

Geospatial Emergency Management Specialist (GEMS)

When we respond to an emergency, we learn many valuable lessons that help us to be better prepared for the next emergency. In lieu of an actual emergency, how do we learn and prepare for future emergencies? We need training. While the role of GIS in Emergency Management is becoming better defined and more widely understood, there remains a need for more training. GIS Professionals need to receive training in Emergency Management. While it is also clear that Emergency Management professionals need to receive training in GIS, this curriculum does not address that need.

Beyond the need for training, there is also a need to better define the roles and responsibilities for GIS professionals to contribute to field of Emergency Management. This definition needs to be incorporated into NIMS standards. This curriculum is framed so as to facilitate that definition.

This curriculum is subject to annual revision. It is anticipated that specialties will be developed for this curriculum, particularly for GEMS1 and GEMS2, which will require additional knowledge in a particular subject area such as radiological preparedness.

***Important Notes:**

Each GEMS level requires completion of the previous level.

Each FEMA independent study course (IS-) takes no more than 8 hours to complete online. Most are finished in 4 hours or less. Classroom style courses (G- or ICS) vary in length and may be scheduled through Minnesota HSEM (held locally) or through FEMA's EMI facility in Maryland.

HAZUS classes are 3 to 4 days each, and may also be scheduled through HSEM or at FEMA's EMI facility. There is no charge for attending any of these classes.

Tabletop or Full Scale exercises or participation in an actual event is equivalent to one continuing education course.

Subject to Annual Revision.

Re-certification is needed every five years. This requires you to take at least five classes from the continuing education list or classes from any higher GEMS level. Any new courses incorporated as requirements into the curriculum during that time must also be completed for re-certification (these are **in addition to** the continuing education requirement, i.e. newly added courses are required for re-certification but do not count as continuing education).

GEMS4

GEMS4 is the entry level in the Geospatial Emergency Management Specialist series. It is appropriate for GIS professionals who do not have formal Emergency Management responsibilities defined in their job, but may volunteer or be assigned a role to provide basic maps or other support in response to emergencies.

The GEMS4 must be able to:

- Effectively use the standard commercial off-the-shelf GIS software to produce standard and unique maps, and answer questions related to spatial information.
 - Collect, process, interpret and disseminate incident-related spatial data.
 - Maintain the standardized filing structures.
 - Work with a variety of spatial data types (raster and vector), including knowledge of various data types such as coverages, geodatabases, shapefiles and map services.
 - Properly document data and archive work.
 - Comply with all data security requirements.
 - Perform the role of GIS Specialist in “incident conditions,” which may include
 - long hours (12 hour operational periods, day or night and weekends)
 - limited office space shared with other personnel
 - working in stressful conditions
 - Demonstrate the maturity and judgment to monitor one’ own physical, emotional and mental limits. Recognize when there is too much work and request help.
 - Follow the ICS chain-of-command at all times.
- ✓ **GIS Experience (Prerequisite) One of the Following at a Minimum**
- One year on the job professional experience in GIS
 - Hold a GIS certificate or degree in GIS from an accredited institution
 - Posses MOS 12Y Geospatial Engineer (Army) or 0261 Geographic Intelligence (Marines)
- ✓ **FEMA training (Available on-line)**
- IS-001: Emergency Manager: an Orientation to the Position
 - IS-022: Are You Ready? An In-depth Guide to Citizen Preparedness
 - IS-055: Household Hazardous Materials – A Guide for Citizens
 - IS-100: An Introduction to the Incident Command System (ICS)
 - IS 293: Mission Assignment Overview
 - IS-700: An Introduction to the National Incident Management System
 - G-202: Debris Management (Classroom only)
- ✓ **U.S. National Grid - One of the Following**
- US National Grid Workshop (To be Developed) – 4 hours OR
 - U.S. National Grid introduction and awareness lecture (2 hours) **plus** USNG issues for map makers lecture (2 hours)
 - Test out option to be developed
- ✓ **HAZUS-MH**
- HAZUS-MH for Decision Makers (online)
 - HAZUS-MH Overview and Installation (online)

GEMS3

GEMS3 is the next level in the Geospatial Emergency Management Specialist series. It is appropriate for GIS professionals who may not have formal Emergency Management responsibilities defined in their job, but may need to provide maps, analysis or other support in response to or preparation for emergencies. This level is appropriate for GIS professionals who are assigned a formal role at an Emergency Operations Center (EOC) to provide basic GIS Support. This includes making maps and reports, answering information requests, and analysis. This level is also appropriate for GIS professional who are helping with emergency preparedness and planning.

The GEMS3 must be able to:

- Create reports and perform basic analysis of spatial data.
 - Collect and maintain the minimum essential datasets.
 - Develop, update, and maintain metadata.
 - Understand Global Positioning System (GPS) data collection methods and be able to download, process, and incorporate the data.
 - Understand the use of a variety of projections and datums including geographic coordinates (latitude–longitude) and be able to re-project data in multiple formats.
 - Create new data as needed for incident operations.
 - Transfer GIS data to and from various locations, which may include FTP or other web sites.
 - Answer questions such as number of acres burned, acres by ownership, or other questions requiring basic GIS analysis and geoprocessing skills.
 - Troubleshoot hardware and software problems sufficient to keep the GIS Specialist operational. This may include basic software installs, ensuring the license managers are functioning, installing print drivers, or connecting a plotter to a computer.
 - Document all data and map requests.
- ✓ **GIS Experience (Prerequisite) One of the Following at a Minimum**
- Three years on the job professional experience in GIS
 - Hold a GIS Certificate AND One year on the job professional experience in GIS
 - Hold an undergraduate or graduate degree in GIS from an accredited university
 - Posses MOS 12Y Geospatial Engineer (Army) or 0261 Geographic Intelligence (Marines) at the rank of Sergeant through Staff Sergeant or above.
 - Posses a certification from ASPRS (Photogrammetrist, Mapping Scientist, or Technologist)
- ✓ **FEMA training**
- IS-120: An Introduction to Exercises
 - IS-200: ICS for Single Resources and Initial Action Incidents
 - IS-800B: National Response Framework, An Introduction
 - IS-860A: National Infrastructure Protection Plan (NIPP)
 - IS-230: Principles of Emergency Management
 - PDS – 230: Principles of Emergency Management
 - IS-235: Emergency Planning
 - PDS - 235: Emergency Planning
 - G-191: ICS/EOC Interface
- ✓ **HAZUS-MH**
- E313 Basic HAZUS-MH

GEMS2

GEMS2 is the next level in the Geospatial Emergency Management Specialist series. It is appropriate for GIS professionals who may have formal Emergency Management responsibilities in their job, and may need to provide complex maps, analysis or other support in response to or preparation for emergencies. This level is appropriate for GIS professionals who are assigned a formal role at an Emergency Operations Center (EOC). This includes making maps and reports, answering information requests, and analysis, and providing damage estimates and analysis. This level is also appropriate for GIS professional who are involved in developing emergency plans, as well as mitigation strategies.

The GEMS2 must be able to:

- Maintain timely and effective exchange of information with all affected agencies and organizations.
 - Perform advanced analysis of spatial data.
 - Communicate effectively to:
 - explain technical issues or concerns
 - train others in basic map reading
 - exchange technical information
 - Direct and prioritize tasks for GEMS4 and GEMS3 positions, allowing for individual strengths.
 - Coordinate and prioritize incoming requests, and monitor the workload.
 - Comply with demobilization procedures.
 - Provide written documentation, digital data, and products developed during the incident to the Documentation Unit and others as requested.
 - Participate in functional area briefings and After Action Reviews (AARs).
- ✓ **GIS Experience (Prerequisite) One of the Following at a Minimum**
- Five years on the job professional experience in GIS
 - Hold a GIS Certificate AND Three years on the job professional experience in GIS
 - Hold an undergraduate or graduate degree in GIS from an accredited university AND one year on the job professional experience in GIS
 - Posses MOS 12Y Geospatial Engineer (Army) or 0261 Geographic Intelligence (Marines) at the rank of Sergeant First Class (Army) or Gunnery Sergeant (Marines) or above.
 - Posses a certification from ASPRS as a Certified Photogrammetrist
- ✓ **FEMA training**
- IS-130: Exercise Evaluation and Improvement Planning
 - IS-393a: An Introduction to Hazard Mitigation
 - IS-241: Decision Making and Problem Solving
 - PDS-241: Decision Making and Problem Solving
 - IS-242: Effective Communication
 - PDS-242: Effective Communication
 - G-386: Mass Fatalities Incident Response
 - IS-547: Introduction to Continuity of Operations
- ✓ **HAZUS-MH ‘Trained Professional’ Certification**
- ✓ **Formal Presentation or public speaking experience.**
- ✓ **InfraGard Member (Recommended)**
- ✓ **Basic leadership experience, formal or informal**

GEMS1

GEMS1 is the last (highest) level in the Geospatial Emergency Management Specialist series. This level is appropriate for GIS professionals who have formal Emergency Management responsibilities in their job, and may be involved in all phases of emergency management. This level is appropriate for the GIS professional who will lead other GIS professionals in emergency response, mitigation and planning.

The GEMS1 must be able to:

- Ensure relevant information is exchanged during briefings and debriefings, presenting maps and reports as needed.
 - Ensure documentation is complete and disposition is appropriate.
 - Coordinate an efficient transfer of position duties when mobilizing/demobilizing.
- ✓ **GIS Experience (Prerequisite) One of the Following at a Minimum**
- Seven years on the job professional experience in GIS
 - Hold a GIS Certificate AND Five years on the job professional experience in GIS
 - Hold an undergraduate or graduate degree in GIS from an accredited university AND Three years on the job professional experience in GIS
 - GISP Certification
 - Holds or previously held MOS 215D (Geospatial Engineering Technician (Army) or MOS 12Y Geospatial Engineer (Army) or 0261 Geographic Intelligence (Marines) at the rank of Master Sergeant.
- ✓ **FEMA training**
- IS 240 Leadership and Influence
 - PDS 240 Leadership and Influence
 - IS 244 Developing and Managing Volunteers.
 - PDS 244 Developing and Managing Volunteers.
 - IS 288: The Role of Voluntary Agencies in Emergency Management
 - G288: Donations Management
 - HSEEP-1: Homeland Security Exercise Evaluation Program
 - G650-1: New Director's Workshop
- ✓ **State Emergency Manager Certification required**
Emergency Manager Certification in the State of Minnesota is accomplished by taking the FEMA classes listed in GEMS 4 through GEMS 1. This is subject to annual revision and requires compliance with current state certification procedures. GEMS professionals from other states must complete all courses listed here, as well as completing all requirements and obtaining Emergency Manager Certification from their resident state.
- ✓ **HAZUS-MH Practitioner Certification**
- ✓ **Formal leadership experience**

One Continuing Education course required annually. **

✓ Continuing Education (recommended for GEMS 4 or 3)

- IS 003: Radiological Emergency Management
- IS 008a: Building for the Earthquakes of Tomorrow
- IS 010: Animals in Disaster: Module A
- IS 011: Animals in Disaster: Module B
- IS 15a: Special Events Contingency Planning for Public Safety Agencies
- IS 26: Guide to Points of Distribution
- IS 101: Federal Disaster Workforce Readiness
- IS 102: Deployment Basics for FEMA Response Partners
- IS 111: Livestock in Disaster
- IS 200HCa: Applying ICS to Healthcare Organizations
- IS 253: Coordinating Environmental and Historic Preservation Compliance.
- IS 271: Anticipating Hazardous Weather and Community Risk
- IS 324: Community Hurricane Preparedness.
- IS 362: Multi-hazard Emergency Planning for Schools
- IS 386: Introduction to Residential Coastal Construction
- IS 394a: Protecting Your Home or Small Business from Disaster
- IS 520: Introduction to Continuity of Operations Planning for Pandemic Influenzas
- IS 650: Building Partnerships with Tribal Governments.
- IS 706: NIMS Intrastate Mutual Aid, and Introduction (Pre-requisite IS 700)
- IS 801: Emergency Support Function, Transportation
- IS 802: Emergency Support Function (ESF) Communications
- IS 803: Emergency Support Function (ESF) Public Works and Engineering
- IS 804: Emergency Support Function (ESF) Firefighting
- IS 805: Emergency Support Function (ESF) Emergency Management
- IS 806: Emergency Support Function (ESF) Mass Care, Emergency Assistance, Housing and Human Services
- IS 807: Emergency Support Function (ESF) Logistics Management and Resources
- IS 808: Emergency Support Function (ESF) Public Health
- IS 809: Emergency Support Function (ESF) Search and Rescue
- IS 810: Emergency Support Function (ESF) Oil and Hazardous Response
- IS 811: Emergency Support Function (ESF)Agriculture and Natural Resources
- IS 812: Emergency Support Function (ESF)Energy
- IS 813: Emergency Support Function (ESF)Public Safety and Security Annex
- IS 814: Emergency Support Function (ESF) Long Term Community Recovery

✓ Continuing Education (recommended for GEMS 2 or 1)

- IS 546a: Continuity of Operations (COOP) Awareness Training
- IS 548: Continuity of Operations.
- IS 106: Workplace Violence Awareness Training
- IS 197EM: Special Needs Planning Considerations for Emergency Management
- IS 197SP: Special Needs Planning Considerations for Service and Support Providers
- IS 208a: State Disaster Management

- IS 293: Mission Assignment Overview
- ICS 300: Intermediate Incident Command System (lecture style only)
- IS 301: Radiological Emergency Response
- IS 302: Modular Emergency Radiological Response Training
- IS 331: Introduction to Radiological Emergency Preparedness Exercise Evaluation.
- IS 366: Planning for the Needs of Children in Disasters.
- ICS 400: Advanced Incident Command System (lecture style only)
- IS 775: EOC Management and Operations
- IS 901: Section 508 Awareness Course

****Continuing Education Important Notes:**

Continuing education classes are subject to annual revision.

Re-certification is needed every five years. This requires you to take at least five classes from the continuing education list or classes from any higher GEMS level. Any new courses incorporated as requirements into the curriculum during that time must also be completed for re-certification (these are **in addition to** the continuing education requirement, i.e. newly added courses are required for re-certification but do not count as continuing education).

For updated information, see:

<http://www.mngeo.state.mn.us/committee/emprep/>

