RIT | Rochester Institute of Technology

Capacity Building for Organizational Resilience:

Integrating Standards on Risk, Disruption and Business Continuity in the Curriculum

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Project Goals

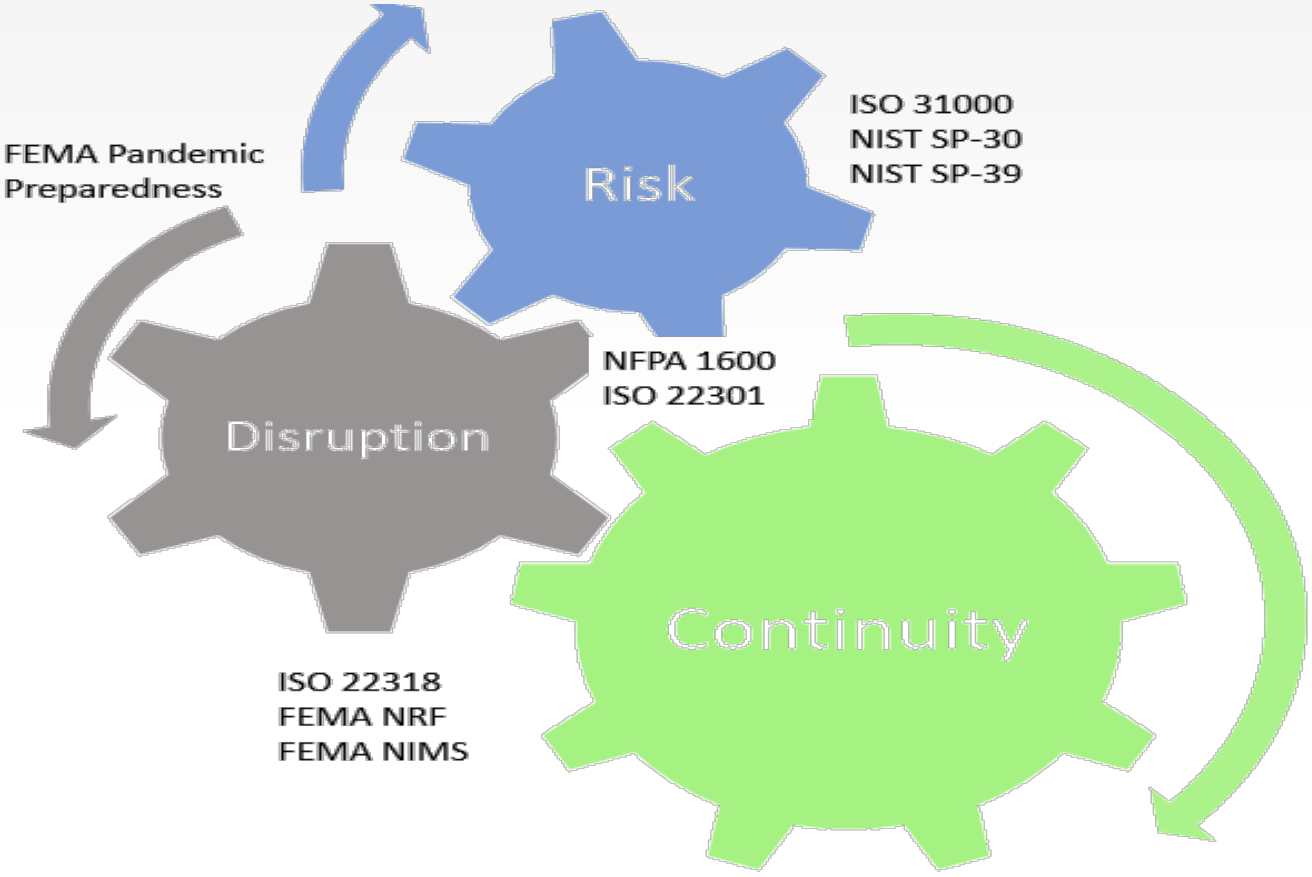
Curricular	• Develop customizable course modules on risk, disruption and continuity - undergraduate & graduate
Faculty	• Support cross-disciplinary faculty expertise development
Educational Effectiveness	• Ensure effectiveness via a cohesive & proven educational structure
Dissemination	• Disseminate results - published papers, presentations and website

Accomplishments – Module Content

- **Educational content +**
  - Tools and resources for faculty and students
  - Real-life examples, active learning activities

Module Content
Description and Rationale
Intended Learning Outcomes
Educational Content
Sample Questions & Exercises
Supporting Resources
Assessment Tools

Standards Based Learning Modules



Accomplishments – Course Integration

Theme Relevance for Existing Courses	Themes in Risk, Disruption & Continuity Standards							
	Leadership & Strategy	Critical Operations & Infrastructure	Business Impact Analysis	Risk Assessment & Reduction	Crisis Communications	Training, Testing & Tabletops	Supply Chain	Crisis/Emergency Resources
Principles of Environmental Sustainability Health and Safety (IUG)	✓			✓		✓		✓
EHS Management (G)	✓	✓	✓	✓			✓	
EHS Management System Design (G)		✓		✓	✓	✓	✓	
Professional Communication (UG)	✓				✓			✓
Accident Causation & Prevention* (UG)	✓		✓	✓		✓		
Principles of Construction Leadership & Management* (G)	✓	✓					✓	✓
Introduction to Careers in High-Tech Ecosystems (G)	✓		✓	✓			✓	
Smart Systems Technologies (IUG)	✓	✓		✓		✓	✓	✓
Cyberphysical Automation II (IUG)	✓	✓	✓	✓	✓	✓	✓	✓

*In progress (IUG) = Introductory undergraduate level (UG) = undergraduate level (G) = graduate level

Communication and Dissemination

➢ Internal

- Shared with RIT programs in Colleges of Computing and Information Science, Engineering, Engineering Technology

➢ External

- Shared with other institutions – SUNY Brockport, Syracuse University
- Shared via RIT Collaboratory for Resiliency & Recovery website https://www.rit.edu/resiliencyandrecovery/ (in progress)
- Presentation at ASQ Quality 4.0 Conference in San Antonio (Oct 2022)
- Presentation at 2022 ICONSES Conference in Austin (Oct 2022)
- Publication of ICONSES Conference Paper (Dec 2022)
- Submitted to ICONSES affiliate journals (Under Consideration)
- Final Summary Paper -- to be submitted in February 2023

Evaluation

- **Assessment at multiple levels**:
  - **Content review** of module materials during development
  - **Evaluation of student learning** after completing the module(s)
  - **External review** of materials by external partners
    - SUNY Brockport, Syracuse University
    - Captured instructor feedback on modules and revised materials as appropriate

Outcomes: Impacts

- **Students:**
  - Capacity-building for standards implementation
  - Enhanced skillset in risk management & business continuity
- **Faculty**
  - Expanded capacity to incorporate & teach about standards
- **Organizations/Employers**
  - Standards-literate entry-level professionals

Outcomes: Quantitative Impacts

- **~ 120 students**
  - 91% of students have achieved a B or better on assignments related to the course modules (so far)
- **7 instructors**
- **6 programs**
- **4 institutions of higher education**
- **Ongoing assessment**

Outcomes: Quantitative Impacts

Course	Module	No. of Students	Assessment Method	% B or Better
Principles of ESHS	Risk Disruption	44	Based on application of module concepts to prepare for a class field trip.	Assignment A: 100% Assignment B: 94%
EHS Management	Risk	21	Based on application of module concepts on 2 assignments and a comprehensive case-based term project.	Unit A: 95% Unit B: 86% Term project: 100%
EHS System Design	Continuity	12	Based on discussion to enhance understanding of critical resources, controls, and emergency management	Qualitative assessment
Professional Communication	Risk	21	Based on class observation on an in-class simulation for disaster preparedness and response communication.	80% successfully completed the exercise
Intro to Careers in High Tech Ecosystems	Risk Disruption Resilience	10	Based on class discussions and an essay assignment following visits to high-tech businesses.	Essay assignment: 80%
Cyberphysical Automation II	Risk Disruption Resilience	10	Based on an assigned paper on risk and resilience in the context of an individual automation project.	Paper: 80%

Outcomes: Qualitative Impacts – Instructor Comments

"Students appeared to grasp concepts well and were able to successfully apply them to the project and answer the related exam questions. Group discussions helped students to prepare."

"Students … seemed to enjoy knowing that they 'get' this concept because they continued to use it – and use it correctly - in subsequent assignments."

"The use of an on-campus workshop format … worked extremely well because students could collaborate on the work in real time, reinforce the concepts within their small groups, and have access to the instructor for guidance."

"In the future, additional class time with focused class exercises could be used to reinforce key learning objectives."

"I really found the content to be a great fit"

Lessons Learned

- **Roadblocks/Challenges**
  - changes in investigator affiliations
  - instructor and personnel changes
  - different instructor needs
  - timing of conferences and calls for proposals
  - time needed for further implementation and dissemination

- **Surprises/Successes**
  - well-received by instructors beyond core team
  - interest in curriculum and tools in other programs

Additional Information/Future Plans

Developing interest:

- Sharing information with Engineering Technology and Liberal Arts/Public Policy
- Gen-ed course on Design for Resilience in a Changing World
- Possible certification through RIT Certified
- Further integration within specific programs

Contact Information

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