Meeting of the
Oregon Tech Board of Trustees
Academic Quality and Student Success Committee
Room 402, Portland-Metro Campus
January 24, 2019
8:00am – 10:40am

Academic Quality and Student Success Committee Agenda

		Page
1.	**Call to Order/Roll/Declaration of a Quorum** (8:00am) *Chair Jeremy Brown*	
2.	**Consent Agenda** *Chair Jeremy Brown*	
2.1	Approve Minutes of the November 15, 2018 Meeting	**1**
3.	**Action Items**	
3.1	Recommendation to the Board to Recommend Approval of the Cybersecurity Degree to HECC (25 min) *Provost Gary Kuleck*	**4**
4.	**Discussion Items** (8:25am)	
4.1	**Provost Update** (20 min) *Provost Gary Kuleck*	
4.2	Workload Audit Review (8:45) (30 min) *Provost Gary Kuleck*	**58**
4.3	**Sabbatical Presentations** (9:15am) (20 min) *Professor Sandra Bailey and Associate Professor Joe Stuart*	
BREAK 9:35am - 9:50am		
4.4	Introduction of Data Science Degree (9:50am) (25 min) *Assistant Professor Rosanna Overholser and Associate Professor Joe Reid*	**79**
4.5	Portland-Metro Student Services Update (10:15am) (20 min) *Assistant VP Dana Onorato*	**96**
5.	**Other Business/New Business** (10:35am) (5 min) *Chair Jeremy Brown*	
6.	**Adjournment** (10:40am)	

Oregon TECH

Meeting of the
Oregon Tech Board of Trustees
Academic Quality and Student Success Committee
Virtual Meeting
Sunset Room Klamath Falls Campus
November 15, 2018
8:00am–10:40am

Academic Quality and Student Success Committee
DRAFT MINUTES

Trustees Present:
Jeremy Brown, Chair | Rose McClure | Jill Mason

University Staff and Faculty Present:
Seth Anthony, Associate Professor, Natural Sciences
Sharon Beaudry, Associate Professor, Management and Acting Department Chair
Tracy Coon, Assistant Professor, Management
Erin Foley, VP of Student Services/Dean of Student Affairs
Dave Groff, Legal Counsel
Sandi Hanan, Acting Director, HR
Scotty Hayes, Information Technology Consultant
Wendy Ivie, Registrar
Jennifer Kass, Director of Career Services
Tom Keyser, Dean of the College of ETM
Gary Kuleck, Provost/Vice President of Academic Affairs
Brittany Miles, AVP Government Relations
Adria Paschal, Senior Executive Assistant to the President
Dan Peterson, Interim Associate Dean of the College of HAS
Paul Titus, Executive Assistant to the Provost
Terri Torres, Faculty Senate President and Professor, Mathematics

1. **Call to Order/Roll/Declaration of a Quorum**
   Chair Brown called the meeting to order at 8:00am. The President's Senior Executive Assistant called roll and a quorum was declared.

2. **Consent Agenda**
   - **2.1 Approve Minutes of the May 17, 2018 Meeting**
     Trustee Mason moved to approve the minutes of the May 17, 2018 meeting. Trustee Brown seconded the motion. A roll call vote was made and the motion passed unanimously.

3. **Action Items**
   - **3.1 Recommendation to the full Board to Approve the New Program Approval Process**

Provost Kuleck stated the Curriculum Planning Commission and Graduate Council worked on improving the new program approval process prior to his arrival. The latest proposal requires more robust market needs and financial analyses, clarifies the timeline, and encourages ideas for new programs and certificates. He explained the required submittals, review bodies, and phases of the process, noting that ideally the timeline would be shorter than proposed. One of the desired outcomes is to have a regular flow of new programming for the Board to consider. **Chair Brown** requested the Provost give a regular update to the Committee on programs in the pipeline. He clarified that the new program approval process for consideration is represented on the colored flow-chart.

Trustee Mason moved to recommend the full board approve the new program approval process. Trustee McClure seconded the motion.

Discussion regarding timeline and parallel review processes.

A roll call vote was made and the motion passed unanimously.

4. Discussion Items

4.1 Provost's Report

Provost Kuleck gave an overview on the progress and the steps required for the Doctorate of Physical Therapy program; a full proposal is anticipated in 6-8 months. Discussion regarding funding commitment to the program and other entities offering the same program. He clarified the program would be in partnership with OHSU and the doctorate program would work under OHSU's mission statement. He summarized the main recommendations from a report on shared governance. He stated there are proposed degree programs in the pipeline including Cyber Security and Data Science. He gave an update on the status of accreditation and reviewed the timeline. He mentioned the upcoming hiring of an interim associate provost.

4.2 Summer Grant Projects and Sabbaticals

Provost Kuleck explained the summer creativity grants program was designed to promote faculty professional development and new program development, and to encourage improvements in existing academic infrastructure and programming. Awardees will present the results to the remainder of faculty. He gave an overview of the sabbaticals awarded for academic year 2018.

4.3 General Education Reform Update

Chair Peterson explained that the general education reform process has been in the making for several years now. He and Registrar Ivie co-led an ad hoc task force (General Education Review *ad hoc* Committee (GERAC)). He provided an overview of the General Education Reform Ad-hoc Committee and its purpose. The focus areas were transferability, budget, students, and academics. **Registrar Ivie** stated the committee came up with six options and made a recommendation to the Provost. Additional data was gathered and analyzed by the Office of Academic Excellence. A decision to move forward is pending. **Director Anthony** stated the committee addressed some of the hurdles of the

original proposal. He noted community colleges are taking a closer look at the universities that are involved in general education reform and its impact on transferability

BREAK 9:23a.m. to 9:35a.m.

4.4 Introduction of Cybersecurity Degree

Assistant Professor Coon explained the shortage of skilled cyber security professionals, the need for them in the government and private sectors, and the executive order from the U.S. President. He identified the degree courses and gave a summary of each. **Acting Chair Beaudry** gave an overview of the existing faculty and their specialties, and proposed new hires; the timeline for program approval; and the accreditation bodies. Oregon Tech's Cyber Defense Center will have operations both at the Portland-Metro and Klamath Falls campuses. **Assistant Professor Coon** outlined potential partnerships. Discussion regarding timing of offering the degree, certification option and potential students.

4.5 Employment Searches Report

Acting Director Hanan gave an overview of faculty searches, explained the new applicant tracking system in which applicants can submit equal opportunity employment information. She outlined the diversity of applicants, where postings are made, and how the posting sites are determined. She stated the new system tracks declined offers and whether a top candidate accepts an offer. **Trustee Brown** recommended we identify whether our applicant pools reflect the growth of the Hispanic and Latino populations. **Acting Director Hanan** explained each search committee member and chair are required to have diversity training prior to obtaining access to the applicant pool. The hiring authority is to include at least one male, female, and member of a diverse background on each committee.

4.6 Career Services Presentation

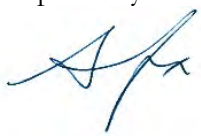
Director Kass introduced herself and her team. She explained the mission of career services, what career management means, how the staff educates students, career fairs and event, how success is measured, challenges to address to assist students, and assistance offered to alumni.

5. Other Business/New Business - none

6. Adjournment

Trustee Mason moved to adjourn. Trustee McClure seconded the motion. With all trustees present voting aye, the motion passed unanimously. The meeting adjourned.

Respectfully submitted,



Sandra Fox
Board Secretary

ACTION ITEM
Agenda Item No. 3.1
Recommendation to the Board to Recommend Approval of the Cybersecurity Degree to HECC

Background

Degree Overview

The federal government recognizes the rapid growth in the gap between cyber threats and skilled cybersecurity professionals who are proficient in identifying, reporting, and responding to information system exploitations. As such, Executive Order 13800, Growing and Sustaining the Cybersecurity Workforce, calls upon public universities to "grow a dynamic and diverse cybersecurity workforce," which is aimed to, "improve the Nation's cyber posture and capabilities in the face of intensifying cybersecurity threats" (US-CERT, 2017).

The order stresses the importance of developing a diverse workforce through hands-on training delivered via work-based learning, internships, and virtual assessment environments. As the Northwest's premier public polytechnic university, Oregon Tech will develop well-rounded cybersecurity professionals through its proposed Bachelor of Science in Cybersecurity degree program.

The proposed B.S. in Cybersecurity is designed to produce graduates that will be ready to enter the workforce as entry-level cybersecurity practitioners, analysts, and penetration testers. Through the program, students will gain foundational knowledge in information systems with focused courses on vulnerability scanning, threat detection, system health reporting, and system defense operations. The curriculum will follow the core knowledge units designed for National Centers of Academic Excellence in Cyber Defense Education (CAE-CDE) prepared by the National Security Administration and the Department of Homeland Security. Furthermore, the curriculum will include topics established by the National Institutes of Standards and Technology's (NIST) National Initiative for Cybersecurity Education (NICE) framework.

Program Outcomes

a. Describe the tactics, techniques, and procedures used throughout the vulnerability assessment process.
b. Evaluate risk in information systems and apply mitigation techniques to reduce impact to business operations.
c. Perform information system vulnerability scanning and report findings.
d. Identify information system exploits and apply proper incident response.

Expected degrees produced over the next five years.

6-year graduation rates published by the state of Oregon is ~63%.

	2021-22	2022-23	2023-24	2024-25	2025-26
FTE	28	35	44	49	66

Degrees will be offered at Wilsonville and Klamath Falls at inception and move online in 2021.

Strategically, Oregon Tech wishes to build from its current areas of strength into programs that can leverage that expertise and expand the impact of the institution. Market demand, by both the student and industry, is essential to proposing and developing any new program. A Bachelor of Science program in cybersecurity fits perfectly into this framework. The information technology program is consistently ranked among the top IT programs nationally. The B.S. Cybersecurity degree draws heavily from and builds a solid foundation upon the strengths of the IT and Management programs and expands them into the highly in-demand field of cybersecurity. There is currently a critical global shortage of trained cybersecurity professionals, and there are no other programs specifically focused on the applied practice of cybersecurity anywhere in the state.

The proposed B.S. Cybersecurity degree is consistent with Oregon Tech's mission of providing high-quality education combined with applied, real-world experiences to prepare graduates to enter the workforce as trained practitioners of their chosen discipline. This degree program focuses on creating well-rounded cybersecurity professionals. The B.S. Cybersecurity degree combines the necessary theory and frameworks to provide students with strong foundational knowledge, along with opportunities to apply their knowledge to real-world problems. Graduates of this program will have the required knowledge, skills and abilities needed to become successful professionals, with both a solid technical background and the "soft skills" that are necessary to succeed in today's work environment.

<u>Timeline</u>

- CPC – complete by the end of fall term.
- Provost – completes review by mid-December and submits documentation to Board of Trustees and Provost Council.
- Oregon Tech Board of Trustees – Provost Kuleck starts the discussion about the program in the November meeting (11/15/2018) and seeks approval at January meeting (1/24/2019).
- State Provost Council – Provost Kuleck starts the discussion about the program in the October meeting (10/2/2018), and will seek their approval at February meeting (2/5/2019). The documents are submitted 6 weeks in advance without board's approval that is provided at the February meeting.
- HECC – March
- NWCCU – start in April, approval may take several months, hopefully granted in July or August.
- Start program – fall 2019 (winter, if delayed). The program cannot be advertised without NWCCU approval. That means it will not appear in the catalogue of 2019-2020 academic year published in May. However, CYB courses that are already approved can be offered. Students can then apply them to the program that will officially start after NWCCU approval.

Recommendation

Staff recommends the Committee move to recommend the full board make a recommendation to HECC to approve the Cybersecurity Program.

Attachments

- Cybersecurity Program proposal

HIGHER EDUCATION COORDINATING COMMISSION

Proposal for a New Academic Program

Institution: Oregon Institute of Technology
College / School: College of Engineering, Technology and Management
Department / Program Name: Management Department
Degree and Program Title: B.S. Cybersecurity

1 Program Description

a. Proposed Classification of Instructional Programs (CIP) number: 11.1003

Title: Computer and Information Systems Security

Definition: A program that prepares individuals to assess the security needs of computer and network systems, recommend safeguard solutions, and manage the implementation and maintenance of security devices, systems, and procedures. Includes instruction in computer architecture, scripting, systems analysis, networking, cryptography, security system design, applicable law and regulations, risk assessment and policy analysis, contingency planning, user access issues, investigation techniques, and troubleshooting.

b. Brief overview (1-2 paragraphs) of the proposed program, including its disciplinary foundations and connections; program objectives; programmatic focus; degree, certificate, minor, and concentrations offered.

The federal government recognizes the rapid growth in the gap between cyber threats and skilled cybersecurity professionals who are proficient in identifying, reporting, and responding to information system exploitations. As such, Executive Order 13800, Growing and Sustaining the Cybersecurity Workforce, calls upon public universities to "grow a dynamic and diverse cybersecurity workforce," which is aimed to, "improve the Nation's cyber posture and capabilities in the face of intensifying cybersecurity threats" (US-CERT, 2017).

The order stresses the importance of developing a diverse workforce through hands-on training delivered via work-based learning, internships, and virtual assessment environments. As the Northwest's premier public polytechnic university, Oregon Tech will develop well-rounded cybersecurity professionals through its proposed Bachelor of Science in Cybersecurity degree program.

The proposed B.S. in Cybersecurity is designed to produce graduates that will be ready to enter the workforce as entry-level cybersecurity practitioners, analysts, and penetration testers. Through the program, students will gain foundational knowledge in information systems with focused courses on vulnerability scanning, threat detection, system health reporting, and system defense operations. The curriculum will follow the core knowledge units designed for National Centers of Academic Excellence in Cyber Defense Education (CAE-CDE) prepared by the National Security Administration and the Department of Homeland Security. Furthermore, the curriculum will include topics established by the National Institutes of Standards and Technology's (NIST) National Initiative for Cybersecurity Education (NICE) framework.

The program objectives are to:

a. Provide students with the knowledge and skills necessary to competently scan, assess, report, and mitigate cybersecurity threats, vulnerabilities, and exploits on information systems and technology.
b. Address the five core Management Department student learning outcomes:
    i. Communicate the major concepts in the functional areas of accounting, marketing, finance, information technology and management.
    ii. Describe the legal, social, ethical, and economic environments of business in an internal/external (global) context.
    iii. Solve organization problems, individually and/or in teams, using quantitative, qualitative, and technology-enhanced approaches.
    iv. Demonstrate professional communication and behavior.
    v. Apply knowledge of business concepts and functions in an integrated manner.
c. Meet the core program learning outcomes
    i. Describe the tactics, techniques, and procedures used throughout the vulnerability assessment process.
    ii. Evaluate risk in information systems and apply mitigation techniques to reduce impact to business operations.
    iii. Perform information system vulnerability scanning and report findings.
    iv. Identify information system exploits and apply proper incident response.

c. Course of study – proposed curriculum, including course numbers, titles, and credit hours.

This section includes the proposed curriculum for both the Portland-Metro and Klamath Falls campuses. The Cybersecurity curriculum includes the Management Department's core curriculum in support of the Department's mission to educate students in practical management principles across multiple disciplines. The curriculum is designed to give students maximum flexibility within the department as they explore which Management Department degree option is best for them.

The Management Department is exempt from the 36 / 45 general education rule at Oregon Tech (See Appendix C, Item A).

Klamath Falls Course Schedule:

BS in Cyber Security			
	NEW CURRICULUM		
Prerequisite	**Freshman Year - Fall**		
Math 100	MATH 111	College Algebra	4
	SPE 111	Public Speaking	3
WRI 115	WRI 121	English Composition	3
		Lab Science Elective	4
		TOTAL:	14
	Freshman Year - Winter		
College Level Math	ECO 201	Principles of Microeconomics	3
	MIS 102	Spreadsheet Lab	1
	MIS 145	Introduction to PC Hardware/Software	4
WRI 121	WRI 122	Argumentative Writing	3
MATH 111	MATH 112	Trigonometry	4
		TOTAL:	15
	Freshman Year - Spring		
	BUS 215	Principles of Management	3
MIS 145	MIS 251	Networking I	4
	MIS 275	Introduction to Relational Database	3
Math 100	MIS 285	Python Programming	4
		TOTAL:	14

	Sophomore Year - Fall		
Math 100	ACC 201	Principles of Accounting I	4
Math 111	MIS 118	Introduction to Programming in C#	4
MIS 145	MIS 273	Systems Administration I	4
WRI 122 and SPE 111	WRI 227	Technical Report Writing	3
		TOTAL:	15
	Sophomore Year - Winter		
	BUS 226	Business Law	3
MATH 111	MATH 361	Statistical Methods I	4
MIS 118 and MIS 275	MIS 218	Database Programming	4
	CYB 201	Cyber Security Fundamentals	3
WRI 227	PHIL 331	Ethics in the Professions	3
	or		
WRI 122 and 3 cr. Hum Electives	PHIL 342	Business Ethics	3
		TOTAL:	17
	Sophomore Year - Spring		
ACC 201	ACC 203	Principles of Managerial Accounting	4
MIS 145	MIS 240	Intro to Linux OS	4
BUS 215 or BUS 317	MGT 335	Project Management	3
College Level Math	ECO 202	Principles of Macroeconomics	3
SPE 111	SPE 321	Small Group and Team Communication	3
		TOTAL:	17
	Junior Year - Fall		
ACC 203	ACC 325	Finance	4
MIS 251	MIS 351	Routing and Switching I	4
WRI 121	MIS 311	Introduction to Systems Analysis	3
		Humanities Elective	3
CYB 201 and MIS 285 and WRI 227	CYB 301	Hacker Tools and Techniques	4
		TOTAL:	18
	Junior Year - Winter		
MIS 275 and MIS 311	MIS 312	Systems Analysis I	4
MIS 118 and MIS 275	MIS 341	Relational Database Design I	4
WRI 227	WRI 350	Documentation Writing	3

	or		
WRI 227	WRI 327	Advanced Tech Writing	3
MATH 361 and MIS 113 or MIS 275	MIS 334	Business Analytics	3
CYB 301 and MIS 351	CYB 302	System Defenses and Incident Response	4
		TOTAL:	18
	Junior Year - Spring		
	BUS 223	Marketing I	3
MIS 218, MIS 312, MIS 341	MIS 322	Systems Analysis II	4
MIS 312 and MGT 335	MIS 495	Senior Project Selection	1
CYB 301 and SPE 321	CYB 303	Security Operations and Analysis	4
CYB 201 and MIS 351	CYB 351	Network Security	4
		TOTAL:	16
	Senior Year - Fall		
MIS 251 and MIS 273	MIS 365	Cloud Computing	4
MIS 495 and MIS 322	MIS 496	Senior Project Mgmt	3
BUS 215 or BUS 304 and MIS 206 or MIS 311	CYB 411	Managing Risk in Information Systems	3
BUS 215, BUS 304, BUS 317	MGT 321	Operations Management	3
		TOTAL:	13
	Senior Year - Winter		
SPE 111 and WRI 122	BUS 356	Business Presentations	4
MIS 496	MIS 497	Senior Project I	3
Junior Standing or Instructor's Consent	PSY 347	Organizational Behavior	3
BUS 215, BUS 304, BUS 317	BUS 349	Human Resource Mgmt	3
		TOTAL:	13
	Senior Year - Spring		
MIS 497	MIS 498	Senior Project II	3
ACC 203 and WRI 227	BUS 478	Strategic Management	3
WRI 122	ANTH 452	Globalization	3
		Humanities Elective	3
		TOTAL:	12

		Degree Total	182

Portland Metro Course Schedule:

BS in Cyber Security			
	NEW CURRICULUM		
Prerequisite	**Freshman Year - Fall**		
Math 100	MATH 111	College Algebra	4
WRI 115	WRI 121	English Composition	3
	MIS 145	Introduction to PC Hardware/Software	4
MATH 100	MIS 285	Python Programming	4
		TOTAL:	15
	Freshman Year - Winter		
		Humanities Elective	3
	MIS 102	Spreadsheet Lab	1
MIS 145	MIS 251	Networking I	4
WRI 121	WRI 122	Argumentative Writing	3
MATH 111	MATH 112	Trigonometry	4
		TOTAL:	15
	Freshman Year - Spring		
College Level Math	ECO 201	Principles of Microeconomics	3
	SPE 111	Public Speaking	3
MIS 145	MIS 273	Systems Administration I	4
MATH 111	MIS 118	Introduction to Programming in C#	4
		Humanities Elective	3
		TOTAL:	17
	Sophomore Year - Fall		
Math 100	ACC 201	Principles of Accounting I	4
	BUS 215	Principles of Management	3
	MIS 275	Introduction to Relational Database	3
WRI 122 and SPE 111	WRI 227	Technical Report Writing	3
		Lab Science Elective	4
		TOTAL:	17
	Sophomore Year - Winter		

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	BUS 226	Business Law	3
ACC 201	ACC 203	Principles of Managerial Accounting	4
College Level Math	ECO 202	Principles of Macroeconomics	3
	CYB 201	Cyber Security Fundamentals	3
WRI 227	PHIL 331	Ethics in the Professions	3
	or		
WRI 122 and 3 cr. Hum Electives	PHIL 342	Business Ethics	3
		TOTAL:	16
	Sophomore Year - Spring		
MIS 118 and MIS 275	MIS 218	Database Programming	4
MIS 145	MIS 240	Intro to Linux OS	4
BUS 215 or BUS 317	MGT 335	Project Management	3
SPE 111	SPE 321	Small Group and Team Communication	3
	BUS 223	Marketing I	3
		TOTAL:	17
	Junior Year - Fall		
MATH 111	MATH 361	Statistical Methods I	4
MIS 251	MIS 351	Routing and Switching I	4
WRI 121	MIS 311	Introduction to Systems Analysis	3
CYB 201, MIS 285 and WRI 227	CYB 301	Hacker Tools and Techniques	4
		TOTAL:	15
	Junior Year - Winter		
MIS 275 and MIS 311	MIS 312	Systems Analysis I	4
MIS 118 and MIS 275	MIS 341	Relational Database Design I	4
CYB 201 and MIS 351	CYB 351	Network Security	4
MATH 361 and MIS 113 or MIS 275	MIS 334	Business Analytics	3
		TOTAL:	15
	Junior Year - Spring		
ACC 203	ACC 325	Finance	4
MIS 218, MIS 312, MIS 341	MIS 322	Systems Analysis II	4
MIS 312 and MGT 335	MIS 495	Senior Project Selection	1
CYB 301 and SPE 321	CYB 303	Security Operations and Analysis	4
		TOTAL:	13
	Senior Year - Fall		

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MIS 495 and MIS 322	MIS 496	Senior Project Mgmt	3
BUS 215 or BUS 304 and MIS 206 or MIS 311	CYB 411	Managing Risk in Information Systems	3
BUS 215, BUS 304, BUS 317	MGT 321	Operations Management	3
MIS 251 and MIS 273	MIS 365	Cloud Computing	4
		TOTAL:	13
	Senior Year - Winter		
SPE 11 and WRI 122	BUS 356	Business Presentations	4
MIS 496	MIS 497	Senior Project I	3
Junior Standing or Instructor's Consent	PSY 347	Organizational Behavior	3
BUS 215, BUS 304, BUS 317	BUS 349	Human Resource Mgmt	3
CYB 301 and MIS 351	CYB 302	System Defenses and Incident Response	4
		TOTAL:	17
	Senior Year - Spring		
MIS 497	MIS 498	Senior Project II	3
ACC 203 and WRI 227	BUS 478	Strategic Management	3
WRI 122	ANTH 452	Globalization	3
	or		
	HIST 452	Globalization and Pac NW	3
WRI 227	WRI 350	Documentation Writing	3
	or		
	WRI 327	Advanced Technical Writing	3
		TOTAL:	12
		Degree Total	182

d. Manner in which the program will be delivered, including program location (if offered outside of the main campus), course scheduling, and the use of technology (for both on-campus and off-campus delivery).

The proposed B.S. Cybersecurity degree will be offered to our on-campus students at both the Klamath Falls and Portland-Metro campuses, as well as to our online students. Lab equipment is available for both on-campus and online students. On-campus students will have direct access to equipment shared between Portland-Metro and Klamath. Online students will have access to private cloud infrastructure hosted by Oregon Tech and public cloud education services through Amazon Web Services paid subscriptions.

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e. Adequacy and quality of faculty delivering the program.

All courses in the program are developed and are currently being taught by existing faculty. The faculty possess the necessary background and knowledge of course content to deliver courses effectively. Faculty and course review are conducted each time a course is offered. Departmental faculty members continue to receive excellent evaluations, including student evaluations, tenure, promotion, and post-tenure reviews. Part-time and adjunct faculty members teach some of the required courses, however, all adjuncts are reviewed carefully by the Program Director and Department Chair each quarter.

f. Adequacy of faculty resources – full-time, part-time, adjunct.

Full-time faculty:

Richard Bailey, Professor
(1991) Management. B.S. (1984), M.A. (1985) Utah State University. Certified Public Accountant

Sandra Bailey, Professor
(2000) Management. B.S. (1985) Utah State University; M.Ed. (2005) Oregon State University

Sharon Beaudry, Associate Professor, Business Program Director
(2014) Management. B.S. (1985) College of New Rochelle; J.D. (2009) Northwestern California University; M.B.A. (2013) Northcentral University. Senior Professional in Human Resources (SPHR)

Dan Carrere, Assistant Professor
(2017) Information Technology. B.S. (1998) M.MIS (2000) Georgia College and State University

Tracey Coon, Assistant Professor
(2018) Information Technology. B.S. (2011) Kaplan University; MSIT (2016) Southern New Hampshire University

Jeffrey Dickson, Associate Professor, IT Program Director, HI Program Director
(2010) Information Technology. B.S. (2006) Oregon Institute of Technology; M.B.A. (2012) Southern Oregon University

Jared Emard, Assistant Professor
(2016) Management. B.S. (2009) Oregon Institute of Technology; M.B.A. (2016) Southern Oregon University

Grant Kirby, Associate Professor

(2003) Management. B.S. (1987) Oregon Institute of Technology; M.B.A. (1999) University of Oregon; M.S. (2013) Portland State University; Graduate Certificate M.S. (2013) Portland State University

Carmen Morgan, Associate Professor, Accounting Program Director
(1989) Management. A.A. (1984), B.S. (1986) Oregon Institute of Technology; M.B.A. (1991) Portland State University. Certified Public Accountant: Oregon; Certified Management Accountant; Certified in Financial Management, Personal Financial Specialist.

Hallie Neupert, Professor, Department Chair
(1999) Management. B.A. (1994) Wellesley College; M.S. (1996) University of Arizona

Mike Pierce, Associate Professor
(2014) Management. B.S.C.E. (1978) University of Wisconsin Platteville; M.B.A. (1992) Alaska Pacific University; Ph.D. (2002) Gonzaga University. Registered Professional Engineer: Wisconsin

Patrick Schaeffer, Associate Professor, Operations Management Program Director
(2009) Management. B.S. (1986), M.S. (1994) San Jose State University

Maureen Sevigny, Professor, Distance Ed Program Director
(1995) Management. B.A. (1976) Barnard College; M.B.A. (1978) New York University; Ph.D. (1995) University of Maryland

Lindy Stewart, Assistant Professor
(2015) Information Technology. B.S. (2012) Oregon Institute of Technology; M.S. (2015) Boston University

Kristy Weidman, Assistant Professor, Marketing Program Director
(2012) Management. B.S. (2001) Oregon Institute of Technology; M.A. (2006) Thomas Edison State University

Part-time faculty and Adjuncts:

Don DaSaro, Assistant Professor
(2008) Management. A.S. (1964) Metropolitan College; M.S. (1967) University of Missouri Science and Technology; M.B.A. (1991) Marymount University

Bren Rafaelly, Professor of Practice
(2017) Information Technology. B.S. (1995) Southern Illinois University, Carbondale; M.B.A. (1998) University of Phoenix

Laura Yates, Professor of Practice
(2015) Management. B.A. (1973) Portland State University; M.B.A. (2002) University of Oregon; DMgt (2011) George Fox University

g. Other staff.

The Management Department is supported by an Office Specialist 2 in Klamath Falls, an Office Specialist 2 in Portland-Metro, and staff in the Distance Education Department. No additional staffing will be needed to implement or support the program.

h. Adequacy of facilities, library, and other resources.

The Enterprise Technology and Cybersecurity (ETC) Lab provides equipment needed for students to complete the required lab exercises in the cybersecurity degree program. The lab environment is designed to allow students from the Klamath Falls and Portland-Metro campuses to have direct access to equipment. Additionally, it provides an outward facing connection to allow online students to establish a remote connection to the lab environment, allowing them to complete lab exercises in the same manner as on-campus students.

No additional library resources will be required to support the cybersecurity program. Existing journals and databases used by the IT and computer systems engineering technology programs will be more than adequate. No additional facilities are required. The cybersecurity students will share facilities and lab equipment with our existing information technology program students.

i. Anticipated start date.

a. Fall 2019 - Klamath Falls and Portland-Metro
b. Fall 2021 - Online

2 Relationship to Mission and Goals

a. Manner in which the proposed program supports the institution's mission, signature areas of focus, and strategic priorities.

Strategically, Oregon Tech wishes to build from its current areas of strength into programs that can leverage that expertise and expand the impact of the institution. Market demand, by both the student and industry, is essential to proposing and developing any new program. A Bachelor of Science program in cybersecurity fits perfectly into this framework. The information technology program is consistently ranked among the top IT programs nationally. The B.S. Cybersecurity degree draws heavily from and builds a solid foundation upon the strengths of the IT and Management programs and expands them into the highly in-demand field of cybersecurity. There is currently a critical global shortage of trained cybersecurity professionals, and there are no other programs specifically focused on the applied practice of cybersecurity anywhere in the state.

The proposed B.S. Cybersecurity degree is consistent with Oregon Tech's mission of providing high-

quality education combined with applied, real-world experiences to prepare graduates to enter the workforce as trained practitioners of their chosen discipline. This degree program focuses on creating well-rounded cybersecurity professionals. The B.S. Cybersecurity degree combines the necessary theory and frameworks to provide students with strong foundational knowledge, along with opportunities to apply their knowledge to real-world problems. Graduates of this program will have the required knowledge, skills and abilities needed to become successful professionals, with both a solid technical background and the "soft skills" that are necessary to succeed in today's work environment.

b. Manner in which the proposed program contributes to institutional and statewide goals for student access and diversity, quality learning, research, knowledge creation and innovation, and economic and cultural support of Oregon and its communities.

Oregon Tech has a strong commitment to first generation college students and providing access to those who might otherwise forgo higher education. Small class sizes and individualized focus help those who face challenges, both within and outside the institution. The cybersecurity program is designed to maximize access statewide by offering a variety of ways to engage with the program (Portland-Metro, Klamath Falls, online).

Oregon Tech is an integral part of the state and communities that it serves and has the potential to respond to localized areas of need. Cybersecurity services are costly, and sometimes out of reach for many small and mid-sized businesses. Oregon Tech will play a role in meeting some of that demand, as a service contribution in connection with providing students with realistic work experience in the CDC. Cybersecurity needs exist in every community across the state, and there are increasing threats to small and mid-sized enterprises as they become vectors to larger targets, for example as participants in the supply chain for our larger regional manufacturers. Cybersecurity arose as a critical topic at a manufacturing conference this spring, as manufacturing companies grapple with the implications of potential intellectual property theft, disruption to their production lines and other potential threats.

Oregon supports an industry cluster in cybersecurity, in the Portland-Metro region and statewide. Offering programs such as the B.S. Cybersecurity will support the workforce needs of those companies, making Oregon a more attractive place to locate. Access to local workforce education to support cybersecurity reduces recruiting and retention costs for industry participants, many of whom cite that hiring local is better because of the greater likelihood that those employees will stay.

c. Manner in which the program meets regional or statewide needs and enhances the state's capacity to:

Oregon Tech offering a B.S. in Cybersecurity meets regional and statewide needs by developing and mentoring graduates to be able to fill the current approximate 2,775 vacant cybersecurity jobs.

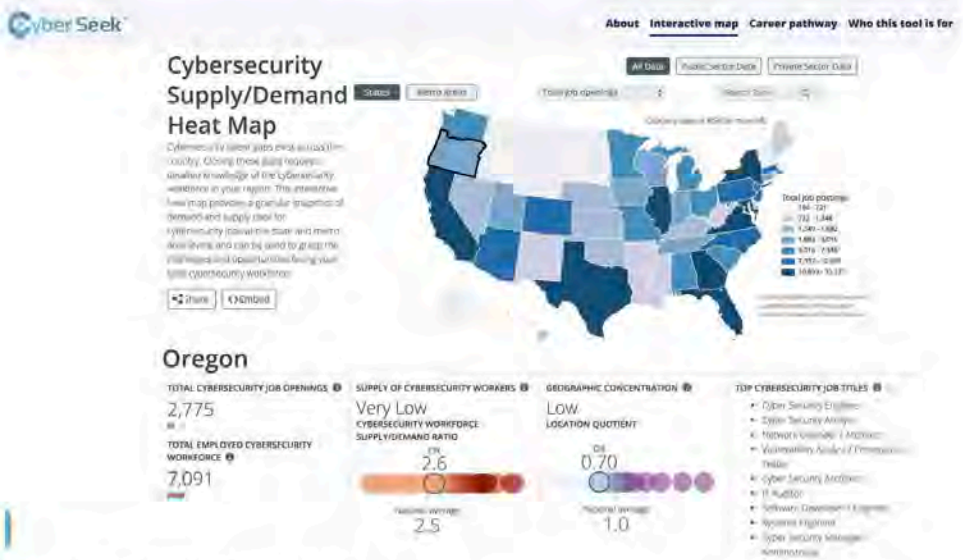

Fig. 1: Cybersecurity Supply / Demand Heat Map

I. improve educational attainment in the region and state;

By offering education locally for students interested in Cybersecurity, Oregon Tech will deliver geographically accessible courses so that students can obtain their security degrees locally. There are current statewide initiatives, Cyber Oregon being one of those initiatives to improve education and help attain a qualified workforce in Cybersecurity.

II. respond effectively to social, economic, and environmental challenges and opportunities; and

Oregon Tech will offer the B.S. Cybersecurity as an on campus offering initially in both Portland – Metro and Klamath Falls campus locations. The fall of 2021 will be the launch of the B.S. Cybersecurity through Oregon Tech Online. Providing the Cybersecurity degree at all locations will limit geographic and social barriers to pursue this degree.

Oregon Tech developed the B.S. Cybersecurity with transferability in mind to help limit economic constraints on both the student and university. Students that transfer from a community college with an AAS in Cybersecurity or degree in business, computer information systems, computer support or other like disciplines will be able to transfer general education and core courses for many of those majors.

While pursuing the B.S. Cybersecurity students can transfer within Oregon Techs management department programs with ease as all the programs support the same common business core outcomes and courses.

III. address civic and cultural demands of citizenship.

Educational attainment depends on access, and providing the program in urban, rural and online formats maximizes the opportunities statewide for students to engage in the program. Cybersecurity is also an interesting field and can be attractive to a wide variety of students: those interested in deeply technical subjects as well as those who are more compelled by the social, ethical, policy and risk analysis aspects of the field. Cybersecurity is a viable "second option" for someone who has an existing degree in a non-technical field but aspires for better/different career opportunities.

One of the biggest social and cultural challenges we face in cybersecurity is how we address threats to our privacy and security while preserving liberty. Cybersecurity affects everyone and depends on the actions of every individual. As such, broadening societal understanding of the technical and social mechanisms by which attacks occur can inoculate us to some of the threats. Cybersecurity is also an exercise in escalation: as we develop better tools to thwart attacks, attackers become savvier. The technical and ethical challenges in the field will expand, not diminish, and there is urgent demand for higher education to provide education to help with the solution. There is space in Oregon for multiple institutions to provide cybersecurity education, which has quite different technical areas of focus that could be supported through complementary programs.

Ongoing dialogue about ethics and various approaches to cybersecurity are integrated throughout the program and are essential to the development of a full professional in the field.

3 Accreditation

a. Accrediting body or professional society that has established standards in the area in which the program lies, if applicable.

IACBE Accreditation: This degree program has been designed to meet the International Accreditation Council for Business Education (IACBE). All Oregon Tech business programs are currently accredited through IACBE (IACBE Accreditation). This accreditation is both mission-driven and outcomes-based in support of quality business education. All accreditation reviews require an independent, external evaluation of the program.

CAE-CDE Designation: In addition, this degree has been designed to meet the requirements of the National Centers of Academic Excellence in Cyber Defense program (CAD-CD) that is jointly sponsored by the National Security Agency (NSA) and the Department of Homeland Security (DHS). The accreditation designation for four-year baccalaureate education is CAE-CDE. The

NSA/DHS offers designations for education (CAE-CDE), research (CAE-CDR), and community colleges (CAE-2Y). If so designated, Oregon Tech would become the first university bachelor's program to be designated in Oregon and one of only three in the Pacific Northwest (List of Designated Programs, 2018). There are currently two community colleges that have been designated as CAE-2Y.

b. Ability of the program to meet professional accreditation standards. If the program does not or cannot meet those standards, the proposal should identify the area(s) in which it is deficient and indicate steps needed to qualify the program for accreditation and date by which it would be expected to be fully accredited.

IACBE Accreditation: The proposed cybersecurity degree incorporates the Management Department's core business education curriculum. The core business program and its corresponding student learning outcomes are included as part of this proposal. This Management Department's core curriculum is currently accredited by IACBE for all other business programs at Oregon Tech.

CAE-CDE Designation: The proposed curriculum has been designed to meet the 2019 requirements which include: 1. Regional accreditation as outlined by the Department of Education, 2. Mapping of the curriculum to the four-year core Knowledge Units (KUs) plus five required options, 3. Demonstration of program in the following areas - outreach and collaboration, a robust and active cyber defense academic program, multidisciplinary efforts, practice of cyber defense at the institution, and among faculty and students.

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, proposal should identify whether or not the undergraduate program is accredited and, if not, what would be required to qualify it for accreditation.

Not applicable.

d. If accreditation is a goal, the proposal should identify the steps being taken to achieve accreditation. If the program is not seeking accreditation, the proposal should indicate why it is not.

IACBE Accreditation: Since Oregon Tech's business programs are currently accredited by IACBE, the cybersecurity program will likewise follow IACBE's process to accredit new programs. The following steps will be completed for accreditation once the program has at least one set of graduates: 1. File an application for new program accreditation, 2. Submit an outcomes assessment plan that addresses student learning outcomes, 3. Prepare a new program self-study, 4. If applicable, undergo a site-visit, 5. Be reviewed by the IACBE Board of Commissioners.

CAE-CDE Designation: To become a designated CAE-CDE program the following steps will be taken: 1. File an application for new program accreditation that also includes a letter of intent and a new applicant checklist, 2. Work with a CAE program mentor to receive an endorsement once the application has been reviewed to have met the curriculum requirements. 3. Become a designated program upon receiving at least three independent reviews of our application by designated subject matter experts.

4 Need

a. Anticipated fall term headcount and FTE enrollment over each of the next five years.

The growing demand for Cybersecurity professionals has educational institutions ramping up to develop and offer cybersecurity focused curriculum and degree programs. Currently, Chemeketa, Lane, Mount Hood, and Portland Community Colleges have or are working on associate and transfer degree programs in or related to Cybersecurity. The relationships that Oregon Tech builds and establishes with these institutions helps to establish a pipeline of students for the Cybersecurity program.

To capture potential enrollment for the Cybersecurity degree, student data research suggests following student pipelines from high school and community college programs as Oregon Tech's enrollment is primarily made up of transfer students. Fall 2017 numbers for the institution indicate there were ~826 transfer students in the college of ETM of which ~776 were in STEM programs. At Oregon Tech, 69% of enrollees in STEM programs are computing majors, resulting in 535 students based on 2017 data. The Management department captured ~33% enrollment of all computing programs at Oregon Tech which is 176 students (Institutional Research, 2017).

Based on community college data published by Oregon.gov, ~12,000 community college students complete a 2-year program have been relatively flat since 2011-2012. 26% of graduating community college students continue to a four-year institution (Roach, 2009). Nationally, 48% of college students pursue a STEM degree (Chen, 2013). Using the figures published by Chen and Roach, an estimated 1,497 students go on to pursue STEM degrees each year in the state of Oregon, upon completing their community college work.

According to the Office of Institutional Research at Oregon Tech, 76% of students are Oregon residents. Of the Management Department's computing students, ~134 are Oregon residents. Oregon tech had 2360 new students Fall 2017. If the number of new students continues to increase by 10% a year to reach the university's 5-year goal, the university would have 3540 new students in 5 years. Computing programs in the Management Department capture ~7.5% of incoming new students (176/2360).

The department's best guess, based on advising students, is that 20% (26) of current on campus computing students in the Management Department will choose cybersecurity and will transfer into Cybersecurity from the Information Technology program. The first-year projections include the 20% student transfer count and a 15% growth in computing programs within the Management Department. There is potential for an increase

in students coming into the department computing programs of up to 25% for the cybersecurity program for the second and third year after program launch. Enrollment will then average out to the institutional goal of 10% growth per year. There will be additional growth in 2021 with the launch of the online program. Projections are calculated using current online enrollment, 60 students (Fall 2017 online enrollment), and Oregon Tech's anticipated growth rate of 10% and an additional 10% growth from marketing efforts for the new cyber degree program. 20% (18) of initial online numbers will be projected Cybersecurity enrollment which are transfers from other computing programs. After 2021-2022 growth is projected at 10% per year across all modalities.

	2019-20	2020-21	2021-22	2022-23	2023-24
Campus FTE	45	56	71	78	85
Online	0	0	21	25	30

Table 1: Estimated 5-Year Enrollment across all locations
**current on campus IT program enrollment is 130 as of Fall 2017*

b. Expected degrees produced over the next five years.

6- year graduation rates published by the state of Oregon is ~63%.

	2021-22	2022-23	2023-24	2024-25	2025-26
FTE	28	35	44	49	66

Table 2: Estimated Annual Graduations across all locations

c. Characteristics of students to be served (resident/nonresident/international; traditional/nontraditional; full-time/part-time, etc.).

The Cyber degree is designed to serve full- or part-time students. It is anticipated that the students attending Oregon Tech, Klamath Falls campus, will be full-time students. Students attending Portland-Metro and online will include both full- and part-time students.

Currently there are no universities offering a specific 4-year baccalaureate-level degree in cybersecurity within the State of Oregon. Several of the universities in the state offer a B.S. in Computer Science or security certificates that can include elective coursework in some aspects of cybersecurity, however they are not exclusively focused on the applied practice of cybersecurity.

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CIS programs from Chemeketa, Lane, Mount Hood, Clark, Umpqua, Rogue and Portland Community Colleges regularly feed into the B.S. in Information Technology program at Oregon Tech. Several of these schools either already have, or are actively working on, developing specific Cybersecurity programs, and have expressed high interest in developing articulation agreements, 2+2, or 3+2 transfer programs with Oregon Tech to provide a clear pathway for their students to earn a baccalaureate level degree.

d. Evidence of market demand.

Evidence of market need

The United States Homeland Security states,

"Our daily life, economic vitality, and national security depend on a stable, safe, and resilient cyberspace.

America needs well trained professionals working in cybersecurity roles. These professionals are critical in both private industry and the government for the security of individuals and the nation. The Department of Homeland Security (DHS) is committed to strengthening the nation's cybersecurity workforce through standardizing roles and helping to ensure we have well-trained cybersecurity workers today as well as a strong pipeline of future cybersecurity leaders of tomorrow.

As greater priority is placed on strengthening cybersecurity, our nation is increasingly looking to higher education to produce skilled and capable cybersecurity professionals able to defend our networks and infrastructure. In response, DHS and The National Security Agency (NSA) jointly sponsor the National Centers of Academic Excellence (CAE) program, designating specific 2- and 4-year colleges and universities as top schools in Cyber Defense (CD). Schools are designated based on their robust degree programs and close alignment to specific cybersecurity-related knowledge units (KUs), validated by top subject matter experts in the field. CAE graduates help protect national security information systems, commercial networks, and critical information infrastructure in the private and public sectors."

The Bureau of Labor Statistics (BLS) represents Information Security Analyst growing at 28% over the next 8 years under the fastest growing occupations: 20 occupations with the highest percent change of employment between 2016-26. (Figure 2).

OCCUPATION	GROWTH RATE, 2016-26	2017 MEDIAN PAY
Solar photovoltaic installers	105%	$39,490 per year
Wind turbine service technicians	96%	$53,880 per year
Home health aides	47%	$23,210 per year
Personal care aides	39%	$23,100 per year
Physician assistants	37%	$104,860 per year
Nurse practitioners	36%	$103,880 per year
Statisticians	34%	$84,060 per year
Physical therapist assistants	31%	$57,430 per year
Software developers, applications	31%	$101,790 per year
Mathematicians	30%	$103,010 per year
Physical therapist aides	29%	$25,730 per year
Bicycle repairers	29%	$28,390 per year
Medical assistants	29%	$32,480 per year
Genetic counselors	29%	$77,480 per year
Occupational therapy assistants	29%	$59,310 per year
Information security analysts	28%	$95,510 per year
Physical therapists	28%	$86,850 per year
Operations research analysts	27%	$81,390 per year
Forest fire inspectors and prevention specialists	27%	$37,380 per year
Massage therapists	26%	$39,990 per year

Last Modification: Friday, April 13, 2018
Fig. 2: BLS Occupational Outlook Fastest Growing Occupations

The National Initiative for Cybersecurity Education (NICE), National Institute of Standards and Technology (NIST) through the US Department of Commerce published findings that 1.8 million more cybersecurity professionals will be needed to fill the global shortage of positions by 2022; 64% of cybersecurity jobs will

require a bachelor's degree and 21 % graduate degrees. Additionally, computer and mathematical occupations will grow 13.5% in the next 8 years (Figure 3).

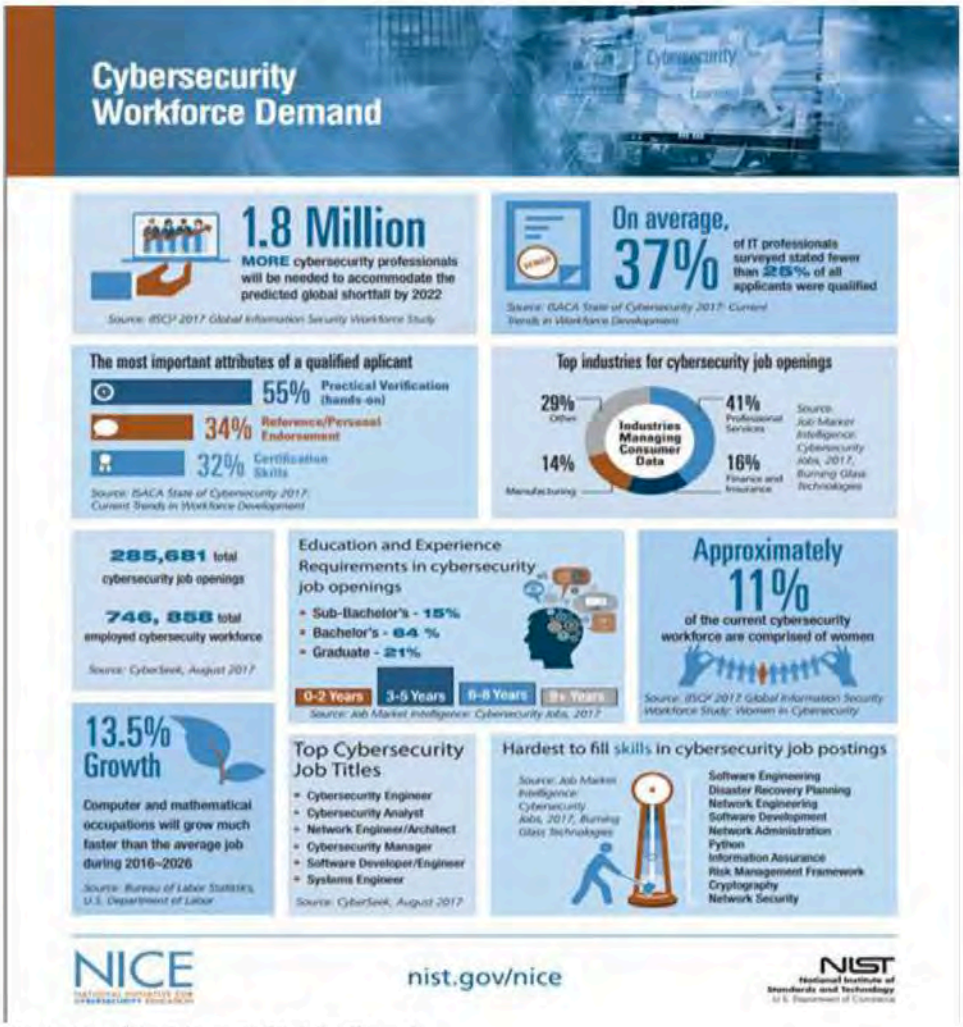

Fig. 3: nist.gov/nice Cybersecurity Workforce Demand

Presidio's President Waheed Choudhry is excited and wanting bring on Oregon Tech students as paid interns (See Appendix C, Item G).

e. If the program's location is shared with another similar Oregon public university program, the proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts).

Not applicable.

f. Estimate the prospects for success of program graduates (employment or graduate school) and consideration of licensure, if appropriate. What are the expected career paths for students in this program?

As stated under section 4d, Market Demand, it is predicted that there will be a shortage of cybersecurity professionals by 2022. In addition to the shortage of professionals, there is a growing demand for cybersecurity positions. Entry-level positions include, but are not limited to, Cybersecurity Specialist/Technician, Cyber Crime Analyst/Investigator, Incident Analyst/Responder and IT Auditor. Mid-Level positions include but are not limited to Cybersecurity Analyst, Cybersecurity Consultant, and Penetration and Vulnerability Tester. Leading industries expressing a growing need for Cybersecurity professionals include Healthcare, social assistance, finance, insurance and retail.

Indeed.com reports Cybersecurity salaries in Oregon ranging from $55,000 to $82,000 (Figure 4).

Industry support Letters

Col. Jeff Smith "Oregon Air National Guard" Kingsley Field (See Appendix C, Item H).

Waheed Choudhry President "Presidio" (See Appendix C, Item G).

Fig. 3:Indeed.com Cybersecurity Salaries, Oregon indeed

According to Indeed.com, average national entry level Cybersecurity salaries range from $74,000 to $106,000 (Figure 5).

Fig. 5: Indeed.com Entry Level Cyber Security Salaries (National Data)

5 Outcomes and Quality Assessment

a. Expected learning outcomes of the program.

The B.S. in Cybersecurity is designed to produce graduates that will be ready to enter the workforce as entry-level cybersecurity practitioners, analysts, and penetration testers. Students will be exposed to the fundamentals of computer organization and architecture, operation systems, network routing and switching, and database management, along with specialized courses in cyber defense operations, vulnerability scanning and reporting, cyber incident response, and information system risk management.

In addition to a strong technical background, students will gain professional skills needed to be successful in a diverse cybersecurity workforce. This is accomplished by incorporating the Management Department's core curriculum into the program's curriculum map.

Management Department Student Learning Outcomes:

1. Communicate the major concepts in the functional areas of accounting, marketing, finance, information technology and management.
2. Describe the legal, social, ethical, and economic environments of business in an internal/external (global) context.
3. Solve organization problems, individually and/or in teams, using quantitative, qualitative, and technology-enhanced approaches.
4. Demonstrate professional communication and behavior.
5. Apply knowledge of business concepts and functions in an integrated manner.

Students graduating with a B.S. in Cybersecurity from Oregon Tech will also demonstrate proficiency in each of Oregon Tech's Essential Student Learning Outcomes (ESLOs), including the ability to:

1. Communicate effectively orally and in writing
2. Engage in a process of inquiry and analysis
3. Make and defend reasonable ethical judgments
4. Collaborate effectively in teams or groups
5. Demonstrate quantitative literacy
6. Explore diverse perspectives

In addition to institutional and departmental student learning outcomes, students earning the B.S. in Cybersecurity will also be able to demonstrate proficiency in the following Program Student Learning Outcomes (PSLOs):

i. Describe the tactics, techniques, and procedures used throughout the vulnerability assessment process.
ii. Evaluate risk in information systems and apply mitigation techniques to reduce impact to business operations.
iii. Perform information system vulnerability scanning and report findings.
iv. Identify information system exploits and apply proper incident response.

Program Student Learning Outcomes (PSLOs)	Assessment Schedule		
Cyber Security	Fall	Winter	Spring
Describe the tactics, techniques, and procedures used throughout the vulnerability assessment process	CYB 301(KF and PM)		MIS 498 (KF and PM)
Evaluate risk in information systems and apply mitigation techniques to reduce impact to business operations.	CYB 411 (KF and PM)		MIS 498 (KF and PM)
Perform information system vulnerability scanning and report findings.	CYB 411 (KF and PM)		MIS 498 (KF and PM)
Identify information system exploits and apply proper incident response.		CYB 302 (KF and PM)	MIS 498 (KF and PM)

**Klamath Falls (KF), Portland Metro (PM)*

Table 3: Program Student Learning Outcomes Assessment Calendar

b. Methods by which the learning outcomes will be assessed and used to improve curriculum and instruction.

Departmental outcomes are assessed using both direct and indirect methods.

Indirect measures used by the Management Department include a student exit survey, administered to all Management Department majors.

Programmatic student learning outcomes are measured within courses directly related to the specific outcome. Measures include examinations, papers, and case analyses. Program Student Learning Outcomes (PSLOs) will be assessed primarily in the required one-year capstone experience. In addition, student work performance will be regularly evaluated with respect to the PSLOs using a standard rubric.

Prospects for graduate success are very strong. Oregon Tech's focused curricula and reputation have led to high employment and graduate school success for Oregon Tech Management Department graduates over the past 15 years. Similar to other Management Department degree offerings, the Cybersecurity degree incorporates well-developed, existing courses taught by seasoned faculty members.

Oregon Tech Essential Student Learning Outcomes (ESLOs) will be evaluated based on standard university processes.

c. Nature and level of research and/or scholarly work expected of program faculty; indicators of success in those areas.

The primary focus for faculty in this program will be in maintaining high levels of professional development. Cybersecurity is a rapidly changing discipline that requires a significant amount of time and effort to maintain an appropriate level of expertise. Faculty will be expected to participate in continuing education activities.

6 Program Integration and Collaboration

a. Closely related programs in this or other Oregon colleges and universities.

Currently there are no universities offering a specific 4-year baccalaureate-level degree in cybersecurity within the State of Oregon. The current offerings are stated below:

Portland State University
Graduate Computer Security Certificate

Portland Community College
Certificate in Cybersecurity Fundamentals
Associates degree with CAE2Y accreditation

Mount Hood Community College
Associates degree with CAE2Y accreditation

Chemeketa Community College
AAS Systems Administration and Network Security

Lane Community College
Career Pathway Certificate in Computer Network Security

Oregon State University
Bachelor's Degree in computer science with an Applied Option in Security

George Fox University
Bachelor's Degree in computer science with a concentration in Cyber Security

University of Oregon
Cyber Research Center with CAE-R accreditation

b. Ways in which the program complements other similar programs in other Oregon institutions and other related programs at this institution. Proposal should identify the potential for collaboration.

The B.S. Cybersecurity degree is housed within the Management Department at Oregon Tech. All students in the Cybersecurity program will complete the management core which will provide foundational knowledge for students choosing to pursue MBA programs at any of the degree granting institutions in the state of Oregon. Students in the Cybersecurity degree also have the foundational knowledge necessary to pursue master's degrees in computer science related degrees.

Incoming students can enter the Cybersecurity degree easily from several different associate degree programs around the state. Degrees in Computer Information Systems, Business, and Computer Science related degrees will transfer both general education and lower-division programmatic courses into the degree.

The expectation is to pursue articulation agreements and degree pathways with community colleges such as are is in place now for degrees within the Management Department.

Oregon tech will look to partner and collaborate with community colleges to develop degree pathways as well as with the Oregon Air National Guard to identify potential education pathways for cyberspace operations Airmen (See Appendix C, Item H).

c. If applicable, proposal should state why this program may not be collaborating with existing similar programs.

Not applicable.

d. Potential impacts on other programs.

Introducing the degree in Cybersecurity will excite a number of students and there is a possibility that some students will switch majors. The primary program that might be affected is the Information Technology program which is housed within the Management Department resulting in internal cannibalization between the degrees in the short term.

Computer Systems Engineering Technology might have some students switch to Cybersecurity. Todd Breedlove, Department Chair, has been consulted, is aware of the possibility, and has provided support (See Appendix C, Item E).

The general education departments have all been consulted and are aware of potential increases in select courses within their curriculum. Dept. Chairs Mark Neupert, Dan Peterson, and Tieman Fogarty have all provided support (See Appendix C, Items B, C and F).

The business programs are also aware of the potential increases or decreases in enrollment. Dept. Chairs Maureen Sevigny and Sharon Beaudry have all been consulted (See Appendix C, Item D)

7 Financial Sustainability

a. Business plan for the program that anticipates and provides for its longterm financial viability, addressing anticipated sources of funds, the ability to recruit and retain faculty, and plans for assuring adequate library support over the long term.

In support of our B.S. in Cybersecurity, we have higher education faculty and obtained the needed lab equipment for our campuses.

To recruit and retain faculty, we will follow established university recruiting processes. With regard to retaining faculty, we will provide professional development opportunities and industry connections. As for library services: We have librarian support embedded within our Blackboard course shells. We collaborate with our library for digital services and research support. Our subscription to Safari Books provides students with access to a wide array of texts as well.

The proposed budget for the BS in cybersecurity has a breakeven point in FY 3 (AY 4) and returned revenue at EOY of $406,559.

b. Plans for development and maintenance of unique resources (buildings, laboratories, technology) necessary to offer a quality program in this field.

The department of management proposes three potential lab configurations.

(1.) On Premise + Public Cloud

Our ideal lab configuration offers direct hands-on experience with equipment onsite located within our own datacenter and can scale out to the public cloud (primarily Amazon Web Services via AWS Educate partnership). This configuration positions us best and provides visibility and presence. The On Premise component has the cost of maintenance and related software subscriptions on the existing hardware that was acquired with the initial cybersecurity grant. For the Public Cloud portion, we can tie direct student lab costs to the student taking the course using a model similar to a tech fee.

(2.) Public Cloud

Our second preference is a Public Cloud only option. In this configuration we solely utilize Public Cloud Infrastructure. We can accomplish this offering via Amazon Web Services Educate partnership. Within this option, costs would be tied to student enrollment (i.e. we only need to provision the resources based on the number of students that we have enrolled). We can tie direct student lab costs to the student taking the course using a model similar to a tech fee (i.e. an "Extra Class / Course Fee").

(3.) On Premise

Our third preference is an on-premise lab. A lab which is solely on premise has some of the benefits outlined but is hindered by the inability to scale. This represents the highest overall cost in terms of capital outlay and maintenance costs.

Existing Equipment:

The equipment acquired through the initial cybersecurity grant belongs to the Management department and will be used in furtherance of the proposed Cybersecurity degree. This means we can take ownership of all equipment on the listing and repurpose to support the lab for the Cybersecurity degree.

Redundancy is important to any highly available IT environment. The cybersecurity grants provide enough equipment to separate and build mirrored lab environments at the Klamath Falls and Portland-Metro campuses. To achieve redundancy, each campus lab environment will serve as an offsite backup storage solution for the other campus. The result is an always-available lab environment and smart resourcing of existing equipment.

Detail of On Premise:

The numbers resulting from the cybersecurity grant show $659,059 as the starting figure for capital outlay for On Premise infrastructure. Equipment lifecycle replacement costs are calculated at 20% and 30% to show flexibility when finalizing the budget. It is important to note the 20% calculation will result in older lab equipment, driving higher equipment failure risk as equipment age increases. The replacement costs are also shown with 3- and 5-year lifecycles. The 3-year lifecycle is ideal to minimize risk in equipment failures and keeping current technologies in the lab environment. These calculations are in line with industry equipment management best practices.

Starting at $659,059, the 20% equipment replacement costs calculate to $131,811. An equipment refresh rate of 3 years at 20% calculates to $43,937 annually. An equipment refresh rate of 5 years at 20% calculates to $26,362 annually. The 30% equipment replacement costs calculates to $197,717. An equipment refresh rate of 3 years at 30% calculates to $65,905 annually. An equipment refresh rate of 5 years at 30% calculates to $39,543 annually.

Detail of Public Cloud:

The costs for Public Cloud services should be able to be contained within an extra class fee per class per student participating within the Cybersecurity degree. By having an "extra class fee" of $ 100, students will have the available resource budget on Amazon AWS to have on average 3 virtual machines for their labs running over the course of 10 weeks with the necessary utilization in terms of compute and storage hours.

To remain flexible and budget conscious we will work with our program directors, dean and related we will work diligently to bring cost under control and long term sustainable.

This equipment can also be leveraged by IT and HI degrees. Cross utilization of laboratory equipment between Cybersecurity, IT, and HI programs results in high-utilization of existing resources. The programs together across all modalities the total students served would be approximately 250 (Cybersecurity, IT, HI, etc.).

c. Targeted student/faculty ratio (student FTE divided by faculty FTE).

The target student/faculty ratio is 20:1.

d. Resources to be devoted to student recruitment.

Recruiting efforts include working with the Office of Academic Partnerships to develop articulation agreements and OIT publications, as well as with the Offices of Strategic Enrollment Management and Admissions. It is anticipated that no resources will be devoted exclusively to recruitment as it will become part of the larger Management Department's recruiting efforts.

8 External Review

a. If the proposed program is a graduate level program, follow the guidelines provided in External Review of New Graduate Level Academic Programs in addition to completing all of the above information.

Not applicable.

APPENDIX

A. Approval to Proceed
B. Summary for OIT Curriculum Planning Commission
    1. New Courses
    2. Program Narrative
    3. Curriculum Map
    4. General Education Requirements
C. Documentation of communication
D. References

Appendix A: Approval to Proceed

Oregon TECH

Curriculum Proposal Cover Sheet
for New Degrees, New Degree Options, Significant Program Revisions, etc.

Approval to Proceed / Final Approval

Department: Management Program: B.S. Cybersecurity

Submitter's Name: Kris Rosenberg Phone: 503-821-1309 Email: kris.rosenberg@oit.edu

Proposal submission date: October 28th, 2016

Implementation requested for academic year: 2018-19 (2017-18 if possible)

Type of curriculum proposal:

- [x] New degree
- [ ] New degree option
- [ ] Significant program revision
- [ ] Curriculum change requiring additional funding, facilities or staff
- [ ] Minor
- [ ] Certificate
- [ ] Specialization
- [ ] Emphasis
- [ ] Other

Abstract of the proposed change:

There is a undenialbe need for for cybersecurity professionals with knowledge and skils in the technologies, processes and practices needed to protect networks, computers, programs and data from attack, damage or unauthorized access. Cybersecurity represents a new unique and specialized profession that is separate from traditional business, IT and engineering disciplines that combines skill sets from these disciplines along with highly specialized knowledge and skills that are unique to Cybersecurity. Therefore it is reccomended that a new B.S. in Cybersecurity degree be devloped.

Signatures below constitute **Approval to Proceed** in the curriculum proposal process:

Date: 11/2/16 Approved by: Maureen Serjoy, Department Chair

Date: 11/2/16 Approved by: [signature], Dean

Date: 11/4/16 Approved by: [signature], Provost

Signatures below constitute **Final Approval** of this proposal:

Date: 1-8-18 Approved by: [signature], Department Chair

Date: 24 Jan '18 Approved by: [signature], Director of Assessment

Date: 1-24-18 Approved by: [signature], Dean

Date: Approved by: , CPC

Date: Approved by: , Provost

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Appendix B: Summary for OIT Curriculum Planning Commission

1. New Courses

Class Number and Name	Cr.
MIS 240 Linux OS	3-3-4
MIS 285 Python Programming	3-3-4
MIS 365 Cloud Computing	3-3-4
CYB 201 Cyber Security Fundamentals	3-0-3
CYB 301 Hacker Tools and Techniques	3-3-4
CYB 302 System Defense and Incident Response	3-3-4
CYB 303 Security Operations and Analysis	3-3-4
CYB 351 Network Security	3-3-4
CYB 411 Managing Risk and Information Systems	3-0-3
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2. Program Narrative

Degree Offered

Bachelor of Science in Cyber Security

This program offers a BS in Cyber Security to students who interests lie in business, computer information systems and goal of securing business assets.

Student Preparation and Admissions

Students must meet the standard OIT admissions requirements. Transfer students must arrange for official transcripts from each college and university attended to be sent to OIT.

3. Curriculum Map

BS in Cyber Security			
	NEW CURRICULUM		
Prerequisite	**Freshman Year - Fall**		
Math 100	MATH 111	College Algebra	4
	SPE 111	Public Speaking	3
WRI 115	WRI 121	English Composition	3
		Lab Science Elective	4
		TOTAL:	14
	Freshman Year - Winter		
College Level Math	ECO 201	Principles of Microeconomics	3
	MIS 102	Spreadsheet Lab	1
	MIS 145	Introduction to PC Hardware/Software	4
WRI 121	WRI 122	Argumentative Writing	3
MATH 111	MATH 112	Trigonometry	4
		TOTAL:	15
	Freshman Year - Spring		
	BUS 215	Principles of Management	3
MIS 145	MIS 251	Networking I	4
	MIS 275	Introduction to Relational Database	3
Math 111	MIS 285	Python Programming	4
		TOTAL:	14
	Sophomore Year - Fall		
Math 100	ACC 201	Principles of Accounting I	4
Math 111	MIS 118	Introduction to Programming in C#	4
MIS 145	MIS 273	Systems Administration I	4
WRI 122 and SPE 111	WRI 227	Technical Report Writing	3
		TOTAL:	15
	Sophomore Year - Winter		
	BUS 226	Business Law	3

MATH 111	MATH 361	Statistical Methods I	4
MIS 118 and MIS 275	MIS 218	Database Programming	4
	CYB 201	Cyber Security Fundamentals	3
WRI 227	PHIL 331	Ethics in the Professions	3
	or		
WRI 122 and 3 cr. Hum Electives	PHIL 342	Business Ethics	3
		TOTAL:	17
	Sophomore Year - Spring		
ACC 201	ACC 203	Principles of Managerial Accounting	4
MIS 145	MIS 240	Intro to Linux OS	4
BUS 215 or BUS 317	MGT 335	Project Management	3
College Level Math	ECO 202	Principles of Macroeconomics	3
SPE 111	SPE 321	Small Group and Team Communication	3
		TOTAL:	17
	Junior Year - Fall		
ACC 203	ACC 325	Finance	4
MIS 251	MIS 351	Routing and Switching I	4
WRI 121	MIS 311	Introduction to Systems Analysis	3
		Humanities Elective	3
CYB 201 and MIS 285 and WRI 227	CYB 301	Hacker Tools and Techniques	4
		TOTAL:	18
	Junior Year - Winter		
MIS 275 and MIS 311	MIS 312	Systems Analysis I	4
MIS 118 and MIS 275	MIS 341	Relational Database Design I	4
WRI 227	WRI 350	Documentation Writing	3
	or		
WRI 227	WRI 327	Advanced Tech Writing	3
MATH 361 and MIS 113 or MIS 275	MIS 334	Business Analytics	3
CYB 301 and MIS 351	CYB 302	System Defenses and Incident Response	4
		TOTAL:	18
	Junior Year - Spring		
	BUS 223	Marketing I	3

MIS 218, MIS 312, MIS 341	MIS 322	Systems Analysis II	4
MIS 312 and MGT 335	MIS 495	Senior Project Selection	1
CYB 301 and SPE 321	CYB 303	Security Operations and Analysis	4
CYB 201 and MIS 351	CYB 351	Network Security	4
		TOTAL:	16
	Senior Year - Fall		
MIS 251 and MIS 273	MIS 365	Cloud Computing	4
MIS 495 and MIS 322	MIS 496	Senior Project Mgmt	3
BUS 215 or BUS 304 and MIS 206 or MIS 311	CYB 411	Managing Risk in Information Systems	3
BUS 215, BUS 304, BUS 317	MGT 321	Operations Management	3
		TOTAL:	13
	Senior Year - Winter		
SPE 111 and WRI 122	BUS 356	Business Presentations	4
MIS 496	MIS 497	Senior Project I	3
Junior Standing or Instructor's Consent	PSY 347	Organizational Behavior	3
BUS 215, BUS 304, BUS 317	BUS 349	Human Resource Mgmt	3
		TOTAL:	13
	Senior Year - Spring		
MIS 497	MIS 498	Senior Project II	3
ACC 203 and WRI 227	BUS 478	Strategic Management	3
WRI 122	ANTH 452	Globalization	3
		Humanities Elective	3
		TOTAL:	12
		Degree Total	182

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4. **General Education Requirements**

The BS in Cybersecurity will meet the institution's policy for general education requirements as follows. Please note that on November 20th, 2012 the management department received an exemption to the 36/45 general education rule by the registrar (See Appendix C, Item A).

General Education Requirements Summary		
Communication: 18 Credits		
SPE 111	Public Speaking	3
SPE 321	Small Groups and Teams	3
WRI 121	English Composition I	3
WRI 122	English Composition II	3
WRI 227	Tech Report Writing	3
WRI 350	Documentation Writing	3
		18
Humanities: 9 Credits		
PHIL 331 or 342	Ethics in the Professions or Business Ethics	3
	Humanities Electives	6
		9
Math / Science: 12 Credits		
MATH 111	College Algebra	4
MATH 112	Trigonometry	4
MATH 361	Statistical Methods	4
		12
Lab Science: 4 Credits		
	Lab Science Elective	4
		4

Social Science: 12 Credits		
ECO 201	Macroeconomics	3
ECO 202	Microeconomics	3
	ANTH 452 or HIST 452	3
PSY 347	Organization Behavior	3
		12
Upper Division: 60 Credits		
MIS 311	Introduction to Systems Analysis	3
MIS 312	Systems Analysis I	4
MIS 322	Systems Analysis II	4
MIS 341	Relational Database Design I	4
MIS 334	Business Analytics	4
MIS 351	Routing and Switching I	4
MIS 495	Sr. Project Selection	1
MIS 496	Sr. Project Management	3
MIS 497	Sr. Project I	3
MIS 498	Sr. Project II	3
CYB 301	Hacker Tools and Techniques	4
CYB 303	Security Operations and Analysis	4
CYB 351	Network Security	4
CYB 411	Managing Risk in Information Systems	3
MGT 321	Operations Management	3
MGT 335	Project Management	3
BUS 349	Human Resources Management	3
BUS 356	Business Presentations	3
		60

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Appendix C: Documentation of Communication

a. Exemption of the 36/45 requirement

MEMORANDUM

OFFICE OF THE REGISTRAR

TO: Marla Miller

FROM: Wendy Ivie

DATE: Tuesday, November 20, 2012

SUBJECT: Management Department Programs – Math/Science/Social Science Requirement

---

Beginning with the 2012-13 catalog year, all Bachelor of Science degrees in the Management Department are not required to meet the umbrella requirement of 36 Math/Science credits or 45 Math/Science/Social Science credits. In the 2012-13 curriculum maps, all 'Math/Science/Social Science Electives' will be replaced with 'General Electives' in the Bachelor of Science degrees listed (note that all degrees are still required to complete at least 12 credits of Social Science):

Allied Health Management
Information Technology, Accounting Option
Information Technology, Applications Development Option
Information Technology, Business/Systems Analysis Option
Information Technology, Health Informatics Option
Management, Accounting Option
Management, Entrepreneurship/Small Business Management Option
Management, Marketing Option
Operations Management

In order for the 36/45 requirement to be waived for students following earlier catalog curriculums, a Course Substitution form will need to be submitted to the Registrar's Office.

Regards,

Wendy Ivie

Wendy Ivie
University Registrar

b. Letter of Support Math Department

From: Tiernan Fogarty
To: Jeff Dickson
Subject: RE: Degree Support
Date: Thursday, September 20, 2018 2:31:02 PM

Hi Jeff,

You bet! This is great. Good luck with the new program.

Thanks, Tiernan

From: Jeff Dickson
Sent: Thursday, September 20, 2018 1:36 PM
To: Tiernan Fogarty <Tiernan.Fogarty@oit.edu>
Subject: Degree Support

Hi Tiernan,

The department of management is proposing a major in Cyber Security. The program is adding MATH 111, 112 and 361.

The projected enrollment is:

20 in wilsonville and 15 klamath year 1 and an aggressive growth of 25% year 2 so 25 in wilsonville and 18 in klamath. There may be some also shifting out of IT into Cyber so they might not all be new students. Yes I made the adjustment for HIST in WLV thanks

Can the math department support this enrollment growth?

Thanks,

Jeff Dickson
Associate Professor
Program Director, Health Informatics
Program Director, Information Technology

Oregon TECH

3201 Campus Drive
Mailstop: OW 143
Klamath Falls, Oregon 97601

Phone: 541-885-1857

c. Letter of Support Humanities Department

From: Mark Neupert
To: Jeff Dickson
Subject: Re: Departmental Support for Cyber Security
Date: Thursday, September 20, 2018 11:51:54 AM

Hi Jeff, HSS can support this requirement.

Cheers, Mark

From: Jeff Dickson
Sent: Thursday, September 20, 2018 8:49:56 PM
To: Mark Neupert
Subject: Re: Departmental Support for Cyber Security

Hi Mark,

20 in wilsonville and 15 klamath year 1 and an aggressive growth of 25% year 2 so 25 in wilsonville and 18 in klamath. There may be some also shifting out of IT into Cyber so they might not all be new students. Yes I made the adjustment for HIST in WLV thanks.

Jeff

Sent from my iPhone

On Sep 20, 2018, at 11:40 AM, Mark Neupert <Mark.Neupert@oit.edu> wrote:

> Hi Jeff, how many students? Location? On the ground in odd we only offering the Hist version.
> M
>
> **From:** Jeff Dickson
> **Sent:** Thursday, September 20, 2018 7:32:55 PM
> **To:** Mark Neupert
> **Cc:** Sharon Beaudry; Hallie Neupert; Maureen Sevigny
> **Subject:** Departmental Support for Cyber Security
>
> Hi Mark,
>
> The Management department is producing a proposal for a BS in Cyber Security. There are some prescribed courses from your department and we would like your departments support to offer the following courses. The BS in Cyber Security will be initially offered in Wilsonville and Klamath Falls and the courses we are needing are ANTH 452, PHIL 342 and PSY 201.
>
> Thank you,
>
> Jeff Dickson

d. Letter of Support Department of Management

From: Sharon Beaudry
To: Jeff Dickson; Hallie Neupert; Maureen Sevigny
Subject: Re: Program Support
Date: Thursday, September 20, 2018 10:57:36 AM

Hi,
In Klamath Falls we can handle the additional students. From my understanding the Wilsonville business core courses are not full, therefore we would also be able to handle those as well.

Sharon Beaudry, JD, SPHR
Associate Professor & Acting Department Chair
Business Management
541.885.1575 | sharon.beaudry@oit.edu
Oregon TECH
Tech-Infused Business Degrees
Webpage
Facebook

From: Jeff Dickson
Sent: Thursday, September 20, 2018 10:34:46 AM
To: Sharon Beaudry; Hallie Neupert; Maureen Sevigny
Subject: Program Support

Sharon, Hallie and Maureen,

As you know we are preparing the proposal for the Cyber Security degree. The proposed curriculum includes the Management core courses and will be needed in both Klamath Falls and Wilsonville campus. Will the BUS programs be able to handle the additional capacity and support the Cyber Degree?

Thanks,

Jeff Dickson
Associate Professor
Program Director, Health Informatics
Program Director, Information Technology

Oregon TECH

3201 Campus Drive
Mailstop: OW 143
Klamath Falls, Oregon 97601

Phone: 541-885-1857

e. Letter of Support Computer Systems Engineering

From: Todd Breedlove
To: Jeff Dickson
Subject: Re: CSET Support for Cyber Security
Date: Saturday, September 22, 2018 11:29:25 AM

Jeff,

We in CSET realize that there may be some shifting of students between our majors. However, it is our belief and advice to all of our students to go with what they love. If that is the cyber security degree, good for them.

I do look forward to working with you to add options for all of our students and opportunities for our departments to collaborate. Initiatives such as minors or concurrent degree options may be just some of the added possibilities.

As it moves forward, let's try to minimize the duplication of effort and course content. We have enough of that already.

Todd

Get Outlook for Android

From: Jeff Dickson
Sent: Saturday, September 22, 2018 10:11:52 AM
To: Todd Breedlove
Subject: CSET Support for Cyber Security

Todd,

We are working to revise the cybersecurity proposal. I would like to get your support for the possibility of future collaboration and options for the cyber security program that align with your department. While I do not have any figures to determine what type of internal conversion we might have with students. I need your recognition that there might be some CSET students that convert over to the cyber security program. Our deadline for this degree proposal is to be on Kuleks desk by Wednesday.

Thanks,

Jeff Dickson
Associate Professor
Program Director, Health Informatics
Program Director, Information Technology

Oregon TECH

3201 Campus Drive

f. Letter of Support Communication Department

Hi Jeff,

After discussing your proposal with the faculty in my department it was determined that your proposal will have no effect on WRI 121, WRI 122, SPE 111 or SPE 321. However, because we offer one, maybe two sections (depending on need) of WRI350 a year, if the cyber security degree was more flexible in the upper division writing requirement by considering one or two more possible upper division writing options (WRI 327 for example), students would have greater ability to take the WRI classes and complete without having to wait for WRI 350. Let me know if you have any questions about my feedback.

Regards,

Dan

From: Jeff Dickson
Sent: Thursday, September 20, 2018 1:37 PM
To: Dan Peterson <Dan.Peterson@oit.edu>
Subject: Program Support

Dan,

The management department is proposing a degree in cyber security. The courses utilized in this degree from your department is WRI 121, 122, 350, SPE 111 and SPE 321.

Project Enrollment is

20 in wilsonville and 15 klamath year 1 and an aggressive growth of 25% year 2 so 25 in wilsonville and 18 in klamath. There may be some also shifting out of IT into Cyber so they might not all be new students.

Can the communications department support this enrollment increase.

Jeff Dickson
Associate Professor
Program Director, Health Informatics
Program Director, Information Technology

Oregon TECH

3201 Campus Drive
Mailstop: OW 143
Klamath Falls, Oregon 97601

Phone: 541-885-1857

g. Internship Support from Presidio

From: Jim Jones2
Sent: Tuesday, September 25, 2018 1:30 PM
To: Jeff Hower <Jeff.Hower@oit.edu>; Lindy Stewart <Lindy.Stewart@oit.edu>; Sharon Beaudry <Sharon.Beaudry@oit.edu>; Dan Carrere <Dan.Carrere@oit.edu>; Tracey Coon <Tracey.Coon@oit.edu>
Subject: Cyber Security Internship.docx

Hello all!

Good news! I spoke to the president of Presidio, Waheed Choudhry, this AM and he is very interested in starting an internship program with us starting Fall 2019. The internship will be however many months we need, and it will be a paid internship at $15 per hour. Waheed would like some additional information about the internship, what is expected of the company, what are the outcomes etc. I attached a quick document that I stole from another organization online that offers internships. I think we can use this as a starting point to provide to the vendors for the internships.

Mr. Choudhry is very excited about this opportunity and has given tentative approval for up to three internships with their security and risk management team.

Please review the attached and edit. We can refine and dial it in before we send students there, for now we just need a good overview of what we expect the internship outcomes to be and what is expected of the company offering the internships.

I am sure y'all have worked with internships before but I found this useful:
https://www.huffingtonpost.com/maureen-dumas/building-a-framework-for-_b_2680394.html

Talk to you soon!

Jim R. Jones Ph.D.
AVP CIO
Information Technology Services
Oregon TECH

3201 Campus Drive, BH 123
Klamath Falls, OR 97601
541.885.1720 Office
541-205-8753 Cell

541.885.1919 Fax
www.oit.edu

"The secret of change is to focus all of your energy, not on fighting the old, but on building the new."
- Socrates

h. Industry support and potential collaboration with Oregon Air National Guard

From: Tracey Coon
To: Jeff Dickson; Lindy Stewart; Dan Carrere
Subject: Fwd: [Non-DoD Source] Oregon Tech & ORANG
Date: Wednesday, September 26, 2018 7:30:42 AM

External support from the Oregon Air National Guard!

Get Outlook for Android

From: Smith, Jeffrey S (Sled) Col USAF 173 FW (US)
Sent: Wednesday, September 26, 5:27 AM
Subject: Re: [Non-DoD Source] Oregon Tech & ORANG
To: Tracey Coon
Cc: Gelhardt, Scott A Capt USAF 173 FW (US), Shirar, Jennifer D SMSgt USAF 173 FW (US)

Tracey,

Thanks for reaching out. Yes, we are absolutely interested in continuing to build the strong partnership we have with Oregon Tech and we are excited to hear about your growing cybersecurity program.

Cybersecurity is an ever growing career field in the Air Force, and we are looking for talented individuals to fill those roles at Kingsley Field and elsewhere in the Oregon Air National Guard. We already have a talented roster of Oregon Tech graduates serving at Kingsley, and we look forward to adding more to the team!

All the best,

Jeff Smith, Col, ORANG
173 FW Commander
541-885-6173 (work)
541-331-8414 (cell)

Sent from my iPad

On Sep 22, 2018, at 11:57 AM, Tracey Coon <Tracey.Coon@oit.edu> wrote:

Hello Col Smith,

The purpose of this message is to gain your support on the proposed cybersecurity degree program here at Oregon Tech.

As you are aware, there is a large deficit between skilled cybersecurity professionals and the growing number of threats aimed at exploiting our information systems. Oregon Tech is

proposing a Bachelor of Science in Cybersecurity degree program that will help build a diverse cybersecurity workforce. Our program is built around the National Security Administration (NSA) and Department of Homeland Security (DHS) cybersecurity core knowledge units. In other words, our program will directly support the federal government's efforts in developing a cybersecurity workforce that is ready to defend our Nation's infrastructure. Furthermore, our program focuses on employers like you to ensure we are providing the best graduates of cybersecurity.

In this process, we seek external support from potential employers. Would you, on behalf of Oregon Air National Guard, be willing to hire recent graduates with a Bachelor of Science in Cybersecurity degree from Oregon Tech?

Finally, as we continue to build this program, are you willing to continue building a partnership between Oregon Tech and the Oregon Air National Guard to support our cybersecurity program?

On behalf of Oregon Tech and the Management Department, I truly appreciate all of your support in this community partnership. I look forward to our future discussions on cybersecurity, Oregon Tech, and the Oregon Air National Guard.

Best regards,

Tracey J. Coon
Assistant Professor, Information Technology

<image002.jpg>
3201 Campus Drive
Mailstop: OW 143
Klamath Falls, Oregon 97601

Phone: 541-885-0856
tracey.coon@oit.edu

Appendix D: References

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DISCUSSION ITEM
Agenda Item No. 4.2
Workload Audit Review

Background

Internal Audit has completed the Faculty Workload Management audit within Academic Affairs, spanning both colleges. Fieldwork was completed at the end of the 2018 Academic Year, using that year's data.

Internal audit results are classified into three categories; findings, observations, and process improvement recommendations in declining order of significance.

The Faculty Workload Management audit identified ten (10) findings, six (6) observations and six (6) process improvement recommendations spanning across several audit objectives. These include Workload tracking, Overload Pay, Release Time, Course Offerings and Accrued Leave.

At the November 15, 2018 meeting the Finance and Facilities Committee of the Board accepted the audit and recommended the Academic Quality and Student Success Committee review the audit report and discuss the management response.

Recommendation
None – for discussion only

Attachments

- Draft Management Response to Audit Report
- Draft Faculty Workload Management Internal Audit Report

ACADEMIC AFFAIRS RESPONSE TO WORKLOAD AUDIT

Preamble

Prior to the Provost's appointment on June 30, 2017, upper leadership positions (e.g., President, Provost, Dean) were filled by interims and most internal budgeting and management processes were under- and undeveloped. Faculty workload guidelines were in place for some programs but were incomplete, not fully implemented, and little effort was made to budget appropriately for faculty workload. Furthermore, faculty workload and course utilization data was not collected until the end of the academic year, manually using inefficient and inaccurate spreadsheets which did not use Banner-based data. In addition, neither the Provost's Office nor the Business Affairs Office had personnel or plans to effectively assist in monitoring and collecting such data. This challenging situation awaited the new leadership.

The Provost, Dr. Gary Kuleck, in his inaugural year, worked to strengthen the reporting structures by first prioritizing the engagement and training of academic department chairs, and assigning the Director of Institutional Research to work directly with them to collect the data. Efforts were weakened by the lack of a permanent Dean in the College of Engineering, Technology and Management (ETM), the absence of the Dean of Health, Arts and Sciences (HAS) for extended periods, a failure to implement Banner-based automated data mining systems, and the lack of comprehensive Faculty workload guidelines for all units.

Financial cost analysis relies on the continuous and periodic collection of workload and course utilization data and effective planning and budgeting based on that data. The past year (July 2017-June 2018), a number of preliminary steps were put in place. First, workload data was accurately collected for the first time allowing for the first-ever detailed cost analysis study of workload, course utilization and other parameters which will be the cornerstone of future effective planning and budgeting. Second, the expectations for Chair and Dean direct participation in the management of those elements have been clearly delineated in a new Chair Selection Policy and Chair's Roles and Responsibilities Guidelines. Furthermore, the Academic Affairs division was seriously understaffed and this has been remedied with the appointment of a new ETM Dean, hiring of two Associate Deans to support the Deans in management of their units, the strengthening of the Institutional Research Office with new personnel to provide leadership and direction in comprehensive planning and management of the university's academic resources. Finally, the installation and implementation of the Faculty Workload and Compensation (FLAC) in Banner is underway and is anticipated to be completed in Spring Term 2019 and will be a powerful tool in addressing issues raised in the internal audit.

This preamble serves as an introduction to the Management Response to the recent Faculty Workload Audit.

Management Response: Faculty Workload Internal Audit

The internal audit was conducted on data from the 2016-17 Academic Year prior to the appointment of the new Provost. Management respectfully agrees with the findings of Internal Audit dated October 5, 2018 related to Workload, Overload Pay, Release Time, Course Offerings and Accrued Leave. The issues identified by Internal Audit, when taken together, demonstrate systemic issues which requires a thorough and systematic solution. This management response letter provides initial steps in a comprehensive plan to address these issues by increasing the planning,

reporting and managing of course offerings and associated workload efficiencies in both the College of Engineering, Technology and Management (ETM) as well as the College of Health, Arts and Sciences (HAS). Management believes the proper operational unit for active management of course offerings is at the college level and involves the coordination of activities and proper resourcing between the Provost's Office and Business Affairs Office. Ultimately, the final responsibility resides with the Deans, with appropriate review and guidance from the Provost.

Internal Audit has identified that there are deficiencies with regard to the university's collection and analysis of data that supports effective practices in course planning, tracking and management of course offerings and workload management. This includes the system which collects and tracks workload for the purposes of paying overload and other non-standard workload of faculty as well as the assignment of release time from the normal teaching expectation of faculty. Course planning, tracking and management has not historically been housed at the Provost or Dean level, nor supported with resources or tools residing in other units, which has therefore resulted in ex *post facto data collection and* reporting by departments. Systematic matching of department records with the university's system of record, Banner, has not taken place since automated support mechanisms have not been implemented and the work required excessive and inaccurate manual actions. Issues related to course and workload planning, tracking and management will become the responsibility of the Dean once the appropriate support mechanisms and resources are in place. The resources necessary for these steps will be made available to the Provost Office to support the Deans in establishing a consistent and intentional planning, tracking and reporting system. The implementation of such a model will require significant change in process, appropriate resourcing allowing for much more active management by the Deans and Chairs. Resource acquisition (personnel and IT support are underway and processes are under development to support these changes). It is anticipated that resources to accomplish these ends are expected to be in place by the end of the academic year.

Internal Audit further identified deficiencies related to institutional policy as it relates to faculty workload expectations, including teaching and non-teaching components of a Full Time Equivalent (FTE) faculty member. This lack of clear definition, and adherence to what definitions do exist, are problematic.. The responsibility of the Deans and Provost to promulgate and maintain clear and consistent workload guidelines for all faculty and for individual classes. This includes guidelines for release time, incorporation of online classes into regular teaching workload, regularizing non-teaching workload expectations and other non-typical work events for faculty. This effort has begun with clarified workload guidelines for AY '18-'19 regular, face-to-face teaching as well as online course and non-tenure track teaching expectations. The complexity and divergence from traditional programming here at OIT will require further effort over time and formalization of such guidelines is recognized as critical to the university. This will be a multi-step process and efforts have begun during the 2018-19 Academic Year.

Inconsistencies related to: calculation of workload for courses with identical contact hours, stipend awards and release time for similar work in different departments, timing of payment for overload courses, the use of stipends or release time, use of waitlist data, and course capacity for identical or substantially identical courses are of concern to Management. Internal Audit further identified dozens of cases in which full load was assigned to courses with less than 10 students in which a discounted load should have been applied per Workload Guidelines. These issues now identified will be mitigated through the development of robust guidelines for all of the programs and will promulgated by the Provost, managed by the Chairs with tracking the responsibility of the Deans.

The specific issues discussed in this management response letter, and other Findings, Observations and Process Improvement Recommendations identified by Internal Audit will be managed through a multi-pronged approach by management with appropriate resources, training and tools, regardless of which reporting areas provide those resources. This includes:

- a system for course and workload planning [Provost]
- clear and consistent workload guidelines [Provost]
- management of course offerings [Chairs]
- authorizing stipend, release time and faculty workload [Deans]
- vacation and sick time tracking [Chairs and Payroll]

In order to ensure that these systems are developed, managed and implemented a deficiency in staff capacity within the Office of the Provost has been identified. To this end, an Internal Research Analyst (IRA) position is being classified to a higher position and hired in Winter 2019 and Associate Provost for Institutional Effectiveness is planned for hiring at a future date. In the interim, the Provost will assign the IRA, IR Director to work with the Deans of ETM and HAS to develop, implement and support a course and workload planning system. This system will be implemented over the course of the 2018-19 Academic Year and 2019-20 Academic Year course offerings will be planned in advance and overload, online, out of load, release and stipend time/pay will be budgeted.

APPENDIX A: ADDRESSING THE FACULTY WORKLOAD AUDIT

STEPS COMPLETED

1. Prioritized the engagement and training of academic department chairs. Expectations for Chair and Dean were clearly delineated in a new Chair Selection Policy and Chair's Roles and Responsibilities Guidelines to encourage the recruitment of proactive chairs with defined duties. **SUMMER '18.**

2. Assigned Director of Institutional Research to collect Workload Data which was accurately collected for the first time (~99% completion). Will continue this year but need staff assigned to academic affairs to completely develop the process. **WINTER '19.**

3. Appointed new ETM Dean, two Associate Deans to support the Deans in management and the hiring of Associate Provost (pending). **SUMMER/FALL '18.**

STEPS UNDERWAY

4. Requested implementation of the Faculty Workload and Compensation (FLAC) in Banner - For accurate and efficient data collection and reporting; requesting staffing to develop the processes and facilitate workload collection in concert with Deans and Chairs. **WINTER '19, requesting FLAC implementation be raised to high priority; staffing requested in Budget request '19-'20.**

5. Requested planning, reporting and managing of course offerings and associated workload efficiencies in both colleges. Ultimately, the final responsibility resides with the Deans with appropriate review and guidance from the Provost. **WINTER '19, first stage of implementation - year-long scheduling.**

6. Created faculty workload guidelines for AY 18-'19 regular, face-to-face teaching as well as online course and non-tenure track teaching expectations. **FALL '18, ongoing steps in implementation.**

Faculty Workload Management
Internal Audit Report
October 5, 2018

DRAFT
10/5/2018

To: Board of Trustees and Management of Oregon Tech

From: Kernutt Stokes, Contract Internal Auditors (IA)

Date: October 5, 2018

Subject: Faculty Workload Management Internal Audit

EXECUTIVE SUMMARY

We have completed our internal audit of Faculty Workload Management at Oregon Tech. The objective of this audit was to ascertain the effectiveness and appropriateness of existing policies and guidelines related to the fiscal, operational, and administrative controls of faculty workload, overload pay, release time, course offerings, and accrued leave as part of the 2017/2018 Internal Audit Plan. In general our audit found that there is insufficient planning, review, approval, reconciliation, and analysis of course and faculty workloads within the University under current practices, policies, and guidelines.

Results of the audit are classified into three categories. The categories are defined below, ranking from most pervasive to least.

- Finding – More serious in nature, a finding is an instance of a breakdown or partial breakdown, leading to a potential failure of the University's objectives. A finding requires immediate corrective action.
- Observation – An instance of a minor deviation from an otherwise well-implemented process. An observation requires noting in the audit report and should be evaluated and corrected as resources and time allow.
- Process Improvement Recommendation (PIR) – An instance of a potential improvement opportunity. A recommendation does not require action, but is encouraged for improvement.

Focus Area	Findings	Observations	PIRs
Workload (page 4)	2	2	1
Overload Pay (page 7)	5	1	2
Release Time (page 10)	1	1	1
Course Offerings (page 12)	1	1	2
Accrued Leave (page 14)	1	1	-
Total	**10**	**6**	**6**

For a detailed explanation of the results please refer to the individual objectives contained in the body of this audit report.

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BACKGROUND

Faculty salaries, OPE (other payroll expenses), overload, and adjunct pay is the largest expense of the University annually, and represents approximately 30% of the total University budget. Control and planning over these expenses is considered critical to the operations and planning goals of the overall organization.

The Provost and Vice President for Academic Affairs supports the faculty and curriculum of Oregon Tech. Academic programs from the College of Health, Arts, and Sciences and College of Engineering, Technology, and Management are supervised by the provost in collaboration with the deans of each college and the Faculty Senate.

The provost is the Chief Academic Officer of the University. At the time of this audit, the College Deans, Dean of Online Learning, Directors of Academic Agreements, Academic Excellence, Institutional Research, Libraries, Oregon Renewable Energy Center, Sponsored Projects and Grants Administration, University Registrar, and the General Instruction unit report to the provost.

Based on the annual risk assessment, IA focused specifically on the following areas:

- Workload – The normal faculty teaching load at Oregon Tech is 12 workload hours per term. While loads may vary from term to term, 36 workload hours per academic year is typical. Faculty members are expected to include time for course preparation, five office hours per week, and academic advising as part of their normal loads. Faculty are also expected to serve on committees and provide community service as part of their regular workload.

- Overload Pay – When a faculty member works above the normal expected workload, overload will be paid. This is only available for faculty members who are on nine-month appointments and must be pre-arranged with the department chair, dean, and provost. Twelve-month faculty are not eligible for overload.

- Release Time – A faculty member with an especially heavy service load may be eligible for a reduced teaching load through release time. This is usually granted to department chairs or faculty members with special assignments but must be negotiated with the dean and provost.

- Course Offerings – Courses with enrollment of less than 10 are classified as low-enrollment, and will be reviewed by the department chair to determine if the course will run. Low-enrollment courses that are allowed to run will be offered at a reduced rate of pay based on the number of students enrolled. Any faculty member teaching a course with less than three students will be offered no pay for that course.

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- Accrued Leave – Sick leave is accrued on a monthly basis for all faculty members at a rate of 8 hours per month. Faculty members with 12-month contracts accrue vacation leave at a rate of 15 hours per month. Faculty members contracted for less than 12 months do not accrue vacation leave.

OBJECTIVE

The objectives of this audit were to:

- Ensure faculty are working the correct workload as defined in the 2016/17 Faculty Handbook and Faculty Workload Guidelines. Ensure all policies and guidelines are being consistently and correctly applied.
- Ensure faculty are being correctly compensated when working over the expected workload and that policies and guidelines regarding overload pay are being consistently and correctly applied.
- Review whether release time is being granted with proper approval and that faculty are being properly compensated.
- Determine whether class size information is being used strategically in course planning. Review whether waitlist and low-enrollment courses are being properly evaluated in accordance with University policies and guidelines.
- Ensure accrued leave is being properly granted and used.

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SCOPE AND METHODOLOGY

Our audit was conducted in accordance with the guidelines set forth in the Institute of Internal Auditors' International Standards for the Professional Practice of Internal Auditing. The standards set criteria for internal audit departments in the areas of independence, professional proficiency, scope and performance of audit work, and management of the internal auditing department.

To achieve the audit objectives, we reviewed the 2016/17 Faculty Handbook along with the updated 2017/18 Faculty Handbook. The purpose of this handbook is to provide a summarization of policies and procedures for new and returning faculty members. Additionally we reviewed the Faculty Compensation Policy and the Faculty Workload Guidelines. All three of these documents were used during our audit of Faculty Workload Management. We also conducted interviews with management and staff, and performed a review of 2016/2017 academic year course offerings, department workloads, accrued leave, and release time.

The scope of this audit was limited to only tenured, tenured-track, and professional-track faculty. The scope of this audit included non-graduate courses offered on the Klamath Falls and Wilsonville

campuses through the following four departments: Computer Systems Engineering Technology (CSET), Management (MGT), Medical Imaging Technology (MIT), and Natural Sciences (NSC).

AUDIT RESULTS

Workload

- **Objective:** Ensure faculty are working the correct workload as defined in the 2016/17 Faculty Handbook, and Faculty Workload Guidelines. Ensure all policies and guidelines are being consistently and correctly applied.
- **Audit work performed**: Reviewed policy documentation including the 2016/17 Faculty Handbooks, Faculty Compensation Policy, and the Faculty Workload Guidelines. Compared the Department Workload Reports to the Course Listing from Banner. Performed interviews with management and staff.

Findings	Observations	PIRs
2	2	1

1) **Finding:** We noted six instances in two departments where faculty members were working less than the typical 36 hour workload with no apparent adjustment to their compensation or work status. There was no documentation available in regards to requests or approvals for these low workloads. Per our inquiry with management, for one department the faculty assumed additional departmental responsibilities to make up for the lost workload. It was not explained what those additional responsibilities were, or if they were outside the normal expectations of a faculty member. For the other department, management stated online courses were taught to fulfill the workload requirements. The 2016/17 Faculty Handbook states online courses are not included in determining a faculty member's workload.

   Recommendation: We recommend the University create a firm policy that clearly states workload hour expectations in conjunction with clearly defining a Full-Time Equivalent (FTE) (See recommendation in Workload #3). Any faculty working a workload less than the stated amount per the policy should be documented and approved by the department chair.

2) **Finding:** We noted that there were instructors listed for courses in the Course Listing from Banner that were not listed in the corresponding Department Workload Report. Per our discussions with Institutional Research, Banner has faculty listed based on the course they are teaching, not by the department they belong to. This has created data inconsistency

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within the University. The reliance on departmental workload reports and not Banner, or another centralized workload management recording/reporting tool, prevents the University from consistently and accurately assessing department and faculty workload, assigning revenues or costs, and increases the potential for inaccuracies in workload reporting.

Recommendation: We recommend that workload be captured and verified in Banner based on the course being taught, not by what department the faculty belongs to. This will allow for accurate reporting, assessment, budgeting, and planning based on the departments' actual workloads. Additionally, overload should be allocated to the course's department, resulting in department and program costs that could be accurately captured in relation to program revenue.

3) **Observation:** During our comparison of the Course Listing from Banner to Department Workload Reports we noted multiple data inconsistency issues including:
   - One instance where the Course Listing from Banner listed a faculty member as the instructor, but that course was not included in that faculty member's workload.
   - One instance where a course listed under a faculty member's workload was assigned to a different faculty member in the Course Listing from Banner.
   - Two instances where the CRNs listed in a faculty member's workload did not agree to the Course Listing from Banner.
   - Five instances where faculty members were co-teaching courses and the total combined workload hours on the Department Workload Report did not match the number of course credits in the Course Listing from Banner. Additionally, in two cases we were unable to confirm whether the workload was being correctly split as some of the faculty were adjunct, and management was unable to provide us with their workload information.

   Recommendation: We recommend the University review the various databases used in course and workload planning for inconsistencies in underlying data. We also recommend that the University develop policies and guidelines that can be consistently applied to faculty workload planning to ensure data in Banner agrees with all other databases.

4) **Observation:** We found no clear definition of a FTE in the 2016/17 Faculty Handbook or Faculty Workload Guidelines. There are non-teaching activities that are required as part of a faculty's FTE that go beyond the 36 hour workload such as: research, publication, advising, and service to the University, professional organizations, and government agencies related to the faculty member's professional field; however, there is no clear value or expectation

assigned to these requirements. During our interviews, there were varying interpretations of whether these additional activities were included in expected workload or whether they were beyond expected workload and should necessitate additional compensation.

Recommendation: We recommend the University create a formal definition of an FTE with clear policies and guidelines regarding the expected requirements that can be consistently applied, reviewed, and enforced. Any definition and policy formulated should take into account the wide variety of activities faculty may participate in and should be applicable to an assortment of potential situations.

5) **PIR:** There is no comprehensive record of non-teaching activities that faculty are involved in maintained by the University. From interviews we performed, these activities are communicated to department deans as part of faculty objective plans and performance evaluations. IA notes that the integration of these activities in performance evaluations is in accordance with a recommendation made by the Oregon University System (OUS) during a 2011 audit to improve management of faculty workload. However, these activities are never compiled or communicated to others outside of the department, such as Human Resources or the Office of the Provost. This can potentially create inequity between faculty expectations and evaluations across departments. Additionally, because the University is not aware of activities that faculty may be participating in as representatives of the University, they are exposed to unknown potential liability.

Recommendation: We recommend the non-teaching activities be compiled and communicated to the Office of the Provost and Human Resources, at least annually. If considered necessary, management should require faculty to notify outside organizations they work or volunteer with (i.e. such as serving on a board of directors) that the University is not liable for advice or decisions they make while participating in that capacity.

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Overload Pay

	Total Population		Sample Size	
Department	# of Overload Hours	$ of Overload Pay	# of Overload Hours Selected for Testing	$ of Overload Pay Tested
CSET	142	$88,750	130.00	$84,025.00
MGT	18	$11,250	15.75	$6,225.00
MIT	138	$86,250	127.50	$79,687.50
NSC	68	$43,100	35.00	$22,175.00
Total	**366**	**$229,350**	**308.25**	**$192,112.50**

- **Objective:** Ensure faculty are being correctly compensated when working over the expected workload and that policies and guidelines regarding overload pay are being consistently and correctly applied.
- **Audit work performed**: Reviewed policy documentation including the 2016/17 Faculty Handbook, Faculty Compensation Policy, and the Faculty Workload Guidelines. Compared the Faculty Overload Reports to the Payroll Register Reports for the pay period ended June 30, 2017. Confirmed individual faculty workloads provided in the Department Workload Reports. Performed interviews with management and staff.

Findings	Observations	PIRs
5	1	2

1) **Finding:** The 2016/17 Faculty Handbook states that all overload should be pre-arranged with the department chair, dean, and provost. There is no request or approval documentation available to document whether these pre-arrangements for overload hours have ever occurred.

   Recommendation: We recommend workload schedules in excess of 12 workload hours be pre-arranged per University policy prior to the term and formally documented through a request and approval process. The requests and approvals for planned overload should be evaluated along with budgeted overload for the department each term (See additional comments at Overload #2).

2) **Finding:** We noted that overload is not budgeted by department. Expected overload for the entire University is budgeted at the beginning of the year by the Office of the Provost. At the end of the year overload payments are paid out by department based on work

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performed. Throughout the year there is no tracking or reconciliation of how overload is performing.

Recommendation: We recommend overload be budgeted by department at the beginning of the year and analyzed each term to determine how it is tracking compared to expectations. If overload payments within a department are expected to exceed budget, those results should be reported to the provost prior to finalization of workloads for that term. This information can also be used in planning both workload and overload budgeting in future years.

3) **Finding:** The 2016/17 Faculty Handbook and the Faculty Workload Guidelines state overload is only paid out if a faculty reaches 39 hours of overload pay, after which the faculty member is paid out for every hour over 36. We found two faculty members with less than 39 hours in their workload who received overload pay. Per our discussions with management, this policy was changed via verbal agreement with the prior provost, but no official document exists to support this. It was stated during our interview with the current provost that this policy has now been updated and appropriately documented.

Recommendation: We recommend all future changes in policy do not occur through only verbal agreements. Overload payments should be made in accordance with the written policy until the time that the policy is officially updated in writing.

4) **Finding:** We noted one instance where a 12-month faculty member received overload pay.

Recommendation: We recommend overload pay be distributed in accordance with policies and guidelines in place. Additionally we recommend the University consider an automated software driven pay system for faculty based on load classification.

5) **Finding:** The Faculty Workload Guidelines state overload is calculated at the end of spring term and is paid on June 30th. We noted that the faculty at Portland-Metro received quarterly payments at the end of each term. We also noted there are different rates of overload pay for each of the different campuses. In one instance this resulted in a faculty member being overpaid. This overpayment was identified and repaid by the faculty prior to our audit.

Recommendation: We recommend overload payments be made in accordance with policies and guidelines. Any difference between campus treatments, if necessary, should be defined in those policies and guidelines and consistently applied.

6) **Observation:** During our audit, we found differences between the 2016/17 Faculty Handbook and the Faculty Workload Guidelines. All overload payments were paid out at rates in accordance with the Faculty Workload Guidelines. These rates are higher than the rates stated in the 2016/17 Faculty Handbook. Per our discussion with management, increases to overload rates were negotiated mid-year.

   Recommendation: We recommend internal documents, whether they are policies or guidelines, be in agreement with each other. In addition, all policy documents or guidelines should be dated with the date of last revision to control version discrepancies. Further, we recommend overload payments be established at the beginning of the year, for the entire year. Increases negotiated during the year should be applied to the following year to allow for accurate budgeting.

7) **PIR:** The Faculty Workload Guidelines state that 12 workload hours are the equivalent of 18 contact hours, and later states that 1 lecture contact hour is equivalent to 1 workload hour. Per our interviews there were varying interpretations and degrees of understanding of this guideline.

   Recommendation: We recommend the University use only workload hours, or more clearly differentiate between workload and contact hours to eliminate potential variability in interpretation and application.

8) **PIR:** We observed no mention in any policy or guideline documentation of how overload pay is calculated for faculty members with less than 12-month contracts or less than 1.0 FTE. Per our audit, payments are being made on a pro-rata basis.

   Recommendation: We recommend policy and guideline documents be updated to account for all work statuses being used by the University.

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Release Time

	Total Population		Sample Size	
Department	# of Faculty Awarded Release Time	# of Hours Released	# of Faculty Selected for Testing	# of Release Time Hours Selected for Testing
CSET	6	63	4	51
MGT	3	42	2	33
MIT	2	21	2	21
NSC	6	21	3	36
Total	**17**	**147**	**11**	**141**

- **Objective:** Review whether release time is being granted with proper approval and that faculty are being properly compensated.
- **Audit work performed**: Reviewed policy documentation including the 2016/17 Faculty Handbook, Faculty Compensation Policy, and the Faculty Workload Guidelines. Compared faculty release times to Department Workload Reports. Calculated actual workload performed after release time was granted. Performed interviews with management and staff.

Findings	Observations	PIRs
1	1	1

1) **Finding:** In our audit of release time, we noted that release time and stipend amounts are not consistently allocated to the same positions within different departments. We also noted for one of the departments tested, the stipend amounts and release time awarded were in excess of the policy's calculation formula. In another department, the stipend amounts and release time appeared to be calculated according to the policy, but the actual amounts allocated did not agree with the calculation. Inconsistent application of release time for similar roles within colleges and programs creates potential liability for the University regarding pay equity and could cause the University to be out of compliance with the Oregon Equal Pay Act.

   Recommendation: We recommend the University create a standard policy for release time to be used by all departments for roles within those departments. Any changes to those allocations should be vetted and approved by Human Resources to ensure compliance with applicable laws and regulations. We recommend that all departments comply with University policies and guidelines when awarding stipends and release time. We recommend that management review whether committees, department chairs, program directors, etc. are part of the normal expected non-teaching activities for the work hours of an FTE, and whether release time or stipends should be awarded for these positions.

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2) **Observation:** Per the 2016/17 Faculty Handbook, release time must be negotiated with the dean and provost. While we were provided with stipend and release time allocations for the periods we audited, there was no written approval of these arrangements.

   Recommendation: We recommend the stipend and release time allocation documents be approved and signed by both the dean and provost in advance of the academic year to ensure this policy can be accurately enforced.

3) **PIR:** Per our review of the 2016/17 Faculty Handbook and the Academic Release Time & Stipend Model, it is unclear when release time vs. stipend amounts should be awarded. We observed during our audit that there is a difference in the monetary value of release time and a stipend. In all of the cases we reviewed, faculty receiving release time were also receiving overload pay, and in a few cases the workload of the faculty was greater than a typical 36 hour teaching load even before release time was considered. Effectively all of the release time in these cases resulted in additional overload hours. Based on our interviews performed, there is not consistent application of these practices across departments.

   Recommendation: We recommend the University clearly define when release time should be awarded vs. stipend amounts. If the purpose of release time is to truly reduce the teaching load of a faculty then the workload of faculty members receiving release time should be monitored to ensure they do not exceed the number of desired teaching hours during a term (or year). If the purpose of release time is to provide additional compensation, this should be considered in conjunction with stipend amounts, and should be consistently applied across all departments and programs. We recommend that management review the need to have both release time and stipends unless the use of each is more clearly defined, and the application across departments is more purposeful and consistent

4) **Additional Comment:** We noted no requests for release time for educational initiatives, external service, etc. within the period scope of our audit.

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Course Offerings

- **Objective:** Determine whether class size information is being used strategically in course planning. Review whether waitlist and low-enrollment courses are being properly evaluated in accordance with University policies and guidelines.
- **Audit work performed**: Reviewed policy documentation including the 2016/17 Faculty Handbook, Faculty Compensation Policy, and the Faculty Workload Guidelines. Compared the Course Listing from Banner to the Department Workload Reports and to the Cancelled Course Listing. Performed interviews with management and staff.

Findings	Observations	PIRs
1	1	2

1) **Finding:** Per the Faculty Workload Guidelines, courses with enrollments of less than 10 students will be reviewed by the department chair during the first two weeks of the term to determine if the course will run. Courses with less than 10 students can be approved, cancelled, substituted, or paid at reduced rates. Based on our interviews, this two week review is not occurring. There is no documented evidence of any review and no written approvals. We tested 30 courses with enrollment of less than 10, of which none were cancelled, and none were paid at reduced rates. Based on our interviews, most of these courses were offered once per year on campus and were required for graduation, but were also offered in online format. Additionally, in at least one instance from the sample we reviewed, a faculty member received overload pay for teaching multiple low-enrollment courses as workload was not adjusted for the low enrollment.

   Recommendation: We recommend the review of low-enrollment courses be documented along with reasons for the approval, substitution, or reduction in rate and to the greatest extent possible be done in advance of the term beginning to minimize disruption to students. Courses that do not have this approval should be cancelled in accordance with the Faculty Workload Guidelines and faculty should be assigned courses with higher enrollment. In addition, we recommend a report of low-enrolled courses and reasons for non-cancellation be compiled and analyzed by each department chair, in consultation with the deans and the provost. Programs with consistently low enrollment could then be evaluated for the continued benefit to the University within its strategic plan. This recommendation encompasses similar recommendations made by the OUS in the 2011 faculty workload management report.

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2) **Observation:** During our audit we noted three instances at each campus where faculty members appeared to be teaching courses with lower capacity than other faculty teaching the same courses on the same campus, with the same room capacity. There appeared to be no clear or purposeful reasons for these differences in capacity.

   Recommendation: We recommend course capacity remain consistent and guidelines be established to determine this capacity. Capacity should be controlled or approved by the proper level of management, such as the department chairs with approval of the dean and in accordance with guidelines established by the provost, instead of the teaching faculty member with no higher levels of approval.

3) **PIR:** Based on our review and interviews performed with management, waitlist data has only recently been compiled at the University. However, it is not currently being used in planning of course offerings. This recommendation is similar to a recommendation made by the OUS in the 2011 faculty workload management report.

   Recommendation: We recommend the University use waitlist data to plan course offerings to accommodate the student demand in an annual course plan established by department chairs with approval of the dean and provost.

4) **PIR:** Based on interviews performed, course offerings are only available to students one term in advance. This makes it difficult for students to plan their graduation track. We also noted during testing many of the low-enrolled courses that were not cancelled, were due to the course being offered infrequently and required for graduation.

   Recommendation: We recommend course offerings be made available to students at least one year in advance. More significant strategic planning regarding course offerings and communication of that to students for a longer timeframe will allow for better graduation planning and counseling of students as well as meeting the financial and strategic needs of the University.

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Accrued Leave

	Total Population		Sample Size	
Department	# of Faculty Accruing Leave	Beginning Balance of Accrued Leave Hours	# of Faculty Selected for Testing	Beginning Balance of Accrued Leave Hours Tested
CSET	11	7,731	7	4,560
MGT	16	10,163	7	5,068
MIT	14	7,406	6	1,182
NSC	18	8,492	9	4,100
Total	**59**	**33,792**	**29**	**14,910**

- **Objective:** Ensure accrued leave is being properly granted and used.
- **Audit work performed**: Reviewed policy documentation including the 2016/17 Faculty Handbook, Faculty Compensation Policy, and the Faculty Workload Guidelines. Reviewed requests, approvals, and denials for planned leave and accruals of leave for the year. Performed interviews with management and staff.

Findings	Observations	PIRs
1	1	-

1) **Finding:** During our audit, we noted one less than 12-month faculty member with an accrued vacation balance of 260 hours. Per interviews performed, this faculty was previously on a 12-month contract prior to the beginning of the year. University policy states that when a faculty member switches from a 12-month to a less than 12-month contract, the accrued vacation should be paid out up to 180 hours with the rest being forfeited. This had not been done for this faculty member. Management has informed us that, as of the date of this finding being communicated to them, the error has been corrected.

   Recommendation: We recommend management review all accrued vacation balances for remaining faculty on less than 12-month contracts and pay out any prior vacation accruals in accordance with University policy.

2) **Observation:** During our audit, we noted many of the faculty members appeared to have significant balances of unused sick leave and vacation. In the four departments, there was a total number of 59 faculty. At the beginning of the year, they had a total accrued sick leave balance of 33,792. During the year, they accrued an additional 4,092 hours and used 174 hours. Out of the 59 faculty, only 8 reported use of sick leave. There were 4 faculty with

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accrued vacation totaling 520 hours. During the year, an additional 370 hours were accrued, of those 370 hours, only 10 hours were used by one faculty. We selected 29 faculty and reviewed all requests for time off and request approvals and denials. For those in our sample that used leave, we noted that all appropriate requests and approvals were in place. However, for the majority that did not use any leave, we observed no documentation to support the unused balances. Based on our interviews performed, it seemed unlikely that no leave was taken, particularly for those individuals that accrued vacation.

Recommendation: We recommend faculty who accrue leave fill out the generated leave report each pay period as do all other employees who accrue leave. This report should be reviewed and approved by the deans and routed to the Office of the Provost and Human Resources. We also noted that the accrued leave policies in place follow previous policies in place under the OUS. We recommend that management review the policies along with the specific OARs and revise the policies to be more appropriate for an organization of the University's current size and structure, if considered necessary. We also noted that, while a cap policy is in place for accrued vacation, there is currently no cap on total accrued sick leave. The size of the accrued sick leave balance represents a significant accrued leave liability on the University's financial statements. We recommend that management review this policy and determine whether a cap should be instituted on sick leave accruals in a way that would both protect the organization while still offering a significant benefit to the faculty.

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ACKNOWLEDGEMENT

We appreciate the courtesy and cooperation we received from management and staff, specifically from the Office of the Provost, Academic Affairs Office, both the College of Engineering, Technology, and Management, and the College of Health, Arts, and Sciences, Institutional Research, Payroll Department, Human Resources, and Information Technology Services (ITS) throughout this audit.

DISCUSSION ITEM
Agenda Item No. 4.5
Introduction of Data Science Degree

Background

Today, information is being produced and collected at an overwhelming pace, much faster than we are currently capable of analyzing it. The field of data science recently emerged in response to this deluge of "big data." Data scientists must have strong mathematical, statistical, and computing skills coupled with the ability to communicate well.

The practice of data science is one of the fastest growing occupations in the US and no public university in Oregon presently offers a bachelor degree in data science. Due to its status as a polytechnic institution, Oregon Tech offers the perfect environment for nurturing data scientists who are able produce data-driven solutions while working in an interdisciplinary team.

Students seeking a Bachelor of Science degree in Data Science at Oregon Tech will take their major courses in the Applied Math, Computer Systems Engineering Technology, Management and Geomatics departments. In a capstone project, each student will develop a data driven solution for an outside group, such as a local business or national organization.

After graduation, students will be ready for immediate employment as data scientists or for advanced coursework. Graduates may choose to continue their education in data science through, for example, OSU's Master's in Data Analytics program or OHSU's Master's in Computer Science and Electrical Engineering program.

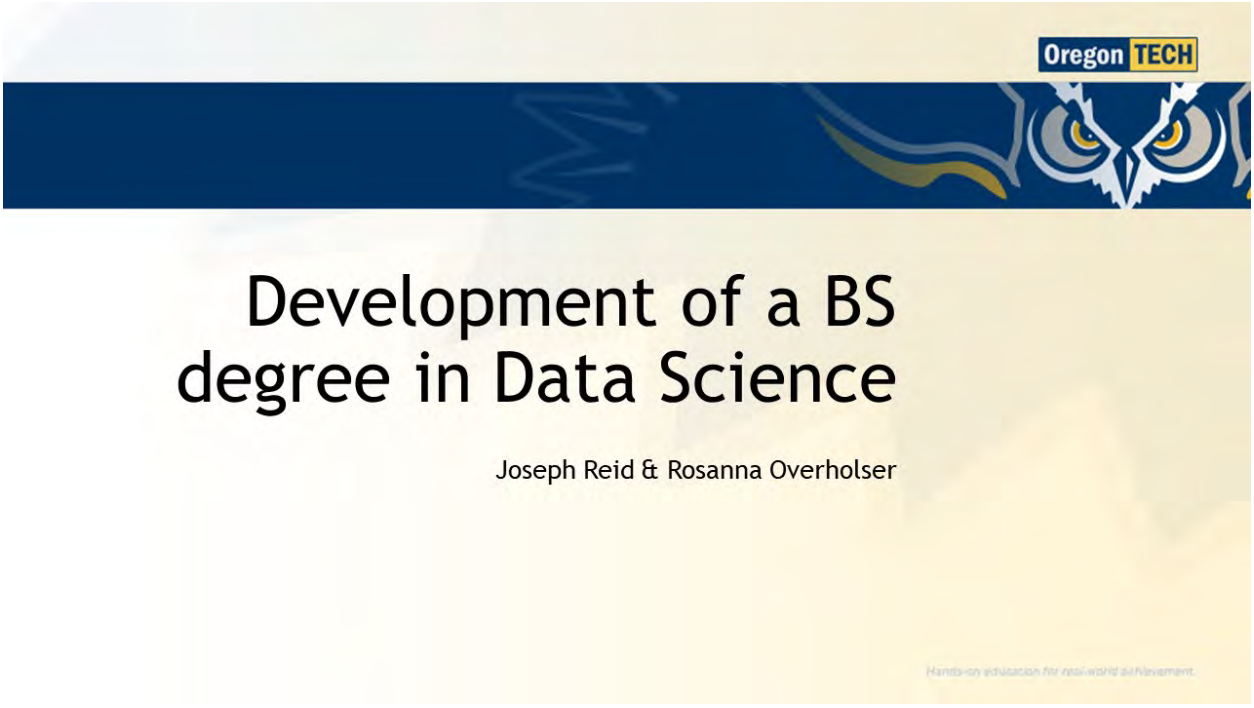
Data is the foundation of tomorrow's industry. Not only will a data science program help fill a growing need in technical expertise, but the presence of the program at Oregon Tech will facilitate the successful evolution of existing programs in fields such as engineering, geomatics, business and healthcare.

Recommendation

None – for discussion only

Attachments

- PowerPoint Presentation


Oregon TECH
Development of a BS degree in Data Science
Joseph Reid & Rosanna Overholser
Hands-on education for real-world achievement.

Oregon TECH
Outline
• What is Data Science?
• Why Oregon Tech?
• Market Analysis
Hands-on education for real-world achievement.

What is Data Science?

"…[e]xtracting knowledge or insights from large quantities of complex data for use in a broad range of applications."

from the National Academy of Sciences Report *Data Science for Undergraduates: Opportunities and Options*

For example…

Let's say we are designing a new program for data science and want to answer the following question:

*What **skills** does industry most want in a data scientist?*

The "traditional" solution

*What **skills** does industry most want in a data scientist?*

A statistician might suggest **surveying** a representative sample of hiring managers or current data scientists

But this solution is time consuming and depends upon the willingness of respondents to participate in the study.

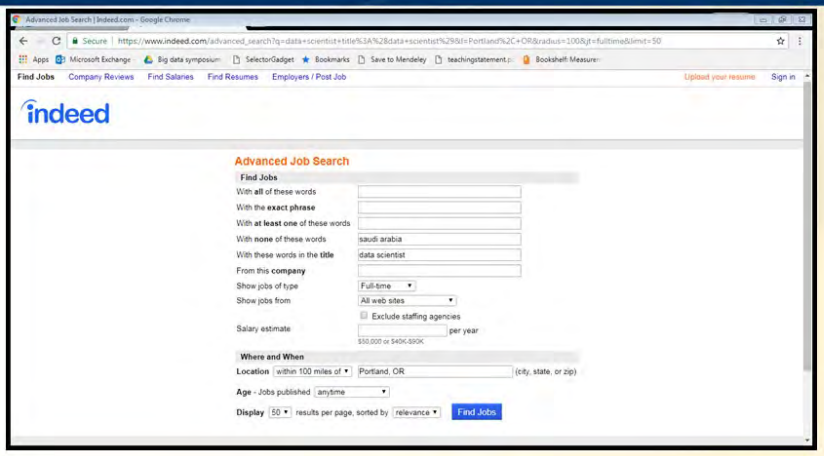
The "modern" solution

*What **skills** does industry most want in a data scientist?*

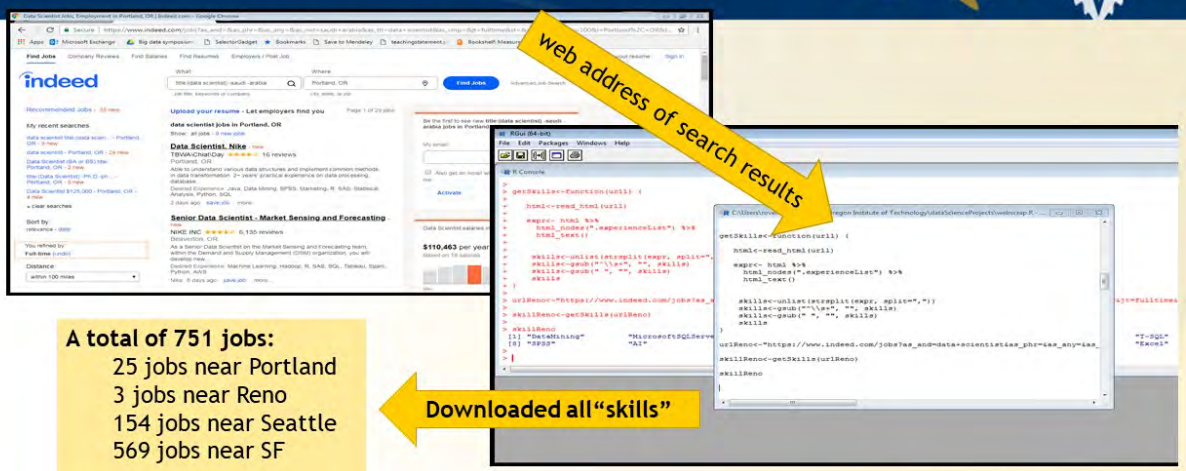
A data scientist might do some **web scraping**.

For example, we could use computer programming to scrape the "desired skills" part of "data scientist" job advertisements.

Step 1: Search for job ads for "data scientist"



Step 2: "scrape" the search results



A total of 751 jobs:
- 25 jobs near Portland
- 3 jobs near Reno
- 154 jobs near Seattle
- 569 jobs near SF

Step 3: Display the results

*What **skills** does industry most want in a data scientist?*

Using 751 job ads from Portland, Seattle, SF and Reno, we see…

Python	42%
Machine Learning	36%
SQL	27%
Hadoop	18%
Java	15%
Spark	15%

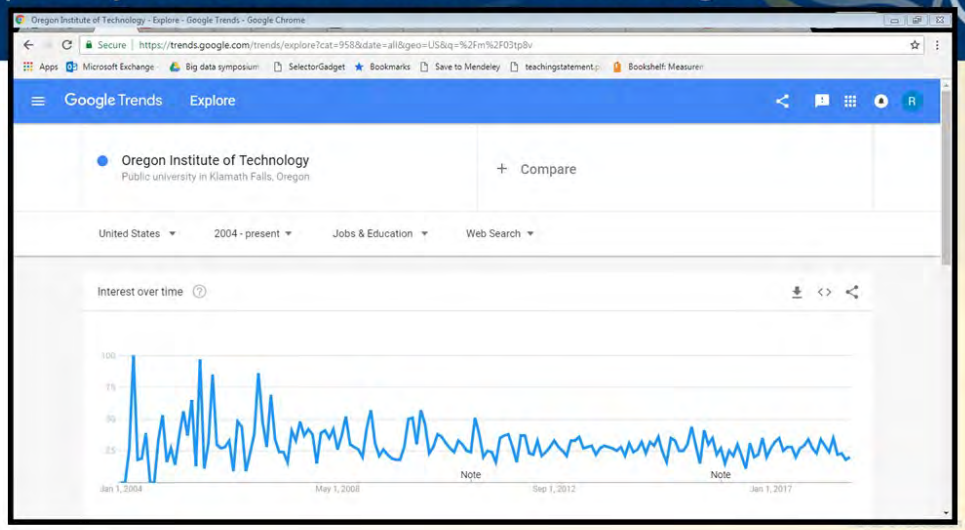
Another example of data science

The tools of data science make it quick and easy to figure out what skills our graduates should have to fit industry's needs.

We can get a quick answer to related question…

Are people interested in earning a degree in data science?

Popularity of search terms over time via Google Trends



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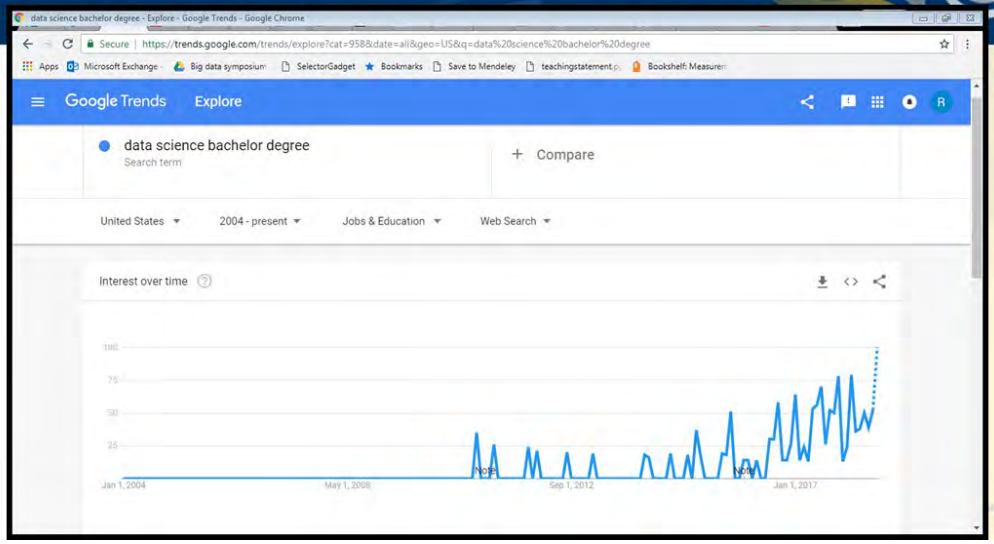

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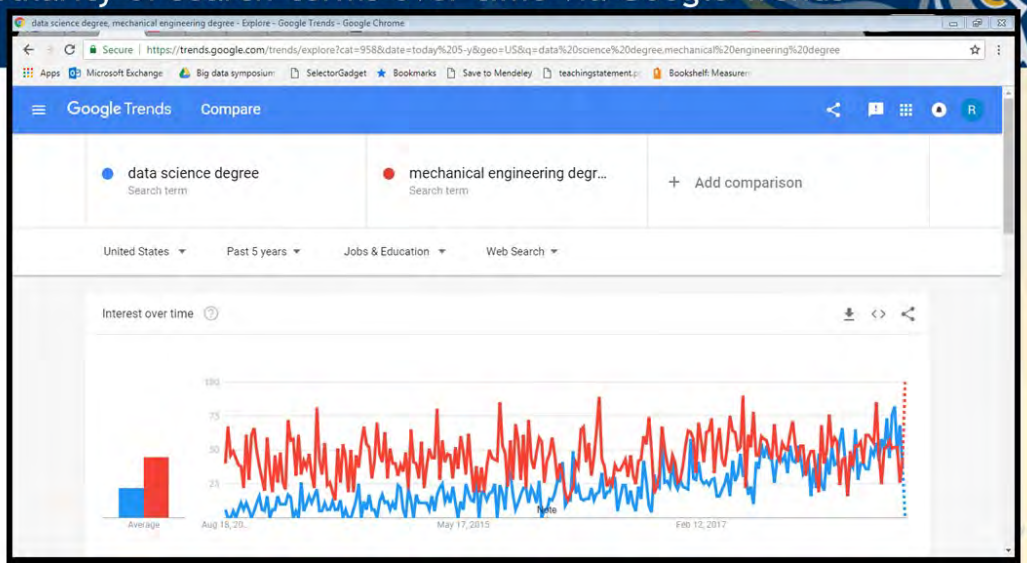
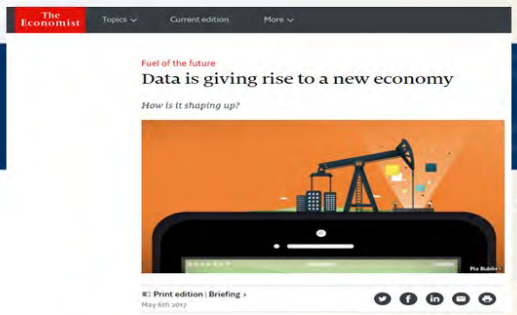
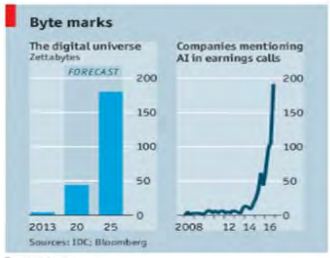


Why Oregon Tech?

We are Industry's University, founded to support the postwar industrial development of Oregon and the Pacific Northwest.

The foundation of tomorrow's industry is **data.**





Oregon TECH

BS in Data Science

Initially offered in the math department at KF campus, "hands on learning for real world achievement"

An essential part of a data scientist's training is the completion of realistic projects. Our campus has a wealth of opportunities for the projects and our small class sizes will help to ensure student success.

Oregon TECH

What will the program look like?

6 new math courses:

Data Science Methods I & II (8 units)
Statistical Machine Learning I & II (8 units)
Spatial Statistics (4 units)
Advanced Methods in Data Science (4 Units)

+

Junior Project Sequence (9 units)

+

Senior Project Sequence (8 units)

+

Existing math, CSET, management, geomatics and gen ed courses (147 units)

No accreditation agency

Our program is designed according the guidelines for a BS in Data Science offered by a math department in the recent National Academy of Sciences Report *Data Science for Undergraduates: Opportunities and Options*

New courses: Data Science Methods I & II

Data Science Methods I

An introduction to data science, accessible to any Oregon Tech student.

Like math 361 or 243 provide an introduction to statistics

Showcase examples of data science in action

-Intro to python
-Ethics
-Problem solving process
-Basic relational databases and reporting

Data Science Methods II

Intended for data science majors

A continuation of I, with more advanced examples and some of the less "fun" but necessary skills:

-Data cleaning, transformation
-Scraping and presenting high dimensional data
-Results Interpretation and Procedure Implementation (Microsoft Azure or similar canned solution methods)
-Bayesian Methods
-Maximum Likelihood Methods

New courses: Statistical Machine Learning I & II

These courses also be used as upper-division math electives by other majors

In the spring of 2018, the math department offered the first part and had 16 students sign up, 11 complete it. We plan to offer it during spring 2019 as well.

The second part will cover more advanced methods

Junior and Senior Projects

Hands-on learning experiences that will make our graduates highly sought after by industry

Each student will create an online portfolio of their work

This will benefit the student as potential employers can see their work ***and*** *benefit us as future students can see what our program is like.*

These projects will help connect data science students to other disciplines on campus

What will our graduates do?

- Graduate school

Computer science, statistics, data analytics, MBA, other

- Industry

On August 13, 2018, there were ***751 jobs*** *advertisements for "data scientists" within 100 miles of Reno, Portland, Seattle and SF.*

How to Attract Students?

- Ads for google search words, e.g. "data science degree"
  - Need an attractive website, showcasing the program and skills of current/past students
- Host a competition for high school students on Kaggle.com, an international site for data science competitions
- A scholarship for data science major
- Public relations with media

Why Oregon Tech?

It is absolutely essential that there is a strong data science presence at Oregon Tech.

Without opportunities to learn data science, other programs will weaken and fall behind the times.

Ex: GIS, Public Health, Energy Industry, Bio-informatics, Robotics (AI), etc…

Data and algorithms are increasingly a part of everyday life. All of our graduates deserve to have a basic understanding of how their personal data is being used to create credit scores, purchase recommendations, etc.

The future of Data Science at Oregon Tech?

- Keep the BS degree up-to-date with industry's needs, and specialize as needed
- Create MS in Mathematics, data science track
- Center for Data Science
  - A diverse set of faculty members and students use data science to solve problems for the Oregon Tech community and beyond
  - Hold workshops to provide continuing education opportunities for faculty and the local community
  - Host public lecture series to showcase examples of data science
- Host a super computer using geothermal and solar power generated on campus and give high students free limited computing accounts (e.g. Canada and Belgium)

Who else is offering BS in Data Science?

- Found 51 four year programs in DS or very closely related fields nationally and internationally combined
- Closest are in Univ of SF, UC Irvine, Berkley, and BYU Idaho
- Masters in Data Analytics at Oregon State and focus at OHSU CSEE Masters

No 4 year program in any Oregon School

Industry Characteristics

- Education: Approx 51 programs at the BS level in the US and abroad (not counting IT and similar programs)
- Three categories of educational programs: Theoretical/Mathematical, Business Focused, Programming Focused
- Most programs are at the graduate level and expect students to have strong mathematical and programming skills (except for MBA programs which are more focused on Database and business presentation skills).

Industry Characteristics of Employers

- E-Commerce, Finance, Government, Healthcare, Science, Social Networking, Telecom, Utilities, Marketing, Insurance, etc…
- BLS expected change in employment between 2014 and 2024 is +54% growth.
- Structural Employment Gap is estimated between 140,000 and 190,000 jobs beyond the number of graduates produced for the 2016/2017 biennium.

Strengths

- Location: Only undergrad 4 year program in Oregon
- Market Segment: Students can focus in working with geographic, engineering, and health type of data while developing a strong background in business implementation.
- Students can specialize by obtaining additional training in related fields (example Pacific Power)
- Can fill the "applied role" for students to fill entry level jobs where they are well rounded in both theoretical and implementation of solutions.
  (DS is at the intersection of Applied Mathematics, Computer Science, and Business/IT. We are in unique position to offer a strong background in all three.)
- May partner with graduate programs in Oregon
- Small Campus: students won't feel like just a number
- Strong applied math department and management/IT requires few new courses and leverages current inefficiencies in class enrolment.
- Encourages applied research at undergraduate level

Weaknesses

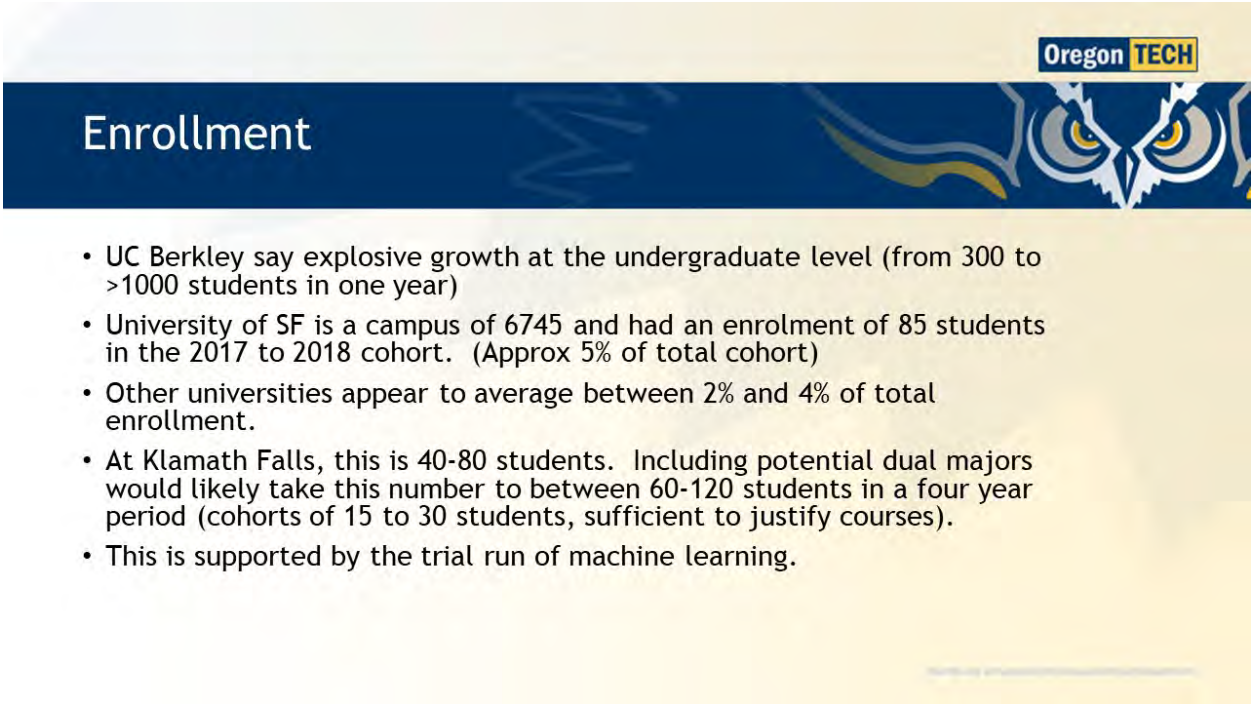
- Faculty turnover is high. The program can't be built on simply faith and must be supported.
- Direct competition in Northern California at research universities
- Location is not near many employment opportunities
- Workload in these courses is high for both faculty and students as each application requires the ability to create a specialized approach.

Opportunities

- Retention: May act as safety net for students who aren't interested in current CSET or IT focus areas
- Recruitment: Fast growing field with easy to sell products. (Machine Learning and AI)
- Placement: Mid Size companies needing well rounded data-scientists and Graduate Schools
- Partnerships: OSU? OHSU? Industry?
- Uniqueness: Cross training students with flexible program that can range from biology to engineering will allow competent, sector specific, graduates.

Threats

- Fast changing field
- Potential turnover in faculty
- Portland State University
- High mathematical/programming threshold for graduates
  - We won't encourage a weak program regardless of an increased draw.


Oregon TECH
Enrollment
• UC Berkley say explosive growth at the undergraduate level (from 300 to >1000 students in one year)
• University of SF is a campus of 6745 and had an enrolment of 85 students in the 2017 to 2018 cohort. (Approx 5% of total cohort)
• Other universities appear to average between 2% and 4% of total enrollment.
• At Klamath Falls, this is 40-80 students. Including potential dual majors would likely take this number to between 60-120 students in a four year period (cohorts of 15 to 30 students, sufficient to justify courses).
• This is supported by the trial run of machine learning.

Student Services at Portland Metro

- Career Services
- Campus Life
- Academic Support Services
- Mental Health Counseling
- Disability Services

Our Mission:

- **Support** academic, professional and personal student success through services and programs
- **Remove** barriers to student success
- **Promote** a sense of campus community

How Do We Know What's Important to Students?

- Student Surveys
- ASOIT – Student Government
- Feedback from students, faculty and staff
- Focus Groups

Issues Reported by Students

- Food Insecurity
- Availability of food on campus
- Functional and appealing student space
- Access to bookstore merchandise
- Lack of International/Veteran Support Services

Food Insecurity Data
Fall 2015 Survey Results

389 survey responses

- 29% indicated there were times in the last year that they were hungry but didn't eat because there wasn't enough money for food
- 12% indicated that there was sometimes not enough food in their household/3% indicated there was often not enough food in their household

*The Hope Center for College, Community and Justice, 2018

Food Pantry
Opened Fall 2018

- Committee of faculty/staff developed use guidelines & processes
- Funded by Campus Life/Donations
- 15 repeat users since opening with average household size of 2
- Partnership with Wilsonville food pantry

Access to Food On Campus

Students want:

Low cost food options

Healthy options

Larger variety of options

Access to food while campus is open

Avenue C Micro Market
Opened January 2019

Will be evaluated with Spring 2019 survey

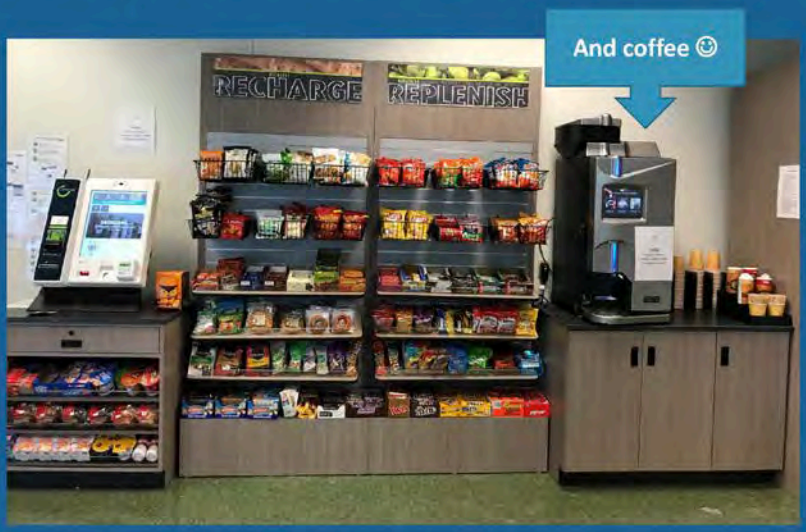
Committee considered various food service options

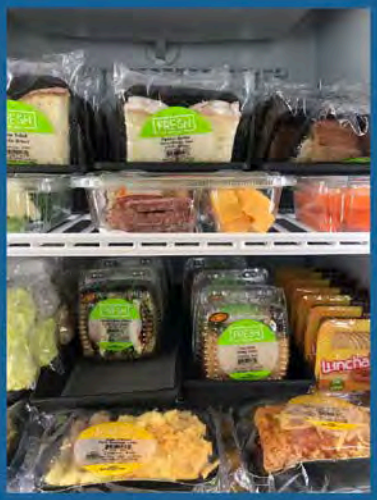
Micro market was selected for its alignment with student needs

Fresh food delivered 3x a week and replenished according to sales

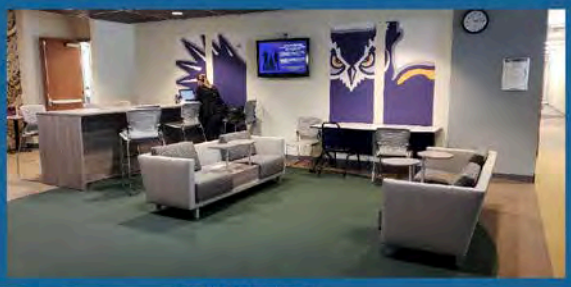
Monitored by security cameras

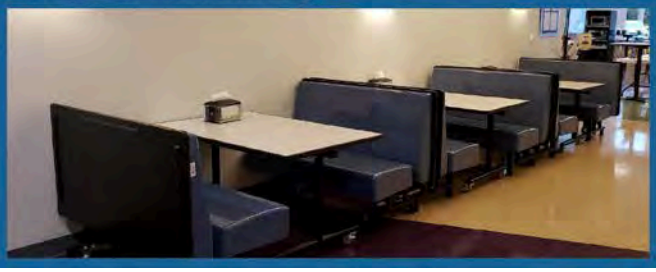
Many choices, including fresh options





Individual/Group Study Spaces
Installed Spring Term 2018





Gaming Space
Opened Fall 2018

Developed a committee of staff/students

Surveyed students on game system & games

Designed space & selected furniture

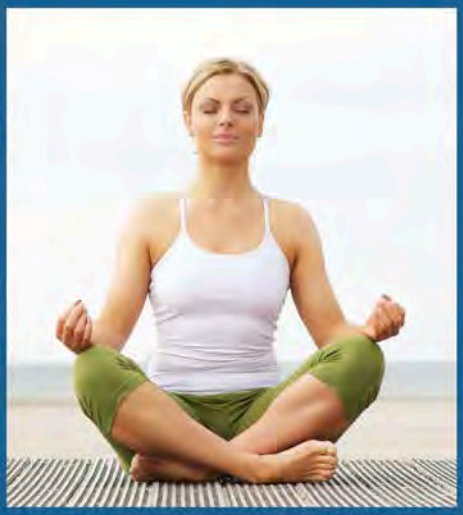
Reflection Room
Opens Winter 2019

ASOIT Initiative

Many requests for prayer/meditation space over the last few years

Winter 2018 survey confirmed interest

Continue to build out space with student feedback



Bookstore Swag Sales
Begin Winter 2019

ASOIT Initiative

- ✓ Promotes school spirit & Oregon Tech in greater community
- ✓ Follett selling Oregon Tech Swag to ASOIT for 20% discount, ASOIT to pass on discount to students

International/Veteran Support Services

Focus Areas

- Helping students to maintain status
- Compliance with Federal regulations
- OPT/CPT
- Student community
- Housing
- Clubs/ASOIT
- Veteran support services

Iona Musgnung
Campus Life Coordinator

Other Student Issues Being Addressed

Issue	Action
Pre-Advising for Perspective Transfer Students	New Transfer Recruiter to focus on one on one Pre-advising at community colleges
Student Engagement	On campus programming, various forms of communication, mentoring/advising
Support for students struggling academically	Exploring ways to better serve these students at KF and PM
Campus Access	Survey results indicate that students are interested in extended campus hours

Questions?