

Essential Geographic Information Systems (GIS) for Transport & Logistics

**Comprehensive &
Certified Training**

When: Oct - Nov, 2023

Where: Online - Virtual

Online & Asynchronous Training

30 Professional Development Hours

ESSENTIAL GIS FOR TRANSPORT AND LOGISTICS

• Online Course:	Comprehensive, Certified, and Asynchronous Training.
• Online Registration:	https://forms.gle/1PiyAT8hc9jWFc2J8
• Contact Email:	gis.tutor.x@gmail.com
• Contact Phone:	+233 242035731; +233 576973455
• Course Duration:	16 October – 24 November 2023
• Registration Deadline:	5 October 2023
• Opening Day/Time:	11.00am UTC, Monday, 16 October 2023
• Note:	No prior knowledge of GIS is required.

BACKGROUND – ABOUT THIS COURSE

Geographic Information Systems (GIS) are used in a wide variety of problem solving and decision-making endeavors including transport planning, logistics, mobility, road inventory and asset management, transport operations, and many more. GIS has become an essential skill set needed to work and collaborate in intra- and interdisciplinary practice and research. It provides a problem-solving and decision-making environment to harmonize and integrate diverse data and analytics from transport and logistics, statistics, engineering, finance, economics, and physical and social sciences. GIS is a key piece of digital revolution, and is ubiquitous in the life-cycle of transport and logistics practice from strategic planning through to design, implementation, operation, asset monitoring and management. Accordingly, this online course on *Essential GIS for Transport and Logistics*, seeks to strengthen the capacity and skills of young scholars and professionals in transport and logistics research and practice, particularly those in sub-Saharan Africa (SSA) to improve their research skills, practice, and tools in knowledge building.

WHAT YOU WILL LEARN

- Use of Geographic Information Systems (GIS) in Transport and Logistics practice.
- GIS software for use in Transport and Logistics research and practice.
- GIS usage in Transport and Logistics Asset Management.
- Open GIS data sources for Transport and Logistics research and practice.
- Collect Transport and Logistics field data via Global Navigation Satellite System (GNSS), e.g. GPS, and mobile technology.

FORMAT

This online course is organized into six (6) units, where each comprise the following items.

- Pre-recorded lessons to be accessed asynchronously.
- Computer-based lab work involving real-world transport and logistics data.
- Graded discussion forum, and a quiz.

Course Completion

Participants who have successfully completed this online course will be awarded a *certificate of completion*. Successful completion is conditioned upon meeting the following requirements.

- Completion of all registration requirements.
- Attendance, participation, and completion of all learning activities including quizzes and discussions.
- Submission of a poster for the capstone mini-project assignment.
- Completion of the course evaluation and feedback questionnaire.

LEARNING OBJECTIVES

Upon completion of the *Essential GIS for Transport and Logistics* course, participants would acquire skills in the following areas.

- Knowledge, understanding, and cognitive skills in GIS for transport and logistics.
- Use of GIS throughout the life cycle of transport and logistic systems.
- Create, analyze, and report transport and logistics data in a GIS software.
- Competence to obtain transport data in field-settings and online environments.
- Practical and professional skills in applying GIS tools to address real-world transport and logistics problems.
- Research proficiency in GIS applied to transport, mobility and logistics studies.

TARGET AUDIENCE

- Postgraduate (Masters, PhD), Postdoc Scholars, and Early-Career researchers
- Transport and Logistics Professionals, and Academics
- National Road & Transport Agency Executives
- Federal, State, and Local Transport and Logistics Agencies
- Highway Engineers and Managers
- Supply Chain and Logistics Professionals
- Private Consultants & Contractors

INSTRUCTORS

Lead Instructor

- Prof. Gift Dumedah, Department of Geography and Rural Development, Regional Transport Research and Education Centre Kumasi (TRECK), Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.

Instructors

- Prof. Charles Adams – Department of Civil Engineering, Regional Transport Research and Education Centre Kumasi (TRECK), KNUST, Ghana.
- Prof. Hannibal Bwire – Department of Transportation and Geotechnical Engineering University of Dar es Salaam (UDSM), Tanzania.
- Prof. Samuel Adu-Prah – Department of Environmental & Geosciences, College of Science and Engineering Technology, Sam Houston State University, Huntsville, Texas, USA.
- Prof. Mrs. Abena Agyeiwaa Obiri-Yeboah – Department of Civil Engineering, Kumasi Technical University (KsTU), Kumasi, Ghana.
- Prof. Steven Jones – University of Alabama, Alabama Transportation Institute (ATI), USA.
- Mr. Terah Antwi – Department of Civil Engineering, Regional Transport Research and Education Centre Kumasi (TRECK), KNUST, Ghana.

COURSE OUTLINE

Unit	Topic	Unit Details
1	Introduction to Essential GIS for Transport and Logistics	<ul style="list-style-type: none"> ▪ Why GIS for Transport and Logistics (T&L)? ▪ GIS role in Intelligent Transportation Systems (ITS) ▪ GIS in T&L workflows: planning, implementation, operations, and monitoring ▪ A case study on the use of GIS in Transport and Logistics.
2	Open Source GIS Software for Transport & Logistics	<ul style="list-style-type: none"> ▪ A survey of open source GIS software in Transport and Logistics ▪ Getting to know GIS software – Google Earth, QGIS, and Qfield ▪ Download, install and setup of GIS software for Transport and Logistics analytics ▪ Geospatial data resources for practical exercises in Transport and Logistics
3	Transport and Logistics Asset Management	<ul style="list-style-type: none"> ▪ Transportation Asset Management (TAM) ▪ TAM – Strategy and Planning ▪ TAM – Organization and People ▪ TAM - Maximizing Asset Performance ▪ TAM – Resource Allocation (RA) ▪ TAM – Monitoring & Adjustment ▪ TAM – Information & Systems ▪ GIS for T&L Asset Management
4	Open Geospatial Data Sources for Transport and Logistics	<ul style="list-style-type: none"> ▪ Open and online geospatial data sources for Transport and Logistics ▪ Accessing open and online road network data ▪ Accessing online road traffic data from OpenRouteService
5	Road Inventory Data Collection with GPS/GNSS and Integration into GIS	<ul style="list-style-type: none"> ▪ Overview of GPS/GNSS data collection into GIS ▪ Attribute data formatting using OpenStreetMap (OSM) Tag Information ▪ Road inventory data collection with GPS/GNSS ▪ Presentation and reporting of GPS/GNSS road inventory data in GIS
6	Mobile GIS Data Collection	<ul style="list-style-type: none"> ▪ Overview of mobile geospatial data collection ▪ Qfield software for mobile field data collection ▪ Direct integration of GPS/GNSS data into GIS through Qfield ▪ GPS/GNSS data integration into GIS for mobile transport and logistics data
7	Capstone Mini-Project	<ul style="list-style-type: none"> ▪ Project topic selection, framing, and scoping ▪ Development of plan of work – mini proposal ▪ Data collection: secondary and primary (field) data ▪ Data analysis and presentation in GIS ▪ Poster preparation, and presentation