Meeting of the
Oregon Tech Board of Trustees
Academic Quality and Student Success Committee
Mt. Thielsen Room, Klamath Falls Campus
May 30, 2019
8:00am – 11:00am

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 from the March 21, 2019 Meeting	**1**
3.	**Action Items**	
3.1	Recommend Approval of the Data Science Program to the Full Board (8:05am) (30 min) *Provost Gary Kuleck*	**3**
3.2	Recommend Approval of the Doctorate in Physical Therapy Program to the Full Board (8:35am) (30 min) *Provost Gary Kuleck*	**55**
4.	**Discussion Items** (9:05am)	
4.1	**Provost Update** (35 min) *Provost Gary Kuleck*	
4.2	Campus Life Initiatives (9:40am) (25 min) *Multicultural Student Services Coordinator Wakaya Wells*	**81**
4.3	Oregon Renewable Energy Center Presentation (10:05am) (25) min) *Director Mason Terry*	**89**
4.4	Alumni Relations Presentation (10:30am) (25 min) *Alumni Relations Manager Becky Burkeen*	**97**
5.	**Other Business/New Business** (10:55am) (5 min) *Chair Jeremy Brown*	
6.	**Adjournment** (11:00am)	

Meeting of the
Oregon Tech Board of Trustees
Academic Quality and Student Success Committee
Mt. Thielsen Room, Klamath Falls Campus
March 21, 2019
9:10am – 10:30am

Academic Quality and Student Success Committee
DRAFT MINUTES

Trustees Present:

Kathleen Hill	Jill Mason	Liam Perry
Rose McClure	Kelley Minty Morris	

University Staff and Faculty Present:
Diana Angeli, Executive Assistant to the President
Seth Anthony, Director of Academic Excellence
Mandi Clark, Director of Housing and Residence Life
Erin Foley, VP of Student Services/Dean of Student Affairs
Gary Kuleck, Provost/Vice President of Academic Affairs

1. **Call to Order/Roll/Declaration of a Quorum**
   Acting Chair Minty Morris called the meeting to order at 9:10am. The President's Executive Assistant called roll and a quorum was declared.

2. **Consent Agenda**
   2.1 **Approve Minutes of the January 24, 2019 Meeting**
   Trustee Mason moved to approve the minutes of the January 24, 2019 meeting. Trustee Hill seconded the motion. With all Trustees present voting aye, the motion passed unanimously.

3. **Action Items** – none

4. **Discussion Items**
   4.1 **Provost Update**
   Provost Kuleck updated the committee on the accreditation process; a mid-cycle report and a report on recommendations from the 7-year report were submitted earlier in the month to the accreditation body. The evaluators will be on the Klamath Falls campus on April 15 and 16. He gave an update on the DPT program process including approval of the program by the grad council. OSU and WOU are both proposing a similar program. Further processing from OHSU and its faculty senate is required to move our DPT program forward. He anticipated the program to go before the statewide provost's council in June. A program director position will be posted with an anticipated start date in fall 2019. CAPTE approval is approximately two years out. He stated the Cybersecurity program was approved by the provost's council and will be before HECC in April. The

Data Science program will go before the provost's council in April, this committee and the Board in May, and HECC in the summer. Graduate certificates and other programs are under development. The Southern Oregon Higher Education Consortium planning retreat of provosts is scheduled in April with a goal of identifying how to partner in three areas: environment/renewable energy/sustainability, agribusiness, and rural health. He stated there were eight applications for sabbaticals and six were approved. Faculty will report out on their sabbaticals upon return.

4.2 Campus Housing and Residence Life Presentation

Director Clark explained the purpose of campus housing and residence life: to provide support services to students while they stay on campus. She reviewed a PowerPoint presentation that included overviews on staffing, student advisor roles, student mentors, tech assistants, other users of housing, facilities offered, occupancy, first year experience program, capital and maintenance projects, and student wants and needs. Discussion regarding space needs for anticipated student enrollment growth.

4.3 Accreditation Update

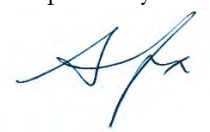
Director Anthony showed a PowerPoint presentation regarding the North West Commission on Colleges and Universities (NWCCU) accreditation. He explained the focus is on our core themes and mission fulfillment. The accreditors want to ensure we are looking at key indicators to meet our mission. He reviewed the cycle or review, the five recommendations we need to address, recently submitted reports, the accreditor visitation in April, upcoming reviews, the need to rethink indicators during our strategic planning process, and changes to accreditation standards.

5. Other Business/New Business - none

6. Adjournment

Meeting adjournment at 10:29am

Respectfully submitted,



Sandra Fox
Board Secretary

ACTION ITEM
Agenda Item No. 3.1
Recommendation to the Board to Recommend Approval of the Data Science Program to HECC

Background

Degree Overview

Information is being produced and collected at an overwhelming pace, much faster than people are currently capable of analyzing it. The field of data science recently emerged in response to this deluge of ``big data".

Data scientists use computational and applied math to extract insights from data: in addition to technical skills, they must be able to work as part of a team and communicate effectively. The proposed B.S. in Data Science degree at Oregon Tech combines coursework from five departments: Applied Mathematics (the program host), Computer Systems Engineering Technology, Communication, Management and Geomatics.

The program curriculum was developed following guidelines recently set out in the National Academy of Sciences Report *Data Science for Undergraduates: Opportunities and Options*[1], as well as an analysis of the skills required by jobs in industry. A key element of the program is extensive hands-on experience. In their junior year, students will work as part of team on a series of projects to apply material from previous classes, and in their senior year, each student will work on an individual capstone project to 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.

Program Outcomes

Outcomes for graduates of the data science program stem directly from the program mission and industry expectations, the alumni should be:

1. Prepared for the professional practice of data science or acceptance into a graduate program,
2. Prepared with the necessary foundation in mathematics, statistics, and computer science in order to thrive in the evolving field of data science,
3. Able to identify and incorporate ethical considerations in their work,
4. Able to identify, collect and analyze data necessary for actionable insights, and
5. Able to effectively communicate findings.

Expected degrees produced after the first graduating class.

Degrees will be initially offered at Klamath Falls, with enrollment starting in the fall of 2020. Program expansion will be dictated by market considerations.

[1] National Academies of Sciences, Engineering, and Medicine. *Data science for undergraduates: opportunities and options*. National Academies Press, 2018.

	2023-24	2024-25	2025-26	2026-27	2027-28
Expected Degrees	6	10	12	15	18

Expected degree counts are based the 6- year graduation rate published by the state of Oregon and enrollment in undergraduate data science degree programs at other institutions.

Mission alignment for the new proposed program

Data science is a new and fast-growing field with roots in computer science, mathematics, statistics, geomatics and management: its applications span many other fields, including engineering, healthcare, business and various technologies. Thus a data science program aligns well with Oregon Tech's mission of providing "statewide educational opportunities for the emerging needs of Oregonians" with "innovative and rigorous applied degree programs in the areas of engineering, engineering technologies, health technologies, management, and the arts and sciences". The primary goal of the proposed data science program is to produce graduates who are trained in the foundational disciplines and can effectively apply these techniques to any of the fields mentioned above. This interdisciplinary flexibility will support data-driven decision making and, perhaps more importantly, to be able to design specialized solutions to data problems spanning many fields of study.

A data science program builds on Oregon Tech's signature areas of focus, including geomatics, computer science, healthcare and management. The Applied Mathematics department has a strong faculty of applied mathematicians and statisticians. Benefitting from a low student to faculty ratio, students will be given many opportunities to learn by doing through junior and senior year projects. Our programs will strongly contribute to Oregon Tech's "intimate, hands-on learning environment, focusing on application of theory to practice".

Oregon Tech's priority is to meet industry's need for skilled workers. Data science is a rapidly growing field[2] with a combination of job titles and positions that these graduates could fill. Jobs range from research in science and medicine to technology jobs within companies in marketing and targeted advertising. Other jobs include self-automated learning systems (cars that drive themselves for example), governmental positions in data management and reporting. With an advanced degree, someone trained in data science could do research in a variety of fields including statistics, business/management, survey sampling, bioinformatics, and many others.

Recommendation

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

Attachments

- Data Science Program proposal
  - Budget Overview
  - Budget

[2] Economist, T. "Data is giving rise to a new economy." The Economist 5 (2017).

HIGHER EDUCATION COORDINATING COMMISSION

Proposal for a New Academic Program

Institution: Oregon Institute of Technology
College / School: College of Health, Arts, and Sciences
Department / Program Name: Applied Mathematics Department
Degree and Program Title: B.S. Data Science

1 Program Description

a. Proposed Classification of Instructional Programs (CIP) number: 30.3001

Title: Computational Science

Definition: A program that focuses on the study of scientific computing and its application. Includes instruction in scientific visualization, multi-scale analysis, grid generation, data analysis, applied mathematics, numerical algorithms, high performance parallel computing, and numerical modeling and simulation with applications in science, engineering and other disciplines in which computation plays an integral role.

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.

Today, information is being produced and collected at an overwhelming pace, much faster than people are currently capable of analyzing it. The field of data science recently emerged in response to this deluge of ``big data."

Students seeking a Bachelor of Science degree in data science at Oregon Tech will take their major courses in four departments: Applied Mathematics, Computer Systems Engineering Technology, Management and Geomatics. The major will be hosted by the Applied

Mathematics department. Program curriculum was developed following guidelines recently set out in the National Academy of Sciences Report *Data Science for Undergraduates: Opportunities and Options*, as well as an analysis of the skills required by jobs in industry. Students will gain extensive hands-on experience by completing a series of projects. In their junior year, students will work as part of team on a series of projects to apply material from previous classes. In their senior year, each student will work on an individual capstone project to 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.

Given that data science is a young and rapidly changing field, we expect to develop concentrations and partner with other programs to create opportunities for dual majors that will meet industry's evolving needs after successfully running the proposed program for several years.

The program mission and objectives are below:

a. The mission of the Bachelor of Science in Data Science program at the Oregon Institute of Technology is to prepare students for professional practice or graduate school. A graduate will be prepared with the technical skills necessary to gain actionable insights from data, the ability to effectively communicate these insights as a member of an interdisciplinary team, and the necessary foundation in ethics, mathematics, and computer science to thrive in the evolving field of data science.

b. The following educational objectives are what faculty expects graduates to be able to accomplish a few years after the commencement of their careers and stem directly from the program mission. The alumni from the program should be:

   1) prepared for the professional practice of data science or acceptance into a graduate program,
   2) prepared with the necessary foundation in mathematics, statistics, and computer science in order to thrive in an evolving field,
   3) able to identify and incorporate ethical considerations in their work,
   4) able to identify, collect and analyze data necessary for actionable insights, and
   5) able to effectively communicate findings.

c. From the program educational objectives, stem a number of specific and measurable outcomes. Graduates of the program will possess:
   1) an ability to translate a real world question into mathematical language,
   2) an ability to design an efficient and cost-effective data collection strategy,

3) an ability to understand and apply ethical standards necessary in data collection, analysis, and storage,
4) an ability to organize a reproducible workflow with project documentation,
5) an ability to design, create, and manage data storage,
6) an ability to clean, impute, and structure features for modeling data,
7) an ability to produce sophisticated visualizations and quantitative summaries of data,
8) an ability to identify and quantify correlations and causal relations within a dataset,
9) an ability to optimize and validate predictive analytics,
10) an ability to effectively communicate findings in written or oral reports, and
11) an ability to work effectively as a member of diverse teams.

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

The proposed curriculum is below.

Freshman Year - Fall		
	Social Science Elective	3
STAT 201	Introduction to Data Science	4
WRI 121	English Composition	3
	Humanities Elective	3
	TOTAL:	13
Freshman Year - Winter		
	Social Science Elective	3
CST 116	C++ Programming I	4
GIS 134	Geographic Information Systems	3
WRI 122	Argumentative Writing	3
	Humanities Elective	3
	TOTAL:	16
Freshman Year - Spring		
MATH 251	Differential Calculus	4
	Social Science Elective	3
CST 126	C++ Programming II	4
SPE 111	Public Speaking	3
	TOTAL:	14

Sophomore Year - Fall		
MATH 252	Integral Calculus	4
	Lab Science Elective	4
CST 136	Object Oriented Programming with C++	4
WRI 227	Technical Report Writing	3
	TOTAL:	15
Sophomore Year - Winter		
MATH 254	Vector Calculus I	4
MATH 361	Statistical Methods I	4
	Lab Science Elective	4
MIS 275	Introduction to Relational Databases	3
	TOTAL:	15
Sophomore Year - Spring		
STAT 211	Data Science Methods	4
	Social Science Elective	3
SPE 221	Small Group and Team Communication	3
CST 211	Data Structures	4
	TOTAL:	14
Junior Year - Fall		
STAT 395	Junior Project I	4
MATH 465	Mathematical Statistics	4
MATH 362	Statistical Methods II	4
MATH 341	Linear Algebra I	4
	TOTAL:	16
Junior Year - Winter		
MATH 451	Numerical Methods I	4
STAT 396	Junior Project II	4
GIS 316	Geospatial Vector Analysis I	4
STAT 441	Statistical Machine Learning I	4
	TOTAL:	16
Junior Year - Spring		
MATH 342	Linear Algebra II	4
STAT 412	Regression and Time Series	4
STAT 442	Statistical Machine Learning II	4
STAT 397	Junior Project III	1
MIS 311	Introduction to Systems Analysis	3
	TOTAL:	16

Senior Year - Fall		
MIS 312	Systems Analysis I	4
CST 324	Database Systems and Design	4
STAT 495	Senior Project I	4
GIS 306	Geospatial Raster Analysis	4
	TOTAL:	16
Senior Year - Winter		
MATH 327	Discrete Mathematics	4
GIS 332	Customizing the GIS Environment I	4
STAT 496	Senior Project II	2
PHIL 331	Ethics in the Professions	3
or		
PHIL 342	Business Ethics	3
MIS 334	Business Analytics	3
	TOTAL:	16
Senior Year - Spring		
STAT 405	Advanced Methods in Data Science	4
STAT 497	Senior Project III	2
STAT 467	Spatial Statistics	4
WRI 350	Documentation Writing	3
or		
WRI 345	Science Writing	3
or		
WRI 327	Advanced Tech Writing	3
CST 475	Big Data Analysis	3
	TOTAL:	16
	Degree Total	183

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. Data Science degree will be offered to students at the Klamath Falls campus. The program will be hosted by the Applied Mathematics department and advising for the degree handled by their faculty. Most of the courses required by the program are already being taught on this campus: new courses developed for the data science major will be scheduled around the existing courses. Some courses will require students to use computer labs to complete some assignments and projects. Students may also be asked to access a remote server to perform computations in one of the senior level courses.

e. Adequacy and quality of faculty delivering the program.

All courses in the program have been developed by existing faculty. The faculty currently in charge of these courses have proper academic qualifications (Master's degree or above in the subject matter they teach). Department members are required to have strong teaching evaluations, and many have undergone promotion, tenure, and post tenure review successfully. All faculty maintain professional development as expected of their roles in each department.

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

Any of the faculty in the Applied Mathematics department may teach required by the data science program in addition to faculty from the Computer Systems Engineering Technology, Geomatics and Management departments.

Full-time faculty:

Todd Breedlove
(1999) Professor, Computer Systems Engineering Technology
B.S. (1996) Oregon Institute of Technology
M.S. (1999) Southern Oregon University

Kenneth Davis
(2016) Assistant Professor, Applied Mathematics
B.A. (1981) Reed College
M.S. (1985) Portland State University
Ph.D. (1989) Washington State University

Dibyajyoti Deb
(2013) Associate Professor, Applied Mathematics
B.S. (2004) Chennai Mathematical Institute, India
M.S. (2006) Ph.D. (2010) University of Kentucky

Jeff Dickson, Associate Professor
(2010) Associate Professor, Management
B.S. (2006) Oregon Institute of Technology
M.B.A. (2012) Southern Oregon University

James P. Fischer
(1999) Professor, Applied Mathematics
B.S. (1989)
B.A. (1991) Humboldt State University
M.S. (1993) University of New Hampshire
Ph.D. (1998) Oregon State University

Tiernan Fogarty
(2002) Professor, Applied Mathematics
B.S. (1995)
M.S. (1997) Ph.D. (2001) University of Washington

David Hammond
(2013) Associate Professor, Applied Mathematics
B.S. (1999) Caltech
Ph.D. (2007) New York University, Courant Institute

Phil Howard
(2014) Assistant Professor, Computer Systems Engineering Technology
B.S., B.A. (1982) Central Washington University
Ph.D. (2012) Portland State University

Cristina Negoita
(2004) Professor, Applied Mathematics
B.A. (1995) University of Oregon
M.S. (2002) Ph.D. (2003) Arizona State University

Douglas Peter Overholser
(2018) Instructor, Applied Mathematics
B.S. (2006) Gustavus Adolphus College
Ph.D. (2013) University of California, San Diego

Rosanna Overholser
(2017) Assistant Professor, Applied Mathematics
B.S. (2006) California Polytechnic State University, San Luis Obispo
M.S. (2008) Ph.D. (2013) University of California, San Diego

Randall Paul
(2004) Professor, Applied Mathematics
B.A. (1989) Rice University
M.S.(1998) Ph.D. (1998) University of Texas at Austin

joseph Reid
(2009) Associate Professor, Applied Mathematics
B.S. (2006) Western Oregon University
B.S. (2008) Oregon Institute of Technology
M.S. (2009) University of Washington
M.A.S. (2013) Penn State University
Certified gStat – American Statistical Association

John Ritter
(1996) Professor, Geomatics
B.A. (1976) University of California, Los Angeles
M.S. (1977) Ph.D. (1983) The University of Michigan

Lindy Stewart
(2016) Assistant Professor, Management
B.S. (2012) Oregon Institute of Technology
M.S. (2015) Boston University

Terri Torres
(2008) Professor, Applied Mathematics
B.S. (1981) Brigham Young University
M.S. (1994) Idaho State University
M.S. (2010) Bowling Green State University

g. Other staff.

The Applied Mathematics Department is supported by an Office Specialist 2 in Klamath Falls. No additional staffing will be needed to implement or support the program.

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

The Applied Mathematics department has two computer labs, one is an open lab space and the other designed for instruction. While the labs contain equipment sufficient for students to complete the required lab exercises in the data science program, we are considering replacing the computers in one lab to more easily support the use of computing in deep learning and are seeking grants to cover this cost – please refer to section 7b.

Using a summer creativity grant from our Provost, we recently purchased $500 of books on data science topics to supplement our existing collection. The library recently received a grant of $12,000 to train staff in data science techniques and update library resources in data science.

Coursework for the data science program in departments other than Applied Mathematics consists of existing classes and so adequate computing and library resources are already in place.

i. Anticipated start date.

We anticipate the B.S. in data science to begin in the Fall term of 2020.

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.

Data science is a new and fast-growing field with roots in computer science, mathematics, statistics, geomatics and management: its applications span many other fields, including engineering, healthcare, business and various technologies. Thus a data science program aligns well with Oregon Tech's mission of providing "statewide educational opportunities for the emerging needs of Oregonians" with "innovative and rigorous applied degree programs in the areas of engineering, engineering technologies, health technologies,

management, and the arts and sciences". The primary goal of a data science program should be to produce graduates who are cross trained in the foundational disciplines and who can apply these techniques to any of the fields mentioned above. This cross training spans the disciplines of management, mathematics, and engineering and will support data-driven decision making and, perhaps more importantly, to be able to design specialized solutions to data problems spanning many fields of study.

A data science program builds on Oregon Tech's signature areas of focus, including geomatics, computer science, healthcare and management. The mathematics department has a strong faculty of applied mathematicians and statisticians. Students enrolled in Oregon Tech's data science program will have the benefit of small student to faculty ratios and will be given many opportunities to learn by doing through junior and senior year projects, adding to Oregon Tech's "intimate, hands-on learning environment, focusing on application of theory to practice".

Oregon Tech's priority is to meet industry's need for skilled workers. Data science is a blossoming field with a combination of job titles and positions that these graduates could fill. Jobs range from research in science and medicine to technology jobs within companies in marketing and targeted advertising. Other jobs include self-automated learning systems (cars that drive themselves for example), governmental positions in data management and reporting. With an advanced degree, someone trained in data science could do research in a variety of fields including statistics, business/management, survey sampling, bioinformatics, and many others.

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.

By providing educational opportunities in Klamath Falls, Oregon Tech plays an important role in ensuring access to higher education to those would might otherwise not attend college. The relatively low cost of living in Klamath Falls, small student to faculty ratios and high expected return on investment of a degree from Oregon Tech will make it easier for a diverse group of people to work in the new field of data science. The proposed degree would allow Oregon Tech to stay at the cutting edge of employment needs and help met Oregon's need for qualified data-management and analysis professionals.

Due to the cross disciplinary origins of data science, much of the coursework in the proposed degree has already been developed and is currently used to train students in computer engineering, health informatics, geomatics, applied math and statistics: the success of Oregon Tech's graduates in these areas is evidence of the high quality of the proposed data science degree. Additionally, the high quality of the new coursework and overall structure of the proposed program can be seen through the curriculum development based on an analysis of data science skills most needed by industry and recent recommendations from the National Academies of Science.

Students in the proposed program will work on a variety of projects, generating new insights and adding to our collective knowledge. Projects could span many different fields, such as helping Animal Shelters identify the best way to match pets with owners, identifying the age structure of sea lion populations from aerial photographs, tracking rainforest deforestation (again from image processing), monitoring invasive species, tracking greenhouse gas emissions trends, identifying health trends in communities and the impact of interventions, and many others. Graduates of the data science program will be well equipped to process data and continue to gain new insights in whenever field they decide to work in.

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

I. improve educational attainment in the region and state;

There are many job opportunities in data science, so we expect that the ability to get a degree in data science will encourage people in the region of Klamath Falls to pursue higher education. Klamath Falls has a lower cost of living compared to Portland and Seattle so offering the proposed B.S. in Data Science on Oregon Tech's campus may make a college degree more attainable for all Oregonians.

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

Our society has recently faced challenges in the form of data collection, use, and privacy: a data science program will add significantly to understand how data can be used to make decisions. For example, popular search engines will make decisions based on someone's browsing history which online advertisement would most likely result in a sale. Facebook recently generated controversy when news organizations reported that third parties were allowed to use methods from data science on networks of friends and private messages

sent on the site. It is important to have educational opportunities such as the proposed degree so that awareness of the power of data science methodologies grows.

Many fields are incorporating techniques from data science and it is increasingly being used to make decisions, either within companies or as part of technology: it is therefore necessary for Oregon's workforce to have exposure to the field of data science.

Data science combines traditional statistical methods with a computer's ability to process large volumes of data. By producing more data scientists, we can better analyze our environment. Oregon Tech's faculty with expertise in geomatics and environmental science will give graduates of the proposed program experience in applying methods of data science to environmental challenges.

III. address civic and cultural demands of citizenship.

Technology can have an enormous impact on a culture, influencing the way information is exchanged, and giving rise to new opportunities. Data Science is the study of practical applications of mathematical and statistical principles to information collected or distributed through technology.

The proposed B.S. in data science goes beyond merely teaching technical skills required to analyze data and challenges students to consider civic and cultural demands. Each step of the workflow of a data scientist comes with ethical considerations, from data collection to analysis to reporting. The programs' heavy focus on practical applications through junior and senior year projects will provide a natural setting to discuss the civic and cultural ramifications of workflow choices.

3 Accreditation

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

At the present time, no accrediting body exists. The National Academy of Sciences has produced a set of suggested guidelines for an undergraduate degree in data science, which were followed in the development of the proposed program.

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.

Not applicable.

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.

We are not seeking accreditation because no accrediting body currently exists for data science programs.

4 Need

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

Data science programs at other universities appear to average between 2% and 4% of total enrollment in size, translating to approximately 40-80 students on the Klamath Falls campus. With the addition of dual major students, this could be 60-120 students in a four year period once the program is established (cohorts of 15 to 30 students, sufficient to justify courses).

We expect that high school students with an interest in mathematics and computer programming will be drawn to our program. Nontraditional students who see a high demand for and high salaries of data scientists may also be attracted to the program.

	2020-21	2021-22	2022-23	2023-24	2024-25
FTE =headcount	5	5	10	15	20

Table 1: Estimated 5-Year Enrollment of fulltime students over 5 years

b. Expected degrees produced over the next five years.

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

	2020-21	2021-22	2022-23	2023-24	2024-25
FTE = headcount	3	3	6	9	12

Table 2: Estimated Annual Graduations over 5 years

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

We expect that most students who come to the Klamath Falls campus for the proposed B.S. in data science will be full-time traditional students who are residents of Oregon. The program could accommodate part-time students as many of the existing courses are offered more than once a year, allowing for flexible pathways through required coursework.

Currently there is no B.S. in data science offered in Oregon and therefore the paths to transfer from two-year college or other four-year institution are uncharted. We plan to work with community colleges in Southern Oregon to develop a clear pathway for students to transfer into the data science. Because much of the coursework in a data science program comes from existing courses in computer science, management, applied mathematics and statistics, we expect that this route will be relatively easy to establish.

d. Evidence of market demand.

Salaries of data scientists are typically high, with Glassdoor.com reporting a median salary of $99,149 on July 6, 2018 for entry level workers. This number is likely higher than our graduates can expect as Glassdoor's dataset included workers with advanced degrees. We

did not find an external source for the median salary of a data scientist with only a BS degree, but expect starting salaries would range from $50,000 to $75,000. Structural Employment Gap is estimated between 140,000 and 190,000 jobs beyond the number of graduates produced for the 2016/2017 biennium.

During a one day examination of job advertisements for data scientists in July, we found 751 jobs for data scientists listed in Seattle, Portland, Reno and San Francisco. Throughout the summer, the number of postings in Portland ranged between 20 and 30.

A Google Trends analysis (see Figure 1 below) suggests that in the US, searches for "data science degree" are being as popular as searches for "mechanical engineering degree".

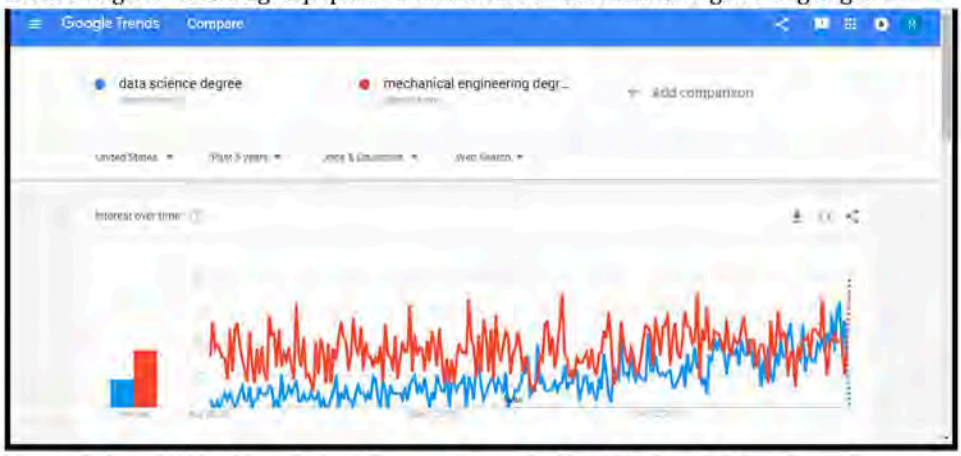


Figure 1: Google Trends analysis of the search popularity of the term "data science degree" (blue) vs. "mechanical engineering degree" (red). Notice that five years ago, there were almost no searches for data science, but within the last year the percentage of searches equals those for mechanical engineering. Note that these trends are for Google searches from the entire US, not just Oregon.

The job title of data scientist is new and not yet tracked by the Bureau of Labor Statistics (BLS). Although BLS does not have job projections for data scientists, the jobs of mathematician, statistician and software developer, applications are all in the top ten occupations with the estimated fastest growing rates in the US over the next 8 years with expected growth of over 30%.

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
Figure. 2: BLS Occupational Outlook Fastest Growing Occupations

According to a survey from Gallup for the Business-Higher Ed Forum, 69% of employers expect to give preference to candidates with data science skills.

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 mentioned in 4.d, data science is a rapidly growing profession and we expect graduates will successfully find employment. They may have the job title of Data Scientist, or a related title as shown in Figure 3.

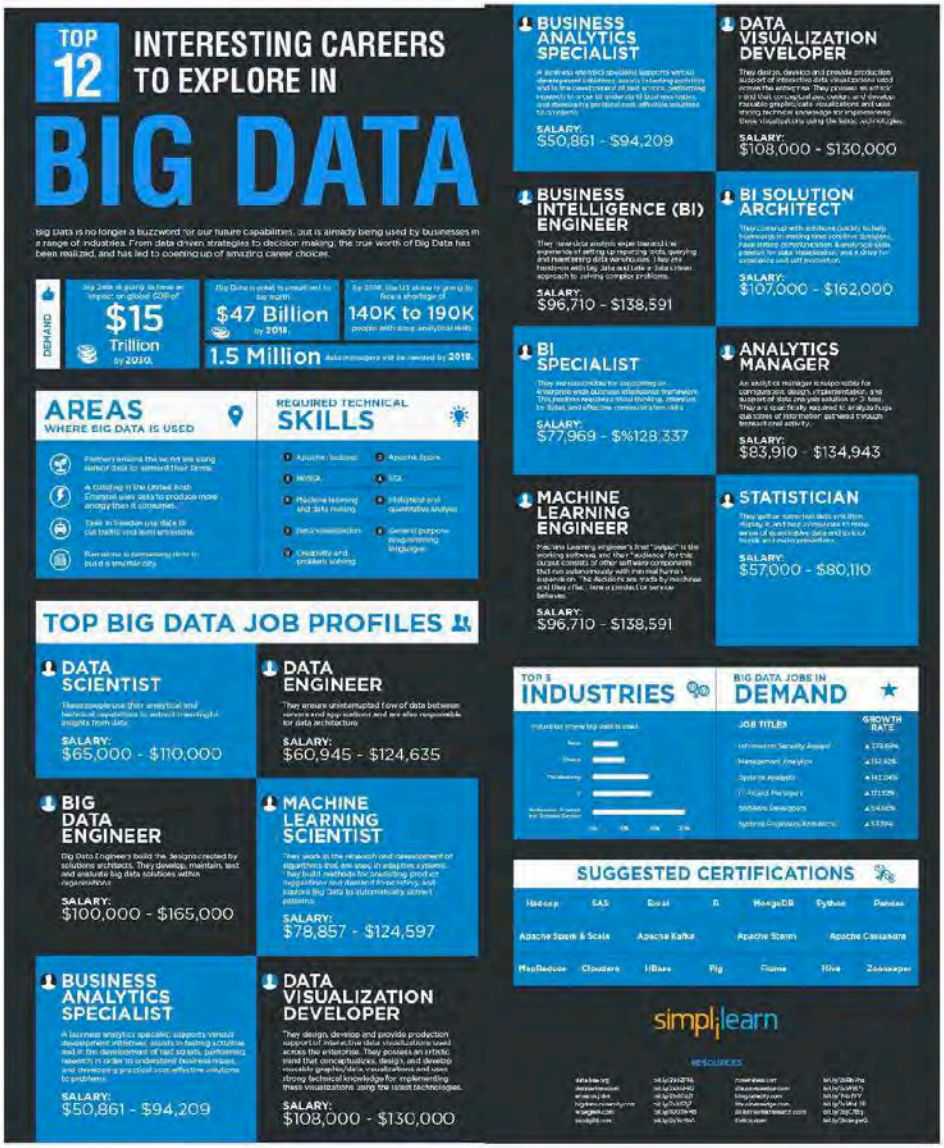


Figure 3: Job titles requiring data science. From https://cloudtweaks.com/wp-content/uploads/2016/09/Top-12-interesting-careers-to-explore-in-bigdata-2016-725px.jpg

5 Outcomes and Quality Assessment

a. Expected learning outcomes of the program.

In part, our curriculum was designed on an analysis of the skills listed in job advertisements for data scientists. By looking at current job postings, we were able to align our program with industry's needs (see figures 4 and 5 below). Discussions with hiring managers helped us understand the shortcomings of the education of current data scientists.

Figure 4: Word cloud of "desired skills" from 751 job advertisements for "data scientists" on Indeed.com. The jobs were located in Portland, Seattle, Reno and San Francisco and advertised on July, 2018. The size of each word corresponds to the number of times it appeared in the 751 advertisements.

Desired Skills	Python	Machine Learning	SQL	Hadoop	Java	Spark
% of job ads containing skill	42%	36%	27%	18%	15%	15%

Figure 5: Skills that appear in at least 15% of 751 job advertisements for data scientists. The most frequently requested skill was the ability to program in Python.

This analysis of the skillset required for a data scientist position along with the guidelines from the National Academy of Sciences informed the development of program level outcomes for the proposed B. S. in data science. These outcomes are shown in Table 3.

	Program Student Learning Outcomes
1	An ability to translate a real-world question into mathematical language
2	An ability to design an efficient and cost-effective data collection strategy
3	An ability to understand and apply ethical standards necessary in data collection, analysis, and storage.
4	An ability to organize a reproducible workflow with project documentation.
5	An ability to design, create, and manage data storage.
6	An ability to clean, impute, and structure features for modeling data.
7	An ability to produce sophisticated visualizations and quantitative summaries of data.
8	An ability to identify and quantify correlations and causal relations within a dataset
9	An ability to optimize and validate predictive analytics.
10	An ability to effectively communicate findings in written or oral reports.
11	An ability to work effectively as a member of diverse teams.

Table 3: Program Student Learning Outcomes for the proposed B.S. in Data Science. Outcomes will be assessed on a three-year cycle.

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

Program outcomes will be assessed using both direct and indirect methods.

Student exist surveys will be given to indirectly assess the program.

Program Student Learning Outcomes (PSLOs) will be assessed as shown in Table 3 in several key courses, primarily through student work collected in the junior and senior year project course sequence. Student work will be evaluated with respect to the PSLOs using a standard rubric. Faculty will gather each year at the beginning of the Fall term to assess the program.

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.

Data science is a growing field with cross disciplinary origins. Thus, faculty teaching in the proposed B. S. in data science program will be expected to heavily invest in professional development.

6 Program Integration and Collaboration

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

There is not currently a bachelor's degree in data science being offered in Oregon. Similar programs are listed below:

Oregon State University
- Master of Science in Data Analytics
- Graduate Certificate in Data Analytics
- Master of Science, Master of Engineering or Ph.D in Computer and Electrical Engineering with a research area in Data Science

University of Oregon
- Bachelor of Science in Spatial Data Science & Technology

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.

We expect that students enrolled in associate degree programs in computer science, engineering or mathematics will be able to easily transfer into the proposed B.S. in data science program as these students will have the required foundational courses in programming and mathematics and lower-division general education courses. We will pursue agreements and pathways with community colleges in Oregon that host such programs.

Students graduating from the proposed B. S. in data science program will have the foundational coursework necessary to enrolled in a variety of Master's programs, including those in computer science, statistics and data analytics. Graduates could also enroll in MBA programs. We expect that graduates may be attracted to OSU's M.S. in Statistics, Data

Analytics or Computer and Electrical Engineering program or OHSU's M.S. in Bioinformatics and Computational Biomedicine program, OHSU-PSU's M.S. in biostatistics program or PSU's M.S. in statistics program.

The proposed B.S. in data science will be hosted by the Applied Mathematics department, which also hosted a B.S. in applied mathematics. Besides sharing some coursework with this program, the proposed B.S. shares some coursework with B.S. programs in the Computer Systems Engineering Technology department. As the proposed B.S. in data science program matures, we will consider creating dual major programs with these programs. We will also consider developing various concentrations for the proposed B.S. in data science, for example in Geographic Information Systems, Renewable Energy Engineering, Environmental Sciences or Health Informatics as industry starts to expect specialization.

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.

Data science is a new and rapidly growing field and it is possible some students may wish to change their major to data science as awareness grows. Since the data science program is similar in the first year to majors in the Computer Systems Engineering Technology department, we believe that these students are most likely to consider changing to the data science major. It is also possible that Applied Mathematics majors may wish to switch.

The all potentially impacted departments have all been consulted and are aware of potential increases in select courses within their curriculum (See Appendix C).

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.

Because much of the coursework for the proposed B.S. in data science program is from existing programs at Oregon Tech, minimal investment is needed to start the program. The proposed budget for the BS in data science has a breakeven point in the first year of running and returned net revenue of $181,701 after three years.

This budget calls for an initial investment in library resources, lab equipment (computers), and travel funds for the professional development of existing faculty. In the third year of the program, funds are allocated to hire an additional full-time math faculty member to support the addition of new upper division courses for the data science major and the junior and senior level project courses. Additionally, we allocate funds to hire a part-time faculty member to support additional sections of existing classes and one new course for the proposed B.S. in data science. Faculty will be recruited and retained following existing university processes.

The proposed budget provides minimal on-going support to the library to purchase print editions of relevant texts: we anticipate that the library's recently received grant of $12,000 for data science related spending and their current subscription to Safari Books will suffice for most student needs by giving access to ebooks. Please refer to Appendix D for a more detailed report of the library's readiness.

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

Our technology requirements are similar to those to the recently proposed B.S. in Cybersecurity program. This program will be housed in the Management Department and will have one of the following three 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.

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.).

Source: HECC Proposal for a New Academic Program
B.S. in Cybersecurity at Oregon Tech

We quote extensively from the proposed B.S. in Cybersecurity program because our choice of configuration will likely be the same. Our current plan is to have a combination of on-site computers (please refer to the budget for costs) and pay for access to a public cloud through a course fee for STAT 442. STAT 442 is the only course we anticipate having such a fee. If the Cybersecurity and Data Science programs can share access to a powerful computing cluster on site at Oregon Tech, then this option might become more attractive.

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

The target student/faculty ratio is generally 20:1, with the ratio for freshman courses being no more than 25:1 and senior courses no more than 15:1.

d. Resources to be devoted to student recruitment.

We will work with the Office of Academic Partnerships to create articulation agreements for transfer students. We will also work with the Offices of Strategic Enrollment Management and Admissions.

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. Library Resource Report
F. 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: Applied Mathematics Program: Data Science

Submitter's Name: Rosanna Overholser Phone: 885-1475 Email: rosanna.overholser@oit.edu

Proposal submission date: 5/23/2018

Implementation requested for academic year:

Type of curriculum proposal:

- ☑ 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:

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

Date: 5/16/18 Approved by: , Department Chair

Date: Approved by: , Dean

Date: 6/4/18 Approved by: , Provost

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

Date: Approved by: , Department Chair

Date: 17 DEC 2018 Approved by: , Director of Assessment

Date: 1-8-19 Approved by: , Dean

Date: Approved by: , CPC

Date: Approved by: , Provost

Please note that the Department Chair's signature for Final Approval was submitted on a hard copy of this form.

Appendix B: Summary for OIT Curriculum Planning Commission

1. **New Courses**

Class Number and Name	Cr.
STAT 201 Introduction to Data Science	4-0-4
STAT 211 Data Science Methods	4-0-4
STAT 441 Statistical Machine Learning I	4-0-4
STAT 442 Statistical Machine Learning II	4-0-4
STAT 395 Junior Project I	4-0-4
STAT 396 Junior Project II	4-0-4
STAT 397 Junior Project III	1-0-1
STAT 405 Advanced Methods in Data Science	4-0-4
STAT 467 Spatial Statistics	4-0-4
STAT 495 Senior Project I	3-0-3
STAT 496 Senior Project II	3-0-3
STAT 497 Senior Project III	2-0-2
	41

28

RE: new courses with STAT prefix

Ben Kintner <Ben.Kintner@oit.edu>

To:

Hi Rosanna,

I see that MATH 441 and MAT 4442 are both available.

Thanks!
--Ben

Ben Kintner | Schedule Coordinator
Office of the Registrar
541-885-1314
Book a meeting with me!

Oregon TECH

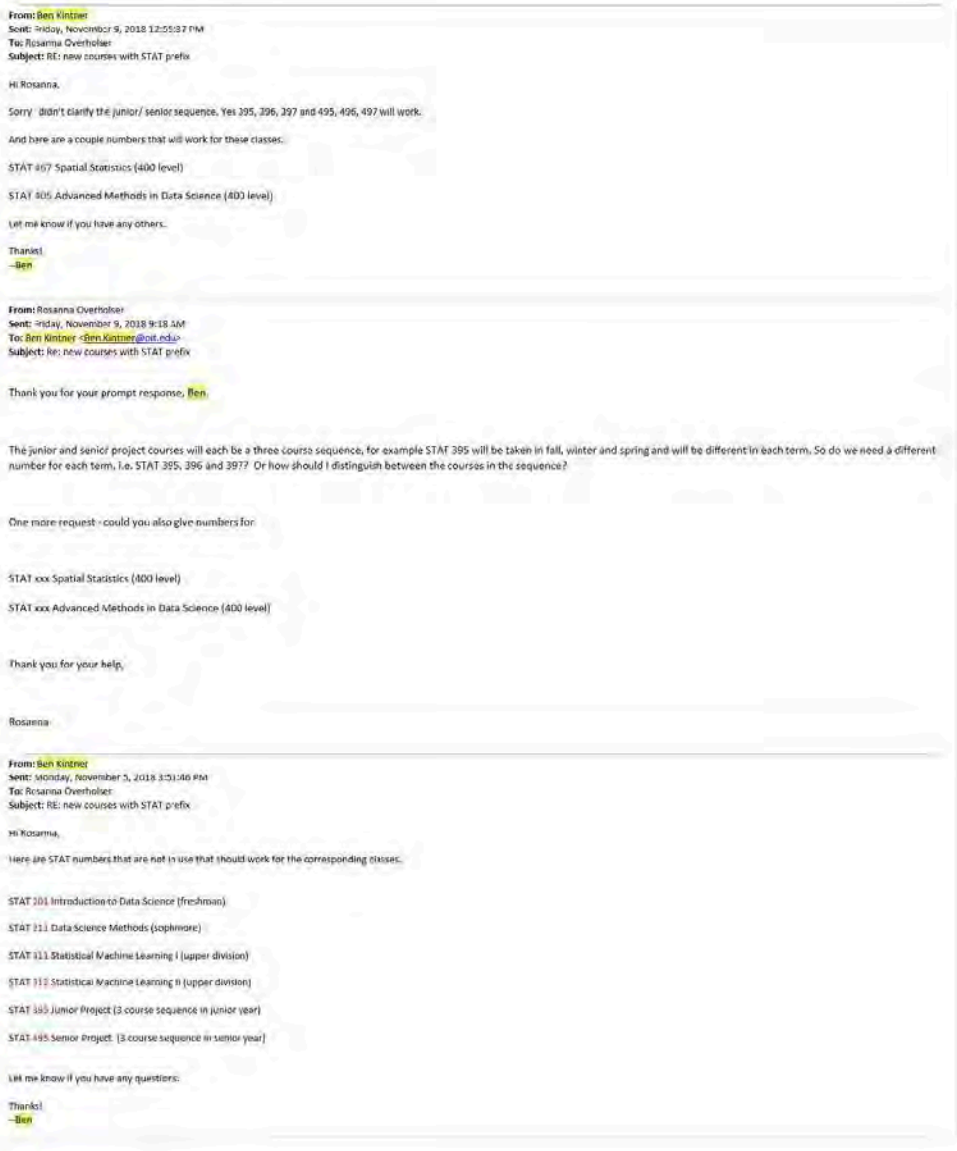
From: Rosanna Overholser
Sent: Monday, February 18, 2019 8:10 AM
To: Ben Kintner <Ben.Kintner@oit.edu>
Subject: RE: new courses with STAT prefix

Hi Ben,

I got some feedback from CPC that I should have made STAT 311 and 312, Statistical Machine Learning I and II four hundred level courses, not 300 level. Could you please help me find 400 level numbers for those two courses?

Thank you!

Rosanna



From: Ben Kintner
Sent: Friday, November 9, 2018 12:55:37 PM
To: Rosanna Overholser
Subject: RE: new courses with STAT prefix

Hi Rosanna,

Sorry didn't clarify the junior/ senior sequence. Yes 395, 396, 397 and 495, 496, 497 will work.

And here are a couple numbers that will work for these classes.

STAT 407 Spatial Statistics (400 level)

STAT 405 Advanced Methods in Data Science (400 level)

Let me know if you have any others.

Thanks!
--Ben

From: Rosanna Overholser
Sent: Friday, November 9, 2018 9:18 AM
To: Ben Kintner <Ben.Kintner@oit.edu>
Subject: Re: new courses with STAT prefix

Thank you for your prompt response, Ben.

The junior and senior project courses will each be a three course sequence, for example STAT 395 will be taken in fall, winter and spring and will be different in each term. So do we need a different number for each term, i.e. STAT 395, 396 and 397? Or how should I distinguish between the courses in the sequence?

One more request - could you also give numbers for:

STAT xxx Spatial Statistics (400 level)

STAT xxx Advanced Methods in Data Science (400 level)

Thank you for your help,

Rosanna

From: Ben Kintner
Sent: Monday, November 5, 2018 3:51:46 PM
To: Rosanna Overholser
Subject: RE: new courses with STAT prefix

Hi Rosanna,

Here are STAT numbers that are not in use that should work for the corresponding classes.

STAT 201 Introduction to Data Science (freshman)

STAT 211 Data Science Methods (sophmore)

STAT 311 Statistical Machine Learning I (upper division)

STAT 312 Statistical Machine Learning II (upper division)

STAT 395 Junior Project (3 course sequence in junior year)

STAT 495 Senior Project (3 course sequence in senior year)

Let me know if you have any questions.

Thanks!
--Ben

2. Program Narrative

Degree Offered
Bachelor of Science in Data Science

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

	NEW CURRICULUM		
Prerequisite	Freshman Year - Fall		
		Social Science Elective	3
	STAT 201	Introduction to Data Science	4
WRI 115	WRI 121	English Composition	3
		Humanities Elective	3
		TOTAL:	13
	Freshman Year - Winter		
		Social Science Elective	3
MATH 111	CST 116	C++ Programming I	4
CE 203 or GIS 103 or coreq CST 116	GIS 134	Geographic Information Systems	3
WRI 121	WRI 122	Argumentative Writing	3
		Humanities Elective	3
		TOTAL:	16
	Freshman Year - Spring		
MATH 112	MATH 251	Differential Calculus	4
		Social Science Elective	3
CST 116	CST 126	C++ Programming II	4
	SPE 111	Public Speaking	3
		TOTAL:	14
	Sophomore Year - Fall		
MATH 251	MATH 252	Integral Calculus	4
		Lab Science Elective	4
CST 126	CST 136	Object Oriented Programming with C++	4
WRI 122 and SPE 111	WRI 227	Technical Report Writing	3
		TOTAL:	15
	Sophomore Year - Winter		
MATH 252	MATH 254	Vector Calculus I	4
MATH 111	MATH 361	Statistical Methods I	4
		Lab Science Elective	4
	MIS 275	Introduction to Relational Databases	3
		TOTAL:	15

	Sophomore Year - Spring		
CST 126, MATH 252, (MATH 243 or MATH 361)	STAT 211	Data Science Methods	4
		Social Science Elective	3
SPE 111	SPE 221	Small Group and Team Communication	3
CST 136	CST 211	Data Structures	4
		TOTAL:	14
	Junior Year - Fall		
STAT 211 and coreq of MATH 362	STAT 395	Junior Project I	4
MATH 254	MATH 465	Mathematical Statistics	4
MATH 361	MATH 362	Statistical Methods II	4
MATH 252	MATH 341	Linear Algebra I	4
		TOTAL:	16
	Junior Year - Winter		
CST 116 and MATH 252 and MATH 341	MATH 451	Numerical Methods I	4
MIS 275 and Math 362, coreq of STAT 441	STAT 396	Junior Project II	4
GIS 134	GIS 316	Geospatial Vector Analysis I	4
(MATH 465 or MATH 361) and (MATH 254 or MATH 261 or MATH 341)	STAT 441	Statistical Machine Learning I	4
		TOTAL:	16
	Junior Year - Spring		
MATH 341	MATH 342	Linear Algebra II	4
MATH 362	STAT 412	Regression and Time Series	4
STAT 441 and MATH 451, coreq of MATH 342	STAT 442	Statistical Machine Learning II	4
STAT 395 and STAT 396	STAT 397	Junior Project III	1
WRI 121	MIS 311	Introduction to Systems Analysis	3
		TOTAL:	16

	Senior Year - Fall		
CST 324 or MIS 275, and MIS 311	MIS 312	Systems Analysis I	4
CST 211	CST 324	Database Systems and Design	4
STAT 397	STAT 495	Senior Project I	4
GIS 134	GIS 306	Geospatial Raster Analysis	4
		TOTAL:	16
	Senior Year - Winter		
MATH 252 or junior standing	MATH 327	Discrete Mathematics	4
GIS 306 or MIS 116 or GIS 316	GIS 332	Customizing the GIS Environment I	4
STAT 495	STAT 496	Senior Project II	2
WRI 227	PHIL 331	Ethics in the Professions	3
	or		
WRI 122 and 3 cr. Hum Electives	PHIL 342	Business Ethics	3
MATH 361 and MIS 113 or MIS 275 or CST 324	MIS 334	Business Analytics	3
		TOTAL:	16
	Senior Year - Spring		
STAT 442, coreq of STAT 467, and CST 211	STAT 405	Advanced Methods in Data Science	4
STAT 496	STAT 497	Senior Project III	2
GIS 332 and MATH 362	STAT 467	Spatial Statistics	4
WRI 227	WRI 350	Documentation Writing	3
	or		
WRI 123 or WRI 227	WRI 345	Science Writing	3
	or		
WRI 227	WRI 327	Advanced Tech Writing	3
CST 324	CST 475	Big Data Analysis	3
		TOTAL:	16
		Degree Total	183

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4. **General Education Requirements**

The general requirements for a B.S. are met by the program in data science as outlined in the table below.

General Education Requirements Summary		
Communication: 18 Credits		
SPE 111	Public Speaking	3
SPE 221	Small Groups and Teams	3
WRI 121	English Composition I	3
WRI 122	English Composition II	3
WRI 227	Tech Report Writing	3
WRI 327 or WRI 345 or WRI 350	Advanced Tech or Science or 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 251	Differential Calculus	4
MATH 252	Integral Calculus	4
	Lab Science Elective (BIO, CHE, GEOG, GEOL or PHY)	4
		12
Social Science: 12 Credits		
	Social Science Elective	3
	Social Science Elective	3
	Social Science Elective	3
	Social Science Elective	3
		12

BS Degree: 36 Credits in Mathematics and Science		
MATH 251	Differential Calculus	4
MATH 252	Integral Calculus	4
MATH 254	Vector Calculus I	4
MATH 361	Statistical Methods I	4
MATH 362	Statistical Methods II	4
MATH 341	Linear Algebra I	4
MATH 342	Linear Algebra II	4
MATH 451	Numerical Methods I	4
MATH 465	Mathematical Statistics	4
		36
Upper Division: 60 Credits		
MATH 327	Discrete Math	4
MATH 361	Statistical Methods I	4
MATH 362	Statistical Methods II	4
MATH 341	Linear Algebra I	4
MATH 342	Linear Algebra II	4
MATH 451	Numerical Methods I	4
MATH 465	Mathematical Statistics	4
STAT 412	Regression and Time Series	4
STAT 441	Statistical Machine Learning I	4
STAT 442	Statistical Machine Learning II	4
STAT 467	Spatial Statistics	4
STAT 405	Advanced Methods in Data Science	4
GIS 306	Geospatial Raster Analysis	4
GIS 316	Geospatial Vector Analysis I	4
GIS 332	Customizing the GIS Environment I	4

Appendix C: Documentation of Communication

a. Letter of Support Humanities Department

support for the data science major

Rosanna Overholser <Rosanna.Overholser@oit.edu>
11/30/2018 3:49 PM

To: Mark Neupert

Dear Prof. Neupert,

I'm an applied math faculty and we've recently finalized a curriculum map for a new BS in data science major. We are requiring the students to take either PHIL 331 or 342 but the choice of the rest of the gen ed requirements are left to the students.

Our estimated enrollements over the first three years of the program are 5, 5, and 10.

Is your department able to support these additional students?

Thank you,

Rosanna

b. Letter of Support Department of Management

RE: resources for data science program

Jeff Dickson <Jeff.Dickson@oit.edu>
11/8/2018 12:25 PM

To: Rosanna Overholser Cc: Sharon Beaudry

Rosanna,

We have capacity and support the additional students to the courses listed.

Thanks,

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

Phone: 541-885-1857
Oregon TECH
Tech-Infused Business Degrees
Webpage
Facebook

From: Rosanna Overholser
Sent: Thursday, November 8, 2018 10:51 AM
To: Jeff Dickson <Jeff.Dickson@oit.edu>
Cc: Sharon Beaudry <Sharon.Beaudry@oit.edu>
Subject: resources for data science program

Hi Jeff and Sharon,

Jeff - thank your for your time yesterday - it was really helpful to talk with you and to see your course material.

I forgot to ask if your department would need any additional resources if data science students took your classes (I think MIS 285, 311, 312 and 334 should be required for all, some students might take others as electives). I've been planning for 5 students in year 1 (which is 2020 if all goes well), 5 in year 2 and 10 in year 3. Would you need to run any extra sections or purchase extra software licenses/computing power?

Thanks,

Rosanna

c. Letter of Support Computer Systems Engineering Technology

From: Todd Breedlove
Sent: Friday, November 30, 2018 12:37:31 PM
To: Rosanna Overholser
Subject: RE: support for the data science program

For the first two years, yes. The 10 might be a stretch but will make it work.

Todd

Todd Breedlove
Professor, Department Chair
Computer Systems Engineering Technology
Oregon Institute of Technology

From: Rosanna Overholser <Rosanna.Overholser@oit.edu>
Sent: Friday, November 30, 2018 12:19 PM
To: Todd Breedlove <Todd.Breedlove@oit.edu>
Cc: Phil Howard <Phil.Howard@oit.edu>
Subject: support for the data science program

Dear Todd,

We have recently finalized the curriculum map for a new major, data science, and are requiring students to take CST 116, 126, 136, 211, 324 and 475. Our estimated enrollments over the first three years are 5, 5, and 10 students.

Does your department have the necessary resources to support these additional students?

Thank you for your help.

Rosanna

d. Letter of Support Communication Department

Re: support for the data science program

VK Veronica Koehn <Veronica.Koehn@oit.edu>
11/30/2018 4:19 PM

To: Rosanna Overholser

Hi Rosanna--

We can definitely make that work! The 10 was the most concerning to me, but we will have three years to work on that. We could handle an additional five right now, so I am sure that 5 will be fine next year and the year after.

Veronica

Veronica Koehn, Ph.D.
Associate Professor of Communication
Interim Chair of the Communication Department
Oregon Institute of Technology
Semon Hall 130
541-885-1677

From: Rosanna Overholser
Sent: Friday, November 30, 2018 3:41 PM
To: Veronica Koehn
Subject: Re: support for the data science program

Dear Veronica,

Please find the updated requirments below students for students in the new data science major:
WRI 121, 122, 227, 321, and 350 or 327 or 345
SPE 111, 321
Our estimated enrollments over the first three years are 5, 5, and 10 students.

Does your department have the necessary support for these additional students?

Thank you!

Rosanna

e. Letter of Support Geomatics Department

RE: support for data science major

JW Jack Walker <Jack.Walker@oit.edu>
11/30/2018 12:27 PM

To: Rosanna Overholser Cc: John Ritter

Rosanna,

Yes, the Geomatics department can accommodate the additional students.
I submitted course prerequisite and corequisite changes to CPC to accommodate Data Science students taking GIS courses.

Thanks,
Jack Walker

Jack A. Walker, PLS
Professor and Chair
Department of Geomatics
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From: Rosanna Overholser <Rosanna.Overholser@oit.edu>
Sent: Friday, November 30, 2018 12:17 PM
To: Jack Walker <Jack.Walker@oit.edu>
Cc: John Ritter <John.Ritter@oit.edu>
Subject: support for data science major

Dear Prof. Walker,

I'm an applied math faculty and we have recently finalized the curriculum map for a new major, data science, and are requiring students to take GIS 134, 306, 316 and 332. Our estimated enrollments over the first three years are 5, 5, and 10 students.

Does your department have the necessary resources to support these additional students?

Thank you for your help,

Rosanna

Appendix D: Library Resource Report

Oregon Tech Libraries Collection Review for Data Science Program
December 20, 2018
Karen Kunz

Background

The main goal of the Oregon Institute of Technology Libraries' collection development program is to support Oregon Tech's academic curriculum and degree programs. Librarians work with liaisons from each department to purchase materials required for existing and new courses or programs. However, the amount of money allocated for each department and program varies each year, depending on pressures on the library's budget from outside sources.

As the Applied Mathematics librarian liaison, I reviewed the library's resources for Data Science holdings along with related subject matter in all formats to prepare this collection review and recommendation about library resources needed to support a new program in Data Science. The following sections provide a summary of the library's related holdings and their associated costs.

Overview of the Oregon Tech Libraries Holdings:

Books

I searched library holdings for the following categories:

Python

- Beginning Python
- Advanced Python
- Python Analytics
- Python Machine Learning
- Python and Data Science
- Pandas, Data Visualization, NumPy, Web Scraping, etc.

Thanks to the Library's subscription to Safari eBooks, access to these topics is strong. However, this is a subscription and access to these eBooks will disappear if the subscription is stopped. In addition, the library has no control over the availability of publishers in this collection. Publishers can (and have in the past) remove their material from this collection. For that reason, I would suggest getting enough purchased (either print or eBook) material to provide basic support for this program. Purchasing 1-2 books in each subtopic should suffice. At the minimum, I would recommend getting:

- Python Data Science Handbook (59.99 – Print; 50.99 – 1 user)
- Python Machine Learning Cookbook ($34.63 – Print; $47.99 – 1/$71.99 – unlimited)
- Python for data analysis (42.99 – Print; $42.99 – 1 user)

Machine Learning

Once again, access to books on machine learning are primarily through eBook subscriptions. There are minimal current print books in the library's collection (none newer than 2006). Access can also be had through borrowing from regional libraries or through interlibrary loan but it is recommended that a few books on this subject be added.

Statistics/Data Analysis

Though the Library has enough general books on Statistics, books on Data Analysis are connected to specific disciplines such as health or transportation. There are adequate eBooks from the subscription eBook collections but it is recommended that some purchased (print or eBook) material on general data analysis be obtained.

Data Science

The Library has no purchased materials on data science. In addition to eBook collections and Summit borrowing, it is recommended that a few books be purchased.

Journals

The Library has a few journals on these topics (see Appendix) and there are several open access journals on Data Science topics. Research into other library's support of data science programs does not reveal much use of journals. However, if it is felt that it is necessary to have well regarded (high impact) journals available, the cost could range from $500 to $3500 per year.

Electronic Resources

The majority of support for Data Science programs from other libraries seems to be in providing data for students.

Databases/Datasets

The Oregon Tech library subscribes to ProQuest Statistical Abstract of the US which provides indexed tables on the social, political, and economic organization of the U.S. These tables are available for download in both XLS and PDF and show the source of the data. In addition, there are numerous federal sites that offer raw data (e.g. BLS, EPA, Census, Data.gov, NIH, etc.) and data repositories that allow for free access.

If it is felt that more access to data is required for this program, the following databases and data repositories are available at a price:

- Data-Planet (Sage)
  - *A very large dynamic repository providing access to massive amounts of statistical data combined with descriptive content and a robust suite of visualization, search, and analysis capabilities on a single platform. 16 subject categories*
- Proquest Statistical Insight (~$2000)
  - *Index to US government, intergovernmental, and nongovernment publications*
- Social Explorer ($150/mo. <20 people)
  - *Hundreds of thousands of built-in data indicators related to demography, economy, health, politics, environment, crime and more. Free trial*

- Rand State Statistics ($0.154/FTE)
  - *More than 200 databases covering all 50 states. Free trial.*
- Proquest Statistical Abstracts of the World (~$800)
  - *Approximately 50 countries*
- RDS TableBase
  - *Tabular data on companies, industries, products and demographics*
- Statista
  - *Market data, market research, market studies, consumer data. Business and industry data in 19 categories.*
- ICPSR: Inter-University Consortium for Political and Social Research ($2500)
  - *Requires membership ($2400/year)*

OIT Library Expenditures in Support of the Current Mathematics Program Curriculum:

The Library divides Mathematics purchases between those for general education material and those for the applied mathematics program. The applied mathematics programs does not have any library purchased journals or reference materials. Within the last 5 years, the library has spent $557 on books for this program. Within that same period of time, the Library spent $1040 on general education mathematics books.

Financial Summary Recommendations for the Library Support of a Data Science program

In general, using online collections, Summit borrowing, and Interlibrary Loan, the Oregon Tech Libraries are able to provide basic support for this program without additional purchases. However, since most of the books in this area are from an eBook subscription, I would recommend purchasing some basic and advanced material for assured access. A budget of $500 would probably provide 10 – 15 books to start. $100/year would allow for 2-3 books to be purchased each year.

The Libraries provide access to several journals in the areas applicable to Data Science. Should it be determined that access to a high-impact journal is desired, the cost would be in the thousands of dollars.

Finally, an area where the Libraries could provide significant help would be in access to data. Though we do have a subscription to the Statistical Abstract of the US, the information given is general in nature. More specific data might be required. Since raw data can be retrieved from many government sites for free (even if not easily), my suggestion would be to consider getting Statista whose data (market research and consumer data) is not easily found for free. Based on a quote from 2015, I would estimate the cost of this subscription to be between $2500 and $3000 – incorporating a 5% increase each year plus the increase of student FTE these past years.

Appendix F: References

HECC D4A Data Mart. (2017). Total Degree and Certificate Completion. Retrieved from https://www.oregon.gov/highered/research/Documents/Student/CC-completion-history.pdf

HECC Office of Research and Data. (2017). University Student Data. Retrieved from https://www.oregon.gov/highered/research/Pages/student-data-univ.aspx

Fastest Growing (n.d.). Retrieved from: https://www.bls.gov/ooh/fastest-growing.htm

BHEF and PwC (Business Higher Education Forum and PricewaterhouseCoopers). 2017. Investing in America's Data Science and Analytics Talent: The Case for Action. http://www.bhef.com/sites/default/files/bhef_2017_investing_in_dsa.pdf. Butler, D. 2013.

Proposed Budget for B.S. in Data Science

Because much of the coursework for the proposed B.S. in data science program is from existing programs at Oregon Tech, minimal investment is needed to start the program. The proposed budget for the BS in data science has a breakeven point in the first year of running and returned net revenue of $181,701 after three years if student enrollment is at 5, 5, and 10 for years 1, 2 and 3 of the program.

This budget calls for an initial investment in library resources, lab equipment (computers), new faculty, and travel funds for the professional development of existing faculty.

In the third year of the program, funds are allocated to hire an additional full-time math faculty member to support the addition of new upper division courses for the data science major and the junior and senior level project courses. Additionally, we allocate funds (0.28 of a FTE) towards the hiring of a CSET faculty member to support additional sections of existing classes and one new course for the proposed B.S. in data science. We anticipate the remaining part of a FTE (0.72) will be utilized to support students in CSET majors. **These hires are predicated upon sustaining enrollment at a level that will support the need for additional resources.**

A minimal investment in library resources is needed because the library received a grant of $12,000 in Winter of 2019 to update their data science collection and train staff.

Equipment costs are to replace two faculty computers and existing computers in one of the math department's computer labs (BH126 or BH119) for the purpose of teaching STAT 442 and possibly STAT 405. These courses involve computationally intensive work best suited for programmable Graphics Processing Units (GPUs). After some discussion with ITS, we determined that rather than having ITS install GPUs in existing computers, we should purchase new computers with programmable GPUs already installed. These computers are significantly more expense (~$2500) than the standard models used by ITS.

Historically, the applied math department has had few funds available for professional development. With the addition of a new major in the rapidly growing (and thus rapidly changing) field of Data Science, we need professional development funds in order to stay up-to-date with the field. Given that there is no accreditation agency with set standards for a data science curriculum, the faculty will play a larger than otherwise role in the success of graduates of the program and so must be equipped with access to the latest techniques and knowledge of industry trends. =

All university resource commitments are based on meeting sustainable enrollment predictions. If these enrollment projections are not met, resource commitment will be adjusted to reflect that reality.

Program Resource Requirements. Indicate all resources needed including the planned FTE enrollment, projected revenues, and estimated expenditures for the first three fiscal years of the program. Include reallocation of existing personnel and resources and anticipated or requested new resources. Second and third-year estimates should be in dollars adjusted for inflation. If the program is contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies). Provide an explanation of the fiscal impact of the proposed discontinuance to include impacts to faculty (i.e., salary savings, re-assignments).

College/University: **Program:**

I. PLANNED STUDENT ENROLLMENT

	FY 0		FY 1		FY 2		FY 3		
	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount	
A. New enrollments to institution		0	5		5		10		New student for a total of 20 in FY3
B. Enrollment from existing programs		0	0		0		0		
	0	0	5	0	5	0	10	0	

II. REVENUE

	FY 0		FY 1		FY 2		FY 3		
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time	
1. New Appropriated Funding Request	$0	$0	$0	$0	$0	$0	$0	$0	
2. Institution Funds	$0	$0	$0	$0	$0	$0	$0	$0	
3. Federal (e.g. grant, appropriation)	$0	$0	$0	$0	$0	$0	$0	$0	
4. New Tuition Revenues from Increased Enrollment	$0		$41,380		$82,760		$165,520		assuming FT KF students
5. Student Fees			$8,555		$17,110		$34,220		assuming FT KF students
6. Other (e.g., Gifts, Program Revenue)	$0	$0	$0	$0	$0	$0	$0	$0	
Total Revenue	$0	$0	$49,935	$0	$99,870	$0	$199,740	$0	

Budget Note: I. A Enrollments are assumed to be full time; therefore FTE=headcount. Budget Note: II.5 Student fees are calculated based on

III. EXPENDITURES

	FY 0		FY 1		FY 2		FY 3		
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time	
A. Personnel Costs									
1. FTE (total for all personnel types)	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	1 FTE in applied math, 0.28 in CSET
2. Faculty	$0	$0	$0	$0	$0	$0	$88,200.00	$0	In FY1 & FY2 taught with current faculty. FY3 will be new faculty member
3. Adjunct Faculty	$0	$0	$0	$0	$0	$0	$0.00	$0	
4. Grad Assts	$0	$0	$0	$0	$0	$0	$0	$0	
5. Research Personnel	$0	$0	$0	$0	$0	$0	$0	$0	
6. Directors Administrators	$0	$0	$0	$0	$0	$0	$0	$0	
7. Administrative Support Personnel	$0	$0	$0	$0	$0	$0	$0	$0	
8. Fringe Benefits	$0	$0	$0	$0	$0	$0	$48,044	$0	
9. Other:	$0	$0	$0	$0	$0	$0	$0	$0	
Total Costs	$0	$0	$0	$0	$0	$0	$116,244	$0	

Budget Notes:

III.A.2. Faculty Salaries are increased by 2.5 % each year

III.A.8. Fringe calculated based on FY19 healthcare ($19,368) and retirement rates (20.22%)

	FY 0		FY 1		FY 2		FY 3	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
B. Operating Expenditures								
1. Travel	$12,500	$0	$0	$0	$0	$0	$2,500	$0
2. Professional services	$0	$0	$0	$0	$0	$0	$0	$0
3. Other services	$0	$0	$0	$0	$0	$0	$0	$0
4. Communications	$0	$0	$0	$0	$0	$0	$0	$0
5. Materials & supplies	$0	$0	$0	$0	$0	$0	$0	$1,000
6. Rentals	$0	$0	$0	$0	$0	$0	$0	$0
7. Materials & goods used for product sale (e.g. fabrication auto repair) Please reflect revenue in II.6	$0	$0	$0	$0	$0	$0	$0	$0
8. Marketing materials and advertising	$0	$500	$0	$1,000	$0	$1,500	$0	$2,000
9. Miscellaneous:	$0	$0	$0	$0	$0	$0	$0	$0
Total Operating Expenses	$12,500	$500	$0	$1,000	$0	$1,500	$2,500	$3,000

Budget Note:

III.B.1 professional development (increase of 2500 per faculty)

	FY 0		FY 1		FY 2		FY 3		
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time	
C. Capital Outlay									
1. Library Resources	$0	$500	$100	$0	$0	$0	$0	$0	
2. Equipment	$5,000		$0	$0	$0	$25,000	$0	$0	
Total Capital Outlay	$5,000	$500	$100	$0	$0	$25,000	$0	$0	
D. Capital Facilities Construction or Major Renovation									
	$0	$0	$0	$0	$0	$0	$0	$0	
E. Indirect Costs (overhead)									
1. Utilities	$0	$0	$0	$0	$0	$0	$0	$0	
2. Maintenance & repairs	$0	$0	$0	$0	$0	$0	$0	$0	
3. Other	$0	$0	$0	$0	$0	$0	$0	$0	
Total Indirect Costs	$0	$0	$0	$0	$0	$0	$0	$0	
TOTAL EXPENDITURES	$17,500	$1,000	$100	$1,000	$0	$26,500	$118,744	$3,000	
Net Income (Deficit)	($17,500)	($1,000)	$49,835	($1,000)	$99,870	($26,500)	$80,998	($3,000)	$181,701

ACTION ITEM
Agenda Item No. 3.2
Recommendation to the Board to Recommend Approval of the Doctor of Physical Therapy Degree to HECC

Background

Degree Overview

This proposal focuses on the creation of a Doctor of Physical Therapy program jointly offered between Oregon Institute of Technology (OIT) and Oregon Health & Science University (OHSU).

Program graduates will help fulfill Oregon's, and the nation's healthcare workforce needs, filling a critical shortage of qualified physical therapists. The development of this program stems from the strategic partnership established in 2017 between OIT, OHSU, and Sky Lakes Medical Center (SLMC) to accelerate the development of the Rural HealthCare Initiative that is a core mission of these three partner institutions. This Program will help broaden the rural healthcare workforce to provide access to critical physical therapy care for underserved areas of the state.

The three organizations have a shared vision and mission related to applied degrees and innovative education strategies that lead to providing high quality patient care. This Program is their commitment to addressing the shortage of physical therapists in Oregon with an emphasis on service to the community and especially for underserved populations in Oregon. One success of this tripartite collaboration is a new, currently under construction, building on the Sky Lakes campus for primary care, and for education (OHSU Campus for Rural Health, and affiliated OHSU and partner education initiatives).

The OIT-OHSU program goals are to reach the needs of people across the state of Oregon, but especially its rural locations. The physical therapy professionals produced by OIT and OHSU will be trained to work with a variety of physical therapy needs. Further, the collaboration with Sky Lakes Medical Center ensures a rural focus where professionals work with patients of a variety of socioeconomic backgrounds and conditions. Having this access will create a healthier Oregon.

The demand for rural health practitioners in Oregon is exacerbated by the lack of appropriate educational venues that are near to where the needs are. The nearest CAPTE-accredited programs are over 250 miles from the OIT Klamath Falls campus. Thus, there is a large pool of qualified applicants in Oregon for whom this training is unavailable. With a workforce demand that far exceeds output from existing DPT programming in Oregon, and the paucity of training opportunities to fulfill the demand for rural healthcare needs, the proposed OIT-OHSU DPT program would be well positioned to attract talented students to serve in such communities and fill the pressing need.

The proposed DPT Program aligns with OIT's mission to provide rigorous, high-quality

applied degree programs in health technologies and sciences focusing on application of theory to practice to meet statewide emerging needs. This focus prepares graduates to provide practice-oriented critical expertise and assessment skills in patient/client treatment, evaluation and case management. It also supports OHSU's strategic mission for collaboration to make Oregon a national leader in delivering innovative health care solutions improving access and high-quality health care for Oregonians through the creation of a strong, vibrant workforce that will implement these solutions where needed.

Sky Lakes Medical Center, the region's largest health provider, is dedicated to providing health care solutions to rural populations, and will serve as a dynamic training resource in the DPT program and will welcome graduates as the need for licensed physical therapists grows. All three institutions have strong track-records in fulfilling their respective missions and the DPT Program will leverage that success. Presently, OIT and OHSU collaborate to train students for two health professions degrees: Medical Laboratory Science (BS) Program, and Paramedic Education Program (EMT certification and AAS paramedic).

The OIT-OHSU DPT Program will be a three-year, 175 credit, cohort-based, full-time, on-site program that will anticipate enrolling 30 students per year. The Program will be delivered on the Klamath Falls campus in the Martha Anne Dow Center for Health Professions (CHP) (top) which has space designated for new program growth, the new 100,000 sq. ft. Sky Lakes Collaborative Health Center building adjacent to the CHP (middle (under construction) and bottom(architect rendering)) in partnership with OHSU, and with clinical practicum available through affiliated physical therapy clinics and in close collaboration with OHSU's Department of Rehabilitation Services.

OIT has identified clinical training sites in Southern Oregon and other rural communities. This program leverages OHSU's existing network of 43 approved DPT training sites statewide, including Acute, Subacute, Inpatient Rehabilitation, and at OHSU's Inpatient Acute and Outpatient Pediatric and Adult Rehabilitation Services programs. OHSU has received awards for their DPT student programs, along with the advanced training knowledge of their 55 PT Clinical Instructors (CI), from Pacific University, Creighton University, and University of Colorado Denver's DPT programs.

Funding has been secured to hire The Program Director in the next three to six months, and a potential Clinical Coordinator identified at OHSU, all to be in place for Year One of the program. Two core faculty will be added in Year Two, with the addition of 2-3 core faculty in the subsequent program rollout. We will seek accreditation from the Commission on Accreditation in Physical Therapy Education (CAPTE) in late 2019 or early 2020.

Enrollment Projections/Yr.	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
1st Year	30	30	32	32	32
2nd Year	-	28-30	28-30	30-32	30-32
3rd Year	-	-	28-30	28-30	30-32

Recommendation

Staff recommends the Committee move to recommend the full board make a recommendation to HECC to approve the Doctor of Physical Therapy Program.

Attachments

- DPT Program proposal
  - Budget Overview
  - Budget

HIGHER EDUCATION COORDINATING COMMISSION

Proposal for a New Academic Program

Institution: Oregon Institute of Technology/Oregon Health & Science University

College/School: College of Health, Arts, and Sciences

Department/Program Name: Department of Physical Therapy Education

Degree and Program Title: Doctor of Physical Therapy (DPT)

1. Program Description

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

51.23 Rehabilitation & Therapeutic Professions

51.2308 Physical Therapy/Therapist

Physical Therapy/Therapist

A program that prepares individuals to alleviate physical and functional impairments and limitations caused by injury or disease through the design and implementation of therapeutic interventions to promote fitness and health. The curriculum includes content, learning experiences and student testing and evaluation processes designed to prepare students to achieve educational outcomes required for initial practice in physical therapy and for lifelong learning necessary for functioning within an ever-changing health care environment.

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.

Degree offered

Doctor of Physical Therapy (DPT)

Programmatic focus

The Doctor of Physical Therapy (DPT) is a joint Oregon Institute of Technology (OIT) and Oregon Health & Science University (OHSU) program that will provide a comprehensive entry-level and post-baccalaureate DPT education, with the unique focus of preparing high-quality graduates with the skills to become practitioners of choice and leaders in rural physical therapy practice. The OIT/OHSU DPT program will ensure graduates develop competence in the diagnosis and treatment of patients with health or medical conditions that may affect movement and mobility. Graduates of the program will complete all eligibility requirements to sit for the state licensure exam and will be prepared for employment as autonomous practitioners in a variety of clinical settings. As led by the American Physical Therapy Association (APTA), graduates will be encouraged to pursue advanced learning and mentorship opportunities, including but not limited to: Residency and Fellowship, ABPTS Specialist Certification, Credentialed Clinical Instructor Program (CCIP), Post-Professional Degree, Leadership Development, and Advanced Proficiency Pathways.

Disciplinary Foundation

Physical therapy is a dynamic profession with an established theoretical and scientific base and widespread clinical applications in the restoration, maintenance, and promotion of optimal physical function. Physical therapists are health care professionals who help individuals maintain, restore, and improve movement, activity, and functioning, thereby enabling optimal performance and enhancing health, well-being, and quality of life. Their services prevent, minimize, or eliminate impairments of body functions and structures, activity limitations, and participation restrictions.

Consistent with the Commission on Accreditation in Physical Therapy Education (CAPTE) Standard 7, the DPT program curriculum includes content, learning experiences and student testing and evaluation processes designed to prepare students to achieve educational **outcomes required for initial practice in physical therapy and for lifelong learning necessary for functioning within an ever-changing health care environment.**

Program Objectives

i. To enable students to obtain the knowledge and skills necessary for immediate employment as autonomous practitioners and/or to serve as academic or clinical faculty in a physical therapist professional education program.
ii. To prepare students to be autonomous practitioners who will
   - uphold the highest standards of professionalism, ethics, and cultural competency
   - engage in practice grounded in contemporary evidence and research,
   - demonstrate exemplary critical thinking to meet patient needs, and
   - engage in interprofessional practice to optimize patient/client outcomes.

iii. To prepare students for licensure

c. Course of study – proposed curriculum, including course numbers, titles, and credit hours. The proposed curriculum for the DPT is designed to meet CAPTE accreditation standards.

SAMPLE: Integrated DPT Curriculum

Year, Term	*Course*	*Credits*
Year 1		
Summer	PT 505, Foundations of Clinical Human Anatomy	6
	PT 501, Introduction to the Physical Therapy Profession	2
	PT 5XX, Medical Terminology	1
	Total:	**9**
Fall	PT 517, Intro to Collaborative Care	4
	PT 520, Therapeutic Procedures: Basic Physical Assessment Skills & Assistive Device Training	4
	PT 5XX, Nutrition and Wellness	2
	PT 516, Foundations of Human Physiology	4
	PT 518, Biomechanics & Kinematics of Human Motion	5
	Total:	**19**

Winter	PT 515, Principles of Evidence-based Practice	3
	PT 525, Principles of Therapeutic Exercise and Motor Learning	5
	PT 526, Physical Agents & Electrotherapy	4
	PT 527, Intro to Clinical Assessment and Reasoning	6
	PT 5XX, Physical Therapy Pharmacology	2
	Total:	**20**
Spring	PT 535, Cardiovascular and Pulmonary Pathophysiology	4
	PT 536, Clinical Dx & Management of Cardiovascular and Pulmonary Dysfunction	6
	PT 537, Clinical Dx & Management of Integumentary Dysfunction	4
	PT 532, Advanced Therapeutic Procedures	3
	PT 5XX, Medical Imaging & PT Implications	2
	Total:	**19**

Year 2		
Summer	PT 611, Clinical Practicum I(Session 1: week 1-4)	4
	PT 612, Clinical Practicum II (Session 2: week 5-8)	5
	Total:	**9**
Fall	PT 625, Advanced Musculoskeletal Anatomy and Pathophysiology	5
	PT 626, Manual Therapy Techniques	4
	PT 627, Advanced Clinical Diagnosis & Management of Musculoskeletal Dysfunction	6
	PT 617, Motor Development & Control Across the Lifespan	4
	Total:	**19**
	PT 605, Clinical Research Methods and Biostatistics	4
	PT 615, Social Determinants and Population Health Issues	3
	PT 616, Foundations of Clinical Neuroscience	4
	PT 637 Advanced Clinical Diagnosis & Mgt of Neurological Dysfunction	4
	PT 630, Legal, Regulatory, and Ethical Issues	3
	PT 602, Clinical Reasoning & Integrated Clinical Experience	2
	Total:	**20**
Spring	PT 601, Clinical Reasoning & Differential Diagnosis	4
	PT 6XX, Pediatric Physical Therapy	3
	PT 6XX, Geriatric Physical Therapy	2
	PT 640, Amputees and Prosthetics	3

	PT 648 Clinical Administration & Marketing	3
	PT 6XX, Emergency Medical Responder	2
	Elective	3
	Total:	**20**

Year 3		
Summer	Elective	5
	PT 6XX, Principles and Management of Pain	2
	PT 647, Clinical Dx & Mgt of Complex Patients	2
	Total:	**9**
Fall	PT 613, Clinical Experience I	10
	PT 636, Capstone Project I	2
	Total:	**12**
Winter	PT 6XX, Clinical Experience II	10
	PT 6XX, Capstone Project II	2
	Total:	**12**
Spring	PT 623, Clinical Experience III	10
	PT 6XX Capstone Project III	**2**
	Total:	**12**
	TOTAL: **(including 36 weeks of clinical education)**	**180**

*Offered online

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 OIT/OHSU DPT Program will be delivered on OIT's Klamath Falls campus as part of the Rural Health Initiative. Didactic and laboratory courses will be scheduled in the Martha Anne Dow Center for Health Professions, as well as Sky Lakes Medical Center. Clinical practicum courses will be available through OHSU and affiliated physical therapy clinics. To date, 43 possible clinical sites have been identified in the Klamath Falls, Medford and Redding areas. The number of clinical placements available at each site will be determined by the Coordinator for Clinical Education. Letters of support are included from the Sky Lakes Medical Center.

The three (3) 1-credit courses on clinical reasoning will be taught on-line during the terms that students are participating in clinical practicum training. Video conference and live discussion boards will be utilized to optimize case-based learning and active clinical reasoning with an experienced clinician. In addition, the OHSU Orthopedic Physical

Therapy Resident will provide key support to DPT students to augment didactic instruction, as a partner in developing effective clinical reasoning skills. Support for these courses will be provided by the online distance education office at OIT.

Courses will be scheduled during the day with the possibility of evening and weekend courses dependent upon the availability of space and staff. (See Appendix A: Exhibit A: MOA).

e. Adequacy and quality of faculty delivering the program.

OIT currently does not have adequate faculty to offer this program. CAPTE requires programs to have at least three (3) full-time core faculty, including the Program Director and the Clinical Education Coordinator. The mean student to faculty ratio for CAPTE accredited programs is 11: 1. Given the proposed enrollment for the DPT program, OIT will need to hire a Program Director, a Clinical Education Coordinator, and 5-7 core faculty. OHSU will take an active role in the recruitment process by participating in the applicant review, interview panel and candidate selection.

The core faculty, including the Program Director and the Clinical Education Coordinator, will meet the rigorous quality standards established by CAPTE. Faculty qualifications are prescribed in CAPTE's Standard 4 with respect to appropriate education, licensure and experience. All faculty will possess a doctoral degree, and at least half will have a doctoral degree beyond the entry-level DPT, transitional DPT, or other professional degree. Core faculty members will be hired by OIT and OHSU, and have faculty appointments at both institutions.

In addition to the core faculty, the DPT program will require Clinical Instructors for each of the clinical practicum sites. Clinical Instructors will hold physical therapy licensure and will be employed in the affiliated physical therapy clinics. OHSU provides clinical instruction for physical therapy students in inpatient acute care, outpatient and pediatric patient population. The majority of clinical instructors are credentialed by the APTA and a number of them have Advanced Clinical Instructor designations. OHSU has multiple staff who are board certified in several areas of specialization (orthopedic, sports, hand therapy, geriatric, cardiopulmonary, neurologic and in addition lymphedema). In support of the DPT program, OHSU Physical Therapists will serve as faculty in both didactic and clinical courses and will support Clinical Education Coordination. (See Appendix B: Position Descriptions)

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

In order to meet the accreditation standards noted above, between 7 and 9 new faculty positions will be required. The Program Director, Clinical Education Coordinator, and at least two additional core faculty will need to be hired prior to the start of the program. The Program Director (PD) must be hired in the first year of the developmental stage of the program (Year One). The Clinical Education Coordinator (CEC) must be hired soon after the PD preferably during Year One. Two Core Faculty positions will be hired in Year Two. The remaining core faculty will be hired over the three years following the launch of the program.

The Clinical Practicum training components of the DPT program relies on the use of Clinical Instructors at the clinical sites. To date, 43 clinical sites have been identified in the Klamath Falls, Medford and Redding areas. The number of clinical placements available at each site will be determined by the Coordinator for Clinical Education.

g. Other staff.

Two Administrative Assistant will be hired in Year One and the other is hired in Year Three to assist the Program Director and the Clinical Education Coordinator.

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

Additional resources will be needed to meet the demands of the DPT program. OIT and OHSU are working in collaboration with Sky Lakes Medical Center to ensure that appropriate space is acquired.

Facilities: CAPTE Standard 8D speaks to ensured space, or access to space, (to include equipment) to meet the program goals. Physical space for this program will be on the OIT campus and Sky Lakes Medical Center in order to ensure adequate space is available to this program.

Physical Space: While CAPTE does not dictate the space specifications, and space allocation is dependent upon the number of students in a cohort, most DPT programs provide a minimum space allocation of 8,000 ft2 for a program size similar to that proposed herein. Such space typically houses teaching classroom/labs, research labs, equipment storage, conference room/library, computer lab and such. This is outside the necessary space for faculty and staff. Standard faculty office space is approximately 100 ft2 each with Director and Administrative Assistant offices slightly larger. Offices alone may require close to 1,200 ft2 of building space.

As part of the OHSU Campus for Rural Health, the Sky Lakes Collaborative Health Center includes approximately 18,000 SF dedicated to offices, including the Dean's suite, five seminar rooms, a presentation room, and simulation spaces. These simulation spaces include:

- Clinic skills lab with six simulated patient bays
- Simulation theater, a simulated 2-bed in-patient room including adjacent control room with viewing window
- Four simulation outpatient exam rooms with dedicated OSCE control room
- Sim Clean, Soiled, and Meds rooms
- Two debrief classrooms and faculty observation room
- Student support facilities including a dedicated study and workspace

Technology. Simulation spaces will be outfitted with audio/visual along with simulation equipment from B-Line Medical including cameras, microphones and speakers. This equipment allows the student to work with simulated patients or live actors while monitored by teaching staff. Events are recorded for viewing in the live environment and available to playback for debriefs following student practice.

Seminar spaces and the presentation room will include audio/visual equipment by Delta AV to allow connection to teaching facilities throughout the state, facilitating collaboration and teaching with the broader OHSU staff and students. In addition, some of the seminar spaces, including the presentation room are integrated with the simulation recording capabilities for multi-functional use.

Equipment: Equipment for the planned cohort of 24 students is estimated at $300,000, in years 3-5. A preliminary equipment list is included under Appendix A: Exhibit B herein. CAPTE guidelines for the timing and purchase of equipment will be followed by the DPT Program Director. The above facilities planning will be solidified by the DPT Program Director soon after that individual joins OIT. The Dean of the College of Health, Arts & Sciences will also be part of such planning to include fund-raising initiatives for both space and equipment.

Library: Library resources required for the DPT program are estimated to be between $5,000 and $50,000 according to the OIT Director of Library Services and the DPT Degree Program Consultant. The complete list of necessary Library holdings will be determined by the Program Director. The budget worksheet that is in Appendix C: Financial Projections, to this proposal includes $15,000 in years 3 & 4 and $20,000 in year 5. DPT students will also have access to OHSU Library which holds subscriptions to relevant e-books, journals and can purchase online textbooks relevant to the curriculum as needed by faculty.

Additional Resources: Active fundraising is underway within the state and in the community to help support the initial costs of this program. Additional resources with respect to accreditation, clinical education travel, recruitment & marketing, faculty development, and other operational expenses are illustrated in Appendix D: DPT Feasibility Study.

i. Anticipated start date.
The first cohort of students will matriculate in Summer 2021.

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.

The DPT Program advances the missions of OIT and OHSU by providing rigorous, high quality applied degree programs in health technologies and sciences, with a focus on the application of theory to practice, and offer statewide educational opportunities to meet emerging needs.

This program is proposed jointly by OIT and OHSU in collaboration with Sky Lakes. All three organizations have a shared vision/mission related to applied degrees, innovative education strategies, providing high quality patient care, addressing the shortage of physical therapists in Oregon and the Pacific Northwest, with an emphasis on service to the community especially underserved populations in Oregon.

OIT Mission

Oregon Institute of Technology, an Oregon public university, offers innovative and rigorous applied degree programs in the areas of engineering, engineering technologies, health technologies, management, and the arts and sciences. To foster student and graduate success, the university provides an intimate, hands-on learning environment, focusing on application of theory to practice. OIT offers statewide educational opportunities for the emerging needs of Oregonians and provides information and technical expertise to state, national and international constituents.

OHSU Mission

As part of its multifaceted public mission, OHSU strives for excellence in education, research and scholarship, clinical practice and community service. Through its dynamic interdisciplinary environment, OHSU stimulates the spirit of inquiry, initiative, and cooperation among students, faculty and staff. Through OHSU Vision 2020 Goals 3 and 4, OHSU will partner to make Oregon a national leader in health and science innovation for the purpose of improving the health and well-being of all Oregonians and beyond.

- Join others in developing policy and care delivery solutions that improve access to high-quality health care for all, especially Oregonians.
- Help meet Oregon's health and science workforce needs through innovative education strategies.

Sky Lakes Medical Center Mission Statement

Sky Lakes Medical Center will continually strive to reduce the burden of illness, injury and disability, and to improve the health, self-reliance and well-being of the people we serve. We will demonstrate that we are competent and caring in all we do. We shall endeavor to be so successful in this effort that we will become a preeminent healthcare center.

Areas of Focus

Applied Degree Program: The DPT Program is an applied field and the required coursework provides a strong foundation in theory with a focus on application to practice. The DPT curriculum emphasizes a strong theoretical foundation and hands-on application through supervised practicum and research project requirements.

Rigorous, High Quality Program: The DPT Program curriculum is designed to meet the accreditation standards (CAPTE).

Statewide Educational Opportunities: The DPT Program will begin to address the shortage of programs in the state (2 private universities) and will be the only public university in the state to have a DPT Program. In addition, with a rural focus and telemedicine opportunities every area of the state including underserved areas will benefit from this program. It will have a direct impact on improving accessibility to services and improving outcomes for the underserved areas of the state.

Foster Student and Graduate Success: The program provides students with the knowledge and skills necessary for immediate employment. The curriculum and practicum experiences prepare students to meet Oregon State licensure requirements. Graduates will have the didactic and clinical training to be eligible to sit for the licensure exam and work as a physical therapist.

Emerging Needs: The DPT Program supports the needs of Oregon's citizens by providing the educational experience that will allow graduates to provide critical expertise and assessment skills in patient/client treatment, evaluation and case management, all in an effort to promote ongoing healthy outcomes for the residents of the State of Oregon. Oregon has unmet physical therapy needs especially in rural communities. Offering this program at a public university can begin to address that need. Oregon has a shortage of licensed physical therapists providing opportunity for high paying jobs for graduates. In addition to addressing the immediate and urgent need for physical therapists in the State of Oregon, graduates of the program will be prepared to address emerging needs in myriad educational, behavioral health, and organizational areas where physical therapists work. Notably, with telemedicine capabilities this program can produce graduates that can begin to address the unmet physical therapy needs of the state especially in rural and underserved regions.

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Potential Collaborations: In the future, collaborations with the OHSU Cascades East Family Medicine Program, may allow DPT students to work directly with family medicine residents and health care professionals specializing in comprehensive rural healthcare. DPT participate in rural healthcare alongside resident physicians in a variety of settings, including inpatient unit, orthopedics unit, sports medicine unit, outpatient family medicine units, pediatrics, geriatrics, behavioral health/wellness, emergency medicine, post-surgical care, integrative medicine, and maternal health. In addition, Cascades East Family Medicine Program integrates telehealth and advanced technology to optimize care for patients in a rural setting, supported by routine educational conferences and rounding opportunities.

In addition, through the use of faculty/student clinics, expedited physical therapy evaluation and intervention may be explored through a combined MD/PT collaborative model for clinic visits. This unique opportunity will support the role of physical therapists as the "primary care musculoskeletal experts" and further emphasize the efficiency and contributions of physical therapists in a primary care setting. In light of the Direct Access program which allows physical therapists to treat patients without a referral for 60 days, it is critical for PT's in rural settings to have advanced exposure to routine MD medical screening and triage decisions.

Strategic Priorities

The Joint OIT/OHSU DPT program is clearly aligned with OIT's Strategic Action Plan and OHSU's Vision 2020 in the following ways.

Student Success. The DPT Program is designed to foster student success by providing a degree that prepares students to meet the workforce demand for highly qualified physical therapists, providing statewide practicum opportunities, maintaining low in-class student-to-faculty ratios, and establishing practicum opportunities with industry partners throughout Oregon.

Faculty and Staff Success. The DPT Program curriculum requires both clinical training and completion of a research project. The research requirement provides faculty with the opportunity to engage in applied research, allowing faculty to be supported in their professional development. The rigorous curriculum and hands on requirements will attract and contribute to the retention of faculty who are passionate about their profession and eager to share that passion with students. It will also promote highly qualified entry level physical therapists into the work force.

Economic and Workforce Connections. The Oregon Talent Council identified physical therapists as a pivotal, high demand occupation. The DPT Program is designed to contribute to the economic development of Oregon by providing the education and training needed to meet this mission-critical workforce demand and is built upon our positive relationships with industry partners. The statewide focus of the clinical practicum training sites will allow us to meet the workforce demand in urban and rural areas of the state and to serve all Oregonians. The DPT Program will be the only public university in the state to have a DPT program and it will begin to address the critical shortage of physical therapists in the state.

Student Access and Diversity. The DPT program is designed to facilitate student access, providing the options for face-to-face courses that can be attended on campus or occasional online instruction when students are off doing clinical training. Statewide access to the program is especially beneficial for students in rural areas of the state. Diversity in the student population is desirable and students from rural areas and from underserved populations will be encouraged to apply.

University Financial Success. The DPT Program will attract new students to OIT and OHSU, thus contributing to enrollment growth and the financial success of the university. As telemedicine is further developed it may help our graduates address the underserved populations in the state and is a signature focus of this program.

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.

Student access and diversity

The proposed OIT/OHSU DPT Program is the only public university option in Oregon, and is designed to facilitate improved student access and diversity in DPT education. The program location in Klamath Falls will facilitate student clinical experiences in underserved, rural regions of the state. The unique program focus and collaboration with OHSU's Rural Health Initiative will positively support Oregon and its communities, culturally and economically. In addition, OHSU's long-standing partnership with the Office of Rural Health improves access and care for all Oregonians, and prioritizes education and development of healthcare professionals in rural care.

Students attracted to this program are likely from OIT's biology/science programs and will serve to help establish services in rural and underserved areas of the state. In addition, graduates can help meet needs in skilled nursing facilities and home health care via telehealth and other uses of technology, a probable niche for this degree. The program will enroll in PTCAS (Physical Therapy Centralized Application Service) to attract students from across the nation and to help meet the shortage of PTs in Oregon.

Physical therapy continues to be a popular graduate program that attracts more applicants than available seats with a national acceptance rate of approximately 15% among qualified applicants. According to aggregate program data collected annually by the CAPTE, only 4% of DPT programs are located in the Northwest region of the U.S. (based on regional accreditation distributions). For more information about Student Access, please see section 2.C.i.

Further, in order for prospective students to apply to DPT programs, undergraduate students are required to complete a rigorous amount of volunteer observational hours. These undergraduate students rely on Oregon physical therapists for their initial exposure to physical therapy, then often leave the state to complete their DPT education. Providing a public DPT option will allow more Oregon students to complete their full training (from pre-physical therapy through DPT education) in Oregon, allowing for a stronger educational continuum and early professional development.

Quality learning:

CAPTE accreditation standards are highly rigorous and scholarly, ensuring a high level of student rigor along with assessment efforts to improve student learning and success.

Most DPT students are admitted with a baccalaureate degree, having majored in disciplines such as biology, exercise science, kinesiology, athletic training, or psychology which allow them to take the needed prerequisite courses for PT school. CAPTE data indicate that the mean GPA earned by students who are admitted to DPT programs is 3.5/4.0, and the majority of accepted students still represent women (62%) and non-minority groups (81%). Applicants to this program are expected to meet these standards.

In addition to providing a rigorous curriculum, and conducting regular assessment of learning outcomes, the program will admit students who have the necessary characteristics to succeed in this field. In order to ensure that students will have the necessary preparation for success in the DPT program, applicants must meet the DPT program admissions requirements as determined by OIT and OHSU. OIT and OHSU will participate in the review of all applications and make joint admissions decisions. The DPT program will have a rigorous curriculum, standards for admissions, accreditation standards, and ongoing program assessments.

Applicants to the OIT/OHSU DPT program shall meet the following requirements:

- Undergraduate coursework: Baccalaureate degree from an accredited four-year institution in biology, exercise science, kinesiology, athletic training, or psychology and having completed the needed pre-requisite courses for DPT school, such as Medical Terminology.
- Academic Standing: be in good academic standing at last college or university attended.
- GPA: Overall undergraduate GPA of 3.0 on a 4.0 scale for the last 90 term (60 semester) units attempted and for the last 45 term hours of the major (or graduate GPA of 3.0).
- GRE Scores: Graduate Record Examination scores for Verbal Reasoning at 150, for Quantitative Reasoning at 14, and for Analytical Writing at 3.5. GRE scores over five years old are not accepted.
- Background Check: Because of the nature of the degree and the subsequent use of practicum requirements to work with children and/or other vulnerable populations, all applicants must be able to pass a criminal background check – such as that conducted by the Castle Branch.
- Personal Statement: applicants will be required to write a statement that addresses career goals and relevance to the program, evidence of aptitude for graduate work and evidence of potential for success in the field.
- Reference Letters: Applicants to the program will be required to provide three academic and professional letters of reference that address the applicant's preparation, abilities, and character,
- Other: International students may have additional admission requirements including TOEFL scores (minimum of 550 paper-based TOEFL, 213 computer-based TOEFL, 79 Internet-based TOEFL, or 6.5 IELTS), transcript evaluations and visa requirements.

Research, knowledge creation and innovation: The OIT/OHSU DPT program will require students to complete clinical practicum training and a research project, thus providing a natural opportunity to advance research interests of faculty, students, and the university. Faculty of the OIT/OHSU DPT program will have the opportunity to collaborate with OHSU clinical staff to provide robust clinical research opportunities.

Economic support of Oregon and its communities:

The OIT/OHSU DPT program will provide access to a public university for the education that professionals need in order to sit for licensure, practice, and receive reimbursement for physical therapy services, as determined by the state. The program will deliver a quality educational learning experience as evidenced by curriculum designed to meet CAPTE standards. The collaboration with OHSU and Sky Lakes provides the opportunity for these

organizations to work in partnership to address unmet healthcare needs in physical therapy throughout the state.

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

i. improve educational attainment in the region and state;

The OIT/OHSU DPT program prepares graduates to enter the workforce prepared ready to meet the demand for physical therapists. According to aggregate data collected annually by the CAPTE, only 4% of DPT programs are located in the Northwest region of the United States (based on regional accreditation distributions). Of the 233 CAPTE-accredited DPT programs in the nation, only 2 are located in the State of Oregon, 1 at Pacific University and 1 at George Fox University, both of which are located more than 250 miles from OIT's Klamath Falls campus. These programs appear to have acceptance rates similar to the national average based on information posted on their web sites. Thus, there remains a large pool of qualified applicants in the State of Oregon, and it is expected that the OIT/OHSU DPT program may attract students from feeder institutions in a different part of the state. Data provided in the 2014 Oregon Health Professions Profile indicate that 81% of Oregon PT's obtained their entry-level education in out-of-state institutions. The reason why is not included in that report but a major contributing factor may very well be the lack of an affordable public option. More students could potentially gain access to this degree by virtue of a more cost-effective tuition structure.

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

The OIT/OHSU DPT program was developed in response to the need for highly qualified physical therapy services throughout the state. Providing the education and training for individuals to meet licensure requirements will allow Oregonians to meet workforce demands and thereby contribute to the economic development of communities.

As recently reported in a needs assessment released by the Oregon Talent Council (November 2015), Physical Therapists were listed among the "high growth, high demand" occupations that have a strong need. The assessment further indicated that "Therapists who provide rehabilitation services are experiencing increased demand across clinical, hospital, home and long-term care settings. The growth is most prevalent in at-home and senior care, with critical shortages in rural areas." The 2014 Oregon Health Professions Profile further reported the statewide number of people per one therapist is 1,409, though there were 11 counties in the State of Oregon (most of them rural) that had 2,000 to 4,000 people per PT and in one county, that ratio climbed to 11,000:1. Implementation of the OIT/OHSU DPT program will effectively respond to the social, economic and environmental challenges and opportunities that often exist in the more rural regions of the state. Efforts to recruit students from rural regions in the state, educate students on the Klamath Falls rural campus, and provide students rural clinical experiences, will additionally support this.

iii. address civic and cultural demands of citizenship.

Ethics and professionalism components of the curriculum will directly address the responsibilities of graduates, including the responsibility to participate in such civic responsibilities as serving on regulatory boards. In addition, the OIT/OHSU DPT

program emphasizes health promotion, well-being, and prevention of injuries by providing instructions during PT therapy to patients/clients in all of Oregon's communities. The OIT/OHSU DPT program is uniquely designed to create high capacity physical therapists with generalized trained in the broad scope of rural practice. Similar to the outstanding work and program development of the OHSU Cascades East Family Medicine Residency, we prioritize high quality rural physical therapy care, with a focus on inter-professional development and collaborative. Further, OHSU/OIT DPT student participation in the OHSU I-CAN program (Inter-professional Care Access Network) will expand the varied healthcare provider roles and perspectives during inter-professional team projects. DPT students will work together with students from Nursing, Medicine, Dentistry, Public Health, and Pharmacy to gain experience in inter-professional service-learning healthcare education. Not only will DPT students gain exposure to varied healthcare professionals, but they will also participate in programs that will specifically help individuals in underserved communities by addressing barriers to health-related social determinants of health.

3. Accreditation

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

Commission on Accreditation in Physical Therapy Education (CAPTE).

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.

The proposed DPT program will be designed to meet all Standards and Elements of Accreditation for Physical Therapists as stated by CAPTE. CAPTE is the only organization offering accreditation to Physical Therapy programs in the U.S. and Canada. Accreditation candidacy is required prior to matriculation of students into a physical therapy program. The accreditation candidacy review cycle only occurs twice per year with a maximum number of programs under review limited to six. The next available slots for candidacy review are in 2022 with application deadlines of June 1 and December 1. The current process by which program approval occurs at OIT and OHSU(internal and external) will affect the application deadline for accreditation candidacy, which could delay the projected program start date. In addition, CAPTE accreditation candidacy review is extremely rigorous. Any perceived or proven shortfall of the institution under review in regard to the accreditation standards, will result in denial of candidacy, further delaying potential start-up. Institutions have the opportunity to request consideration of candidacy through a hearing process during CAPTE scheduled meetings. One potential obstacle for the OIT/OHSU DPT program is the competitive nature of the CAPTE review process and limited number of programs accepted for review by the accrediting body. However, the unique program design including rural healthcare focus, the dearth of physical therapists in Oregon, and the collaborative nature between OIT/OHSU highlight the absolute necessity of this program and likelihood of success.

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.

OIT and OHSU do not offer undergraduate degrees in Physical Therapy.

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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.

Accreditation candidacy is required through CAPTE prior to matriculation of students into the program. The Program Director, when hired, will begin working on the accreditation of the program, as required by CAPTE, which needs to happen before students can be recruited into the program (Appendix E and Appendix F).

The accreditation process will include the following elements:

- To hire the Program Director begin preparing the necessary materials for accreditation (curriculum, program outcomes, etc.)
- Hire administrative assistant for PD
- Hire the Clinical Education Coordinator to develop clinical education program and coordinate the activities of the associated faculty (includes signed clinical agreements with each health care entity and letters of intent (LOIs) from each facility covered under that contact)
- Hire the initial core faculty
- Ensure adequate facilities and other resources are in place (i.e., classroom and lab spaces, Faculty offices, etc.)
- Ensure all areas of CAPTE standard 8 are in compliance prior to launching the program
- Develop 3-year budget projections required by CAPTE to operationalize the program
- Identify source of pre-operational budget support.

OIT and OHSU are collaborating Sky Lakes to accomplish these goals.

4. Need

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

Pending successful CAPTE candidacy, the anticipated first cohort of 24 students would be enrolled beginning Summer AY 2021-22 with anticipated graduation in June 2024. Additional cohorts of 24 students each would be anticipated each year. FTE enrollment over the first five years of the program are included in Appendix G.

2020-21: no admits

2021-22: 24 students

2022-23: 24 new admits, 48 total students

2023-24: 24 new admits, 72 total students

2024-25: 24new admits, 72 total students

	Year 20-21	Year 21-22	Year 22-23	Year 23-24	Year 24-25
New	0	24	24	24	24
Returning	0	0	24	24	24
Returning	0	0	0	24	24
Total	0	24	48	72	72

b. Expected degrees/certificates produced over the next five years.

Beginning in AY 2023-24, 24 degrees are planned to be conferred each year with a total over the following five years (2023-2027) of ~120 Doctor of Physical Therapy degrees.

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

The OIT/OHSU DPT program design allows for students to be served from any of the listed characteristics with the exception of part-time as the curricular demands require continuous full-time enrollment.

d. Evidence of market demand.

Popular and only 15% acceptance rate: Physical therapy continues to be a popular graduate program that attracts more applicants than available seats with a national acceptance rate of approximately 15% among qualified applicants. As described in Section 2.C.i aggregate program data collected annually by the CAPTE, only 4% of DPT programs are located in the Northwest region of the U.S. (based on regional accreditation distributions). Of the 233 CAPTE-accredited DPT programs, only 2 are located in the State of Oregon, 1 at Pacific University and 1 at George Fox University, both of which are located more than 250 miles from OIT's Klamath Falls campus. These programs appear to have acceptance rates similar to the national average based on information posted on their web sites. Thus, there remains a large pool of qualified applicants in the State of Oregon, and it is expected that a DPT program at OIT may attract students from feeder institutions in a different part of the state. Surprisingly, data provided in the 2014 Oregon Health Professions Profile indicates that 81% of Oregon PTs obtained their entry-level education in out-of-state institutions.

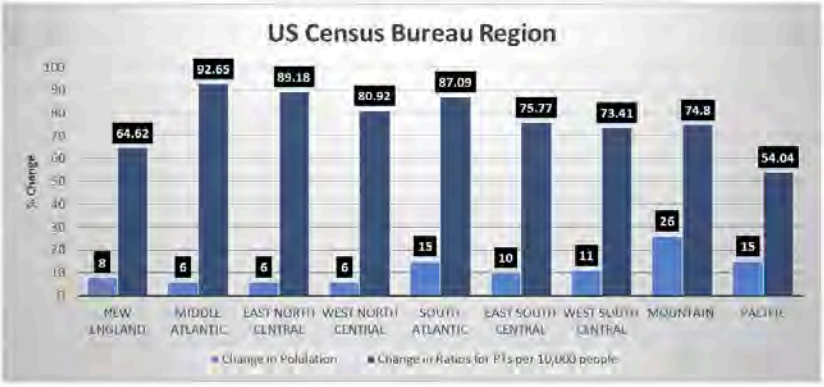
Workforce Analysis: Over the past decade, various media sources have forecasted a very strong job market for physical therapists nationwide and cited the expected job growth as one of the many reasons for ranking physical therapy among the most highly desired careers in the U.S. Examples of these reports include CNN Money which ranked PT as #8 on its list of "Best Jobs in America" (http://money.cnn.com/pf/best-jobs/2012/snapshots/8.html), US News & World Report which ranked PT as #5 in its list of "Best Health Care Jobs" and #7 on its overall list of "100 Best Jobs".

High demand and high pay: According to BLS, 209,690 PTs were employed in the U.S. in 2015 earning a mean annual salary of $85,790 (http://www.bls.gov/oes/current/oes291123.htm). The mean salary for the 2530 PTs employed in Oregon at that time was slightly lower at $81,480. BLS also provides a location quotient (LQ) for various occupations/industries in each state. LQs are ratios that compare an area's employment concentration compared to that of a reference or base area. When compared to the entire U.S., Oregon's LQ for PTs is 0.96 indicating a slightly lower concentration of PTs in Oregon than in the U.S. as a whole.

Growth rate predicted to increase: A study published by Landry et al. in *Physical Therapy* in 2009 analyzed the Health Human Resources (HHR) ratios for physical therapists in the U.S. and Canada during the preceding decade http://ptjournal.apta.org/content/89/2/149.full.pdf). They documented an average growth rate of 70% (from 1995-2005) of PTs in the U.S. and provided a state-by-state comparison. According to their data, the growth rate of PTs in Oregon during that same decade was only 36.12%. In contrast, Oregon's population growth during that same time period exceeded the national average (15.8% in Oregon vs. 12.85% nationally). Thus, these investigators determined that the HHR ratio for the State of Oregon actually increased only 28.93% compared the 63.83% change that occurred at the national level. **These data clearly suggest that the increasing number**

of PTs in the State of Oregon is not sufficient to keeping pace with the rapid population growth and increasing demand for rehabilitation services.

These trends are reflected in the graph below where Oregon is classified in the Pacific region and reflect the lowest amount of change in ratios of PTs per 10,000 population.



Physical Therapy High Growth and Demand: As stated in Section 2.C.ii the Oregon Talent Council (November 2015), Physical Therapists were listed among the "high growth, high demand" occupations that have a strong need. The assessment further indicated that "Therapists who provide rehabilitation services are experiencing increased demand across clinical, hospital, home and long-term care settings. The growth is most prevalent in at-home and senior care, with critical shortages in rural areas." The 2014 Oregon Health Professions Profile further reported the statewide number of people per one therapist is 1,409, though there were 11 counties in the State of Oregon (most of them rural) that had 2,000 to 4,000 people per PT and in one county that ratio climbed to 11,000:1. One of the Council's recommendations for meeting this need was to increase *"the allocation of university and college resources to degrees and programs that align with industry needs."*

Physical Therapists' Perceptions of Need: An assessment of need was based on perceptions of PTs who are licensed to practice in the State of Oregon. To sample the opinions of these individuals, the names and e-mail addresses of 5184 PTs were obtained through the Oregon licensure board for physical therapists. These PTs were sent a web link to a survey soliciting their perceptions of the PT job market in Oregon and the need for an additional DPT program in the state, particularly one that provides a public option. They were also queried about their willingness to provide clinical education opportunities to support another program. Several e-mail addresses were invalid which reduced the sample size to 5080. Of that number, a total of 576 PTs (11.3%) responded to the survey; the aggregated responses are appended. The geographic distribution of these respondents (see pie chart below) provided a sample that appears representative of the state's overall population.

These survey results (in the chart above) indicate:

- The majority (56%) felt there was a need while 21% did not and 23% had no opinion. Most (77%) felt that the State of Oregon would benefit from having a public option for DPT education.
- Approximately 73% of respondents indicated that their clinical facility might consider, or would definitely consider, offering clinical education opportunities if OIT developed a DPT program. Another 15% did not know and only 13% said they would not.

Quotes from the survey participants:

- *I think it would be a great benefit to the state to have a public institution offering entry level DPT. Private colleges are often much more expensive and require taking on a lot of debt in some circumstances which are prohibitive. Also, it would be great to have a location outside of the Portland area as we often find that many students who attend these schools are also seeking positions in Portland, which restricts recruiting outside of the Portland area.*
- *There is a need to develop geriatric clinicians for home health, skilled nursing, and acute care practice environments. If this program was focused on developing clinicians interested in those practice areas focusing on mostly rural practice areas there is a need in this regard. Having practiced in rural areas for the majority of my career the need is definitely there.*
- *My opinion is that, the greatest need is in SNF rehab, but it also seems to have the greatest turnover, and is very demanding.*
- *As we have seen for decades, with the exception of a downturn in the '90s, PT is a growing field with consistently high demands. Our aging population and soaring rates of chronic pain can assure us this will continue. Another school, outside of Portland, may assist in serving the needs of our whole state.*
- *Oregon would definitely benefit from another DPT program, particularly in a public institution, and particularly outside of the Portland area. There is a dearth of PTs in the state, especially in rural areas such as the one my clinic is located in. The opportunities that another school, and a public one, would provide for potential students are enormous and exciting.*

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- *I believe a DPT program at a public Oregon school outside of Portland would be a great addition. My clinic is located in La Grande Oregon. We have been advertising for over 6 months for multiple PT and are currently using 2 head hunters and still cannot even get interviews.*

Geographic Areas with Greatest Need

Although the overall Location Quotient (LQ; ratio comparing areas employment concentration to a reference or base area) for the State of Oregon indicates a slightly lower concentration of PTs than the national average (0.96), additional analysis of various geographic areas within the state indicate a significant maldistribution of PTs. LQs for various areas are shown in Appendix A and range from 0.67 (in Albany) to 1.67 and 1.70 (in Bend-Redmond and Grants Pass, respectively). In addition, data provided in the 2014 Oregon Health Professions Profile (https://apps.state.or.us/ Forms /Served/le8120.pd f) shows that the statewide number of people per one PT provider is 1,409. However, there were 11 counties that had 2,000 to 4,000 people per PT and one country (Morrow) which had over 11,000 people per PT. This profile also shows that few PTs are employed in skilled nursing facilities (8%) and home health agencies (13%) where the needs are greatest. Finally, a report issued in July 2016 from the State of Oregon Employment Department shows a similar disparity in the anticipated job market growth (15%to 37.7%) and salaries ($70,424 to $87,548) for PTs across the state. (https://www.qualityinfo.org/j c-oprof/?at=l&tl=physical%2Otherapist-291123-4101000000-2-true-true-true-false-false-false- false- true- true- false- false- falsefalse- none- 0- 1- 1).

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).

The OIT/OHSU DPT program location is not shared with another similar Oregon public university program.

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?

According to 2016 CAPTE data, employment rates for graduates nationwide are 99.4% and licensure first time test taker rates are 93.6% successful. The program is designed to provide students with the approved course work and supervised experience necessary to meet the requirements to be eligible for the state licensure exam. Graduates of the OIT/OHSU DPT program are required to seek state licensure in order to legally work in any state in the U.S. The career path is that of a licensed physical therapist. The DPT degree is a clinical degree that prepares students to be autonomous practitioners in a variety of clinical settings such as community clinics, hospitals, rehabilitation centers, school settings, skilled nursing facilities and in-home health care services. Career Development for a graduate of the DPT program can include opportunities in the following:

- Residency and Fellowship
- ABPTS Specialist Certification
- Credentialed Clinical Instructor Program (CCIP)
- Post-professional Degree
- Leadership Development

5. Outcomes and Quality Assessment

a. Expected learning outcomes of the DPT program include.

1. Students will understand the history and philosophy of physical therapy and basic theoretical approaches to understanding treatment and the patient care process.
2. Students will use technical terminology to explain and provide examples of the characteristics, concepts, principles, and processes of physical therapy.
3. Students will demonstrate an understanding of, and ability to conduct physical therapy assessments and analyses.
4. Students will demonstrate competence in research designs and will identify and describe the advantages, disadvantages, and ethical considerations of research designs
5. Students will critically evaluate research, analyze, and apply research findings to the practice of physical therapy.
6. Students will demonstrate an understanding of the legal constraints and ethical guidelines as pertinent to physical therapy treatment and practice.
7. Students will demonstrate an understanding of the roles, functions, and responsibilities of professional physical therapists, including relationships with professional organizations, and maintaining professional credentials.
8. Students will have effective written and oral communication.
9. Students will provide culturally effective instructions to patients/clients to achieve goals
10. Students will effectively examine a patient/client and formulate a physical therapy diagnosis.
11. Students will demonstrate effective management of a comprehensive plan of care with effective written, oral and nonverbal communication with patients/ clients and their caregivers, colleagues, other health providers, payers and the public
12. Students will apply the principles of evidence-based practice to collaborative clinical decision making
13. Students will provide services to help with prevention, health promotion, fitness and wellness of individuals and groups
14. Students will participate and manage in the case management process
15. Students will analyze data to make sound decisions regarding reimbursement financial, legal and social responsibilities

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

The OIT/OHSU DPT program will follow the procedures for assessment and continued improvement as identified by the OIT Commission on Assessment and the OHSU Assessment Council. Specific learning outcomes (SLOs) and assessments will be addressed in compliance with the OIT Commission on Assessment and OHSU policy regarding Student Learning Outcomes and Assessment as overseen by the Provost/Vice President for Academic Affairs (Constance Tucker, PhD) in consultation with Dr. Tucker.

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

   Program faculty will be expected to meet expectations for professional development as described in the OIT tenure and promotion policies as well as meeting the standards set by CAPTE. CAPTE Standard 4B addresses the ongoing scholarly agenda that is required for program faculty as follows:

   A long-term plan for building lines of inquiry that will result in original contributions to the profession. It should include the principal topics of scholarly inquiry, specific goals that identify the types of scholarship, scholarly activities, and anticipated accomplishments with a timeline. The agenda may also include plans for relevant mentorship and collaboration with colleagues.

   The Program Director will be responsible to work with each core faculty to develop such agendas. All faculty will be required to participate in supervising student research projects and skills testing.

6. Program Integration and Collaboration

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

   There are currently two private options for the Doctor of Physical Therapy degree in the State of Oregon. Pacific University and George Fox University, both in the Northern region of the state. Neither are closely related to OIT or the public institutions of higher education in the State of Oregon. There are currently no public DPT education options in Oregon.

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.

   While it may not be possible to collaborate with the other two degree-granting private institutions in the State of Oregon, the OIT/OHSU DPT program will be a collaborative effort with the OHSU Rural Health Initiative and Sky Lakes Medical Center in Klamath Falls. OIT will deliver the didactic and laboratory components of the degree, to be complemented with clinical experiences within OHSU affiliated clinics and hospitals. Additionally, Sky Lakes Medical Center has shown interest in collaboration with potential adjunct faculty, laboratory space/equipment if feasible, as well as advisory functions. There is an expectation a variety of undergraduate programs in related fields (e.g., healthcare/biology) at OIT and other institutions in the state will prepare students for the graduate component of the degree. All three organizations working together and building from their natural strengths will help ensure this program is successful.

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

   There are no similar programs in the public sector of higher education institutions to allow for collaboration.
   OIT and OHSU will collaborate with Sky Lakes to support this program.

d. Potential impacts on other programs.

   There is no evidence of a negative or positive impact on the two private universities offering DPT programs in the State of Oregon. The majority of the students recruited and accepted to Pacific and/or George Fox appear to be from out-of-state according to data published on the institutions' web sites. Students from out-of-state tend to graduate and move back to their home state to practice. Only a 15% acceptance rate on average into PT programs is

noted, so there is an abundance of applicants who are not accepted into current DPT education programs.

7. External Review

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.

Revised June 2018

Proposed Budget for Doctorate in Physical Therapy Program

The joint OIT-OHSU (Oregon Health Sciences University) Doctor of Physical Therapy (DPT) program promises to usher in a new era of opportunity for Oregon Tech. It will require a substantial investment but the payoffs go beyond the spreadsheet calculations. There will be new programming that can be developed from the investment in facilities and staffing in the DPT program, new opportunities to leverage this program to strengthen and create new academic and industry partnerships and a substantial elevation of Oregon Tech's brand recognition in the state, region and nation. We believe that the investment described herein will lay the foundation for all of these developments.

The budget model outlined for the DPT program is built on the recommendations of a consultant hired to develop a first draft of the program for the Commission on Accreditation in Physical Therapy Education CAPTE approval and with input from OHSU who invested considerable time in reviewing and adding to this proposal. In order to offer this doctorate program it is necessary to develop a graduate faculty after hiring the mandatory Program Director and Clinical Director. These faculty, who must have appropriate degrees in the discipline (e.g. Ph.D.s and D.P.T.s for certain positions), have a higher level of expected scholarship and externally facing activities and also a commitment to assist in health science program development in the College of Health Arts and Sciences. The compensation of the roster of hires includes OPE (benefits and health insurance) at a rate of 40%; staff with lower salaries have an OPE added of 60%. Costs of operations are also estimated and calibrated to the number of students anticipated and the number of faculty.

Assumptions: Enrollment @24 new students/yr.; 95% retention from year-to-year; tuition starting at current rates with a 3% increase/yr. Expenses growth of 5%/yr.; some expenses are tied directly to the number of faculty using the resources (e.g. professional development).

Equipment requested is budgeted at cost; after purchase, a sinking fund equivalent to a 7-year straight line depreciation cycle will provide resources to replace the equipment as needed.

The DPT program is projected to have a 3-year 'payback' schedule with positive net revenue in Year 2. It should be noted that capital expenditures are not included in this calculation since it is not clear how the necessary physical infrastructure will be allocated (e.g. it is possible that Sky Lakes Medical Center/OHSU space/facilities can be used, etc.). Also, no attempt is made to estimate out-of-state tuition revenue (which will be substantially higher), nor potential value of emerging 'feeder' programs which can stem from this project.

6-year Financial Projections for New DPT Program at Oregon Tech (excluding facility costs)

Conservative W/Hiring Caps Model Assumptions	Enrollment capped @ 24 new students /annum; Tuition increase of 2%/annum; expenses increasing @ 5%/annum; attrition rate 5%;	Tuition estimate predicated upon $450/hr with 2% adjustment per annum. Does not include out-of-state student tuition. Assumes 5% attrition. All expenses assume 5% increase per annum. OPE 40%	Equipment assumes 7 year depreciation cycle. Expenses reflect matching replacement sinking fund with 5% inflation/yr adjustment.

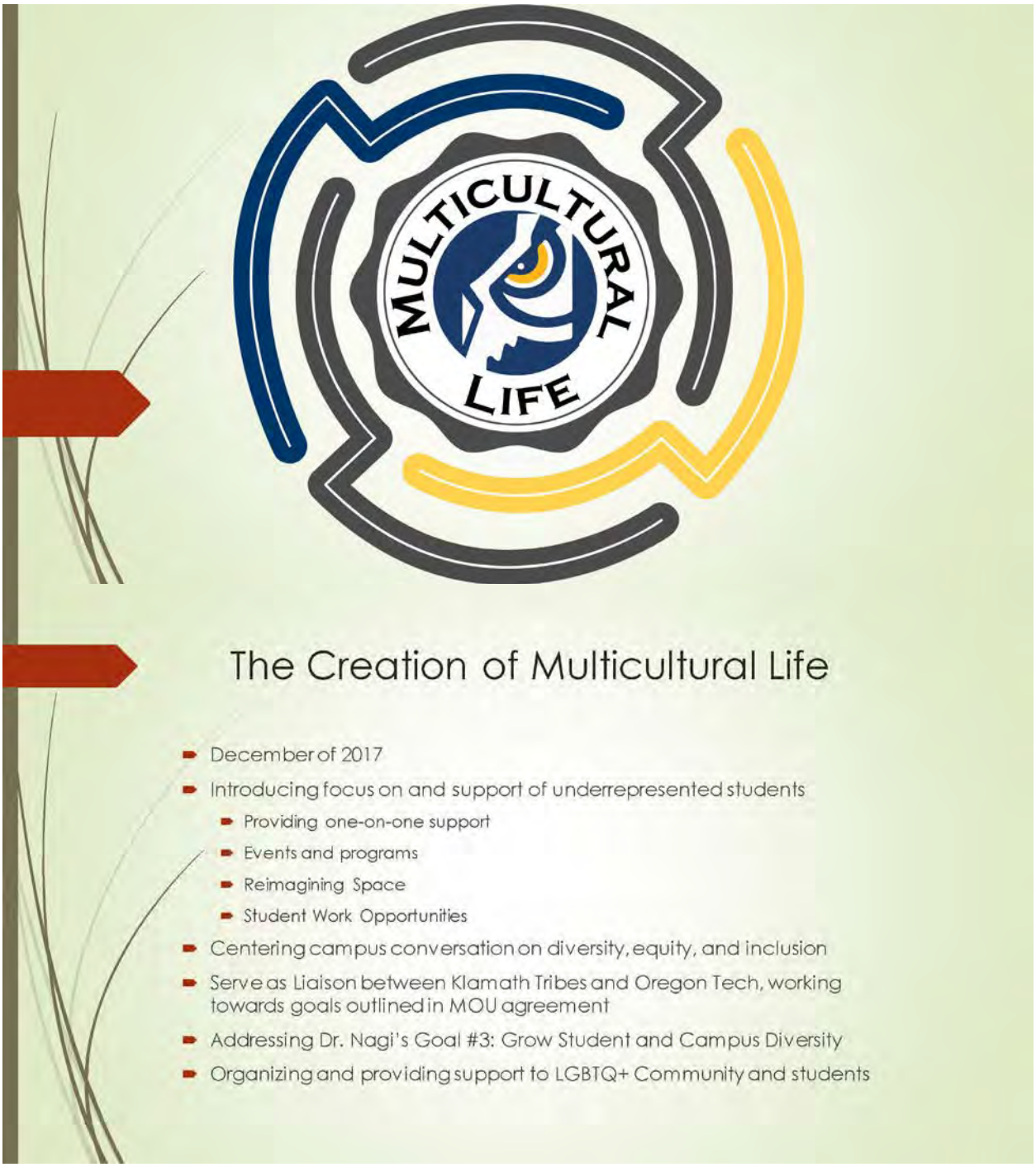
Revenue: Core FTEs (12-month contracts)	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)	Year 6 (2024)	KEY
Yr. 1 assumptions- 24 enrolled; 69 CU		$745,200.00	$760,104.00	$775,306.08	$1,054,416.27	$807,214.23	Cohort 1
Yr. 2 assumptions - 21 enrolled 5% attrit. 69 CU			$665,091.00	$678,392.82	$691,960.68	$1,008,285.56	Cohort 2
Yr. 3 assumptions - 18 enrolled 5% attrit. 46 CU				$387,653.04	$395,406.10	$403,314.22	Cohort 3
Annual Fees ($2500/student/yr)		$60,000.00	$115,875.00	$163,863.00	$188,364.42	$192,131.71	Cohort 4
Grand Total Revenue		$805,200.00	$1,541,070.00	$2,005,214.94	$2,330,147.47	$2,410,945.72	Cohort 5

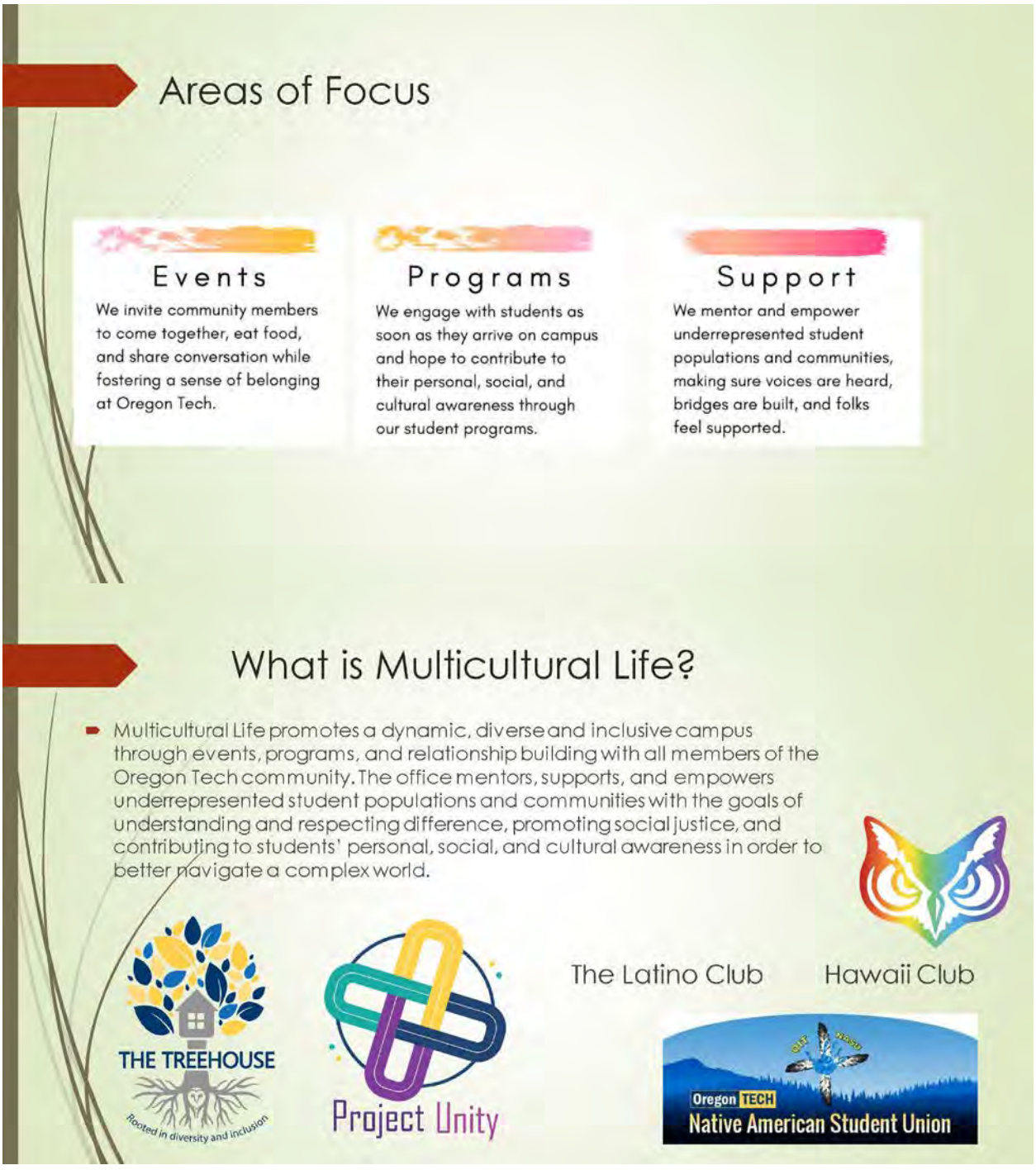
Expenses: Core FTEs (12-month contracts)	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)	Year 6 (2024)
Program Director (Assoc. Prof. or Prof)	$196,000.00	$201,880.00	$207,936.40	$214,174.49	$220,599.73	$227,217.72
Clin Educ Coordinator (Asst. Prof.)	$133,000.00	$136,990.00	$141,099.70	$145,332.69	$149,692.67	$154,183.45
Core Faculty (Assoc. Prof.) Fixed term		$128,000.00	$129,780.00	$133,673.40	$137,683.60	$141,814.11
Visiting NTT- 1-2 year)		$112,000.00	$115,360.00	$118,820.80	$122,385.42	$126,056.99
Core Faculty (Asst. Prof.)			$112,000.00	$115,360.00	$118,820.80	$122,385.42
Core Faculty (Assoc. Prof.)			$112,000.00	$115,360.00	$118,820.80	$122,385.42
Core Faculty (Asst. Prof.)				$119,000.00	$122,570.00	$126,247.10
Core Faculty (Assoc. Prof.)				$98,000.00	$100,940.00	$103,968.20
Subtotal	**$329,000.00**	**$576,870.00**	**$818,176.10**	**$1,059,721.38**	**$1,091,513.02**	**$1,124,258.42**

Staff Salaries (excluding benefits)	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)	Year 6 (2024)
Admin Asst to Program Director	$56,000.00	$58,800.00	$61,740.00	$64,827.00	$68,068.35	$71,471.77
Subtotal	**$56,000.00**	**$58,800.00**	**$61,740.00**	**$64,827.00**	**$68,068.35**	**$71,471.77**
Operating Costs						
Recruitment & Marketing	$5,250.00	$10,500.00	$15,750.00	$21,000.00	$26,250.00	$26,250.00
Clinical Education Travel		$10,500.00	$15,750.00	$21,000.00	$26,250.00	$31,500.00
Faculty Development	$10,000.00	$20,000.00	$30,000.00	$40,000.00	$45,000.00	$50,000.00
Operational	$25,000.00	$30,000.00	$50,000.00	$75,000.00	$75,000.00	$78,750.00
Equipment			$225,000.00	$83,783.75	$91,291.25	$98,798.75
Library Resources		$5,000.00	$15,000.00	$20,000.00	$25,000.00	$30,000.00
Accreditation Fees		$2,500 .00			$10,000.00	$5,000.00
Subtotal	**$40,250.00**	**$76,000.00**	**$351,500.00**	**$260,783.75**	**$298,791.25**	**$320,298.75**
Total Expenses	$425,250.00	$711,670.00	$1,231,416.10	$1,385,332.13	$1,458,372.62	$1,516,028.93
Net	-$425,250.00	$93,530.00	$309,653.90	$619,882.81	$871,774.84	$894,916.79
Cumulative	**-$425,250.00**	**-331,720.00**	**-22,066.10**	**597,816.71**	**1,469,591.55**	**2,364,508.34**

NOTE: Depending on date of hire for PD and CEC, 2020 expenses could be significantly lower than projected.

DISCUSSION ITEM
Agenda Item No. 4.2
Campus Life Initiatives




Areas of Focus
Events
We invite community members to come together, eat food, and share conversation while fostering a sense of belonging at Oregon Tech.
Programs
We engage with students as soon as they arrive on campus and hope to contribute to their personal, social, and cultural awareness through our student programs.
Support
We mentor and empower underrepresented student populations and communities, making sure voices are heard, bridges are built, and folks feel supported.
What is Multicultural Life?
Multicultural Life promotes a dynamic, diverse and inclusive campus through events, programs, and relationship building with all members of the Oregon Tech community. The office mentors, supports, and empowers underrepresented student populations and communities with the goals of understanding and respecting difference, promoting social justice, and contributing to students' personal, social, and cultural awareness in order to better navigate a complex world.
THE TREEHOUSE
Rooted in diversity and inclusion
Project Unity
The Latino Club
Hawaii Club
Oregon TECH
Native American Student Union

What is the Treehouse?

- Student Program, began in Summer of 2018. Result of Women's Resource Center and Diversity Center merge.

Vision:

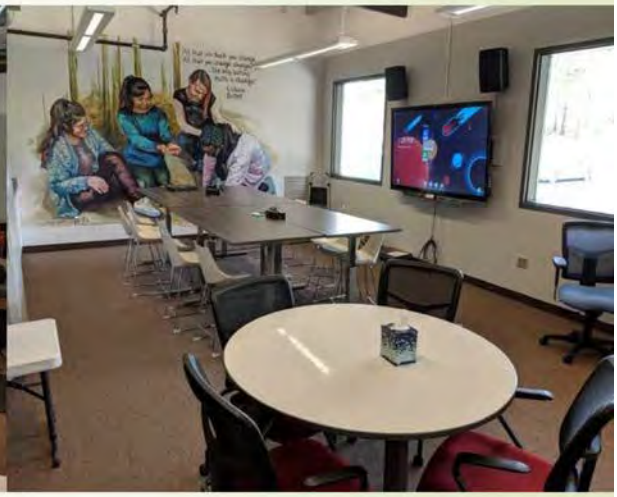
Our vision is centered on a deeper understanding and appreciation for diversity, inclusivity, and equality for the people of Oregon Tech, Klamath Falls, and the world at large.

Mission:

Our mission is to provide programs, education, events, physical space, support and advocacy to the peoples of Oregon Tech, to work actively against oppression, hate, sexism, racism, inequality and other injustices, and promote a safe and welcoming environment for women, people of color, the LGBTQIA+ community, and other diverse groups.

THE TREEHOUSE

Rooted in diversity and inclusion



The Quiet Room
sit. pray. meditate. think. be
Please use this space for spiritual and relaxation purposes only. Be mindful of occupants, knock before entering, and leave furniture as it was.
This space is NOT: a study area, dining area, nor a place to watch videos

CHINESE
NEW YEAR
WOMEN OF COLOR COLLECTIVE
CELEBRATING WOMEN OF COLOR THROUGH CONVERSATIONS AT OREGON TECH
Cultural Club Dinner
JOIN US FOR DISCUSSIONS OF DIVERSE BACKGROUNDS WITHIN OREGON TECH
HOW TO RESPOND TO RACISM WORKSHOP
Snack and Substance
CELEBRATING BLACK HISTORY MONTH
THROUGH CONVERSATIONS AT OREGON TECH
What is Project Unity?
• Brand new program started Fall of 2018.
• For first-year students from underrepresented and diverse backgrounds – attend events, meet new people, and learn more about yourself.
• Placed with a Mentor, an upperclassmen student who is dedicated to helping you throughout your first year, getting you involved on campus, creating a community, and making sure you succeed at Oregon Tech.
Project Unity

How does Multicultural Life Serve the University?

- Provide funding, event support, and organization to cultural clubs like Latino Club, Native American Student Union, Hawaii Club, and Rainbow Owls
- Actively engage with students and provide support on issues surrounding identity, race, culture, gender, sexuality.
- Attempt to advance the university on its' collective understanding of what makes students different and underrepresented in order to make Oregon Tech a better place for all students.

ALL PROCEEDS
CANDLES
CANDLES
PRIDE WEEK
LGBTQ+ Oregon TECH

Milestones

- Hosted Oregon Tech's first PRIDE Week
- Organized and helped form the Diversity, Equity, and Inclusion Committee
- Successfully organized and hosted area Latino and Native American high school students for the annual **Latinos Unidos** and **Native American Student Visit Day** (hosted on Indigenous Peoples Day)
- From student request and input – put forward a Smudging Procedure to support Native American students and their spiritual practices. Approved by the shared governance of Oregon Tech.
- Partnered with New Student Orientation to introduce diversity programming to incoming students
- Host regular programming throughout the term, including Community Dinners, Snack & Substance, and other cultural events.
- Assisted in re-starting Safe Zones Training across campus
- Furthered the relationship between Klamath Tribes and Oregon Tech, hosting community members for Indigenous Peoples Day and participating in planning of the Klamath Tribes Youth Summit.
- Provide space for underrepresented students to be themselves and celebrate who they are and where they come from.

Looking Ahead

- Proposal to create and fund a Multicultural Life Department at Oregon Tech
  - Able to serve more students
  - More focus on programs and events, with even more involvement in The Treehouse and Project Unity
  - Provide vision and strategic direction for Oregon Tech on diversity, equity, and inclusion
  - Develop diversity and cultural trainings
  - Coordinate further leadership development for underrepresented students
  - Increased focus on admission and retention
- Oregon Tech's unique position as a polytechnic institution

DISCUSSION ITEM
Agenda Item No. 4.3
Oregon Renewable Energy Center

Oregon TECH OREC

Creating Value

- Entrepreneurial minded solution development to solve Oregon's real world problems.
- Student experiential learning through multidisciplinary applied research and projects.
- Oregon community engagement in the renewable energy space.

Hands-on education for real-world achievement.

Oregon TECH OREC

OREC Lab: Student Capstone Projects

- **Plastic Reclamation:** Converting waste plastics into crude oil through pyrolysis and a zeolite catalyst.
- **Direct Air Carbon Capture:** Collecting and concentrating carbon dioxide from the atmosphere to repurpose for other industries.
- **Self-Contained Renewable Micro-Grid:** Small scale demonstration of a micro-grid using wind energy, solar energy, and energy storage.
- **Bio-Gas Generator:** Converting agricultural waste into methane gas through a natural process for use as a fuel.
- **Carbon Negative Methanol Production:** Converting atmospheric carbon dioxide to methanol, an alternative fuel, using an electrolytic approach.
- **Solar Power Air Monitoring:** Station is taking $PM_{2.5}$ concentration as well as meteorological measurements to characterize the air quality in the Klamath Basin. In collaboration with Natural Sciences Department.

Hands-on education for real-world achievement.

Oregon TECH OREC

OREC Funded Proposals

- **Research Proposal for Advancing Multi-Disciplinary, Place-Based RESEARCH AND ACADEMIC PROGRAM DESIGN IN RENEWABLE ENERGY ECONOMIC DEVELOPMENT**
- Award: $25,000
- The purpose of this proposed project is to advance the understanding of how technological, economic, and policy developments in renewable energy will successfully impact the economic, social, and health conditions of Klamath Falls.
  - **Multi-Disciplinary Research Agenda and Data Collection Plan**, as a framework for a student/faculty project pipeline hosted at the Population Health Management Research Center;
  - **Multi-Disciplinary Course in Sustainable Economic Development,** incorporating business, civil engineering, law/policy, renewable energy engineering, and systems analysis that would support multiple existing minors and new academic programs;
  - **Workshop Series** bringing together regional external partners in industry and government to share lessons learned in successful renewable energy projects.

Hands-on education for real-world achievement.

Oregon TECH OREC

OREC Funded internal Proposals (cont)

- **Renewable Energy in National Electric Resource Forecasting:** Consumer Demand and Behavioral Economics
- Award: $25,000
- This research will enable Colombia and other developing countries to include renewable energy in their planned energy resource mixes with the understanding of the possibilities and the limits of consumer behavior, independent of policy influence and the simple cost of electricity, which does not differentiate renewable from non-renewable sources.

Hands-on education for real-world achievement.

Oregon TECH OREC

OREC Funded internal Proposals (cont)

- **Multi-parameter Intelligent Renewable Energy Forecasting: A step to Machine Learning to Improve Security, Reliability, and Efficiency of the Modern Power Grid**
- Award: $25,000
- Researchers from the Oregon Institute of Technology (OIT), and Marquette University (MU), will collaborate to establish a viable method to predict the generation and usage of electricity efficiently, using advanced machine learning algorithms and extend the endeavor to perform big data analysis.
- This project can offer a high return on investment, create more business opportunities, and help overall utility system to cope with the current challenges, by applying the latest technology; thus breaking new grounds in the utility sector.

Hands-on education for real-world achievement.

Oregon TECH OREC

OREC Funded internal Proposals (cont)

- **Direct Air Carbon Capture:** Collecting and concentrating carbon dioxide from the atmosphere to repurpose for other industries.
- Award: $10,000
- Student Capstone project.
- Entered into Catalyze Klamath Challenge.

Hands-on education for real-world achievement.

Oregon TECH OREC

Solar Aeration System

- Hypoxic conditions in July/Aug in Upper Klamath Lake: kills juvenile Klamath, Short-nose and Lost River Sucker fish (endangered).
- Design and build floatovoltaic aeration systems: infuse oxygen to counteract hypoxic conditions.
- Mitigation to help the Suckers survive as a species.
- $28,000 OREC endowed funds.
- Seeking additional funds: $100k (Pilot 2019), $1.5 mil (Large scale 2020-2022).

Hands-on education for real-world achievement.

Oregon TECH OREC

Oregon Community Solar

- Collaborating with Sustainable North West, Klamath Watershed Partnership, and solar developers (Cypress Creek Renewables, Saturn Power).
- Two projects under feasibility analysis.
- An initial capacity tier is defined as 2.5% of 2016 peak load (100MW for PGE, 72MW for Pacific Power, and 2.5MW for Idaho Power).
- A project may not have a nameplate capacity of more than 3MW, requires a minimum of 5 customers, and no customer shall subscribe to more than 40% of project capacity.
- 50% of each project shall be reserved for residential or small commercial customers, and 10% for low income customers (defined as annual income less than 200% of the federal poverty level).
- Minimum project size is 25KW, maximum 3MW.

Hands-on education for real-world achievement.

Oregon TECH OREC

Renewable Energy in Ag

- One of if not the largest yearly agricultural cost: electricity mainly for irrigation pumping!
- Renewable energy sources:
  - Photovoltaic
  - Hydro
  - Biomass/Biofuels
  - Geothermal

Hands-on education for real-world achievement.

Oregon TECH OREC

Solar Powered Irrigation

- 10kW pumping: ~300gpm @ 60psi
- Cost for new grid connected irrigation pumping connection:
  - $25,000 (if 3-phase power exists at location) plus yearly operation costs.
  - Remote pumping location: $25,000 + ~$10/ft. (wire/conduit and trenching); ¼ mile install ~ $38,200
  - Cost for off-grid pumping solution: DC side, photovoltaic array + battery storage (iron flow cell, zinc-air, Li-ion)
  - ~$50,000-60,000
  - $0 yearly electricity costs
  - 20yr. savings of ~$100,000-$200,000 (usage dependent)
- Combined with irrigation system modernization – ~30-50% water savings with no yearly pumping costs.

Hands-on education for real-world achievement.

Oregon TECH OREC

Solar Power Pivot

- Off-grid solar powered pivot system with LESA high efficiency emitters.
- In system engineering phase.

48 Volts DC, 100 Watt, Geared DC Motor, coupled to a Heavy Duty Gear Box

http://www.magetsi.com/solar_powered.html

http://www.solarirrigation.systems/?lightbox=i11buw

Hands-on education for real-world achievement.

Oregon TECH OREC

Biofuels/Biomass

- Burn piles are the primary method to treat invasive woody species and forest residuals from commercial lumber operations and in the efforts to reduce the intensity/frequency of wildfires.
- Burn piles fill rural skies with smoke increasing risks to human health and have limited socio-economic benefit to the surrounding communities.
- 9 million acres in Oregon suffering from invasive woody species and excess fuels in its forestlands, only 6,000 have been address to date.
- 290 million acres similarly affected throughout the United States.
- Alternatives to use the woody biomass in co-gen processes is only minimally profitable; and straight conversion to energy is not cost competitive.
- Development and refinement of advanced technologies to convert the invasive woody biomass and forest residuals into value-add products with three significant benefits:
  - First – eliminate smoke from burn piles for cleaner environment & healthier people;
  - Second – generate significant new revenues from the bio-energy, bio-fuel, bio-industrial and other bio-products to boost jobs and communities;
  - Third – Provides a sustainable avenue for waste material in the efforts to reduce intensity and frequency of wildfires.
- A public-private partnership is proposed to perform research, planning and implementation of innovative solutions linking the feedstock with processing techniques and off-the-self technologies to provide value added products to markets.

Hands-on education for real-world achievement.

Oregon TECH OREC

ENGR 101/102

- 1st in the nation solar powered tiny home designed and built by first year engineering students.
- OREC funded ~60% of the material cost.

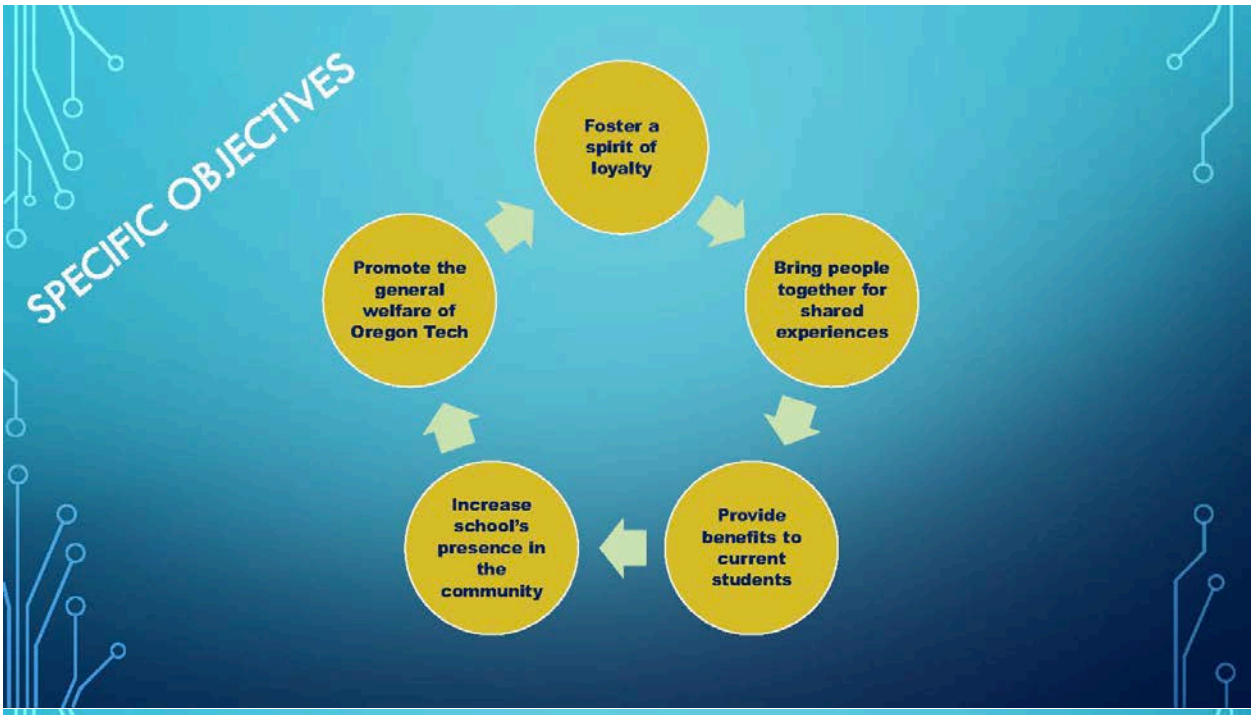
Hands-on education for real-world achievement.

Oregon TECH

Q & A

Hands-on education for real-world achievement.

DISCUSSION ITEM
Agenda Item No. 4.4
Alumni Relations


SPECIFIC OBJECTIVES
Foster a spirit of loyalty
Bring people together for shared experiences
Provide benefits to current students
Increase school's presence in the community
Promote the general welfare of Oregon Tech

SERVICES PROVIDED
Alumni Events
Career Services for Life
Free Library Access
Continuing Education
Discounts to hotels, stores, athletic events, etc.

WAYS WE ENGAGE

PHILANTHROPY

EXPERIENTIAL

VOLUNTEERISM

VOLUNTEER OPPORTUNITIES

ALUMNI ADVISORY BOARD

Currently comprised of 12 members

CAREER DEVELOPMENT

Career Fairs, Industry Advisory Councils, Classroom Speakers, Mentors

REGIONAL AMBASSADORS

Regional programs currently in Klamath Falls, Portland, Salem, Boise and Reno

EXPERIENTIAL OPPORTUNITIES

TRADITIONAL EVENTS

Reunions, networking, pre-games, etc.

INDUSTRY EVENTS

Meeting alumni where they work

ONLINE

Opportunities for life-long learning

BLAZERS NIGHT 2019

SEATTLE PRE-GAME SOCIAL 2019

STUDENT & ALUMNI BREAKFAST 2018

BUILDING YOUR BRAND WORKSHOP 2019

PHILANTHROPIC OPPORTUNITIES

ALUMNI GIVING

Time, talent and treasure

STUDENT PHILANTHROPY

Events & activities to ensure students stay connected after they graduate

COMMUNITY SERVICE

Facilitate opportunities for alumni to give back to not just the school, but also other charities and the communities they care about

OUTREACH INITIATIVES

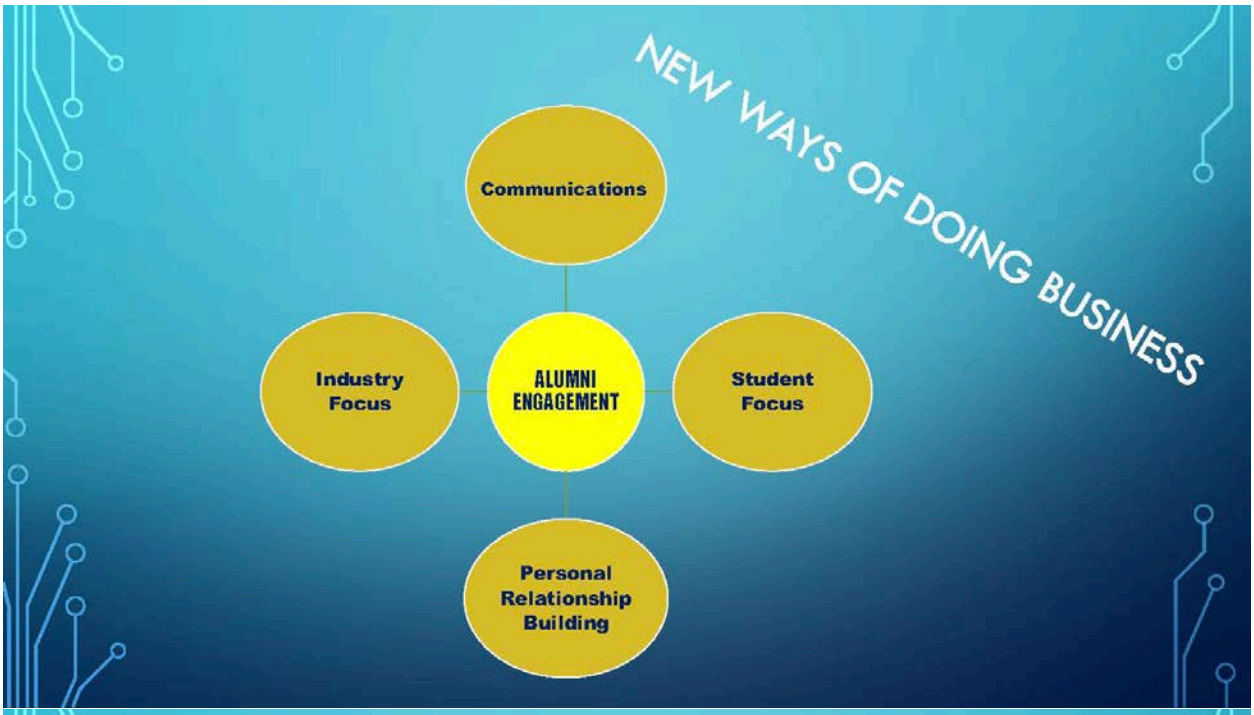
NEWSLETTERS

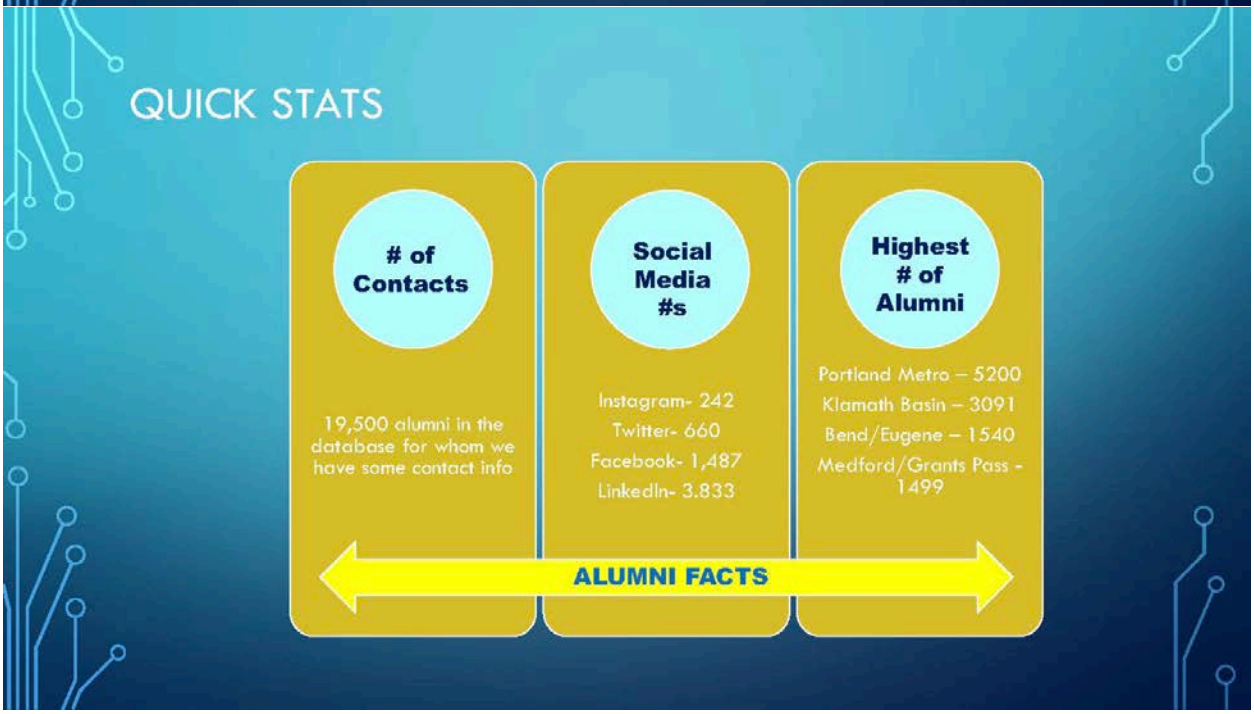
Monthly via email and posted to website

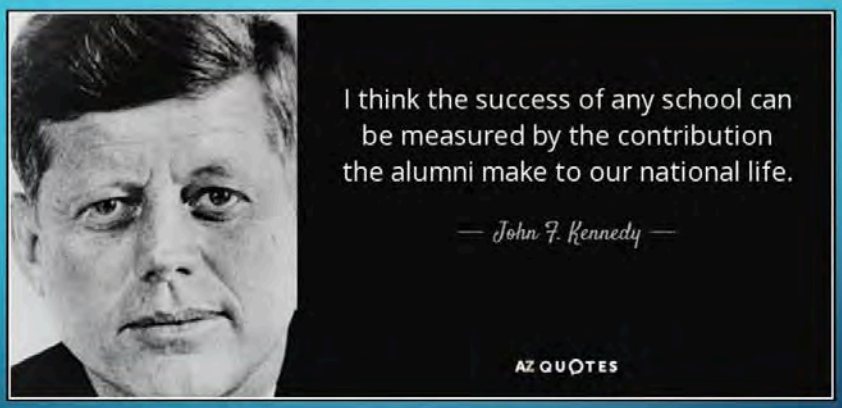
SOCIAL MEDIA

LinkedIn, Twitter, Facebook & Instagram

WEBSITE/EMAIL/DIRECT MAIL


NEW WAYS OF DOING BUSINESS
Communications
Industry Focus
ALUMNI ENGAGEMENT
Student Focus
Personal Relationship Building


QUICK STATS
# of Contacts
19,500 alumni in the database for whom we have some contact info
Social Media #s
Instagram- 242
Twitter- 660
Facebook- 1,487
LinkedIn- 3,833
Highest # of Alumni
Portland Metro – 5200
Klamath Basin – 3091
Bend/Eugene – 1540
Medford/Grants Pass - 1499
ALUMNI FACTS

UPCOMING EVENTS

- May 16-17, 2019: Industry Meetings and Alumni Reception (Reno)
- May 31, 2019: Senior Project Symposium & Senior Send-Off (KF)
- June 5, 2019: Senior Project Symposium & Senior Owl Send-Off (PM Campus)
- June 14-15, 2019: Golden Owls Reunion (KF)
- June 17: Seattle 20th Birthday Celebration
- June 26: ODOT Industry Luncheon (Salem)
- August 17: Reno Alumni BBQ
- August 23: Event for basketball players, families and fans in Portland