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CWU Faculty Senate Minutes - 05/29/13

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CENTRAL WASHINGTON UNIVERSITY FACULTY SENATE

REGULAR MEETING Wednesday, May 29, 2013, 3:10 p.m. BARGE 412 Draft Minutes

Meeting was called to order at 3:11 pm

Senators: All senators or their alternates were present except: Susan Donahoe, John Harbaugh, Jim Johnson, Suzanne Little, Eric Mayer, Teri Walker, and Matthew Wilson

Visitors: Gary Rogers, Kim Bartel, Rob Perkins, Ben Glasgall, Marla Wyatt, Scott Carlton, Toni Čuljak, Jan Bowers,

CHANGES TO AND APPROVAL OF AGENDA - Stand as approved.

MOTION NO. 12-36(Approved): APPROVAL OF MINUTES of May 1, 2013

COMMUNICATIONS – Letter from Lori Gray is available for review in the Faculty Senate office.

FACULTY ISSUES: Senator Braunstein reported that the university has an agreement to purchase an electronic curriculum management system. The vendor is Digital Architecture that also produces our current catalog system. This program will integrate seamlessly with the catalog and PeopleSoft. The pathway of curriculum will be automatically designated, and there will be a tracking system to see where form is in the process. The Curriculum log will now show the entire form for each of the items on the log. Lori hopes to have a soft roll out this fall, will full implementation next winter or spring. Senator Dittmer reported that he is working with the iCat group. They have purchased software called Faculty 180. They are in the process of customizing it. Hopefully it will replace binders and do portfolios electronically. Start working in fall. Senator Mike Jackson explained that the Commencement Committee has sent list of faculty who are currently signed up to participate at commencement to department chairs. If faculty would like to see if they are on the list, please ask your chair. Faculty can still sign up until June 3rd. The Bookstore ordered extra regalia, contact Steve Wagner in Wildcat shop to see if there is still some available. Commencement instructions will be sent out electronically. Senator Jackson asked Faculty Senate to distribute to faculty. Senator Asoszatai-Petheo let the Senators know that this agenda has the time broken down to 2 and 5 minute segments. It will be his job to keep Chair Madlem informed of the time limits.

Mike Luvera, University Police and Parking Services – Mike Luvera is the Chief of Police on campus. Campus safety is taking the issues with bicycles on campus seriously. They recently did a survey and one of the top five issues was bicycles on campus. They are partnering with students in Law & Justice to come up with an education program to roll out in the fall. There have been studies done that devoted bicycle lanes increases speed and pedestrian accidents are more likely. Central has tried them before, but did not work on the main mall here. There is a 10 mph speed limit on campus, but is very hard to enforce. They would like to be proactive with education at this time and see how this works.

PRESIDENT: Written report is available in the Faculty Senate office. President Gaudino reported that the Friends of Washoe have decided to relocate the current chimpanzee population to a sanctuary in Canada. More information is in the news. The President thanked the Senate for their input, but the decision was made outside of Central's process.

PROVOST: The Provost thanked everyone for their participation in the first ever promotion/tenure reception this evening. It will be a lot of fun and hope to establish a tradition. Next fall encourage faculty to participate in the student convocation for new students that will be held September 24th at 11:00 a.m.

There will be a lunch afterwards. This is great for recruitment and programs. The Provost gave a message of gratitude to the Senate leadership and senators for their work through a number of thorny issues. She hopes for a summer of peace and renewal.

OLD BUSINESS - None

REPORTS/ACTION ITEMS

SENATE COMMITTEES:

Academic Affairs Committee Year-End Report: http://www.cwu.edu/faculty-senate/sites/cts.cwu.edu/faculty-senate/files/AACYear-End-Report2012-13.pdf

Motion No 12-37(Approved, 1 abstention): Approve of changes to the Academic Affairs and Student Life Policies 5-90 as outlined in Exhibit A.

Motion No. 12-38(Approved, 1 abstention): Approve the Academic Affairs and Student Life Procedures as outlined in Exhibit B.

Motion No. 12-38a (Approved): Senator Sloan moved to amend CWUR 5-90-040 (C) 3. to add a timeline of fifteen days.

Curriculum Committee

Motion No. 12-39(Approved): Approve a new major BS in Business and Marketing Education as outlined in Exhibit C.

Senator Bailey indicated three concerns from the College of Business. First concern is the title of this program. The second is the statement regarding regional needs states "Registered nurses, teachers, and business, management and accounting occupations all appear... Business and marketing education teachers help fill the demand in four of these occupations." The third is with the reallocating of positions around campus, why are we developing a program that has these problems. Kim Bartel responded that the College of Business Dean approved the program, it has been around since the 1940's and was eliminated in early 2000's, but there is a demand in the high schools for teachers. The state requires the title of business and marketing. There is no increase in faculty. There are currently two faculty on staff who will teach the within the program.

Motion No. 12-40(Approved, 1 abstention): Approve a new minor in Physical Activity and Recreation Programming as outlined in Exhibit D.

Motion No. 12-41(Approved, 5 nays, and 4 abstentions): Approve a new BAS-ITAM Cybersecurity Specialization as outlined in Exhibit E.

Motion No. 12-42(Approved, 3 nay, and 4 abstentions): Approve a new ITAM Cybersecurity minor as outlined in Exhibit F.

Motion No. 12-43(Approved): Approve of changes to the Curriculum Policies 5-50 as outlined in Exhibit G.

Motion No. 12-44(Approved): Approve the Curriculum Procedures as outlined in Exhibit H.

Executive Committee

Motion No. 12-45(Approved): "Ratification of 2013-14 Faculty Senate committee vacancies as attached in Exhibit I."

Motion No. 12-46(Katharine Whitcomb): "Election of 2013-14 Faculty Senate Chair-Elect." Nominees: Susan Donahoe and Katharine Whitcomb

General Education Committee

Motion No. 12-47(Approved 3 nay, 3 abstentions): Approve the General Education proposal as outlined in Exhibit J.

Senator Harper indicated the non-tenure-track instructors who teach the current English 101 have concerns about Sent out a call to NTT instructors to concerned about 2. but does not provide guidance to academic conventions. Heurta - concerns with outcomes with computer fundamentals, suggested recommend an amendment to that. (see handout).

Motion No. 12-47a(Failed): Senator Heurta moved to amend the Computer Fundamentals learner outcomes to read: Students must pass a Computer Fundamentals course or achieve a minimum established score on a Computer Fundamentals Assessment. Exam to fulfill the computer fundamentals requirement. Learner outcomes, Students will be able to: 1. Utilize word processing software to create, design and produce professional documents incorporating design options for formatting and layout. 2 Utilize spreadsheet software to process, manipulate, and represent numeric data using the basic spreadsheet functions. 3 Utilize database software to create, design, and query a database file using fundamental database functionality. 4 Utilize presentation software to create, design and produce a professional presentation incorporating design options for formatting and layout. Rationale: These are computer skills that are used by students in many general education courses many majors and professions will also require these skills.

Jaclyn Sperlich indicated that as a student, that the General Education deficient is disconcerting. It is a serious issues that there has been a lack of reform and movement in General Education. If anyone is truly vested in the program then they should be more involved with the committee.

Senator Harrod asked what is deficient in the current general education requirements.

Phil Backlund indicated it has been 17 years since any major changes have been made to current general education requirements. This step would allow the committee to move the program forward. There is currently no learner outcomes and no basis for judging criteria for courses requesting to be part of the general education requirements.

Senator Drake indicated he did meet with members of the members of the committee and is concerned with deletion of the second outcome for Academic Writing and the Research Paper.

Motion No 12-47b (Approved, 7 abstentions): Senator Drake moved to reinstate the second outcome to Academic Writing and the Research Paper to read. Take a position on an issue by developing a focused assertion based on a shared assumption, presenting evidence in support of a line of reasoning, addressing divergent stances on the issue, and using a variety of rhetorical appeals.

Senator Harrod asked why the committee decided to do this wholesale rather than just doing just basic or breadth. The committee responded there are substantial issues with assessing the current basic skills. Over the years the proposals have been presented many different ways and it hasn't made any difference.

Senator Olson asked about quantitative literacy, and basic quantitative skills. Many majors already run over the credit limit and having to add math courses to the major will increase it even more. Committee response was this is in response to changes that are coming from the state level. The outcomes were written by Stuart Boersma, who has sat on a state-wide committee working on this subject.

Senator Pritchett asked about there not being an outcome for health and physical activity. Every other university he has been affiliated have had physical activity associated with general education.

Senator Alsoszatai-Petheo indicated that Senators are being asked to pass a framework. We've been asked in good-faith to pass this opportunities for changes as the process continues.

Bylaws & Faculty Code Committee Year-End Report http://www.cwu.edu/faculty-senate/sites/cts.cwu.edu.faculty-senate/files/BAFCAnnual%20Report12-13.pdf

Evaluation and Assessment Committee Year-End Report http://www.cwu.edu/faculty-senate/sites/cts.cwu.edu.faculty-senate/files/EACYear-End-Report2012-13.pdf The Executive Committee is massaging the Faculty Assessment of Academic Administrators. The data will be made available to faculty that are interested by calling the Faculty Senate office.

Faculty Legislative Representative - Dave has been selected as chair of the Council of Faculty Representatives, which is made up of faculty legislative representatives (FLR) for all universities in Washington. Dave met with the Student Achievement Council last Thursday. He is working with the group on technology in higher education. There are a lot of modalities out there, some that will be embraced and some not so much. Dave's FLR year-end report will be posted on the Faculty Senate website.

CHAIR: Chair Madlem thanked the Senators for their diligent work this year. It has been delightful to serve this year. The five standing Senate committees have been busy this year. Appreciate all they have done this year. Encourage faculty to participate in the new student convocation next fall. It is an opportunity to start a new tradition at Central. Chair Madlem announced that Katharine Whitcomb will be the chair-elect for next year. Chair Madlem presented Chair-Elect Cheney will his gavel.

Motion No. 12-48(Approved): Whereas, Toni Čuljak has contributed significant service to the Faculty Senate; and

Whereas, she has served on the Faculty Senate Curriculum committee form 1997 - 2007 and 2008-2010:

Whereas, she served on the Faculty Senate Executive Committee from 2000-2006, serving as a chair in 2004-2005, and as a one year replacement in 2011-2012.

Whereas, she has served on the Faculty Senate General Education Committee from 2010 - 2013;

Be it resolved that the Central Washington University Faculty Senate is grateful and publically wishes to thank Toni Čuljak for her years of dedicated service.

CHAIR-ELECT: Chair-Elect Cheney indicated he is looking forward to next year and working with all of you. Melody and Eric are working with the President in converting Grupe Center as faculty center. This will be a collaborative space that faculty can use during the academic year.

Motion No 12-49(Approved): Whereas, Melody Madlem contributed to the excellent working relationships of the Faculty Senate with the administration by strengthening the ideals and practice of shared governance; and

Whereas, she enhanced the communication between the CWU Faculty Senate and the greater

faculty at large, working persistently to represent the widely diverse concerns of the CWU faculty while actively promoting faculty collegiality;

Be it resolved that the Central Washington Faculty Senate is grateful and publically wishes to thank Melody Madlem for her diligent work and focus on faculty in the role of Chair of the Faculty Senate during the Academic Year 2012-2013.

STUDENT REPORT: Kelsey Miller will be the student representative for next year. The Student Academic Senate (SAS) tripled their budget for next year to be able to provide more help to students. Next Friday at 3:00 SAS will be celebrating our seniors in SURC 301. Many of us are walking soon, thank you all for your part.

NEW BUSINESS – The Executive Committee assessment and Faculty Senate assessment are attached to the agenda for your review.

Meeting was adjourned at 4:54 p.m.

Exhibit A

Academic Affairs Policy - was sent via email

Summary of changes:

The main change to this document is removing procedure from policy. This is a requirement for all University policy and must be completed this year. This is a first pass at getting the procedure into its own document (see Exhibit B). Some other changes are:

- Updates to Alternative Admission to reflect current practice
- First-year Admissions criteria was updated to reflect current practice
- International Student Admission was updated to reflect current practice
- Student Leave of Absence was updated to reflect current practice
- Freshman was replaced with First-Year
- Foreign Language Department was replaced by World Language
- Housekeeping to update titles and office names
- Some minor editing to make the policy or procedure clearer.
- Change numbering in order to take the document out of being alphabetical to the original flow of the document.

Exhibit B

Academic Affairs Procedure – was sent via email

Exhibit C

Required Summary Page For All Proposed Majors, Minors, Specializations, and Certificates This form must accompany your proposal. BS Business and Marketing Education

Please address all questions. If it is not complete, the proposal and summary page will be returned to the originator.

1. Provide a justification for the creation of this program. (How will this program enhance the curriculum of your department/college and the university? What specific need(s) is (are) being addressed that is (are) not being met in other programs? Please document the demand.

CWU currently has two residency based Career and Technical Education (CTE) majors: Family and Consumer Sciences Ed and Industrial Technology Ed. In addition to these residency programs, CWU also has non-residency CTE Certification programs, which are located throughout the state. CWU, through the Family and Consumer Sciences Department, administers the largest CTE programs in Washington state. Business and Marketing Education is a major component of CTE, and this program will provide a complete CTE program at CWU. No other programs exist at CWU that meet the specific needs for a Business and Marketing Education program. Additionally, this program will assist in meeting the currently high demand for secondary level business and marketing teachers throughout Washington State.

Note: The following report was requested and approved by Associate Provost Tracy Pellet.

In its *Regional Needs Report*, the Washington Higher Education Coordinating Board (2011), states "Registered nurses, teachers, and business, management, and accounting occupations all appear near the top of each region's list of high-wage, high demand occupations requiring postsecondary education" (p. ii) Business and marketing education teachers help fill the demand in four of these occupations. First, they are teachers. Second, the subject matter taught in business and marketing courses includes business, management, and accounting. Furthermore, this report states, "In selecting which fields of study to focus on for college program expansion, institutions would do well to focus on the highest growth occupations" (p. 109).

The Educator Supply and Demand in Washington State, published by OSPI (Lashway, 2007), states that a need for both business and marketing education teachers exists. For example, the report states that the number of openings for the 2005-2006 AY (the most recent data available) were 52.7 for business education and 20 for marketing education. The same report states that district perceptions of shortages in the 2005-2006 AY ranked in the considerable range as well. Additionally, this document reports that the number of current business and marketing education teachers who are eligible to retire is increasing. From a sample size of 96 school districts, the estimated number of eligible retirees in business education during the period of 2006-2011 is 96. From a sample size of 62 school districts, the estimated number of eligible retirees in marketing education during the same period is 16.

The OSPI 2008-2009 Annual Report on Certificates Issued and Certificated Personnel Placement Statistics reports that 27 CTE Business Education and 15 CTE Marketing Education Initial teaching endorsements were issued. These numbers are significant for two reasons. First, when compared with the number of Business and Marketing CTE programs in Washington state, the low numbers for initial business and marketing education endorsements indicates a shortage of incoming teachers to replace those who are currently eligible to retire. Second, candidates who receive this endorsement are able to teach any courses in the broad categories of CTE Business and Marketing Education, while other specific endorsements limit candidates to teaching in limited subcategory specialty areas. Thus, the needs of school districts can be better met by hiring CTE Business and Marketing Education endorsed teachers.

Evidence of Employer Need

A 2009 Career and Technical Education (CTE) demand study was completed by Dr. Pam Weigand, Director of Business and Marketing Education and Plan 2 Certification at Eastern Washington University (EWU). The purpose of the study was to determine demand for CTE instructors throughout the state both for the 2009-2010 academic year and for the five future years through academic year 2012-2013.

The study (Weigand, 2009) included only school districts in Washington state. CTE instructors were asked to provide estimates for new CTE teacher needs in their school districts. Of the 248 districts statewide, 140 responded for a response rate of 59 percent. The results indicated that, during the next five-year period, an estimated 90 new positions will be needed for Business and Marketing Education instructors.

Each of the studies cited above indicate a strong and continuing need for new Business and Marketing Education instructors, thus justifying the need for such a program at Central Washington University.

Evidence of Student Demand

A survey of high school students from four Washington state high schools regarding their interest in majoring in business and marketing education was completed in Spring 2011. The results are illustrated in the Table 1 below:

Table 1: Secondary Student Survey Results

School		N	"Yes" Response	Percent "Yes"
Fife High School		303	20	6.60
Okanogan High School		97	9	9.28
Kittitas High School		82	13	15.85
Ellensburg		171	13	7.60
T	Total	653	55	8.42

As illustrated in Table 1, 55 out of 653 Washington state high school students surveyed indicated an interest in the business and marketing education program.

During 2010 and 2011, several potential students have expressed interest in completing the CWU business and marketing program. Ten of these potential majors have inquired via email, while others have spoken personally with the program coordinator. Given these numbers of interested program candidates, at least five student majors for the first year of the program is conservatively estimated.

The only other business and marketing teacher preparation program in Washington state is located at Eastern Washington University. The program director at EWU fully supports development of a new program at Central Washington University. Additionally, EWU and CWU faculty and administration have discussed a possible future goal of collaborating with each other to create more economically cost-effective programs.

References

Office of the Superintendent of Public Instruction. (February 2010). *Annual Report 2008 – 2009: Certificates issued and certificated personnel placement statistics.* Olympia, Washington.

Lashway, L., Bryant, B., Burton, C., and Hett, A. (2007). Educator Supply and Demand in Washington State. Office of Superintendent of Public Instruction, Olympia, Washington.

Washington Higher Education Coordinating Board. (2011). *Regional Needs Analysis Report.* Olympia, Washington. Weigand, P. (2009). CTE 2009 demand study: Washington state.

- 2. Attach a clean copy of the catalog narrative and program requirements. Include course number, course title, credits, pre-admission requirements and total credits. Also include a sample graduation plan. (See Attachment A) Note: Sample graduation plan pending new general education program requirements.
- 3. Please indicate how this new program will impact existing programs in your department/college and the university. (Is this program replacing a deleted program or is it adding to your program offerings? If it is an additional program, how will the program be staffed? How will FTE's be affected in existing programs? Is there long-term support for the program in terms of staffing and funding? Will faculty e [sic] reassigned from existing courses? Will the program impact enrollments in other departments or colleges, etc.?)

This program is replacing a prior program that was eliminated from a different department. Staffing and support information is provided below. FTEs in existing programs will not be affected. Long-term support for the program in terms of staffing and funding has been provided by the college dean. Faculty will be reassigned from existing courses. The program will have minimal impact on enrollments in other departments or colleges.

4. Does this program include courses from outside the originating department?				
Has the affected department(s) agreed to allow course(s) to be used in program?	¥es	☐ No		
If yes, please list those courses and attach a document (letter, email, etc.) that specifies the	hat the	department	agrees to us	36
of course(s) from all affected department chairs.				

The program includes courses from outside the originating department. The affected departments have agreed to allow courses to be used in the program. (Document attached)

Courses:

ECON 101 Economic Issues BUS 241 Legal Environment of Business

5. What are the Enrollment and Graduation Targets for the first five years? (Include student headcount, FTE, program graduates (breakdown by year). What is the basis for these projections?)

ENROLLMENT AND GRADUATION TARGETS

Year	1	2	3	4	5
Headcount	5	10	15	20	25
FTE	5	10	15	20	25
Program Graduates	0	5	10	15	20

The basis for these projections include the statistics derived from the statement of need included in Item 1 above as well as a recommendation from CEPS Dean Connie Lambert.

6. Who are the Program Personnel? (Include faculty names, degree, rank, part-time or full-time, % of effort in program, total faculty FTE) (Also include Program Administration & Staff: name, title, responsibilities and % of effort in the program, total staff FTE)

PROGRAM PERSONNEL

	Faculty	<i>i</i>		
Name	Degree (e.g. M.A.; Ph.D.; J.D.)	Rank (if applicable)	Status (e.g. full-time, part-time)	% Effort in Program
Kimberlee Bartel	PhD	Professor	Full-Time	100%
Robert Perkins	EdD	Professor	Part-Time	33%
Total Faculty FTE				
	Administration	and Staff		
Name	Title Respor		nsibilities	% Effort in Program
Alex Lange	Secretary	Administrative	e Support	.001%
			Total Staff FTE	.001

7. Program Expenses and Revenues

Program Expenses							
	Year 1	Year 2	Year 3	Year 4	Year n (full enrollment)		
Administrative Salaries (#FTE) Benefits @ # %	265.80	265.80	265.80	265.80	265.80		
Faculty Salaries (#FTE) Benefits @ 27%	120,000	130,000	130,000	130,000	130,000		
TA/RA Salaries (#FTE) Benefits @ # %	0	0	0	0	0		
Clerical Salaries (#FTE) Benefits @ # %	265.80	265.80	265.80	265.80	265.80		
Other Salaries (#FTE) Benefits @ # %							
Contract Services							
Goods and Services	1,000	1,000	1,000	1,000	1,000		
Travel	1,000	1,000	1,000	1,000	1,000		
Equipment (list equipment cost) - Computers	2,000	1,000	500	500	500		
Lease or Acquisition							
Other (itemize)							
Indirect (if applied to the program)							
Total Costs	124,453	138,632	133,032	133,032	133,032		

Program Revenues

	Year 1	Year 2	Year 3	Year 4	Year <i>n</i> (full enrollment)
General Fund	124,453	138,632	133,032	133,032	133,032
Tuition and Fees (total)	34,734	199,954	266,605	333,256	399,907
Corporate Grants/Donations					
Internal Reallocation*					
Other Fund Source (specify)					
Total Revenue					

Attachment A -

Catalog Narrative: This bachelor of sciences teaching major satisfies the endorsement for business and marketing education teaching for career and technical education. It is designed for students who are seeking teaching careers in Business and Marketing Education at the secondary grade levels (7-12). The coursework provides experiences in the business and marketing education content areas and instructional pedagogy including field experiences that are designed to prepare teacher education candidates to exceed the Washington state competencies for secondary level teacher certification and content endorsement. Students in the Business and Marketing Education Major must be admitted to the Teacher Certification Program and complete the Professional Education Program sequence coursework as part of the teacher certification program.

Program Requirements and Preadmission Requirements: Students wishing to obtain a teaching certificate in business and marketing education will

- Complete the business and marketing career and technical education teaching major
- Successfully complete CTE 310 before being fully admitted to the major
- Have a university-level cumulative GPA of at least 2.3 for full admission to this major and a 3.0 minimum cumulative GPA in the major to exit the program and to graduate from CWU with teacher certification
- Earn a grade of C in each course counted toward fulfilling major requirements
- Apply, be accepted into, and complete the Teacher Preparation Program.
- Student teach in a CTE-approved program.
- Hold a valid first aid card with CPR
- Complete 2,000 hours of paid work experience in the last six years.
- Provide documentation of occupational safety

Required Courses:

CTE 310 Introduction to Career & Technical Education	4
BME 346 Practicum: Basic Accounting	. 5
BME 450 Curriculum Development for Business and Marketing Education	. 4
BME 451 Methods & Materials for Teaching Information Technology	. 4
BME 452 Methods & Materials for Teaching Basic Business and Marketing	. 4
CTE 460 Business & Marketing Education Exit Assessment	
IT/CS 101 Computer Applications	-4
ECON 101 Economic Issues	. 5
BUS 241 Legal Environment of Business	. 5
FCSG 220 Leadership in Human Development	. 4
FCSG 320 Program Management & Planning	. 4
FCSG 379 Professional Development & Internship Planning	. 5
OCED 410 CTE School to Work Programs	. 4
ADMG 385 Business Communications	. 5
IT 260 Integrated Information Technology Application Projects	
FCSG 420 Program Promotion and Advertising	. 4
Total for the Business and Marketing Education Teaching Major	
Total for Professional Education Program51	l

Exhibit D

Physical Activity and Recreation Programming Minor

1. Provide a justification for the creation of this program: The Department of Physical Education, School, and Public Health (PESPH) and the Recreation and Tourism program in the Department of Family and Consumer Sciences are proposing a new minor for the Bachelor of Science in Physical Education and School Health degree. This minor is intended to meet student interest and demand that do not require a certification to teach in the schools. The purpose is to build new enrollment and meet market demand without requiring additional courses. Students will complete a minor that will be between 29-34 credits and includes a marketable certification.

Demand in the State: This minor is unique in the state of Washington because it includes core courses not only in recreation and physical activities, but also in pedagogy, tourism, and a certification of choice (WSI, Climbing Wall Instructor, Lifeguard, First Aid, or Wilderness First Responder). Currently, Eastern and Western Washington Universities do not offer tourism or pedagogical courses in their recreation management major or minors. According to the U.S. Bureau of Labor Statistics (2008), approximately 327,500 people were employed as activity directors in leadership roles in schools, camps, state agencies, and management of physical activities. The employment projection for 2018 is an increased demand of 15% of various physical activity surveying the demographic specific to the young and elderly.

Student Demand: In Winter quarter 2013, a survey was distributed to 91 students in two general education courses within PESPH. Results showed that 50% of students were interested in all of the non-education professional options including the proposed minor. 33% are interested in a major that encompasses outdoor education, sports, physical education, and physical activity. **See exhibit A for the actual survey results**.

Based on Centers for Disease Control (CDC) data, 35.7% of adults and approximately 17% of children and adolescents aged 2-19 years are obese. With these facts, there is a real potential for a new market for commercial and community-based organizations to develop specialized physical activity programs for children and adults (ACSM, 2013). The role of a fitness professional is interwoven with assessing, interpreting, and designing health and physical activity programs for people in numerous settings (Kravitz and Rockey, 2005). Job opportunities that may appeal to students lie in commercial or community-based agencies such as municipal parks and recreation departments, recreation programs, club fitness, hotels and resorts, country clubs, cruise ships, community colleges. Potential positions are activity coordinators or directors with YMCA/YWCA/Boys and Girls Clubs, cruise ships, camps, Alternative Wellness Programs, and Fitness Clubs. Students may become Physical Educators for Firemen, Police, and Government Agencies, Private Trainers, Aquatics Instructors, and manage Off-Site School Activity Programs.

Employer Demand: As noted, the employment projection for 2018 is an increased demand of 15% of various physical activities, especially for the demographic specific to the young and elderly, according to the Bureau of Labor Statistics, 2008. On a national level again, the Occupational Outlook Handbook cites growth of Recreation Workers as 19% (or about as fast as average) in the 2010-2020 decade (BLS, 2010).

The skills that minors will have do not fit precisely into a position that is represented on national and state labor categories. According to the 2011 Regional Needs Analysis Report from the Washington Higher Education Coordinating Board, job openings for "Fitness Trainers and Aerobics Instructors" will increase by 45% between 2010 and 2020. While the above may be the closest category, it is noteworthy that related categories are also in a growth modes; e.g., "Teachers and instructors, all others" [non-school] will increase by 30% over the decade.

A smaller number of positions may fall within the "Leisure and Hospitality" labor category. Within the Central and Southeast region of the state, these jobs are projected to grow by 11% between 2010 and 2020. It appears then, that job opportunities for those with a minor in Physical Activity and Recreation Programming, will be good to very good.

2. Attach a clean copy of the catalog narrative and program requirements. Include course number, course title, credits, pre-admission requirements and total credits. Also include a sample graduation plan.

Catalog Narrative: The interdisciplinary Physical Activity and Recreation Programming minor is designed for students who want to instruct and direct activities in various settings, such as parks and recreation, nonprofit organizations, cruise lines, resorts, and other active lifestyle organizations.

See Exhibit B for a 2 year graduation plan.

See Exhibit C for the Course numbers, course titles, credits, and total credits.

- 3. Please indicate how this new program will impact existing programs in your department and the university. This minor is meant to build new enrollment and meet market demand without requiring additional courses. Existing faculty will continue to teach the courses that are currently being offered and internal reallocation of funds will be used as needed without additional workload burden. All existing staff will do the paperwork.
- 4. Does this program include courses from outside the originating department? Yes. Has the affected department(s) agreed to allow course(s) to be used in the program? Yes. Attached are two supporting letters from Dr. Ken Briggs, PESPH Chair and Dr. Dorothy Chase, FCS Chair.
- 5. What are the Enrollment and Graduation Targets for the first five years? This is a new program that will need promotion and advertisement to increase the numbers. The numbers will only increase once students are aware there is another option other than teacher certification.

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Student Headcount	10	20	25	40	50+
(2 year Program)					
PESH FTE	200-230	400-460			
Recreation & Tourism FTE	160-220	320-440			
Program Grad	0	10	20	25	25+

6. Personnel:

Program PESH Faculty:

Name	Degree	Rank	Part-Time/Full-	% Effort in	Total Faculty
			Time	Program	FTE
Steve Jefferies	Ph.D.	Professor	Full-Time	2%	
Kirk Mathias	Ed.D.	Professor	Full-Time	3%	
Paul Stefan Ward	Ph.D.	Assistant Professor	Full-Time	10%	

Program Recreation and Tourism Faculty:

1 og um recention and rounding recently						
Name	Degree	Rank	Part-Time/Full-	% Effort in	Total	Faculty
			Time	Program	FTE	
Robert Perkins	Ed.D.	Professor/Co-Chair	Full-Time	10%		
Jeff Hagler	M.S.	Adjunct	Part-Time	10%		
Kenneth Cohen	Ph.D.	Associate Professor	Full-Time	10%		

Program Administration/Staff

Name	Title	Responsibilities	% Effort in	Total Staff FTE
			Program	
Ken Briggs	Ed.D. PESPH, Chair	Advise Program	5%	
		Director		
Dorothy Chase	Ph.D. Professor/Co-chair	Program Advisor	5%	
	FCS	Oversee the Minor for		
		Recreation and Tourism		
Heidi Henschel	Ed.D.	Program Advisor	5%	
Pellett	Physical Education &	Oversee the Minor for		
	School Health Director	Physical Education and		
		School Health		
Debra D'Acquisto,	Physical Activity Director,	Program Advisor	.5%	
M.A.	Staff			
Edith Fowler	Office Manager - PESPH	Paperwork for Physical	2%	
	-	Activity Minor –		
		Scheduling		
Alex Lange	Senior Secretary - FCS	Paperwork for Recreation	2%	

	and Tourism – Scheduling	

7. Program Expenses and Revenues: Please see the Summary Form Table. The foreseeability for expense would be to advertise the program. An estimated cost for rack cards would be \$300.00. 4-10-13 Revised

EXHIBIT A

PESH SPECIALIZATION: PHYSICAL ACTIVITY AND SPORT PROGRAMMING INTEREST SURVEY

>	Would you like to manage, direct, coordinate, design and deliver physical education based skills to adults? YesNo to youth/teens? YesNo
	Has anyone in your life inspired you to be more physically active? Yes No
>	Does a profession in physical education, other than working in the schools, interest you?
	YesNo
	Do you enjoy outdoor education? (i.e. rock climbing, hiking, mountain biking, water sports recreation) YesNo
Ch	eck the job opportunity areas that appeal to you FITNESS CLUB OWNER/MANAGER
	SPECIAL PROGRAMS DIRECTOR i.e. sports and teams
	YMCA/YWCA/BOYS AND GIRLS CLUB i.e. community centers
	FITNESS DIRECTOR
	COACH i.e. sports coach or lifestyle coach
	AQUATICS DIRECTOR/INSTRUCTOR/LIFEGUARD
	LIFESTYLE MANAGEMENT ORGANIZATION
	RECREATION DEPARTMENT i.e. seniors, kids, teens, adults
	OFF - SITE SCHOOL ACTIVITY PROGRAMS
	ALTERNATIVE WELLNESS PROGRAMS, i.e. yoga, massage therapy
	RESORTS/CRUISE SHIP ACTIVITY PROGRAMS/COUNTRY CLUBS/CAMPS
	ON-SITE WORK PLACES i.e. hospitals, corporations, spas, health clubs
	TEACHING SPORT SKILLS/ TEACHING LIFETIME PHYSICAL ACTIVITY SKILLS
	PHYSICAL EDUCATOR FOR FIREMEN/POLICE/GOVERNMENT AGENCIES
	PRIVATE TRAINER
	OUTDOOR RECREATION SPECIALIST
	OTHER
\triangleright	Would you be interested in a major that encompasses outdoor education, sports, physical education and
	physical activity? YesNo
	May we contact you? CWU e-mail

EXHIBIT B

Physical Activity and Recreation Programming Minor

First Year		
Fall	Winter	Spring
PESH 330 Positive Youth Development 3 RT 373E Resort Management 5 RT 300 Challenge Course 4 RT 381 Recreational Sports Management 3 Second Year	PESH 341 Effective Teaching 3 RT 484 Legal Liability Risk Management 4	PESH 343 Pedagogical Application of teaching Styles and Systematic Reflection 3 RT 330 Sustainable Resources for Rec and Tourism 3 RT 382 Community Rec 3 RT 431 Camp Programming 3
Fall	Winter	Spring
PESH 356 Teaching Lifelong Physical Activity Pursuits 3 RT 222 Recreation Activities and Programming 3 RT 484 Legal Liability Risk Management 4 RT 330 Sustainable Resources for Recand Tourism 3	RT 360 Outdoor Survival 3	PESH 456 Facilitating and Leading Adventure Activities in the Schools RT 487 Outdoor Issues 4 RT 431 Camp Programming 3
Note: Courses that meet every quarter: 1.PEF Fitness, PED Dance, PEID Individual/Dual Sports, PETS Team Sport and PEAQ Aquatics 1 2. FCSG 220 Leadership Skills 4 3. EMS 245 3	Note: 1. RT 330 Sustainable Resources meets Fall and Spring 3 2. RT 484 Legal Liability meets Fall and Winter 4 3. RT 393, variable quarters	
Green - Must take one course	Red - Must take one course	April 9, 2013

EXHIBIT C

Department of Physical Education, School, and Public Health, and Department of Family and Consumer Sciences Physical Activity and Recreation Programming Minor

Physical Education and School Health Program Director: Heidi Henschel Pellett, Ed.D. Recreation and Tourism Program Director and FCS Co-chair: Dorothy Chase, Ph.D.

Additional Program Advisors:

Debra D'Acquisto, MA, Director of Physical Activity Robert Perkins, Ed.D., Co-chair of Recreation and Tourism

Catalog Narrative

This interdisciplinary Physical Activity and Recreation Programming minor is designed for students who want to instruct and direct activities in various settings, such as parks and recreation, nonprofit organizations, cruise lines, resorts, and other active lifestyle organizations.

Admission Requirements

Total Credits

Applications are accepted throughout the academic year. To be admitted to the minor, all students must have a cumulative grade point average of a 2.75. For the application procedure, contact a program director in Physical Education and School Health or Recreation and Tourism to complete a specific application form. All courses in the minor require a grade of a C or better.

29-34

Required Cou	reae	
PESH 341	Characteristics of Effective PE Teaching	3
PESH 343	Pedagogical Application of Teaching Styles	3
1 L911 543	and Systematic Reflection	5
PESH 356	Teaching Lifelong Physical Activity Pursuits	3
PESH 456	Facilitating and Leading Adventure Activities	2
	in the Schools	
RT 484 Legal	Liability and Risk Management	4
Salaat ana fran	m the following	2
Select one from	in the following	3
RT 222	Recreation Activities and Programming	3
CI ((2)) DI		2
	hysical Activity Courses from the following	3
Categories: P	PEID (1), PEF (1), PEAQ (1), PETS (1), PED (1)	
	m the following	3- 4
FCSG 220	Leadership and Human Development	4
PESH 330	Positive Youth Development	3
Select one from	m the following	2- 4
	or Leadership Training	2
	enge Course Leadership	4
RT 360 Outdo	-	3
RT 431 Reside	ent Camp Programming	3
Salaat one from	m the following	2.5
RT 373E	Resort Management	5-5 5
	ational Sports Management	3
	nunity Recreation	3
	or Recreation Issues	3
K1 407 Outuo	of Activation issues	3
	cations totaling	
EMS 245	First Aid	3
	ing Wall Instructor	2
PE 115 Beginn		1
	nediate Climbing	1
PEAQ 320	Water Safety Instruction	3
PEAQ 221	0	3
RT 193 Adven	ture Certification	1 - 6
T . 1 G . 14	20.	

Exhibit E

Required Summary Page For All Proposed Majors, Minors, Specializations, and Certificates This form must accompany your proposal. BAS-ITAM Cybersecurity Specialization

Please address all questions. If it is not complete, the proposal and summary page will be returned to the originator.

1. Provide a justification for the creation of this program. (How will this program enhance the curriculum of your department/college and the university? What specific need(s) is (are) not being met in other programs? Please document the demand.)

President Obama stated in a recent State of the Union address, "America must also face the rapidly growing threat from cyber-attacks. We know hackers steal people's identities and infiltrate private mail. We know foreign countries and companies swipe our corporate secrets. Now our enemies are also seeking the ability to sabotage our power grid, our financial institutions, and our air traffic control systems. We cannot look back years from now and wonder why we did nothing in the face of real threats to our security and out economy" (Verton, 2013).

A specialization in cybersecurity and digital forensics trains computer professionals to protect computer systems from outside access by the unauthorized entities that President Obama describes. According to Sharon Nelson, president of Sensei Enterprises, a Fairfax-based computer forensics and legal technology firm, the call for workers skilled in this field "now goes across every vertical, no matter what industry you're talking about" (Halzak, 2012).

As Obama's address indicates, there are several factors that have dramatically and suddenly increased the need for skilled professionals in this field. Developments like the use of the cloud to store data and employees' use of mobile devices have increased the risks around information stored and exchanged within an organization. Specific industries are now hiring cybersecurity experts at increasing rates: public utility companies, national security agencies, food and water suppliers, financial services, and companies with intellectual property and proprietary information to protect. Projections indicate that the federal government, in particular, will be hiring an increased number of cybersecurity analysts to aid in the protection of sensitive databases and information systems (Occupation Outlook).

Although there is an increasing demand for cybersecurity professionals in many employment sectors, there are not enough professionals to fill this need. Cynthia Dion-Schwarz, deputy assistant director for computer an information science and engineering at the National Science Foundation (NSF), suggests that the responsibility lies with educational institutions: "The outlook is grim because we are not producing, from an education perspective, the people with the right skill sets to just have the entry-level skills needed in order to make progress in cybersecurity It's a pipeline issue . . . it's not a desire or capability issue (Corrin, 2012).

Not only is there a gap between the number of professionals needed based on the number of graduates our educational system is producing, but there is also an equity gap around those who are qualified. "There are fewer graduates in STEM areas, and women are particularly underrepresented – a big problem for a field that already lacks diversity" (Corrin, 2012).

Finally, it's well-known that employers seek workers with the following qualifications:

- Analytical Skills Cybersecurity professionals spend a great deal of time analyzing cyber threats, seeking out vulnerabilities, and tracking data use.
- Leadership Ability Leading a team of experts is often required of cybersecurity specialists.
- Problem-Solving Skills Finding and fixing problems is a big part of a cybersecurity job.
- Interpersonal Skills The ability to work well on a team is usually crucial in this field (Florida Tech, 2013).

The most valued cybersecurity professionals will need to demonstrate the critical thinking skills, highly developed communication tools, technical acumen, and overall interdisciplinary approach needed to address the constantly changing threats to global cybersecurity (Florida Tech, 2013).

A specialization in Cybersecurity through the ITAM Department will help fill the demand for cybersecurity professionals.

Current ITAM students are well versed upon graduation with the "soft" skills described above through courses in Business Communication and Report Writing; IT Security, Privacy, and Ethics; Network Management, Project Management, and Leadership and Supervision. A Cybersecurity specialization will allow our students more advanced courses and training to allow students to meet the demand for more advanced skills in this profession.

Locally at CWU, neither the Computer Science Department nor the Law & Justice Department offers a major, minor, or even more than one course that will allow our students an in-depth study of cybersecurity. CS has one Network Security course, but requires the following path to take the course: CS 112 Foundations of Computer Science → CS 301 Data Structures → CS 311 Computer Architecture I → CS 312 Computer Architecture II → CS 430 Introduction to Computer Security. Law & Justice has a single course, LAJ 460 Terrorism. LAJ 300 Administration of Criminal Justice is a recommended pre-requisite. None of these courses are offered online for our online BAS-ITAM students.

Of our current 557 ITAM majors, slightly over 200 students are female. Adding a Cybersecurity specialization will give our female students further depth of knowledge and additional options to pursue a career in a growing field.

Because the BAS-ITAM is only available to students with non-transferable technical degrees, only students admitted into the BAS-ITAM will have this specialization available to them for study.

Because it is a growing, relatively new field and because it crosses different job categories, the specific reporting of job demand becomes somewhat complex. Cybersecurity responsibilities fall to a variety of different experts in the field who work in different areas of the field: programming, databases, and networks.

Because of these challenges, reporting on the demand for cybersecurity jobs relies on research results related to cybersecurity needs in today's labor market and on the use of several categories. The job classifications that specifically include cybersecurity are computer and information systems managers, computer systems analysts, database administrators, network system administrators, computer support specialists and information security analysts, along with web developers and network managers. Economic Modeling Specialists Intl. (EMSI), a subscription service that provides high-quality employment data, economic analysis, and comprehensive impact analyses for colleges and universities, reports that jobs in these categories are on the rise. The occupational report in Table 1 lists the occupational categories, as reported by EMSI, that relate to the need for cybersecurity in <u>King and Pierce</u> counties (EMSI, 2013).

Regional Growth - Occupation Group

Occupation	2012 Jobs	2022 Jobs	Change	% Change
Computer and	7,323	9,184	1,861	25%
Information Systems				
Managers (11-3021)				
Computer Systems	11,068	14,118	3,050	28%
Analysts (15-1121)				
Database	2,066	2,833	767	37%
Administrators (15-				
1141)				
Network and	5,686	7,393	1,707	30%
Computer Systems				
Administrators (15-				
1142)				
Computer Support	12,011	15,576	3,565	30%
Specialists (15-1159)				
Information Security	9,202	11,904	2,702	29%
Analysts, Web				
Developers, and				
Computer Network				
Architects (15-1179)				

As the EMSI data indicates, the projected job growth in the fields related to cybersecurity shows a 25-30% increase of the next decade.

Presently the following community colleges have a certificate or minor in cybersecurity: Clover Park Technical College, Community Colleges of Spokane, Lake Washington Institute of Technology, Walla Walla Community College, and Whatcom Community College. The following 4-year institutions have a certificate or minor in cybersecurity: University of Washington and Washington State University (being developed in cooperation with Whatcom Community College) and perhaps Eastern Washington University, though finding information on their website made it difficult to determine if EWU actually has a program.

Neither UW or WSU has a BAS program to allow for non-transferrable degrees; additionally, the degree Whatcom Community College students will transfer into UW or WSU is an AS-T (Associate of Science – Transferable). Thus, the over 50% of students who graduate from a community college in the state who hold non-transferable technical degrees will have significantly increased times to graduation in pursuing a similar program through Whatcom CC, UW, or WSU.

For students with non-transferable technical degrees who have chosen CWU, a viable option for Cybersecurity does not exist.

2. Attach a clean copy of the catalog narrative and program requirements. Include course number, course title, credits, pre-admission requirements, and total credits (See last page for Catalog narrative). Also include a sample graduation plan.

Fall Quarter	Winter Quarter	Spring Quarter	Summer Quarter
IT 238	IT 336 & IT 338	IT 436	IT 438

3. Please indicate how this new program will impact existing programs in your department/college and the university. (Is this program replacing a deleted program or is it adding to your program offerings? If it is an additional program, how will the program be staffed? How will FTE's be affected in existing programs? Is

there long-term support for the program in terms of staffing and funding? Will faculty be reassigned from existing courses? Will the program impact enrollments in other departments or colleges, etc.?).

The Cybersecurity specialization will only have positive effects on ITAM, CEPS, and CWU. The FTES generated in this specialization will not detract from ITAM; rather, it might bring in new students to CWU.

The department hired Dr. Gary Rogers in Winter 2013 not only to support our Systems Analysis and Project Management courses, but to develop cybersecurity courses. Dr. Rogers spent many years in the network security arena while Chief of Telecommunications Standards for the Internal Revenue Service; additionally he advised other IRS projects on their network security requirements. After leaving the IRS, Dr. Rogers developed and taught the Information Security program at Middle Georgia State for five years. His most recent job was as a computer scientist for the United States Air Force working in the cybersecurity arena for three years. He has his Security+ and COMPTIA industry certification. Dr. Rogers is leading the department effort to move into this additional high demand area of IT.

This specialization will be initially capped at 25 students. If demand is higher, we will work with department and college resources; the cap will not be raised without additional faculty resources already in place.

- 4. Does this program include courses from outside the originating department? No.
- **5.** What are the Enrollment and Graduation Targets for the first five years? The courses will be taught in a 4-quarter sequence, allowing a new "cohort" to begin Fall quarters.

	AY 2013	AY 2014	AY 2015	AY 2016	AY 2017
Headcount	25	25	25	25	25
FTES	10.6	10.6	10.6	10.6	10.6

6. Who are the Program Personnel?

Name	Degree	Rank	Time	% Effort	FTEF
Gary Rogers	Ph.D.	NTT	Full-time	33%	.33
Libby Gibson	NA	Admin Support	Full-time	5%	.03

7. Program Expenses and Revenues

Pro	Program Expenses						
			Year 1	Year 2	Year 3	Year 4	Year n (full enrollment)
Administrative Sa (#FTE)/Benefits		Salaries	\$1000	\$1000	\$1000	\$1000	\$1000
Facu (#F1	ulty [E)/Benefits	Salaries	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
TA/ (#F1	RA TE)/Benefits	Salaries					
Cler (#F1	rical TE)/Benefits	Salaries					
Oth (#F1	er TE)/Benefits	Salaries					
Con	tract Services						

Goods and Services					
Travel					
Equipment (list equipment					
& cost)					
Lease or Acquisition					
Other (Itemize)					
Indirect (if applied to the					
program					
Total Costs	\$31,000	\$31,000	\$31,000	\$31,000	\$31,000
Program Revenues					
	Year 1	Year 2	Year 3	Year 4	Year n (full enrollment)
General Fund: State					
Support					
Tuition and Fees (total)	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000
Corporate					
Grants/Donations					
Internal Reallocation*					
Other Fund Source					
(specify)					
Total Revenue	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000

References

Corrin, A. (2012, October 26). Desperately seeking cybersecurity pros. *FCW*. Retrieved from http://fcw.com/articles/2012/10/26/cyber-workforce.aspx

EMSI. (2013). Retrieved January 31, 2013, from http://www.economicmodeling.com/analyst/

Florida Tech (2013, April 2). Retrieved from http://www.floridatechonline.com

Halzack, S. (2012, September 30). As demand rises for cybersecurity professionals, so does their pay. *Washington Post*. Retrieved from http://articles.washingtonpost.com/2012-09-30/business/35497573_1_cybersecurity-security-clearance-private-sector

Occupational Outlook Handbook: 2010-2011 Edition. (2010). U.S. Bureau of Labor Statistics (BLS).

Verton, D. (2013, February 13). Obama issues cybersecurity executive order. *Homeland Security Today*. Retrieved from http://www.hstoday.us/single-article/obama-issues-cybersecurity-executive-order/e5a22b7b1052eebf4e648c37db849341.html

BAS-ITAM Cybersecurity Specialization

The Cybersecurity specialization provides an opportunity for IT professionals to gain knowledge specific to the detection, protection, and recovery from attacks to an organization's information assets. When combined with the leadership/management skills classes in the BAS Core, this specialization will provide a thorough knowledge base for managers and technology leaders concerned with the operation and management of cybersecurity systems. This baccalaureate degree requires significant study in general education at the upper-division level. A professional/technical degree in a computer-related discipline is required for admission. Students not meeting the requirement of the degree in a computer-related discipline would need department permission.

Required Courses

Total Credits:	69-72
IT 490** Internship	7-10
IT 438 IT Risk Management	4
IT 436 Cyberattack/Defense	4
IT 351 Computer Networks	4
IT 338 Cybercrime	4
IT 336 Digital Forensics	4
IT 238 Cyberterrorism	4
BAS-ITAM Core Requirements	38

^{**}NOTE: Elective courses may be substituted for those who have more than 2,000 documented work experience in the technology field.

Exhibit F

Required Summary Page For All Proposed Majors, Minors, Specializations, and Certificates This form must accompany your proposal.

Cybersecurity Minor

Please address all questions. If it is not complete, the proposal and summary page will be returned to the originator.

1. Provide a justification for the creation of this program. (How will this program enhance the curriculum of your department/college and the university? What specific need(s) is (are) not being met in other programs? Please document the demand.)

President Obama stated in a recent State of the Union address, "America must also face the rapidly growing threat from cyber-attacks. We know hackers steal people's identities and infiltrate private mail. We know foreign countries and companies swipe our corporate secrets. Now our enemies are also seeking the ability to sabotage our power grid, our financial institutions, and our air traffic control systems. We cannot look back years from now and wonder why we did nothing in the face of real threats to our security and out economy" (Verton, 2013).

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Regional Growth – Occupation Group

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Computer and Information Systems Managers (11-3021)	7,323	9,184	1,861	25%
Computer Systems Analysts (15-1121)	11,068	14,118	3,050	28%
Database Administrators (15- 1141)	2,066	2,833	767	37%
Network and Computer Systems Administrators (15- 1142)	5,686	7,393	1,707	30%
Computer Support Specialists (15-1159)	12,011	15,576	3,565	30%
Information Security Analysts, Web Developers, and Computer Network Architects (15-1179)	9,202	11,904	2,702	29%

As the EMSI data indicates, the projected job growth in the fields related to cybersecurity shows a 25-30% increase of the next decade.

Presently the following community colleges have a certificate or minor in cybersecurity: Clover Park Technical College, Community Colleges of Spokane, Lake Washington Institute of Technology, Walla Walla Community College, and Whatcom Community College. The following 4-year institutions have a certificate or minor in cybersecurity: University of Washington and Washington State University (being developed in cooperation with Whatcom Community College) and perhaps Eastern Washington University, though finding information on their website made it difficult to determine if EWU actually has a program.

Neither UW or WSU has a BAS program to allow for non-transferrable degrees; additionally, the degree Whatcom Community College students will transfer into UW or WSU is an AS-T (Associate of Science – Transferable). Thus, the over 50% of students who graduate from a community college in the state who hold non-transferable technical degrees will have significantly increased times to graduation in pursuing a similar program through Whatcom CC, UW, or WSU.

For students who have chosen CWU, a viable option for Cybersecurity does not exist.

Students polled in our Network Management and Web/Database Management specializations overwhelmingly supported the Cybersecurity minor. While not overwhelming, students in our Administrative Management Specialization and Retail Management and Technology also expressed interest in this minor.

2. Attach a clean copy of the catalog narrative and program requirements. Include course number, course title, credits, pre-admission requirements, and total credits (See last page for Catalog narrative). Also include a sample graduation plan.

Fall Quarter	Winter Quarter	Spring Quarter	Summer Quarter
IT 238	IT 336 & IT 338	IT 436	IT 438

3. Please indicate how this new program will impact existing programs in your department/college and the university. (Is this program replacing a deleted program or is it adding to your program offerings? If it is an additional program, how will the program be staffed? How will FTE's be affected in existing programs? Is there long-term support for the program in terms of staffing and funding? Will faculty be reassigned from existing courses? Will the program impact enrollments in other departments or colleges, etc.?).

The Cybersecurity minor will only have positive effects on ITAM, CEPS, and CWU. The FTES generated in this minor will not detract from ITAM; rather, as a stand-alone minor with little duplication of our core or specialization courses, it is the only ITAM minor students can actually earn. It's possible that some other minors across campus might lose some FTES because students chose our minor over their minor, but students from College of Business, Computer Science, and Law & Justice are not required to take minor so little cannibalizing of FTES should occur in those areas for which we believe we will draw students.

The department hired Dr. Gary Rogers in Winter 2013 not only to support our Systems Analysis and Project Management courses, but to develop cybersecurity courses. Dr. Rogers spent many years in the network security arena while Chief of Telecommunications Standards for the Internal Revenue Service; additionally he advised other IRS projects on their network security requirements. After leaving the IRS, Dr. Rogers developed and taught the Information Security program at Middle Georgia State for five years. His most recent job was as a computer scientist for the United States Air Force working in the cybersecurity arena for three years. He has his Security+ and COMPTIA industry certification. Dr. Rogers is leading the department effort to move into this additional high demand area of IT.

This minor will be initially capped at 25 students. If demand is higher, we will work with department and college resources; the cap will not be raised without additional faculty resources already in place.

- 4. Does this program include courses from outside the originating department? No.
- **5.** What are the Enrollment and Graduation Targets for the first five years? The following numbers are based on indicated student demand from our Networking Administration and Web/Database Administration students. Additionally, the courses will be taught in a 4-quarter sequence, allowing a new "cohort" to begin Fall quarters.

	AY 2013	AY 2014	AY 2015	AY 2016	AY 2017
Headcount	25	25	25	25	25
FTES	10.6	10.6	10.6	10.6	10.6

6. Who are the Program Personnel?

Name	Degree	Rank	Time	% Effort	FTEF
Gary Rogers	Ph.D.	NTT	Full-time	33%	.33
Libby Gibson	NA	Admin Support	Full-time	5%	.03

7. Program Expenses and Revenues

Р	Program Expenses								
					Year 1	Year 2	Year 3	Year 4	Year n (full enrollment)
Α	Administrative Salaries \$1000 \$1000 \$1000 \$1000 \$1000								

(#FTE)/Benefits					
Faculty Salaries	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
(#FTE)/Benefits					
TA/RA Salaries					
(#FTE)/Benefits					
Clerical Salaries					
(#FTE)/Benefits					
Other Salaries					
(#FTE)/Benefits					
Contract Services					
Goods and Services					
Travel					
Equipment (list equipment					
& cost)					
Lease or Acquisition					
Other (Itemize)					
Indirect (if applied to the					
program					
Total Costs	\$31,000	\$31,000	\$31,000	\$31,000	\$31,000
Program Revenues					
	Year 1	Year 2	Year 3	Year 4	Year n (full enrollment)
General Fund: State					
Support					
Tuition and Fees (total)	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000
Corporate					
Grants/Donations					
Internal Reallocation*					
Other Fund Source					
(specify)					
Total Revenue	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000

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Cybersecurity Minor

Students fulfilling the requirements for an ITAM program degree specialization can earn a minor in Cybersecurity.

Required Courses

IT 238 Cyberterrorism	4
IT 336 Digital Forensics	4
IT 338 Cybercrime	4
IT 351 Computer Networks	4
IT 436 Cyberattack/Defense	4
IT 438 IT Risk Management	4

Total Credits: 24

Exhibit G

See attached

Summary of changes:

The main change to this document is removing procedure from policy. This is a requirement for all University policy and must be completed this year. This is a first pass at getting the procedure into its own document (see Exhibit H). Some other changes are:

- Equivalent course definition was added
- Reserve course policy was updated to reflect current practice
- Freshman was replaced with First-Year
- Housekeeping to update titles and office names
- Some minor editing to make the policy or procedure clearer.
- Change numbering in order to take the document out of being alphabetical to the original flow of the document.

Exhibit H

See attached

Exhibit I

Committee	Name	Department	Term
Academic Affairs Committee			
	Vacant		6/15/10 6/14/16
CEPS – 1 vacancy	vacant		6/15/13 – 6/14/16
COTS – 2 vacancies	Penglin Wang	Anthropology	6/15/13 - 6/14/16
	Vacant		6/15/13 - 6/14/16
CAH – 1 vacancy	Vacant		6/15/13 – 6/14/16
COB – 2 vacancies	Thomas Tenerelli	Economics	6/15/13 – 6/14/16
	Vacant		6/15/13 - 6/14/16
Bylaws and Academic Code	Vacant		C/15/12 C/14/1C
1 vacancy - senator	vacani		6/15/13 – 6/14/16
Curriculum Committee			
COTS – 2 vacancies	Suzanne Little	Psychology	6/15/13 - 6/14/16
	Vacant		6/15/13 - 6/14/16
CEPS – 1 vacancy	Teri Walker	TEACH	6/15/12 6/14/16
CEPS - I VACATICY	Ten waren	TEACH	6/15/13 – 6/14/16
Evaluation & Assessment Committee			
COB – 1 vacancy	Vacant		6/15/13 – 6/14/16
,			0,10,10 0,11,10
General Education Committee			
CAH – 2 vacancies	Phil Backlund	Communication	6/15/13 – 6/14/16
	Jay Ball	Theatre Arts	6/15/13 – 6/14/16
		550	
CEPS – 2 vacancies	Kelly Benson	EFC	6/15/13 - 6/14/16
	Kimberly McBride	PESPH	6/15/13 – 6/14/15
COB – 2 vacancies	Toni Sipic	Economics	6/15/13 – 6/14/16
	Vacant		6/15/13 - 6/14/15
COTC 1 vacanav	Vacant		C/15/10 C/14/14
COTS – 1 vacancy	Vacant		6/15/13 – 6/14/16
Dispute & Allegations Committee			
1 regular member	Stephanie Stein	Psychology	6/15/13 – 6/14/16
4 alternate vacancies	Holly Johnson	Computer Science	6/15/13 - 6/14/16
	Todd Kroll	Chemistry	6/15/13 - 6/14/16
	Mary Wise	Library	6/15/13 - 6/14/16
	Vacant		6/15/13 - 6/14/16

Exhibit J

2012-2013 CWU GENERAL EDUCATION COMMITTEE INTEGRATED PROPOSAL FOR ALTERATIONS TO THE CURRENT SET OF CWU GENERAL EDUCATION REQUIREMENTS. Draft May 20, 2013

Introduction:

The Faculty Senate General Education Committee proposes a number of changes to the current General Education course structure for the specific purpose of making the current structure more coherent, functional, and assessable.

The changes proposed to the basic skills requirements are reflective of a lengthy and careful re-examination of the academic and intellectual skills students must acquire to become functioning and effective members of the university community and of society as a whole. The proposed modifications to basic skills recognize changes in secondary education and technological advances which have occurred in the twenty years since the last overhaul of the General Education Program. These changes have been made in consultation with the departments currently associated with basic skills courses.

As the General Education program stands currently, an absence of learner outcomes associated with the breadth areas has resulted in disparate groupings of courses which seem to have few common features. When a department proposes to add a course to the current system, the General Education Committee lacks the means of evaluating the proposed course's suitability for general education and/or for a particular breadth area. As a result, the committee proposes learner outcomes for each of the breadth areas. These learner outcomes are intended to be the primary learner outcomes for courses included in any specific breadth area. Departments are free to add additional outcomes specific to their courses; however, the primary focus of these courses will be the outcomes associated with the particular breadth area.

The committee has intentionally removed all mention of specific courses currently associated with basic skills requirements in order to avoid any sense of ownership associated with basic skills. Any departments will be free to propose a course designed to fulfill a basic skills requirement.

As noted earlier, the purpose of the proposed changes is to make the current structure more coherent, functional, and assessable. To this end, the Faculty Senate General Education Committee voted unanimously on the following stipulations.

- 1. The proposal is to be voted on in the whole.
- 2. No courses will be grandfathered into the new program. Departments will be required to resubmit course proposals for considerations based on the new program requirements and learner outcomes.

Recognizing the complexity of the endeavor if the proposal is approved, we anticipate the revised General Education structure will go into effect in September 2014.

Basic Skills Requirements.

Academic Advising Seminar:

Learner Outcomes. Students will be able to:

- 1. Describe CWU students' rights and responsibilities, classroom expectations, and the importance of taking ownership of one's education.
- 2. Reflect on their own experiences that influenced their decision to attend the university and identify their anticipated needs for success.
- 3. Demonstrate knowledge and use of academic resources at CWU.
- 4. Explain CWU's general education requirements, graduation requirements, the process of declaring a major/minor, and the purpose of a liberal arts education.
- 5. Illustrate basic understanding of CWU library information resources.
- 6. Show the ability to access and utilize CWU web resources, such as GroupWise, Blackboard, and SAFARI.
- 7. Recognize the importance of extra-curricular opportunities to enhance your college experience.

Basic Academic Writing: (a minimum grade of C- is required in Basic Academic Writing before taking Academic Writing and the Research Paper or any Writing intensive (W) course)

Learner Outcomes. Students will be able to:

- 1. Read critically <u>and rhetorically</u>, distinguishing central ideas from evidence; identifying the author's purpose, assumptions, and attitudes; and using prior knowledge and experience to identify issues.
- 2. Respond appropriately to different kinds of rhetorical situations by considering the relevant context, focusing on a purpose, and addressing a specific audience.
- 3. Synthesize responses to common issues, various perspectives on a topic, or solutions to a problem and draw reasonable conclusions based on this synthesis.
- 4. Express ideas in clear, coherent, and balanced sentences and paragraphs.
- 5. Demonstrate the ability to follow Follow the conventions of standard Academic English, demonstrating control of grammar, usage, and punctuation rules.

Academic Writing and the Research Paper:

Learner Outcomes. Students will be able to:

- 1. Identify assumptions and criteria to use when analyzing the writing of others.
- 2. Take a position on an issue by developing a focused assertion based on a shared assumption, presenting evidence in support of a line of reasoning, addressing divergent stances on the issue, and using a variety of rhetorical appeals.
- 2. Prepare and implement a research plan that outlines the quantity and quality of sources needed and the use of a variety of research methods.
- 3. Cite and document sources precisely and effectively, noting the connection between the form and of citation and/or documentation and rhetorical impact.
- 4. Describe the interrelationship between style and meaning in the writing of others and adjust style to enhance meaning in their own writing.
- 5. Demonstrate proficiency in the conventions of standard Academic English, demonstrating control of grammar, usage, and punctuation rules.
- 5. Craft prose that conforms to academic conventions and to expectations regarding clarity, coherence, and unity.

Computer Fundamentals:

Learner Outcomes. Students will be able to:

- 1. Create documents using word processing software.
- 2. Create spreadsheets using a spreadsheet application.
- 3. Create a computer based presentation using presentation software.
- 4. Extract information from a database using database software.

Rationale: These are computer skills that are used by students in many General Education courses. Many majors and professions will also require these skills.

Foreign Language Requirement: Required—2 years of one high school foreign language or 1 year of college—Learner Outcomes. Students will be able to:

- 1. Demonstrate comprehension of common structures and everyday vocabulary in spoken and written forms of the target language.
- 2. Demonstrate production of common structures and everyday vocabulary in spoken and written forms of the target language.
- 3. Demonstrate knowledge of the most common cultural features of the country or countries in which the target language is spoken.

Basic Quantitative Skills: Students must pass a Basic Quantitative Skills course or achieve a minimum established score on a Quantitative Literacy Assessment Exam to fulfill the Basic Quantitative Skills requirement)—Goal: Develop the basic tools necessary for quantitative literacy.

Learner Outcomes. Students will be able to:

- 1. Use proportional reasoning to solve and analyze problems involving "per unit" quantities, indices and percentages.
- 2. Analyze, interpret and solve problems related to personal finance.
- 3. Interpret percentages, fractions and ratios as appropriate probabilities.
- 4. Use probability to analyze risks and their portrayal in the media.
- 5. Create and interpret basic statistical summaries.
- 6. Compare and contrast the behavior of various growth models.

Rationale: That our students "need" mathematics is a common assertion. What remains unclear, however, is what *type* of math they need. Do all students need the algebra skills necessary to succeed in calculus? Should every college-educated citizen to be able to use the quadratic formula to solve quadratic equations? Or would our society and students be better served by understanding conditional probability? Or being able to read and comment critically on an article on the ramifications of changing the retirement age? Or understanding that the plural of anecdote is not data? The committee feels that this second type of math, often called quantitative literacy, is a more valuable skill for all students, and as a result, the committee feels that our students are better served by either taking a course in basic quantitative literacy skills or by passing a quantitative literacy test.

Quantitative Literacy course requirement: Note: Students are urged to take a quantitative literacy (Q) class that is also a breadth requirement course or a quantitative literacy (Q) course in their selected major. Goal: Apply the concepts and tools of Basic Quantitative Skills in context.

Learner Outcomes. Students will be able to:

- 1. Read, interpret and generate graphical representations of relevant data.
- 2. In context, describe the uses and limitations of statistical data.
- 3. Analyze and critique claims involving quantitative data.
- 4. Interpret and explain quantitative relationships expressed in symbols.

Rationale: In addition to the basic skills, students need to use quantitative literacy in context. It is in these contests that these important skills are truly learned. As a result, all students should take a class where the basic skills are practiced *in context*.

Critical Thinking course requirement: Goal: Be able to analyze arguments and their constituent parts, as well as be aware of the assumptions one makes in an argument.

Learner Outcomes: Students will be able to:

- 1. Accurately summarize an argument, identifying its thesis, premises, and assumptions.
- 2. State the general distinction between the truth of an argument's premises and the validity or strength of its reasoning; and display awareness of this is in their writing.
- 3. Identify whether a given argument is deductive or inductive, and accordingly evaluate it for either validity or soundness of the strength and cogency; and recognize whether it commits any common argumentative fallacies.
- 4. Display awareness of their own assumptions, and a willingness to question them; and hence an ability and willingness to engage seriously and respectfully with others who disagree with those assumptions.
- 5. Show awareness and tolerance of complexity; that is, be able to take a reasoned position on a complex question while acknowledging that their position might be incorrect.

Rationale: The committee feels that the current reasoning requirement should be split apart into two components: a quantitative literacy requirement and a critical thinking requirement.

- a. Quantitative Literacy is best learned in context, and as a result, such classes should not be the sole responsibility of the math department. Quantitatively literate students are prepared to analyze arguments involving quantitative claims. Thus, requiring such a course in the General Education program ensures that our students will be well-prepared, thoughtful citizens.
- b. Critical Thinking. In addition to analyzing arguments involving quantitative claims, students need to be able to analyze more general arguments. As a result, the committee feels that a course in critical thinking, involving analysis of the logical structure of arguments, is necessary. One of the goals of such a class is to make students aware of the distinction between facts and assumptions.

Writing Requirement: Note: Students are urged to take a writing intensive (W) class that is also a breadth requirement course or a writing intensive (W) course in their selected major.

- 1. Require Basic Academic Writing (a minimum grade of C-) as a prerequisite for general education writing intensive (W) courses.
- 2. Require three (3) writing intensive (W) courses in the General Education program for graduation.
 - a. Writing intensive courses must include at least seven pages of assigned writing that is assessed for content and mechanics (grammar, spelling, punctuation, and organization).
- 3. Departments will complete an assessment of student writing in the major. Note: The means by which students' writing in their major courses is assessed is to be determined by the departments and approved by the General Education Committee and may be specific to individual majors.

Possible assessment models include:

- a. Compilation of a portfolio of student writing to be included in a student's end of the major assessment.
- b. Create or commission a "writing in the major" course that teaches and assesses the type/forms of writing used specifically in the major.
- c. Establish designed writing intensive courses in the major, similar to those in the General Education Program, in which writing is a significant aspect of the courses' learning outcomes and assessment.

Explanation and Rationale for changes to the Writing Requirement:

Part 1: Basic Academic Writing will become a prerequisite to all writing intensive (W) courses. Rationale:

- CWU puts itself at a disadvantage by assessing student writing (for NWCCU and other accrediting organizations) in writing intensive courses which students take before they have completed Basic Academic Writing and Academic Writing and the Research Paper.
- Writing intensive (W) courses are intended to reinforce skills learned in Basic Academic Writing and Academic Writing and the Research Paper. According to Scott Carlton, Interim Registrar and former Director of Academic Advising Services, to require both Basic Academic Writing and Academic Writing and the Research Paper as prerequisites to all writing intensive courses would create a significant logjam for students trying to complete their coursework in four years.
- Although requiring Basic Academic Writing as a prerequisite to all writing intensive (W) courses will create some problems in students' progress to degree, we believe those problems will be mitigated by the second part of the proposal.

Part 2: The number of writing intensive (W) courses in General Education will be reduced from four (4) to three (3). Rationale:

- The writing intensive (W) course requirement was established for the purpose of reinforcing skills learned in college-level composition courses, to ensure that students write on a regular basis in their general education courses, and to assist in the institutional assessment of writing in the General Education Program.
- The reduction in the number of required writing intensive (W) courses is intended to alleviate the logiam created by requiring Basic Academic Writing as a prerequisite to all writing intensive courses.
- However, the reduction in writing intensive courses runs counter to the expressed intentions of the writing intensive (W) course requirement. The solution proposed to this reduction is outlined in Part 3 of the proposal.

Part 3: Establishes a graduation requirement that all departments will complete an assessment of student writing in their majors.

Explanation:

- The means by which students writing in their major courses is assessed is to be determined by the departments and approved by the General Education Committee and may be specific to individual majors.
- One possible assessment model that might be used is the compilation of a portfolio of student writing to be included in a student's end of the major assessment.
- Using another model, departments may also choose to create or commission a "writing in the major" course that teaches and assesses the type/forms of writing used specifically in the major. e.g. A Public Relations major would be expected to produce press releases, reports, etc. while a chemistry major might be expected to produce lab reports, experiment proposals, research papers, etc.
- A third might be establishing designated writing intensive courses in the major, similar to those in the General Education Program, in which writing is a significant aspect of the courses' learning outcomes and assessment. These courses would be most effective if they were required for all majors and include a designated writing outcome and assessment so that all instructors of the course would be required to fulfill the requirement. In this way, students could be assured of the experience of discipline/major-based writing no matter who taught the course.

Rationale:

- The additional graduation requirement would compensate for the elimination of one writing intensive course in general education.
- It would also assist students in becoming more literate in their chosen careers. In past alumni surveys, students were asked about things they wished they had learned more about or had more experience with. Many students listed writing in their major and stated that they felt inadequately prepared for writing in their chosen career field.
- Additionally, the university has frequently expressed a belief in the significance of "teaching writing across the curriculum." The addition of this graduation requirement would demonstrate the university's commitment to this important educational goal.

Proposing courses for the basic or breadth areas:

If a department wishes to propose a course for a basic skill or breadth area, department must:

- 1. Identify the block for the proposed course.
- 2. Describe in detail how the primary learner outcomes of the course meet the general education learner outcomes identified for that block.
- 3. Provide a detailed sample syllabus that highlights sections that will be common to all syllabi used for this course.
- 4. Provide documentation for the ways in which the learner outcomes will be assessed.

Note: Individual courses *may* include additional learner outcomes specific to the course, but *must* include as their primary learner outcomes those associated with the basic or breadth area under which the course is located.

BREADTH AREAS

SOCIAL AND BEHAVIORAL SCIENCES GENERAL EDUCATION

Perspectives on the Cultures and Experiences of the United States.

Learner Outcomes. Students will be able to:

- 1. Identify the influence of the various institutions, cultures and traditions of the United States.
- 2. Critically analyze ways in which the past affects the present and future.
- 3. Articulate the requirements of informed citizenship based on analysis of social, economic and/or political processes issues and events.
- 4. Apply critical thinking and ethical reasoning to individual and collective decision making.

Perspectives on World Cultures.

Learner Outcomes. Students will be able to:

- 1. Identify the influence of the various institutions,k cultures and traditions of nations, groups or societies outside the United States. Identify basic principles and institutions that underlie the cultures and traditions of nations, groups or societies of the world.
- 2. Critically analyze the dimensions of human diversity and similarity within and outside the United States across different social groups throughout the world.
- 3. Articulate contemporary national and transnational issues that provide perspective on one's relationship to world cultures issues and processes that cross national boundaries, and inform perspectives on one's own relationships to other social groups.
- 4. Apply critical thinking and ethical reasoning to individual and collective decision making.

Foundations of Human Adaptations and Behavior.

Learner Outcomes. Students will be able to:

- 1. Identify basic principles which that underlie human interaction.
- 2. Critically analyze the fundamental patterns of human interaction with natural and man human-made environments.
- 3. Articulate ways in which we can to foster a better understanding of the human condition by analyzing the informed judgments of how humans interact with their immediate and distal environments ways in which humans determine and respond to significant issues.
- 4. Explain and apply scientific methods to investigate and analyze individual, groups or institutional behavior.

ARTS AND HUMANITIES GENERAL EDUCATION

Literature and the Humanities.

Learner Outcomes. Students will be able to:

- 1. Read and respond in oral and written forms to literary works from a variety of cultures.
- 2. Examine artifacts with an awareness of the cultural context in which they were produced.
- 3. Read and respond in oral and written forms to literary works of different genres.
- 4. Synthesize one's understanding of past humanistic knowledge with one's current knowledge, making connections between past and present.

The Aesthetic Experience.

Learner Outcomes. Students will be able to:

- 1. Acquire a vocabulary for the discussion of aesthetic genres.
- 2. Demonstrate an understanding of aesthetic activities within their historical, artistic, and cultural traditions.
- 3. Demonstrate an understanding of several artistic genres and how they relate to one another.
- 4. Apply aesthetic judgment and critical thinking by experiencing and evaluating works of art.

Religions and Philosophies of the World.

Learner Outcomes. Students will be able to:

- 1. Identify their own linguistic, conceptual and normative presuppositions.
- 2. Analyze alternative ways of articulating and interpreting human experience.
- 3. Reflect on the implications of these frameworks in the wider social and political sphere.
- 4. Integrate unfamiliar vocabularies, principles, and systems of thought into their existing ideas.
- 5. Critically evaluate their use of language, perception of reality, and values.

NATURAL SCIENCES GENERAL EDUCATION

Learner Outcomes for all Natural Sciences general education courses. Students will be able to:

- 1. Demonstrate how scientific discovery and research contribute to our lives.
- 2. Recognize the natural sciences as a system in which observations and measurement must ultimately verify theories that explain and predict natural phenomena.
- 3. Distinguish between data and analysis.
- 4. Apply mathematical and quantitative skills to solve problems in the natural sciences.

5. Engage in systematic critical thinking (analysis, inference, evaluation, induction, deduction).

In addition, each of the following breadth areas also has specific learner outcomes:

Fundamental Disciplines of Physical and Biological Sciences

Learner Outcomes. Students will be able to:

- 1. Make inquiry-driven laboratory and/or field observations.
- 2. Rigorously describe and analyze fundamental processes and components of one or more natural systems.

Patterns and Connections in the Natural World

Learner Outcomes. Students will be able to:

- 1. Demonstrate an understanding of conceptual models of complex natural systems.
- 2. Analyze the processes and cause-effect relationships in complex natural systems.

Application to Natural Sciences

Learner Outcomes. Students will be able to:

- 1. Articulate the scientific or technological basis of real-world issues.
- 2. Use scientific data and method to accurately describe or predict consequences of technology on natural systems.
- 3. Make informed decisions about real-world issues based on an understanding of the underlying science.
- 4. Apply scientific principles to real-world issues.