



Overview of Disaster Risk Reduction (DRR) Ambassador Curriculum Modules

As of August 15, 2018

DISASTER
RISK REDUCTION
Ambassador Curriculum

TABLE OF CONTENTS

	Page
DRR CURRICULUM OVERVIEW.....	3
DRR AMBASSADOR CURRICULUM AT-A-GLANCE.....	4
OVERVIEW OF CURRICULUM MODULES	5
I. Disaster Risk Reduction for a Safe and Prosperous Future	5
II. Forming a Community’s Vision for Disaster Risk Reduction.....	6
III. Realizable, Practical, and Affordable Approaches to Implementing the Disaster Risk Reduction Vision	8
IV. Resources and Tools for Community Disaster Risk Reduction.....	9
V. Resources for Hazard-Specific Disaster Risk Reduction	11

DRR CURRICULUM OVERVIEW

The DRR Ambassador Curriculum is designed:

- With a multi-hazard approach that encourages shared management strategies and unified responses in DRR plans and action
- To build a strong legal, ethical, and equitable basis for safe and effective development, redevelopment, and adaptation
- To be custom-tailored and updated for local needs to facilitate community progress
- As an initial set of self-study and training media that can be extended as new topic options are identified and developed

The Curriculum is organized into five parts and when complete will consist of a series of stand-alone modules, each approximately 1-1.5 hours. They are designed for instructor-led or webinar presentation but the materials may be downloaded from the NHMA website and read independently; some videos are available. The curriculum is still under development; modules to be developed are so indicated.

DRR AMBASSADOR CURRICULUM AT-A-GLANCE

I. Disaster Risk Reduction for a Safe and Prosperous Future	
1	Introduction to the Natural Hazard Mitigation Association and Disaster Risk Reduction Ambassador Curriculum
2	Introduction to Disaster Risk Reduction as a Foundation of Community Resilience
3	Leadership for Disaster Risk Reduction (TBD)
4	Community Disaster Risk Reduction and Adaptation
5	Approaching the Challenge of Disaster Risk Reduction: NIST Community Resilience Guide
II. Forming a Community’s Vision for Disaster Risk Reduction	
6	Risk Assessment through Storytelling: An Asset-Based Approach
7	Achieving Community Buy-in for Disaster Risk Reduction: Win-Win Approaches
8	Leveraging Resources to Improve Disaster Risk Reduction
III. Realizable, Practical, and Affordable Approaches for Moving from a Vision for Disaster Risk Reduction to a Strategy	
9	Selecting and Implementing a Strategy for Addressing Community Disaster Risk Problems
10	Integrating Hazard Mitigation into Local Planning
11	Beyond Codes and Low-Impact Development (Under development)
12	Creating the Plan: A Sustainable Floodplain Management Process Model
IV. Resources and Tools for Implementing a Community’s Disaster Risk Reduction Strategy	
13	Climate and Weather Tools and Trends (Under development)
14	Risk Assessment Basics
15	Legal and Policy Opportunities for Disaster Risk Reduction
16	Linking Catastrophe Insurance to Disaster Risk Reduction
V. Resources for Hazard-Specific Disaster Risk Reduction	
17	Living with Water: Inland and Coastal Flooding (TBD)
18	Design for Flood Resilience: Part I: Floodplain Management and Flood Resistant Design
19	Design for Flood Resilience: Part II: Green Infrastructure / Low Impact Development
20	Overcoming Impediments to Flood Resilience: Paths Forward
21	Wildfire Mitigation (Under development)
22	The Wildfire-Flood Connection (TBD)
23	Severe Thunderstorm/Tornado Safe Rooms (TBD)
24	From Policy to Engineering: Earthquake Risks (TBD)

OVERVIEW OF CURRICULUM MODULES

I. Disaster Risk Reduction for a Safe and Prosperous Future

Part I of this curriculum describes and illustrates how communities with internal leadership, support from the NHMA Resilient Neighbors Network and DRR Ambassadors, and using a systematic approach, can achieve a safe, healthy, and prosperous future by reducing disaster risks.

Module 1: Introduction to the Natural Hazard Mitigation Association and Disaster Risk Reduction Ambassador Curriculum

Author: Edward Thomas, Esq., President, NHMA

This module defines disaster risk reduction and introduces the NHMA. It describes NHMA local initiatives that include; publications to assist communities to navigate the programs and resources for disaster risk reduction, the RNN, outreach to non-traditional DRR partners, and the DRR Ambassador Curriculum.

Learning Objectives

1. Name the local initiatives of the NHMA.
2. Describe the purpose of the DRR Ambassador Curriculum.

Module 2: Introduction to Disaster Risk Reduction as a Foundation of Community Resilience

Authors: Edward Thomas, Esq., President, NHMA, and Erin Capps, JD, Vice President, NHMA and VP Operations, H2O Partners Inc.

This module introduces the basic concepts of community resilience, mitigation, and adaptation from a whole community perspective. It provides a rationale for disaster risk reduction as a foundation of community resilience, introducing the concept of Four Circles of Resilience and Sustainability. Module 2 also discusses trends in damages, liability, and costs of natural disasters. It includes suggested solutions, publications that promote resilience and disaster risk reduction, and important considerations for plotting a path forward toward a resilient future.

Learning Objectives

1. Define community resilience and disaster risk reduction.
2. Define mitigation and climate adaptation from a community perspective.
3. Explain the role of disaster risk reduction as a foundation of community resilience.

Module 3: Leadership for Disaster Risk Reduction

[TO BE DEVELOPED]

This module will discuss the role of leaders/champions for DRR in the community; how to be effective change agents for DRR, leadership challenges, and best leadership practices to address them.

Module 4: Community Disaster Risk Reduction and Adaptation

Authors: Rebecca Joyce, Community Program Manager, Central Shenandoah Planning District Commission; Barbara Miller, CEM, CFM, Director Jefferson County Homeland Security and Emergency Management; Timothy J. Trautman, P.E., CFM, Program Manager, Engineering & Mitigation Program, Charlotte-Mecklenburg Storm Water Services

This module discusses the concepts of whole community and climate adaptation. It provides a lens into what various communities, with unique hazards and challenges, have undertaken in order to achieve disaster risk reduction. It includes lessons learned from the RNN and the Rockefeller Foundation's 100 Resilient Cities Challenge in three different regions of the United States. The module also describes how each of the communities in these examples faces unique hazards and their own physical, social, and economic challenges, but share the common goal of reducing risk and vulnerability to become more disaster-resilient.

Learning Objectives

1. Describe the trends changing the make-up of U.S. communities.
2. Identify themes of the whole community approach.
3. Recall mitigation types and provide hazard-specific examples.
4. Recognize lessons learned from RNN community success stories.

Module 5: Approaching the Challenge of Disaster Risk Reduction: NIST Community Resilience Guide

Author: Steve Cauffman, Research Engineer, Community Resilience Group, National Institute of Standards and Technology (NIST)

Given the unique circumstances under which community leaders pursue DRR and resilience, a systematic approach is useful. This module introduces the 2015 *NIST Community Resilience Planning Guide for Buildings and Infrastructure Systems*, which provides a practical and flexible overall approach for setting priorities and allocating resources to manage risks for various hazards.

Learning Objectives

1. Define resilience in the context of an entire community.
2. Identify the six planning steps described in the *NIST Community Resilience Planning Guide for Buildings and Infrastructure Systems*.
3. State the purpose of the *NIST Community Resilience Economic Decision Guide for Buildings and Infrastructure Systems*.

II. Forming a Community's Vision for Disaster Risk Reduction

These modules suggest and provide examples of strategies for developing and refining the community's DRR vision.

Module 6: Risk Assessment through Storytelling: An Asset-Based Approach

Authors: Bob Freitag, CFM, University of Washington Institute for Hazards Mitigation Planning and Research, and William John Siembieda, Ph.D., AICP, Professor, California Polytechnic State University

This module explores a risk assessment and identification approach that builds on a community's assets. This “assets-based approach” engages community stakeholders in a positive interactive experience; it encourages outcomes that embrace future visions and focus less on past conditions.

Learning Objectives

1. Describe the advantages (and limitations) of a risk assessment process that builds on community assets.
2. Distinguish between existing risk assessment tools such as HAZUS, that are vulnerabilities-based, and RiskMap, which build on community assets.
3. List the community assets to include in an asset-based risk approach within your organizations.
4. Use the asset-based approach checklist for initiating an asset-based risk assessment in your communities.

Module 7: Achieving Community Buy-in for Disaster Risk Reduction: Win-Win Approaches

Authors: Edward Thomas, Esq., President, NHMA and David Mallory, PE, CFM, Treasurer, NHMA
Developing a resilient society requires a new message that promotes a “win-win” approach to development practices based on sound economic, legal, and ethical principles, protection of the environment, and involvement of all stakeholder groups. This module describes the steps to craft and sell a local resilience program designed to create a safer future in an era of climate variability and change.

Learning Objectives

1. List examples of harm prevention messages that would appeal to a variety of audiences.
2. Identify ways of “getting to yes” for safe development through principled negotiations.
3. Identify questions that help decide the best project choice to control floods or enhance water resources.
4. Identify ways to develop a well-thought-out, clear “no,” to avoid adverse impacts.

Module 8: Leveraging Resources to Improve Disaster Risk Reduction

Author: Edward Thomas, Esq., President, NHMA and Donna Boyce, J.D., Board Member, NHMA
This module suggests a process, techniques, and strategies for cooperating and coordinating with multiple partners in a community’s disaster resilient future. It presents a process to: envision a disaster resilient future that meets the needs of the community; develop a plan that includes taking action now to control development; obtain technical assistance and locate funding sources; continue to pursue resilience during recovery from a disaster, and learn from

examples of successes achieved by a wide array of communities. NHMA's *Building Your Roadmap to a Disaster Resilient Future* is introduced as a reference for using this process.

Learning Objectives

1. Summarize the elements of a community's roadmap to a disaster resilient future.
2. Provide examples of resources to leverage for disaster risk reduction during normal times.
3. Describe how conditions, opportunities, and resources for disaster risk reduction change after a disaster.
4. Discuss options for leveraging resources in a hypothetical post-disaster community.

III. Realizable, Practical, and Affordable Approaches to Implementing the Disaster Risk Reduction Vision

Part III of the DRR Ambassador Curriculum introduces processes for developing a strategy for making the DRR vision a reality; hazard mitigation planning, code development, and resolving conflicts between development and risk reduction.

Module 9: Selecting and Implementing a Strategy for Addressing Community Disaster Risk Problems

Author: Tom Hughes, Vice President, NHMA and State Hazard Mitigation Officer, Pennsylvania Emergency Management Agency

Successful local mitigation efforts can happen at any time – not just after large disaster events. This module provides best practices for, and examples of, community hazard mitigation and development in situations where residents wanted action and their local government didn't know where to start.

Learning Objectives

1. Discuss ways to pick optimal DRR strategies for your community
2. Describe ways to effectively present information that helps local leaders, planners, and community members visualize what resilience looks like
3. Provide examples of how DRR strategies were developed and implemented in real communities

Module 10: Integrating Hazard Mitigation into Local Planning

Authors: Lawrence Frank, MRP, CFM, Resilience Program Manager, Atkins North America, and Shannon Burke, urban planning professional, Secretary, NHMA

This module briefly reviews and provides resources for the local mitigation planning process. It discusses the benefits and provides guidance and references for integrating hazard mitigation planning into the local community's entire network of plans.

Learning Objectives

1. List references for FEMA hazard mitigation plan requirements.

2. Describe the concept of a safe growth audit and how it can be applied in the local community.
3. Describe ways to integrate hazard mitigation throughout the community’s planning process.
4. List common barriers to integration of hazard mitigation in the planning process.

Module 11: Beyond Codes and Low-Impact Development

[UNDER DEVELOPMENT] *Author: David Vaughn, Director of Global Engagement, Clemson University Risk Engineering and System Analytics Center*

Strong building and zoning codes and mitigation best practices are needed to achieve disaster risk reduction in building and community planning. The process of code development and the relationship between FEMA guidance and local building codes and zoning practices is reviewed in this module.

Learning Objectives

1. Describe the role of building and zoning codes in local land-planning decisions.
2. Seek applicable regulatory and “beyond code” options for their local community and municipal efforts to reduce DRR costs and to improve health, safety and quality of buildings, neighborhoods and communities.
3. Identify resources for natural hazard mitigation and Disaster Risk Reduction (DRR).

Module 12: Creating the Plan: A Sustainable Floodplain Management Process Model

Author: Timothy J. Trautman, P.E., CFM, Program Manager, Engineering & Mitigation Program, Charlotte-Mecklenburg Storm Water Services

The Charlotte-Mecklenburg Storm Water Services (CMSWS) pioneered the “Future Conditions” approach to floodplain management, to resolve the conflict between the increased risk of flooding and the development and construction demands of a growing community. The module describes challenges and successes in achieving results.

Learning Objectives

1. Describe the decision model behind floodplain management.
2. Explain the future conditions approach to floodplain mapping.
3. Explain the strategic planning approach to flood mitigation.

IV. Resources and Tools for Community Disaster Risk Reduction

Part IV of the curriculum includes modules devoted to enabling DRR stakeholders to implement their DRR strategy effectively through the use of science, data, the law, and other relevant resources.

Module 13: Climate and Weather Tools and Trends

[UNDER DEVELOPMENT] *Authors: Leonard Vaughan, Hydrologist, National Weather Service, and*

Melissa Griffin, South Carolina Assistant State Climatologist

Climate and weather tools and trends define the challenges, needs, and opportunities for disaster risk reduction, no matter what the cause or consequences. This module addresses ways to mitigate and adapt to extreme weather impacts and risks.

Learning Objectives

1. Describe climate, weather and related ecosystem service benefits and liabilities.
2. Access sources of information and interpretation of climate and weather-related risks characteristics of their regions and localities.
3. State climate and DRR measures that support one another and that conflict with one another.

Module 14: Risk Assessment Basics (Vulnerability-Based)

Author: Steve Pardue, Antares Planning Group, LLC

Risk assessment is assisted by new decision tools and shared community assessments that help prioritize costs and benefits of DRR plans and actionable projects. This module introduces the basic concepts of risk assessment in an uncertain or changing climate. It provides resources that drill deeper into the topic.

Learning Objectives

1. Explain why risk assessment is an essential element in disaster risk reduction decision-making processes.
2. Identify the categories of risk.
3. Define risk in terms of probability, vulnerability, and value.
4. Explain the role of benefit-cost analysis (BCA) in risk assessment.

Module 15: Legal and Policy Opportunities for Disaster Risk Reduction

Author: Edward Thomas, Esq., President, NHMA

This module integrates engineering, planning, policy, and legal research into a fundamental message; safe development, climate adaptation, and hazard mitigation provide the most resilient path for the whole community. It provides a community development approach for hazard mitigation, floodplain management, water quality and resources, design, and construction. This module is designed to fit into the FEMA RiskMAP vision of using the National Flood Insurance Program (NFIP) as the basis of future planning and hazard mitigation.

Learning Objectives

1. State the ancient legal and equitable roots and concepts of safe or “do no harm” development decisions, including higher standards designed to protect the property and rights of everyone.
2. Explain how floodplain management, and other forms of regulation designed to prevent harm, generally avoid the “takings” issue.
3. Explain the evolving professional “Standard of Care.”

4. Identify important legal concepts discussed in this module, such as Variances.

Module 16: Linking Catastrophe Insurance to Disaster Risk Reduction

Author: Nicholas Lamparelli, Co-founder and Chief Underwriting Officer, reThought Insurance, Blogger & Podcaster at InsNerds.com

This module describes the leading causes of catastrophe (CAT) losses globally, introduces the protection gap, and describes CAT models and new innovations that could solve the protection gap. The content is intended to provide community representatives with information that they can take away, evaluate, and implement in their own financial and economic practices to manage the risks in their communities.

Learning Objectives

1. State the leading causes of catastrophe (CAT) losses in the US and globally.
2. Define the “protection gap.”
3. Describe the features of CAT models and why they are important.
4. Identify business models that could be implemented to solve the protection gap.

V. Resources for Hazard-Specific Disaster Risk Reduction

Part V provides information and guidance to enable community leaders to more effectively reduce risk from specific hazards, using available tools, resources, and innovations.

Module 17: Living with Water: Inland and Coastal Flooding

[TO BE DEVELOPED]

“Living with Water” is an approach to coastal, riverine, and regional planning that manages water quality and quantity as a resource from sky to soil to sewer to saving to sea. These innovations address the combined risks of flood, drought, soil, and ecosystem losses, and the benefits of water and food security as a combined planning and project benefit in both inland and coastal communities.

Module 18: Design for Flood Resilience: Part I: Floodplain Management and Flood Resistant Design

Author: Don Watson, FAIA, CIP, EarthRise design

This module identifies the direct and indirect risks associated with different types of flooding and reviews watersheds, floodplains, aquifers and floodways. It describes floodplain management and watershed management planning based on future conditions for disaster risk reduction, and provides examples of flood resistant design measures for buildings and infrastructure.

Learning Objectives

1. Identify the risks associated with different types of flooding.
2. Explain the advantages of watershed management based on future conditions.

3. Describe flood resistant design measures for buildings and infrastructure.

Module 19: Design for Flood Resilience: Part II: Green Infrastructure / Low Impact Development

Author: Michele Adams, P.E., Meliora Environmental Design

This module defines measures to maintain and improve healthy inland waterways and floodplains and describes how green infrastructure reduces stormwater costs and flood risk.

Learning Objectives

1. Describe how impervious surfaces alter the Hydrologic Cycle.
2. Identify design elements that are considered Low Impact Development or Green Infrastructure.

Module 20: Overcoming Impediments to Flood Resilience: Paths Forward

Author: Edward Thomas, Esq., President, NHMA

This module continues to explore the unrelenting increase in flood losses and examines the impact of the NFIP on flood loss reduction. It addresses the limitations of current NFIP mapping in communicating current and future flood risk, and discusses the Community Rating System (CRS) and “Grandfathering” as part of a long term solution to flood loss.

Learning Objectives

1. Describe higher standards, including the CRS, as part of a long-term solution to flood loss.
2. Explain the limitations of current NFIP mapping in identifying flood risk.
3. Explain common impediments to flood resilience and suggest ways to overcome them.

Module 21: Wildfire Mitigation and Module 22: The Wildfire-Flood Connection

(UNDER DEVELOPMENT)

These modules will incorporate perspectives from the western U.S. and other high risk locations for insights, best practices, and creative funding solutions to encourage communities in addressing the wildfire risk, fire-flood connection, and reducing future damage.

DRAFT Learning Objectives

1. Explain the causes of increasing wildfire damages including development trends in the wildland-urban interface that put many communities at risk from wildfire.
2. Explain the flooding risks associated with and exacerbated by wildfires.
3. Describe protective measures that individuals and homeowners can take to mitigate the risk from wildfire to health, safety, and vulnerable buildings and structures.
4. Describe protective measures that communities can take to mitigate the risk from wildfire to the health and safety of citizens, and to vulnerable buildings and structures.
5. Discuss opportunities for communities to reduce their risk through improved land use planning.

Module 23: Severe Thunderstorm / Tornado Safe Rooms

[TO BE DEVELOPED]

This module will discuss lessons learned from severe storm events such as the tornado in Moore, Oklahoma. It addresses cost effective changes that can be made to building codes and construction practices that can minimize impacts, along with the economics of mitigating against these unique hazards. The module also describes the benefits of building safe rooms.

Module 24: From Policy to Engineering: Earthquake Risks

[TO BE DEVELOPED]

This module will review how alignment of policy and engineering guidelines can advance seismic resilience for both individuals and society. It presents a vision for strategic collaboration between the technical and policy worlds to better assist individuals, organizations, and communities in understanding and managing earthquake and related natural disaster risks.