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**Submission #1 **

Proposal paper in support of 'shared' cybersecurity special topics course.

While it supports many of the ideas presented in the CFP, this paper offers an approach that specifically addresses these questions:

- What skills and knowledge should people in the field have, and how should that be acquired?
- How do we get more US citizens—and a more diverse population —into cybersecurity in meaningful ways?
- What kinds of resources and materials for use in education and training are needed, how do we get them developed, and how do we measure their effectiveness?
- What are some good ways to "future-proof" the education we provide?

One issue plaguing academia is the need for timely information and training yet by the time a 'new' or cutting edge course is created it is outdated and in need of a refresh. While adding current events helps it does not address the fact that faculty can't be experts in everything or hold experience and credentials to teach every topic encompassed in 'cybersecurity', which means each term only a select few are fortunate enough to attend classes by experts in cybersecurity niche topic areas.

I propose that an emerging technology course is created, but instead of teaching or training a few teachers how to replicate the material, which is quickly outdated and for which they may not hold the necessary expertise, that the program recognize the experts in those areas and synergize the classroom by offering that special topic course on emerging technologies to other schools at the same time through a webcast format. Attendees would need the same level of pre-requisite skills, but this proposal extends teaching specialty topics to a few faculty to instead teaching many classes across the country at the same time each semester.

This proposal allows for recognition of cybersecurity experts while extending the reach of their expertise from a handful of teachers to many students across the country (or online if deployed military, etc) to allow them to gain knowledge in these emerging or niche topic areas where we have a pronounced need. It eliminates the need for schools to be seen as competitors and instead as compliments as competing programs and duplication of expensive resource labs may become a thing of the past.

How would such a proposal work? The teacher of record at each school is still responsible for their class in whatever format it is offered. The web hosted teacher can do this in conjunction with teaching their own classes of the same topic at the same time. The teacher presenting the material (web host/remote teacher) would create some resources for the remote on- ground faculty including a detailed rubric for each assignment, prerequisite readings, etc. to ensure that the students watching at a distance have the ability to understand the material and their teacher has the information to properly score the assessments.

 The class would be taught by a combination with the expert in a web-format/webinar so the expert may broadcast from their home school/lab and all participating schools may benefit. This highlights the expert and allows all to benefit from that expertise, and it allows for schools to specialize in certain areas while still offering additional electives and specializations that otherwise would not be options for that student population. To accomplish this, the expert teacher who broadcasts the material will receive an additional stipend and the teacher of record from participating schools will still be paid as the local teacher as this person needs to grade, interact, answer questions, and facilitate the learning process. This type of cross-school and cross-class partnership has many benefits as all who participate are paid, the skills of the expert are shared to a broader audience, it reduces unnecessary or inferior replication of course topics, offers an audience to non-traditional applications or specializations in cybersecurity, and extends the reach of necessary course content beyond traditional classroom borders.

The webinar should be an interactive session allowing the on-ground faculty in each class to gather questions and assist their class. The on-ground teacher can augment the material with

additional items to aid in understanding or make it more relevant to the participating population. These items can include current events, grading course projects and research, guest speakers from industry and government, application of how the content applies to cybersecurity compliance, regulation, and governance.

The teacher hosting the webcast class would receive a stipend for the course materials and remotely teaching the sessions (for all class periods or a pre-determined number of times within a course to demonstrate the most difficult topics or concepts the remote school can't supply (such as those needing a specific lab set-up to allow for successful demonstration)), and for assisting local faculty in teaching and challenging their population of students.

The web portion should not be used as a recording to replace teachers, but should only be used in the event of class cancellation, to facilitate review in remote areas (such as military students deployed in drastically different time zones which would prohibit real-time attendance at the webcast, or daytime courses when the expert only teaches in the evenings for example) or to allow for review and remediation of the material. To keep the content fresh and to compensate the remote teacher for their effort and expertise, live webcasts should be performed.

This proposal addresses the need for flexibility in cybersecurity curriculum to address emerging topic areas, matching newer faculty or those untrained or lacking experience in an area of cybersecurity which is essential to student success in the workforce, and removes the financial barrier to many schools offering timely and necessary cybersecurity subjects, while showcasing the excellence held by some institutions in various cybersecurity areas. This is a concept that would require trust by both schools and the involved faculty, but which may ultimately solve some of the issues faced by our present lack of capacity to meet the needs of business and industry, resulting in our shortage of well-trained and educated cybersecurity workforce. Opening up the expertise in some of the topic areas may inspire greater enrollment by women and minorities as they would have access to these niche classes at their local college. It also offers the opportunity to showcase experts who may be women and minorities to areas of the country that have a less diverse faculty. Finally, this concept meets the CAE/CAE2Y requirement of shared teaching and resources.

The created material would become part of the collection made available to the CAE community – maybe hosted by CyberWatch or CSSIA in their curriculum repositories for designated schools to use. This could be limited to CAE/CAE2Y schools as a means of validating the pre-requisite and foundational skills and as an added benefit of becoming a CAE.