

GEOGRAPHY ELECTIVE

GCE Ordinary Level

(Syllabus 2204)

TO BE IMPLEMENTED FROM YEAR OF EXAMINATION 2014

INTRODUCTION

Desired Outcomes of Education and the Study of Geography

The Desired Outcomes of Education (DOE) are attributes that educators aspire to for our learners. These outcomes establish a common purpose for Geography teachers, and serve as a compass to steer the teaching and learning process.

The DOE for our learners are:

- a *confident person* who has a strong sense of right and wrong, is adaptable and resilient, knows himself, is discerning in judgement, thinks independently and critically, and communicates effectively;
- a *self-directed learner* who takes responsibility for his own learning, who questions, reflects, perseveres in the pursuit of learning;
- an *active contributor* who is able to work effectively in teams, exercises initiative, takes calculated risks, is innovative and strives for excellence; and
- a *concerned citizen* who is rooted to Singapore, has a strong civic consciousness, is informed, and takes an active role in bettering the lives of others around him.

As a subject, Geography builds on students' experiences and prior knowledge to examine the physical and human phenomena found on Earth as well as their complex interactions and patterns across space.

Geography emphasises the integrative study of physical and human environments to enable students to gain a better understanding of their own space and other parts of the world. It also focuses on the interconnectedness among groups of people, and between people and their environment. The Geography student can expect to acquire a wide range of knowledge and skills to understand and explain physical and human phenomena, and other contemporary environmental and social issues that occur in different places and cultures. Equipped with the skills of gathering and analysing information, and an inquiring mind to seek answers to issues affecting our lives and the world we live in, Geography students are prepared for their roles as informed citizens in the 21st century. Geography also imbibes in students an awareness of appropriate attitudes and values that promotes a positive geographical future; one that ensures the sustainability of our resources, people, country, and planet. These attributes would place them in good stead to attain the DOE. Details of how the study of Geography contributes towards the DOE of the Singapore education system are shown in Fig 1.



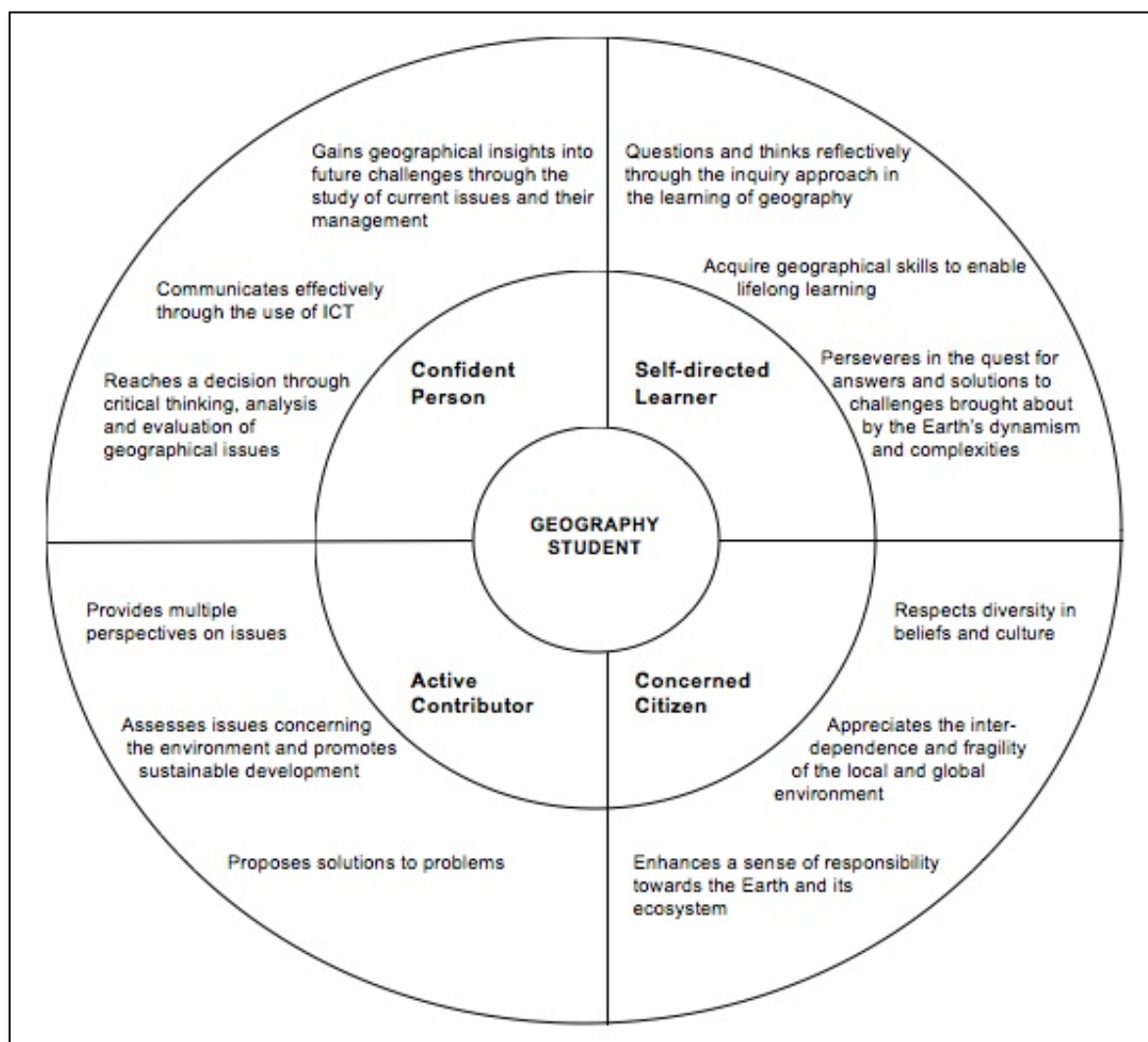


Fig. 1: Desired Outcomes of Singapore's Education through Geography

KEY GEOGRAPHICAL CONCEPTS

There are six key concepts that underpin the study of Geography. Students need to understand these concepts in order to deepen and broaden their knowledge, understanding and skills of the subject. The key concepts and elaborations are as listed in the table below.

1	Space
	<ul style="list-style-type: none"> Know the location and distribution of physical features and human activities. Appreciate how and why the physical features and human activities are changing and their implications. Understand the interactions between places and the patterns of networks created by movements within these places.
2	Place
	<ul style="list-style-type: none"> Understand that every place has a unique set of physical and human characteristics. Understand the dynamic nature of places, and the opportunities and challenges associated with them.

3	Scale
	<ul style="list-style-type: none"> • Appreciate different scales, from local to national and international. • Make links between scales to develop geographical understanding of issues confronting different societies.
4	Physical and human processes
	<ul style="list-style-type: none"> • Understand the complexity of physical processes and recognise the opportunities and challenges associated with these processes. • Understand how sequences of events and activities in the physical and human worlds are part of our dynamic planet and changing world.
5	Environmental and cultural diversity
	<ul style="list-style-type: none"> • Appreciate the differences and similarities between people, places, environments and cultures. • Appreciate the variety of people, places, environments and cultures in our varied and changing world.
6	Interdependence
	<ul style="list-style-type: none"> • Explore the socio-cultural, economic and environmental connections between places and earth's four spheres. • Understand the inter-relationships and interconnections when studying change in physical features and human activities at all scales.

AIMS AND LEARNING OUTCOMES

AIMS

The syllabus aims to enable candidates to:

- Acquire knowledge of the characteristics, distribution and processes of physical and human phenomena;
- Develop a holistic understanding of physical-human relationships at local, regional and global scales;
- Gain geographical insights and global awareness into future challenges through the study of current issues and their management;
- Become inquiring and self-directed learners who ask geographical questions and seek understanding through the collection and analysis of geographical information;
- Develop skills in communicating and applying geographical knowledge; and
- Make informed judgements and sound decisions through the analysis, synthesis and evaluation of geographical information.

LEARNING OUTCOMES

Knowledge

The syllabus intends that candidates develop knowledge with regard to:

- Components of physical and human environments at local, regional and global scales;
- Diverse spatial patterns of physical and human phenomena;
- Relationships and interactions between and within physical and human phenomena at local, regional and global scales;
- Varying spatial and temporal changes in physical and human environments; and
- Different approaches through which challenges faced can be managed by local, regional and global communities.

Skills

The syllabus intends for candidates to develop the skills to:

- Ask relevant geographical questions and work effectively in teams to collect geographical information from both primary and secondary sources;
- Extract relevant information from geographical data;
- Interpret and recognise patterns in geographical data and deduce relationships;
- Organise and present geographic information in a coherent way; and
- Analyse, evaluate and synthesise geographical data to make informed and sound decisions.

Values

Through their geographical training, candidates should develop:

- Judgements on values and attitudes in the use and management of resources;
- A sense of appreciation, care and responsibility for the quality of the environment; and
- Respect and sensitivity towards the attitudes, values and beliefs of people in different human environments.

ASSESSMENT OBJECTIVES

Candidates should be able to:

AO1: Knowledge

- Demonstrate relevant factual knowledge – geographical facts, concepts, processes, interactions and trends
- Demonstrate knowledge of relevant fieldwork techniques – identification of geographical questions, sequence of fieldwork inquiry, primary and secondary data collection methods

AO2: Critical Understanding and Constructing Explanation

- Select, organise and apply concepts, terms and facts learnt
- Make judgements, recommendations and decisions
- Evaluate data collection methods and suggest improvements

AO3: Interpreting and Evaluating Geographical Data

- Comprehend and extract relevant information from geographical data (numerical, diagrammatic, pictorial and graphical forms)
- Use and apply geographical knowledge and understanding to interpret geographical data
 - Recognise patterns in geographical data and deduce relationships
 - Compare and contrast different views
 - Present geographical data in an appropriate form and an effective manner
 - Draw conclusions based on a reasoned consideration of evidence
- Evaluate the validity and limitations of fieldwork evidence and of the conclusions reached

Assessment Specification Grid

The table below shows the approximate weighting of the Assessment Objectives in the syllabus.

Assessment Objectives	Weighting
AO1+2	25%
AO1+3	25%
Total	50%

Note: AO1 forms part of the testing of AO2 and AO3.

SCHEME OF ASSESSMENT

The examination consists of **one** paper. The paper comprises three sections – Sections A and B (*Global Tourism and Variable Weather and Climate*) and Section C (*Living with Tectonic Hazards and Food Resources*). The duration of the paper is **1 hour 40 minutes**. For Section A, the question consists of **no more than five parts**, including the sub-division of parts. For Section B, the question consists of **no more than three parts**, including sub-division of parts. For Section C, the question consists of **no more than five parts**, including sub-division of parts. The last part-question in both Sections B and C includes an open-ended question which will be marked according to level descriptors and capped at a maximum of 8 marks. Each open-ended question will be marked based on 3 levels. The question in Section A and the remaining part-questions in Sections B and C will be marked using point marking.

1h 40min 50% 50 marks	Section A (13%)	Two structured questions on Geographical Investigations will be set based on the following topics: <ul style="list-style-type: none"> • Global Tourism • Variable Weather and Climate One question will be set on each topic. Candidates must answer one question in this section. The question carries 13 marks.
	Section B (12%)	Two structured questions will be set based on the following topics: <ul style="list-style-type: none"> • Global Tourism • Variable Weather and Climate One question will be set based on a specific topic. One other question will be set on a combination of topics. Candidates must answer one question from this section. The question carries 12 marks.
	Candidates are advised to spend a total of 55 minutes on Sections A and B.	
	Section C (25%)	Two structured questions will be set based on the following topics: <ul style="list-style-type: none"> • Living with Tectonic Hazards • Food Resources One question will be set based on a specific topic. One other question will be set on a combination of topics. Candidates must answer one question from this section. They are advised to spend 45 minutes on the question. Each question carries 25 marks.

Note: Stimulus materials will be used where they facilitate the application of content to new contexts and issues. A non-exhaustive list of stimulus materials includes topographic and other maps, photographs, diagrams, sketches and texts. Map reading and skills of photograph interpretation, graphic construction, interpretation of data (primary and secondary), and simple descriptive analysis of statistical data may be examined in all sections. For map reading, this may only be tested as a sub-part of a question. It will not be set as a full 25 mark question. Candidates may be assessed in the application of geographical knowledge in decision-making processes. **Geographical investigations in the form of a fieldwork case study will only be examined in Section A.**

USE OF CALCULATORS

An approved calculator may be used in this paper.

SYLLABUS FRAMEWORK AND OUTLINE

The O-Level Geography Elective syllabus is structured around three major themes, namely “Our Dynamic Planet”, “Our Changing World” and “Geographical Skills and Investigations”. Each theme in physical and human geography comprises two topics as shown below.

Theme 1: Our Dynamic Planet (Physical Geography)

- (1) Living with Tectonic Hazards - Risk or opportunity?
- (2) Variable Weather and Changing Climate – A continuing challenge?

Theme 2: Our Changing World (Human Geography)

- (3) Global Tourism - Is tourism the way to go?
- (4) Food Resources – Is technology a panacea for food shortage?

Theme 3: Geographical Skills and Investigations

- (5) Topographical Map Reading Skills
- (6) Geographical Data and Techniques
- (7) Geographical Investigations

This syllabus adopts an inquiry-based approach to the learning of Geography. It provides coverage of physical and human aspects of the subject and the linkages that exist between them by presenting them in the form of geographical questions. It gives students a deeper and critical understanding of the changing world and helps prepare them for the complexities in the 21st century.

There are four topics in themes 1 and 2 of the O-Level Geography Elective syllabus. The heading for each of these topics is presented in the form of an overarching geographical question. Each topic is organised around either two or three key questions and these key questions serve as the organisational framework of the syllabus. For each key question, there are learning outcomes, content and main terms. The syllabus is designed such that the first two key questions guide students to gain an understanding and appreciation of the topic as stated in the overview. Students then apply their geographical skills and understanding to the third key question to reach a reasoned conclusion to the overarching issue. However, in two topics, namely *Weather and Climate* and *Food Resources* where there are no third key questions, attempts have been made to ensure that the content covered in key questions 1 and 2 would provide some scope for students to answer the overarching issues. (see Table 1 for the syllabus content outline and key questions).

In the syllabus, examples stated in brackets (xx) are meant to be exhaustive and compulsory and only these would be assessed in the examinations. In contrast, examples listed as (e.g. yy) are not exhaustive and may be replaced with more recent and relevant ones given the indication of scale. Case studies where applicable, are to be studied in greater detail.

Table 1: Syllabus Content Outline and Key Questions

Theme 1: Our Dynamic Planet (Physical Geography)	
Topic 1: Living with Tectonic Hazards – Risk or opportunity?	
	<ul style="list-style-type: none"> • Why are some areas more prone to tectonic hazards?
	<ul style="list-style-type: none"> • What landforms and associated tectonic phenomena are found at plate boundaries?
	<ul style="list-style-type: none"> • How do people prepare for and respond to earthquakes?
Topic 2: Variable Weather and Changing Climate – A continuing challenge?	
	<ul style="list-style-type: none"> • Why do different places experience different weather and climate?
	<ul style="list-style-type: none"> • What is happening to the Earth's climate?
Theme 2: Our Changing World (Human Geography)	
Topic 3: Global Tourism – Is tourism the way to go?	
	<ul style="list-style-type: none"> • How does the nature of tourism vary from place to place?
	<ul style="list-style-type: none"> • Why has tourism become a global phenomenon?
	<ul style="list-style-type: none"> • Developing tourism at what cost?
Topic 4: Food Resources – Is technology a panacea for food shortage?	
	<ul style="list-style-type: none"> • How and why has food consumption patterns changed since 1960s?
	<ul style="list-style-type: none"> • What are the trends and challenges in production of food crops?
Theme 3: Geographical Skills and Investigations	
Topic 5: Topographical Map Reading Skills	
Topic 6: Geographical Data and Techniques	
Topic 7: Geographical Investigations	

SYLLABUS CONTENT

Topic 1: Living With Tectonic Hazards – Risk or opportunity?

Certain places in the world like those near plate boundaries are prone to earthquakes, volcanic eruptions and tsunamis. Such natural hazards pose dangers to people who live there and have a significant impact on their quality of life. In examining the spatial patterns of these natural hazards and why such patterns exist, students have to explore the concept of plate tectonics and understand how plate movements resulting from internal earth processes create mountain systems, some large-scale landform features and tectonic hazards around the world. They will examine how and why the impact of these tectonic hazards vary greatly from place to place and consider the decision-making process that leads people to adopt certain responses when deciding to live in hazard-prone areas. Although Singapore is not at the plate boundaries, we do experience tremors and effects associated with earthquakes and volcanic eruptions occurring in neighbouring countries. Through studying this topic, students will gain an appreciation of the constraints people face and the reasons behind the different choices people make in similar situations.

Learning Outcomes	Content	Main Terms
Key Question 1: Why are some areas more prone to tectonic hazards?		
Students will be able to: <ul style="list-style-type: none"> Compare the different types of natural hazards 	A) <u>Knowledge</u> <ul style="list-style-type: none"> Overview of types of natural hazards (climate-related e.g. floods and storms versus tectonic hazards) 	<ul style="list-style-type: none"> Natural hazard
<ul style="list-style-type: none"> Describe the internal structure of the Earth (core, mantle, crust) and tectonic plates Explain the movement of plates 	<ul style="list-style-type: none"> Internal structure of the Earth <ul style="list-style-type: none"> Core Mantle Continental crust and oceanic crust Tectonic plates Movement of crustal plates driven by the pull of subducting plates and convection currents circulating within the mantle 	<ul style="list-style-type: none"> Core Mantle Continental crust Oceanic crust Tectonic plate Slab-pull force Convection current
<ul style="list-style-type: none"> Describe the global distribution of tectonic plates and types of plate boundaries 	<ul style="list-style-type: none"> Names, types and locations of major plates and plate boundaries in the world Types of plate boundaries and examples: <ul style="list-style-type: none"> Divergent: oceanic-oceanic (e.g. Mid-Atlantic Ridge), 	<ul style="list-style-type: none"> Subduction zone Divergent boundary Convergent



Learning Outcomes	Content	Main Terms
	<ul style="list-style-type: none"> continental-continental (e.g. Great Rift Valley of East Africa) ○ Convergent: oceanic-oceanic (e.g. Mariana Trench), continental-continental (e.g. Himalayas), oceanic-continental (e.g. Andes) ○ Transform (e.g. San Andreas Fault) 	<ul style="list-style-type: none"> boundary • Transform boundary
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> • Draw and annotate a diagram showing the internal structure of the Earth • Identify and label major plates and the boundary types on maps • Draw labelled diagrams showing the different types of movements taking place at plate boundaries 	
Key Question 2: What landforms and associated tectonic phenomena are found at plate boundaries?		
<p>Students will be able to:</p> <ul style="list-style-type: none"> • Discuss how plate movements influence the general distribution of landforms and associated phenomena • Describe the characteristics of landforms and phenomena associated with plate movements • Explain the causes of landforms and phenomena associated with plate movements • Describe the structure of volcanoes • Explain the shape and size of volcanoes • Describe the benefits and risks of living in volcanic areas • Discuss the impact of earthquakes on people living in areas prone to this natural hazard 	<p>A) <u>Knowledge</u></p> <ul style="list-style-type: none"> • Plate movements and associated landforms <ul style="list-style-type: none"> ○ Divergent: Rift valleys and block mountains ○ Convergent: Fold mountains ○ Divergent and Convergent: Volcanoes • Phenomena and their causes <ul style="list-style-type: none"> ○ Earthquakes ○ Tsunamis ○ Volcanic eruptions • Structure of volcanoes – crater / caldera, vent, magma chamber • Shape and size of volcanoes (shield volcano e.g. Erta Ale in Ethiopia, stratovolcano e.g. Puy de Domes in France and Mt Pinatubo in Philippines) and viscosity of lava (high-silica vs low-silica) • Benefits of living in volcanic areas (e.g. fertile soil, precious stones and minerals, tourism and geothermal energy) • Risks of living in volcanic areas (e.g. massive destruction by 	<ul style="list-style-type: none"> • Tensional force • Compressional force • Folding • Fold mountains • Rift valley • Block mountain • Volcano • Pacific Ring of Fire • Shield volcano • Stratovolcano • Crater • Caldera • Vent • Magma chamber • Magma • Lava

Learning Outcomes	Content	Main Terms
	volcanic materials, pollution, effects on weather) • Hazards associated with living in earthquake zones (e.g. disruption of services, fires, landslides, destruction of properties, loss of lives and threat of tsunami)	• Viscosity • Geothermal energy • Earthquake • Focus • Epicentre • Richter scale • Aftershocks • Tsunami • Vulcanicity
	B) <u>Skills</u> • Analyse maps and photographs of major tectonic landforms and phenomena to derive the relationship between their distribution patterns and plate boundaries (e.g. Pacific 'Ring of Fire') • Draw an annotated cross-section of a volcano • Draw labeled diagrams to show the formation of a fold mountain, a rift valley, a block mountain and a volcano	
Key Question 3: How do people prepare for and respond to earthquakes?		
Students will be able to: • Discuss the responses of people to earthquakes and tsunamis • Assess the effectiveness of strategies in mitigating and responding to the effects of earthquakes and tsunamis	A) <u>Knowledge</u> • People may respond to natural hazards in several ways: <ul style="list-style-type: none"> ○ fatalistic approach ○ acceptance approach ○ adaptation approach • Preparedness measures (e.g. land use regulation, building design, infrastructure, emergency drills, and use of technology such as earthquake and tsunami monitoring and warning systems) • Responses (e.g. short term: search and rescue, and emergency food and medical supplies; long term: rebuilding of infrastructure and provision of health care)	• Fatalistic approach • Acceptance approach • Adaptation approach

Learning Outcomes	Content	Main Terms
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> • Examine before and after satellite images and aerial photographs of a place affected by an earthquake or tsunami to identify and analyse the changes that have occurred 	

Topic 2: Variable Weather and Changing Climate – A continuing challenge?

Variations in day-to-day weather are occurring all the time; they are an integral part of our lives. The average weather conditions of about 30 years is known as climate. Climate has changed in the past through natural causes on timescales ranging from millions to hundreds of years. However, in this topic, the study of climate change is confined to the changes taking place in the last 150 years. Changes in climate are often discussed as they impact human lives, livelihoods and nature's life support systems. In recent years, severe weather events such as tropical cyclones appear to have become more intense. In studying this topic, students will examine the fundamental concepts and essential principles of the Earth's weather and climate system. They will gain an understanding of the scientific basis of changing weather and climate and the complex inter-connections among the physical and biological components of the Earth system. Through the study, students will also appreciate that climate change poses challenges as well as opportunities.

Learning Outcomes	Content	Main Terms
Key Question 1: Why do different places experience different weather and climate?		
Students will be able to: <ul style="list-style-type: none"> • Differentiate between weather and climate • Explain the daily and seasonal variations in temperature at a particular location • Compare and explain the variations in temperature between different locations 	A) <u>Knowledge</u> <ul style="list-style-type: none"> • Definition of weather • Definition of climate • Elements of weather <ul style="list-style-type: none"> ○ Temperature ○ Rainfall, clouds and relative humidity ○ Pressure and winds • Temperature <ul style="list-style-type: none"> ○ Factors influencing the temperature of locations <ul style="list-style-type: none"> - Latitude - Altitude - Distance from the sea - Cloud cover 	<ul style="list-style-type: none"> • Weather • Climate • Weather elements • Temperature • Latitude • Altitude • Continental effect • Maritime effect • Cloud cover

Learning Outcomes	Content	Main Terms
<ul style="list-style-type: none"> • Explain the differences in relative humidity in different locations • Explain the formation of convectional rain and relief rain 	<ul style="list-style-type: none"> • Relative humidity, clouds and rainfall <ul style="list-style-type: none"> ○ Relative humidity ○ Formation of rain <ul style="list-style-type: none"> - Convectional rain - Relief rain 	<ul style="list-style-type: none"> • Relative humidity • Evaporation • Condensation • Saturation • Clouds • Precipitation • Convectional rain • Relief rain
<ul style="list-style-type: none"> • Explain how coastal temperatures are moderated by land and sea breezes • Explain the formation of monsoon winds 	<ul style="list-style-type: none"> • Pressure and winds <ul style="list-style-type: none"> ○ Pressure and movement of air ○ Wind systems <ul style="list-style-type: none"> - Land and sea breezes - Monsoon winds 	<ul style="list-style-type: none"> • Air pressure • Wind • Land breeze • Sea breeze • Coriolis effect • Deflection • Monsoon winds
<ul style="list-style-type: none"> • Describe and explain the distribution and characteristics of equatorial, monsoon and cool temperate climates • Describe and explain the weather and climate of Singapore with reference to rainfall, relative humidity and temperature 	<ul style="list-style-type: none"> • Equatorial climate • Monsoon climate • Cool temperate climate (marine west-coast) 	<ul style="list-style-type: none"> • Equatorial climate • Monsoon climate • Cool temperate climate • Marine west-coast • Annual range • Diurnal range • Prevailing wind • Wind speed • Wind direction

Learning Outcomes	Content	Main Terms
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> • Use of appropriate instruments to gather weather data (e.g. temperature, rainfall, pressure and wind) • Make calculations (e.g. annual range, diurnal range, mean monthly, relative humidity) • Use appropriate graphs and diagrams to represent weather data 	
Key Question 2: What is happening to the Earth's climate?		
<p>Students will be able to:</p> <ul style="list-style-type: none"> • Discuss climate change in the last 150 years • Explain the greenhouse effect • Discuss the natural causes of recent climate change 	<p>A) <u>Knowledge</u></p> <ul style="list-style-type: none"> • Changes in climate <ul style="list-style-type: none"> ○ Global records since 1881 show a significant, but irregular temperature rise of 0.3°C to 0.6°C ○ Global cooling was recorded after WWII for several decades because of industrial pollution and volcanic activity (global dimming) ○ Global warming over the last century: world is warming on average by 0.74°C, with most of that since 1970s ○ Global temperatures in the last decade reached the highest levels on record • Greenhouse gases (CO₂, water vapour, nitrous oxide, methane, ozone and halocarbons) trap heat in the atmosphere (greenhouse effect) • Natural causes of recent climatic change <ul style="list-style-type: none"> ○ Variations in solar output ○ Volcanic eruptions – cooling influence 	<ul style="list-style-type: none"> • Global climate change • Global warming • Global cooling • Greenhouse gases • Greenhouse effect

Learning Outcomes	Content	Main Terms
<ul style="list-style-type: none"> Explain how human activities such as deforestation, burning of fossil fuels, rice cultivation and cattle farming increase greenhouse gases and lead to enhanced greenhouse effect 	<ul style="list-style-type: none"> Anthropogenic factors (human-caused factors) leading to enhanced greenhouse effect <ul style="list-style-type: none"> Deforestation (altering atmospheric composition e.g. carbon dioxide and nitrous oxide, and affecting hydrological cycle) Burning fossil fuels Changing land use <ul style="list-style-type: none"> Agriculture (e.g. padi fields, cattle farming) Industries (e.g. manufacturing) Urbanisation 	<ul style="list-style-type: none"> Anthropogenic factors Enhanced greenhouse effect Deforestation Agriculture Industries Urbanisation
<ul style="list-style-type: none"> Explain the impact of climate change such as sea level rise, extreme weather events and human health Describe the responses to climate change 	<ul style="list-style-type: none"> Impact of climate change <ul style="list-style-type: none"> Sea level rise (e.g. threatens low lying areas and islands, increases risk of damage to homes and buildings from storm surges that accompany tropical cyclones) More frequent extreme weather events (e.g. heat waves and tropical cyclones) Spread of some infectious insect-borne diseases (e.g. dengue fever and malaria) Lengthen the growing season in certain regions (e.g. fruit production in Eastern Canada, vineyards in Europe) Responses and challenges to climate change <ul style="list-style-type: none"> International community (Kyoto Protocol and 2009 Copenhagen Conference) Nations (e.g. strategies to reduce greenhouse gas emissions focusing on energy efficiency and energy conservation, new building requirements and technologies) 	<ul style="list-style-type: none"> Sea level rise Insect-borne diseases International agreement Energy efficiency Energy conservation
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> Extract information, describe trends and draw conclusions from graphs on temperature and greenhouse gases 	

Topic 3: Global Tourism – Is tourism the way to go?

Tourism is an important industry in many countries of the world. However, it has both advantages and disadvantages. The growth in tourism has an impact on people and places and requires careful management in order to ensure that it is sustainable. In Singapore, tourism is an important sector of the economy and many students also aspire to work in the industry. Through examining this topic, students will gain a better understanding of the challenges faced in global competition for the tourist dollar and the management of tourist sites.

Learning Outcomes	Content	Main Terms
Key Question 1: How does the nature of tourism vary from place to place?		
Students will be able to: <ul style="list-style-type: none"> Describe and give examples of different types of tourism Explain why tourist activities are different at different places Discuss the roles of different groups in promoting tourism 	A) <u>Knowledge</u> <ul style="list-style-type: none"> Tourists are people who travel and stay away from their normal place of residence for more than 24 hours Different places and environments provide different opportunities for tourist activities: <ul style="list-style-type: none"> Places of scenic beauty (e.g. mountain regions, coastal resorts, national parks – honeypot tourism) Places with good facilities – MICE (e.g. Singapore), educational facilities – educational tourism (e.g. Singapore), medical facilities – medical tourism (e.g. Thailand), spa facilities – health tourism, theme parks Places with rich culture – heritage tourism (e.g. London, Angkor Wat), film-induced tourism (e.g. South Korea), gourmet/shopping tourism (e.g. Hong Kong), pilgrimage tourism (e.g. Mecca) Places of conflict – dark tourism (e.g. Killing Fields and Tuoi Sleng Genocide Museum in Cambodia, Auschwitz Camp in Poland) Space tourism (e.g. USA) Role of different groups in tourism: Government, media, international organisations and travel writers 	<ul style="list-style-type: none"> Tourist MICE Honeypot tourism Educational tourism Medical tourism Health tourism Film-induced tourism Heritage tourism Pilgrimage tourism Dark tourism Space tourism

Learning Outcomes	Content	Main Terms
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> • Locate key tourist attractions associated with different types of tourism and indicate their positions on a world map • Classify key global tourist attractions by type • Describe distribution of key global tourist attractions by type • Identify key features of specific tourist sites and associated tourist activities • Evaluate travel reviews on selected tourist attractions 	
Key Question 2: Why has tourism become a global phenomenon?		
<p>Students will be able to:</p> <ul style="list-style-type: none"> • Describe the trends of both domestic tourism and international tourism • Describe the changing nature of global tourism • Explain the growth of global tourism 	<p>A) <u>Knowledge</u></p> <ul style="list-style-type: none"> • Trends in the global tourism industry in terms of destinations, country of origin and tourist dollars for: <ul style="list-style-type: none"> ○ Domestic tourism ○ International tourism • Evolution of mass tourism (e.g. beach holidays) to niche tourism (e.g. whale watching) and from tour groups to independent travellers • Development of package holiday and short-haul destinations and the growth of long-haul tourism, including eco-tourism • Reasons for the growth of global tourism <ul style="list-style-type: none"> ○ Developments in technology (better and affordable transport; more air routes and agreements e.g. IATA, e-services: online booking of tours and tickets, ease of access of information) ○ Demand factors arising from changing profile of tourists (disposable income, leisure time and changing lifestyle) ○ Destination factors (attractions, investment in infrastructure and services, access to information) 	<ul style="list-style-type: none"> • Domestic tourism • International tourism • Mass tourism • Niche tourism • Package holiday • Short-haul destinations • Long-haul destinations • Eco-tourism • Technology • Budget airlines • Tourist profile • Demand factors • Disposable income • Changing lifestyle • Destination factors

Learning Outcomes	Content	Main Terms
<ul style="list-style-type: none"> Explain why tourism is subject to regional fluctuations 	<ul style="list-style-type: none"> Impact of disasters, regional and global recessions, political situations and diseases on growth of tourism (e.g. Iceland volcanic eruption in 2011, Japan tsunami in 2011, global recession 2008–10, Thailand political unrest in 2010, E. coli outbreak in Germany in 2010) 	<ul style="list-style-type: none"> Regional fluctuation
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> Extract information on trends in global tourist industry from graphs or tables Extract information on factors affecting growth of the global tourist industry from maps, graphs or tables Analyse tourist revenues using diagrams such as bar graph and pie chart 	
Key Question 3: Developing tourism at what cost?		
<p>Students will be able to:</p> <ul style="list-style-type: none"> Assess the impact of tourism on a country Explain how tourism can be made sustainable Compare the roles of various groups in taking care of the tourist areas 	<p>A) <u>Knowledge</u></p> <ul style="list-style-type: none"> Impact of the growth of tourism on a country <ul style="list-style-type: none"> Economic – Advantages (e.g. employment opportunities, growth in income, increase in foreign exchange, development of infrastructure and facilities) and disadvantages (e.g. seasonal unemployment, under-use of facilities at certain times of the year, shortage of services e.g. water supplies) Socio-cultural (e.g. preservation versus dilution of local customs and heritage, increased crime) Environmental (e.g. vandalism, littering, destruction of habitat, carbon footprint, increased congestion, pollution) Managing the impact of tourism <ul style="list-style-type: none"> Conservation of fragile environments and sustainable tourism (through laws and regulation and support from local population) Responsibilities of various groups (e.g. visitors, tour operators, planning authorities, non-governmental) 	<ul style="list-style-type: none"> Employment Foreign exchange Infrastructure development Preservation Custom Heritage Carbon footprint Conservation Fragile environment Sustainable tourism Eco-tourism Community-based tourism

Learning Outcomes	Content	Main Terms
	organisations like the International Eco-tourism Society and Conservation International) in conserving and protecting tourist areas	
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> • Locate tourist attractions in a selected country on a map • Extract information from sources regarding tourism in a selected country • Design questionnaires – layout, format, wording and number of questions • Analyse top tourist destinations and tourist origins for a selected country using maps such as flow maps and pie charts 	

Topic 4: Food Resources – Is technology a panacea for food shortage?

Food is an important resource issue in contemporary society. This topic focuses on food consumption, production and distribution patterns in societies. It looks at the perplexing problem of why there is hunger in some societies while others enjoy excess food provision that results in obesity and food wastage. Students will examine the role and impact of technology in raising yields to combat the food shortage problem. In the light of growing world population and the challenges of environment sustainability, solutions to the issue of hunger may be in continuing the intensification of farming practices in the midst of global climate change, changing the food supply and distribution chains or population control.

Learning Outcomes	Content	Main Terms
Key Question 1: How and why has food consumption patterns changed since 1960s?		
Students will be able to: <ul style="list-style-type: none"> Describe variations in global food consumption patterns between DCs and LDCs over time Describe the changing food preferences in DCs and LDCs Explain why variations exist and persist in food consumption between DCs and LDCs 	A) Knowledge <ul style="list-style-type: none"> Variations in global food consumption patterns between DCs and LDCs over time, in terms of: <ul style="list-style-type: none"> Indicators of food consumption (e.g. consumption/kg/yr, starchy staples as % of all calories, total daily calorie intake) Changing food preferences (e.g. rice, meat, fruits) Reasons for the growth and variations in food consumption: <ul style="list-style-type: none"> Economic (disposable income, pricing) Socio-cultural (religion, food preferences e.g. organic food and fast food, migration, population growth, changing diet e.g. meat and dairy consumption) Political (stability of food supply, food safety) 	<ul style="list-style-type: none"> Food Staple food Food consumption per capita Daily calorie intake Food preference Disposable income Organic food
<ul style="list-style-type: none"> Discuss the impact of variations in food consumption on individuals within DCs and LDCs 	<ul style="list-style-type: none"> Impact of inadequate food consumption on individuals and countries: <ul style="list-style-type: none"> Health (e.g. malnutrition, starvation, ill-health of population) Economic (e.g. lower productivity, food aid and economic aid can cause long term debts, diversion of financial resources to health care) Political (e.g. social unrest) Social (survival responses e.g. scavenging) Impact of excess food consumption on individuals and countries: <ul style="list-style-type: none"> Health (obesity and related illnesses) Economic (lower productivity) 	<ul style="list-style-type: none"> Malnutrition Starvation Social unrest Scavenging Obesity

Learning Outcomes	Content	Main Terms
	<ul style="list-style-type: none"> ○ Social issues (food wastage and dieting) 	
	<p>B) <u>Skills</u></p> <ul style="list-style-type: none"> • Compare food consumption levels between DCs and LDCs shown in maps or graphs • Compare how food consumption patterns are influenced by changes in income. 	
Key Question 2: What are the trends and challenges in production of food crops?		
<p>Students will be able to:</p> <ul style="list-style-type: none"> • Describe and explain the trends in production of food crops since 1960s • Discuss the factors affecting the intensity of food production and supply 	<p>A) <u>Knowledge</u></p> <ul style="list-style-type: none"> • Food chain (linkages between consumers, producers and distributors) • Trends in production of food crops (rice and wheat) from 1960s: <ul style="list-style-type: none"> ○ Increased intensity of production of food crops ○ Increased production of genetically modified food crops • Factors affecting the intensity of food production and supply <ul style="list-style-type: none"> ○ Physical (relief, soils, drainage and climate) ○ Social (land tenure and land fragmentation) ○ Economic (purpose of farming: commercial and subsistence; demand and capital, trade, agri-business) ○ Political (government policy, ASEAN and CAP of the EU) ○ Technological advances (Green Revolution through use of high yielding varieties, irrigation, mechanisation, fertilisers and pesticides, and genetically modified food) 	<ul style="list-style-type: none"> • Food chain • Crop yield (ton/hectare) • Subsistence farming • Commercial farming • Intensification • Productivity (output per unit area/labour per unit area) • Land tenure • Land fragmentation • Agri-business • High yielding varieties • Irrigation • Fertilisers • Pesticides • Green Revolution • Genetically modified food

Learning Outcomes	Content	Main Terms
<ul style="list-style-type: none"> Discuss the effects of intensification of food production activities on water and soil quality Discuss why the production of genetically modified food crop varies between countries Discuss the causes of food shortage 	<ul style="list-style-type: none"> Challenges associated with intensification of production of crops from 1960s <ul style="list-style-type: none"> Effects of use of irrigation and chemicals on water and soil quality Consequences of development of genetically modified food crops (benefits e.g. economic and regional development, threats e.g. reduction of biodiversity and habitat loss) Causes of food shortage: <ul style="list-style-type: none"> Physical (extreme weather, climate change and pests such as locusts) Political (civil strife and poor governance) Economic (rising demand for meat and dairy products from emerging economies like China and India, food policy, soaring cost of fertilisers and transport, conversion of farmland to industrial crop production e.g. biofuel crops) Social (accessibility, logistics of food distribution and storage, rapid population growth) 	<ul style="list-style-type: none"> Salinisation Eutrophication Biodiversity Habitat loss Extreme weather Governance Cash crops Biofuel Food subsidy Food security Stock piling Food distribution
	<p>B) Skills</p> <ul style="list-style-type: none"> Identify areas on maps where major crops (rice and wheat) are grown Describe how interaction between physical and human environments affects food production from maps and photographs Describe the range of products produced by an agri-business and its spatial network 	

Topic 5: Topographical Map Reading Skills

Candidates will be expected to be familiar with topographical maps. Any map provided will contain a key. Questions will be set based at least in part on the topics in the syllabus. However, there will be instances where candidates will be expected to identify and describe other features as itemised in the following table.

Candidates should be able to:

Read	<ul style="list-style-type: none"> grid references (4- and 6-figure grid references) direction (both compass and bearings from grid north)
Interpret	<ul style="list-style-type: none"> scales (representative fraction, line/linear and statement) symbols human activity from map evidence
Calculate	<ul style="list-style-type: none"> distances (straight-line and winding distances) gradient
Identify	<ul style="list-style-type: none"> broad areas of relief (low river valley region, steep sided uplands) landforms such as mountain, valley and flood plain
Describe	<ul style="list-style-type: none"> relief using contour intervals nature of relief using geographical terms (broad, flat, steep-sided, deeply cut, gently sloping, convex, concave) patterns and location of vegetation, land-use and communication cross-sections (including annotation) for interpretations. (Candidates will not be asked to construct them)
Explain	<ul style="list-style-type: none"> relationship between land use or communications and relief

Topic 6: Geographical Data and Techniques

Candidates should develop skills and techniques to interpret and evaluate geographical data. They will also be asked to construct or complete graphs, diagrams, tables, field sketches, cross sections and transects to present geographical data in an appropriate way in the examinations. Individual questions on data presentation will be capped at a maximum of 3 marks. Sources of data will include books, journals, news reports, maps at a range of scales, statistics, censuses, graphs, questionnaires, photographs, remotely sensed images, interviews, information held in Geographic Information Systems and other information technology databases.

Geographical Data and Techniques	
Maps & Symbols	Base maps, Sketch maps, Topographic maps, Road maps, Atlases, Choropleth maps, Isoline maps, Dot maps, Maps with proportional symbols
Photographs	Aerial photographs, Landscape photographs, Satellite images
Graphs	<p><u>Line Graphs</u>: Simple line graphs, Compound line graphs, Comparative line graphs, Flow lines, Desire line graphs</p> <p><u>Bar graphs</u>: Simple bar graphs, Compound bar graphs, Comparative bar graphs</p> <p><u>Others</u>: Triangular graphs, Pie charts, Histograms, Scatter graphs with lines of best fit*</p>

Others	Texts, Diagrams, Tables, Cartoons, Field sketches, Cross sections and Transects
Statistical calculations to show patterns and changes	Percentages Ratios Mean, median, mode

*No calculation is required; best fit lines would be visual and indicate trends.

Candidates should be able to:

- Describe landscape (physical and human) or geographical phenomena from photographs. Practice in describing and explaining physical and human landscapes and the physical-human interrelationships shown on photographs is essential. Attention should be given to drawing simple annotated sketches to illustrate the features recognised and described from photographs. Candidates should be able to give brief descriptions of physical and/or human features recognised and explain physical-human inter-relationships, for example, the processes or factors affecting the physical and human environments. They should also be able to recognise patterns and deduce relationships from photographs.
- Extract and interpret information from graphs and other data presentations as indicated in the table. Using data provided, candidates should be able to construct/complete geographical representation appropriately. They should also be able to undertake simple statistical calculations, describe trends and deduce relationships from graphs and other data presentations. The production of sketch maps should be encouraged as an integral part of the presentation of information. The drawing of sketch maps and sketch sections, especially with annotations should be seen as a valuable aid in supporting information given in written accounts. This form of presentation is encouraged in the examination.

Topic 7: Geographical Investigations (Only for Section A)

Candidates should be familiar with the inquiry approach to fieldwork, namely (a) formulate aims and hypotheses/guiding questions, (b) inquiry skills and techniques to collect data, (c) make analyses of data, (d) presentation techniques to display data, and (e) form conclusions.

Formulating aims and hypotheses/guiding questions: Candidates should be familiar with hypotheses/guiding questions as statements that form the basis of fieldwork. The hypotheses may investigate a geographical concept e.g. 'The impact of tourism on an attraction is more positive than negative'. Guiding questions like 'Why are tourist activities more sustainable at X than at Y?' may focus candidates to answer a question or solve a problem. Steps to testing hypotheses or answering guiding questions include data collection, data analysis, data presentation and drawing conclusions from data.

- Data collection: Candidates should be familiar with the following types of skills in fieldwork:
 - Observation – This is an inquiry skill to collect and record data through observation of physical features and human activities. Field sketches, annotated photographs, recording sheets and maps may all be used to record observations.
 - Measurement – When recording measurements, due consideration should be given to planning the layout of the recording sheet, the location of instruments and the sampling methods adopted to provide reliable data. For example, in physical geography topics, candidates need to know the equipment (e.g. clinometer) and techniques used.

(iii) Questionnaires – For example, in human geography, consideration should be given to factors influencing the successful design of questionnaires (e.g. layout, format and wording of questions and the number of questions) and the conduct of the questionnaires (e.g. the sampling methods – random, systematic, stratified, line, point and area sampling, pilot survey, and location of survey).

(iv) Interviews – This method should be used to collect in-depth information from a specific person or group of people. The interviewer should be reflective and take into consideration issues such as gender, experience and socio-economic status and also observe interview etiquette.

- Data analysis: Candidates should be able to describe and analyse the patterns and trends in data collected and suggest relationships. They should be able to apply relevant geographical knowledge and understanding when interpreting and analysing the data.
- Data presentation techniques: Candidates should have the knowledge and skill to present data using illustrations appropriate to the type of geographical investigation undertaken. These include map with proportional symbols (e.g. volume of tourist arrivals to Singapore), graphs (e.g. relationships between variables or across time), field sketches, sections and transects.
- Forming conclusions: Using evidence from the data, candidates should be able to make judgements on the validity of the original hypothesis or reach a conclusion to answer the guiding question. They should also comment on the reliability of the data collected and evaluate the data collection methods used.

Glossary of Terms

The glossary of terms in this syllabus is explained below. The list is to be used as a guide. It is neither definitive nor exhaustive. The glossary has been deliberately kept brief with respect to the descriptions of meanings. Candidates should appreciate that the meaning of a term must depend in part on its context.

Term	Explanation
Account for	<ul style="list-style-type: none"> Write about why something occurs or happens May also be written as 'give reasons for', 'suggest reasons for'
Analyse	<ul style="list-style-type: none"> Break the content of a topic / information into its constituent parts and give an in-depth account
Annotate	<ul style="list-style-type: none"> Add labels of notes or short comments, usually to a diagram, map or photograph to describe or explain
Assess	<ul style="list-style-type: none"> Provide arguments based on knowledge and understanding on both sides / for and against and reach a conclusion based on the evidence May also be written as 'how far do you agree', 'how true is this statement', 'to what extent do you agree with this statement'
Calculate	<ul style="list-style-type: none"> Provide a numerical answer In general, working should be shown, especially where two or more steps are involved
Comment on	<ul style="list-style-type: none"> Provide your views about something, possibly to offer some explanation on it or to infer something which could be responsible for, or develop from it
Compare	<ul style="list-style-type: none"> Provide an account of the similarities and differences between two sets of information or two areas Two separate descriptions do not make a comparison
Complete	<ul style="list-style-type: none"> To add the remaining detail or details required
Contrast	<ul style="list-style-type: none"> Write about the point(s) of difference between two things
Define	<ul style="list-style-type: none"> Give the definition or meaning of a word or phrase May also be written as 'explain the meaning of', 'what is meant by'
Describe	<ul style="list-style-type: none"> Write about what something is like or where it is
Discuss	<ul style="list-style-type: none"> Analyse and evaluate different points of view
Draw	<ul style="list-style-type: none"> Make a sketch of a geographical form May also be written as 'using a diagram', 'illustrate with a sketch'
Explain	<ul style="list-style-type: none"> See 'Account for'
Evaluate	<ul style="list-style-type: none"> See 'Assess'
Give an explanatory account	<ul style="list-style-type: none"> Provide a description of something together with an explanation for it May also be written as 'give a reasoned account'

Term	Explanation
How	<ul style="list-style-type: none"> Prove/demonstrate/show (depending on question) in what way / to what extent / by what means or method
Identify	<ul style="list-style-type: none"> Pick up something from information you have been given
Illustrating your answers	<ul style="list-style-type: none"> Support your answers by using specific examples or diagrams
Insert	<ul style="list-style-type: none"> Place specific names or details to an illustrative technique May also be written as 'label'
Justify	<ul style="list-style-type: none"> Give an explanation why something is chosen or why it is done in a particular manner or why a particular position/stand is taken
List	<ul style="list-style-type: none"> Identify or name a number of specific features to meet a particular purpose
Locate	<ul style="list-style-type: none"> Find where something is placed or state where something is found or mark it on a map or diagram
Name	<ul style="list-style-type: none"> State/specify/identify using a word or words by which a specific feature is known or give examples which illustrate a particular feature
Outline	<ul style="list-style-type: none"> Provide a brief description or explanation
Predict	<ul style="list-style-type: none"> Use your own knowledge and understanding along with information provided to state what might happen next
Refer to	<ul style="list-style-type: none"> Write an answer which uses some of the ideas provided in an illustrative technique or other additional material such as a case study May also be written as 'with reference to'
State	<ul style="list-style-type: none"> Write in brief detail using a short statement, words or a single word
Study	<ul style="list-style-type: none"> Examine closely, pay special attention to, look carefully at
Suggest	<ul style="list-style-type: none"> Write down ideas on or knowledge of something
Use	<ul style="list-style-type: none"> Base answer on information provided May also be written as 'using the information provided'
What	<ul style="list-style-type: none"> Used to form a question concerned with selective ideas/details/factors
Where	<ul style="list-style-type: none"> At what place? To what place? From what place?
Why	<ul style="list-style-type: none"> Provide the cause or reason
With the help of information in	<ul style="list-style-type: none"> Use some of the information provided as well as additional material