National Emergency Training Center
16825 S. Seton Avenue
Emmitsburg, MD 21727-8998

FEMA

R0492

Dear National Fire Academy Student:

By now you should have received an email notification from the National Emergency Training Center (NETC) Admissions Office. This notification indicates your acceptance into the U.S. Fire Administration (USFA), National Fire Academy (NFA) "Emergency Resource Deployment Planning Standards of Coverage (SOC)" (ERDP) course.

Congratulations on your acceptance into the USFA's/NFA's ERDP (SOC) course. This course is designed for fire and emergency medical services (EMS) leaders and managers, local officials, and planning personnel who are faced with performance outcome management decisions that relate to providing fire protection and EMS for their community.

During the course, you will collect data, analyze, and compare and contrast findings to identify base-level performance standards and changes influenced by internal and external impacts. Metrics and graphic displays will be used to demonstrate changes in current and future service levels; expenditures and resource allocations; and changes impacting responders, citizens, community safety and preparedness.

In order for this course to be meaningful, you need to do the following things:

1. You must have completed the online self-study course "National Fire Incident Reporting System 5.0 Self-Study" (Q0494) available at https://apps.usfa.fema.gov/nfacourses/catalog/details/184 prior to applying for this course.

   You are expected to install materials and complete as much as possible prior to class.

   You are encouraged to bring your laptop with the software, data and completed materials to class.

   If you are unfamiliar with basic Geographic Information System (GIS) concepts, watch episodes 1-5 of the Geospatial Revolution found at https://www.geospatialrevolution.psu.edu/ or by copying and pasting the link to your browser address window.

2. Review the attached Glossary and become familiar with the terminology.

This is a six-day class that starts on Sunday at 8 a.m. Subsequent classes will meet daily from 8 a.m. to 5 p.m., with evening classes possible.

The course materials are now available in a Bring Your Own Device (BYOD) format that will function on any electronic device. If you own an electronic device (laptop computer, tablet, etc.) and are familiar with its document reader functions, we are asking you to download the Student Manual (SM) **before you travel to Emmitsburg** and bring the preloaded device with you. Please see the page following this letter for complete instructions on successfully downloading your course materials. Please note: If you plan to bring/use an iPad, you may experience issues saving/storing/printing course assignments because there is no USB/thumb drive capacity for these devices.

The NFA classroom environment is computer based. Increased numbers of students and instructors are bringing laptop computers or other electronic devices to campus; you are responsible for the security and maintenance of your equipment. The NFA cannot provide computer software, hardware (which includes disks, printers, scanners, monitors, etc.), or technical support for your device. For your convenience, we do provide surge protector power strips at each classroom table.

If you need additional information related to your course's content or course requirements, please contact Mr. Dan Newland, Training Program Management and Planning, and Information Management training specialist, at 301-447-1157, or by email at daniel.newland@fema.dhs.gov. Good luck, and I hope to see you on campus

Sincerely,

Eriks J. Gabliks, Superintendent
National Fire Academy
U.S. Fire Administration

Enclosures

National Fire Academy Bring Your Own Device (BYOD)
Course Materials/Download Instructions

If you own an electronic device (laptop computer, tablet, etc.) and are familiar with its document reader functions, we are asking you to download the Student Manual (SM) before you travel to class and bring the preloaded device with you.

The **first step** is to download Adobe Acrobat Reader to your device. This will enable you to read and manipulate the course materials. Adobe Acrobat Reader can be used to comment and highlight text in PDF documents. It is an excellent tool for note-taking purposes.

For laptops and computers

Adobe Acrobat Reader can be downloaded from www.adobe.com/downloads/. It is a free download. Please note that depending on your settings, you may have to temporarily disable your antivirus software.

For tablets and other similar hand-held devices

Adobe Acrobat Reader can be downloaded onto devices such as iPads, Android tablets and other hand-held devices. The application can be found in the device's application store using the search function and typing in "Adobe Acrobat Reader." Follow the instructions given. **It is a free application.**

After you have successfully downloaded the Adobe Acrobat Reader, please use the following web link to download your SM. You may copy/paste this link into your web browser.

https://apps.usfa.fema.gov/ax/sm/sm_0492.pdf

Note: In order to have the editing capabilities/toolbar, the SM needs to be opened with Adobe Acrobat Reader. There should be a function on your device to do this.

If you need assistance, please contact nfaonlinetier2@fema.dhs.gov.

GLOSSARY

Unless otherwise noted in the definition, all definitions are taken from ESRI's GIS Dictionary at https://support.esri.com/en-us/gis-dictionary

Accuracy — The degree to which a measured value conforms to true or accepted values. Accuracy is a measure of correctness. It is distinguished from precision, which measures exactness

Address Locator Service — A dataset in ArcGIS that stores the address attributes, associated indexes, and rules that define the process for translating nonspatial descriptions of places, such as street addresses, into spatial data that can be displayed as features on a map. An address locator contains a snapshot of the reference data used for geocoding, and parameters for standardizing addresses, searching for match locations, and creating output. Address locator files have a .loc file extension. In ArcGIS 8.3 and previous versions, an address locator was called a geocoding service.

Almanac — In GPS, a file transmitted from a satellite to a receiver that contains information about the orbits of all satellites included in the satellite network. Receivers refer to the almanac to determine which satellite to track.

ArcToolbox — A user interface in ArcGIS used for accessing, organizing, and managing a collection of geoprocessing tools, models, and scripts.

Attributes — 1. Nonspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and sediment load at a gauging station. 2. In raster datasets, information associated with each unique value of a raster cell. 3. Information that specifies how features are displayed and labeled on a map; for example, the graphic attributes of a river might include line thickness, line length, color, and font for labeling. 4. In MOLE, aspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a force element might include its name and speed. Most MOLE attributes are what some military specifications refer to as labels or modifiers.

CAD — Acronym for *computer-aided design*. A computer-based system for the design, drafting, and display of graphical information. Also known as computer-aided drafting, such systems are most commonly used to support engineering, planning, and illustrating activities.

Cartography	The art and science of expressing graphically, usually through maps, the natural and social features of the earth.
Data	Any collection of related facts arranged in a particular format; often, the basic elements of information that are produced, stored, or processed by a computer.
Data Frame	A map element that defines a geographic extent, a page extent, a coordinate system, and other display properties for one or more layers in ArcMap. A dataset can be represented in one or more data frames. In data view, only one data frame is displayed at a time; in layout view, all a map's data frames are displayed at the same time. Many cartography texts use the term "map body" to refer to what ESRI calls a data frame.
Data View	An all-purpose view in ArcMap and ArcReader for exploring, displaying, and querying geographic data. This view hides all map elements, such as titles, north arrows, and scale bars.
Degrees	A unit of angular measure represented by the symbol °. The earth is divided into 360 degrees of longitude and 180 degrees of latitude.
Ephemeris	A table of the predicted positions of a satellite within its orbit for each day of the year, or for other regular intervals.
Equator	The parallel of reference that is equidistant from the poles and defines the origin of latitude values.
FGDC	Acronym for *Federal Geographic Data Committee*. An organization established by the United States Federal Office of Management and Budget responsible for coordinating the development, use, sharing, and dissemination of surveying, mapping, and related spatial data. The committee is comprised of representatives from federal and state government agencies, academia, and the private sector. The FGDC defines spatial data metadata standards for the United States in its Content Standard for Digital Geospatial Metadata and manages the development of the National Spatial Data Infrastructure (NSDI).
Geocentric datum	A horizontal geodetic datum based on an ellipsoid that has its origin at the earth's center of mass. Examples are the World Geodetic System of 1984, the North American Datum of 1983, and the Geodetic Datum of Australia of 1994. The first uses the WGS84 ellipsoid; the latter two use the GRS80 ellipsoid. Geocentric datums are more compatible with satellite positioning systems, such as GPS, than are local datums.

Geocoding A GIS operation for converting street addresses into spatial data that can be displayed as features on a map, usually by referencing address information from a street segment data layer.

Geodatabase A database or file structure used primarily to store, query, and manipulate spatial data. Geodatabases store geometry, a spatial reference system, attributes, and behavioral rules for data. Various types of geographic datasets can be collected within a geodatabase, including feature classes, attribute tables, raster datasets, network datasets, topologies, and many others. Geodatabases can be stored in IBM DB2, IBM Informix, Oracle, Microsoft Access, Microsoft SQL Server, and PostgreSQL relational database management systems, or in a system of files, such as a file geodatabase.

Geoprocessing A GIS operation used to manipulate GIS data. A typical geoprocessing operation takes an input dataset, performs an operation on that dataset, and returns the result of the operation as an output dataset. Common geoprocessing operations include geographic feature overlay, feature selection and analysis, topology processing, raster processing, and data conversion. Geoprocessing allows for definition, management, and analysis of information used to form decisions.

Georeferencing Aligning geographic data to a known coordinate system so it can be viewed, queried, and analyzed with other geographic data. Georeferencing may involve shifting, rotating, scaling, skewing, and in some cases warping, rubber sheeting, or orthorectifying the data.

GIS Acronym for *geographic information system*. An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed.

Globe Documents A disk-based representation of the globe view or views contained in ArcGlobe. Globe documents have a .3dd extension.

GPS Acronym for *Global Positioning System*. A system of radio-emitting and -receiving satellites used for determining positions on the earth. The orbiting satellites transmit signals that allow a GPS receiver anywhere on earth to calculate its own location through trilateration. Developed and operated by the U.S. Department of Defense, the system is used in navigation, mapping, surveying, and other applications in which precise positioning is necessary.

Graticule	Coordinate data along the map frame in a scaled map. (IG 2-97 of pilot version)
LANDSAT Program; Landsat	LANDSAT Program: A NASA (National Aeronautics and Space Administration) program which stands for LAND + SATELLITE; the longest running enterprise for acquisition of satellite imagery of Earth. -Wikipedia, Landsat program, https://en.wikipedia.org/wiki/Landsat_program The term Landsat is also used to refer to the multispectral, earth-orbiting satellites developed by NASA as part of the LANDSAT program. These satellites gather imagery for land-use inventory, geological and mineralogical exploration, crop and forestry assessment, and cartography.
Latitude	The angular distance, usually measured in degrees north or south of the equator. Lines of latitude are also referred to as parallels.
Layer Files	In ArcGIS, a file with a .lyr extension that stores the path to a source dataset and other layer properties, including symbology.
Layout View	In ArcMap and ArcReader, a view that shows the virtual page upon which geographic data and map elements, such as titles, legends, and scale bars, are placed and arranged for printing.
Line	On a map, a shape defined by a connected series of unique x,y coordinate pairs. A line may be straight or curved.
Longitude	The angular distance, usually expressed in degrees, minutes, and seconds, of the location of a point on the earth's surface east or west of an arbitrarily defined meridian (usually the Greenwich prime meridian). All lines of longitude are great circles that intersect the equator and pass through the North and South Poles.
Map Documents	In ArcMap, the file that contains one map, its layout, and its associated layers, tables, charts, and reports. Map documents can be printed or embedded in other documents. Map document files have a .mxd extension.
Map Extent **Syn: Geographic extent**	The limit of the geographic area shown on a map, usually defined by a rectangle. In a dynamic map display, the map extent can be changed by zooming and panning.

Metadata

Information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, where, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system and projection of the data), while documentation is entered by a person (for example, keywords used to describe the data).

MGRS

Acronym standing for *Military Grid Reference System*.

The geocoordinate standard used by NATO militaries for locating points on the earth. The MGRS is derived from the Universal Transverse Mercator (UTM) grid system and the universal polar stereographic (UPS) grid system, but uses a different labeling convention. The MGRS is used for the entire earth.

An example of an MGRS coordinate, or grid reference, would be 4QFJ12345678, which consists of three parts:

- 4Q (grid zone designator, GZD),
- FJ (the 100,000-meter square identifier), and
- 12345678 (numerical location; easting is 1234 and northing is 5678, in this case specifying a location with 10 m resolution).

-Wikipedia, Military Grid Reference System, https://en.wikipedia.org/wiki/Military_Grid_Reference_System

Minutes

An angle equal to 1/60 of a degree of latitude or longitude and containing sixty seconds.

NAD

Acronym for *North American Datum.* **[see geocentric datum]**

Oblique Imagery (syn: oblique photograph; aerial imagery)

An aerial photograph taken with the axis of the camera held at an angle between the horizontal plane of the ground and the vertical plane perpendicular to the ground. A low oblique image shows only the surface of the earth; a high oblique image includes the horizon.

oblique projection A type of map projection.

A planar or cylindrical projection whose point of tangency is neither on the equator nor at a pole.

A conic projection whose axis does not line up with the polar axis of the globe.

A cylindrical projection whose lines of tangency or secancy follow neither the equator nor a meridian.

Orthophotography The practice of taking an aerial photograph from which distortions owing to camera tilt and ground relief have been removed. An orthophotograph has the same scale throughout and can be used as a map.

Point A geometric element defined by a pair of x,y coordinates.

Polygon 1. On a map, a closed shape defined by a connected sequence of x,y coordinate pairs, where the first and last coordinate pair are the same and all other pairs are unique. 2. In ArcGIS software, a shape defined by one or more rings, where a ring is a path that starts and ends at the same point. If a polygon has more than one ring, the rings may be separate from one another or they may nest inside one another, but they may not overlap.

Precision (1) The closeness of a repeated set of observations of the same quantity to one another. Precision is a measure of the control over random error. For example, assessment of the quality of a surveyor's work is based in part on the precision of their measured values.

(2) The number of significant digits used to store numbers, particularly coordinate values. Precision is important for accurate feature representation, analysis, and mapping.

(3) A statistical measure of repeatability, usually expressed as the variance of repeated measures about the mean.

Prime Meridian In a coordinate system, any line of longitude designated as 0 degrees east and west, to which all other meridians are referenced.

Raster Data	[data models] spatial data model that defines space as an array of equally sized cells arranged in rows and columns, and composed of single or multiple bands. Each cell contains an attribute value and location coordinates. Unlike a vector structure, which stores coordinates explicitly, raster coordinates are contained in the ordering of the matrix. Groups of cells that share the same value represent the same type of geographic feature. [ESRI Software] In ArcGIS, a raster spatial data model that is stored on disk or in a geodatabase. [computer graphics] a raster graphics image, or bitmap, is a dot matrix data structure representing a generally rectangular grid of pixels, or points of color, viewable via a monitor, paper, or other display medium. Raster images are stored in image files with varying formats. -Wikipedia, Raster graphics, https://en.wikipedia.org/wiki/Raster_graphics
Remote Sensing	Collecting and interpreting information about the environment and the surface of the earth from a distance, primarily by sensing radiation that is naturally emitted or reflected by the earth's surface or from the atmosphere, or by sensing signals transmitted from a device and reflected back to it.
Seconds	An angle equal to one sixtieth of a minute of latitude or longitude.
Spherical Coordinate System	A reference system using positions of latitude and longitude to define the locations of points on the surface of a sphere or spheroid.
Trend Analysis	The practice of collecting information and attempting to spot a pattern, or trend, in the information. https://en.wikipedia.org/wiki/Trend_analysis [statistics and spatial modeling] A trend is nonrandom variation in the value of a variable that can be described by a mathematical function such as a polynomial. -ESRI GIS Dictionary
Vector Data	A representation of the world using points, lines, and polygons.

USNG

Acronym for *United States National Grid*.

A point reference system of grid references commonly used in the United States. It provides a nationally consistent language of location in a user friendly format. It is similar in design to the national grid reference systems used throughout other nations. The USNG was developed by the Federal Geographic Data Committee.

It resembles the Military Grid Reference System (MGRS). When the WGS84 datum or NAD83 datum is used, USNG and MGRS coordinates are “equivalent”.

-Wikipedia, United States National Grid,
https://en.wikipedia.org/wiki/United_States_National_Grid

UTM

Acronym for *universal transverse Mercator*. A projected coordinate system that divides the world into 60 north and south zones, 6 degrees wide.