☒ **New Program Code**   ☐ **Modify Program Code**   Date: _____

REQUESTOR CONTACT INFORMATION

Name	Terri Ota	Campus	West O'ahu, UH
Title	Academic Program/Faculty Affairs Specialist	Email	tota@hawaii.edu
Office/Dept	UHWO Academic Affairs	Phone	689-2314

NEW PROGRAM CODE TO CREATE

Institution	WOA - University of Hawaii West Oahu	Campus	WOA - Univ of Hawaii - West Oahu
Level	UG - Undergraduate	Effective Term	Fall 2020 (202110)

		Code (Max. Characters)	Description	Check if requesting new code:
College	(2)	BA	Business Administration	☐ See Banner form STVCOLL
Department	(4)	BUAD	Business Administration	☐ See Banner form STVDEPT
Degree/Certificate	(6)	BS	Bachelor of Science	☐ See Banner form STVDEGC
Major	(4)	CYBR	Cyber Security	☒ See Banner form STVMAJR
Concentration	(4)	CYOP	Cyber Operations	☒ See Banner form STVMAJR
Minor	(4)			☐ See Banner form STVMAJR

If a similar major/concentration code exists in Banner, please list the code: _____

Justification to warrant a new major/concentration code similar to an existing major/concentration code:

New bachelor of science degree, no similar code for Major or Concentration in STVMAJR.

If new major, please list the BOR's approved Classification of Instructional Programs (CIP) Code:

Is this major/concentration code being used the same way at the other UH campuses?   ☐ Yes   ☒ No

Should this program be available for applicants to select as their planned course of study   ☒ Yes   ☐ No
on the online application? *If yes, student may select the code as their only program of study.*

RULES PERTAINING TO FINANCIAL AID AND 150% DIRECT SUBSIDIZED LOAN LIMIT LEGISLATION

Is 50% or greater of the classes in this program offered at a location other than the Home   ☐ Yes   ☒ No
Campus?

Is this program/major/certificate financial aid eligible?   ☒ Yes   ☐ No

Does this certificate qualify as a Gainful Employment Program (Title IV-eligible certificate   ☐ Yes   ☐ No
program)?
See http://www.ifap.ed.gov/GainfulEmploymentInfo/index.html

Program Length
In academic years; decimals are acceptable. The length of the program should match what is published by the campus in any online and/or written publication.   4 years

Special Program Designations   ☐ A   ☐ B   ☒ N   ☐ P   ☐ T   ☐ U
See Special Program Designations Code Definitions on IRAO Program Code Request webpage

Required Terms of Enrollment: ☒ Fall   ☒ Spring   ☐ Summer   ☐ Extended
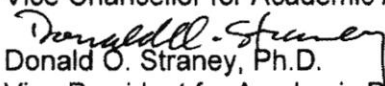
IRAO USE ONLY: DATE RECEIVED

ADDITIONAL COMMENTS (for modifying existing program codes, specify the term to turn on/ off the online application, the recruitment/admission term, and the general student/history/ degree term.)

The BS-CYBR with concentration in CYOP (Cyber Operations) is a new degree program, anticipated to be effective Fall 2020 (Banner term 202110).

ATTACHMENTS

BOR Approved: Sole-credential Certificates, Associate (excluding ATS), Bachelor and Graduate Degrees, and sole credential certificates

☐ BOR Meeting Minutes & Supporting Documents   ☐ Curriculum

Chancellor Approved: Concentrations, Certificates and Associate in Technical Studies (ATS) Degree

☐ Memo from Chancellor to notify Vice President for Academic Planning and Policy regarding program action.

☐ Curriculum

┌───┐
CERTIFICATES ONLY: Please check one (1) statement. This certificate is a...

☐ BOR approved certificate. BOR Meeting/Approval Date: _____

☐ Chancellor approved within an authorized BOR program. BOR Program: _____

☐ Chancellor approved CO in accordance with UHCCP 5.203, Section IV.B.10.
└───┘

VERIFICATIONS

By signing below, I verify that I have reviewed and confirm the above information that is pertinent to my position.

Registrar (Print Name)	**Financial Aid Officer** (Print Name)	**For Community Colleges, verification of consultation with OVPCC Academic Affairs:**
Vicky del Prado	James Oshiro	Tammi Oyadomari-Chun
Vicky del Prado 3/18/20	_James Oshiro_ 3/18/20	
Signature Date	Signature Date	Signature Date

UNIVERSITY
of HAWAI'I'
SYSTEM

January 28, 2020

MEMORANDUM

TO: Jeffrey Moniz
           Vice Chancellor for Academic Affairs, UH West Oʻahu

FROM: Donald O. Straney, Ph.D.
           Vice President for Academic Planning and Policy

SUBJECT: Approval of Authorization to Plan for Bachelor of Science in Cybersecurity

At the UH Officers meeting held on January 27, 2020, the Authorization to Plan for a new Bachelor of Science in Cybersecurity was approved with no comments. We look forward to receiving a proposal to authorize a provisional program in Cybersecurity.

Should you have any questions, please do not hesitate to contact me.

cc: Council of Chief Academic Officers
       Maenette Benham, Chancellor, UH West Oʻahu
       Alan Rosenfeld, AVCAA, UH West Oʻahu

BS-CYBR Cybersecurity

InWorkflow | Fall 2020

Proposal Information

Workflow Status
> Board of Regents > UHWO Rep
Terri Ota - Review

Proposer

✔ **Michael Miranda (Submitter)**
Submitted 2-9-2020

Division (Business Administration) \\ Division Chair

✔ **Matthew Chapman**
Approved 2-9-2020

(All Division Chairs) \\ Division Chairs

✉ Mary Heller

✉ Kristina Lu

✉ Louis Herman

✉ Matthew Chapman

✉ Stan Orr

✉ Sharla Hanaoka

✉ Michael Furuto

(Assessment) \\ Director of Assessment

— Sharon Valente

(VCAA) \\ VCAA

✉ Jeffrey Moniz

(Catalogue Coordinator) \\ Catalogue Coordinator

✔ **Terri Ota**

Approved 2-14-2020

missing 8.6, 8.7

(Curriculum Committee) \\ Curriculum Committee Members

✉ Camonia Graham-Tutt

(Curriculum Committee) \\ Curriculum Committee Chair

✔ **Reed Young**
Approved 3-5-2020

Approved

(Faculty Senate) \\ Faculty Senate Chair

— Terri Ota

✔ **Thomas Hirsbrunner**
Approved 3-16-2020

Approved by Faculty Senate 3/6/20

(VCAA) \\ VCAA

✔ **Jeffrey Moniz**
Approved 3-17-2020

(Chancellor) \\ Chancellor

— Terri Ota

✔ **Maenette Benham**
Approved 3-17-2020

(Board of Regents) \\ UHWO Rep

Terri Ota

(Assessment) \\ Director of Assessment

Sharon Valente

(Catalogue Coordinator) \\ Catalogue Coordinator

Terri Ota

(STAR) \\ STAR Builders

Summer DeBruyne

2. Program Code

2.1) Code (Admin Only)
BS-CYBR

2.2) Title
Cybersecurity

3. Proposal Details

3.1) Proposer Name(s)
Michael Miranda

3.2) Internal Proposal Date
11/07/19

3.3) Proposal Summary
Creation of a new degree: Bachelor of Science in Cybersecurity with a concentration in Cyber Operations. This is a new technical cybersecurity program with foundational aspects based in cyber operations, including information security, computer science, and computer engineering.

3.4) Justification or Rationale for Program Action
Please see the attached ATP. On January 28, 2020, the UH Officers approved the Bachelor of Science in Cybersecurity proposal to proceed with the process of establishing the program at UH West Oahu. See attached document "ATP BS in Cybersecurity 01-28-20.pdf".

3.5) Approved ATP1 & Complete ATP2 Attachment
- ATP BS in Cyber Security - 20191217 Final Draft.docx
- BS in Cybersecurity Timeline.docx

3.6) Proposal Supporting Documents
- ATP BS in Cybersecurity 01-28-20.pdf
- BS-CYBR Program Resources - 2020-2024.xlsx
- BS in Cybersecurity - Enrollment Projections 2020-2025.docx
- BS-CYBR-DLO 2020-02-07.pdf
- BS-CYBR CLOs Cyber Operations - 20200209.pdf
- BS-CYBR Program Proposal v20200218.pdf
- BS-CYBR Program Proposal v202000304 CC.pdf

3.7) Other Affected Departments / Programs / Campuses
Yes. Math and Social Sciences. Required science-related courses include:

SSCI 210 Statistical Analysis I (3)
SSCI 301 Methods & Techniques in Social Science Research (3)
MATH 241 Calculus I (4)
MATH 242 Calculus II (4)

MATH 301 Introduction to Discrete Mathematics (3)
Total 17

3.7a) Documentation of Consultation

- University of Hawaii Mail - BS in Cybersecurity - Enrollment Projects.pdf
- University of Hawaii Mail - BS in Cybersecurity - Enrollment Projects - Furuto.pdf

3.8) Proposal Impact(s) - Articulation

Please see attached ATP document.

3.9) Proposal Impact(s) - Requirements

No. 120 hours is required.

3.10) Will the proposed program addition require additional resources?

Not for Fall 2020. As enrollment increases, it is predicted to require more resources in two years. Please see the attached documents: BS in Cybersecurity - Enrollment Projections 2020-2025.docx and BS-CYBR Program Resources - 2020-2024.xlsx

3.12)Proposer Notes

DLOs are included in the ATP attached. CLOs are also attached as an attachment. I was unable to add them via Kuali. Also attached is the latest timeline from VCAA Jeffrey Moniz.

4. General Information

4.1) Program Level Type

Bachelor

4.2) Degree Type

Bachelor of Science

4.5) Catalog Description

The Bachelor of Science in Cybersecurity is a technical cybersecurity program with foundational aspects based in cyber operations, including information security, computer science, mathematics, and computer engineering that enable public sector agencies with intelligence, military, and law enforcement missions, and private sector enterprises.

4.6) Division

Business Administration

5. Learning Outcomes

5.1) Program (Degree) Outcomes
Program Outcome Code

None
LINKED COURSE OUTCOMES
--- None ---

6. Program Requirements

6.1) Proposed Course(s) for the Program
SEE ATTACHED ATP. In the list below, the *** INDICATES CONCENTRATION REQUIREMENTS

GENERAL EDUCATION CREDITS
Foundations Written Communication (FW)
ENG 100 Composition 1 3
Foundations Symbolic Reasoning (FS) OR Foundations of Quantitative Reasoning (FQ)
MATH 115 Statistics 3
Foundations Global and Multicultural Perspectives (FG):
6 credits from two different groups (A, B, C):
*Group A: Primarily before 1500 CE (e.g.; HIST 151 or ANTH 151)
*Group B: Primarily after 1500 CE (e.g.; HIST 152 or ANTH 152)
*Group C: Pre-history to present 6
Diversification Arts, Humanities & Literature (DA, DH, DL):
6 credits from two different areas 6
Diversification Social Sciences (DS): 6 credits from two different areas 3
Diversification Social Sciences (DS): Different area from above. 3
Diversification Natural Sciences (DB, DP, DY):
3 credits from the biological sciences (DB): 3
3 credits from the physical sciences (DP): PHYS 151 3
1 credit of laboratory (DY): PHYS 151L 1
Total 31

MATH AND STATISTICS REQUIREMENTS CREDITS
SSCI 210 Statistical Analysis I 3
MATH 241 Calculus I (4) 4
MATH 242 Calculus II (4) 4
MATH 301 Introduction to Discrete Mathematics (3) 3
Total 14

WRITING AND RESEARCH REQUIREMENTS CREDITS
ENG 200 Composition II or ENG 209 Business Writing 3
SSCI 301 Methods & Techniques in Social Science Research 3
WI ITS 410 IT Project Management 3
WI CYBR 486S Senior Project or WI CYBR 490S Senior Practicum 3
Total 12

LOWER DIVISION REQUIREMENTS CREDITS
ICS 101 Digital Tools for Info World 3
ICS 111 Introduction to Computer Science I 3
ICS 113 Database Fundamentals OR ICS/ITS 129 Introduction to Databases 3
ICS 184 Introduction to Networking 3
ICS 211 Introduction to Computer Science II 3
ICS 240 Operating Systems 3
ISA 275 Security Essentials OR CENT 275 Security Essentials 3
PHYS 151/151L
Total 21-25

UPPER DIVISION REQUIREMENTS CREDITS
ISA 320 Fundamentals of Secure Software Programming 3

3/18/2020

ISA 330 Introduction to Proactive System Security 3
ISA 340 Introduction to Digital Forensics 3
ISA 400 Management of Information Security 3
ISA 450 Modern Cyber Conflicts 3

Concentration (Cyber Operations)
***ISA 360 Cyber Competitions 3
***ISA 430 Cybersecurity for Supervisory Control and Data Acquisition 3
***ISA 480I Cyber Investigations 3
***ISA 480R Cyber Detection and Response 3
***ISA 480C Communications and Wireless 3
Total 30

ELECTIVES 300-400 Level (6 credits) CREDITS
Recommended: MATH, HLTH, PUBA, FORS or BUSA (examples: 340 Business Intelligence, 342 Practical Programming: Python, 348 Data Analytics for Business, 349 Data Analytics on the Cloud) 3
Recommended: MATH, HLTH, PUBA, FORS or BUSA 340 Business Intelligence, BUSA 342 Practical Programming: Python, BUSA 348 Data Analytics for Business, BUSA 349 Data Analytics on the Cloud 3
Total 6

ELECTIVES (6 credits) CREDITS
Recommended MATH, HLTH, PUBA, FORS 3
Recommended MATH, HLTH, PUBA, FORS 3
Total 6

TOTAL CREDITS 120

6.2) Credits Required
120

6.6) Program Prerequisites
Acceptance to UH West Oahu.

6.7) Entrance Requirements

6.8) Satisfactory Progress Requirements

6.9) Completion Requirements

6.10 (Admin Only) Program Requisites

General Education Requirements

0
Total Credits

No Rules

Focus Requirements

0
Total Credits

No Rules

Grand Total Credits: 0

7. Concentrations

7.1) Concentrations

Code	Title

8. BOR Information

8.1) Program Justification
See attached ATP: ATP BS in Cyber Security - 20191217 Final Draft.docx

8.2) Program Mission and Objectives
See attached ATP: ATP BS in Cyber Security - 20191217 Final Draft.docx

8.3) Program Curriculum Plan
See attachments: BS-CYBR Program Sheet 20-21 Draft 12.19.2019-mmiranda.docx, BS CYBR Map 20-21 Draft 12.19.2019-mmiranda.docx

8.4) Program Target Group
See attached ATP: ATP BS in Cyber Security - 20191217 Final Draft.docx

8.5) Program Resources
See attached ATP: ATP BS in Cyber Security - 20191217 Final Draft.docx

8.6) Program Efficiency

(2/14/20: inserted per mchapman)

This program does not duplicate a program currently in the system. This program's course requirements are specifically designed to focus on STEM and address the full breadth of cyber security mission areas: Information Networks, Defensive Cyber Security and Proactive Cyber Security.

a. Network Operations: ICS 111 Introduction to Computer Science I; ICS 211 Introduction to Computer Science II; ICS 184 Introduction to Networking; ICS 129 Introduction to Databases; ICS 240 Operating Systems; ISA 480C Communications and Wireless

b. Defensive Cyber Security: ISA 275 Security Essentials; ISA 320 Fundamentals of Secure Software Programming; ISA 340 Introduction to Digital Forensics; ISA 400 Management of Information Security; ISA 480I Cyber Investigations; ISA 480R Cyber Detection and Response

c. Proactive Cyber Security: ISA 330 Introduction to Proactive System Security; ISA 360 Cyber Competitions; ISA 430 Cybersecurity for Supervisory Control and Data Acquisition; ISA 450 Modern Cyber Conflicts

The math and statistics requirements include: MATH 115 Statistics; MATH 241 Calculus I; MATH 242 Calculus II; MATH 301 Introduction to Discrete Mathematics; SSCI 210 Statistical Analysis

The writing and research requirements include: SSCI 301 Methods & Techniques in Social Science Research; ITS 410 (WI) IT Project Management; APSC 486S (WI) Senior Project or APSC 490S (WI) Senior Practicum. The available electives include: BUSA 340 Business Intelligence; BUSA 342 Practical Programming: Python; BUSA 348 Data Analytics for Business; BUSA 349 Data Analytics on the Cloud.

There is no impact to the current UH West O'ahu Bachelor of Applied Science in Information Security and Assurance (BAS ISA). This Bachelor of Science degree is not offered in the University of Hawai'i system or at any other college or University in Hawai'i. The Bachelor of Science in Cyber Security supplements degree offerings including the BAS with a Concentration in Information Security and Assurance (BAS-ISA). Both the BS in Cyber Security and the BAS-ISA degree meet cyber workforce development needs for Hawaii, the Asia-Pacific Region, and globally. These programs are distinct, meeting both professional and technical requirements for the cyber workforce. Additionally, the BS program immediately provides BAS-ISA students an option to transition into a degree program that provides expended job opportunities. This expands educational opportunities and pathways for both UH Community College students and high school graduates on Oahu (See table in Appendix B for a direct comparison).

8.7) Program Effectiveness

(2/14/20: inserted per mchapman)

The degree proposed is a Bachelor of Science in Cyber Security. The is a new technical cyber security program with foundational aspects based in information security, computer science, mathematics, and computer engineering that enable public sector agencies with intelligence, military, and law enforcement missions, and private sector enterprises. Establishment of the Bachelor of Science, Cyber Security aligns with the following system wide guiding principles and University of Hawai'i – West O'ahu strategic directions:

a. System Wide Guiding Principles (University of Hawai'i Integrated Academic and Facilities Plan, April 20, 2017, pg 2)

i. Unique Program: This new program is unlike any program in Hawai'i by focusing on the technical and engineering aspects of cyber security as well as the full-scope of global, cyber implications. The diversity of offerings is unmatched in the State and positions the University of Hawai'i to be among an elite list of universities in the country that meet the rigorous designation requirements of the National Security Agency (NSA) and the Department of Homeland Security (DHS) as Center of Academic Excellence in Cyber Operations.

ii. Support Articulation of Courses System Wide: All of the courses to meet university general education and lower-division requirements for this new program are offered by University of Hawai'i campuses and can be easily included in existing articulation agreements with Leeward, Honolulu, Kapi'olani and Windward Community Colleges.

iii. Increase and Diversify Enrollment: This new program requires students to complete highly technical cyber security curricula that relate to critical infrastructure and cyber security incident response investigations, and covers the three fundamental areas of cyber considerations: Information Networks, Defensive Cyber Security and Proactive Cyber Security. This will be attractive to students who want to focus on the science, technology and engineering of cyber security and cyber mission areas. Whereas, the current Bachelor of Applied Science in Information Security and Assurance degree is geared toward students interested in cyber security and the broader application to other domains, such as business, health and public

administration.

b. University of Hawai'i – West O'ahu (UH West O'ahu) – Strategic Action Plan 2018-2028 (pg 11)

i. To continue to grow, create new programs, degrees, and offerings to draw traditional and non-traditional students: This new Bachelor of Science in Cyber Security will draw students such as active duty military personnel, law enforcement, current IT professionals desiring to specialize in cyber security and new students who are seeking a more technical cyber security degree.

ii. Offering innovative baccalaureate degree programs in sought-after-fields: Cyber security skills are in high demand. This degree in Cyber Security is unlike other information security degrees, because of its focus on the science, technology and engineering of cyber security, as well as the complete breadth and scope of cyber security mission areas.

iii. Expand the Bachelor of Science degree programs: This Bachelor of Science in Cyber Security will be the University of Hawai'i – West O'ahu's second Bachelor of Science degree fulfilling the objective to expand STEM education in the region.

9. Attachments

9.1) Attach a file

- BS CYBR Map 20-21 Draft 12.19.2019-mmiranda.docx
- BS-CYBR Program Sheet 20-21 2020-02-07.docx
- BS-CYBR Program Sheet 20-21_200305.docx

Admin Only

Proposal Owner
Michael Miranda

Date End
No Date Chosen

pid
HkPUqXMoB

Program Proposal

Bachelor of Science in Cybersecurity

Table of Contents

Program Purpose

A new degree program, a Bachelor of Science in Cybersecurity (BS-CYBR), is proposed for the University of Hawai'i – West O'ahu (UH West O'ahu). The BS-CYBR is a new technical cybersecurity program designed to provide students with an advanced cybersecurity education and will be UH West O'ahu's second STEM degree program. This advanced cybersecurity education deepens a student's knowledge of information security, mathematics, computer science, and computer engineering. It also prepares them to meet the advanced cybersecurity workforce requirements of public sector agencies and private sector enterprises.

According to the National Institute of Standards and Technology (NIST), the shortage of cybersecurity professionals is nearly three million. Only twenty-five percent of applicants to cybersecurity jobs are qualified, and it takes more than six months to fill a new cybersecurity position. NIST further predicts that computer and mathematical occupations will grow much faster than the average during 2016-2026.[1] According to the U.S. Department of Labor, the projected growth rate for Information security analyst jobs is 32% from 2018-2028.[2] A table summarizing additional statistics is below.

Information Security Analysts	
2018 Median Pay	$98,350 per year / $47.28 per hour
Typical Entry-Level Education	Bachelor's Degree
Work Experience in a Related Occupation	Less than 5 years
On-the-job Training	None
Number of Jobs, 2018	112,300
Job Outlook 2018-28	32% (much faster than average)
Employment Change, 2018-2028	35,500

Table 1. U.S. Bureau of Labor Statistics, Quick Facts: Information Security Analysts

In one instance involving the public sector, the U.S. Government Accounting Office found that "the Army activated a cyber battalion in December 2018, and as of March 2019, this unit was understaffed by more than 80 percent".[3]

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[1] Cybersecurity Workforce Demand, National Institute of Standards and Technology, National Institute for Cybersecurity Education,
https://www.nist.gov/sites/default/files/documents/2019/02/07/workforce_demand_111617_final.pdf (February 7, 2019).

[2] U.S. Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook,
https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm (retrieved September 27, 2019).

[3] FUTURE WARFARE: Army Is Preparing for Cyber and Electronic Warfare Threats, but Needs to Fully Assess the Staffing, Equipping, and Training of New Organizations, U.S. Government Accountability Office, Report to Congressional Committees, https://www.gao.gov/assets/710/700940.pdf (August 2019).

The NIST National Initiative for Cybersecurity Education (NICE) defines seven workforce categories.[4]

Categories	Descriptions
Securely Provision (SP)	Conceptualizes, designs, procures, and/or builds secure information technology (IT) systems, with responsibility for aspects of systems and/or network development.
Operate and Maintain (OM)	Provides the support, administration, and maintenance necessary to ensure effective and efficient information technology (IT) system performance and security.
Oversee and Govern (OV)	Provides leadership, management, direction, or development, and advocacy, so the organization may effectively conduct cybersecurity work.
Protect and Defend (DR)	Identifies, analyzes, and mitigates threats to internal information technology (IT) systems and/or networks.
Analyze (AN)	Performs highly-specialized review and evaluation of incoming cybersecurity information to determine its usefulness for intelligence.
Collect and Operate (CO)	Provides specialized denial and deception operations and collection of cybersecurity information that may be used to develop intelligence.
Investigate (IN)	Investigates cybersecurity events or crimes related to information technology (IT) systems, networks, and digital evidence.

Table 2. NICE Workforce Categories

This new program covers all the workforce categories and specifically focuses on developing the advanced cybersecurity skills in the categories of Protect and Defend, Analyze, Collect and Operate, and Investigate. According to a study done by CyberSeek, a cybersecurity workforce project supported by NIST and the U.S. Department of Commerce[5], from October 2018 through September 2019, there were a total of 2,466 job openings and a total of 5,775 people in the cybersecurity workforce in Hawai'i.[6] The job openings during that time were distributed among the NICE workforce categories, as depicted below. Also, the table indicates the workforce categories of specific focus by the current Bachelor of Applied Science in Information Security and Assurance, and the proposed BS-CYBR.

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[4] National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework, NIST Special Publication 800-181, https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-181.pdf (retrieved February, 16, 2020).
[5] "About this tool", CyberSeek, https://www.cyberseek.org/index.html#aboutit (retrieved February 16, 2020).
[6] "Cybersecurity Supply/Demand Heat Map, https://www.cyberseek.org/heatmap.html (retrieved February 16, 2020).

Categories	Job Openings	BAS-ISA	BS-CYBR (proposed)
Securely Provision (SP)	979	X	X
Operate and Maintain (OM)	1650	X	X
Oversee and Govern (OV)	341	X	X
Protect and Defend (DR)	783	X	X
Analyze (AN)	369		X
Collect and Operate (CO)	188		X
Investigate (IN)	15		X

Table 3. Job Openings and Degree Correlation to NICE Workforce Categories

The present and growing cybersecurity threats further exacerbate the increasing gap between the number of job openings and the available qualified cybersecurity professionals. The number of vulnerabilities in software is growing.
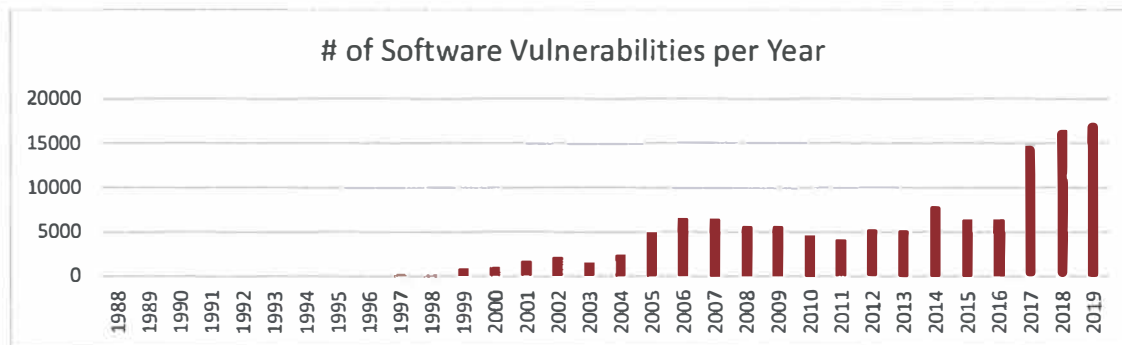

Figure 1. NIST National Vulnerability Database[7]

The attacks on Industrial Control Systems (ICS) and similar Operational Technology (OT) assets increased over 2000% since 2018.[8] ICS and OT assets are used for supervisory control and data acquisition (SCADA) systems that control machines in utilities, manufacturing, and other industrial use cases. The top five industries targeted by cybersecurity attackers in 2019 were: (1) Financial Services, (2) Retail, (3) Transportation, (4) Media and (5) Professional Services, and the number of records breached in 2019 was 8.5 billion.[9] According to the Verizon Data Breach Investigations Report, 71% of the breaches they investigated were financially motivated, with 56% of the breaches taking months or longer to discover.[10]

Hawaiʻi is particularly exposed as a target of these cybersecurity threats due to its unique position as:

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[7] "Statistics Results", National Vulnerability Database,
https://nvd.nist.gov/vuln/search/statistics?form_type=Basic&results_type=statistics&search_type=all (retrieved February 16, 2020).
[8] "X-Force Threat Intelligence Index 2020", IBM Security, https://www.ibm.com/downloads/cas/DEDOLR3W, (retrieved February 16, 2020).
[9] Id.
[10] "2019 Data Breach Investigation Report", Verizon, https://enterprise.verizon.com/resources/reports/2019-data-breach-investigations-report.pdf (retrieved February 16, 2020).

Program Proposal
Bachelor of Science in Cybersecurity
April 21, 2020

- Host to Headquarters, U.S. Indo-Pacific Command, federal facilities, and other U.S. intelligence agencies that require a sustained, qualified cyber workforce of college graduates in Hawai'i; and
- A center for the hospitality, financial, commerce, health, and technology industries in the Pacific.

The proposed BS-CYBR will directly address these threats and the cybersecurity needs of Hawai'i by developing local cybersecurity professionals with advanced skills that can immediately enter the workforce upon graduation.

Outcomes

The proposed BS-CYBR program will provide students with the necessary cybersecurity knowledge, skills, and experience to support the advanced cybersecurity requirements of public and private-sector entities.

The intended outcome of the proposed BS-CYBR program is to provide students with a focused education concentrating on cybersecurity. It builds upon a foundation in math, science, computer science and cybersecurity with advanced technical cybersecurity topics:

- Defensive and proactive activities
- Industrial Control Systems and SCADA cybersecurity
- Cyber investigations
- Cyber detection and response
- Communications and wireless technologies

As a result, graduates of the BS-CYBR will be able to holistically address the latest cybersecurity threats by applying the full spectrum of knowledge and advanced technical capabilities they acquired. Also, this curriculum is intended to align with the requirements of the National Security Agency (NSA) National Center of Academic Excellence in Cyber Operations.[11] The U.S. Department of Homeland Security recognizes degree programs in Cyber Operations, like the BS-CYBR, as a STEM field of study.[12]

Alignment with the UH System

The University of Hawai'i Integrated Academic and Facilities Plan (April 20, 2017) enumerates several guiding principles in applying resources efficiently, coherently, and collaboratively. This new program aligns with the following key principles: (1) minimizing the duplication of academic programs, (2) increasing and diversifying enrollment, and (3) prioritizing systemwide articulation and transferability in all academic planning.

Unique Program

This new program is unlike any program in Hawai'i by focusing on the technical and engineering aspects of cybersecurity as well as the full scope of global cyber implications. The diversity of offerings is

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[11] "Criteria for Measurement for CAE Cyber Operations Fundamental", National Security Agency Central Security Service, https://www.nsa.gov/resources/students-educators/centers-academic-excellence/cae-co-fundamental/ (retrieved February 16, 2020).
[12] STEM Designated Degree Program Lists Effective May 10, 2016, https://www.ice.gov/sites/default/files/documents/Document/2016/stem-list.pdf (retrieved February 16, 2020).

Program Proposal
Bachelor of Science in Cybersecurity
April 21, 2020 Page **5** of **15**

unmatched in the State and positions the University of Hawai'i to be among an elite list of universities in the country that meet the rigorous designation requirements of the National Security Agency (NSA) and the Department of Homeland Security (DHS) as Center of Academic Excellence in Cyber Operations.

Support Articulation of Courses System-Wide

All of the courses that meet university general education and lower-division requirements for this new program are offered by the University of Hawai'i campuses and are included in existing articulation agreements with Leeward, Honolulu, Kapi'olani and Windward Community Colleges. These existing articulation agreements will be expanded to provide pathways into the BS-CYBR program.

Increase and Diversify Enrollment

This new program requires students to complete highly technical cybersecurity curricula that relate to critical infrastructure and cybersecurity incident response investigations. It covers the three fundamental areas of cyber considerations: Information Networks, Defensive Cyber Security, and Proactive Cyber Security. This new program will be attractive to students who want to focus on the science, technology, and engineering of cybersecurity and cyber mission areas.

Alignment with the UH West O'ahu – Strategic Action Plan 2018-2028

The UH West O'ahu Strategic Action Plan identified opportunities and challenges that will impact the university's ability to fulfill its 10-year goals: (1) Creating a niche (opportunity), (2) Enrollment and retention (challenge), and (3) Distinguish from other 4-year institutions. This new program meets those opportunities and challenges.

Creating a Niche

The new program is an innovative baccalaureate degree program in a sought-after-field. Cybersecurity skills are in high demand. The BS-CYBR is unique as it focuses on the science, technology, and engineering of cybersecurity, as well as the complete breadth and scope that address all cybersecurity workforce domains.

Enrollment and Retention

New programs, degrees, and offerings such as the BS-CYBER will support increased enrollment and retention of both traditional and non-traditional students. The new program will draw students such as active-duty military personnel, law enforcement, current IT professionals desiring to specialize in cybersecurity, and new students who are seeking a more technical cybersecurity degree.

Distinguish from Other 4-year Institutions

This BS-CYBR will be UH West O'ahu's second Bachelor of Science degree, fulfilling the objective of expanding STEM education in the region. The BS-CYBER degree will also offer an opportunity for UH West Oahu to earn designation at an NSA/Department of Homeland Security (DHS) Center of Academic Excellence in Cyber Operations, the first in the State of Hawaii and one of the few in the U.S.

Program Organization

The BS-CYBR degree program establishes a solid math and science foundation to support a rigorous cybersecurity curriculum. The program is comprised of the following 120 credits:

- General Education: 31 credits
- Writing and Research: 9 credits
- Math and Statistics Requirements: 14 credits
- Cybersecurity Lower Division: 21 credits
- Cybersecurity Upper Division: 30 credits
- Capstone: 3 credits
- Electives: 12 credits (6 Upper and 6 Lower)

This program's course requirements focus on STEM and address the full breadth of cybersecurity mission areas: Network Operations, Defensive Cybersecurity, and Proactive Cybersecurity.

- Network Operations
  - ICS 111 Introduction to Computer Science I
  - ICS 211 Introduction to Computer Science II
  - ICS 184 Introduction to Networking
  - ICS 129 Introduction to Databases
  - ICS 240 Operating Systems
  - ISA 480C Communications and Wireless
- Defensive Cybersecurity:
  - ISA 275 Security Essentials
  - ISA 320 Fundamentals of Secure Software Programming;
  - ISA 340 Introduction to Digital Forensics
  - ISA 400 Management of Information Security
  - ISA 480I Cyber Investigations
  - ISA 480R Cyber Detection and Response
- Proactive Cybersecurity
  - ISA 330 Introduction to Proactive System Security
  - ISA 360 Cyber Competitions
  - ISA 430 Cybersecurity for Supervisory Control and Data Acquisition
  - ISA 450 Modern Cyber Conflicts

The math and statistics requirements include: MATH 115 Statistics, MATH 241 Calculus I, MATH 242 Calculus II, MATH 301 Introduction to Discrete Mathematics, SSCI 210 Statistical Analysis

The writing-intensive and research requirements include: SSCI 301 Methods & Techniques in Social Science Research, ITS 410 (WI) IT Project Management, APSC 486S (WI) Senior Project or APSC 490S (WI) Senior Practicum.

See Appendix A –Program Sheet, AY 2020-21 (draft) and Appendix B – Academic Map (draft)

Student Demand

Over the last ten years, the BAS-ISA program has grown and is fulfilling a growing demand from students for a quality cybersecurity education. Demand for cybersecurity programs is strong and evidenced by the number of institutions that have earned the NSA's designation as a National Center in Academic Excellence (CAE) in Cyber Defense (CAE-CD) -- two-hundred and seventy-seven.[13] UH West Oʻahu, UH Maui, and UH Mānoa (Cyber Defense Research) are among them.

The Institutional Research Office of the University of Hawaiʻi – West Oʻahu provided a projection of enrollment in the BAS-ISA program through 2025 in the row labeled "1" in the table below. Row "2" is a projection should the new BS-CYBR program become available in the Fall of 2020.

| | | | | | | | | | | | | Projections | | | | | |
Fall Semester	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BAS-ISA	12	25	36	58	76	82	77	106	141	160	169	162	151	164	170	182	190
BS-CYBR												34	60	67	71	77	81
												196	211	230	241	259	271

The projected enrollment with the new BS-CYBR considers the following:

- There is an expectation that a certain percentage of current BAS-ISA students will transition to the new BS-CYBR program over the next five years.
- Enrollment of a minimum average of 12 new students will enroll in the new BS-CYBR program over the next five years.

Program Resources and Efficiency

Resources

The new BS-CYBR program will be supported by existing resources supporting the BAS-ISA program. As a highly technical program, there is an additional focus on hands-on lab exercises. Therefore, lab resources, both physical and in the form of "cloud" or virtual resources, will be necessary as enrollment grows. A consistent issue with serving the UH West Oʻahu region is that, in many cases, students cannot purchase computers with sufficient capability to fully benefit from courses. Although a certain computing capacity is available on the UH West Oʻahu campus, this hands-on, lab-intensive program will likely exceed current computing resources at UH West Oʻahu as enrollment expands. However, for the initial program, funding is available through a grant from the Office of Naval Research (ONR) through AY 2019-2020 to complete required labs before the beginning of the Fall semester 2020. As enrollment increases, additional resources will be required, as indicated below. The resource projections below focus on the incremental resources required with the new BS-CYBR program.

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[13] Centers of Academic Excellence in Cyber Operations, National Security Agency Central Security Services, https://www.iad.gov/NIETP/reports/cae_designated_institutions.cfm (retrieved February 17, 2020).

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	Projections					
	2020	2021	2022	2023	2024	2025
BS-CYBR Students	34	60	67	71	77	81
FT Faculty	3	3	4	4	4	4
- Ratio	11	20	17	18	19	20
PT Faculty	2	2	2	2	2	2
Lecturers	2	2	3	3	3	3

The incremental annual expense starting in 2022 would be:

- $90,000 – Assistant Professor, Cybersecurity
- $10,000 - Lecturer

In terms of new facilities, a larger and modernized computer lab space will be required by 2021. At this time, there is a plan to utilize the space being vacated by the Creative Media program when that program moves to its new facilities in 2020. A lifecycle replacement for existing equipment and software will be required in 2022-23. That budget and funding source will be assessed at that time.

There is no cost to apply for and executing the due diligence to obtain the NSA CAE in Cyber Operations (CAE-CO) designation.

(CONTINUED ON THE NEXT PAGE)

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Program Differentiators

The University of Hawai'i (UH) system is fortunate to have more than one cybersecurity program. The most comparable programs to the new BS-CYBR are the Bachelor of Applied Science, Information Security and Assurance (UH West O'ahu) (BAS-ISA), and Bachelor of Science, Computer Science with Security Science Focus (UH Mānoa) (BS-CS SecSci). Below is a table enumerating the required cybersecurity-related courses for each program and clearly illustrates how each program differs from each other. Although they all share many foundational lower-division courses, they quickly diverge in the upper-division with separate focuses.

COURSE TOPIC	UHWO BS-CYBR	UHWO BAS-ISA	UHM BS-CS SecSci
Introduction to Computer Science I	ICS 111	ICS 111	ICS 111
Introduction to Computer Science II	ICS 211	ICS 211	ICS 211
Introduction to Databases	ICS 129	ICS 129	ICS 321
Introduction to Networking	ICS 184	ICS 184	ICS 315/351
Introduction to Discrete Mathematics	MATH 301		ICS 141
Operating Systems	ICS 240	ICS 240	ICS 332
Security Essentials	ICS 275	ICS 275	
Fundamentals of Secure Software Programming	ISA 320	ISA 320	
Introduction to Proactive System Security	ISA 330	ISA 330	
Introduction to Digital Forensics	ISA 340	ISA 340	
Management of Information Security	ISA 400	ISA 400	
IT Project Management	ITS 410	ITS 410	
Modern Cyber Conflicts	ISA 450	ISA 450	
Cyber Competitions	ISA 360		
Cybersecurity for SCADA	ISA 430		
Cyber Investigations	ISA 480I		
Cyber Detection and Response	ISA 480R		
Communications and Wireless	ISA 480C		
Capstone Project or Practicum	CYBR 486/490	ISA 486/490	
Program Structure			ICS 212
Discrete Mathematics for Computer Science II			ICS 241
Software Engineering I			ICS 314
Security and Trust I: Resource Protections			ICS 355
Security and Trust II: Information Assurance			ICS 455
Data Security and Cryptography			ICS 423
Software Engineering II or Artificial Intelligence for Games			ICS 414/464
Computer Security and Ethics or Computer System Security			ICS 425/426
Special Topics or Special Topics in Security			ICS 491/495

Another differentiating factor is the BS-CYBR's design is to meet the criteria to earn NSA's CAE-CO. *See* Appendix C – NSA-CAE Cyber Operations Fundamentals. As colleges mature their CAE-CD programs, the next level of cybersecurity education that students will seek, and institutions will need to offer, include

programs that address the complete set of cyber implications. At this time, only twenty-one institutions have achieved the CAE-CO designation.[14] Upon earning this designation, the BS-CYBR program will be among an elite group of programs in the nation, and the only program in the State recognized as a CAE-CO.

Finally, the BS-CYBR program at UH West O'ahu addresses the flexibility needs of full-time students and working professionals. Lower-division requirements can be completed at the community colleges and transferred pursuant articulation agreements. Also, eleven (11) of the upper-division courses are hybrid courses that combine the face-to-face classroom learning with online learning. This flexibility makes this BS-CYBR program responsive to the needs of degree-seeking professionals, including government employees, active/reserve military personnel, and working private-sector professionals.

Program Effectiveness

Assessment: Program effectiveness will be determined by looking at student achievement data. Student achievement data include the number of declared majors, annual degree attainment, and the number of students who graduate within five years. The attainment of the program's student learning outcomes will be assessed as part of the established and ongoing assessment process.

The proposed BS-CYBR will be subject to the campus Program Review process every five years, Annual Report of Program Data, and appropriate Western Association of Schools and Colleges (WASC) Senior College and University Commission (WSCUC) accreditation processes in which all programs participate. The Program Review process requires programs to report progress on student achievement data, perform an analysis of the course and program student learning outcomes assessment, review current curriculum and recommend changes, and determine the future need for additional resources.

Conclusion

There is an urgent need for highly skilled cybersecurity professionals across all industries. The proposed Bachelor of Science in Cybersecurity addresses this need by providing students a pathway to acquire this specialized knowledge and to practice these skills under provisional supervision. By hiring BS-CYBR graduates with these skills, employers with advanced cybersecurity requirements can be confident in their ability to identify, protect, detect, respond, and recover from cybersecurity threats.

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[14] Centers of Academic Excellence in Cyber Operations, National Security Agency Central Security Services, https://www.nsa.gov/resources/students-educators/centers-academic-excellence/cae-co-centers/ (retrieved February 17, 2020).

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Bachelor of Science in Cybersecurity, Cyber Operations

The goal of academic advising is to further enhance the educational mission of the university, and create quality, accessible advising partnerships with all students in a positive environment that supports student success. This advising sheet is for tracking purposes toward degree completion and is subject to change. Students also may track their academic progress via STAR Degree Check through STAR at www.star.hawaii.edu. Academic Advising appointments may be scheduled by calling 808-689-2689 or toll-free from neighbor islands at 866-299-8656.

Graduation Requirements (see the 2020-2021 catalog for any additional graduation requirements):

☐ 45 Upper Division Credits Minimum	☐ 3 Upper Division Writing Intensive Courses	☐ 2.0 *UHWO GPA*
☐ 120 Total Credits Minimum	☐ Focus Requirements (OC, HAP, ETH)	☐ 2.0 *CONCENTRATION GPA*
☐ 30 UHWO Credits		

General Education Requirements: 31 credits

Credits	Course Alpha / Number / Title
3	**Foundations Written Communications (FW)** ENG 100 Composition I
3	**Foundations Symbolic Reasoning (FS) OR Foundations of Quantitative Reasoning (FQ)** Recommend MATH 115 Statistics
6	**Foundations Global and Multicultural Perspectives (FG):** 6 credits from two *different* groups (A, B, C): *Group A: Primarily before 1500 CE (e.g.; HIST 151 or ANTH 151) *Group B: Primarily after 1500 CE (e.g.; HIST 152 or ANTH 152) *Group C: Pre-history to present
6	**Diversification Arts, Humanities & Literature (DA, DH, DL):** 6 credits from two different areas
3	**Diversification Social Sciences (DS):** 6 credits from two different areas
3	**Diversification Social Sciences (DS):** Different area from above.
3	**Diversification Natural Sciences (DB, DP, DY):** 3 credits from the biological sciences (DB):
3	3 credits from the physical sciences (DP): Recommend PHYS 151
1	1 credit of laboratory (DY): Recommend PHYS 151L

Writing Skills Requirements: 3 credits

Credits	Course Alpha / Number / Title
3	**ENG 200 Composition II or ENG 209 Business Writing**

Cybersecurity Math and Statistics Requirements: 14-17 credits

Credits	Course Alpha / Number / Title
0-3	**MATH 115 Statistics** *(may also count as FQ in General Education Above)*
4	**MATH 241 Calculus I**
4	**MATH 242 Calculus II**
3	**SSCI 210 Statistical Analysis I**
3	**MATH 301 Introduction to Discrete Mathematics**

Cybersecurity Core Requirements: 42-46 credits

Credits	Course Alpha / Number / Title
0-3	**PHYS 151 College Physics** *(may also count as DP in General Education Above)*
0-1	**PHYS 151 L College Physics Lab** *(may also count as DY in General Education Above)*
3	**SSCI 301 Methods & Techniques In Social Science Research (Ethics Focus)**
3	**ITS 410 IT Project Management (WI)**
3	**ICS 101 Digital Tools for Info World**
3	**ICS 111 Introduction to Computer Science I**
3	**ICS 113 Database Fundamentals OR ICS/ITS 129 Introduction to Databases**

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Credits	Course Alpha / Number / Title
3	ICS 184 Introduction to Networking
3	ICS 211 Introduction to Computer Science II
3	ICS 240 Operating Systems
3	ISA 275 Security Essentials OR CSNT 275 Security Essentials
3	ISA 320 Fundamentals of Secure Software Programming
3	ISA 330 Introduction to Proactive System Security
3	ISA 340 Introduction to Digital Forensics
3	ISA 400 Management of Information Security
3	ISA 450 Modern Cyber Conflicts (Ethics Focus Designation Pending)

Cyber Operations Concentration Requirements: 15 credits

Credits	Course Alpha / Number / Title
3	ISA 360 Cyber Competitions
3	ISA 430 Cybersecurity for Supervisory Control and Data Acquisition
3	ISA 480I Topics in ISA: Cyber Investigations
3	ISA 480R Topics in ISA: Cyber Detection and Response
3	ISA 480C Topics in ISA. Communications and Wireless

Capstone Requirement: 3 credits

Credits	Course Alpha / Number / Title
3	CYBR 486S Senior Project or CYBR 490S Senior Practicum (WI)

Elective Requirements: 5-12 credits

*See your Student Success Counselor to determine how many elective credits are needed.

Credits	Course Alpha / Number / Title
3	Upper Division (300-400 Level) Recommend: MATH, HLTH, PUBA, FORS or BUSA (examples: BUSA 340 Business Intelligence, BUSA 342 Practical Programming: Python. BUSA 348 Data Analytics for Business, BUSA 349 Data Analytics on the Cloud)
3	Recommend MATH, HLTH, PUBA, FORS
3	Recommend MATH, HLTH, PUBA, FORS
3	Recommend MATH, HLTH, PUBA, FORS

NOTES:
- The Faculty contact for this concentration is Michael Miranda, he may be contacted at mmiranda@hawaii.edu or 689-2481

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Appendix B – Academic Map (draft)

University of Hawai'i West O'ahu – BS-CYBR 4-year Academic Map 2020-21

Graduation Requirements
- 45 Upper Division Credits Minimum
- 120 Total Credits Minimum
- 30 UHWO Credits Minimum

- 3 Upper Division Writing Intensive Courses
- Focus Requirements (OC, HAP, ETH)

- 2.0 OVERALL GPA
- 2.0 UHWO GPA
- 2.0 CONCENTRATION GPA

Year 1

SEMESTER 1

REQ Fulfilled	COURSE	CR
Written CommFW	ENG 100	3
CYBR LD Core	ICS 101	3
FQ	Recommend: MATH 115	3
FGA/FGB/FGC	_____	3
DA/DH/DL	Recommend: HWST 107 or HAP	3
Credits		15
MILESTONE: Completion of ENG 100 and ICS 101; start Math		

SEMESTER 2

REQ Fulfilled	COURSE	CR
CYBR LD Concentration	ICS 111	3
CYBR LD Concentration	ICS 113 or 129	3
DA/DH/DL		3
Natural Sciences (DP or DP)	Physical Science	3
Natural Sciences (DY)	Lab	1
Elective	_____	3
Credits		16
MILESTONE: Completion of ICS 111 and ICS 113/129; prepared for MATH 241		

Year 2

SEMESTER 3 — Fall

REQ Fulfilled	COURSE	CR
CYBR LD Concentration	MATH 241	4
Writing Skills	ENG 200 or ENG 209/210/215	3
CYBR LD Concentration	ICS 184	3
CYBR LD Concentration	ICS 211	3
Social Sciences (DS)	_____	3
Credits		16
MILESTONE: Completion of MATH 241, ICS 184, ICS 211		

SEMESTER 4 — Spring

REQ Fulfilled	COURSE	CR
CYBR LD Concentration	MATH 242	4
CYBR LD Concentration	ICS 240	3
CYBR LD Concentration	ISA 275/CSNT 275	3
CYBR Math – Statistics	SSCI 210	3
Elective	Recommend: PUBA 101 (also DS)	3
Credits		16
MILESTONE: Completion of MATH 242, ICS 240, ICS 275, SSCI 210		

Year 3

SEMESTER 5 — Fall

REQ Fulfilled	COURSE	CR
CYBR Concentration	ISA 320	3
CYBR Concentration	ISA 330	3
CYBR Math	MATH 301	3
UD Elective	Recommend: BUSA 342	3
UD Elective	Recommend: BUSA 386 (WI)	3
Credits		15
MILESTONE: Completion of ISA 320, ISA 330, and first upper division WI		

SEMESTER 6 — Spring

REQ Fulfilled	COURSE	CR
CYBR Concentration	ISA 340	3
CYBR Methods and (DS)	SSCI 301	3
FGA/FGB/FGC	_____	3
Natural Sciences (DP or DP)	Biological or Physical Science	3
Elective		3
Credits		15
MILESTONE: Completion of ISA 340 and SSCI 301		

Year 4

SEMESTER 7 — Fall

REQ Fulfilled	COURSE	CR
CYBR Writing	ITS 410 (WI)	3
CYBR UD	ISA 400	3
CYBR UD	ISA 450	3
CYBR UD	ISA 360	3
CYBR UD	ISA 480I	3
Credits		15
MILESTONE: Completion of ITS 410, ISA 400, and ISA 450. Schedule a final degree audit with your Academic Advisor.		

SEMESTER 8 — Spring

REQ Fulfilled	COURSE	CR
CYBR UD	ISA 430 – Spring only	3
CYBR UD	ISA 480R – Spring only	3
Elective	Recommend: ETH	3
CYBR Capstone & WI	CYBR 486S (WI) or CYBR 490S (WI)	3
Credits		12
MILESTONE: Completion of Capstone course; Graduate!		

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Appendix C – NSA-CAE Cyber Operations Fundamentals

Another objective of this program is to qualify UH West O'ahu for an additional designation as an NSA Center of Academic Excellence in Cyber Operations Fundamentals. To achieve this designation, the BS-CYBR must include the necessary content[15]:

1. **MANDATORY**
   a. M.1 Low Level Programming Languages (must include programming assignments to demonstrate that students are capable of the desired outcomes)
   b. M.2 Software Reverse Engineering (must include hands-on lab exercises)
   c. M.3 Operating System Theory
   d. M.4 Networking (must include hands-on lab exercises)
   e. M.5 Cellular and Mobile Technologies
   f. M.6 Discrete Math and Algorithms
   g. M.7 Overview of Cyber Defense (must include hands-on lab exercises)
   h. M.8 Security Fundamental Principles (i.e., "First Principles")
   i. M.9 Vulnerabilities
   j. M.10 Legal and Ethics
2. **OPTIONAL CONTENT (10 of the following 17)**
   a. O.1 Programmable Logic (must include hands-on lab exercises)
   b. O.2 Wireless Security (must include hands-on lab exercises)
   c. O.3 Virtualization -> should be Virtualization (must include hands-on lab exercises)
   d. O.4 Cloud Security/Cloud Computing
   e. O.5 Risk Management of Information Systems
   f. O.6 Computer Architecture (includes Logic Design)
   g. O.7 Microcontroller Design (must include hands-on lab exercises)
   h. O.8 Software Security Analysis (must include hands-on lab exercises)
   i. O.9 Secure Software Development (Building Secure Software) (includes hands-on labs)
   j. O.10 Embedded Systems (must include hands-on lab exercises)
   k. O.11 Digital Forensics (must include hands-on lab exercises)
   l. O.12 Systems Programming (must include hands-on lab exercises)
   m. O.13 Applied Cryptography
   n. O.14 Industrial Control System (ICS)
   o. O.15 User Experience (UX)/Human Computer Interface (HCI) Security
   p. O.16 Offensive Cyber Operations
   q. O.17 Hardware Reverse Engineering (must include hands-on lab exercises)

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[15] https://www.nsa.gov/Resources/Students-Educators/centers-academic-excellence/cae-co-fundamental/requirements/

NEW PROGRAM RESOURCE TEMPLATE
This template identifies new resources needed to implement the proposed program and its relationship to the existing departmental/division

Part I: Program Overview
Campus: University of Hawaii - West Oahu
Proposed degree/certificate: Bachelor of Science in Cybersecurity
Expected first term to offer new program: Fall 2020
College/Department/Division: Division of Business Administration
Programs currently offered by the College/Division: Bachelor of Arts in Business Administration, Bachelor of Applied Science

	Previous Year 2017-18	Previous Year 2018-19	Current Year 2019-20	Projected Year 1 2020-2021	Projected Year 2 2021-22	Projected Year 3 2022-23	Projected Year 4 2023-24	Comments
A. ENROLLMENT (Fall Headcount)								
Projected: BS in Cybersecurity				34	60	67	71	Assumes a percentage of ISA students converting to BS-CYBR and accounts for projected graduates.
Undergraduate				34	60	67	71	
Graduate								
B. COMPLETION (Annual)								
Projected: BS in Cybersecurity				5	15	25	35	
Undergraduate				5	15	25	35	
Graduate								
C. COURSES, SECTIONS, SSH (Annual)								
Projected New Courses				10	11	12	13	
Projected New Sections				15	16	17	19	
Projected New Course SSH				813	861	978	1023	
Current Courses Offered	7	8	9					
Current Sections Offered	8	12	15					
Current Annual SSH	417	627	768					

Part II: Program Resources

D. CURRENT RESOURCES/FUNDING	Current Year
Tuition/Special Fund Allocation	$0
General Fund Allocation	$141,878
Summer Session Allocation	$0
Program/Course Fee Allocation	0

E. CURRENT ACADEMIC PERSONNEL	Current Year	
Current Faculty FTE	0.9375	prorating the Faculty FTE contribution to the 15 sections offered in AY 19-20.
Current Faculty Salaries ($)	$98,610	
Current Lecturers ($)	$43,268	prorating the Lecturer FTE contribution to the 15 sections offered in AY 19-20; base on Step 2 salary of
Current Graduate TAs	0	

	Current Year 2019-20	Projected Years 2020-2021	2021-22	2022-23	2023-24	Comments
F. PROJECTED ACADEMIC PERSONNEL (I-Faculty)						
Projected New Faculty FTE	0	0	1	0	0	
Projected New Faculty Salaries ($)	0	0	90,000	0	0	
Projected New Lecturers ($)	0	0	$6,000	$12,240	$24,972	Needed for 300-level courses as Faculty FTE focus on 400
Projected New Graduate TAs	0	0	0	0	0	

G. TOTAL NEW PROGRAM RESOURCES (e.g., new positions, lecturers, equipment or software for labs, accreditation fees, insurance, compliance costs, reporting, vendor contracts, etc.)						
Personnel			$96,000	$12,240	$24,972	
NSA CAE Cyber Operations Designation	0	$0	$0	$0	$0	
Total New Resources Needed			$96,000	$12,240	$24,972	TOTAL: $133,212

H. Indicate if new facilities are needed to support the proposed program (include any off-campus facilities)	Not until 2022. We will likely need a larger computer lab space.
I. Explain how new program resources will be funded (e.g., reallocation, grants, contracts)	From 2020-2022, funding from the ONR Cybersecurity grant will cover new resource requirements. Additional equipment/software services needed in 2022-23.

J. Indicate if there are other significant resources anticipated beyond the projected years	

K. ADDITIONAL COMMENTS:

Part III: Approvals

By signing below, I have reviewed and approve the New Program Resource Template. (printed name, signature and date)
Department/Division Chair:
College/Department Administrative Officer:
Dean:
Vice Chancellor for Academic Affairs:

Vice Chancellor for Administration:

New Program Resource Template Details

https://www.hawaii.edu/institutionalresearch/enrReport.action?reportId=ENRT00 Campus data may be used when majors are a subset of enrollment reported in
https://www.hawaii.edu/institutionalresearch/degreeReport.action?reportId=MAPS_DEG_TOC
https://www.hawaii.edu/irodr/login.do?
D. Current Resources/Funding. Data should come from the College/Department's Administrative Officer using the most current information available.
E. Current Academic Personnel. Instructional costs without fringe. Direct salary cost for all current faculty and lecturers teaching in the program.
F. Projected Academic Personnel. Instructional costs without fringe. Projected direct salary cost for all new faculty and lecturers teaching in the program.
instructional cost, special equipment/software, fees, etc.
H. Facilities. Indicate if any new facilties (classrooms, labs, buildings, etc.), including off-campus facilities, are needed to support the proposed program.
reallocation.
Program Resource Template.

Reviewed by: Vice Chancellor of Administration: 1/25/17
Reviewed by: Vice Chancellors of Academic Affairs: 2/14/17

MINUTES

BOARD OF REGENTS MEETING

MAY 21, 2020

Note: On January 30, 2020, the World Health Organization declared the outbreak of COVID-19 a public health emergency of international concern, subsequently declaring it a pandemic on March 11, 2020. On March 16, 2020, Governor David Y. Ige issued a supplementary proclamation that temporarily suspended Chapter 92, Hawaii Revised Statutes, relating to public meetings and records, "to the extent necessary to enable boards to conduct business in person or through remote technology without holding meetings open to the public."

I. <u>CALL TO ORDER</u>

Chair Ben Kudo called the meeting to order at 10:59 a.m. on Thursday, May 21, 2020. The meeting was conducted with regents participating from various locations.

<u>Quorum (12)</u>: Chair Ben Kudo; Vice-Chair Jan Sullivan; Vice-Chair Wayne Higaki; Regent Simeon Acoba; Regent Kelli Acopan; Regent Eugene Bal; Regent Michael McEnerney; Regent Randy Moore; Regent Alapaki Nahale-a; Regent Michelle Tagorda; Regent Robert Westerman; and Regent Ernest Wilson Jr.

<u>Others in attendance</u>: President David Lassner; Vice President (VP) for Administration Jan Gouveia; VP for Community Colleges Erika Lacro; VP for Legal Affairs/University General Counsel Carrie Okinaga; VP for Academic Planning and Policy Donald Straney; VP for Research and Innovation Vassilis Syrmos; VP for Budget and Finance/Chief Financial Officer Kalbert Young; VP for Advancement/UH Foundation (UHF) Chief Executive Officer Tim Dolan; UH-Mānoa (UHM) Provost Michael Bruno; UH-Hilo (UHH) Chancellor Bonnie Irwin; UH-West Oʻahu (UHWO) Chancellor Maenette Benham; Executive Administrator and Secretary of the Board of Regents (Board Secretary) Kendra Oishi; and others as noted.

II. <u>APPROVAL OF THE MINUTES OF THE APRIL 16, 2020 MEETING</u>

Vice-Chair Sullivan moved to approve the minutes of the April 16, 2020, meeting, seconded by Regent Wilson, and the motion carried, with all members present voting in the affirmative.

III. <u>PUBLIC COMMENT PERIOD</u>

Board Secretary Oishi announced that the Board Office received numerous written testimony offering comments relating to the Maunakea management restructuring plan. While most of the written testimony received was in opposition to the management restructuring plan agenda item, there appeared to be confusion as to the action that was scheduled to be taken by the board as comments generally were directed at the issue of the overall governance of Maunakea, which was not under consideration for board action, rather than the internal restructuring of various university entities that currently

have oversight and management responsibilities for Maunakea. Written testimony offering comments on the Maunakea management restructuring plan agenda item may be found on the board website as follows:

[Written Testimony Comment Received](#)

[Written Testimony Comment Received2](#)

[Written Testimony Comment Received3](#)

[Late Written Testimony Comment Received](#)

[Late Written Testimony Comment Received2](#)

Board Secretary Oishi further noted that two individuals had registered to provide oral testimony. Mr. Hank "Hanalei" Fergerstrom and Rev. M. Kalani Souza.

Noting that he represented Na Kupuna Moku O Keawe, Mr. Fergerstrom stated that the organization opposed the approval of the Maunakea management restructuring plan. Mr. Fergerstrom commented that the process used to develop the proposed management restructuring plan appeared to lack transparency and openness as Na Kupuna Moku O Keawe, a Maunakea stakeholder, had neither been consulted on, nor received any draft of, the proposed plan and as such was unaware of its contents. Mr. Fergerstrom remarked that consultation and inclusion of all Maunakea stakeholders in any management issue regarding Maunakea is crucial and should be given utmost consideration by the board.

Chair Kudo clarified that there were two separate reorganization issues involving Maunakea management. The first issue, which is the agenda item under consideration by the board at this meeting, deals with administrative, organizational, and internal restructuring of the various entities of the university that currently are in existence and have oversight and management responsibilities for Maunakea. The second topic addresses the broader issue of the governance and management of the totality of Maunakea, which is not being considered at this meeting. Overall management and governance of Maunakea is an issue that will be subject to a lengthy process involving more than the board, including numerous government entities and stakeholders, and will include opportunities for input from a number of sources, including the community. Although the ultimate decision on the overall governance of Maunakea is not one that the board will make, he stated that the board initiated a process to begin understanding, assessing, and discussing various management governance alternatives, some of which were proposed to address criticisms raised regarding the governance of Maunakea. Chair Kudo noted the importance of these discussions to allow the board to advocate for changes in an informed manner.

Rev. Souza commented on the approval of the Maunakea management restructuring plan noting the lack of transparency and involvement of indigenous peoples in the process. He stressed that lack of transparency erodes public confidence and trust and that it would be in the board's best interest to be as transparent and forthright as possible, particularly with this contentious issue.

IV.   REPORT OF THE PRESIDENT: COVID-19 UPDATE

President Lassner updated the board on the university's current situation with regard to the COVID-19 public health crisis noting that the situation remains dynamic which requires the university to continue to maintain flexibility. He stated that the ability of faculty, staff, and students of the university to rise to the occasion and adapt to unexpected challenges amidst a new teaching and learning environment allowed the educational mission of the university to move forward.

Despite numerous challenges, the university was able to successfully complete the spring semester and fulfill its obligations to its students. The success in the use of online and distance learning that allowed completion of the spring semester was not only experienced by the university itself but also by the university's early college programs. Through a collaborative partnership between the various campuses of the university system and the State Department of Education, 231 early college education courses were offered during the spring semester, 228 of which were successfully completed and 3 of which required cancellation for various reasons.

As expected, the university's graduating class of 2020 will be entering a job market that has been dramatically altered by the COVID-19 crisis. As university graduates face one of the most difficult job markets in modern history, serious consideration may be given to pursuing further educational opportunities through enrollment in graduate school which would increase a graduate's qualifications when the employment market improves. The administration is hoping that many of UH's graduates consider this track.

Similarly, Hawai'i's class of 2020 high school graduates will be facing extremely challenging times. The administration is viewing this as an opportunity to encourage the 45 percent of high school graduates who do not pursue higher education to consider changing their plans and attend a college or university in the fall. To this end, the community colleges have partnered with Hawai'i P-20 Partnerships for Education in developing the Next Steps to Your Future program (Next Steps) which is specifically designed to engage public high school graduates on all islands with higher education and career options. Mainly supported through private philanthropy, Next Steps is a summer onramp program that connects graduating high school seniors to available post-secondary education, training, and employment opportunities. Next Steps also includes the Hawai'i P-20 Summer Advising Initiative which links high school graduates with both general and personal advising to allow them to make informed decisions and take the critical steps needed to achieve their post-high school education plans. The Next Steps program has received tremendous interest from public high school graduates from the class of 2020 with over 580 students signed up for advising.

As part of the Next Steps program, the community colleges are also offering free, online Next Step: Career Exploration classes to Hawai'i's public high school graduates. Through these summer classes, students can learn how to navigate college; discover the education and training available at UH; determine whether to enroll in college, seek employment, or both; explore career options; develop career plans; and identify next steps toward their career and life goals. Enrollment in these classes will also allow students to begin earning credits towards a college degree. Interest in this program has

been strong with over 700 students registering for the program to date and 660 students scheduled to attend classes.

The university is forging ahead with plans to reopen campuses this fall and continues to take actions to ensure the health and safety of returning students, faculty, and staff. Since a safe return to campus can only take place when measures for physical distancing and hygiene are in place to lessen the risks of exposure, working teams have been assembled on each campus as part of the planning and preparation process. These working teams will address essential areas critical to meeting the unique needs of each campus for their anticipated fall reopening and will be using recently updated public health guidance from the Centers for Disease Control and Prevention (CDC) that is specific to the reopening of institutes for higher education (IHE).

The university's first summer session is slated to begin on May 26 with all courses being conducted online. Enrollment for the first summer session is strong with enrollment in both undergraduate and graduate level courses experiencing increases over the same period in 2019. The second summer session will provide the university with the opportunity to begin testing plans for a hybrid form of instruction which integrates both safe on-campus teaching with online instructional activities, a plan which the university is anticipating to fully implement in the fall.

As the world begins to emerge from the COVID-19 pandemic, it is expected that society will be facing a new normal until a vaccine or adequate treatment modalities are developed or herd immunity is achieved. Components of this new normal such as screening, testing, and contact tracing, as well as possible quarantining of individuals, are fundamental to any recovery efforts being undertaken and the university's intellectual, research, and instructional capacity is key to Hawai'i's recovery efforts. President Lassner announced that UHM and UHWO have partnered with the State Department of Health to provide training for an initial cohort of 200 individuals in contact tracing that will allow the state to meet its workforce needs for this effort. The community colleges will also be training more community health workers to assist individuals in the most disadvantaged communities which have tended to experience greater public health impacts from the COVID-19 pandemic. Additionally, JABSOM and the City and County of Honolulu have created a partnership to establish a testing lab which will serve multiple purposes including helping to increase testing among disadvantaged communities, driving innovation in the rapidly changing field of coronavirus testing and allow for pioneering of new testing methods that will assist Hawai'i and beyond, assisting with the university's requirements for testing within the UH community, and serving as a platform to enable the university to compete for federal research funding anticipated with regard to coronavirus and other infectious diseases.

The university also continues planning and developing strategies to prepare for and address multiple financial scenarios arising from the COVID-19 crisis and the impacts these scenarios will have on the university. While the full-scale impact of the COVID-19 crisis on the State's general fund is not yet known, all indications are that it will be significant and the university is anticipating budget shortfalls since general fund appropriations account for approximately half of the university's operating dollars.

Although deposits for fall enrollment have increased at some campuses, actual enrollment and associated tuition revenue remain uncertain as students and families, both in Hawai'i and abroad, are weighing their options and making their higher education decisions later than usual. Uncertainty also exists on whether the federal government will provide additional stimulus funding and, if so, how these funds will be distributed to IHEs.

Citing reports that universities are contemplating various changes to their operations to mitigate possible COVID-19 outbreaks such as adjusting academic calendars to shorten the academic year or requiring reconfigurations to student housing, Reqent McEnerney asked whether similar plans were being considered by the university. President Lassner replied in the affirmative. He noted that IHEs across the country have been sharing experiences and ideas on ways to mitigate the effects of COVID-19 but that different conclusions are being reached on a number of issues. While the university is not contemplating changing its semester dates, it is considering changing the ways in which classes are offered including a mix of online and in-person course instruction and adjusting class times. Additionally, every classroom on every campus throughout the system is being assessed to determine maximum capacity when taking into consideration CDC guidance and recommendations which will probably result in smaller class sizes.

Regent McEnerney noted that many students may not be returning to IHEs that they were attending in the spring semester, opting instead to attend local colleges and universities, and asked how the university planned to address the transfer of credits with other institutions for these students. President Lassner replied that he recently signed an agreement between higher education institutions across the country that deals with general education learning outcomes known as the interstate passport system. This agreement will allow for easier transfer of general education credits/requirements for students. Discussions between IHEs are still ongoing with regard to major coursework requirements as these are unique to each institution.

Regent Wilson commented that while much of the focus on the health and well-being of individuals during the COVID-19 pandemic has been on physical health, it was important to also consider the impacts the pandemic has had on the mental health of individuals and commended the university administration for not overlooking this issue. President Lassner assured the board that the importance of the mental health of individuals, particularly those associated with the university, is a constant topic of discussion among members of the administration.

V.   REPORT OF THE UNIVERSITY OF HAWAI'I FOUNDATION

VP/UHF CEO Dolan provided a brief report on the fundraising efforts of UHF stating that he was optimistic about UHF's direction and effort in supporting the ten campuses of the UH System. He cautioned, however, that UHF will face challenges in its fundraising efforts and in fulfilling its mission over the next fiscal year due to economic and financial uncertainties caused by the COVID-19 pandemic.

UHF began the fiscal year with a goal of raising $75 million. UHF has raised slightly over $70 million to date and fully expects to surpass its $75 million goal by the end of this fiscal year. VP Dolan noted that it was encouraging that the high-volume, low-dollar donations that are usually garnered by UHF's annual fund drive through efforts such as phone calls, e-mails, and donation requests sent through the mail, experienced an increase of 15 percent over last year despite these fundraising efforts being hampered by the COVID-19 pandemic. He reiterated, however, that UHF is expecting fundraising during the next fiscal year to be difficult, particularly among major gifts donors where UHF acquires a majority of its funds. UHF also is continuing its efforts to capture the attention of ultra-high net-worth individuals and organizations that have not experienced as great a financial impact from the COVID-19 pandemic and may serve as a source of philanthropy for the university.

Mr. John Han, Chief Operating Officer for UHF, presented an overview of the finances for UHF as of March 31, 2020. He reported that UHF's net assets totaled $540 million, which was a decrease of approximately $3 million in comparison to the same period last year, and that net operating revenues for UHF were approximately $11.2 million, which was an increase of approximately $1 million over the same period in 2019. Mr. Han explained that much of the increase in net revenues resulted from an increase in fee revenue as a result of a 17 percent increase in non-specific, cash donations made to UHF. UHF incurred $8.9 million in expenses, approximately $800,000 less than last year, but it was stressed that the decrease in expenses was primarily due to 11 unfilled vacancies at UHF.

Mr. Han briefly reviewed UHF funds expended by various UH programs for the 2020 fiscal year highlighting the reasons for the slight increase in spending witnessed by the faculty and academic support program and capital projects program.

Given the number of vacancies at UHF and that Hawaiʻi is currently experiencing a high rate of unemployment, Regent McEnerney asked whether UH graduates were being recruited to work at UHF. VP Dolan responded in the affirmative but explained that a number of the vacancies are in roles that require particular skills and UHF is being very methodical in its approach to hiring individuals for these positions.

Regent McEnerney inquired as to how the relocation of UHF offices from Bachman Hall to facilities located on King Street has impacted its development. VP Dolan replied that, although UHF is currently located at off-campus facilities, most of its major fundraising activities are already embedded in academic programs located on campus. The main impact of being located at off-campus facilities for UHF is in increased expenses caused by rent payments.

VI. COMMITTEE AND AFFILIATE REPORTS

A. Report from the Committee on Academic and Student Affairs

Committee Chair Wilson gave a brief report on actions taken by the Committee on Academic and Students Affairs at its recently concluded meeting noting that the committee met and considered recommendations made by the administration to change

three programs: Bachelor of Arts in Public Health at UHM; Bachelor of Arts in Pharmacy Studies at UHH; and Graduate Program for Doctoral and Master of Science Degrees in Marine Biology at UHM, from provisional to established status and to establish one new program, Bachelor of Science in Cybersecurity at UHWO. The committee recommended approval of these actions by the board.

Chair Wilson also noted that the committee had been provided information from the UH Student Caucus for its spring 2020 update, as well as a video presentation. While the student caucus could not provide their presentation in person due to present circumstances, he recognized and acknowledged their outstanding work and thanked the students for sharing their thoughts and ideas with the committee and the board. He also thanked Regent Acopan for all her efforts and hard work with the UH Student Caucus.

B. Report from the Committee on Personnel Affairs and Board Governance

Committee Chair Tagorda provided a brief recap of actions taken by the Committee on Personnel Affairs and Board Governance at its recently concluded meeting. She reported that the committee met and considered two items including amendments to Regents Policy (RP) 9.212 with regard to Executive and Managerial (EM) Personnel Policies and amendments to RP 4.201, Mission and Purpose of the University, RP 4.202, Strategic Planning, and RP 4.203, Unit Academic Plans.

Committee Chair Tagorda stated that the proposed amendments to RP 9.212 would provide the board with greater oversight over salary adjustments for EM positions in excess of the usual percentage range of adjustments. She highlighted that the proposed policy changes would differentiate annual salary adjustments from other salary adjustments and require board approval for adjustments in excess of 5 percent of the base salary for EMs reporting to a position that reports directly to the board and for all EM appointments exceeding the maximum of the range in the salary schedule. She stated that the committee recommended approval of the proposed policy amendments.

The committee also reviewed and discussed proposed policy changes to RP 4.201, RP 4.202, and RP 4.203, as a follow-up to discussions that occurred during the February board meeting. Chair Tagorda stated the changes will conform these policies to the Integrated Academic and Facilities Plan that was previously adopted by the board and which the administration has already been using to guide its activities. However, she noted that changes to policies related to strategic planning may be subject to consultation. Accordingly, the committee recommended board approval of amendments to these policies subject to the administration conducting the necessary consultation by September 30, 2020.

A review and discussion on the committee's activities for the year also took place.

C. Affiliate Reports

There were no affiliate reports.

VII. AGENDA ITEMS

A. **Consent Agenda**

 1. **Approval to Change from Provisional to Established Status: Bachelor of Arts Degree in Public Health, UHM**

 2. **Approval to Change from Provisional to Established Status: Bachelor of Arts in Pharmacy Studies, UHH**

 3. **Approval to Change from Provisional to Established Status: Marine Biology Graduate Program for Doctoral and Master of Science Degrees in Marine Biology, UHM**

 4. ==**Approval for the Establishment of a Provisional Bachelor of Science in Cybersecurity, UHWO**==

 5. **Approval of Amendments to Regents Policy 9.212, Executive and Managerial Personnel Policies**

Prior to voting on the consent agenda, Chair Kudo stated that Regent Tagorda had recused herself from voting on agenda item A.1, relating to the Bachelor of Arts Degree in Public Health at UHM.

Regent Moore moved to approve the consent agenda, seconded by Regent Wilson, and noting the excused absence of Regent Acopan and the recusal of Regent Tagorda on agenda item A.1, the motion carried with all members present voting in the affirmative.

B. **Approval of the Maunakea Management Restructuring Plan**

Prior to the presentation, Chair Kudo reiterated that this agenda item involved the administrative, organizational, and internal restructuring of the various entities of the university that currently are in existence and have oversight and management responsibilities for Maunakea and did not address the overall governance of Maunakea. Given some of the confusion surrounding this agenda item, he stated that he would be recommending the deferral of this matter until the board's June meeting to allow for further consultation with stakeholders.

Dr. Greg Chun, Executive Director of Maunakea Stewardship, stated that the administration was requesting approval of the internal management restructuring and reorganization plan for Maunakea (Plan) and provided a brief summary of the report on the Plan presented to the board at its meeting on April 16, 2020, noting that the development of the Plan, as well as the report presented, was a required action under Board Resolution 19-03. He repeated that the Plan merely encompassed administrative, organizational, and internal restructuring of entities of the university that currently are in existence and have oversight and management responsibilities for Maunakea and did not address overall governance issues.

Dr. Chun stated that the Plan was developed using a systematic approach to gather information that was collected across a broad swath of stakeholder groups including government agencies, elected officials, private landowners, other stakeholders, and numerous interested parties. The process to gather this information involved over 89 meetings, presentations, and conversations between November 6, 2019, and April 16, 2020; stakeholder meetings conducted by consultants working on the Maunakea Master Plan (Master Plan) update which are ongoing; and feedback received over the course of eight public hearings which were held as part of the administrative rulemaking process regarding Maunakea. As a result of this methodical approach to gathering information and input on the management of Maunakea, the administration developed six key objectives that were used as a guide in the establishment of the Plan. These objectives included improving transparency and lines of authority and accountability across management units; organizing management functions around mission-critical activities; clarifying the university's regulatory, stewardship, and advocacy roles by separating these functions within the university organization; leveraging and optimizing existing networks and partnerships to maximize resources and expertise; broadening, diversifying, and elevating stakeholder input in decision making; and maintaining governance continuity to minimize disruption to the maximum extent possible.

Through this analysis and information gathering process, the administration learned that one of the major issues of the current internal management structure for Maunakea is its multijurisdictional nature which has created vagueness and confusion with regard to management policy, responsibility, and authority. To address this issue, the Plan seeks to take a more unified approach to the management of Maunakea. Under the Plan, the Office of Maunakea Management (OMKM), which is currently under the jurisdiction of UHH, and Maunakea Support Services (MKSS), which is currently under the jurisdiction of the Institute for Astronomy at UHM, would be combined into a single entity to be known as the Center for Maunakea Stewardship (Center) that would be placed within UHH and led by an Executive Director who would be directly responsible for oversight of all the operations of the Center and report directly to UHH. It was noted that the Plan seeks to execute a merger strategy for OMKM and MKSS that was called for in the 2000 Master Plan which is currently in effect and was developed with broad community input and vetted and approved by the board. While the Plan does not contain every concern, suggestion, or idea received during the information gathering process, it seeks to accomplish what is in the best interest of the overall mission of the university while achieving the right balance between stakeholder interests, the responsibility to properly steward Maunakea, the responsibility to the community, and legal commitments and requirements.

Chair Kudo mentioned that the internal restructuring and reorganization of university entities charged with management of Maunakea is a dynamic situation and that adjustments will need to be made as circumstances change. However, it is important that the university continue efforts to increase the efficiency and effectiveness of its management responsibilities regarding Maunakea and the Plan is an effort to accomplish this goal. While decisions on the broader issue of the overall governance of Maunakea may ultimately impact the university's management role, he stated that action on the internal restructuring and reorganization efforts needed to be taken now

because of the unknown timeframe for decisions regarding this broader governance issue which could possibly take years to complete.

Vice-Chair Higaki commented that he supported Chair Kudo's decision to defer this agenda item until the next board meeting and reported that MKMB and Kahu Kū Mauna were in the process of scheduling meetings to discuss this issue, as well as other issues involving Maunakea, and that he and Regent Nahale-a, who both serve on MKMB, can obtain feedback on the Plan from both groups.

Regent Nahale-a noted that much of the frustration surrounding Maunakea over the years has been the lack of clarity as to management authority and accountability and that he is confident that the new management structure contained in the Plan addresses this issue. He stated that he also supports Chair Kudo's recommendation to defer this agenda item until the next board meeting remarking that most of the criticism received on this agenda item mentioned a lack of proper engagement and consultation, as well as a lack of sufficient opportunities to provide input and feedback, on the Plan. He also stated that the one month deferral of this issue will allow relationships with stakeholders to be maintained and improved.

Regent Acoba also supported the deferral of this issue until the next board meeting. He indicated that the reorganization is not only internal. The actions taken on Maunakea are affected by the master plans. The reorganization changes the roles of the parties responsible for the management and oversight of Maunakea and also creates a new Center with an executive director and a deputy director in the future. He noted that organizations that the university was supposed to be closely working with on this issue such as MKMB, Kahu Kū Mauna, and the observatories, testified that inadequate consultation occurred and that additional time was necessary to fully vet the Plan and respond accordingly. Their letters raise matters not raised in the presentation of the reorganization plan that was made to the board at its last meeting. Process is important and the parties should have the opportunity to respond. The one month deferral will allow for such vetting and response.

Chair Kudo stated that this matter was deferred until the board's June meeting.

C. Legislative Update

VP Young provided a report on the actions taken by the Legislature to address the projected impacts of the COVID-19 pandemic as it reconvened on May 11 after a nearly two-month recess. He stated that the Legislature was expected to recess again on May 21 and reconvene in mid-June after the Council on Revenues presented its economic forecast for Hawai'i. It is anticipated that the economic forecast will be grim and that the State will face a serious reduction in tax revenues while also confronting new expenditure requirements to address the unanticipated consequences of the pandemic. As such, the Legislature will more than likely need to make adjustments and reductions to the State budget for the next fiscal year when it reconvenes in mid-June.

Actions taken by the Legislature since it reconvened as well as the status of a number of measures impacting the university, including budget-related bills, were briefly reviewed. VP Young noted that both the operating and capital improvement projects

(CIP) supplemental budgets were anticipated to be passed by the Legislature and sent to the governor for review and approval. While there were no dollar amount reductions to the university's general fund appropriations, the Legislature eliminated many vacant full-time equivalent (FTE) position counts from the university's budget. In total, nearly 758 FTE counts were reduced, which is equivalent to more than 11 percent of all general-funded FTEs available to UH. Although these positions were vacant, these reductions will inhibit UH's ability to hire and recruit personnel which may have an impact on services to students and the community.

The university's CIP budget request for approximately $230 million to address capital renewal, progress on deferred maintenance, and funding for projects to modernize each of the campuses within the university system is also expected to undergo significant revisions as a result of the economic impacts caused by the COVID-19 pandemic. It is presumed that revisions will be made to the CIP budget once the Governor and Legislature further examine revenue streams and possible uses for bond appropriations relative to federal funding or additional stimulus funding. The university, however, provided the Legislature with a list of shovel-ready projects that would stimulate the state's economy when the worst of the pandemic passes.

He noted that, prior to the start of the 2020 legislative session, the board submitted a supplemental operating budget request of $28.1 million in general funds. However, due to the decrease in State tax revenues and the uncertainty of Hawaiʻi's economic recovery, statewide reductions were implemented and none of the board's requests were approved by the Legislature.

Board and commission appointments made by the Governor that require the advice and consent of the State Senate were also being acted upon. VP Young specifically highlighted boards and commissions that were administratively attached to the university such as the Center for Nursing Advisory Board and Hawaii Medical Education Council noting that the nominees had passed initial confirmation hearings and were awaiting approval by the full Senate. Notably missing from these board and commission appointments, however, were nominations for the Board of Regents which the Governor has yet to provide to the Senate but which could be acted upon when the Legislature reconvenes in mid-June should those nominations be forwarded by the Governor.

Regent McEnerney questioned the nature of a negative figure of $1,752,000 million contained in the CIP budget for renewal, modernization, and improvement. VP Young responded that this was a reduction in the amount previously appropriated by the Legislature for those purposes.

Regent Acoba asked what the Legislature would be covering in its June session. VP Young replied that all bills that were alive prior to the Legislature's recess in March could still be acted upon. While action on a number of bills that involve individual appropriations may still take place, given the anticipated economic outlook for the State, this is unlikely to occur. He reiterated, however, that the Legislature will more than likely be making amendments and adjustments to the 2021 fiscal year budget as more information on the economic forecast for the State becomes available.

D. **Appointment of a Permitted Interaction Group to Investigate Issues and Make Recommendations Related to the University of Hawai'i's Strategic Response and Economic Recovery From COVID-19**

Chair Kudo requested that the board approve the appointment of a permitted interaction group to be known as the COVID-19 Strategic Response and Economic Recovery Task Group (Task Group) whose purpose is to support and monitor the university's strategic response to the impacts engendered by COVID-19 upon the health and safety of the university community, the continuation of academic education and programs, research and technology infrastructure, revenues, operating costs and expenses, and the overall present and future viability of the university system. He stated that the magnitude and nature of the impacts of COVID-19 upon public and private IHEs throughout the United States is both significant and unprecedented and that the uncertainties presented by the COVID-19 pandemic have reshaped the higher education landscape across the nation. While the COVID-19 situation remains dynamic, it is not anticipated that a sense of normalcy will be returned to until a vaccine is developed. As such, it is important that the board engage more actively in the strategic planning by the university administration to better inform key board and administration decisions in the near- and long-term. The Task Group is intended to assist the board in this regard.

Vice-Chair Higaki moved to approve the appointment of the Task Group, seconded by Regent McEnerney, and the motion carried with all members present voting in the affirmative.

E. **Approval of the Establishment of the Lakshmi Devi and Devraj Sharma Endowed Chair II in Women's Health at the John A. Burns School of Medicine (JABSOM) at UHM**

President Lassner provided information on a financial commitment received from Santosh D. Sharma, MD, a distinguished Professor Emeritus in the Department of Obstetrics, Gynecology, and Women's Health (OBGYN) at JABSOM, in the amount of $2,000,000 to establish the Lakshmi Devi and Devraj Sharma Endowed Chair II in Women's Health in recognition and honor of the parents of Dr. Sharma for their commitment to her education and personal growth as a young female in Kenya, Africa, at a time when young women had little access to higher education. He noted that this was the second such gift bestowed upon OBGYN by Dr. Sharma with the first donation of $2,000,000 being provided in 2015.

Regent McEnerney moved to approve the establishment of the Lakshmi Devi and Devraj Sharma Endowed Chair II in Women's Health at JABSOM, seconded by Regent Moore, and the motion carried with all members present voting in the affirmative.

F. **Approval of the Establishment of the Joanna Lau Sullivan Distinguished Endowed Professorship at the UH Cancer Center**

President Lassner provided information on a financial commitment for the establishment of the Joanna Lau Sullivan Distinguished Endowed Professorship at the UH Cancer Center in recognition of the generous philanthropic support of the late Maurice and Joanna Lau Sullivan to various causes and organizations, particularly

those related to education, medical care, cancer research, and the arts. He stated that interest earned as of March 31, 2020, from the J and M Sullivan Endowed Cancer Fund (Fund) would be used to support a distinguished endowed professorship at the UH Cancer Center, noting that the Fund was created from a previous gift from the Maurice and Joanna Sullivan Family Foundation to support an endowed chair in cancer research.

Regent McEnerney moved to approve the establishment of the Joanna Lau Sullivan Distinguished Endowed Professorship at the UH Cancer Center, seconded by Regent Moore, and the motion carried with all members present voting in the affirmative.

G. <u>Approval of Awarding of Title of Professor Emerita of Economics to Marcia Sakai</u>

President Lassner spoke about former faculty member Professor Marcia Sakai and provided a brief background of the long and illustrious career of Professor Sakai, highlighting a number of her accomplishments and giving a brief synopsis of her outstanding scholarly achievements and contributions to the university, most notably, serving as Interim Chancellor at UHH. He noted that Professor Sakai had been unanimously recommended for the title of professor emeritus by faculty of the College of Business and Economics at UHH but that she did not meet all of the necessary criteria – mainly that she had not served as a full professor for the requisite number of five years. As such, the administration is requesting board approval of the professor emerita status for Professor Marcia Sakai.

Regent Nahale-a moved to approve the awarding the title of Professor Emerita of Economics to Professor Marcia Sakai, seconded by Vice-Chair Higaki, and the motion carried with all members present voting in the affirmative.

H. <u>Approval of Resolution in Appreciation and Recognition of Michael McEnerney</u>

Chair Kudo noted that this agenda item would be deferred to the June board meeting.

VIII.　<u>ANNOUNCEMENTS</u>

Chair Kudo announced that the next board meeting was scheduled for June at a date and location to be determined.

IX.　<u>ADJOURNMENT</u>

There being no further business, Vice-Chair Sullivan moved to adjourn, seconded by Regent Moore, and the motion carried, with all members present voting in the affirmative, and the meeting was adjourned at 12:44 p.m.

Respectfully Submitted,

/S/

Kendra Oishi

Executive Administrator and Secretary
of the Board of Regents

Notice of Meeting
UNIVERSITY OF HAWAIʻI
BOARD OF REGENTS

Board business not completed on this day will be taken up on another day and time announced at the conclusion of the meeting.

Date: Thursday, May 21, 2020

Time: 10:30 a.m.

Place: **Virtual Meeting**

In light of the evolving COVID-19 situation, protecting the health and welfare of the community is of utmost concern. As such, this will be a virtual meeting and written testimony and oral testimony will be accepted in lieu of in-person testimony. Meetings may be monitored remotely via the livestream pilot project. See the Board of Regents website for information on accessing the livestream: www.hawaii.edu/bor. Mahalo for your consideration.

AGENDA

  I. **Call Meeting to Order**

 II. **Approval of the Minutes of the April 16, 2020 Meeting**

III. **Public Comment Period for Agenda Items:**

All written testimony on agenda items received after posting of this agenda and up to 24 hours in advance of the meeting will be distributed to the board. Late testimony on agenda items will be distributed to the board within 24 hours of receipt. Written testimony may be submitted via the board's website, US mail, email at bor.testimony@hawaii.edu, or facsimile at 956-5156. All written testimony submitted are public documents. Therefore, any testimony that is submitted for use in the public meeting process is public information and will be posted on the board's website.

Those wishing to provide oral testimony for the virtual meeting may register here. Given constraints with the online format of our meetings, individuals wishing to orally testify must register no later than 8:00 a.m. on the day of the meeting in order to be accommodated. It is highly recommended that written testimony be submitted in addition to registering to provide oral testimony. Oral testimony will be limited to three (3) minutes per testifier.

 IV. **Report of the President: COVID-19 Update**

  V. **Report of the University of Hawaiʻi Foundation**

 VI. **Committee Reports**

A. Report from the Committee on Academic and Student Affairs

B. Report from the Committee on Personnel Affairs and Board Governance

C. Affiliate Reports

For disability accommodations, contact the Board Office at 956-8213 or bor@hawaii.edu.
Advance notice requested five (5) days in advance of the meeting.

VII.   Agenda Items

A. Consent Agenda

1. Approval to Change from Provisional to Established Status: Bachelor of Arts Degree in Public Health, University of Hawaiʻi at Manoa

2. Approval to Change from Provisional to Established Status: Bachelor of Arts in Pharmacy Studies, University of Hawaiʻi at Hilo

3. Approval to Change from Provisional to Established Status: Marine Biology Graduate Program for Doctoral and Master of Science Degrees in Marine Biology, University of Hawaiʻi at Mānoa

4. Approval for the Establishment of a Provisional Bachelor of Science in Cybersecurity, University of Hawaiʻi – West Oahu

5. Approval of Amendments to Regents Policy 9.212, Executive and Managerial Personnel Policies

B. Approval of Maunakea Management Restructuring Plan

C. Legislative Update

D. Appointment of a Permitted Interaction Group to Investigate Issues and Make Recommendations Related to the University of Hawaiʻi's Strategic Response and Economic Recovery From COVID-19

E. Approval of the Establishment of the Lakshmi Devi and Devraj Sharma Endowed Chair II in Women's Health at the John A. Burns School of Medicine at the University of Hawaiʻi at Mānoa.

F. Approval of the Establishment of the Joanna Lau Sullivan Distinguished Endowed Professorship at the University of Hawaiʻi Cancer Center

G. Awarding of Title of Professor Emerita of Economics to Marcia Sakai

H. Approval of Resolution in Appreciation and Recognition of Michael McEnerney

VIII.   Announcements

A. Next Meeting: July 16, 2020, location TBD

IX.   Adjournment

UNIVERSITY OF HAWAII
BOARD OF REGENTS

20 MAY -1 P2:33

RECEIVED

'20 MAY -1 P2:02

UNIVERSITY OF HAWAII
PRESIDENT'S OFFICE

UNIVERSITY of HAWAI'I·
WEST O'AHU

April 21, 2020

MEMORANDUM

TO: Benjamin Kudo
             Chair, Board of Regents

VIA: David Lassner
             President

VIA: Donald Straney
             Vice President for Academic Planning and Policy

FROM: Maenette Benham,
             Chancellor

SUBJECT: Request Approval of a New Provisional Degree, Bachelor of Science in
             Cybersecurity

SPECIFIC ACTION REQUESTED:

It is requested that the Board of Regents approve a new provisional degree, the Bachelor of
Science in Cybersecurity (BS-CYBR), at the University of Hawai'i—West O'ahu.

RECOMMENDED EFFECTIVE DATE:

Fall 2020

ADDITIONAL COST:

There are additional costs associated with this request. Increased projected enrollment will
require additional personnel.

PURPOSE:

With our increased reliance on information technology systems and cyber work environments across all industries, there is an urgent need for highly skilled cybersecurity professionals. The proposed Bachelor of Science in Cybersecurity (BS-CYBR) will address this demand by providing students with a pathway to acquire specialized knowledge and skills required to meet this growing need. It will be UH West Oʻahu's second STEM degree program. The BS-CYBR's highly technical cybersecurity program designed to provide students with an advanced cybersecurity education will expand students' knowledge of information security, mathematics, computer science, and computer engineering. It will also prepare them to meet the leading cybersecurity workforce requirements of public sector agencies and private sector enterprises. Employers with advanced cybersecurity requirements who hire BS-CYBR graduates with these skills, can be confident in their ability to identify, protect, detect, respond, and recover from cybersecurity threats.

BACKGROUND:

Board of Regents Policy 5.201: Instructional Programs states that "The board shall approve the establishment of all new instructional programs granting academic credit leading to a degree or credential, upon recommendation by the president."

The proposed Bachelor of Science in Cybersecurity (BS-CYBR) degree fulfills the charge of the UH System's Integrated Academic and Facilities Plan (IAFP) calling for the addition of one or more baccalaureate STEM degree programs at the University of Hawaiʻi—West Oʻahu. Additionally, it meets a key sector need for Hawaiʻi's post-COVID-19 economic revitalization. The BS-CYBR builds on the success of our current Information Security & Assurance concentration under the Bachelor of Applied Science degree program. The proposed program is also consistent with the institution's Strategic Action Plan, 2018-2028, which explicitly articulates UH West Oʻahu's commitment to supporting the greater community and fueling state economic growth by developing "innovative and transformative thinkers with the ability to generate and apply knowledge to address the pressing issues of our times" (page 7). The proposed degree also aligns with UH West Oʻahu's designated applied and technical focus as defined by the IAFP and meets the UH System IAFP call for UH West Oʻahu to focus on general degrees that are distinctive, and for degrees that will articulate well with our UH Community Colleges. In accordance with the IAFP, this degree is also attentive to community college transfer students.

The BS-CYBR Program was developed in accordance with the standards consistent with earning the designation of being a National Security Agency (NSA)/Department of Homeland Security (DHS) Center of Excellence in Cyber Operations Fundamentals. A Center of Academic

Excellence Cyber Operations program would complement the following existing Centers of Academic Excellence in Cyber Defense programs already present in our UH System: Cyber Defense Research (UHM), Cyber Defense 2-Year Education (HonCC and LeeCC), and Cyber Defense Education (UH West O'ahu and Maui College). It would provide a particular emphasis on technologies and techniques related to specialized cyber operations (e.g., collection, investigation, and response). These technologies and techniques are critical to intelligence, military, and law enforcement organizations authorized to perform these specialized operations.

The proposed BS-CYBR should be created at UH West O'ahu as the next step in the progression to develop a complementary, select STEM program that is integrated with the already existing and highly successful Bachelor of Applied Science, Information Security & Assurance (BAS-ISA). Our campus currently employs the faculty expertise to carry out and support this next step. While the numbers of students in the BAS-ISA are expected to continue on a positive trajectory, the faculty expects that the BS-CYBR will attract students from the BAS-ISA who wish to move beyond cyber protection and defense into the realm of cyber analysis, collection, operation, and investigations. The shared BAS-ISA and the BS-CYBR pathway at the foundational lower-division course level diverges at the upper division level. Overall, both cyber programs are expected to grow together and complement each other. Our faculty and Institutional Research Office project 34 BS-CYBR students in the first year, averaging 65 students a year over five years, with 81 students in 2025.

The proposed BS-CYBR exemplifies the development of a successful area of concentration that fulfills the mission of UH West O'ahu as highlighted in the IAFP. That mission is to offer students a distinct learning experience focused on 21st century skills that prepares them to be innovative community leaders. In particular, the IAFP identifies signature programs that include "creative media, cybersecurity, facilities management, sustainable community food systems and insurance" (p. 8). This new Bachelor of Science in Cybersecurity degree will fulfill the promise of our mission and will be crucial to timely meeting a critical workforce demand.

ACTION RECOMMENDED:

It is recommended that the Board of Regents approve a new provisional degree, the Bachelor of Science in Cybersecurity, at the University of Hawai'i—West O'ahu.

Attachment

c: Kendra Oishi, Executive Administrator and Secretary to the Board of Regents
        Jeffrey Moniz, Vice Chancellor for Academic Affairs

UNIVERSITY
of HAWAI'I
SYSTEM

Terri Ota <tota@hawaii.edu>

FW: Substantive Change Screening Determination: No further review of program needed

1 message

Sharon Valente <valentes@hawaii.edu>   Wed, Jul 1, 2020 at 9:15 AM
To: Maenette Benham <mbenham@hawaii.edu>, Jeffrey Moniz <jmoniz@hawaii.edu>
Cc: Matthew Chapman <mchapman@hawaii.edu>, Stanley Orr <sorr@hawaii.edu>, Jon Magnussen
<jonmagnu@hawaii.edu>, Terri Ota <tota@hawaii.edu>, Leila Shimokawa <lwai@hawaii.edu>, Michael Furuto
<mfuruto@hawaii.edu>, Gloria Niles <gniles@hawaii.edu>, Michael Miranda <mmirand1@hawaii.edu>

Aloha!

We have received official notice that following degrees and certificates have been approved by WSCUC:

- BS in Cybersecurity

- Certificate in Hawaiian Indigenous Health and Healing

- Certificate in Sustainability Issues

The next step with WSCUC is for me to enter the implementation date. I presume in all cases it is Fall 2020. I had been informed that the distance modality of the BA in Humanities has an implementation date of Fall 2021.

The next step within UH West Oahu is in Terri's area.

I will follow up on the distance modality for the Bachelor of Education.

Some good news!!

Mahalo, Sharon

Sharon A. Latkovich Valente PhD
Director of Assessment, Evaluation, and Accreditation
Accreditation Liaison Officer
University of Hawai'i – West O'ahu
91-1001 Farrington Highway
Room D231
Kapolei, HI 96707
valentes@hawaii.edu
808-689-2321

Office of Assessment,
Evaluation, & Accreditation

AALHE **Member**
www.aalhe.org

From: John Hausaman [mailto:jhausaman@wscuc.org]
Sent: Wednesday, July 1, 2020 8:57 AM
To: valentes@hawaii.edu
Subject: Substantive Change Screening Determination: No further review of program needed

WASC Senior College and University Commission

Dear ALO:

Thank you for submitting the Substantive Change Screening form. Following a review of the information submitted, it has been determined that no substantive change review will be necessary for the proposed program.

Program Implementation Notification Required
You are required to confirm implementation of the program in order for the program or location to be listed on the WSCUC website for purposes of financial aid eligibility verification by the U.S. Department of Education.

Login to the Accreditation Management Portal and the Bachelor of Science in Cybersecurity as Active within 30 days of implementation. Failure to report implementation may result in the suspension of financial aid eligibility for enrolled students.

UNIVERSITY
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Terri Ota <tota@hawaii.edu>

CIP Code for BS Cybersecurity

1 message

Matthew Chapman <mchapman@hawaii.edu>   Wed, Jun 10, 2020 at 2:01 PM
To: Terri Ota <tota@hawaii.edu>
Cc: P Soares <pfrederi@hawaii.edu>, Jeffrey Moniz <jmoniz@hawaii.edu>, Sharon Valente <valentes@hawaii.edu>, James Burrell <jb743@hawaii.edu>, Michael Miranda <mmirand1@hawaii.edu>

After much consultation and discussion, I would like the CIP code for BS Cybersecurity to be:

43.0403 (previously known as 43.0116 - changed on the 2020 list to 43.0403)/

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Detail for CIP Code 43.0403

Title: Cyber/Computer Forensics and Counterterrorism.   Print

Definition: A program focusing on the principles and techniques used to identify, search, seize and analyze digital media and to conduct cyber investigations against criminal and terrorist activity. Includes instruction in computer boot processes and drives, jumper setting, file access and reconstruction, hacking, network systems, cryptography, programming, investigative techniques, forensic imagery, web-based investigation methods, cyberterrorism, and applicable laws and administrative procedures.
See also: 11.1003) Computer and Information Systems Security/Information Assurance.

Action: Moved from 43.0116 to 43.0403

Mahalo,
Matt

Matthew A. Chapman, Ph.D.
Computer Science and Cybersecurity
Professor and Chair, Business Administration Division
University of Hawaii - West Oahu

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(808) 689-2333