GEOINT Professional Certification
Geospatial Data Management: Proficiency Level II (GDM-II)
Essential Body of Knowledge (EBK)
03 May 2023

Core Competency 1 - Data/Information Management (24%)

Formats, catalogs, and/or filters geospatial data and information to facilitate data access, integration, and interpretation. Applies knowledge of policies, procedures, and requirements established under appropriate authorities to protect information and geospatial data. Identifies, accumulates, recommends, and applies tools for transferring knowledge across an organization, managing access control of information across sources, and appropriately storing, using, and/or distributing that information and geospatial data. Understands and applies appropriate processes and procedures to ensure the overall quality of information and geospatial data.

Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 1: Understand how to format and catalog geospatial data and information.
ECO 1.1: Describe the differences between file-based and enterprise spatial databases.
ECO 1.2: Identify the primary dataset types within spatial databases.
ECO 1.3: Describe how primary dataset types are stored within spatial databases.
ECO 1.4: Distinguish between file-based spatial database formats.
ECO 1.5: Discuss enterprise spatial database management systems.
ECO 1.6: Identify attribute structures within spatial databases.
TCO 2: Apply knowledge of how to access and integrate geospatial data and information.
ECO 2.1: Describe how join and relate functions work within the context of spatial database attribute tables.
ECO 2.2: Demonstrate cardinality as it pertains to relationships (e.g. many to many, one to many, one to one).

ECO 2.3: Explain the functions of web services in the context of disseminating and accessing spatial data and information.
TCO 3: Understand requirements, policies, and procedures to protect information and geospatial data.
ECO 3.1: Associate proper security markings with various Geospatial Intelligence (GEOINT) data.
ECO 3.2: Recognize where appropriate security markings are placed in geospatial data/information/services.
ECO 3.3: Explain how to use applicable security classification guidance and standards.
TCO 4: Apply tools and processes to transfer geospatial information across organizations.
ECO 4.1: Exploit appropriate tools to create, translate, or transform geospatial data from multiple sources (e.g. merge, append, or clip).
ECO 4.2: Convert standard and non-standard data and databases into formats usable in Geographic Information Systems (GIS) software and web services.
ECO 4.3: Manage spatial data using National System for Geospatial Intelligence (NSG) and other applicable schema standards.
ECO 4.4: Perform basic spatial data manipulation methods including clip, select, identify, dissolve, and smooth via automated and manual processes.
TCO 5: Understand source and information access control processes.
ECO 5.1: Describe firewalls in the context of Relational Database Management Systems (RDBMS) or other web server connections.
ECO 5.2: Understand how network management and addressing impacts geospatial web services.
ECO 5.3: Describe different types of geospatial web services (e.g. Coverage, Feature, Mapping, Tile, Processing).
ECO 5.4: Describe portal services as they relate to publishing geospatial web services.
TCO 6: Apply knowledge of storing, using, and/or distributing information and geospatial data.
ECO 6.1: Explain the components of GIS.
ECO 6.2: Demonstrate how spatial data is disseminated in compliance with applicable standards (e.g. NSG, Open Geospatial Consortium (OGC)).
ECO 6.3: Describe database authentication.

ECO 6.4: Recognize current enterprise spatial data sources and services (e.g. Map of the World, NSG authoritative sources, Intelligence Community GIS portal).
TCO 7: Apply processes and procedures to ensure the quality of information and geospatial data.
ECO 7.1: Understand data review automation tools and processes (e.g. ArcGIS Data Reviewer, Geospatial Analysis Integrity Tool (GAIT), Quality Assurance Capability (QAC)).
ECO 7.2: Exploit outputs of data review automation processes and tools (e.g. ArcGIS Data Reviewer, GAIT condition report, Quality Assurance Capability (QAC)).
ECO 7.3: Describe data quality measures (e.g. spatial and geometric precision, horizontal and vertical accuracy, temporal currency).
ECO 7.4: Identify geospatial data standardization authorities and activities (e.g. NSG Geospatial Working Group (GWG), OGC, International Standards Organization (ISO)).
ECO 7.5: Demonstrate the difference between accuracy and precision.
ECO 7.6: Understand quality assurance and quality control processes as applied to spatial data.
Core Competency 2 - Data/Information Processing (20%) Transforms, decrypts, translates, or otherwise manipulates geospatial data and information. Understands tools and methods to substantiate discipline, domain, or area of work. Adapts existing tools or methods or employs methodological approaches required for substantive discipline, domain, or area of work.
Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 8: Apply knowledge of transforming, decrypting, translating, or otherwise manipulating information and geospatial data.
ECO 8.1: Convert/translate data from one schema to another schema.
ECO 8.2: Distinguish between a Table Join and a Spatial Join.
ECO 8.3: Describe data security functions, uses, and drawbacks.
ECO 8.4: Describe the characteristics and functionalities of geospatial data (e.g. tabular, vector, raster).
ECO 8.5: Manipulate fields in tables.

ECO 8.6: Describe how to load data into NSG or other applicable schemas.
ECO 8.7: Explain georeferencing (as it pertains to rasters, control points, and real world representation).
TCO 9: Apply tools, methods, and documentation for substantive discipline over the domain, or area of interest.
ECO 9.1: Describe processes to combine datasets.
ECO 9.2: Describe methods to manipulate geospatial data attributes.
ECO 9.3: Describe processes to automate geospatial data quality checks with appropriate data integrity review tools (e.g. GAIT and ArcGIS Data Reviewer, Quality Assurance Capability (QAC)).
ECO 9.4: Discuss topological relationships.
ECO 9.5: Demonstrate the use of data quality/integrity review tools.
ECO 9.6: Summarize overlay operations that combine multiple input datasets.
TCO 10: Understand required methodological approaches for substantive discipline over the domain, or area of interest.
ECO 10.1: Discuss the advantages and disadvantages of using relational databases.
ECO 10.2: Define Conflation.
ECO 10.3: Define Integration.
ECO 10.4: Describe the different types of errors that data review tools inspect. (e.g. topology, geometry, attribution)
ECO 10.5 Describe the differences between the processes of conflating and integrating datasets.
Core Competency 3 - Cartographic Principles (20%) Understands datum, coordinate, and grid systems. Edits geospatial information or data using appropriate tools by annotating changes, applying corrections, additions, deletions, and updating databases following appropriate standards. Investigates relationships, patterns, and trends of information and geospatial data by applying geographic information systems.
Terminal and Enabling Certification Objectives (TCOs & ECOs)

TCO 11: Apply datum, coordinate, and grid systems.
ECO 11.1: Distinguish the principal components of coordinate systems: projections, datums, ellipsoids, spheroids, units of measurement.
ECO 11.2: Interpret the parameters of map projections.
ECO 11.3: Recognize the types of distortion caused by projections and how spatial relationships are presented on a map.
ECO 11.4: Distinguish the differences between a coordinate and grid system.
ECO 11.5: Demonstrate coordinate conversions.
ECO 11.6: Recognize different types of projections.
ECO 11.7: Demonstrate datum transformations.
ECO 11.8: Explain the Universal Transverse Mercator (UTM) coordinate system.
ECO 11.9: Distinguish NSG standards that govern coordinate and grid systems, and datums, ellipsoids, and spheroids.
ECO 11.10: Describe the uses of different coordinate reference systems and projections.
TCO 12: Understand relationships, patterns, and trends in information and geospatial data using GIS software.
ECO 12.1: Recognize different geospatial data classification methods.
ECO 12.2: Distinguish between discrete and continuous surface data types.
ECO 12.3: Discuss data management functions commonly provided in GIS software.
ECO 12.4: Describe techniques and processes for applying database management standards (e.g. access policies, querying, securing, and editing).
ECO 12.5: Distinguish the functionalities of layer properties of geospatial data in a software viewer/editor.
ECO 12.6: Describe the differences in methods and symbology applied to discrete and continuous surface data types.

Core Competency 4 - Researching (18%) Identifies a need for and knows where and how to gather geospatial information. Obtains, evaluates, organizes, and maintains information and geospatial data.
Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 13: Understand how to obtain and organize information and geospatial data.
ECO 13.1: Summarize sources for geospatial data.
ECO 13.2: Describe different types of geospatial data.
ECO 13.3: Distinguish the Human Geography data themes.
TCO 14: Understand how to evaluate and maintain information and geospatial data.
ECO 14.1: Define metadata and its importance to data management.
ECO 14.2: Describe how topological relationships are implemented in GIS software.
ECO 14.3: Describe functions and uses of XML files within geospatial data management.
ECO 14.4: Describe NSG metadata standards and how they are applied.
Core Competency 5 - Customer Operations and Requirements (18%) Knowledge of relevant customer organizations or operations (e.g., military, policy makers, and law enforcement), including knowledge of translating requirements to provide the appropriate output or response to customer needs.
Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 15: Understand customer organizations or operations.
ECO 15.1: Describe Component Command GEOINT roles, responsibilities, and specific guidance.
ECO 15.2: Recognize the Joint Geospatial Intelligence Cell Construct.
TCO 16: Understand customer requirements to provide appropriate output.
ECO 16.1: Describe the Joint Geospatial Intelligence Operations Process.

ECO 16.2: Describe Geospatial Intelligence Deliberate and Crisis Action Planning Processes and Actions.
ECO 16.3: Describe National Geospatial Intelligence Agency (NGA) customer support models.