

**Short Module Descriptor:**

This module covers public health geographics and geoinformatics (geographic information science and systems in public health).

**Module Aims:**

**Public Health Geographics and Geoinformatics (Geomatics):** Aims: Define medical geography and geography of disease/spatial epidemiology, and appreciate the concepts of mapping vs. analysing, and the time (temporal) dimension of geographic information; Appreciate the scope and impact of location in the context of health and healthcare; Define syndromic surveillance; Define landscape epidemiology; Understand the geography of healthcare systems; Appreciate the roles of geomatics as an enabling suite of technologies in health and healthcare, beyond simple cartography and common routing functions; and Appreciate the main problematic issues associated with GIS and geodata.

On completion of this module students will be able to:

Explain and discuss GIS (Geographic Information Systems) fundamentals and scope (including spatial data concepts and issues like geocoding, vector and raster GIS, scale, projections, resolution, topology, etc., spatial analysis and GIS functions, types of GIS including Internet and mobile GIS, and the effective use of maps and GIS for information visualisation—the art and science of cartography);  
Understand and discuss geodemographics and census data uses in health and healthcare, as well as UK health administrative boundaries and geography;  
Explain and discuss the basic principles and uses of GIS-related methods, technologies and information systems (including computer-aided design (CAD), database management systems (DBMS), spatio-temporal statistics, mapping small area data, and cluster analysis using SaTScan, remote sensing (RS), the global positioning system (GPS), and location-based services (LBS) and consumer geoinformatics);  
Explain and discuss the basics of syndromic surveillance and real-time GIS;  
Explain, discuss, and analyse where applicable the main problematic issues associated with GIS and geodata, and their possible solutions;  
Explain, discuss, and recommend where applicable Tomlinson's 10-Stage GIS Planning Methodology, enterprise, community and public participation GIS, and spatial data infrastructures; and  
Describe various applications of geomatics in the health sector using case studies from around the world.

**INDICATIVE SYLLABUS CONTENT:**

**Public Health Geographics and Geoinformatics (Geomatics):** Health geographics improves our understanding of the important relationships between people, location (and its characteristics: for example environmental or socio-economic), time, and health; it therefore assists us in discovering and eliminating disease, in public health tasks like disease prevention and health promotion, and also in better healthcare service planning and delivery.

This module will cover the following topics: Introduction to Public Health Geoinformatics; the Bio/Medical/Health/Public Health Informatics continuum—from micro- to macro-scale; Definition and growth of Public Health Geoinformatics as a discipline; Four underpinning principles; Syndromic surveillance and e-epidemiology; GIS definitions and value; GIS fundamentals; Census data and geodemographics; Main problematic issues associated with GIS and their solutions; GIS applications in health and healthcare; Internet and mobile GIS; Spatially enabling health organisations—Tomlinson's Methodology; Enterprise, community and public participation GIS; Related technologies (remote sensing, global positioning system, location-based services, consumer geoinformatics); A look at the future, e.g., the geosemantic Web.

For detailed syllabus/**Recommended Readings**, see: <http://vega.soi.city.ac.uk/~dk708/>  
<http://vega.soi.city.ac.uk/~dk708/JBI1015a.pdf> - <http://www.ij-healthgeographics.com/content/pdf/1476-072x-3-1.pdf> and  
[http://www.informatics.nhs.uk/doclibrary/download/2428/MNKB\\_PHIGIS.ppt](http://www.informatics.nhs.uk/doclibrary/download/2428/MNKB_PHIGIS.ppt)

--Maged N. Kamel Boulos