonstrate	Demonstrate highly
concepts of	adequate level of	robust level of	comprehensive
production	understanding	understanding	level of
			understanding
Be able to utilise a	Demonstrate	Demonstrate	Demonstrate highly
number of key	adequate and	appropriate and	appropriate and
business concepts	appropriate use	effective use	effective use

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## Grade descriptors for Introduction to Programming

Learning Outcome	Pass	Merit	Distinction
Create project	Demonstrate	Demonstrate	Demonstrate
documentation.	ability to	ability to perform	ability to perform
	perform the	the task	the task to the
	task	consistently well	highest standard
Implement a program	Demonstrate	Demonstrate	Demonstrate
that uses data capture	ability to	ability to perform	ability to perform
and validation.	perform the	the task	the task to the
	task	consistently well	highest standard
Implement a program	Demonstrate	Demonstrate	Demonstrate
that uses sequential	ability to	ability to perform	ability to perform
programming with	perform the	the task	the task to the
different data types.	task	consistently well	highest standard
Implement a program	Demonstrate	Demonstrate	Demonstrate
that uses iteration and	ability to	ability to perform	ability to perform
selection constructs.	perform the	the task	the task to the
	task	consistently well	highest standard
Implement a program	Demonstrate	Demonstrate	Demonstrate
that uses file i/o.	ability to	ability to perform	ability to perform
	perform the	the task	the task to the
	task	consistently well	highest standard
Implement a program	Demonstrate	Demonstrate	Demonstrate
that uses arrays	ability to	ability to perform	ability to perform
	perform the	the task	the task to the
	task	consistently well	highest standard



## Grade descriptors for Introduction to Computer Science

Learning Outcome	Pass	Merit	Distinction
Understand fundamental concepts relating to hardware and software	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the characteristics of hardware components	Demonstrate adequate ability to differentiate and recognise components	Demonstrate sound and consistent ability to differentiate and recognise components	Demonstrate exceptional ability to differentiate and recognise components
Understand how data is represented in a computer system	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the fundamental concepts of computer networks	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand cultural, ethical and legal issues relating to computing	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding





#### **Grade descriptors for Further Mathematics**

Learning Outcome	Pass	Merit	Distinction
Understand different	Demonstrate	Demonstrate	Demonstrate highly
techniques to solve	adequate	robust	comprehensive
cubic equations and	understanding	understanding of	understanding of
write expressions in	of techniques	techniques	techniques
terms of their partial			
fractions			
Be able to work with	Demonstrate	Demonstrate	Demonstrate ability to
complex numbers,	ability to	ability to perform	perform the tasks to
perform arithmetic	perform the	the tasks	the highest standard
calculations using	tasks	consistently well	
complex numbers, solve			
nigner order			
polynomials with			
complex roots and			
Bo able to perform	Domonstrato	Domonstrato	Domonstrato ability to
arithmetic operations	ability to	ability to perform	perform techniques to
using matrices	perform	techniques	the highest standard
understand basic	techniques	consistently well	the highest standard
transformations using	teeninques		
matrices and in			
addition, understand			
which matrices			
represent linear			
transformations and			
calculate the inverse of			
a matrix			
Understand the	Demonstrate	Demonstrate	Demonstrate highly
properties of rational	adequate	robust	comprehensive
functions and	understanding	understanding of	understanding of
understand conic	of techniques	techniques	techniques
sections			
Understand how to use	Demonstrate	Demonstrate	Demonstrate highly
sigma notation to	adequate	robust	comprehensive
calculate the sum of	understanding	understanding of	understanding of
simple finite series, and	of techniques	techniques	techniques
appreciate the			
relationship between			
the roots of polynomials			
	Domester	Demokratist	Demonstrate h'ulu
Understand further	Demonstrate		
techniques in calculus	auequate	IUDUSI	comprehensive
compinations of	or recondues	lechniques	lechniques

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functions, how to use these techniques to solve problems involving functions given parametrically and how to derive Maclaurin and Taylor series			
Understand further	Demonstrate adequate	Demonstrate robust	Demonstrate highly
hyperbolic functions	understanding of techniques	understanding of techniques	understanding of techniques
Understand Euler's relation and De Moivre's theorem and derive relations between trigonometric functions and hyperbolic functions	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand further techniques in calculus to differentiate combinations of functions, how to use these techniques to solve problems involving functions given parametrically and how to derive Maclaurin and Taylor series	Demonstrate adequate understanding of techniques	Demonstrate robust understanding of techniques	Demonstrate highly comprehensive understanding of techniques



# Grade descriptors for Physics

Learning Outcome	Pass	Merit	Distinction
Understand the	Demonstrate	Demonstrate	Demonstrate highly
mechanics of	adequate level of	robust level of	comprehensive level
motion	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
mechanics of forces	adequate level of	robust level of	comprehensive level
	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
mechanics of	adequate level of	robust level of	comprehensive level
energy	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
mechanics of	adequate level of	robust level of	comprehensive level
momentum	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
mechanics of	adequate level of	robust level of	comprehensive level
periodic motion	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
basic principles of	adequate level of	robust level of	comprehensive level
thermal physics	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
fundamentals of	adequate level of	robust level of	comprehensive level
electrostatics	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
fundamentals of	adequate level of	robust level of	comprehensive level
electrodynamics	understanding	understanding	of understanding
Understand the	Demonstrate	Demonstrate	Demonstrate highly
fundamentals of	adequate level of	robust level of	comprehensive level
magnetism	understanding	understanding	of understanding



## Grade descriptors for Chemistry

Learning Outcome	Pass	Merit	Distinction
Understand atomic	Demonstrate an	Demonstrate robust	Demonstrate a highly
structure and bonding	adequate level of	level of	comprehensive level
•	understanding	understanding	of understanding
Understand	Demonstrate an	Demonstrate robust	Demonstrate a highly
energetics, rates,	adequate level of	level of	comprehensive level
kinetics and chemical	understanding	understanding	of understanding
equilibria			
Understand the key	Demonstrate an	Demonstrate robust	Demonstrate a highly
points of inorganic	adequate level of	level of	comprehensive level
chemistry	understanding	understanding	of understanding
Understand functional	Demonstrate an	Demonstrate robust	Demonstrate a highly
groups, naming	adequate level of	level of	comprehensive level
organic compounds	understanding	understanding	of understanding
and isomerism			
Understand organic	Demonstrate an	Demonstrate robust	Demonstrate a highly
synthesis reactions	adequate level of	level of	comprehensive level
	understanding	understanding	of understanding
Understand aromatic	Demonstrate an	Demonstrate robust	Demonstrate a highly
(arene) chemistry	adequate level of	level of	comprehensive level
	understanding	understanding	of understanding
Understand the	Demonstrate an	Demonstrate robust	Demonstrate a highly
techniques used in	adequate level of	level of	comprehensive level
organic analysis	understanding	understanding	of understanding



## Grade descriptors for Biology

Learning Outcome	Pass	Merit	Distinction
Understand cell Structure	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the systems involved in coordination and control of the body	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the systems involved movement and energy release in the body	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand how the body obtains the nutrients it needs and disposes of waste products	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the body's defences against disease and infection	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the process of reproduction	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding

