AQA AS GCE in Geography

Study Skills Booklet

Tring School

Contents

1. Introduction

Congratulations for choosing the most relevant and up-to-date subject available in schools today! Over the next year you will; increase your awareness of the world around you, equip yourself with some of the most desirable transferable skills and hopefully follow a course you enjoy.

There is a big step up from GCSE to AS. There are two main differences. The first is the increase in the quantity and quality of information that is required. The second is the level of interpretation and analysis that you are expected to be able to do. By the exams you will need a good level of knowledge (you need to know the terms, definitions, processes, events, case studies). You will also need a good understanding: (you need to be able to analyse and evaluate a variety of material, why it is important, where it fits in and how you can apply this to other situations). To do this you must:

Attend all AS Geography lessons with both your teachers. You are expected to attend all lessons unless you have a valid reason. If you are unable to attend a lesson you must notify the teacher in advance if possible and catch up on all work before the next lesson. Concerns regarding attendance will be raised with the Head of Sixth Form and your parents. Attendance below an acceptable level means you will be withdrawn from exams.

Ask your teachers for help or advice if you do not fully understand something. Your teachers will always make time for your questions or concerns. If they are busy they will arrange an alternative time for you to meet. You can also contact your teachers by email:
Mr Stone: cdstone@tring.herts.sch.uk
Mrs Chapman jchapman@tring.herts.sch.uk
Mrs Champness fchampness@tring.herts.sch.uk
Mrs Thompson lthompson@tring.herts.sch.uk

Use private study time productively (at least 6 hours per week for Geography). This means solidly working on homework tasks, background reading or revision of class work. Basically it is your opportunity to solidify understanding and extend your ability to apply it to the real world.

Complete all homework tasks. Homework tasks are often used in the following lesson so it is absolutely essential that you complete all homework and are ready to discuss what you have found.

Read widely around the subject to gain as wide a geographical awareness as possible. We cannot teach you everything in lesson time.

2. Specification at a Glance

AS Examinations

Unit 1 – GEOG1
Physical and Human Geography
70% of AS, 35% of A Level
2 hour written examination
120 marks
Structured short and extended questions

Unit 2 – GEOG2
Geographical Skills
30% of AS, 15% of A Level
1 hour written examination
50 marks
Structured skills and generic fieldwork questions

A2 Examinations

Unit 3 – GEOG3
Contemporary Geographical Issues
30% of A Level
2 hour 30 minutes written examination
90 marks
Structured short and extended questions, plus an essay

Unit 4 – either GEO4A Geography Fieldwork Investigation or GEO4B Geographical Issue Evaluation
20% of A Level
1 hour 30 minutes written examination
60 marks
GEO4A – structured short and extended questions based on candidates' Fieldwork investigation and fieldwork skills.
GEO4B – structured short and extended questions based on an Advance Information Booklet

3. Performance descriptors

This table outlines what you need to get close to an A/B and what you would be expected to do to get an E/U:

	Assessment Objective 1	**Assessment Objective 2**	**Assessment Objective 3**
Assessment Objectives	Demonstrate knowledge and understanding of the content, concepts and processes.	Analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts.	Select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.
A/B boundary	Candidates characteristically: a) demonstrate detailed knowledge and understanding of a range of concepts and processes b) demonstrate detailed knowledge and understanding of subject specific material.	Candidates characteristically: a) analyse and interpret geographical information, issues and viewpoints b) offer a valid evaluation of geographical information, issues and viewpoints c) demonstrate the ability to apply geographical understanding to unfamiliar contexts at different scales.	Candidates characteristically: a) select and use appropriately a range of methods, skills and techniques (including new technologies) when investigating questions and issues b) reach valid conclusions and communicate findings clearly in a structured manner appropriate to the task.
E/U boundary	Candidates characteristically: a) demonstrate some knowledge and understanding of some concepts and processes b) show basic knowledge and understanding of subject-specific material.	Candidates characteristically: a) offer limited and inconsistent analysis and interpretation of geographical information, issues and viewpoints b) attempt some limited evaluation of geographical information, issues and viewpoints c) show some limited ability to apply aspects of geographical understanding to unfamiliar contexts.	Candidates characteristically: a) use a limited range of methods, skills and techniques (which may include new technologies) to attempt to investigate questions and issues b) draw some limited conclusions c) communicate findings which broadly address the tasks.

4. Finding information

It is impossible to teach everything you need to know during lesson time. Therefore you will be expected to carry out a few hours of independent reading and research each week. There are a few things to help you do this:

Books and articles

A huge variety of books and articles are available in the Learning Centre. They should be one of your first sources of information. Don't always rely on the Internet.

Alternatively, your Geography teachers also have a large supply of books available for use during school time.

The internet

The internet contains a huge amount of information and this has advantages and disadvantages. Some websites like S-cool revision provide superb summaries of AS-level content. Some like CREDs website provide accurate up-to-date information about natural disasters. Look at your reading list for recommended websites for each topic area. However, there is also a lot of rubbish to sift through which can be time-consuming and unproductive. Many of the websites are aimed above or below the level you require. In addition, websites that seem accessible and useful may also provide inaccurate information (Wikipedia is one of these so avoid it!). Overall the internet can be fantastic, and refining your search skills is an important skill but you should **not** rely on the internet for most of your information.

The media (TV, film, newspaper)

There is a huge amount of geographical information available through all the above. They can be useful in collecting facts and figures about current events which aids the construction of good, up-to-date case studies. However, you need to be aware of bias in reporting and film making. For example; if its not exciting/disastrous/controversial it doesn't make the news. You need to consider what truth is in the 'story' and what has been altered to make it more exciting/accessible/politically acceptable.

Fieldwork and primary data collection

A large part of your AS level requires you to collect your own primary data. Therefore you will be given plenty of opportunity to develop your fieldwork skills. Some fieldtrips are essential to attend if you want to do well at AS (e.g. Dorset). Others such as Iceland are more general geography trips to widen your geographical understanding. Your knowledge and use of fieldwork techniques is examined in Unit 2 (Geographical Skills) . You will be expected to know of and have used a variety of techniques for studying aspects of physical and human geography. You will also be required to know the advantages and drawbacks of the techniques you used and possible alternatives. There will be a field trip to Dorset that all AS students will be expected to attend in March. More information will be given about this at the beginning of the Spring term. There will be further fieldwork opportunities throughout the year and you are encouraged to participate on as many of these as possible.

Your teachers will make information on primary data techniques available during the course and you will have opportunity to put them into practise on various fieldtrips.

5. Note-taking

You've found the information but now you need to review it and pull out the important parts! This is often more easily said than done, particularly when everything seems new and important.

Good notes are absolutely essential. They are your record of what you have learnt and you will need them to write essays and revise from. Neat, well ordered notes can save a lot of time and stress before exams.

Top tips for note taking

1. They should **summarise** (not copy)

2. You should **leave room** to add further detail at a later date

3. Use **abbreviations** whenever possible

4. If note taking from books
   - **Skim read first**
   - What was it about? What did you want to find out about?
   - Reread carefully
   - As you go only note down pieces of information you need. Not things that you find interesting.

5. **Keep notes organised**.
   - Clear titles and use subheadings whenever possible
   - Use indenting to show levels of detail
   - Name and date all work
   - File notes by subject, then topic
   - Keep them in order of the scheme of work (See Appendix 3)

6. Use **colour** to make them more interesting

7. **Highlight** key words and terms

8. Use simple, clear **linking diagrams** to show how information fits together

9. Use simple **sketch diagrams and maps with labels to reduce linear text**

10. Use **bullet points** when making lists

Abbreviations

You can abbreviate how you like in your notes, however, you must understand them! Just remember that in the exams only a few abbreviations are allowed. These include common geographical abbreviations like CBD (central business district) and MEDC (more economically developed country). Even so, it is best to write then out in full the first time you use them.

Common abbreviations	
=	equals/same as
>	greater than/more than
<	lower than/less than
↑	increasing/growing
↓	decreasing/shrinking
∴	therefore

Other possible abbreviations	
env	environment
temp	temperature
max	maximum
min	min
urb	urbanisation
E	energy

What to write down

Generally when note-taking you to write down key definitions and terminology, processes (see below) and case studies (see next section).

Key definitions and terminology

You must know technical words and what they mean. You may be examined on them. They are also useful to begin essays with. If you know the key definitions you will be more confident with the reading you have to do and with the subject as a whole. You have lists of keys terms and definitions for each topic provided in Appendix 1. Make sure you are familiar with these and add any further terms that you feel are new to you as you progress through the course. Using the right words in the right way also gives a positive impression to the examiner.

Processes and theories

A process is an action that causes change and is one of the key focuses in geographical study. A theory is an idea that explains a process. If you understand a process or theory you can often apply it to numerous locations and examples. Processes and theories are by far the most important thing to know. The rest of Geography is all about applying them to real life situations. For example, if the process of erosion is understood you can explain coastal retreat in locations all around the world. Often they can be put in equations or diagrams which can be used in exams. If Hoyt's Model is understood you can use these ideas and discuss their application to any city in the world. If you are unsure about a theory then find out more about it or ask. Don't just ignore it!

6. Constructing case studies

Generally a few detailed examples are better than many superficial ones. At AS all topic areas/processes/theories need to be supported by at least one in-depth case study. Often two contrasting case studies are required. For example: Rio de Janeiro to show urban land use in LEDCs and Cambridge to show urban land use in MEDCs.

Hypothetical case studies should be avoided wherever possible; you should use real places, people and events rather than scenarios. Constructing good case studies requires in depth research and the use of more than one source. Very occasionally, if you are lucky, case studies come ready made.

Top tip: By carefully selecting case studies so they are from the same country you can reduce the level of background information.

Notes on one particular place should be kept together, ideally on one page. Case study diagrams are a fantastic way of getting all the information you need onto a page. They also allow you to make links between important pieces of information.

Generally for constructing a good case study you need to ask questions. A good place to start is checking the Ws:

Who?

Which groups were affected? In what ways? Positively or negatively?

Where?

The location of the case study/event. A sketch map is often very useful.

What?

What exactly happened/is happening? What reasons can be given/how did it begin? What needs to be done?

Why?

Why is it happening? Why are the consequences like they are?

When?

The time and date

7. Answering questions

Command words

Like at GCSE a wide range of questions are asked in exams to test your ability to the maximum. They use similar command words to what you are familiar with from GCSE although there are some new ones too. It is absolutely essential you know what each command word wants you to do. The table below outline what each of the command words means:

Describe	Is asking you to say what you see… You should tell the examiner about patterns, trends, main features, opinions.
Explain	Is asking you for reasons. Use phrases like 'This is because…'
Compare	Is asking you for similarities **and** differences.
Discuss (a topic)	Is asking you to describe and explain a subject
Discuss (a statement)	Is asking you to evaluate the truth of a statement and whether or not you agree with it. You must put both arguments forward before you reach your conclusion.
Contrast…	Is asking you for differences between two things
Examine…	Is a very general instruction asking you to describe and explain
To what extent…?	Is asking you to evaluate and say whether you agree or disagree. Again you need to put both arguments forward before you reach your conclusion
How?	Is a describe question. You need to say how you would you do something or how would something change if…
Comment on…	Is another very general term that is asking you to describe and explain
In what ways…?	Is asking you to describe or identify a pattern, a process or a change.

Types of questions

At AS there will be a range of questions including data response, structured questions and essay questions.

Data response

Some form of data is provided (e.g. a map, graph, photo) which you have to look at and answer questions about. These questions often ask you to describe and then explain the data.

Structured questions

Structured questions are similar to data response, they too often ask about a piece of data. However, they tend to require slightly longer answers to be written in a separate booklet.

Essay questions

Essay questions are not normally set at GCSE (when they are lots of support is given to help you structure your answer). This is one area lots of AS students struggle with initially.

Essay questions tend to just be a statement or question which you have to select information (processes, theories, examples) to help you answer. Often you have a choice of questions. Choosing the best one is a skill in itself and is something only you can decide. It depends on the strengths and weaknesses in your knowledge and understanding.

Planning essays

Essay plans are often regarded by students as a waste of time, particularly in exams. However, the majority of essays written without plans end up as big piles of unstructured waffle that fail to answer the question. In exams it is absolutely essential to write a quick, brief outline plan before you begin your essay. This plan should outline the main points and examples for each paragraph. For a half hour essay question you should spend 5 minutes on the plan and 25 minutes on the essay. For a one hour essay you can spend up to 10 minutes planning.

For essays written outside exams you have more time to plan. Your plans can contain more detail. To help you with planning essays your teacher may ask you to write detailed essay plans instead of an actual essay. These very detailed plans need to contain all the points you are going to make. Good essay writing takes practise and everyone has different issues. Listen carefully to advice about how to improve your essays and stick to it!

8. Peer Teaching

AS Geography isn't just about sitting back and listening to your teacher waffle on about all the things you need to know. This doesn't make you think about the information you are learning. At least some lessons should (and will be) led by you.

Every now and then your teacher will request that you prepare and lead part (or sometimes even a whole lesson). It is essential that you do this well for your own learning and for the others in the class.

How to teach:

- **Do your research:**
  Spend time finding out about the topic you have been given. You have to be the expert and may have to answer questions from your peers. This means you will have to properly read around the area so you have a good overview and know specific details

- **Have a starter or a hook:**
  Get your peers interested in your lesson by doing something different or giving some interesting facts at the beginning.

- **Check everyone understands:**
  Have a checklist, a quick quiz or a question at the end to test how well your peers have been paying attention

- **Present you information well:**
  Clear diagrams and key points should be given on a handout. It often helps to have your information on PowerPoint. However, this should not be your script.

- **Share your aims:**
  Make sure you tell everyone your aims for the lesson. Often these will be given to you by your teacher before you begin your planning

- **Bribery:**
  Bribing your peers and teachers is always allowed - sweets and biscuits are popular and make your peers and teachers like you more and may even help them remember your amazing lesson ☺

9. Revision

Your brain has a short term and long term memory. Few students at AS level can rely on short term memory alone (i.e. cramming just before exams). At AS-level it is very important to develop your long-term memory. To do this you should be constantly or revising work you have done. Reading over your notes from class and checking you understand everything you have written is included as revision. It will help reduce pressure enormously when it comes to the final exams if you just know the basics (i.e. key terms, processes and theories). That way your short term memory can concentrate of learning the facts and figures required in case studies.

Revision of any kind requires good notes. Your main source of revision should be your own notes, made throughout the year. Revision guides and websites are not always targeted to the exam board you are sitting or do not contain the same (or sometimes any) case studies so should only be used when your notes are not sufficient.

When you are revising make sure you know exactly what you need to learn. Different papers examine different elements of your knowledge and skills. Check with a teacher if you are unsure of which area to revise.

Make sure you have a quiet area you can go to when you need to revise away from interruptions and distractions. And use some recommended revision techniques, if you've got one you know works well from GCSE stick with it. If you're still not sure below are a couple of ideas (and my personal favourites) to get you started:

- Mind mapping information: Write key words, facts and case studies around a bubble, link information. Use colour and diagrams
- Revision cards: All information to do with one subject area/place goes on one card. Use the cards to test yourself.
- Rewriting unknown facts. Reread notes and pick out information you don't know, write it down. A couple of hours later reread, anything you still don't know write down again somewhere else or highlight. Keep going until you are happy you remember most of the information you need.
- Possible questions: Think of possible questions that could come up. Write answers to them using your notes. Identify gaps which you need to focus your revision on.

10. Private study time

DON'T

- Sit in the common room chatting to mates thinking I've got all year, I'll do it later

- Spend hours on the internet searching for information that is available in a book in the library 2 minutes away.

- Leave homework until the last minute. Books aren't always available. The book you have may not have the right information.

- Think that you understood most of the lesson and that'll be okay. It could come up in the exam and if you were only just starting to understand in the lesson you certainly would have forgotten in a year.

- Think AS-levels don't matter. If I fail this year I can re-sit and take a gap year before I do my UCAS form. If you fail we may not let you retake and you will certainly have to pay for the privilege of sitting the exam again and doing all that revision again (after a long gap with no allocated lesson time on that topic).

DO

- Use all the resources available to you to help you do your best: The library, the Sixth Form Study area, and your teachers.

- Do 6 hours out of class every week. Be strict with yourself. Success at AS-level is about consistency and independent learning.

- Use your time wisely. You have study periods in school when you are meant to work, so work while you are in school so you don't have to another time. It is possible to do well at your AS-levels, be involved in loads of activities in and out of school and have a part-time job. You just need to be motivated and disciplined in your approach to work

- Your absolute best. Your predicted grade is an estimate of what you could get. It's not a right that's owed to you and there's no guarantee, so if you don't work you probably won't get it. On the other hand, if you work hard you can do better than it suggests.

11 Geographical Skills

Candidates will need to develop a variety of basic, investigative, cartographic, graphical, applied ICT and statistical skills. They will need to develop a critical awareness of the appropriateness and limitations of different skills and resources. The level of accuracy, sophistication and detail are all expected to be greater at AS than at GCSE, and similarly between AS and A2.

Basic Skills
To include:
• annotation of illustrative material, base maps, sketch maps, OS maps, diagrams, graphs, sketches, photographs etc
• use of overlays
• literacy skills.

Investigative Skills
To include:
• identification of geographical questions and issues, and effective approaches to enquiry
• identification, selection and collection of quantitative and qualitative evidence from primary sources (including fieldwork) and secondary sources
• processing, presentation, analysis and interpretation of evidence
• drawing conclusions and showing an awareness of the validity of conclusions
• evaluation
• risk assessment and identification of strategies for minimising health and safety risks in undertaking fieldwork.

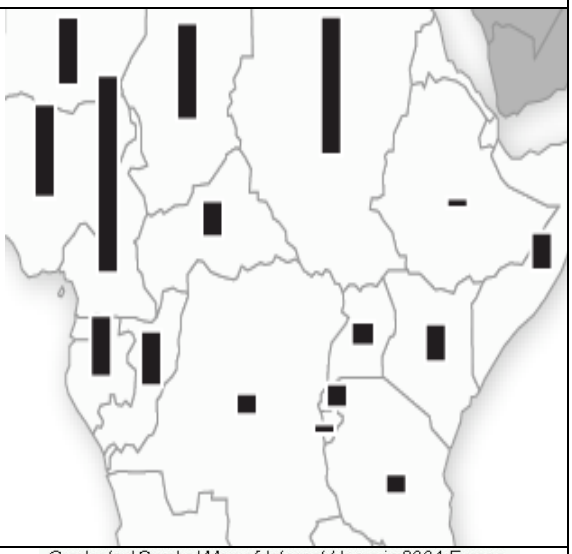
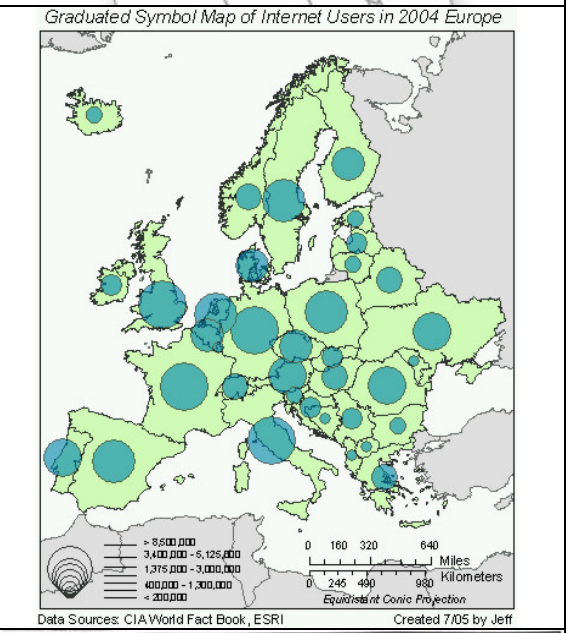
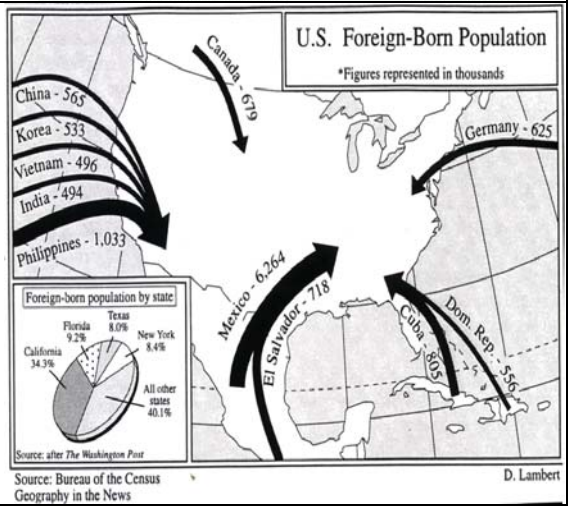
Cartographic Skills
To include use of:
• atlas maps
• base maps
• sketch maps
• Ordnance Survey maps at a variety of scales
• maps with located proportional symbols – squares, circles, semi-circles, bars
• maps showing movement – flow lines, desire lines and trip lines
• detailed town centre plans
• choropleth, isoline and dot maps.
In addition, to include at A2:
• weather maps – including synoptic charts.

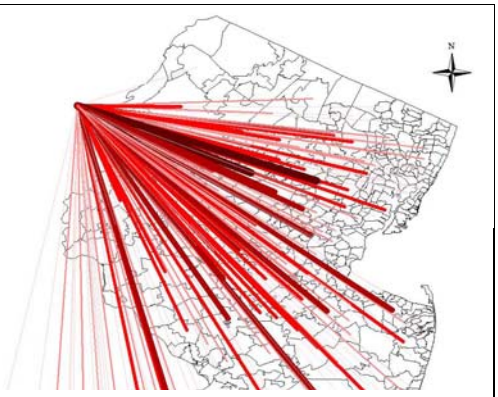
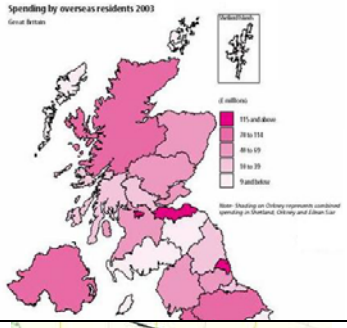
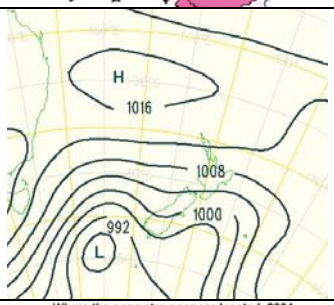
Graphical Skills
To include use of:
• line graphs – simple, comparative, compound and divergent
• bar graphs – simple, comparative, compound and divergent
• scatter graphs – and use of best fit line
• pie charts and proportional divided circles
• triangular graphs
• kite and radial diagrams
• logarithmic scales
• dispersion diagrams.

ICT Skills
To include:
• use of remotely sensed data – photographs, digital images including those captured by satellite
• use of databases, e.g. census data, Environment Agency data; meteorological office data
• use of geographical information systems (GIS)
• presentation of text and graphical and cartographic images using ICT.

Statistical Skills
To include at AS:
• measures of central tendency – mean, mode, median
• measures of dispersion – interquartile range and standard deviation
• Spearman's rank correlation test
• application of significance level in inferential statistical results.
In addition, to include at A2:
• comparative tests – Chi-squared, Mann Whitney U Test.

Cartographic Skills

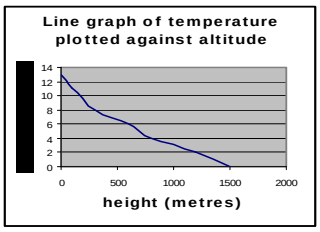
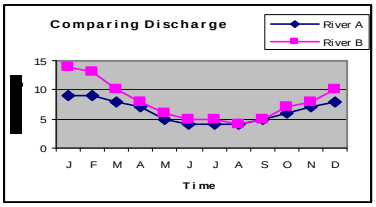
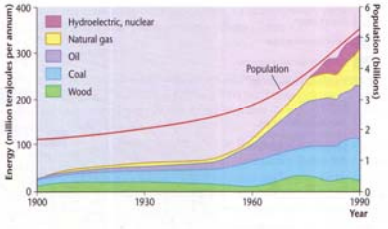
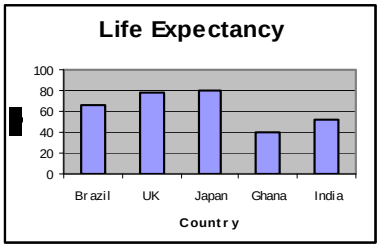
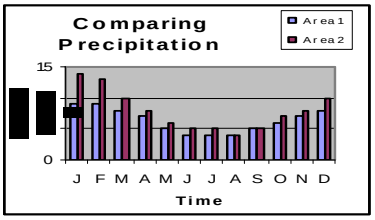
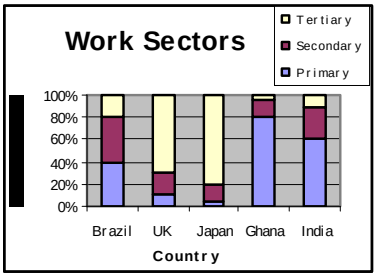
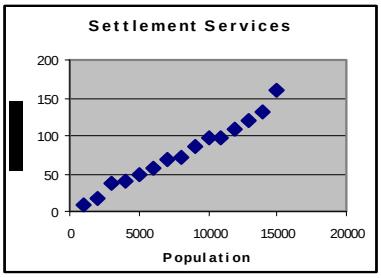
Map Type	Description	Map Example
Maps with located proportional symbols	These symbols are drawn proportional in size to the size of the variable being represented. The symbol used can theoretically be anything. Most common are squares, bars and circles.	
Squares and Bars	The method for drawing proportional bars or squares is: 1. Examine the data and decide on your scale. The length of the bar will be proportional to the value it portrays. 2. Draw your bars on a base map, one end of the bar located next to the place to which it refers. 3. Bars should be of uniform width, solid looking and can be placed vertically or horizontally.	
Circles and semi-circles	The method for drawing proportional circle or semi-circles is: 1. Calculate the square root of the values 2. Multiply each square root by a constant: this gives you the radius of each circle. 3. Draw the circles and mark the scale on the map The circles can be divided	
Maps showing movement – flow lines	Flow line maps are used for portraying movements or flows, such as traffic flows along roads or flows of migrants between countries. A line is drawn along the road, or from the country of origin to country of destination, proportional in width to the volume of the flow.	

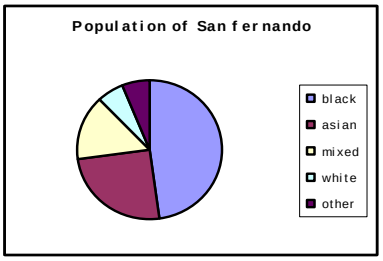
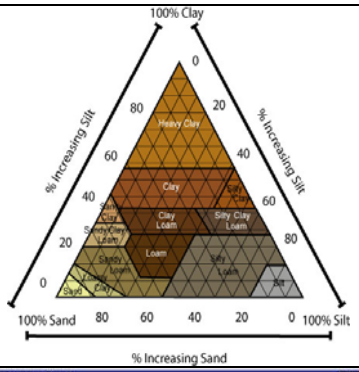
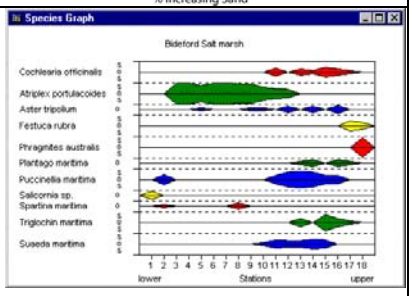
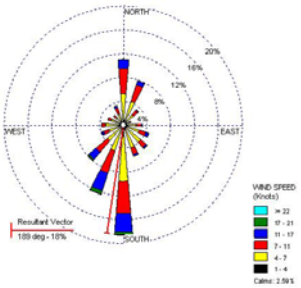
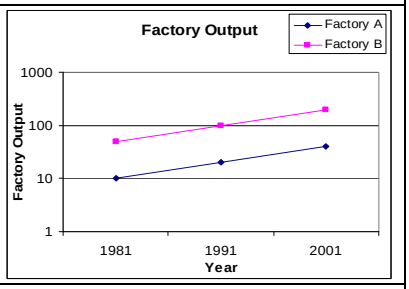
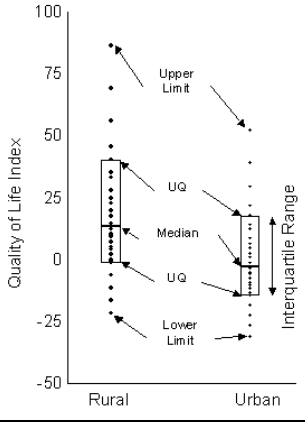
Maps showing movement – desire lines and trip lines	A desire-line diagram shows the movement of phenomena from one place to another. Each line joins the places of origin and destination of a particular movement. Trip lines can be used to show regular trips, for example where people shop; lines could be drawn from a town to nearby villages	
Chlorophleth Maps	In chlorophleth or shading maps, areas are shaded according to a prearranged key, each shading or colour type representing a range of values. Generally, the darker the colour the higher the number will be that it represents.	
Isoline Maps	Isolines are lines on map map that join points of equal value (e.g. contour lines, isotherms, isobars). They can only be used when the variable to be plotted changes in a fairly gradual way across space.	
Dot Maps	In dot mapping, dots of a fixed size are given a value representing a variable such as crop yield or numbers of people.	

Other maps that the syllabus says you need to be aware of and able to use include:

- Atlas Maps
- Base maps
- Sketch Maps
- Ordnance Survey Maps at a variety of scales
- Detailed town centre plans

Graphical Skills

Graph Type	Description	Graph Example
Simple Line Graph	Simple line graphs are used for showing the relationship between two variables. One of these variables is usually time but they can also show other factors. For example, the relationship between temperature and altitude.	
Comparative Line Graph	A comparative line graph is used to compare two sets of data on the same axis, such as comparing two separate rivers discharge throughout the course of a year.	
Compound Line Graph	On a compound line graph, the differences between the points on adjacent lines give the actual values. To show this, the areas between the lines are usually shaded or coloured and there is an accompanying key.	
Simple Bar Graph	In a simple bar graph, one axis has a numerical value, but the other is simply categories. Bars are drawn proportional in height to the value they represent. For example a bar graph could be used to compare the life expectancies of different countries.	
Comparative Bar Graph	A comparative bar graph is used to compare two sets of data on the same axis, such as comparing the amount of precipitation in two separate regions over the course of a year.	
Compound Bar Graph	Bar graphs that have bars (representing different components) stacked on top of one another are known as compound bar graphs. They are usually percentages (adding up to 100%). For example, the people working in primary, secondary and tertiary sectors in different countries.	
Scattergraphs + best fit lines	These are used to investigate the relationship between two variables. For example the number of services in a settlement compared to the settlement population. The pattern of the scatter describes the relationship. Where there is an obvious relationship between the variables a line of 'best-fit' can be drawn.	

Proportional Divided Circles (Pie Charts)	These are used for showing a quantity (such as the population of a country) that can be divided into parts (such as different ethnic groups). A circle is drawn to represent the total quantity. It is then divided into segments proportional in size to the components. The actual size of the circle can also be used to represent data.	
Triangular Graph (ternary diagrams)	Triangular graphs are graphs with three axis instead of two, taking the form of an equilateral triangle. The important features are that each axis is divided into 100, representing percentage. From each axis lines are drawn at an angle of 60 degrees to carry the values across the graph. The data used must be in the form of three components.	
Kite Diagrams	Kite diagrams are used to see trends in statistics in a visual way. The central line for each diagram has a value of 0. The 'kite' is then drawn symmetrically both above and below the line to represent your data. For example, you can use kite diagrams to compare the distribution of plant species along a coastline.	
Radial Diagrams	These are particularly useful when one variable is a directional feature, for example wind-rose diagrams show both the direction and the frequency of winds. The circumference represents the compass directions and the radius can be scaled to show the percentage of time that winds blow from each direction	
Logarithmic Scales	Logarithmic graphs are used for plotting rates of change. They are different from normal graphs because the scale(s) are not spaced evenly. In this example comparing the output of two factories the y axis numbers are 1, 10, 100, 1000.	
Dispersion Diagrams	Dispersion graphs are used to display the main pattern in the distribution of data. The graph shows each value plotted as an individual point against a vertical scale. It shows the range of data and the distribution of each piece of data within that range. It therefore enables comparison of the degree of bunching of two sets of data. For example a dispersion diagram could be use to compare 'Quality of Life' of people living in urban areas with people living in rural areas	

Statistical Skills

<table>
<tr><th>Statistic Type</th><th>Description</th><th>Example</th></tr>
<tr><td>Mean</td><td>The mean ($\bar{x}$) is what you know as the average, and you find it by adding together all the values under consideration and dividing the total by the number of values.</td><td>Data,: 3, 4, 4, 4, 6, 6, 9

$\bar{x}$: $\frac{3 + 4 + 4 + 6 + 6 + 9}{7} = \frac{36}{7} = 5.1$</td></tr>
<tr><td>Mode</td><td>The mode is simply the most frequently occurring event. If we are using simple numbers, the mode is the most frequently occurring number. If we are looking at data on the nominal scale (grouped into categories), the mode is the most common category</td><td>Data: 3, 4, 4, 4, 6, 9

Mode (most frequently occurring number) = 4</td></tr>
<tr><td>Median</td><td>The median is the central value in a series of ranked values. If there is an even number of values, the median is the mid-point between the two centrally placed values.</td><td>Data: 3, 4, 4, 4, 6, 9
Median (central value) = 4

Data: 3, 4, 4, 6, 6, 9
Median = 5</td></tr>
<tr><td>Interquartile range</td><td>The interquartitle range is a measure of the spread of values around their median. The greater the spread the higher the interquartile range.
Stage 1
Place the variables in rank order, smallest first, largest last.
Stage 2
Find the upper quartile. This is found by taking the 25% highest values and finding the mid point between the highest of these and the next highest value.
Stage 3
Find the lower quartile. This is obtained by taking the 25% lowest values and finding the mid-point between the highest of these and the next highest value.
Stage 4
Find the difference between the upper and lower quartiles. This is the interquartile range, a crude index of the spread of values around the median</td><td>Monthly average temperatures
<table>
<tr><td>Jan</td><td>4</td><td>Jul</td><td>17</td></tr>
<tr><td>Feb</td><td>5</td><td>Aug</td><td>17</td></tr>
<tr><td>Mar</td><td>7</td><td>Sep</td><td>15</td></tr>
<tr><td>Apr</td><td>9</td><td>Oct</td><td>11</td></tr>
<tr><td>May</td><td>12</td><td>Nov</td><td>7</td></tr>
<tr><td>Jun</td><td>15</td><td>Dec</td><td>5</td></tr>
</table>

Ranked:
4 5 5 7 7 9 11 12 15 15 17 17
| |
lower quartile 6
upper quartile 15

Interquartile Range: (15 – 6) = 9</td></tr>
</table>

<table>
<tr><th>Statistic Type</th><th>Description</th><th>Example</th></tr>
<tr>
<td>Standard Deviation</td>
<td>
If we want to obtain some measure of the spread of our data around its mean, we calculate its standard deviation.
Two sets of figures can have the same mean but very different standard deviations.
Stage 1
Tabulate the values (x) and their squares (x^2). Add these values ($\sum x$ and $\sum x^2$)

Stage 2
Find the mean of all the values of x and square it

Stage 3
Calculate the formula:

$\sigma = \sqrt{\left(\frac{\sum x^2}{n} - \bar{x}^2\right)}$

Where
σ = standard deviation
√ = square root of
$\sum$ = the sum of
n = the number of values
$\bar{x}$ = the mean of the values

The higher the standard deviation, the greater the spread of data around the mean.
</td>
<td>
Number of vehicles passing a traffic count point on ten days between 9.00 and 10:00am.
<table>
<tr><td>Day 1</td><td>50</td><td>Day 6</td><td>70</td></tr>
<tr><td>Day 2</td><td>75</td><td>Day 7</td><td>63</td></tr>
<tr><td>Day 3</td><td>80</td><td>Day 8</td><td>42</td></tr>
<tr><td>Day 4</td><td>92</td><td>Day 9</td><td>75</td></tr>
<tr><td>Day 5</td><td>60</td><td>Day 10</td><td>82</td></tr>
</table>
<table>
<tr><th>x</th><th>x^2</th></tr>
<tr><td>50</td><td>2500</td></tr>
<tr><td>75</td><td>5625</td></tr>
<tr><td>80</td><td>6400</td></tr>
<tr><td>92</td><td>8464</td></tr>
<tr><td>60</td><td>3600</td></tr>
<tr><td>70</td><td>4900</td></tr>
<tr><td>63</td><td>3969</td></tr>
<tr><td>42</td><td>1764</td></tr>
<tr><td>75</td><td>5625</td></tr>
<tr><td>82</td><td>6724</td></tr>
</table>
$\sum x = 689 \quad \sum x^2 = 49571$

$\bar{x} = \frac{689}{10} = 68.9 \quad \bar{x}^2 = (68.9)^2 = 4747.2$

$\sigma = \sqrt{\left(\frac{49571}{10} - 4747.2\right)} = 14.5$
</td>
</tr>
</table>

Statistic Type	Description	Example
Spearman's rank correlation test	This technique is among the most reliable methods of calculating a correlation coefficient. This is a number which will summarise the strength and direction of any correlation between two variables. *Stage 1:* Tabulate the data. Rank the two data sets independently, giving the highest value a rank of 1, and so on. *Stage 2* Find the difference between the ranks of each of the paired variables (d). Square these differences (d^2) and sum them ($\sum d^2$) *Stage 3* Calculate the coefficient (r_s) from the formula: $r_s = 1 - \left(\frac{6\sum d^2}{n^3 - n} \right)$ where r_s = the coefficient d = the difference in rank of the values of each matched pair n = the number of pairs $\sum$ = the sum of The result can be interpreted from the scale: +1.0 Perfect positive correlation — 0 No correlation — -1.0 Perfect negative correlation You can now determine whether the correlation you have calculated is really significant, or whether it could have occurred by chance. (*see application of significance level*)	Population size and number of services in each of 12 settlements Population / No. Services: 350/3; 5632/41; 6793/43; 10714/87; 220/4; 15739/114; 8763/72; 7982/81; 6781/73; 4981/35; 1016/11; 2362/19 *Stages 1-2* Pop / Rank / Ser / Rank / Dif / d^2: 220/12/4/11/1/1; 350/11/3/12/1/1; 1016/10/11/10/0/0; 2362/9/19/9/0/0; 4981/8/35/8/0/0; 5632/7/41/7/0/0; 6781/6/73/4/2/4; 6793/5/43/6/1/1; 7982/4/81/3/1/1; 8763/3/72/5/2/4; 10714/2/87/2/0/0; 15739/1/114/1/0/0 *Stage 3* $r_s = 1 - \left(\frac{6x12}{12^3 - 12} \right)$ r_s = + 0.96 (a strong positive correlation)

Statistic Type	Description	Example
Application of significance level in inferential statistical results	*Stage 4* Decide on the rejection level (α). This is simply how certain you wish to be that the correlation you have calculated could not just have occurred by chance. Thus if you wish to be 95% certain, you rejection level is calculated as follows: $\alpha = \frac{100-95}{100}$ α = 0.05 *Stage 5* Calculate the formula for *t*: $t = r_s\sqrt{\left(\frac{n-2}{1-r_s{}^2}\right)}$ Where r_s = coefficient n = number of pairs *Stage 6* Calculate the degrees of freedom (df): (df) = *n* -2 Where *n* = the number of pairs *Stage 7* Look up the critical value in the t-tables, using the degrees of freedom (stage 6) and rejection level (stage 4). If the critical value is less than your t-value (stage 5), then the correlation is significant at the level chosen (95%). If the critical value is more than your t-value, then you cannot be certain that the correlation could not have occurred by chance.	*Stage 4* Rejection level (α) = 95% = 0.05 *Stage 5* $t = 0.96\sqrt{\left(\frac{12-2}{1-0.96^2}\right)} = 10.73$ *Stage 6* Df = 12 – 2 = 10 *Stage 7* Df = 10 Rejection level = 0.05 Therefore critical value of *t* – 2.23 The critical value is less than our *t* value (10.73). We can therefore conclude that there is a significant correlation between settlement size and the number of services offered in each.

General Geographical Skills

Observation Skills

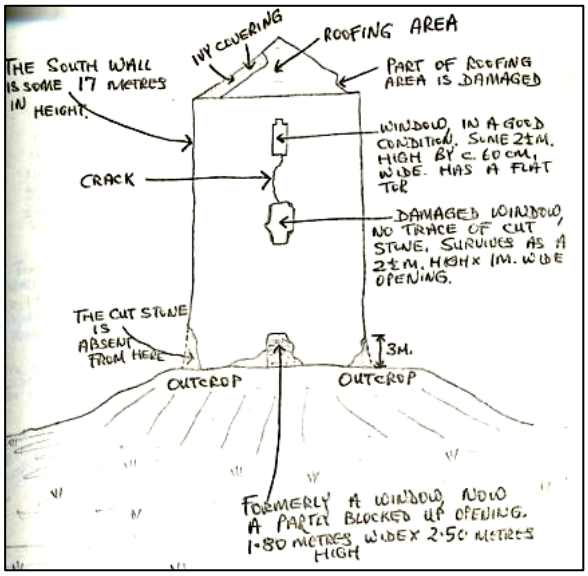
Most people can see but not many people observe. Show a normal person an image and they will tell you a couple of things; the grass is green, or the houses are big. Show a skilled geographer the same image and they will give you a detailed description of what is there and reasons why the images is how it appears. As a geographer you are expected to constantly observe, by the end of the year you will not be able to visit the beach without thinking of erosion or visit a town without thinking of urban regeneration!

Besides these general observations and interpreting images you will also be expected to record detailed observations through sketching and annotating.

Field Sketches

Well drawn and labelled field sketches are useful for describing and analysing both human and natural environments. They are a very important primary data collection tool. When observing you should look for; the specific, small-scale features and the larger, more general features.

You don't have to be an amazing artist as features should be clearly labelled.



Annotated Photographs

Annotated photos are a partial substitute for sketches. Sketches enable you to mark key features whilst you are in the field. With photographs you have to wait to label images after the photographs have been processed or downloaded. Detail can easily be lost. As with sketches labels should be relevant and detailed.

ICT Skills

During your AS level studies you will be expected to use a variety of programmes that you will be very familiar with. Unless told specifically you have the choice about how you present your work. For example, essays for class can be typed or hand written. Some students like to type notes into neat, although I would suggest there are much better ways of spending your private study time.

Your teacher will expect you to have a working knowledge of Microsoft Word for essays, PowerPoint for presentations and peer teaching and Excel for spreadsheets. If you use any additional programmes you will be given guidance from your teacher.

Geographical Information Systems (GIS)

These are now one of the most important tools for geographical analysis and you will be made familiar with GIS and how it is used. For an excellent (although very basic) introduction to GIS try the ordnance survey map zone website. GIS is basically electronic mapping. Huge amounts of data can be stored onto maps, in various layers that can be added or removed as they are required. All variables that are plotted onto GIS need a location. This may be a postcode, a grid reference or the degree of latitude and longitude. Often GIS is used alongside satellite images.

Remote sensing

Over the last 30 years the ability of humans to monitor the Earth has dramatically improved because of the development of satellite technology. Prior to this observations could be carried out by airborne cameras.

Remote sensing is the name given to measuring and monitoring phenomenon from a distance. Visible and invisible wavelengths can be monitored. For example; instruments can take photographs where land appears as it normally would (visible parts of the electromagnetic spectrum) or they can create images using infra red and ultra violet light (invisible parts of the electromagnetic spectrum). You need to be able to interpret both types of image.

Google Earth is a fantastic way of accessing a range of visible images and is available on the school system.

Appendix 1: Key Words

This section contains a number of the key words you will need for your studies. You should know exactly what these words mean and how to use them correctly in your writing. This is not an exhaustive list and you will need to add to them as you progress through Year 12.

Rivers, Floods and Management

Term	Definition
Abrasion	
Afforestation	
Antecedent Rainfall	
Artificial Levees	
Attrition	
Base Flow	
Braiding	
Capacity	
Channel Efficiency	
Competence	
Contour Ploughing	
Corrosion	
Cross Profile	
Dam	
Deforestation	
Delta	
Deposition	
Discharge	
Diversion Spillways	
Entrainment Velocity	
Erosion	

Evaporation	
Evapotranspiration	
Fall velocity	
Flood Plain	
Flooding	
Floodplain Zoning	
Graded Profile	
Groundwater Flow	
Hard Engineering	
Helicoidal Flow	
Hjulstrom Curve	
Hydraulic Action	
Hydraulic Radius	
Hydrological Cycle	
Impermeable Surface	
Incised Meanders	
Infiltration	
Interception	
Kinetic Energy	
Knick Points	
Lag Time	
Land Use Management	
LEDC	

Levee	
Load	
Long Profile	
Meander	
MEDC	
Peak Discharge	
Peak Rainfall	
Percolation	
Permeable Surface	
Potential Energy	
Pothole	
Precipitation	
Rapid	
Receding Limb	
Recurrence Interval	
Rejuvenation	
Rising Limb	
River Management	
River Restoration	
River Straightening	
River Terraces	
Roughness	
Saltation	

Soft Engineering	
Solution	
Stemflow	
Storm Hydrograph	
Surface Runoff	
Suspension	
Throughfall	
Throughflow	
Traction	
Transportation	
Urbanisation	
Water Balance	
Waterfall	
Watershed	
Wetted Perimeter	

Coastal Environments

Term	Definition
Abrasion	
Arch	
Attrition	
Bar	
Barrage	
Bay	
Beach	
Beach Nourishment	
Berm	
Concordant Coastline	
Conservation	
Constructive Wave	
Cost-Benefit Analysis	
Cusp	
Deposition	
Destructive Wave	
Discordant Coastline	
Dune Regeneration	
Ecosystem	
Emergent Coastline	
EQI/EQA	

Erosion	
Eustatic Sea Level Change	
Fetch	
Fjord	
Gabion	
Groyne	
Hard engineering	
Headland	
High Energy Coast	
Hydraulic Action	
Isostatic Sea Level Change	
LEDC	
Longshore drift	
Low Energy Coast	
Managed retreat/realignment	
Marsh Creation	
Mass Movement	
MEDC	
Raised Beach	
Relict Cliff	
Resource	
Revetment	
Ria	

Rip rap	
Runnel	
Salt Marsh	
Saltation	
Sand Dune	
Sanitation	
Sea Wall	
Sediment Cell	
Sediment Source	
Soft engineering	
Solution	
Spit	
Stack	
Storm Surge	
Stump	
Sub-Aerial Weathering	
Submergent Coastline	
Suspension	
Sustainable	
Tourism	
Traction	
Transportation	
Wave cut Platform	

Population Change

Term	Definition
Ageing Population	
Agenda 21	
Age-specific Birth Rate	
Anti–natalist policies	
Asylum Seeker	
Crud Birth Rate	
Crude Death Rate	
Demographic Transition Model (DTM)	
Dependency Ratio	
Fertility Rate	
Forced Migration	
Infant Mortality Rate	
International Migration	
Life Expectancy	
Longevity	
Migration	
Natural Change	
Net Migration	
Optimum Population	
Over Population	
Population Density	

Population Structure	
Pro–natalist policies	
Refugee	
Rural – Urban Migration	
Standardised Mortality Rate	
Sustainable Development	
Under Population	
Voluntary Migration	
Youthful Population	

Energy Issues

Term	Definition
Acid Deposition	
Appropriate Technology	
Bioethanol	
Biomass	
Carbon Dioxide	
Carbon Trading	
Catalytic Converters	
Climate Change	
Coal	
Commodity	
Congestion Charge	
Consumption	
Critical	
Crude Oil	
Electricity	
Emissions	
Energy Conservation	
Flow	
Fossil Fuels	
Geothermal Energy	
Greater London Low Emission Zone (LEZ)	

Greenhouse Effect	
Industrial Revolution	
Kyoto Protocol	
Liquified Natural Gas	
Methane	
Natural Gas	
NGO’s	
Nitric Acid	
Nitrous Oxide	
Non-critical	
Non–renewable	
Nuclear Decommissioning Authority – (NDA) prev. NIREX	
Nuclear Energy	
OPEC	
Plutonium	
Precipitation	
Primary Energy	
Radioactive	
Recoverable Reserve	
Renewable	
Reserve	
Resource	
Secondary Energy	

Solar Power	
Speculative Reserves	
Stock	
Sulphuric Acid	
Sustainable Development	
The Carbon Trust	
Tidal Energy	
Transnational Corporations	
Uranium	
Wave Energy	
Wind Energy	

Appendix 2: Specification Content

This section contains a more detailed guide to the content of your course. It provides an exact copy of what the exam board says you need to know for the topics you will study for GEOG1.

Core Physical Section:
Rivers, Floods and Management

- The drainage basin hydrological cycle: the water balance.
- Factors affecting river discharge: the storm hydrograph.
- The long profile – changing processes: types of erosion, transportation and deposition, types of load; the Hjulstrom curve.
- Valley profiles – long profile and changing cross profile downstream, graded profile, potential and kinetic energy.
- Changing channel characteristics – cross profile, wetted perimeter, hydraulic radius, roughness, efficiency and links to velocity and discharge.
- Landforms of fluvial erosion and deposition – potholes, rapids, waterfalls, meanders, braiding, levees, flood plains and deltas.
- Process and impact of rejuvenation – knick points, waterfalls, river terraces and incised meanders.
- Physical and human causes of flooding – location of areas of high risk in a more developed and a less developed country case study, magnitude, frequency (risk) analysis.
- Impact of flooding – two case studies of recent events should be undertaken from contrasting areas of the world.
- Flood management strategies – to include hard engineering – dams, straightening, building up of levees, diversion spillways, and soft engineering
    - forecasts and warnings, land use management on floodplain, wetland and river bank conservation and river restoration.

The Physical Option:
Coastal environments

- The coastal system – constructive and destructive waves, tides, sediment sources and cells.
- Coastal processes – marine erosion, transportation and deposition; land-based sub-aerial weathering, mass movement and runoff.
- Landforms of erosion: headlands and bays, blow holes, arches and stacks, cliffs and wave cut platforms. Landforms of deposition – beaches and associated features: berms, runnels and cusps, spits, bars, dunes and salt marshes.
- Case study of coastal erosion – specific physical and human cause(s) and its physical and socio-economic consequences.
- Sea level change – eustatic and isostatic change.
- Coastlines of submergence and emergence and associated landforms. Impact of present and predicted sea level increase.
- Case study of coastal flooding – specific physical and human cause(s) and its physical and socio-economic consequences.
- Coastal protection objectives and management strategies – hard engineering: sea walls, revetments, rip rap, gabions, groynes and barrages. Soft engineering: beach nourishment, dune regeneration, marsh creation, land use/activity management.
- Case studies of two contrasting areas – one where hard engineering has been dominant and one where soft engineering has been dominant. To investigate issues relating to costs and benefits of schemes, including the potential for sustainable management.

Core Human Section:
Population Change

- Population indicators – vital rates (birth rate, death rate, fertility rate, infant mortality rate, changes over time, life expectancy, migration rate and population density) for countries at different stages of development.
- Population change: the demographic transition model (5 stages), its validity and applicability in countries at different stages of development.
- Population structures at different stages of the demographic transition. The impact of migration in population structure. The implications of different structures for the balance between population and resources.
- Social, economic and political implications of population change. Attempts to manage population change to achieve sustainable development with reference to case studies of countries at different stages of development.
- The way population change and migration affects the character of rural and urban areas.
- Settlement case studies – comparing two (or more) of the following areas – an inner city area, a suburban area, an area of rural/urban fringe and an area of rural settlement. To include reference to characteristics such as: housing, ethnicity, age structure, wealth and employment and the provision of services.
- The implications of the above for social welfare.

The Human Option:
Energy Issues

- Types of energy – renewable (flow) resources, nonrenewable (stock) resources, primary/secondary energy, the primary energy mix considered in a national context.
- Global patterns of energy supply, consumption and trade. Recent changes in these patterns.
- The geopolitics of energy – conflict and co-operation in world affairs. The role of transnational corporations in world energy production and distribution.
- Environmental impact of energy production – fuel wood gathering; nuclear power and its management. The use of fossil fuels – acid rain, the potential exhaustion of fossil fuels.
- The potential for sustainable energy supply and consumption. Renewable energy – bio-mass, solar power, wind energy, wave energy and tidal energy. Appropriate technology for sustainable development.
- Energy conservation – designing homes, workplaces and transport for sustainability.
- Case studies at national scale of two contrasting approaches to managing energy supply.