West Virginia Technology and Computer Science

Introduction to Geographic Information Systems: Grades 9, 10, 11, 12

Adopted 2017

Computational Thinking	1. **Demonstrate an understanding of the basics of cartography.** TCS.GIS.1
	2. **Demonstrate a basic proficiency in map reading; an understanding of scale; an understanding of the power of analysis; and an understanding of the history of map creation and use.** TCS.GIS.2
	3. **Analyze GIS data to identify spatial relationships or display results of analyses, using maps, graphs, or tabular data.** TCS.GIS.3
Collaboration	4. **Collect data using a student-created online data collection technology.** TCS.GIS.4
	5. **Identify a community need related to a human impact on the environment; create a capstone mapping project that describes a solution for that human impact using student collected and generated GIS data; and evaluate competing solutions in terms of effectiveness at mitigating the human impact.** TCS.GIS.5
	6. **Create an internet-based map product (story map application or web application) that describes a solution for mitigating a human impact on the environment using students collected and generated GIS data.** TCS.GIS.6
	7. **Use a student-created online data collection technology to groundtruth basemap orthophotographs.** TCS.GIS.7
	8. **Create a presentation using an online map system displaying a student-created map with a purpose of educating the public on a community, state or national social issue.** TCS.GIS.8
Computing Practice and Programming	9. **Use a web-based GIS to answer questions about the earth and the environment.** TCS.GIS.9
	10. **Demonstrate basic proficiency in map creation, including adding layers, adding additional data, changing data symbology, configuring pop-up, saving and sharing maps.** TCS.GIS.10

	11. Use geospatial technology to explore and investigate environmental problems such as: - resource management - impact assessment TCS.GIS.11
	12. Use geospatial technology to explore and investigate rural and urban issues such as: - urban planning - transportation - logistics - emergency planning to calculate emergency response times in the event of a natural disaster. TCS.GIS.12
	13. Explore uses of geospatial technology by law enforcement to map, visualize, and analyze crime incident patterns. TCS.GIS.13
	14. Use geospatial technology to explore and investigate business problems related to asset management. TCS.GIS.14
	15. Use geospatial technology to explore and investigate problems related to medical geography and epidemiology. TCS.GIS.15
	16. Research a career related to GIS and present a career summary, projected job outlook, and roles and responsibilities. TCS.GIS.16
Computers and Communication Devices	17. Demonstrates an understanding of GPS technology, data collection, and data layer creation in an online mapping system. TCS.GIS.17
	18. Collect GPS data using a GPS unit, compile it into a .cvs file, and add it to a saved web map. TCS.GIS.18
Community, Global and Ethical Impacts	19. Use geospatial technology to explore and investigate the history of cartography. TCS.GIS.19
	20. Demonstrate an awareness of the ethical and social implications of the use of GIS and GPS system, including system reliability, privacy, legal issues, and the social and ethical ramifications of their use. TCS.GIS.20
	21. Identify the impacts GIS and GPS systems have on individuals, society, commercial markets, and innovation. TCS.GIS.21