

technical cybersecurity education. As well, by integrating business courses in topics such as Project Management, Accounting and Communication, the Master in Cybersecurity will prepare the participants for advanced careers (e.g., management) in the field. The degree will benefit the students as the Professional Science Master's concept is a valuable format, giving graduates an edge in the industry by advancing and/or adding new skill sets that are imperative and demanded in the workforce. This was underscored at a recent meeting with VIASAT – senior leaders at the company including Simon Kyo, Vice President, Corporate Quality, expressed the immediate need for a graduate degree combining cybersecurity and business curriculum.

The proposed program will benefit CSM and CoBA, and support their respective missions with regard to enhancing the strong linkages between students and the communities they serve. As well, the proposed program is aligned with the Colleges' missions to push the boundaries of knowledge and discovery, provide rigorous and relevant educational programs that reflect a balance of theoretical and applied learning, and ensure students are prepared to be at the forefront of solving many of the critical challenges facing our rapidly evolving world.

The degree will benefit the University as a whole due to its interdisciplinary nature – providing another demonstration of true inter-college/department collaboration. In addition, the degree will support the University's goals to participate in the overall CSU-wide Professional Science Master's degree initiative. This initiative and the campuses involvement is supported by the CSU Academic Senate (January 18-19, 2007).

The creation of the Master of Science in Cybersecurity is aligned with the University Mission in that it will be a "rigorous....graduate program distinguished by exemplary teaching, innovative curricula and the application of new technologies". Furthermore, the proposed Master of Science in Cybersecurity will prepare the student in an emerging economic market, providing "skills, competencies and experiences needed in a global society experiencing accelerated technological, social and environmental change."

The proposed program also aligns with the University Vision in that it is a "specialized program(s) responsive to state and region needs", emphasizing the Professional Science Master's blend of computer science and business.

3. Demand: What evidence is there of adequate student demand for this program?

Preliminary evidence of adequate student demand for the proposed program should include:

- (i) A list of other CSU campuses currently offering the proposed degree major program (see the CSU Mentor website at <http://www2.assist.org/browseAreas.do>),

San Diego State University has a Master of Science in Homeland Security. This program is only 30 units and does not include any business courses. CSU San Bernardino has an MBA or an MPA with a concentration in Information Assurance and Cybersecurity Management.

- (ii) A list of neighboring institutions, public or private, currently offering the proposed degree major program,

Within the San Diego region, University of Southern California offers a Master of Science in Computer Security which is only 28-semester units and does not provide any business curriculum. The second neighboring institution is National University with a Masters in Cybersecurity and Information Assurance, which is 54 quarter units. Both programs are geared toward students who want to focus on the technical side of system development with a background in engineering or math.

- (iii) Information indicating substantial regional demand for individuals who have earned this degree (contact the Career Center for assistance)

The field of cybersecurity is a new and rapidly developing field. Open job listings for cybersecurity positions throughout the nation rose 73 percent in the five years through 2012, 3.5 times faster than postings for computer jobs as a whole, according to Boston-based Burning Glass, a labor market analytics firm that collects data from more than 22,000 online jobs sites. Furthermore, the data show "employers literally just posting and reposting" their positions, suggesting that there are not enough qualified professionals to fill those positions. There were

64,383 jobs related to cybersecurity listed for the twelve months through April, about 3 percent of all information technology positions, according to the company.

San Diego has been identified as a Cybersecurity hub with the development of Securing our eCity program, Stop Think Connect campaign and the Cyber Hive collaboration program. An initial CSM advisory council meeting in 2012 confirmed the need, relevance and applicability of the proposed Master in Cybersecurity across multiple prominent San Diego sectors such as the military (both active and Veteran), gaming, banking, biotechnology and communications. In a recent meeting, VIASAT has stated that they would highly value a Master in Cybersecurity for training their current workforce based on the fact that it provides a blend of science and business and would show their support by providing the students and tuition funding for the first cohort. The San Diego Labor statistics reflect an above average increase, 12.3%, in cybersecurity related jobs projected for 2013-2020.

- (iv) Information indicating adequate student interest in the proposed program (e.g., numbers of minors, existing programs at feeder community colleges, or results of student surveys).

The number of current providers of the Master in Cybersecurity is reasonably small on both a national and local level. However, interest in the degree is reflected in the National data showing a 488% increase from 2005-2010 in Masters in Cybersecurity degree conferrals. The strongest feeder of this program will come from the existing San Diego-based company employees, currently working in the industry and in search of a higher degree for career advancement or department transition. There are currently 15 undergraduates with Computer Science majors and a total of 29 students who have received their undergraduate degree in Computer Science since Spring 2008. However, this program will serve a different audience, as discussed above, providing a combination of technical and business training.

4. Resources: Give preliminary estimates of the following resources needed to implement the program:

The program will be owned by the CSM but will be financially supported and implemented through Extended Learning as a self-support degree.

The proposed program will launch as a Pilot Program in Fall 2015. The program resources include a tenure track faculty with expertise in the cybersecurity field. This faculty member will teach in the program as well as serve as the faculty program director. The program will also rely on the industry experts as lecturer faculty to enhance the curriculum. Existing business faculty will teach the business courses.

No additional space will be required for this program.

Course development will be funded by Extended Learning. Marketing/outreach and library costs will be funded by Extended Learning, as is consistently done for self-support programs.

5. Relation to Existing Programs:

There are currently no existing degrees at CSUSM specifically related to cybersecurity. However, there is an undergraduate degree in Computer Science with an option in Computer Information Systems, which would provide the opportunity for an academic feeder into the Master's program in Cybersecurity.

A general Masters degree in Computer Science currently exists but will not be competitive with the Master's in Cybersecurity as the proposed degree has a distinctly different focus, containing business classes and curriculum specific to the field.

The addition of a Master of Science in Cybersecurity to the above mentioned degree programs would provide opportunities for additional teaching faculty in the Computer Science department, expanding resources to the student population and CS department.

Opportunities for further collaboration with the College of Business Administration will be available as the Master degree will be interdisciplinary.

Increased regional support and visibility as a cybersecurity educating resource will benefit CS, CSM, CoBA and the University in regard to our existing programs.

The proposed degree will also allow for the opportunity to apply as a Center for Excellence of Cybersecurity, similar to CSU San Bernardino.

While the degree is officially designated as a Master of Science in Cybersecurity due to CSU guidelines, the implementation of the degree will strengthen the CSUSM Professional Science Masters reputation, which is strongly supported by the CSU system.

REVIEW PROCESS

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| 1. <u>see attached</u>
Originator (Please Print and Sign) | Date | 2. <u>see attached</u>
Program/Department Director/Chair*
- if applicable | Date |
| 3. <u>see attached</u>
CSM Curriculum/Planning Committee* | Date | 4. <u>see attached</u>
CSM Dean (or Designee)* | Date |
| 5. <u>see email from Glen</u>
CoBA Curriculum/Planning Committee* | Date | 6. <u>[Signature]</u>
CoBA Dean (or Designee)* | <u>4/11/14</u>
Date |
| 7. <u>see attached</u>
Date received in Academic Programs | | | |

* Signature indicates support that the proposed program move forward for consideration for placement on the UAMP.