**KNIGHT, UMD**

**DHS Coastal Resilience Center**

**Education Project:**

**Annual Project Performance Report**

Covers reporting period July 1, 2016 – June 30, 2017

1. **Project Title:**

   Development and Testing of a Project Management Curriculum for Emergency Managers

2. **Principal Investigator:**

   Sandra K. Knight, PhD, PE, D.WRE, D.NE, Senior Research Engineer, Department of Civil and Environmental Engineering, University of Maryland, College Park. Lead investigator for research and key advisor for emergency management training and curricula content.

   **Co-Principal Investigator:** John Hart Cable, Director, Project Management Program, A. James Clark School of Engineering, University of Maryland. Lead advisor for Project Management curricula and certification.

3. **Other Education Participants/Partners:**

   o  Allison Reilly, PhD, Assistant Professor, Department of Civil and Environmental Engineering, University of Maryland

   o   Gerald E. Galloway, PhD, PE, NAE, Glenn L. Martin Institute Professor of Engineering, Department of Civil and Environmental Engineering, University of Maryland

   o  Gregory Baecher, PhD, PE, Glenn L. Martin Institute Professor of Engineering, Department of Civil and Environmental Engineering, University of Maryland

4. **Short Project Description ("elevator speech):**

   The goal of this educational work plan is to develop and test an educational and training curriculum that prepares professionals to manage and deliver disaster-related project(s), by merging the unique challenges of emergency management with the capabilities and technologies introduced by applying project management processes. By incorporating modern project management organizational processes, technologies, and skills, emergency managers will be able to manage and execute disaster-related projects and meet resilience goals more effectively and efficiently.  By building disaster resilient concepts and emergency protocols and goals into project management processes, project managers will be equipped to contribute to a more sustainable and disaster-resilience future.

5. **Abstract:**

   Emergency managers are often assigned to lead many of the emergency activities and oversee the execution of large programs in the wake of disaster that are funded through

federal and state programs.  Furthermore, agencies and organizations (federal, state and local governments, utilities, non-profits, private industry, etc.) have a strong reliance on contract support and expertise that is often responsible for the response and recovery for sector-specific projects or program execution (marine transportation, healthcare, supply chain, utilities, etc.).   Therefore, it is imperative, in this demanding environment, that project and emergency managers have the right training and educational skills to effectively deliver projects on-time and on-budget while being considerate of the needs of the community and planning for a resilient future.

This research aims to fill a gap in training by merging emergency management and project management curriculum for the purposes of advanced learning or certification for practitioners. This research will aim to support existing certifications, and both degree and non-degree programs.  Practitioners in emergency management and project managers who carry out emergency management activities will have the opportunity to hone their knowledge and skills through a set of courses that will be offered through the existing UMD Project Management Program.  Additionally, through collaboration and coordination with existing accreditation programs, specific emergency training institutes (like the Emergency Management Institute), other academic institutes of higher learning and DHS supported programs, targeted training materials and short-courses will be developed and opportunities identified for providing the broadest access possible for practitioners.

The proposed research comprises three distinct phases: 1) understanding the requirements and needs of practitioners and developing a disaster-focused curriculum to be offered within the UMD Project Management program or Civil Engineering graduate program, 2) developing training and short course plans of instruction that align with existing certification programs, and 3) executing initial course offerings and/or training programs for delivering the developed approaches and technologies to practitioners.

6. **End users:**

The following partners, collaborators and potential end-users have or will be contacted to participate in a needs interview, provide guidance and direction on existing certification requirements, collaborate on and/or review course curriculum development and either enroll or offer courses and training developed from this education research.

Initial contact and discussions have been carried out with many of the people/institutes identified below.  At each phase of the project, organizations and individuals will be asked to provide feedback and confirmation on products.  A product roll-out strategy has been developed that will seek to include more on the list.

Certification activities

- Project Management Institute (PMI), John Hart Cable, Director PMP, UMD is coordinating this effort through the existing collaboration UMD has with PMI.
    - Role:  PMI provides three certifications in project management.  Working with both PMI and IAEM, this project will attempt to establish training and curricula that satisfies certifications and could potentially be accredited by both.  Additionally, because of the close relationship UMD has with PMI,

opportunities will be sought to collaborate and leverage resources to make the effort a success.

- International Association of Emergency Management (IAEM), IAEM Certification Coordinator, Daryl Spiewak.
  - Role of IAEM: IAEM provides two certifications in emergency management. Working with both PMI and IAEM this project will attempt to establish a connection between these two programs and identify curriculum that could be accredited by both.
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Needs and outreach

- FEMA Federal Coordinating Officers, Director, TBD
  - Role: Identify requirements for federal and state coordinating officers in executing disaster programs and create training and curriculum that would support those needs. Use office as an opportunity to transition PM training into the FCO training and identify professionals interested in program.
  - Two current or former FCO's participated in a needs survey.
- Industry Partners, various
  - Role: Provided invaluable feedback during the needs assessment survey and at the FEMA HMA Workshop
- Hazard Mitigation Assistance Workshop
  - Role: Provided forum with over 50 attendees from federal, state, local and tribal organizations to assess importance and training needs for both emergency manager practitioners and graduate studentsl

Potential Delivery Partners

- DHS Center for Domestic Preparedness, Anniston, AL, TBD
  - Role: Will contact as potential partner leverage opportunities and resources to offer PM training based on Plans of Instruction that have been developed.
- Emergency Management Institute, Emmitsburg, MD. Supervisor and Chief Mitigation Branch
  - Role: establishing training and curriculum needs, leveraging opportunities and resources and establishing opportunity to transition training products to their organization.
- DHS FEMA Recovery Directorate, Branch Chief, National Coordinator Community Planning and Capacity Building and FEMA Recovery
  - Role: Review curriculum and training Plans of Instruction and help identify delivery partners for recovery program training. Opportunities to support the National Disaster Recovery Framework and leverage resources will be sought with this organization.
- FEMA Emergency Management Higher Education Program, Program Manager
  - Role: Established opportunity with her to learn how UMD can interface with this program and continue contribute and benefit from the Higher Education Program
- FEMA Director, National Training and Education Division

- o Role: Along with EMI the development of the education program and course offerings will be closely coordinated with the EMHEP and NTES at FEMA. Opportunities to obtain financial or in kind support will be sought through their programs to leverage grant resources funded under this plan.
- National Disaster Preparedness Training Center (NDPTC) at University of Hawaii, Tim Manning, Deputy Administrator for Preparedness, FEMA and Karl Kim, Director NDPTC
  - o Role: Consider as potential training deliverer and partner to develop a course or courses to be offered through their program.


Potential Practitioners who would take the training

- National Emergency Managers Association, Paul Hogue
  - o Role: NEMA could provide an opportunity to advertise the course offerings to its members which cover all the state emergency management agencies and FEMA and provide critical input to program development
- District of Columbia Homeland Security Emergency Management Agency, State Hazard Mitigation Officer, Donte Lucas
  - o Role: Provided input on needs.
- Maryland Emergency Management Agency, TBD
  - o Role: NEMA and connections to State emergency management agencies will be used to identify practitioners to help develop and test the course curriculum

Academic Partners and collaborators

- Jackson State University, DHS Coastal Resilience Center of Excellence, Tom Richardson
  - o Role: As education partner lead for the CRC, UMD will coordinate and seek advice for improving and enhancing the work plan
- Louisiana State University, Barry Kiem, Disaster Management Program
  - o Role: Used collaborative opportunities to gather lessons learned while establishing their program at LSU
- National Center for Security and Preparedness, Director Rick Mathews
  - o Role: Can provide lessons learned and identify potential partners form their experiences as a COE
- State University of New York, David Rousseau, Dean College of Emergency Preparedness, Homeland Security and Cyber Security
  - o Role: Can provide lessons learned in establishing their new college in emergency management
- National Consortium for the Study of Terrorism and Responses to Terrorism (START), UMD, Holly Roberts and Michael Egnoto
  - o Role: potential on campus partner to mutually support, promote and leverage programs as well as provide critical input into needs and curriculum development
- University of Maryland University College, Emergency Management curriculum faculty adjunct, Cliff Oliver

- o   Role:  Advisor on curriculum and point of contact with UMUC and potential guest lecturer at UMD
- University of the District of Columbia, Chair Civil Engineering, Pradeep Behera
  - o   Role: Partnerships and collaboration with other academic institutes including but not limited to these will be used to 1) improve curriculum development, 2) collaborate on projects, symposia and training, 3) identify students that could participate with the PIs and interface with practitioners to validate content and usefulness of curriculum.

## 7.  Explanation of Changes:

The YR2 Workplan updates provided to the CRC on April 22, 2016 reflected and explained all modifications in YR1 and beyond from the original work plan submitted August 2015 prior to DHS S&T approval and funding in January 2016.  Since award, there were some minor shifts in funding.  One modification resulted from an unnecessary requirement to support an intern in the SUMREX program.  In discussions with Dr. Whalin at the March 2016 PI meeting, this project does not lend itself to supporting an intern.  Therefore, budgets were modified to reflect that change.  RETALK can be considered in YR2 or YR3 to replace the SUMREX activity.  Further, by the time funding arrived in January 2016, it was too late to identify and hire a graduate student.  These funds were shifted to contract support. Delays in contracting and some shifts in travel funding required a carryover of funds which was requested by the PI to CRC on June 2, 2016.

There were only shifts to two milestones and one related transition milestone (all documented in the YR2 work plan updates under review).  These shifts were in part due to receipt of final approval and funding by UMD, but also due to 1) administrative delays at UMD of putting a sole-source contract in place to conduct a needs assessment and 2) adding attendance of an EMI higher education summer symposium in June.  Both of these efforts will contribute to a better product. This should not impact overall effort.  Other activities can be completed as scheduled.

## 8.  Unanticipated Problems:

There were no real problems of concern.  The biggest challenge was just getting things in place in January to get started and dealing with the unexpected challenge by the PI of putting sub-contracts in place at UMD.  This has been resolved and processes should be better understood moving forward.

## 9.  Project Outcomes:

Natural Disasters between 2003 and 2012 resulted in estimated global average annual economic losses of $156.7 billion and average annual deaths of 106,654[1].  Following the tremendous losses that come with these disasters, come billions of dollars for emergency management activities that must be managed by federal, state and local agencies and/or

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[1] Guha-Sapir D, Hyois Ph., Below R. *Annual Disaster Statistical Review 2013: The Numbers and Trends.*  Brussels: Center for Research on the Epidemiology of Disaster (CRED): 2014

organizations. For instance, the federal disaster appropriations following Hurricane Sandy were approximately $58 billion[2] and were dispersed via many programs and agencies with specific regulatory or policy requirements for execution.  Disaster relief funds such as these are spent to get communities back on their feet by replacing or rebuilding critical infrastructure, key facilities, businesses and homes. Further, the organized response to a disaster shares all the characteristics and has all the organizational needs of a built project.  It is also well understood that building resilience into our built, social and environmental systems prior to an event has recurring benefits to disaster losses. Therefore, resources are often allocated for mitigation following a disaster as well as on "sunny days."

Project outcomes:
- Help professionals, whether emergency managers or project managers, more effectively and efficiently deliver projects and programs to provide for a disaster resilient future.
    - Broaden and/or improve the skills and capabilities of emergency management workforce professionals
    - Educate program and project delivery professionals on the complexities and unique requirements that arise in the face of disaster
- Identify and link the best practices and lexicons of emergency management and project management
- Develop test courses/training/curriculum that can be easily adapted and used by other institutes of learning

## 10. Education Activity and Milestone Progress:

### Education Activities and Milestones: Progress to Date

| Reporting Period 7/1/2016 – 6/30/2017 | | | |
|---|---|---|---|
| **Education Activity** | Proposed Completion Date | % Complete | Explanation of why activity / milestone was not reached, and when completion is expected |
| | | | |
| **Education Milestone** | | | |
| Needs assessment: to include review of literature and existing academic and accreditation programs, interviews with subject matter experts, case history review. (Needs assessment report) | 07/31/16 | 100% | |
| Top Priority Course Curriculum Offerings Descriptions:  completion of 3 introductory | 05/31/2017 | 90% | Three courses have been identified and one offered.  The other two will |

[2] https://www.congress.gov/113/plaws/publ2/PLAW-113publ2.pdf

| | | | |
|---|---|---|---|
| course prospectus and targeted scheduling for initial delivery in year 2 and/or year 3 (depending upon university capacity): Course Prospectus and University Approval | | | be delivered next year (not yet on UMD course schedule) but two newly hired Resilience Faculty Members. Additionally, other concepts for courses have been identified and prospectus begun. However, the expected completion is now September 30, 2017. |
| Develop requirements for a short course(s) suitable for CEU, in-person and/or online training for transition to existing emergency management institutes such as CDP or EMI (Prepare Course Prospectus for inclusion in agency training catalogue or similar source of training offerings) | 05/30/2017 | 100% | Three complete Plans of Instruction following EMI guidelines were developed in lieu of the Course Prospectus. These are required by FEMA in advance of actually delivering a short course. To deliver a short course, we will need a delivery partner to help pay for the final expenses of developing lecture materials and providing the instruction. |
| Identify feasibility and process needed to get courses accredited through PMI and IAEM or identify and alternative for certification if not feasible. | 12/31/2017 | 50% | Contacts were made and requirements identified. However, it was important to have the Plans of Instruction and the course offering complete to document the process and set up an implementation strategy to share with potential certification organizations. |
| Offer 1 Introductory Couse at UMD Spring of 2017. | 5/30/2017 | 100% | The course was approved by the university and offered. 11 students completed the course |

## 11. Transition Activity and Milestone Progress:

### Transition Activities and Milestones: Progress to Date

| Reporting Period 1/1/2016 – 6/30/2016 | | | |
|---|---|---|---|
| **Transition Activity** | Proposed Completion Date | % Complete | Explanation of why activity / milestone was not reached, and when completion is expected |
| Develop a Roll-out strategy for Plans of Instruction to identify delivery partners | 5/25/2017 | 100 | The needs report was completed and confirmed the gaps identified in PM for emergency managers. Its results were shared at the annual PI meeting at UNC, February 2017 and at HMA conference of practitioners in |

| | | | |
|---|---|---|---|
| | | | June 2017. However, it was deemed more important to share the actual Plans of Instruction and the Course development ideas with the contacts and potential partners. |
| Site visits and other correspondence to FEMA Headquarters, EMI, CDP and/or others in development of needs. (This will continue throughout project) | 01/31/2018 | 100 | Contacts were made and interviews conducted with FEMA, EMI staff and others by the original deadline. Additionally, PI presented the Plans of Instruction and Course offerings to over 50 attendees June 2, 2017 at the HMA workshop. However, the PI will like to schedule further meetings and visit facilities to identify training delivery partners and refine the offerings.. |
| Obtain University Approval for introductory Course at UMD | 9/30/2016 | 100 | |
| Post introductory course prospectus for students to enroll | 11/30/2016 | 100 | |

## 12. Interactions with research projects:

We had two RETALK opportunities this year. Sandra Knight visited LSU and discussed with Barry Kiem the process, successes and setbacks of establishing a research program at LSU. This was further shared with UMD faculty from across the colleges with Robert Twilley came a presented how he established the Coastal Sustainability Studio.

## 13. Publications:

None to date

**14. Tables:**

**Table 1: Documenting CRC Education Project Courses and Enrollments**

| Courses Developed and Taught by <u>University of Maryland</u> under Project Development and Testing of a Project Management Curriculum for Emergency Managers | | | | | | |
|---|---|---|---|---|---|---|
| <u>Course</u> | | <u>Developed (D), Revised (R), and/or Taught (T), by Project Year</u> | | | | |
| <u>Number</u> | <u>Title</u> | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> |
| ENCE688B | Principles of Disaster Management | D | T | N/A | N/A | N/A |
| Offering: Elective (E), Concentration (C), Minor (M) | | - | E | N/A | N/A | N/A |
| Enrollment | | - | 11 | | | |

**Table 2: Documenting External Funding and Leveraged Support**

| External Funding | | | |
|---|---|---|---|
| <u>Title</u> | <u>PI</u> | <u>Total Amount</u> | <u>Source</u> |
| NA | | | |
| Leveraged Support | | | |
| <u>Description</u> | | | <u>Estimated Annual Value</u> |
| NA | | | |

## 15. Metrics:

| Metric | Year 1 (1/1/16 – 6/30/16) | Year 2 (7/1/16 – 6/30/17) |
|---|---|---|
| HS-related internships (number) | | |
| Undergraduates provided tuition/fee support (number) | | |
| Undergraduate students provided stipends (number) | | |
| Graduate students provided tuition/fee support (number) | | 1 |
| Graduate students provided stipends (number) | | |
| Undergraduates who received HS-related degrees (number) | | |
| Graduate students who received HS-related degrees (number) | | |
| Certificates awarded (number) | | |
| Graduates who obtained HS-related employment (number) | | |
| Lectures/presentations/seminars at Center partners (number) | | |
| DHS MSI Summer Research Teams hosted (number) | | |
| Journal articles submitted (number) | | |
| Journal articles published (number) | | |
| Conference presentations made (number) | | |
| Other presentations, interviews, etc. (number) | 25 | 1 |
| Trademarks/copyrights filed (number) | | |
| Requests for assistance/advice from DHS agencies (number) | 2 | |
| Requests for assistance/advice from other agencies or governments (number) | 3 | |
| Total milestones for reporting period (number) | 3 | 9 |
| Accomplished fully (number) | 3 | 8 |
| Accomplished partially (number) | | 1 |
| Not accomplished (number) | | 0 |