

GISCI Geospatial Core Technical Knowledge Exam ® Knowledge Categories

Revised Exam Blueprint 2019 Cross-reference to Original Exam Blueprint 2015

July 2019

This table provides a cross-reference between the current 2019 exam blueprint KSA (knowledge, skills, and abilities) numbers and the KSA numbers on the original 2015 blueprint. Approximately 92% of the original exam blueprint content transferred to the revised blueprint; approximately 8% of the revised blueprint material is new. This information is for general reference only.

Current KSA	1. Conceptual Foundations	Original KSA(s)
101	Understanding of datums, coordinate systems, and projections	105
102	Understanding of representation of discrete features and continuous phenomena in GIS	103
103	Knowledge of earth geometry and its approximations	104
104	Knowledge of basic geomatics and relationships to GIS	643

Current KSA	2. Geospatial Data Fundamentals	Original KSA(s)
201	Understanding of spatial data models and their associated planar geometries	102, 324,426
202	Understanding of spatial data relationships	536
203	Understanding of data quality	538,640
204	Understanding of data resolution	538
205	Understanding of data validation and uncertainty	640, 103
206	Understanding of metadata	639
207	Knowledge of temporal data	103
208	Knowledge of spatial data standards, including ISO, FGDC, and OGC	639

Current KSA	3. Cartography and Visualization	Original KSA(s)
301	Understanding of graphic representation techniques and implications	209
302	Understanding of map design principles and essential map elements	210,211,431
303	Understanding of surface interpretation and representation	206,207, 209
304	Understanding of 2D and 3D visualization	206

Current KSA	4. Data Acquisition	Original KSA(s)
401	Understanding of digitization and other manual data collection and conversion methods	208,537
402	Knowledge of field data collection	644
403	Knowledge of automated data collection and conversion methods	537, partially new
404	Knowledge of remotely sensed data sources and collection methods	643
405	Knowledge of acquisition, use, and limitations of crowdsourced and open source data and services	323,322,538, partially new

Current KSA	5. Data Manipulation	Original KSA(s)
501	Understanding of georeferencing, data format conversion, and data transformation	312,105,537
502	Understanding of spatial data generalization operations and methods	103,209
503	Understanding of spatial file types and their applications and limitations	534,318,321
504	Understanding of data integration	534, 537, 538, partially new

Current KSA	6. Analytical Methods	Original KSA(s)
601	Understanding of data selection queries and views	533
602	Understanding of techniques and implications of data classification	211
603	Understanding of analytical operations and methods	425
604	Knowledge of map algebra	427
605	Knowledge of descriptive and spatial statistics	428

Current KSA	7. Database Design and Management	Original KSA(s)
701	Understanding of relationships among database objects	317,320,536
702	Understanding of database design	319,536
703	Knowledge of database management and administration	314
704	Knowledge of data security	313

Current KSA	8. Application Development	Original KSA(s)
801	Knowledge of data transfer protocols	312,537
802	Knowledge of coding, scripting, and modeling basics	429
803	Awareness of basic application development methods	322

Current KSA	9. Systems Design and Management	Original KSA(s)
901	Knowledge of systems architecture and design, including various GIS softwares, platforms, and environments	315,316,322,323
902	Knowledge of systems and application security	313
903	Awareness of trends in geospatial technology	643, partially new

Current KSA	10. Professional Practice	Original KSA(s)
1001	Understanding of appropriate interpretation of work-related policies and procedures	new
1002	Understanding of ethics related to technical GIS work	643, partially new
1003	Knowledge of managing, documenting, and communicating GIS work	new
1004	Awareness of how GIS is used across other professions	643, partially new
1005	Awareness of GIS-related professional organizations and certification	new

2015 Exam Blueprint

GISCI Geospatial Core Technical Knowledge Exam ® Knowledge Categories

Knowledge Category	Weight
1. Conceptual Foundations	12%
2. Cartography and Visualization	14%
3. GIS Design Aspects and Data Modeling	29%
4. GIS Analytical Methods	17%
5. Data Manipulation	15%
6. Geospatial Data	13%
<i>Total</i>	<i>100%</i>

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GISCI Geospatial Core Technical Knowledge Exam ® Knowledge Areas

1. Conceptual Foundations

101. Knowledge of spatial relationships such as distance (e.g., horizontal and vertical), direction, and topology (e.g., adjacency, connectivity, and overlap) that are particularly relevant to geospatial data analysis

102. Knowledge of standard spatial data models, including the nature of vector, raster, and object-oriented models, in the context of spatial data used in the workplace

103. Understanding of the conceptual foundations on which geographic information systems (GIS) are based, including the problem of representing change over time and the imprecision and uncertainty that characterizes all geographic information

104. Knowledge of earth geometry and its approximations, including geoids, ellipsoids, and spheres

105. Knowledge of georeferencing systems, including coordinate systems, spatial projections, and horizontal and vertical datums

2. Cartography and Visualization

206. Knowledge of contour mapping

207. Knowledge of basic physical geography (e.g., types of boundaries, continents, landforms, and topography)

208. Understanding of how data collection methods influence map design and representation

209. Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping

210. Knowledge of principles of map design, including symbolization, color use, and typography, for a variety of print and digital formats

211. Understanding of how the selection of data classification and/or symbolization techniques affects the message of the thematic map

3. GIS Design Aspects and Data Modeling

312. Knowledge of data exchange procedures

313. Knowledge of security restrictions on data (e.g., user permissions and access rights)

314. Knowledge of database administration

315. Knowledge of systems architecture and design

- 316. Understanding of the enterprise environment
- 317. Knowledge of schemas and domains and how they interact
- 318. Knowledge of digital file management
- 319. Knowledge of database design
- 320. Knowledge of database general structure (e.g., tables and data)
- 321. Knowledge of geospatial data structure (e.g., topology rules)
- 322. Understanding of desktop, server, enterprise, and hosted (e.g., cloud) applications available, including their benefits and shortcomings
- 323. Working knowledge of GIS hardware and software capabilities (e.g., application servers, data servers, storage devices, and workstations)
- 324. Knowledge of data models, including vector, raster, grid, TIN, topological, hierarchical, network, and object-oriented

4. GIS Analytical Methods

- 425. Knowledge of overlay analysis
- 426. Functional knowledge of planar geometry (e.g., points, lines, and polygons) required to convert real world examples into spatial concepts
- 427. Knowledge of algebra (e.g., deriving values from a basic formula)
- 428. Knowledge of statistics (e.g., descriptives, summary statistics, and R-squared)
- 429. Knowledge of basic programming (e.g., scripting, object oriented, query, and extensible)
- 430. Knowledge of raster/vector principles
- 431. Knowledge of scales (e.g., visual, verbal, relative, absolute, physical, and display vs. data)
- 432. Knowledge of units of measurement (e.g., conversion and angular vs. metric)

5. Data Manipulation

- 533. Knowledge of selection queries (e.g., attribute, spatial, and location)
- 534. Knowledge of different data types (e.g., SHP, GDB, Coverage, DGN, TXT, and IMG) and formats (spatial, rendered, and tabular)
- 535. Knowledge of different field types
- 536. Knowledge of data relationships (e.g., one to one and many to many)
- 537. Knowledge of data collection, transfer, and format conversion (e.g., export formats, properties, and settings)
- 538. Knowledge of data quality, including geometric accuracy, thematic accuracy, resolution, precision, and fitness for use

6. Geospatial Data

- 639. Knowledge of metadata and its standards (e.g., ISO and FGDC)
- 640. Understanding of the difference between quality control and quality assurance in the context of a given geospatial project
- 641. Knowledge of data archiving and retrieval
- 642. Knowledge of the differences among a join, a merge, a union, a clip, and an intersect
- 643. Knowledge of basic geomatics
- 644. Knowledge of basic field data collection