CNSE/Cybersecurity Advisory Meeting AGENDA 4/7/2023

Attendees:
Juan Martinez Western NRG, Paul Guggenheimer, IT Consultant,
Nathan Orlina – Western NRG Tech Trainer,
Mahmoud Pegah (VCCCD IT Director),
Ed Garcia – Faculty,
Kevin Rickard Faculty,
Wayne Snyder Navy Base – Cybersecurity Analyst,
Michael Wylie – Cybersecurity Consultant – Crowdcast
Stan Stahl – Secure the Village - Principal

Agenda:

1 - Update on Spring 2022 Advisory Board feedback (last year's feedback)

2 - Paid Internship Funding of $300,000

3 - Open Access Lab

4 - National Cyber League competition and Club Meetings

5 - Center of Excellence Status, SLO, Professional development, Website Updates, Cross Discipline content

6 - Updated Cybersecurity AS Degree - 2023 Catalog Updated

7 -Status and overview of BS Applied Cybersecurity Network Operations Program: New courses such as CyberOps, MSLearn, Hybrid Server, Certification, Capstone Course, Project Management

8 - Proposal to update T211 Classroom Advanced Lab

9 - Perkins/Strong Workforce Grant and new lab Equipment

10 - Advisory Board Input and feedback on specific initiatives and strategic direction based on workforce needs.

Please contact me with any questions that you may have regarding participation in our Spring 2023 CNSE Advisory Board meeting. Please feel free to forward to a colleague who may be interested in participating.

1 - Update on Spring 2022 Advisory Board feedback (last year's feedback)

A - CAE Updates Website, CNSE M57 Scripting course, SLO Course Alignment from select AS Degree, etc

B – Updated AS Degree Submitted to State Chancellors Office

C – Impacto Grant ongoing

D – 2 New High School Pathways - Fillmore and Santa Paula

E – New curriculum CASP, AWS Security, Azure M111 ,etc

F – Open Access Lab Post Covid initiative.

1b – Pending Approval for 16 week Calendar….August 2024.

2 - Paid Internship Funding of $300,000 + Requirement for Cyber AS & BS Degree

3 – Ongoing Open Access Lab – Mon 1pm-8pm – T211, Tue 10am-8pm T212

New Equipment – 30 PFSense Firewalls, T211 TB Drives, T211 Ram + TB Drives Dual Screens, Smart Projector, New Servers, etc – Remind students to Text FT-Faculty for Open Access Lab confirmation, Career Advisement, Internship Prep, Course work, equipment access, Hands-On activities to develop competency.

4 - National Cyber League competition and Club Meetings – Mondays 8-9pm – Open to everyone, Learn Cyber related technologies, challenges. (Invite your Students)

5 - Center of Academic Excellence Status, SLO's, Professional development, Website Updates, Cross Discipline content (Business - CISA, BIO-Tech – HIPAA)

6 - Updated Cybersecurity AS Degree - 2023 Catalog Updated – Internship Requirement.

7 – Certification Exam Bank – Coming…..Prepare your Students to Pass Exams. CNSE will populate CNSE exam 1 Canvas portal with Cert Practice Questions.

8 - Proposal to add equipment bench T211 Classroom (Project Mgmt. Bench)

9 - Perkins/Strong Workforce Grant submitted and new lab Equipment coming.

10 -Status and overview of BS Applied Cybersecurity Network Operations Program:

New Junior/Senior year courses such as CyberOps, MSLearn Security, Hybrid Server I & II, Capstone Course/Project Management, Ethics, Technical Writing, See San Diego City CyberDefense BS Degree, Whatcom Community College (National Cyber CAE) as models

https://www.sdcity.edu/academics/schools-programs/business-it-cosmo/it/cyberdefense.aspx

Review Attached and Proposed BS Curriculum – Make adjustments now before FINAL Submission, think about equipment needed, Curriculum to use, format/modality.
See end for Moorpark BS "Applied Cybersecurity Network Operations" Curriculum
11 - Advisory Board Input and feedback on specific initiatives and strategic direction based on workforce needs.
Please follow up with Ed/Kevin with ideas/suggestions that you may have.
Please feel free to forward to a colleague who may be interested in participating.

Executive Summary: This document outlines Key Points on the Application Submission by Moorpark College for a B.S. Degree in Applied Cybersecurity Network Operations and its impact on increasing accessibility to a disenfranchised population.

1 – **Job Growth – STRONG LMI DATA - Employment Development Dept (EDD) LMI for the State of California shows Information Security Analyst with +32.7 percent employment growth through 2028**. *Cyberseek.org, which tracks employment by Metro area, shows 1,119 open positions in Ventura County and 27,542 in neighboring Los Angeles County, and Indeed.com shows 6,562 Remote Jobs for Cybersecurity*. Most importantly, Indeed.com has the option to select by Education Level, which listed 389 jobs with High School Education, 629 with Associate Degrees, **4,838 with Bachelor's Degree,** 5,550 with Master's Degree, and 92 with Doctoral Degrees. **This is consistent with articles indicating that 80 percent of Cybersecurity jobs will require a Bachelor's Degree with at least one relevant Cybersecurity Certification, such as Security+ Fundamentals,** which covers various knowledge domains dealing with Cybersecurity.

Note: Ventura County Strong Workforce Board identified Information Communications Technology (ICT) Education, training, demand, as the most critical component impacting Ventura County.

Indeed.com Job Bank showing employment demand in Ventura County (<u>50 mile</u> radius)

Job Title	# of Jobs	Description	$Average Pay
Info Tech	316	Provide Technical Services	$60-90K
Network Security	290	Provide Computer Network Security services	$80-120K
Cyber	137	Provide Digital Security against cyber threats	$80-120K
Tech Support	80	Provide Technical Support services to organization	$50-80K
Computer Support	63	Provide Computer Support services	$45-75K

REQUIREMENTS FOR B.S. IN CYBERSECUIRTY JOB MARKET?: Burning Glass (https://www.burning-glass.com/wpcontent/uploads/recruiting_watchers_cybersecurity_hiring.pdf)

found, " 88% of Cybersecurity postings specify a bachelor's degree or higher. 59% require a vendor Certification as well. The good news is that there are entry-level postings for entry-level jobs, while the more advanced positions which require advanced knowledge, education, and experience, which motivates learners to continue in their educational journey. Good news is there are many entry level positions for ICT Graduates with Profession Certification such as Security+, Network+, Cisco, and other certifications recognized by Industry

2 – **STUDENT DEMAND/INTEREST:** Ventura County + Los Angeles County have numerous ICT Programs with no ICT CSU/UC Pathways. Program would support Remote + OnCampus with Open Access Labs 2 days per week, 8 hours per day to help students with Curriculum Labs, Internship Prep, Career Guidance, etc (Stem Impacto Model where Student Success support strategies are pervasive).

3 - FACULTY ACCESSIBILITY MODEL: Our Programs Open Access Lab is an enhanced ACCESSIBILITY Model that fits the needs of all Student Classroom Modalities as Students taking Online, OnCampus, working Full-time, can either attend class, watch recorded Zoom Sessions, attend Zoom Office Hours, or Attend Campus Open Access Lab (Mondays noon to 8pm, Tuesdays 10am – 8pm with Full-Time Faculty available) and meet with Faculty for Instructional Support, Career Guidance, or discuss course sequencing, prepare for Internship.

4 – DEI IMPACT: Information Communications Technology (ICT) students are students who enjoy working with computers, have limited Math and Programming skills thus they are a "Bad Fit" for Computer Science Track. Many jobs still exist for Technology students who know how to fix, resolve, install, configure and/or provide guidance in technical environments. For example: Colleges have an IT Staff that manage computer systems and technology. Those are ICT Students, not the Programmers, those are Computer Science Students.
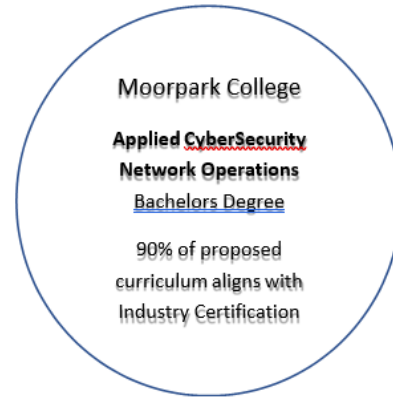
DEI Impact – 57% of ICT Students at MC are Non-White, 140 Hispanics Started Fall 21 and 120 completed Fall 21, or 79% Hispanic Success Rate (ICT Program overall success rate is 87%)

63% of ICT Students are Age over 25, and 24% (Age 30 – 39), 17% over 40.

CNSE Fall 21 Enrollments by Ethnicity, Age, and Gender						
	Fall 2021		**Fall 2021**	**Fall 2021**	**Fall 2021**	**Fall 2021**
	Credit		Credit	Credit	Credit	Credit
	Enrollment Count	**Enrollment %**	Retention Count	Success Count	Retention Rate	Success Rate
ETHNICITY	**402**	**100%**	369	309	92%	77.00%
African-American	12	3%	12	12	100%	100.00%
Asian	40	10%	38	34	95%	85.00%
Hispanic	**152**	**38%**	**140**	**120**	**92%**	**79.00%**
Multi-Ethnicity	22	**6%**	21	18	95%	82.00%
Pacific Islander	2	1%	2	2	100%	100.00%
Unknown	8	2%	7	7	88%	87.50%
White Non-Hispanic	166	41%	149	116	90%	69.88%
Non-white Population	**228**	**57%**				
	Fall 2021		Fall 2021	Fall 2021	Fall 2021	Fall 2021
	Credit		Credit	Credit	Credit	Credit
	Enrollment Count	**Enrollment %**	Retention Count	Success Count	Retention Rate	Success Rate
AGE	**402**	**100%**	369	309	92%	76.87%
1 to 17	2	1%	1	1	50%	50.00%
18 & 19	63	16%	58	42	92%	66.67%
20 to 24	**85**	**21%**	**80**	**64**	**94%**	**75.29%**
25 to 29	**87**	**22%**	**76**	**71**	**87%**	**81.61%**
30 to 34	48	**12%**	40	33	83%	68.75%
35 to 39	48	**12%**	48	42	100%	87.50%
40 to 49	44	11%	42	37	95%	84.09%
50 +	25	6%	24	19	96%	76.00%
AGE 25+	**==>**	**63%**				

4 – PROXIMITY: Proximity to other Community College ICT programs who suffer with Transfer Options/Pathways

	Projected Transfers from surrounding Community Colleges + Labor Job Market Demand from Cyberseek.org			
1	AS Degree Grads already on Campus @ Moorpark College	Moorpark 0 miles	Student Transfers 20	
2	Oxnard College Computer Networking	23 miles	10	
3	Pierce College	23 miles	10	
4	Mission College	30 miles	7	
5	College of the Canyons	32 miles	10	
6	LA City College	41 miles	5	
7	Glendale College	43 miles	5	
8	Santa Monica College	43 miles	5	
9	LA Valley College	44 miles	4	
10	West Los Angeles College	45 miles	4	
11	Pasadena City College	48 miles	4	
12	LA Trade Tech	48 miles	4	
13	East Los Angeles College	52 miles	3	
14	LA South West College	52 miles	3	
15	El Camino College	54 miles	3	
16	Santa Barbara City College	57 miles	3	
17	Rio Hondo College	59 miles	3	
	Total # of Anticipated TRANSFER Applicants=> ~ 103			

Moorpark College

Applied CyberSecurity Network Operations Bachelors Degree

90% of proposed curriculum aligns with Industry Certification

Students can attend Open House, meet Campus Leadership, Faculty, and get familiar with Open Access Lab (11 Colleges w/in 50 miles)
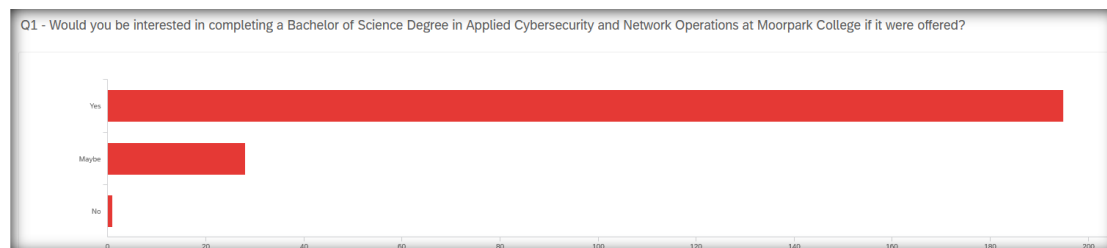
Ventura County REGIONAL IMPACT

11 Community Colleges within 50 mile radius with no "CyberSecurity Major" Transfer Options.

1. Moorpark College itself (~175 enrolled Info Tech students) -) Zero travel miles (Host Campus)
2. Oxnard College – 23 miles (~125 enrolled Info Tech students) Alex Lynch
3. Pierce College – 23 miles (~100 enrolled Info Tech students) Luis Celada
4. Mission College – 30 miles (~100 enrolled Info Tech students) Javier Rios/Milan Samplewala, riosj2@lamission.edu, samiib@lamission.edu
5. College of the Canyons – 32 miles (~125 enrolled Info Tech students) Justin Hunt
6. Los Angeles Valley College – 32 miles – some Cloud courses
7. Los Angeles City College – 41 miles
8. Glendale Community College – 41 miles
9. Santa Monica College – 43 miles
10. Los Angeles Valley College – 44 miles
11. Pasadena City College 48 miles
12. East Los Angeles College 52 miles
13. Los Angeles SouthWest College – 52 miles
14. El Camino College – 54 miles
15. Santa Barbara City College – 57 miles (~75 enrolled Info Tech students) Angel Cardenas

Moorpark College did a Student Interest Survey to validate interest which was collected over Christmas Break over 5 day window via email.

ICT Program Survey showed 195 would consider completing program, 28 maybe, 1 No

This is a tremendous response collected over a 5 day window on 1 campus, imagine 10 campuses feeding into 1 ICT transferrable Program?

Q1 - Would you be interested in completing a Bachelor of Science Degree in Applied Cybersecurity and Network Operations at Moorpark College if it were offered?

120 Students in MC ICT program work over 30+ Hours Weekly, 27 Students work 15-30 Hours, and 7 Students work less that 15. 155 Employed, 69 Unemployed (Program would need 2 + 2.5 + 3 year Graduate windows to support disparate working populations)

Q5 - How many hours do you work per week?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How many hours do you work per week?	1.00	3.00	2.73	0.54	0.29	154

5 - CURRICULUM: PROGRAM COURSE REQUIREMENTS

Lower-Division – 35 Major Units + 25 General Ed Units = 60 Units Total for A.S. Degree (Years 1 + 2)

Year 1 Semester 1 (16 Units)	Year 2 Semester 1 (14 Units)
*4U – CNSE M01 – Network+	*3U – CNSE M55 – Linux Administration
*4U – CNSE M06 – A+ PC Management	*3U – CNSE M111 – Azure Cloud Foundations
*4U – ENGLISH 101 General Education	/ M105 Aws Cloud Foundations
*4U – General Education	*4U – CNSE M13 – TCP/IP Protocols
	*4U – General Education
Year 1 Semester 2 (17 Units)	
*3U – CNSE M82 – Security+	Year 2 Semester 2 (13 Units)
*4U – CNSE M18 – Cisco I	*3U – CNSE M57 – Bash/Python for Cybersecurity
*3U – CNSE M30 - Windows Administration	*3U – CNSE M100 – Cybersecurity Analyst
*4U – MATH General Education	*3U – General Education

*3U – General Education	*3U – General Education *1U – CNSE M80 – Internship

35 Major UNITS completed, 25 General Education Completed in first 2 years = 60 Units 8 COURSES in ICT A.S. Degree map to Industry Certificaiton **********************Completion of Years 1 and 2 ************************** Note: 8 LOWER DIVISION MAJOR COURSES MAP TO INDUSTRY CERTIFICATION CURRICULUM

All COURSES IN B.S. DEGREE MAP TO CERTIFICATION

Upper-Division – 51 Major Units + 9 GE (Includes Internship)

Year 3 Semester 1 (16U) *4U – ACNO M301 - Advanced Cisco II *3U – ACNO M302A – Microsoft Hybrid Server I *3U – ACNO M304 – Virtualization Technology + Kubernetes *3U – ACNO M305 – ~~AWS Cloud Foundations~~ AWS Cloud OPERATIONS ***3U – ENGL M49 – Technical Writing** Year 3 Semester 2 (15U) *3U – ACNO M306 Azure Cloud Administrator *3U – ACNO M307 AWS Cloud Architecture / Cloud Operations *3U – ACNO M302B Microsoft Hybrid Server II *3U – ACNO M308 Firewall Security ***3U – Bus M Project Management**	Year 4 Semester 1 (14U) *3U – ACNO M401 Cloud Databases *3U – ACNO M402 Certified Ethical Hacker *3U – ACNO M403 CyberOps *2U – ACNO M404 Identity Protection Security ***3U – Phil M402 Cloud and Cybersecurity Ethics** Year 4 Semester 2 (15U) *2U – ACNO – M405 Azure Cloud Security *3U – ACNO – M406 Comptia Advanced Security Practitioner *3U – ACNO – M407 AWS Cloud Security *3U – ACNO M408 Device & Network Forensics *3U – ACNO M409 CISA Risk Management ***1U – ACNO – M80 Internship**

35 Major UNITS completed, 25 General Education Completed in first 2 years => 60 Total Units 51 Major UNITS Completed,   9 General Education Completed in last 2 years => 60 Total Units ■ 86 Major Units Completed, 34 General Education Completed in 4 years   ====>120 Total Units Note: ALL 17 UPPER DIVISION MAJOR COURSES MAP TO INDUSTRY CERTIFICATION CURRICULUM AND UTILIZE EDUCATION PARTNERS CURRICULUM AND ONLINE LABS WHICH IS MOSTLY FREE WITH SOME LOW COST. ADDITIONAL HANDS-ON LAB ACCESS PROVIDED IN OPEN ACCESS LAB CLASSROOMS WHICH ARE AVAILABLE WITH FULL-TIME FACULTY 2 FULL DAYS WITH EVENINGS. **OPEN ACCESS LAB – Provide students with increased Lab Access, course sequencing guidance, career and program guidance, internship preparation prior to off-site internship placement, and Cyber Club Cyber Range training; provides classroom for studying, student engagement, and participation.**

UPPER DIVISION COURSE DESCRIPTIONS – 51 UNITS

6 - CSU DUPLICATION CONCERNS: NONE – ALL CSU Cybersecurity Programs are Certificates and they are all REBRANDED COMPUTER SCENCE PROGRAMS with Programming/Coding skills as a requirement.

CSU's that do offer Cybersecurity do so as a Certificate and 90% of Curriculum is coding/programming related. The BS Degree from Moorpark College has all 51 Major Units are Professional Certification aligned. VERY CONSERVATIVE ESTIMATES

ZERO of CSU ICT/Cyber Courses align to Industry Certification.

Sample CSU Cyber Curriculum for IT Degree/Cybersecurity Certificate, note the extensive programing and math requirements. Does your Campus IT Staff need or use the skills below for their Job Effectiveness, or would being trained and Certified on troubleshooting and managing infrastructure equipment make more sense?

Lower Division Requirements - 10-17 units

Complete one set from the following:
Set 1
- IT 105 - Introduction to Programming (Cross-listed as COMP 105) **Units: 3**
plus
- IT 151 - IT Programming **Units: 3**

Set 2
- COMP 150 - Object-Oriented Programming **Units: 4**
plus
- COMP 151 - Data Structures And Program Design **Units: 4**

Set 3
- IT 152 - Programming for Health Informatics **Units: 4**

Complete the following:
- COMP 162 - Computer Architecture and Assembly Language **Units: 3**

- COMP 362 - Operating Systems **Units: 4**
- IT 221 - Unix System Programming I (Cross-listed as COMP 221) **Units: 3**

Upper Division Requirements - 9 units

- IT 424 - Computer System Security (Cross-listed as COMP 424) **Units: 3**
- MATH 482 - Number Theory and Cryptography **Units: 3**

Complete one from the following:
- MATH 300 - Discrete Mathematics **Units: 3**
- MATH 301 - Discrete Mathematics for IT **Units: 3**

Minor Elective Requirements - 6-7 units

- CHEM 343 - Forensic Science **Units: 3**
- COMP 345 - Digital Image Processing (Cross-listed as PHYS 345, MATH 345) **Units: 3**
- COMP 420 - Database Theory and Design (Cross-listed as IT 420) **Units: 3**
- COMP 429 - Computer Networks (Cross-listed as IT 429) **Units: 3**
- COMP 445 - Image Analysis and Pattern Recognition (Cross-listed as PHYS 445, MATH 445) **Units: 3**
- COMP 449 - Human-Computer Interaction **Units: 3**
- COMP 452 - Computational Bioinformatics (Cross-listed as MATH 452) **Units: 4**
- IT 421 - Unix System Programming II **Units: 3**
- IT 428 - Computer Networks for Health Informatics **Units: 3**

7 - PROGRAM STANDARDS: ICT A.S. Program aligns to Center of Excellence in Cybersecurity and the proposed B.S. Degree builds on Pre-Reqs and would apply for COE Accreditation eventually.

All B.S. courses align to Industry Certification from Comptia, Microsoft, Cisco, AWS, Palo Alto, Vmware and most importantly are immediately recognized by ICT/Cybersecurity Professional Workforce.

These are professionally workforce aligned courses and are not textbook courses typically used in Academia where theory is the primary focus. Our BS Degree program would use Lab immersed curriculum that focuses on Hand-On troubleshooting with workforce skills emphasis and Industry recognized certifications as achieved by Faculty themselves leading to higher employer recognition of skills learned in the classroom.

An Internship is a requirement and will also provide Faculty with workforce collaboration opportunities.

8 - PROGRAM ACCESSIBILITY/AVAILABILITY MODEL: B.S. Cohort would be invited to Open House, Meet Campus Leadership, Faculty, and Courses to be offered Online with 2 days per week Open Access Lab on Campus for students needing Career Guidance, Internship Prep, course sequencing concerns, Equipment access, Internship Prep, and Instruction support from Full-time Faculty. Students will tour Open Access Lab and understand they are part of a new Learning Community. Our Subject Matter Experts work as ICT/Cyber professionals during the day and provide evening Instruction. **Courses will support a working student population as much as possible WITH Faculty who are very sensitive to DEI issues are well versed and experienced on strategies to help with reducing educational barriers.**

Students will be able to successfully complete courses using Professional Training materials and curriculum from Microsoft, AWS, Cisco, Comptia, NDG, Palo alto that all support remote professional learning. Our equipment Lab on Campus will support Additional Hands-On learning for students.

Additional comments: MC Faculty anticipate an extremely impacted program due to limited ICT/Cyber CSU Pathways throughout South Central Coast Regional Consortium (SCCRC) and are anticipating an immediately Impacted Program and we will need to contact Chancellors Office to request a Higher Enrollment Cap.
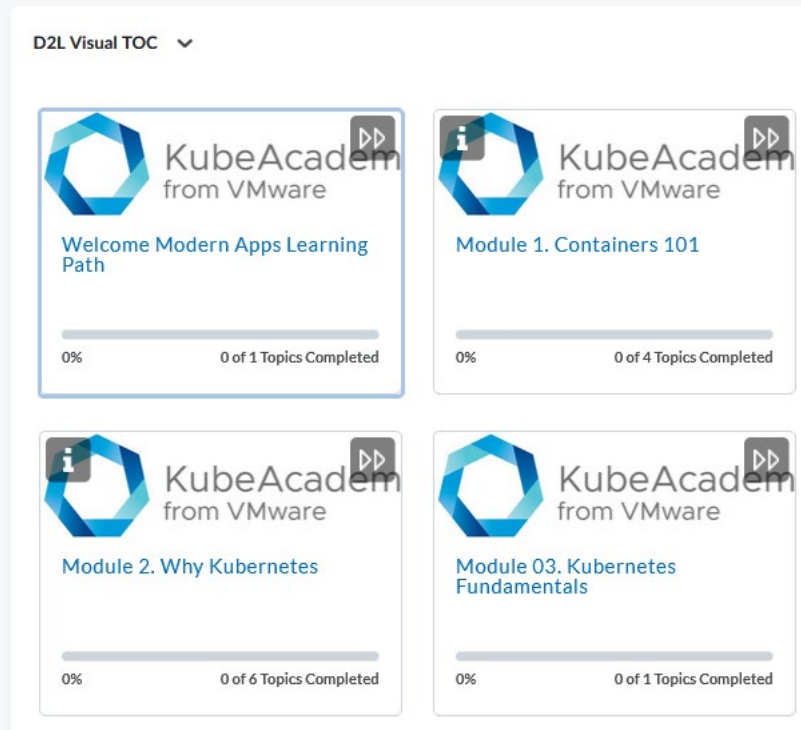
Mod 0 - Welcome Modern apps 4 minutes

Mod 1 – 10 minutes, 8 minutes, 8 minutes,

      Lab 01 Containerize Applications

Mod 2 – 2 Minutes, 8 minutes, 10 minutes, 10 minutes, 8 minutes, 1 minute.

Mod 3 - Lab 02 – Deploy applications using Kubernetes.

REGARDING SUGGESTIONS:

- I didn't understand what the Open Access Lab did or the benefits of using it. I will **definitely** be recommending it to students starting on Monday. OAL is designed to Increase APPLIED HANDS-ON STUDENT EXPERIENCE, so students come in, I hand them a Lab to do, equipment to configure, etc students work alone, in groups, and work on projects.
    - o I would like to suggest using the Open Access Lab as a means of streamlining Internship or Job Hunting prep. (That's exactly what we are trying to do, provide students with Hands-On activities to develop skills related to Internship Prep and Job Prep) **We are trying to ADD VALUE outside of classroom training so**

they plan, research, setup, apply/troubleshoot, communicate, share, collaborate, document project work, and tear down after each visit.

- Something like having a Soft Skills workshop or mock interview sessions would be something I think would incentivize students to attend. (They work in groups on solving problems and collaborate on challenges to increase Soft Skills)
  - In talks with some of the hiring folks at Western NRG, most of the factors we use to hire or not hire during interviews are purely soft skills. (Good to know, and Kevin and I do emphasize the importance of Team Work and collaborating and communicating effectively)

- Course or module ideas:
  - Wireshark. I could look into making a course that actually maps to the WCNA cert. Though that may be niche. (I think its best to add a module to TCP/IP Course that covers some WCNA) keep in mind Wireless is covered (some) in CNSE M19 which will move to Bachelors Level) Let me know of Equipment/Add-Ons that can be purchased from NewEgg or Major supplier that can be used for Wireless Captures. We cannot use Amazon or Ebay for Purchasing. We can work over the next year in buying WCNA related gear to be used in Classroom Lab work as part of TCP/Ip course. Perhaps you could add some Campus Handson Lab time to your class even if its optional and 1 day per month. Students need Hands-On and other colleges are doing 100% online and our program is trying to find more balance and increase Hands-On opportunities.
  - Do any of the courses include Backup systems? RTO, Deduplication, Best practices etc? It's an important part of systems and unfortunately, the very last line of defense for Ransomware. Yes CASP, and CISA should cover those topics but will keep that as a reminder we need to ensure those topics are in Bachelors Curriculum, very good point!

Explore increasing DevOps/Dev Secure with Kubernetes (VMware Modules)

Explore modules from https://www.sans.org/cyber-security-courses/security-leadership-essentials-managers/

MGT512: Security Leadership Essentials for Managers