

**IM SYLLABUS (2008-2011)**

**GEOGRAPHY**

**IM 13**

**SYLLABUS**

<b>Geography IM 13 Syllabus</b>	(Available in September) Part I: Portfolio + 3 weeks Project; Part II: Written (3 hrs)
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**Introduction**

This syllabus is based on a number of core areas, each of which is expanded into key ideas, or concepts, in order to indicate the extent and depth to which they should be studied. Emphasis on the inter-relationships and inter-actions between human activities and the environment should form an important aspect of the teaching and learning of Geography. The inclusion of application in the syllabus is meant to highlight the links between the key ideas and a particular part of the real world, techniques indicate the type of skills, including some simple quantitative components relevant to the subject matter.

The Intermediate Geography course should offer a number of advantages:

- a considerable, spatially referenced knowledge of issues regarding man and his environment gained through the development of a sense of place;
- a different structure of geographical knowledge which should act as a stimulus and a challenge to the investigation of principles;
- strong emphasis on the learning and practice of skills through its ideas-based program and;
- an opportunity to accommodate a range of teaching methods adopted by different teachers.

**Aims**

A course based on the given syllabus helps candidates to:

- gain a substantial body of knowledge of man and his environment while developing a sense of place;
- appreciate the inter-relationships and inter-actions of man with his environment;
- understand that the real world is constantly changing in physical and human terms;
- acquire a range of skills, not least of which the opportunity to practise decision-making in relation to the environmental management.

**Scheme of Assessment**

The examination will consist of one three hour paper. The paper will be divided into four sections of three questions each, each section will correspond to the Modules 1, 2, 3, and 4 of the syllabus. A total of five questions need to be answered in the examination paper. Candidates must attempt at least one question from each of the sections. The other question can be answered from any section providing that not more than two questions are answered from any one particular section. Section 4 can contain questions from Module 4 and any of the skills indicated in Modules 1 and 2. All questions carry equal marks: i.e. 20 per cent of the total mark.

**Assessment Objectives**

The examination sets out to test the candidates' ability to:

- demonstrate knowledge of key ideas and locational knowledge at different scales with special reference to Malta, the Mediterranean Region and Europe;
- apply the geographical knowledge and skills acquired in a variety of physical and human contexts;
- appreciate the wide variety of processes within the human and physical environments together with existing patterns and inter-relationships;
- describe and explain effectively the points set out in (a), (b) and (c) above;
- select and use a range of source material, including different types of maps and graphs;
- select and use basic quantitative techniques in order to communicate better geographical ideas and information and;
- analyse decisions, suggest solutions to problems and assess their likely consequences.

## **Syllabus**

### **Module 1 – Physical Geographical Processes**

#### **Atmospheric Processes**

*Key Concepts:* Air masses and fronts; the origins and development of mid-latitude depressions over Europe and the Mediterranean as a result of global atmospheric circulation to include the Tri-cellular model, ITCZ, global wind systems, solar radiation budget.

*Aims & Application:* An understanding of the processes affecting weather and climate over Malta and the Mediterranean aimed at affording students some elementary prediction.

*Skills:* The interpretation of synoptic charts and weather reports as presented by the following symbols: See Figure 1. Simple weather prediction.

#### **Geomorphic processes**

*Key concepts:* Structure of the earth (core, mantle and crust); the nature and components of the continents and ocean basins such as trenches, ocean ridges, rift valleys and mountain ranges.

Elementary plate tectonics, i.e., theory and evidence of continental drift, sea-floor spreading of continental and oceanic crust; divergent, constructive and destructive plate boundaries; volcanoes, earthquakes, orogenesis.

Factors influencing drainage basins: basin morphology, drainage patterns and factors controlling them. The drainage basin hydrological cycle: precipitation inputs, interception, stemflow, overlandflow, throughflow, infiltration, percolation and groundwater flow. Processes leading to the formation of karst landforms with specific reference to caves and solution subsidence structures.

Coastal morphological processes and resulting coastal landforms. Transition zone between land and sea, offshore, foreshore, backshore, constructive and destructive waves, longshore drift. Erosional landforms: shore platforms, bays and headlands. Depositional landforms: beaches, sand dunes, salt marshes.

*Aims & Application:* An understanding of the geological and geomorphic processes governing landscape formation to include landscape features found in the Maltese islands. Understanding concepts of key geomorphological elements in Maltese geology.

*Skills:* Reading and interpretation of geomorphological elements in maps and charts as presented in Figure 2. The storm hydrograph.

### **Module 2 – Human Geographical Processes**

#### **Population**

*Key concepts:* Population growth and changes over time; distribution; densities; structure; migration.

*Aims & Applications:* The distribution of population and factors affecting it within the Mediterranean region with special reference to Malta. Migration theories (Ravenstein and Zelinsky) involving an understanding of push and pull factors affecting migration with special reference to the Mediterranean region. An understanding of the demographic transition model.

*Skills:* Interpretation of population pyramids and other graphic presentations of human population structures and dynamics.

## **Settlement**

*Key Concepts:* Location and site of settlements, influencing factors; growth; patterns; models of urban structure and growth with reference to Burgess' Concentric rings model and Hoyt's Sector model. Urban functional zones. Concept of settlement hierarchy depending on population and function.

*Aims & Applications:* An understanding of urban land use in terms of functions with special reference to spatial patterns in Malta. Problems associated with large cities.

*Skills:* Interpretation of settlement and land use maps.

## **Industrial Activity**

*Key Concepts:* The classification of economic sectors by function: 1) primary industry with special reference to agricultural economies, farming as a system, mariculture (aquaculture), and fishing; 2) secondary industry with special reference to manufacturing industry; 3) tertiary industry with special reference to tourism.

*Aims & Applications:* The primary industry in the Maltese islands: agriculture, quarrying, mariculture and fishing. The location of industrial estates in Malta. Agglomeration; economies of scale. Tourism in Malta and the Mediterranean.

*Skills:* Application of established locational models: the Weberian model of industrial location and the Von Thunen model of rural land uses.

## **Module 3 – The Man-Environment Relationship**

This is an issues based module intended to consolidate the geographic knowledge gained from modules 1 and 2. In fact, the issues listed in this module are meant to orient teachers in their approach to the subject matter listed in the first two modules. Students are meant to employ the knowledge of key geographic concepts and skills in order to understand and discuss current man-environment problems at a global and/or local scale as indicated in the topic.

- 1) Global warming and climate change; the problems associated with sea-level rise, ozone depletion, and extreme climatic instability (droughts, flooding, hurricanes, cyclones).
- 2) Natural hazards and human responses with special reference to mass movement, volcanoes, earthquakes, and tsunamis.
- 3) Threats to groundwater reserves by settlement, industrial (including quarrying in the Maltese Islands), and agricultural activities.
- 4) Global soil erosion, deforestation, and desertification.
- 5) Problems of development and under-development with reference to the relationship between population growth and natural resources.
- 6) Pollution of air, land, and water in the Mediterranean region. The problem of waste management and its impact on the environment in the Maltese Islands.
- 7) The environmental impact of the tourist industry on the Maltese Islands.
- 8) Major vegetation communities of the Maltese Islands that form part of the successional sequence towards the climatic climax, i.e., sclerophyll forest, maquis (sclerophyllous scrub), garigue, steppic grassland.

## Module 4 – Fieldwork and Mapwork skills

This unit will test students in both fieldwork techniques and the planning of fieldwork to tackle a problem or issue that centres on geographical matter within the Maltese Islands. The focus will be on practicality, design planning, the nature of the data required, its presentation, analysis and interpretation. Cartographic techniques will also be tested since map literacy is also considered to be both academically important and practically useful.

### General

- Tabulation (the clear and concise rendition of data on tables)
- Flow diagrams (= system diagram) construction
- Pictograms (the use of pictures to show observed results)
- Rose diagrams (to display orientated data)
- Desire lines (to illustrate the direction and scale of movement between areas or points of origin and destination)

### 1. Cartographic component

Interpretation of thematic and quantitative maps as exemplified by:

- choropleth maps
- dot maps (to illustrate the distribution of features)
- isoline maps (= isopleth maps)
- weather charts
- bar diagrams (including composite bar charts)
- pie charts
- scatter graphs
- line (= arithmetic) graphs

### 2. Statistical component

The use of statistical analysis is considered to be an indispensable skill for the geographer.

- histograms
- frequency curves
- concept of simple correlation and correlation coefficient
- sampling error
- data types (nominal, ordinal, interval)
- data collection (random, stratified, systematic sampling)

#### *Measures of central tendency and dispersion*

- median
- mode
- median (plus running mean)
- range
- quartiles, inter-quartiles and percentiles
- standard deviation

#### *Description of spatial distributions*

- Nearest neighbor analysis (as a test for 'non-randomness' and as a means to give a statistical meaning to 'clustered', 'dispersed', 'random' and to regular distribution of phenomena over space)

***Relationship between data***

- scatter diagrams (correlation graphs to show the relationship between dependent and independent variables)
- Chi-squared test ( $\chi^2$ )
- Spearman rank correlation coefficient ( $r_s$ )
- Student's t-distribution (to establish statistical significance of  $r_s$ )

**3. Fieldwork Component**

Fieldwork is recognised as an established component of geographical education. It is one of the distinctive attributes of geography, offering valuable learning opportunities. The aim of geographic fieldwork is to understand geography at the local scale and to gain experience of gathering, analysing and presenting data. Fieldwork methods generally involve the gathering of information in the form of numerical quantities. Analysis of the data often includes the use of appropriate statistical methods to identify similarities and differences. The application of geographical concepts and skills in the investigation of an identified problem or issue in the field is considered to be an essential part of geography. The aim of geographic fieldwork is to understand geography at the local scale and to gain experience of gathering, analysing, and presenting data.

- Concept of the 'scientific method' in fieldwork investigation; hypothesis testing
- Data collection: primary research and secondary sources
- Bias in sampling (distortion or error in the sampled data);
- The use of quadrats, transects (belt and line) e.g. as in vegetation studies and land-use transects; random numbers
- Questionnaires: the design of a 'good questionnaire'; closed- and open-questions; questionnaire administration
- Surveys (data collection without questionnaires): different types of surveys, e.g. land-use surveys; land-use transects; environmental surveys
- Interviews (going beyond the formal nature of questionnaires): the conduction of interviews in order to see how people stand on an issue or how they act in certain circumstances

Students shall be examined on their understanding of the appropriate methods of inquiry applicable to generic issues or problems. No field reports are expected to be handed in to the MATSEC board. Students are assessed by means of question/s in the examination regarding the application of field methods.

**Figure 1: Basic symbols used in the interpretation of surface weather charts**

**Figure 2: Symbols used in the reading and interpretation of geomorphological elements, with example.**