

Army Engineer Geospatial Leader W2 SI Smartbook

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Suggested Improvements. Send comments and suggested improvements directly to TRADOC Proponent Office - Geospatial (TPO-Geospatial), U.S. Army Engineer School, Maneuver Support Center of Excellence, 14010 MSCoE Loop, Suite 2691, Fort Leonard Wood, MO 65473. Comments can also be submitted via e-mail to Mr. Tony Buster; e-mail: anthony.h.buster.civ@army.mil. Distribution. The W2 ASI Smartbook is available upon request from TPO-Geospatial.

Introduction

No commander will ever go into the breach without a map! Combined Arms Breaching is arguably one of the most challenging and complex task a unit will undertake, and geospatial engineers plays a major role in supporting combat and general engineering disciplines and all Warfighting Functions (WfFs). This discipline is essential and considered foundational to all four lines of engineering support. What links the commander at the line of departure (LoD) with the 12Y and 125D for ensuring maximum lethality through terrain visualization? The 12A does. To better prepare those officers for increased responsibility and specialized understanding of geospatial functions a considerable amount of rigor was applied to ensure competency and credibility remains paramount. This Smartbook is intended for officers seeking the W2 skill identifier (SI) to help provide a clear understanding of the process for obtaining it, and the associated training requirements.



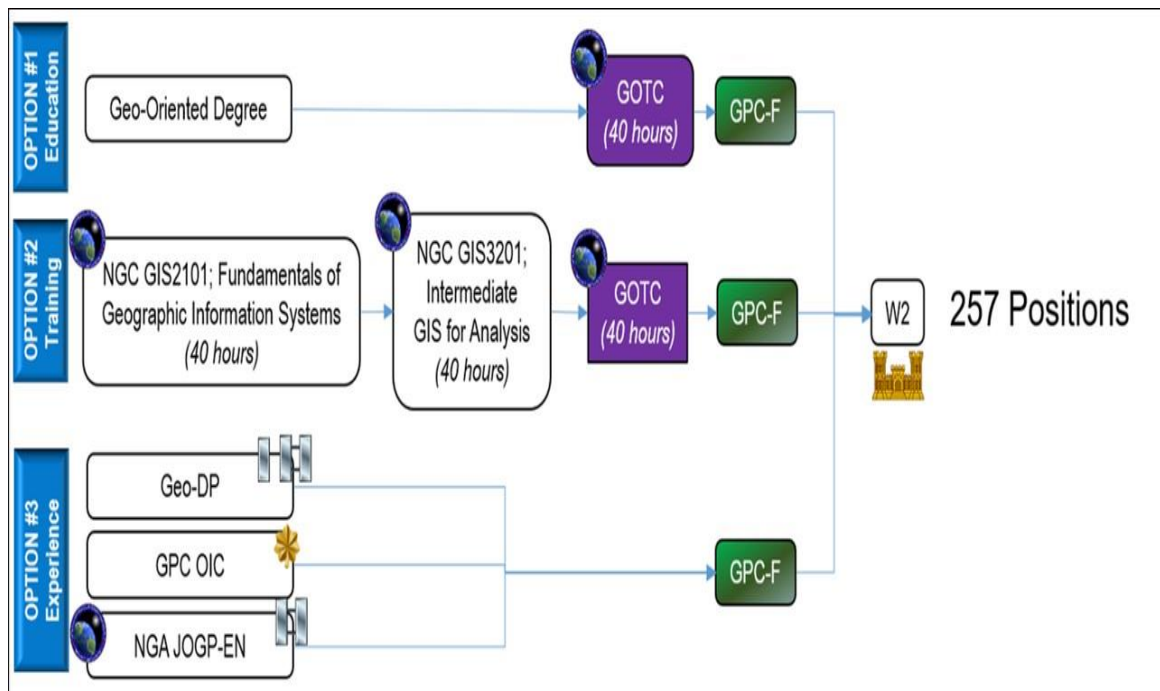
Section 1

Army Engineer Geospatial Leader Overview

Endstate of the Army Engineer Geospatial Leader (W2) training/certification is to train and certify 12A Engineer Officers on the ability to leverage Geospatial Information Systems (GIS), Geospatial Information & Services (GI&S), and geospatial analytical applications to solve an operational problem, determine appropriate organization and capability to fulfill a geospatial requirement, task organic capabilities to fulfill geospatial requirements, and develop production requirements for the National System for Geospatial Intelligence (NSG). How does a 12A get to this endstate? By completing specific training courses, performing on the job training (OJT), or academic accomplishments.

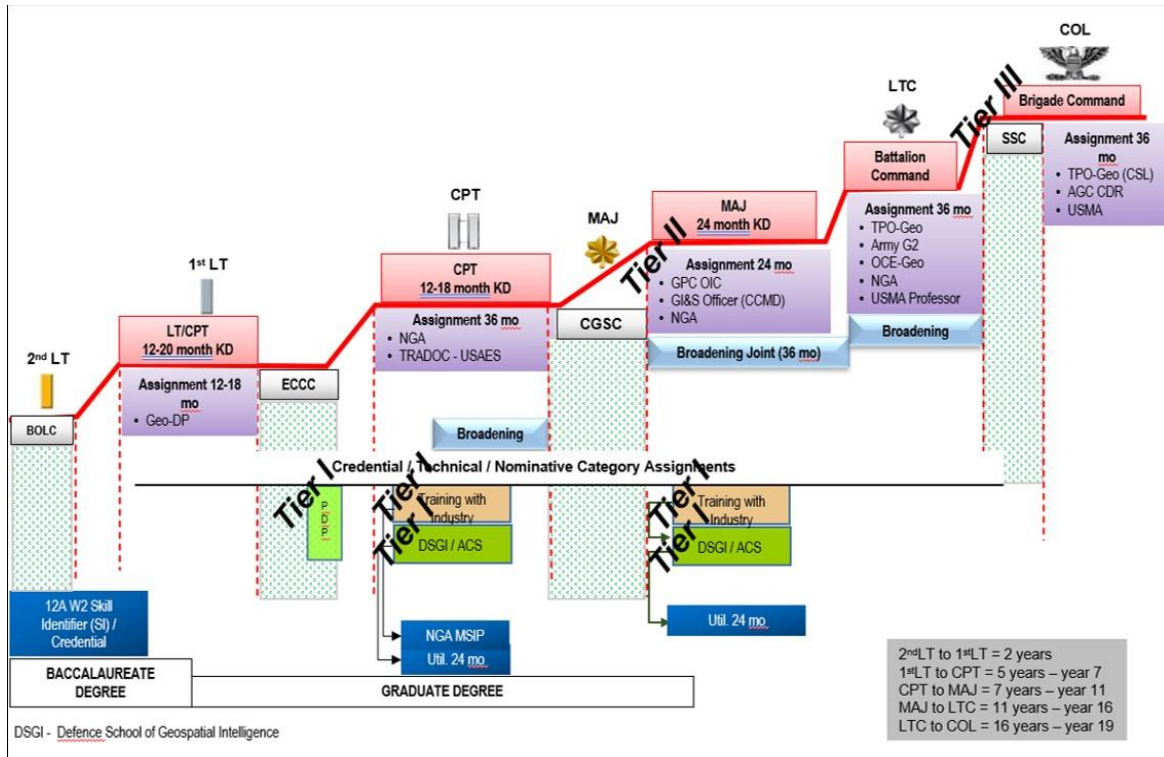
W2 SI REVISION

During the Geospatial Engineering Working Group (GEWG) at Fort Leonard Wood, November 2021, TPO-Geospatial along with various subject matter experts (SME), and 12As within the geospatial community determined a revision was needed and published a memorandum to lay out a way forward. (See attachments section for the full version of the memo.) In short three options were constructed with a focus on ensuring requirements match available resources to obtain the constructive options for Officers without an academic degree in geospatial sciences. The revision is captured in the memo and became effective November 2022. The goal of the revision is to ensure appropriate rigor is applied to effect and increase competency consistently while also maximizing accessibility. The below figure shows an abbreviated flow chart for all three options. Of note all three require a GEOINT Professional Certification – Fundamentals (**GPC-F**) certification, and two of the options require the completion of Geospatial Information and Services (GI&S) Officer Training Course (**GOTC**), which will be discussed in section 2.



ENGINEER OFFICER GEOSPATIAL CAREER PATH

The below chart is a conceptualization of a career path and way points for an engineer officer to track geospatially. The tiering considerations are subjective in the sense they give bearing and provide pace counts to ensure geospatially tracked officers are equipped with experience and knowledge to effectuate and champion geospatial equities throughout their careers. Attaining W2 will posture Engineer Officers to better achieve geospatially tracked career path goals.



TIER I

- Assignments that require basic understanding of Army Geospatial Operations (more than what is received in EN PME)
- Bachelors Degree or previous Geospatial Tradecraft experience required (tactical level or GEO-DP)
- Geospatial Masters degree preferred

TIER II

- Assignments that require understanding of the NSG (most likely NGA), preferably acquired from a Tier 1 assignment
- Geospatial Masters degree preferred

TIER III

- Assignments with strategic level impact on Army GEOINT programs
- Geospatial Masters degree or higher preferred
- NSG experience and Operational experience preferred

OPTIONS FOR ATTAINING W2

Note. The courses referenced throughout the below options are discussed in detail in Section 2.

Option 1: Education

- (a) Education (Must successfully complete one of the below requirements) and both sub paragraphs (b) and (c).
 - (i) Possess an undergraduate or higher from an accredited college or university in GIS, Remote Sensing, Cartography, Photogrammetry, or Geography with a track in GIS.
 - (ii) Have a minimum of 12 credit hours from an accredited college or university in any Geospatial related field.
- (b) Successfully complete NGC **GEO2121**; Geospatial Information and Services (GI&S) Officer Training Course (**GOTC**) (40hrs). (See note page 7)
- (c) Acquire NGA **GEOINT Professional Certification (GPC) – Fundamentals** (Level 1).

Option 2: Training

- (a) Successfully complete NGC **GIS2101**; Fundamentals of Geographic Information Systems (40hrs).
- (b) Successfully complete NGC **GIS3201**; Intermediate GIS for Analysis (40hrs).
- (c) Successfully complete NGC **GEO2121**; Geospatial Information and Services (GI&S) Officer Training Course (**GOTC**) (40hrs). (See note page 7)
- (d) Acquire NGA **GEOINT Professional Certification (GPC) – Fundamentals** (Level 1).

Option 3: OJT

- (a) On the Job Training (Must successfully complete one of the below requirements) and sub paragraph (b).
 - (i) 12 months as a Geospatial Development Program Officer.
 - (ii) Complete the National Geospatial-Intelligence Agency Joint Officer Geospatial Program (Engineer)
 - (iii) 12 months as a Geospatial Planning Cell Plans Officer (Officer in Charge).
- (b) Acquire NGA **GEOINT Professional Certification (GPC) – Fundamentals** (Level 1).

GEOSPATIAL DEVELOPMENT PROGRAM (GEO-DP)

The Geospatial Development Program is designed to expose junior officers to Army Geospatial functions and capabilities. This will not produce a geospatial expert, but it will give the participating officer enough knowledge and experience to know what questions to ask and where to go to ask them. While participating in this program officers will be exposed to high level geospatial considerations and afforded opportunities for TDY assignments. The overall intent of the program is to translate maneuver terminology into geospatial questions and considerations to better complete the mission. It is expected that all GEO-DP officers leave the program and serve as geospatial stewards by educating their future subordinates, peers, and superiors. Officers can only be assigned to the program after completing 2LT key development (KD) time and upon assignment to the program will be locked-in to the Engineer Captain Career Course (ECCC). For more information see attached flyer.

Section 2

Navigating NGA Requirements

Navigating the National Geospatial-Intelligence College (NGC) on the onset can seem complex, but once you have registered your CAC and have a blackboard account the process is nothing more than an email or two. This section gives an overview of the NGC and the courses and software associated with this SI. The NGA is the functional manager for GEOINT and the NGC provides the foundational training and education requirements for ensuring consistent competencies through the community.

NATIONAL GEOSPATIAL-INTELLIGENCE COLLEGE (NGC)

The NGC can be broken down into three main categories:

- 1) **Learn.NGA.mil** is a CAC enabled portal for hosting the details of four functional areas of the college:
 - GEOINT Learning
 - Workforce Learning
 - Instructor Training & Certification
 - GEOINT Professional Certification (<https://geointcertification.nga.mil/>)
- 2) **NGA/GEOINT Blackboard** is portal for receiving the training once registered. This is similar to other online institutions with discussion boards, announcements, assignment submission, etc. For the instructor led courses such as GIS2101, GIS3201, GEO2121 the courses are a combination of WebEx and Blackboard.
- 3) **Registrar** is the coordinating office for enrolling, disenrolling, transcript request, etc. Most if not all interaction with the registrar's office will be completed via email.

See attachment “**TPO-GEO NGA COURSE ACCESS & SOFTWARE REQ'S INFO SHEET**” for detailed instructions for gaining access to all sites associated with NGC courses.

LEARN.NGA.MIL/GEOAxis Portal

As previously stated Learn.NGA.mil is the portal for researching courses and provides details such as dates, locations, duration, pre-requisites, etc. This is a CAC enabled site that uses the GEOAxis portal to verify CAC certificates. In order to access this site users must verify their (.mil) email. This site not only holds information for the specific courses needed for this SI, but has well over 100 different courses that range from fully UNCLASS through courses requiring TS clearances and SCIF access to attend.

NGC Blackboard

As previously stated this is the delivery portal for NGC courses and web based training (WBT) that are self-paced thru instructor led courses requiring specific date and times for virtual attendance. Once you have gained access to the CAC enabled site requesting a blackboard account is completed using the attachment “**NON-NGA TRAINING REQUEST FORM.**” The blackboard account is username and password, meaning it is fully accessible without a CAC. The blackboard account also provides access to Esri courses, career services, Skillsoft professional development training, and NGC Foreign Languages On-Demand Training.

GIS 2101 - Fundamentals of GIS

Fundamentals of Geographic Information Systems (GIS) GIS2101 is designed for the beginner GIS user, providing a working foundation in the concepts and application of GIS, with an emphasis on using the latest NGA-approved version of Esri ArcGIS software. The course objectives are to prepare data for analysis using the appropriate GIS tools or techniques and implement the appropriate GIS analytical tools to solve a geospatial problem, conduct data editing, basic GIS analysis, and product creation. The course is offered as resident or non-resident (**virtual instructor led**) in 40 hours / 5 days. The course is completely unclassified with no prerequisites.

GIS 3201 - Intermediate GIS

Intermediate GIS for Analysis GIS3201 refreshes and builds on the fundamentals taught in GIS2101 and other introductory GIS courses. It focuses on using ArcGIS to conduct geospatial analysis in a homeland security setting. Topics include fundamentals refresher (GIS concepts, geodesy, ArcGIS review), geodatabases, geocoding, distribution and pattern analysis, network analysis, raster analysis, building geoprocessing models, and using scripts. This course is taught primarily through hands-on practice with a small amount of informal lecture on key concepts. You will be evaluated with a capstone project that covers all the concepts and techniques taught throughout the course. The course objectives are to prepare geospatial data for exploitation and analyze geospatial problems using intermediate-level analysis concepts, functions, and tools as well as modify geoprocesses using intermediate-level GIS utilities. The course is offered as resident or non-resident (**virtual instructor led**) in 40 hours / 5 days. The course is completely unclassified with GIS2101 as the only prerequisites.

GEO 2121 - GOTC

Geospatial Information and Services (GI&S) Officer Training Course (GOTC) GEO2121 is an in-depth study into the broad scope of foundational geospatial capabilities and limitations throughout the services, and provides an overview of the Geographical Information and Services (GI&S) community, and the GI&S portion of contingency plans. The course is an overview of the community, process, data, and products associated with the responsibilities of the GI&S officers throughout the NSG. This includes an awareness of GEOINT, GI&S fundamental principles, relevant GI&S communities, the breadth of NGA's foundation products/services, and the necessary hardware and software tools. This course also includes executing the process for requirements identification, research, submission, analysis, and dissemination, and culminates in exercises to write a GI&S Annex for a Contingency Plan/Operation Plan (CONPLAN/OPLAN). The course objectives are to discuss the GI&S community (people) across the levels of command Identify the primary GI&S data sources used for production, differentiate the primary products and services of each Foundation Data domain, distinguish each step of the GI&S process for tasking, collection, processing, exploitation, and dissemination (TCPED), construct a GI&S Annex for a given scenario, and demonstrate understanding of the importance of creating and submitting detailed and accurate requirements. The course is currently offered as non-resident (**virtual instructor led**) in 40 hours / 5 days. The course is completely unclassified with no prerequisites. **(Note: This course is on academic pause pending course review; in the interim TPO-Geo will work with candidates for a waiver if all other requirements are met.)**

GPC-Fundamentals Test

The GPC Fundamentals certification is a prerequisite for all others GPC certifications. To pass the GPC Fundamentals certification, one must demonstrate knowledge of GEOINT doctrine, fundamental tradecraft knowledge, and its role as a component of the larger DoD Enterprise. The GPC Fundamentals certificate is a 125-question test with 2.5 hours to complete. It is valid for 3 years during which time personnel will complete professional development units (PDUs) ensuring the certification is maintained and no additional GPC-F testing is required. The GPC-F is available to all geospatial practitioners worldwide.

GEO 1008 - GEOINT BASICS WBT (GPC-F TEST PREP)

GEOINT Basics web-based training (WBT) GEO1008 is a six-hour WBT that provides GEOINT practitioners a basic understanding of fundamental GEOINT principles, and the processes and techniques used to address intelligence problems. The course is self-paced fully online with no prerequisites. NGC suggest this course as a prep for the GPC-F certification test.

SOFTWARE AND WEB ACCESS CONSIDERATIONS

For GIS2101 and GIS3201 ArcGIS software is required. This software is provided, free of cost, to students in the form of a temp license prior to the start of each class start date. See the following attachments **“TPO-GEO NGA COURSE ACCESS & SOFTWARE REQ’S INFO SHEET”** that discusses hardware requirements; **“NGC COURSE WELCOME EMAIL EXAMPLE”** that speaks to downloading instructions, and **“ARCGIS INSTALLATION GUIDE EXAMPLE”** that speaks to install procedures.

ArcGIS Pro 2.# and 3.#

ArcGIS Pro is the latest professional desktop GIS application from Esri. While there are several GIS programs for visualizing GI&S data the NGC uses ArcGIS Pro 2.# up to 3.# for the aforementioned NGC courses. The use of ArcGIS is to help you as the engineer officer to understand how the data is manipulated and give you a better than average understanding of how GI&S programs operate. The use of the program throughout the courses is not intended to make you an expert, but rather give you foundational skills to think through and consider analytical approaches to solving GI&S problems.

Section 3

References & Attachments

REFERENCES

ATP 3-34.80, Geospatial Engineering, Mar 2024 -

https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN40514-ATP_3-34.80-000-WEB-1.pdf

TC 3-34.80, Army Geospatial Guide for Commanders and Planners, Sep 2019 -

https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/ARN19295_TC%203-34x80%20FINAL%20WEB.pdf

AR 611-1 Military Occupational Classification Structure Development and Implementation

DA Pam 611-21 Military Occupational Classification and Structure Updates reference to Smartbook located here (<https://www.army.mil/g-1#org-g-1-publications> or

<https://api.army.mil/e2/c/downloads/2023/11/08/e171d47d/chapter-4-officer-skill-indentifiers.pdf>)

ATTACHEMENTS (see PDF attachments)

ARCGIS INSTALLATION GUIDE EXAMPLE

GEO-DP FLYER

MEMO W2 SI UPDATE DTG 8 DEC 2021

NON-NGA TRAINING REQUEST NGA FORM 1430-12v1

TPO-GEO NGA COURSE ACCESS & SOFTWARE REQ'S INFO SHEET

WELCOME EMAIL EXAMPLE