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Associazione Italiana per l'Informatica
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EUROPEAN COMPUTER DRIVING LICENCE
GIS Cartography
Syllabus

Purpose

This document details the syllabus for *ECDL GIS Module 1 – Cartography*. The syllabus describes, through learning outcomes, the knowledge and skills that a candidate for ECDL GIS should possess. The syllabus also provides the basis for the theory and practice-based test in this module.

Note

The official version of the syllabus for ECDL GIS Module 1 – Cartography Version 1.2 can be found on the web site www.ecdl.it, and it was released in January 2007.

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GIS Module 1 – Cartography

The following is the syllabus for Module 1 of the GIS certification and provides the basis for the theory test in this module domain.

Scopi del modulo

GIS Module 1 – Cartography tests the candidate's knowledge of cartography starting with the basics of geodesy which are required in order to use data in a GIS. The candidate must be able to demonstrate knowledge of the most common reference systems, coordinate systems and cartographic projection systems. The candidate shall have a basic knowledge of map characteristics, map operations and on how real world objects can be represented. The candidate shall also be able to demonstrate knowledge of both digital and non-digital map typologies, in order to use them appropriately both outside and inside a GIS.

The items with () suggest that they can be localized for each country.*

CATEGORY	KNOWLEDGE AREA	REF.	KNOWLEDGE ITEM
1.1 General concepts	<i>1.1.1 The shape of the Earth, physical and reference surfaces</i>	1.1.1.1	Know the shapes by which the Earth is approximated and the relative key dimensions
		1.1.1.2	Know what is meant by topographic surface, geoid surface, ellipsoid surface and local spheroid
	<i>1.1.2 Reference systems and datums</i>	1.1.2.1	Know what geodetic and vertical datums are
		1.1.2.2	Know the fundamental aspects of a geodetic reference system (rotational ellipsoid, survey reference point, deviation from the vertical)
		1.1.2.3	Know the fundamental aspects of a vertical reference system, understand orthometric height and ellipsoidal height
	<i>1.1.3 Coordinates on a curved and planar surface</i>	1.1.3.1	Understand the meaning of latitude, longitude and height above sea level
1.1.3.2		Understand the fundamental aspects and differences between the different coordinates on a curved surface (spherical, ellipsoidal, geoidal, astronomical and geocentric coordinates)	
1.2 Classification of cartographic representations	<i>1.2.1 Classification by type of geometric distortion</i>	1.2.1.1	Understand what equivalent (equal area) , conformal and equidistant maps are
	<i>1.2.2 Classification by scale</i>	1.2.2.1	Know what very large, large, medium, small and very small scale is
		1.2.2.2 (*)	Know, with reference to the scale what technical, topographic, chorographic (intermediate-scale) geographical and cadastral maps are.

CATEGORY	KNOWLEDGE AREA	REF.	KNOWLEDGE ITEM
	1.2.3 <i>Classification by projection type</i>	1.2.3.1	Understand the differences between perspective and conic, cylindrical and azimuthal projections.
		1.2.3.2	Know the main kinds of projection systems
	1.2.4 <i>Classification by source</i>	1.2.4.1	Know what surveyed and derived maps are
		1.2.4.2	Understand the concept of cartographic generalisation.
	1.2.5 <i>Classification by content</i>	1.2.5.1	Understand the difference between base and thematic maps
		1.2.5.2	Know how to distinguish the information content between a base and a thematic map
	1.2.6 <i>Classification by use</i>	1.2.6.1	Understand the difference between a map, a plan and a chart, and distinguish the respective uses of each
1.3 International, European and National cartography	1.3.1 <i>International cartography</i>	1.3.1.1	Understand the key aspects of the UTM (Universal Transverse Mercator) system.
		1.3.1.2	Understand the key aspects of the WGS84 system
	1.3.2 <i>European cartography</i>	1.3.2.3	Understand the key aspects of ETRF89 (Terrestrial Reference Frame 1989)
		1.3.2.4	Understand the key aspects of the UTM ED50 reference system (ellipsoid and orientation)
	1.3.3 <i>National cartography (*)</i>	1.3.3.1	Know the national cartographic bodies.
		1.3.3.2	Understand the key aspects of cadastral cartography (ellipsoid, orientation, Cassini-Soldner and Gauss-Boaga reference systems, ground control points) and map tiling
		1.3.3.3	Know the key aspects of the Roma40 Gauss-Boaga reference system (ellipsoid, orientation, Conformal Gauss cartographic parameters, ground control points) and map tiling
		1.3.3.4	Know the key aspects of the UTM ED50 Italian cartography (reference system: ellipsoid, orientation, cartographic coordinates and map tiling)

CATEGORY	KNOWLEDGE AREA	REF.	KNOWLEDGE ITEM
		1.3.3.5	Understand what is meant by the IGM95 network
		1.3.3.6	Know what is meant by Regional Technical Map (Carta Tecnica Regionale - CTR)
	<i>1.3.4 Cartographic coordinate transformation and conversion</i>	1.3.4.1	Know the term Coordinate Conversion
		1.3.4.2	Know the term Coordinate Transformation
	<i>1.3.5 Measurement and positional elements, elevation points, contour lines</i>	1.3.5.1	Know how to measure lengths and areas at different scales
		1.3.5.2	Know how to represent height (elevation points and contours)
1.4 Data quality	<i>1.4.1 Basic aspects</i>	1.4.1.1	Understand the terms completeness, logical consistency, positional accuracy, temporal accuracy, thematic accuracy and lineage.
	<i>1.4.2 Metadata for cartographic data</i>	1.4.2.1	Know what metadata is and what the main contents should be
		1.4.2.2	Know the main metadata standard for GI
1.5 Digital Elevation Models	<i>1.5.1 Digital Elevation Models</i>	1.5.1.1	Know what a Digital Elevation Model is and how it can be generated
1.6 Global Positioning System (GPS)	<i>1.6.1 Global Positioning System (GPS)</i>	1.6.1.1	Know the basic operating principles of the Global Positioning System (GPS) and its use in GIS.