



**FEMA**



# **National Fire Academy**

**R0387 – Analytical Tools for Decision-Making  
Version: 1st Edition, 3rd Printing, June 2016**

**Quarter:**

**ACE Credit: Pending**

**IACET Continuing Education Units: Pending**

**Length of Course: 6 Days (52 contact hours, Sunday – Friday)**

**Prerequisite: Yes**

**Curriculum: Planning and Information Management**

**Training Specialist: Dave Donohue**

**Instructor:**

**Instructor email/phone:**

**Classroom: J-**

**Meeting Time: 8 AM – 5 PM**

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## **Course Description (Catalog)**

R0387 – “Analytical Tools for Decision-Making.” This six-day course will enable you to leverage technology to support community risk reduction as well as fire and emergency medical services emergency preparedness planning.

You will gain experience with technologies that support planning, mitigation, response and recovery operations.

This course is technically/technology intensive and will present significant challenges for those not proficient with the use of personal computers, complex software, and manipulation of data. A substantial portion of the course involves geospatial technologies and their applications. You will receive hands-on training in the use of alternate computer technologies.

## **Student Qualifications (Primary and Secondary Audience)**

The target audience for “Analytical Tools for Decision-Making” (ATDM) is that person who has a support role related to technology in the fire department and/or has the responsibility for technology implementation including collecting, analyzing and reporting data including:

- Data management.
- Analysis.
- Reporting.
- Application and presentation.

## **Course Scope (Goal)**

The goal of this course is to provide students with the ability to leverage technology to support community risk reduction and fire and Emergency Medical Services (EMS) emergency preparedness planning. Emergency services personnel will be able to leverage technology to support safety, management and response operations.

The scope of the training topic areas covered will include:

- Polling software and search engines.
- Data reports and analysis.
- Mapping principles and concepts.
- Mapping for visualization.
- Using Geographic Information System (GIS) for planning.
- Using GIS for mitigation.
- Using GIS for response.
- Using GIS for recovery.
- Multimedia.
- Emerging technologies.

## **Course Objectives (Course Learning Outcomes – TLOs)**

After successfully completing this course, you will be able to accomplish the following:

- Apply the concept of analytics to their own decision-making to improve their decision-making process and avoid negative consequences.
- Compare and contrast emerging technologies and the potential impact of implementing new technologies within their own agencies.
- Examine sources of data, database formats, data collection processes and data management systems to identify data and reporting needs in preplanning, response, mitigation and recovery.

- Evaluate a variety of analytical tools, including the analytic hierarchy process (AHP) model, to determine the applicability of these tools to decision-making in both nonresponse as well as response planning.
- Evaluate the application of spatial technologies for use in the emergency services.
- Choose an appropriate technology to effectively communicate results of the analytical process and the decisions that result from the analytical process to staff, management or the community.

### **Course Delivery Method**

The National Fire Academy (NFA) offers specialized training courses and advanced management programs of national impact in an academic classroom environment [on campus at the National Emergency Training Center \(NETC\) in Emmitsburg, Maryland](#). This classroom course is designed for the national level fire service officer from State and local fire service organizations. During this 6-day delivery, students will reside in dormitories provided on campus with classes conducted in classrooms designed for critical student/instructor interaction. All course materials are designed for interactive classroom environments, in either paper notebook or electronic formats.

## Course Schedule

The purpose of the course schedule is to give you, at a glance, the required preparation, activities, and evaluation components of your course.

### SCHEDULE

| DAY 1   | DAY 2  |
|---|--|
| Introduction, Welcome and Administrative  | Activity 2.2: Technology — Where Are We Going? (cont'd)  |
| Introduction, Welcome and Administrative (cont'd)   | Activity 2.3: Pandemic Flu Outbreak H5N1<br>Unit 2: Emerging Technologies (cont'd)   |
| <i>Break</i>  | <i>Break</i>   |
| Unit 1: Analysis for Decision-Making<br>Activity 1.1: All This Information — What to Do?  | Unit 2: Emerging Technologies (cont'd)<br>Activity 2.4: Insurance Services Office Impact on My Organization  |
| <i>Lunch</i>  | <i>Lunch</i>   |
| Unit 1: Analysis for Decision-Making (cont'd)<br>Activity 1.2: Developing a Decision-Making Model                                     | Unit 3: Data and Reporting<br>Activity 3.1: Creation of Student Folder on Computer in Lab (J-011)  |
| <i>Break</i>  | <i>Break</i>   |
| Unit 2: Emerging Technologies<br>Activity 2.1: Technology — Where Did We Come From?<br>Activity 2.2: Technology — Where Are We Going? | Activity 3.2: Comparing Excel and Access Using the Same Database<br>Unit 3: Data and Reporting (cont'd)<br>Activity 3.3: Part 1: Putting It All Together |

| <b>DAY 3</b>  | <b>DAY 4</b>   |
|---|--|
| Activity 2.2: Technology — Where Are We Going? (cont'd)   | Activity 2.2: Technology — Where Are We Going? (cont'd)  |
| <i>Break</i>  | <i>Break</i>   |
| Unit 4: Analytical Tools for Decision-Making<br>Activity 4.1: Using Analytics for Response  | Unit 4: Analytical Tools for Decision-Making (cont'd)<br>Activity 4.9: Proactive Response Planning<br>Activity 4.10: Part 2: Putting It All Together |
| <i>Break</i>  | <i>Break</i>   |
| Activity 4.1: Using Analytics for Response (cont'd)<br>Unit 4: Analytical Tools for Decision-Making (cont'd)<br>Activity 4.2: Cellphones<br>Activity 4.3: The Analytic Hierarchy Process  | Unit 5: Geospatial Technologies for Risk Reduction<br>Activity 5.1: Bing Maps, Google Maps and Google Earth  |
| <i>Lunch</i>  | <i>Lunch</i>   |
| Activity 4.3: The Analytic Hierarchy Process (cont'd)<br>Unit 4: Analytical Tools for Decision-Making (cont'd)<br>Activity 4.4: Vulnerability Assessment Profile/Security Assessment Profile Calculators — PivotTable Creation<br>Activity 4.5: National Oceanic and Atmospheric Administration Vulnerability Assessment Matrix and Opportunity Assessment Matrix | Unit 5: Geospatial Technologies for Risk Reduction (cont'd)<br>Activity 5.2: Creating a Map in Google Earth  |
| <i>Break</i>  | <i>Break</i>   |
| Unit 4: Analytical Tools for Decision-Making (cont'd)<br>Activity 4.6: Computer-Aided Management of Emergency Operations<br>Activity 4.7: Areal Locations of Hazardous Atmospheres<br>Activity 4.8: Mapping Applications for Response, Planning and Local Operational Tasks   | Unit 5: Geospatial Technologies for Risk Reduction (cont'd)<br>Activity 5.3: Geocaching  |

| <b>DAY 5</b>  | <b>DAY 6</b>   |
|---|--|
| Activity 2.2: Technology — Where Are We Going? (cont'd)   | Activity 2.2: Technology — Where Are We Going? (cont'd)  |
| <i>Break</i>  | <i>Break</i>   |
| Unit 5: Geospatial Technologies for Risk Reduction (cont'd)<br><br>Activity 5.4: Reading the United States National Grid<br><br>Activity 5.5: ArcMap Basics | Unit 6: Presenting Your Results  |
| <i>Break</i>  | <i>Break</i>   |
| Unit 5: Geospatial Technologies for Risk Reduction (cont'd)<br><br>Activity 5.6: Google Earth<br><br>Activity 5.7: Joining Data From Different Sources      | Unit 6: Presenting Your Results (cont'd)<br><br>Activity 6.1: Adobe Captivate<br><br>Activity 6.2: Windows Live Movie Maker        |
| <i>Lunch</i>  | <i>Lunch</i>   |
| Unit 5: Geospatial Technologies for Risk Reduction (cont'd)   | Unit 6: Presenting Your Results (cont'd)<br><br>Activity 6.3: Part 4: Putting It All Together<br><br>Unit 7: Final Graded Activity |
| <i>Break</i>  | <i>Break</i>   |
| Unit 5: Geospatial Technologies for Risk Reduction (cont'd)<br><br>Activity 5.8: Part 3: Putting It All Together  | Activity 7.1: Putting It All Together<br><br>Graduation  |

## **Course Resources (Instructional Materials)**

In order to be fully prepared, obtain a copy of the required textbooks and other instructional materials prior to the first day of class.

### **Required Readings**

The student must complete required readings during the course to be able to thoughtfully participate in discussions and activities.

None.

### **Suggested Reading/Resources**

Suggested readings and resources are not evaluated, but may enhance the student's understanding, serve as additional sources for citation and promote discussion of course material.

None.

### **Required Resources (Course Textbook)**

Student Manual.

### **Supplemental Resources (Supplemental Course Textbook)**

None.

## **Grading Methodology (Evaluation Procedures)**

Each student will be scored on each of the following graded activities according to the scoring rubrics. Activities are weighted differently because of their level of difficulty and the amount of time that is required for students to accomplish the course objective associated with the activity.

### **1. Activity 1.2: Developing a Decision-Making Model**

Develop a decision-making model that could be used by COs.

### **2. Activity 2.2: Technology — Where Are We Going?**

Share experiences among both students and instructors with new and emerging technologies based on previous experience in their home agencies.

### **3. Activity 3.2: Comparing Excel and Access Using the Same Database**

Compare the strengths of Excel and Access for data analysis and reporting.

4.     **Activity 4.3: The Analytic Hierarchy Process**  
  
Develop a decision-making model based on the AHP model.
5.     **Activity 4.4: Vulnerability Assessment Profile/Security Assessment Profile Calculators — PivotTable Creation**  
  
Measure risk factors using preformatted Excel templates.
6.     **Activity 4.5: National Oceanic and Atmospheric Administration Vulnerability Assessment Matrix and Opportunity Assessment Matrix**  
  
Analyze community risk using the NOAA VAM and the OAM.
7.     **Activity 4.6: Computer-Aided Management of Emergency Operations**  
  
Use the CAMEO Chemicals application to research response-related questions.
8.     **Activity 4.7: Areal Locations of Hazardous Atmospheres**  
  
Use ALOHA to compute threat zones and exposure relating to a hazardous materials incident.
9.     **Activity 5.1: Bing Maps, Google Maps and Google Earth**  
  
Use Bing Maps, Google Maps and Google Earth to replicate a photo.
10.    **Activity 5.2: Creating a Map in Google Earth**  
  
Navigate to assigned locations using the USNG.
11.    **Activity 5.3: Geocaching**  
  
Use GPS technologies to overcome common challenges encountered during emergency service operations.
12.    **Activity 5.5: ArcMap Basics**  
  
Navigate within ArcGIS using the Standard and Tools (Pan and Zoom) toolbars.
13.    **Activity 5.6: Google Earth**  
  
Import data into Google Earth and plot hydrant locations.
14.    **Activity 6.1: Adobe Captivate**  
  
Use Adobe Captivate.

15. **Activity 6.2: Windows Live Movie Maker**

Use Windows Live Movie Maker and understand its capabilities.

16. **Activity 7.1: Putting It All Together**

Apply the various selected technologies in each of the following areas: planning, mitigation, response and recovery.

**Required Reading Assignments**

Student completion of reading assignments will be done via evaluation of their class participation and will not be a separately graded activity.

**Suggested Readings**

Suggested readings are not evaluated, but may enhance the student's understanding and promote discussion of course material.

## **Course Outline**

### **Introduction (Day 1)**

### **Unit 1: Analysis for Decision-Making (Day 1)**

#### **Objectives**

##### **Terminal Objective**

The students will be able to:

- 1.1 Apply the concept of analytics to their own decision-making to improve their decision-making process and avoid negative consequences.

##### **Enabling Objectives**

The students will be able to:

- 1.1 View the demographic makeup of the class with the provided results of the polling software.
- 1.2 Given a scenario, evaluate uses for analytical information derived from TurningPoint.
- 1.3 Compare four different models of analytics: the knowledge continuum model, the five steps of analytics, the analytics objectives, and the collective applications model.
- 1.4 Develop a decision-making model that could be used by Company Officers (COs).

### **Unit 2: Emerging Technologies (Day 1)**

#### **Objectives**

##### **Terminal Objective**

The students will be able to:

- 2.1 Compare and contrast emerging technologies and the potential impact of implementing new technologies within their own agencies.

##### **Enabling Objectives**

The students will be able to:

- 2.1 Review the history of the introduction of technologies in the fire and emergency services.

- 2.2 Prepare a presentation and present to the class experiences with new and emerging technologies based on previous experience in their home agencies.
- 2.3 Use consensus-building to develop a decision-making process in a limited time frame with changing information.
- 2.4 Examine the need for new technologies based on new Insurance Services Office criteria for evaluating fire service capabilities.

### **Unit 3: Data and Reporting (Day 2)**

#### **Objectives**

##### **Terminal Objective**

The students will be able to:

- 3.1 Examine sources of data, database formats, data collection processes and data management systems to identify data and reporting needs in preplanning, response, mitigation and recovery.

##### **Enabling Objectives**

The students will be able to:

- 3.1 Define databases and describe various formats that a database may take.
- 3.2 Compare the strengths of Excel and Access for data analysis and reporting.
- 3.3 Identify critical data elements available from a variety of public and private data sources.
- 3.4 Given a scenario, identify what data is needed to accurately document the incident using the National Fire Incident Reporting System (NFIRS).
- 3.5 Given a scenario, evaluate each of the data and reporting tools included in this unit and decide which tools could be useful in planning, mitigation, response and recovery.

### **Unit 4: Analytical Tools for Decision-Making (Day 3)**

#### **Objectives**

##### **Terminal Objective**

The students will be able to:

- 4.1 Evaluate a variety of analytical tools, including the analytic hierarchy process (AHP) model, to determine the applicability of these tools to decision-making in both nonresponse as well as response planning.

## **Enabling Objectives**

The student will be able to:

- 4.1 Based on analytical information, determine future response needs.
- 4.2 Develop a decision-making model based on the AHP model.
- 4.3 Measure risk factors using preformatted Excel templates.
- 4.4 Analyze community risk using the National Oceanic and Atmospheric Administration (NOAA) Vulnerability Assessment Matrix (VAM) and Opportunity Assessment Matrix (OAM).
- 4.5 Use the Computer-Aided Management of Emergency Operations (CAMEO) Chemicals application to research response-related questions.
- 4.6 Use Areal Locations of Hazardous Atmospheres (ALOHA) to compute threat zones and exposure relating to a hazardous materials incident.
- 4.7 Use Mapping Applications for Response, Planning and Local Operational Tasks (MARPLOT) software to plot plume models from ALOHA in order to determine chemical hazards in preresponse and emergency situation planning.
- 4.8 Explain how Hazards United States (HAZUS) can be used for loss estimation, planning, response, recovery and mitigation.
- 4.9 Determine the need for proactive response planning using analytical information.
- 4.10 Given a scenario, evaluate each of the analytical tools included in this unit and decide which tools could be useful in planning, mitigation, response and recovery.

## **Unit 5: Geospatial Technologies for Risk Reduction (Day 4)**

### **Objectives**

#### **Terminal Objective**

The students will be able to:

- 5.1 Evaluate the application of spatial technologies for use in the emergency services.

## **Enabling Objectives**

The students will be able to:

- 5.1 Describe the nature of spatial data.
- 5.2 Describe remote sensing as a source of information about an object or location.
- 5.3 Use Bing Maps, Google Maps and Google Earth to replicate a photo.
- 5.4 Define Geographic Information System (GIS).
- 5.5 Compare and contrast the range of coordinate systems commonly used for geolocation to illustrate the advantages of using the United States National Grid (USNG).
- 5.6 Determine the critical components of a coordinate system.
- 5.7 Describe GPS.
- 5.8 Use GPS technologies to overcome common challenges encountered during emergency service operations.
- 5.9 Given a scaled map, a Romer scale, and a USNG coordinate, locate the feature at the given coordinates.
- 5.10 Navigate within ArcGIS using the Standard and Tools (Pan and Zoom) toolbars.
- 5.11 Describe how GIS may be used to manage and analyze data spatially.
- 5.12 Import data into Google Earth, and plot hydrant locations.
- 5.13 Analyze how ArcMap may be used for planning activities in their organization.
- 5.14 Given a table containing coordinates and another table of attributes, import external data into ArcMap, and use table joins to develop a feature dataset.
- 5.15 Given a scenario, evaluate each of the geospatial technology tools included in this unit, and decide which tools could be useful in planning, mitigation, response and recovery.

## **Unit 6: Presenting Your Results (Day 6)**

### **Objectives**

#### **Terminal Objective**

The students will be able to:

- 6.1 Choose an appropriate technology to effectively communicate results of the analytical process and the decisions that result from the analytical process to staff, management or the community.

#### **Enabling Objectives**

The students will be able to:

- 6.1 Identify the elements of a professional presentation to management.
- 6.2 Describe how Adobe Captivate can be used to facilitate, enhance or expand communication.
- 6.3 Use Adobe Captivate.
- 6.4 Describe how video technology can be used to improve the functioning of an organization.
- 6.5 Use Windows Live Movie Maker.
- 6.6 Describe how Web-based collaboration tools, such as Google Drive or Join.Me, can be used within their organization to improve information sharing.
- 6.7 Given a scenario, evaluate each of the multimedia tools included in this unit and decide which tools could be useful in planning, mitigation, response and recovery.

## **Unit 7: Final Graded Activity (Day 6)**

### **Policies**

#### **Class Attendance and Cancellation Policy**

##### **Attendance**

- You are required to attend all sessions of the course. If you do not, you may not receive a certificate, and your stipend may be denied.

- If you need to depart campus early and miss any portion of the course and/or graduation, you must make the request in writing to the NFA training specialist. The training specialist, in collaboration with the superintendent, may waive the attendance requirement in order to accommodate you with extraordinary circumstances as long as you complete all course requirements. If you receive approval for departing early, you must forward the approval to the Admissions Office so your stipend reimbursement is not limited.

### **Student Substitutions**

Substitutions for NFA courses are made from waiting lists; your fire department can't send someone in your place.

### **Cancellations or No-Shows**

NFA's mission for delivery of courses is impaired significantly by cancellations and no-shows. It is very difficult and costly to recruit students at the last minute. Currently there is a two-year ban on student attendance for students who are no-shows or cancel within 30 days of the course start date without a valid reason. If you receive such a restriction, your supervisor needs to send a letter to our Admissions Office explaining the cancellation/no-show.

### **Course Failure**

If you fail an on-campus course, you will not be issued a stipend for that course. You can reapply for the failed course or any other NFA course and go through the random selection process. You don't have to successfully complete the failed course before attending another NFA course.

### **Student Code of Conduct Policy**

Students, instructors and staff are expected to treat each other with respect at all times. Inappropriate behavior will not be tolerated and may result in removal from campus and denial of stipends.

## **Writing Expectations**

Student writing will conform to the generally accepted academic standards for college papers. Papers will reflect the original work of the student and give appropriate credit through citations for ideas belonging to other authors, publications or organizations. Student written work should be free of grammatical and syntax errors, free of profanity or obscene language or ideas, and reflect critical thinking related to the course subject matter.

## **Citation and Reference Style**

Attention Please: Students will follow the APA, Sixth Edition as the sole citation and reference style used in written work submitted as part of coursework to NFA. Assignments completed in a narrative essay, composition format, abstract, and discussion posts must follow the citation style cited in the APA, Sixth Edition.

## **Late Assignments**

Students are expected to submit classroom assignments by the posted due date (11:59 p.m. EDT/EST) and to complete the course according to the published class schedule. As adults, students, and working professionals, you must manage competing demands on your time. Discussion board postings submitted within 3 days after the submission deadline will receive up to a 20% deduction. Those that do not submit their discussion board postings within this timeline will receive a “0” grade for the week. Final assignment papers will not be accepted after the deadline. Any paper submitted after the deadline will receive a “0” grade for that assignment.

## **Netiquette**

Online learning promotes the advancement of knowledge through positive and constructive debate – both inside and outside the classroom. Forums on the Internet, however, can occasionally degenerate into needless insults and “flaming.” Such activity and the loss of good manners are not acceptable in a professional learning setting – basic academic rules of good behavior and proper “Netiquette” must persist. Remember that you are in a place for the rewards and excitement of learning which does not include descent to personal attacks or student attempts to stifle the forum of others.

- **Technology Limitations.** While you should feel free to explore the full-range of creative composition in your formal papers, keep e-mail layouts simple. The NFA Online classroom may not fully support MIME or HTML encoded messages, which means that bold face, italics, underlining, and a variety of color-coding or other visual effects will not translate in your e-mail messages.
- **Humor Note.** Despite the best of intentions, jokes and especially satire can easily get lost or taken seriously. If you feel the need for humor, you may wish to add “emoticons” to help alert your readers: ;-), : ), ☺ .

## **Disclaimer Statement**

Course content may vary from the outline to meet the needs of this particular group.

## **Grading**

Please review the following rubrics that explain how grades will be awarded.

Students who do not complete the entire course will be awarded an Incomplete (I) grade. In accordance with National Fire Academy academic policies, an Incomplete (I) grade must be removed by the end of the next semester following the course, or it automatically becomes a Failing (F) grade.

If you fail an on-campus course, you will not be issued a stipend for that course. You can reapply for the failed course or any other NFA course and go through the random selection process. You don't have to successfully complete the failed course before attending another NFA course.

[http://www.usfa.fema.gov/training/nfa/admissions/student\\_policies\\_campus\\_information.html](http://www.usfa.fema.gov/training/nfa/admissions/student_policies_campus_information.html)

## **Academic Honesty**

Students are expected to exhibit exemplary ethical behavior and conduct as part of the NFA community and society as a whole. Acts of academic dishonesty including cheating, plagiarism, deliberate falsification, and other unethical behaviors will not be tolerated.

Students are expected to report academic misconduct when they witness a violation. All cases of academic misconduct shall be reported by the instructor to the Training Specialist.

If a student is found to have engaged in misconduct and the allegations are upheld, the penalties may include, but are not limited to one or a combination of the following:

- expulsion,
- withholding of stipend or forfeiture of stipend paid,
- exclusion from future classes for a specified period; depending on the severity it could range from 1-10 years, and/or
- forfeiture of certificate for course(s) enrolled in at NETC.

Refer to NFA-specific Standard Operating Procedure 700.1 – *Academic Code of Conduct and Ethics* for more information.

## Grading Rubrics

### ACTIVITY 1.2 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                     | Activity Time | Activity Type | Objective  |
|------|-----------------|------------------------------------|---------------|---------------|--|
| 1    | 1.2             | Developing a Decision-Making Model | 45 min.       | Small Group   | Develop a decision-making model that could be used by COs. |

### Scoring Rubric

|   |   |
|---|---|
| 0 | Group did not attempt this task.  |
| 1 | Group identified both positive and negative impact examples but did not develop a decision-making model.  |
| 2 | Based on positive and negative examples, the group developed a decision-making model but did not include a visual description.  |
| 3 | Based on both positive and negative examples, the group developed a decision-making model and included a visual description of the model but was not able to adequately explain the model during the debrief and did not describe how consequences from unforeseen circumstances were accounted for in the model. |
| 4 | Based on both positive and negative examples, the group developed a decision-making model, included a visual description of the model, and clearly described the model during the debrief, including how the model would help to avoid consequences from unforeseen circumstances.                                |

**Instructor Guide (IG) page reference:** IG 1-45

## ACTIVITY 2.2 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                   | Activity Time | Activity Type | Objective   |
|------|-----------------|----------------------------------|---------------|---------------|---|
| 2    | 2.2             | Technology — Where Are We Going? | 330 min.      | Individual    | Share experiences among both students and instructors with new and emerging technologies based on previous experience in their home agencies. |

### Scoring Rubric

|    |  |
|----|--|
| 0  | Student did not attempt this task.   |
| 3  | Topic content and context were poorly represented, or materials were not well-organized.   |
| 6  | Coverage of the content and context was generally good but not sufficiently organized or integrated with the conclusion and application.   |
| 9  | Confident and affluent introduction, clear overview, and descriptive explanations, but the applications were underdeveloped.               |
| 12 | Thorough coverage of the value of emerging technology; well-sequenced presentation with integrated application for the emergency services. |

**IG page reference:** IG 2-13

### ACTIVITY 3.2 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                                     | Activity Time | Activity Type | Objective  |
|------|-----------------|--|---------------|---------------|--|
| 3    | 3.2             | Comparing Excel and Access Using the Same Database | 50 min.       | Large Group   | Compare the strengths of Excel and Access for data analysis and reporting. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student imported the text file into Excel but did not complete the data manipulation or import into Access.  |
| 2 | Student imported the text file into Excel and was able to manipulate the data but did not complete the import into Access.   |
| 3 | Student imported the text file into Excel and was able to manipulate the data. In addition, the student was able to import the data into Access but did not complete the manipulation of data in Access. |
| 4 | Student imported the text file into Excel and was able to manipulate the data. In addition, the student was able to import the data into Access and completed the manipulation of data in Access.        |

**IG page reference:** IG 3-27

## ACTIVITY 4.2 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                 | Activity Time | Activity Type | Objective   |
|------|-----------------|--------------------------------|---------------|---------------|---|
| 4    | 4.2             | The Analytic Hierarchy Process | 45 min.       | Small Group   | Develop a decision-making model based on the AHP model. |

### Scoring Rubric

|   |   |
|---|---|
| 0 | Student did not attempt this task.  |
| 1 | Student attempted this task and was unable to compare and contrast processes or identify the decision model value.  |
| 2 | Student attempted this task and was able to compare and contrast processes but did not demonstrate the skills and knowledge to identify the decision model value. |
| 3 | Student was able to compare and contrast processes and identify the decision model value and expressed an understanding of the AHP model.                         |

**IG page reference:** IG 4-43

### ACTIVITY 4.3 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                 | Activity Time | Activity Type | Objective   |
|------|-----------------|--------------------------------|---------------|---------------|---|
| 4    | 4.3             | The Analytic Hierarchy Process | 45 min.       | Small Group   | Develop a decision-making model based on the AHP model. |

#### Scoring Rubric

|   |   |
|---|---|
| 0 | Student did not attempt this task.  |
| 1 | Student attempted this task and was unable to compare and contrast processes or identify the decision model value.  |
| 2 | Student attempted this task and was able to compare and contrast processes but did not demonstrate the skills and knowledge to identify the decision model value. |
| 3 | Student was able to compare and contrast processes and identify the decision model value and expressed an understanding of the AHP model.                         |

**IG page reference:** IG 4-45

### ACTIVITY 4.4 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title  | Activity Time | Activity Type | Objective  |
|------|-----------------|---|---------------|---------------|--|
| 4    | 4.4             | Vulnerability Assessment Profile/ Security Assessment Profile Calculators — PivotTable Creation | 60 min.       | Individual    | Measure risk factors using preformatted Excel templates. |

#### Scoring Rubric

|   |   |
|---|---|
| 0 | Student did not attempt this task.  |
| 1 | Student attempted this task but did not demonstrate the knowledge and skill to create the PivotTable or complete the query. |
| 2 | Student was able to create the PivotTable but did not complete the query.   |
| 3 | Student was able to create the PivotTable and complete the query.   |

**IG page reference:** IG 4-59

### ACTIVITY 4.5 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title  | Activity Time | Activity Type | Objective  |
|------|-----------------|---|---------------|---------------|--|
| 4    | 4.5             | National Oceanic and Atmospheric Administration Vulnerability Assessment Matrix and Opportunity Assessment Matrix | 20 min.       | Individual    | Analyze community risk using the NOAA VAM and OAM. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student attempted this task but did not complete either the VAM or the OAM.          |
| 2 | Student attempted this task but was only able to complete either the VAM or the OAM. |
| 3 | Student attempted this task and completed both the VAM and the OAM.                  |

**IG page reference:** IG 4-75

### ACTIVITY 4.6 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                                    | Activity Time | Activity Type | Objective   |
|------|-----------------|---|---------------|---------------|---|
| 4    | 4.6             | Computer-Aided Management of Emergency Operations | 30 min.       | Individual    | Use the CAMEO Chemicals application to research response-related questions. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student attempted this task but was not able to use the CAMEO Chemicals application to find answers to the questions.  |
| 2 | Student attempted this and was able to use the CAMEO Chemicals to appropriately answer the first question: What guidance does the Emergency Response section of the Emergency Response Guide provide for fire? The student did not answer the second question: What is the initial downwind evacuation distance for a large spill? |
| 3 | Student attempted this and was able to use the CAMEO Chemicals to appropriately answer both questions: What guidance does the Emergency Response section of the Emergency Response Guide provide for fire? What is the initial downwind evacuation distance for a large spill?   |

IG page reference: IG 4-91

### ACTIVITY 4.7 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                           | Activity Time | Activity Type | Objective  |
|------|-----------------|--|---------------|---------------|--|
| 4    | 4.7             | Areal Locations of Hazardous Atmospheres | 20 min.       | Individual    | Use ALOHA to compute threat zones and exposure relating to a hazardous materials incident. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student attempted this task but did not complete any of the four steps required in the activity: Define the location and chemical, enter weather information and ground roughness; describe the release; choose Levels of Concern (LOCs); and create a threat zone estimate. |
| 2 | Student attempted this task and completed Part 1: Define the location and chemical, enter weather information and ground roughness. The student did not complete describe the release, choose LOCs, and create a threat zone estimate.                                       |
| 3 | Student attempted this task and completed Part 1: Define the location and chemical, enter weather information and ground roughness and Part 2: Describe the release. The student did not complete choose LOCs and create a threat zone estimate.                             |
| 4 | Students attempted this task and completed Part 1: Define the location and chemical, enter weather information and ground roughness; Part 2: Describe the release; and Part 3: Choose LOCs. The student did not complete create a threat zone estimate.                      |
| 5 | Student attempted this task and completed all four steps required in the activity: Define the location and chemical, enter weather information and ground roughness; describe the release; choose LOCs; and create a threat zone estimate.                                   |

**IG page reference:** IG 4-133

### ACTIVITY 5.1 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                          | Activity Time | Activity Type | Objective   |
|------|-----------------|---|---------------|---------------|---|
| 5    | 5.1             | Bing Maps, Google Maps and Google Earth | 30 min.       | Individual    | Use Bing Maps, Google Maps and Google Earth to replicate a photo. |

#### Scoring Rubric

|   |   |
|---|---|
| 0 | Student did not attempt this task.  |
| 1 | Student attempted this task and was able to use Bing Maps but did not use Google Earth or import his or her map into PowerPoint.  |
| 2 | Student attempted this task and was able to use Bing Maps and use Google Earth but did not import his or her map into PowerPoint. |
| 3 | Student attempted this task and was able to use Bing Maps, use Google Earth, and import his or her map into PowerPoint.           |

**IG page reference:** IG 5-27

## ACTIVITY 5.2 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title                 | Activity Time | Activity Type | Objective  |
|------|-----------------|--------------------------------|---------------|---------------|--|
| 5    | 5.2             | Creating a Map in Google Earth | 45 min.       | Small Group   | Use freeware available to produce a map of student demographics in Google Earth. |

### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student was able to prepare the file to import into Google Earth but was not able to convert the data or save the .kml file.     |
| 2 | Student was able to prepare the file to import into Google Earth and convert the data, but he or she did not save the .kml file. |
| 3 | Student was able to prepare the file to import into Google Earth, convert the data, and save the .kml file.                      |

**IG page reference:** IG 5-59

### ACTIVITY 5.3 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title | Activity Time | Activity Type | Objective   |
|------|-----------------|----------------|---------------|---------------|---|
| 5    | 5.3             | Geocaching     | 120 min.      | Small Group   | Use GPS technologies to overcome common challenges encountered during emergency service operations. |

#### Scoring Rubric

|   |   |
|---|---|
| 0 | Student did not attempt this task.  |
| 1 | Student attempted this task and was able to set up the GPS receiver but was not able to enter the coordinates as a waypoint and navigate to the geocache. |
| 2 | Student attempted this task and was able to set up the GPS receiver and enter the coordinates as a waypoint but was not able to navigate to the geocache. |
| 3 | Student attempted this task and was able to set up the GPS receiver, enter the coordinates as a waypoint, and navigate to the geocache.                   |

**IG page reference:** IG 5-77

### ACTIVITY 5.5 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title | Activity Time | Activity Type | Objective  |
|------|-----------------|----------------|---------------|---------------|--|
| 5    | 5.5             | ArcMap Basics  | 30 min.       | Individual    | Navigate within ArcGIS using the Standard and Tools (Pan and Zoom) toolbars. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student was able to add the Parks Layer to the map but did not use the Pan and Zoom toolbar or change symbology.             |
| 2 | Student was able to add the Parks Layer to the map and use the Pan and Zoom toolbar, but he or she did not change symbology. |
| 3 | Student was able to add the Parks Layer to the map, use the Pan and Zoom toolbar, and change symbology.                      |

**IG page reference:** IG 5-127

### ACTIVITY 5.6 SCORING RUBRIC

Name: \_\_\_\_\_

| <b>Unit</b> | <b>Activity Number</b> | <b>Activity Title</b> | <b>Activity Time</b> | <b>Activity Type</b> | <b>Objective</b>  |
|-------------|------------------------|-----------------------|----------------------|----------------------|---|
| 5           | 5.6                    | Google Earth          | 30 min.              | Individual           | Import data into Google Earth and plot hydrant locations. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student was able to prepare the file to import into Google Earth but was not able to convert the data or save the .kml file.     |
| 2 | Student was able to prepare the file to import into Google Earth and convert the data, but he or she did not save the .kml file. |
| 3 | Student was able to prepare the file to import into Google Earth, convert the data, and save the .kml file.                      |

**IG page reference:** IG 5-135

### ACTIVITY 6.1 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title  | Activity Time | Activity Type | Objective            |
|------|-----------------|-----------------|---------------|---------------|----------------------|
| 6    | 6.1             | Adobe Captivate | 30 min.       | Individual    | Use Adobe Captivate. |

#### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student attempted this task and was able to record a Captivate project but was not able to modify the project or publish the project.  |
| 2 | Student attempted this task and was able to record a Captivate project and modify the project but was not able to publish the project. |
| 3 | Student attempted this task and was able to record a Captivate project, modify the project, and publish the project.                   |

**IG page reference:** IG 6-15

## ACTIVITY 6.2 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title           | Activity Time | Activity Type | Objective   |
|------|-----------------|--------------------------|---------------|---------------|---|
| 6    | 6.2             | Windows Live Movie Maker | 60 min.       | Individual    | Use Windows Live Movie Maker and understand its capabilities. |

### Scoring Rubric

|   |  |
|---|--|
| 0 | Student did not attempt this task.   |
| 1 | Student attempted this task and was able to add the FireStudio simulation but did not complete the remainder of the tasks necessary to create the movie, including create title slides, add music to the Movie Maker project, adjust duration, insert screen shots, and create captions.     |
| 2 | Student attempted this task and was able to add the FireStudio simulation and create title slides but did not complete the remainder of the tasks necessary to create the movie, including add music to the Movie Maker project, adjust duration, insert screen shots, and create captions.  |
| 3 | Student attempted this task and was able to add the FireStudio simulation, create title slides, and add music to the Movie Maker project but did not complete the remainder of the tasks necessary to create the movie, including adjust duration, insert screen shots, and create captions. |
| 4 | Student attempted this task and was able to add the FireStudio simulation, create title slides, add music to the Movie Maker project, and adjust duration but did not complete the remainder of the tasks necessary to create the movie, including insert screen shots and create captions.  |
| 5 | Student attempted this task and was able to add the FireStudio simulation, create title slides, add music to the Movie Maker project, adjust duration, and insert screen shots, but he or she did not create captions.   |
| 6 | Student attempted this task and was able to add the FireStudio simulation, create title slides, add music to the Movie Maker project, adjust duration, insert screen shots, and create captions.   |

**IG page reference:** IG 6-35

### ACTIVITY 7.1 SCORING RUBRIC

Name: \_\_\_\_\_

| Unit | Activity Number | Activity Title          | Activity Time | Activity Type | Objective  |
|------|-----------------|-------------------------|---------------|---------------|--|
| 7    | 7.1             | Putting It All Together | 90 min.       | Small Group   | Apply the various selected technologies in each of the following areas: planning, mitigation, response and recovery. |

#### Scoring Rubric

|    |  |
|----|--|
| 0  | Student did not attempt this task.   |
| 5  | Topic content and context were poorly represented or materials were not well-organized.  |
| 10 | There was incomplete treatment of the topic and/or no application for the emergency services.  |
| 15 | Coverage of the content and context was generally good but not sufficiently organized or integrated with the conclusion and application.       |
| 20 | Confident and affluent introduction, clear overview, and descriptive explanations, but the applications were underdeveloped.                   |
| 25 | Thorough coverage of the value of the emerging technology; well-sequenced presentation with integrated application for the emergency services. |

**IG page reference:** IG 7-7

## EVALUATION METHODOLOGY

| Evaluation Component  | Point Value | Percentage of Grade |
|---|-------------|---------------------|
| Activity 1.2: Developing a Decision-Making Model  | 4           | 4%                  |
| Activity 2.2: Technology — Where Are We Going?  | 10          | 10%                 |
| Activity 3.2: Comparing Excel and Access Using the Same Database  | 4           | 4%                  |
| Activity 4.3: The Analytic Hierarchy Process  | 4           | 4%                  |
| Activity 4.4: Vulnerability Assessment Profile/Security Assessment Profile Calculators — PivotTable Creation                    | 4           | 4%                  |
| Activity 4.5: National Oceanic and Atmospheric Administration Vulnerability Assessment Matrix and Opportunity Assessment Matrix | 4           | 4%                  |
| Activity 4.6: Computer-Aided Management of Emergency Operations   | 4           | 4%                  |
| Activity 4.7: Areal Locations of Hazardous Atmospheres  | 5           | 5%                  |
| Activity 5.1: Bing Maps, Google Maps and Google Earth   | 4           | 4%                  |
| Activity 5.2: Creating a Map in Google Earth  | 4           | 4%                  |
| Activity 5.3: Geocaching  | 4           | 4%                  |
| Activity 5.5: ArcMap Basics   | 4           | 4%                  |
| Activity 5.6: Google Earth  | 4           | 4%                  |
| Activity 6.1: Adobe Captivate   | 8           | 8%                  |
| Activity 6.2: Windows Live Movie Maker  | 8           | 8%                  |
| Activity 7.1: Putting It All Together   | 25          | 25%                 |
| <b>Total Possible Points</b>  | <b>100</b>  | <b>100%</b>         |

