THE UNIVERSITY OF WISCONSIN-MILWAUKEE
College of Engineering and Applied Science

F A C U L T Y   M E E T I N G

Friday, October 28, 2016   1:30 P.M.   EMS E180

A G E N D A

I.   ANNOUNCEMENTS

II.   INFORMAL REPORTS – See Attachment 1

   A. Opportunity for questions regarding Informal Reports

III.   AUTOMATIC CONSENT BUSINESS

   A. Course Modifications – See Attachment 2

   B.   Updates to the M.S. Tracks – See Attachment 3

   C.   Minutes of the September 30, 2016 Meeting

IV.   NEW BUSINESS

   A. Notice of Intent for B.S. in Applied Computing – See Attachment 4

   B. M.S. in Computer Science Program Change – See Attachment 5

   C. Update on CEAS Budget

V.   COMMITTEE OF THE WHOLE DISCUSSION

   A. Expectations of Department Chairs – See Attachment 6

VI.   GENERAL GOOD AND WELFARE

VII.   ADJOURNMENT

                          John R. Reisel, Secretary
                          CEAS Faculty

JRR
Attachments

INFORMAL REPORTS

Office of Student Services – Todd Johnson
No Report

Career Services – Juli Pickering
No Report

Curriculum Committee – Prof. Church
No Report

Graduate Program Subcommittee – Prof. Lopez
No Report

Academic Planning Committee – Prof. Misra
No Report

Biomedical and Health Informatics – Prof. McRoy
No Report

Graduate Faculty Committee – Prof. Hosseini
Dissertator Status and Graduate Fellowship Awards:
GFC met on Oct. 17, 2016 and discussed Dissertator Status and Graduate Fellowship Awards terms.
Research Ranking;
Hosseini, a member of the UWM Research Policy Committee (RPC), reported to GFC that RPC had a discussion on ranking research universities based on different metrics. It was discussed that rankings that use number of publications and number of PhD students, UWM, generally speaking does well. But rankings that use funding as a metric, UWM usually does not do well. It was indicated that major funding is in multidisciplinary work that is what UWM needs to engage more.

Faculty Senate – Prof. Reisel

The Faculty Senate approved the creation of SAAPs involving the use of shared research facilities and sponsored program fixed price contract close outs. If those impact you, you should read the SAAPs - they can be found on the Secretary of the University's website (http://www4.uwm.edu/secu/policies/saap/index.cfm).

The Senate also approved a new grading deadline policy. Course grades should be submitted within 4 business days of the completion of the final exam period.

The Senate also considered and passed a resolution to protest the Board of Regents actions compelling UWM (and all system campuses) to pass post-tenure review policies that were not compliant with AAUP standards on academic freedom. The Senate then subsequently passed the Post-Tenure Review Procedure for UWM. The PTR document now gets forwarded to the UW System for consideration by the Board of Regents in their December meeting. If the BoR approves the procedure, departments should prepare to enact the policy beginning in the 2017-18 academic year.

COURSE CHANGES

ELECENG 335 ELECTRONICS II, 4 cr., U
        CMOS Logic Gates, Differential and multistage amplifiers, IC techniques,
        frequency response, feedback, digital circuits. Counts as repeat of
        ElecEng 332.
        Prereq: ElecEng 330(P), 310(C).

had been

ELECENG 335 ELECTRONICS II, 4 cr., U
        Differential and multistage amplifiers, IC techniques, frequency response.
        Counts as repeat of ElecEng 332.
        Prereq: ElecEng 330(P), 310(C).

Updates to M.S. Concentration Tracks

The proposed list of courses acceptable to completing a concentration for an M.S. degree can be found on the following pages, with the current list following the proposed list.

CIVIL ENGINEERING CONCENTRATION

Minimum of 15 graduate credits in Civil and Environmental Engineering courses numbered between 701 and 999, excluding 888 and 995.

Please check the courses that the student has completed
___ Civ Eng 701 Advanced Strength of Materials, 3 cr
___ Civ Eng 702 Elastic Stability, 3 cr
___ Civ Eng 708 Fate and Transport of Micro and Nano Particles in the Environment, 3 cr
___ Civ Eng 710 Industrial Waste Treatment, 3 cr
___ Civ Eng 711 Water Resource Planning and Systems Analysis, 3 cr
___ Civ Eng 712 Ground Water Flow and Seepage, 3 cr
___ Civ Eng 714 Unit Operations in Environmental Engineering, 3 cr
___ Civ Eng 716 Sediment Transport, 3 cr
___ Civ Eng 717 Open Channel Flow, 3 cr
___ Civ Eng 718 Biological Processes for Water and Wastewater Treatment, 3 cr
___ Civ Eng 719 Pollutant Dispersion Processes, 3 cr
___ Civ Eng 721 Advanced Water Analysis, 3 cr
___ Civ Eng 731 Properties of Concrete, 3 cr
___ Civ Eng 735 Advanced Soil Mechanics, 3 cr
___ Civ Eng 755 Soil and Foundation Dynamics, 3 cr
___ Civ Eng 756 Advanced Foundation Engineering, 3 cr
___ Civ Eng 761 Advanced Structural Analysis, 3 cr
___ Civ Eng 771 Advanced Concrete Design, 3 cr
___ Civ Eng 772 Advanced Steel Design, 3 cr
___ Civ Eng 775 Analysis and Design of Bridges, 3 cr
___ Civ Eng 777 Design of Multistory Buildings, 3 cr
___ Civ Eng 785 Dynamics of Structures, 3 cr
___ Civ Eng 790 Transportation Systems Design, 3 cr
___ Civ Eng 792 Methods of Transportation Analysis, 3 cr
___ Civ Eng 794 Traffic Planning and Operations, 3 cr
___ Civ Eng 804 Theory of Plasticity, 3 cr
___ Civ Eng 880 Bioengineering Seminar, 1 cr
___ Civ Eng 890 Advanced Topics in Engineering Mechanics, 1 - 3 cr
___ Civ Eng 891 Advanced Topics in Civil Engineering, 1 - 3 cr
___ Civ Eng 940 Topics in Transportation, 3 cr
___ Civ Eng 990 Master's Thesis, 1 - 9 cr*
___ Civ Eng 999 Advanced Independent Study, 1 – 3 cr*

* A maximum of 3 credits each of Civ Eng 990 and 999 may be included.

EFFECTIVE: Spring 2017

ELECTRICAL AND COMPUTER ENGINEERING CONCENTRATION

Minimum of 15 graduate credits in Electrical Engineering courses numbered between 701 and 999, excluding 888 and 995.

Please check the courses that the student has completed
___ ElecEng 701 Advanced Linear System Analysis, 3 cr
___ ElecEng 710 Artificial Intelligence, 3 cr
___ ElecEng 711 Pattern Recognition – Statistical, Neural, & Fuzzy Approaches, 3 cr
___ ElecEng 712 Image Processing, 3 cr
___ ElecEng 713 Computer Vision, 3 cr
___ ElecEng 716 Tomography: Imaging and Image Reconstruction, 3 cr
___ ElecEng 717 Tomography: Image Quality and Artifact Correction, 3 cr
___ ElecEng 718 Nonlinear Control Systems, 3 cr
___ ElecEng 721 Digital Communications, 3 cr
___ ElecEng 737 Medical Imaging Signals and Systems, 3 cr
___ ElecEng 741 Electromagnetic Fields and Waves, 3 cr
___ ElecEng 742 Electromagnetic Wave Theory, 3 cr
___ ElecEng 751 Switching & Automata Theory, 3 cr
___ ElecEng 755 Information and Coding Theory, 3 cr
___ ElecEng 758 Advanced Computer Architecture, 3 cr
___ ElecEng 760 Computer Systems Performance Evaluation, 3 cr
___ ElecEng 762 Fault-Tolerant Computing, 3 cr
___ ElecEng 765 Introduction to Fourier Optics and Optical Signal Processing, 3 cr
___ ElecEng 766 Introduction to Nonlinear Optics, 3 cr
___ ElecEng 771 Advanced Electric Power Systems Theory, 3 cr
___ ElecEng 781 Advanced Synchronous Machinery, 3 cr
___ ElecEng 810 Advanced Digital Signal Processing, 3 cr
___ ElecEng 816 Optimal Control Theory, 3 cr
___ ElecEng 819 Adaptive and Self-Optimizing Control Theory, 3 cr
___ ElecEng 872 Computer Analysis of Electric Power Systems, 3 cr
___ ElecEng 880 Bioengineering Seminar, 1 cr
___ ElecEng 890 Special Topics, 3 cr
___ ElecEng 990 Master's Thesis, 1 - 9 cr*
___ ElecEng 999 Advanced Independent Study, 1 – 3 cr*

* A maximum of 3 credits each of ElecEng 990 and 999 may be included.

EFFECTIVE: Spring 2017

ENERGY ENGINEERING CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ MechEng 432 Internal Combustion Engines, 3 cr
___ MechEng 434 Air Conditioning System Design, 3 cr
___ MechEng 435 Power Plant Theory and Design, 3 cr
___ MechEng 436 Solar Engineering, 3 cr
___ ElecEng 471 Electrical Power Systems, 3 cr
___ ElecEng 572 Power Electronics, 3 cr
___ MechEng/ElecEng 574 Intermediate Control Systems, 3 cr
___ ElecEng 575 Analysis of Electric machines and Motor Drives, 3 cr
___ MechEng/ElecEng 701 Advanced Linear System Analysis, 3 cr
___ MechEng 702 Advanced Engineering Thermodynamics, 3 cr
___ MechEng 703 Principles of Combustion, 3 cr
___ MechEng 710 Advanced Transport Processes, 3 cr
___ MechEng 711 Thermal Radiation and Conduction, 3 cr
___ MechEng 712 Convection Heat and Mass Transfer, 3 cr
___ MechEng 714 Energy Transport in Microscale Systems, 3 cr
___ MechEng 716 Two-Phase Flow, 3 cr
___ MechEng/ElecEng 718 Nonlinear Control Systems, 3 cr
___ MechEng 721 Fundamentals of Fluid Flow, 3 cr
___ MechEng 722 Advanced Fluid Mechanics, 3 cr
___ MechEng 723 Computational Fluid Dynamics and Heat Transfer, 3 cr
___ MechEng 725 Fluid Power and Turbomachinery, 2 cr
___ ElecEng 781 Advanced Synchronous Machinery, 3 cr
___ ElecEng 816 Optimal Control Theory, 3 cr
___ MechEng/ElecEng 819 Adaptive Control Theory, 3 cr
___ ElecEng 872 Computer Analysis of Electric Power Systems, 3 cr
___ ElecEng 890 Special Topics: Advanced Power Electronics subtitle, 3 cr

EFFECTIVE: Spring 2017

ENGINEERING MECHANICS CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ Civ Eng 401 Intermediate Strength of Materials, 3 cr
___ Civ Eng 463 Introduction to Finite Elements, 3 cr
___ Civ Eng 466 Mechanics of Composite Materials, 3 cr
___ Civ Eng 469 Introduction to Biomedical Engineering, 3 cr
___ Civ Eng 502 Experimental Stress Analysis, 3 cr
___ Civ Eng 580 Engineering Analysis in Applied Mechanics, 3 cr
___ Civ Eng 701 Advanced Strength of Materials, 3 cr
___ Civ Eng 702 Elastic Stability, 3 cr
___ Civ Eng 725 Finite Element Methods in Engineering, 3 cr
___ Civ Eng 726 Mechanical Vibrations, 3 cr
___ Civ Eng 732 Fatigue in Engineering Materials, 3 cr
___ Civ Eng 773 Advanced Dynamics, 3 cr
___ Civ Eng 774 Shock and Vibration Analysis, 3 cr
___ Civ Eng 804 Theory of Plasticity, 3 cr
___ Civ Eng 805 Applied Elasticity, 3 cr
___ Civ Eng 880 Bioengineering Seminar, 1 cr
___ Civ Eng 890 Advanced Topics in Engineering Mechanics, 1 - 3 cr
___ Civ Eng 990 Master's Thesis, 1 - 9 cr*
___ Civ Eng 999 Advanced Independent Study, 1 - 3 cr*

* A maximum of 3 credits each of Civ Eng 990 and 999 may be included.

EFFECTIVE: Spring 2017

MATERIALS ENGINEERING CONCENTRATION

Minimum of 15 graduate credits in Materials Science and Engineering courses numbered between 701 and 999, excluding 888 and 995

Please check the courses that the student has completed
___ MatlEng 701 Properties of Solids, 3 cr
___ MatlEng 702 Advanced Materials Thermodynamics, 3 cr
___ MatlEng 710 Advanced Mechanical Behavior of Materials, 3 cr
___ MatlEng 720 Kinetic Processes in Materials, 3 cr
___ MatlEng 731 Deformation Processing, 3 cr
___ MatlEng 732 Solidification Processing, 3 cr
___ MatlEng 740 Heterogeneous Equilibria, 3 cr
___ MatlEng 750 Thin Solid Films, 3 cr
___ MatlEng 760 Surface Analysis of Solids, 3 cr
___ MatlEng 890 Advanced Topics in Materials, 3 cr
___ MatlEng 990 Master's Thesis, 1 - 9 cr*
___ MatlEng 999 Advanced Independent Study, 1 - 3 cr*

* A maximum of 3 credits each of Materials 990 and 999 may be included.

EFFECTIVE: Spring 2017

CIVIL ENGINEERING CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ Civ Eng 702 Elastic Stability, 3 cr
___ Civ Eng 710 Industrial Waste Treatment, 3 cr
___ Civ Eng 711 Water Resource Planning and Systems Analysis, 3 cr
___ Civ Eng 712 Ground Water Flow and Seepage, 3 cr
___ Civ Eng 713 Design Environmental Energy Systems, 3 cr
___ Civ Eng 714 Unit Operations in Environmental Engineering, 3 cr
___ Civ Eng 716 Sediment Transport, 3 cr
___ Civ Eng 717 Open Channel Flow, 3 cr
___ Civ Eng 720 Solid Wastes Engineering, 3 cr
___ Civ Eng 721 Advanced Water Analysis, 3 cr
___ Civ Eng 731 Properties of Concrete, 3 cr
___ Civ Eng 735 Advanced Soil Mechanics, 3 cr
___ Civ Eng 755 Soil and Foundation Dynamics, 3 cr
___ Civ Eng 756 Advanced Foundation Engineering, 3 cr
___ Civ Eng 761 Advanced Structural Analysis, 3 cr
___ Civ Eng 771 Advanced Concrete Design, 3 cr
___ Civ Eng 772 Advanced Steel Design, 3 cr
___ Civ Eng 775 Analysis and Design of Bridges, 3 cr
___ Civ Eng 777 Design of Multistory Buildings, 3 cr
___ Civ Eng 780 Energy Analysis Applied Mechanics II, 3 cr
___ Civ Eng 785 Dynamics of Structures, 3 cr
___ Civ Eng 790 Transportation Systems Design, 3 cr
___ Civ Eng 792 Methods of Transportation Analysis, 3 cr
___ Civ Eng 794 Traffic Planning and Operations, 3 cr

Please check the courses that the student has completed
___ Civ Eng 801 Applied Elasticity, 3 cr
___ Civ Eng 804 Theory of Plasticity, 3 cr
___ Civ Eng 805 Applied Elasticity, 3 cr
___ Civ Eng 890 Advanced Topics in Engineering Mechanics, 1 - 3 cr
___ Civ Eng 891 Advanced Topics in Civil Engineering, 1 - 3 cr
___ Civ Eng 990 Master's Thesis, 1 - 9 cr*
___ Civ Eng 999 Advanced Independent Study, 1 – 3 cr*

* A maximum of 3 credits of Civ Eng 990 or 999 may be included.

EFFECTIVE: Fall 2003

ELECTRICAL AND COMPUTER ENGINEERING CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ ElecEng 701 Advanced Linear System Analysis, 3 cr
___ ElecEng 710 Artificial Intelligence, 3 cr
___ ElecEng 711 Pattern Recognition – Statistical, Neural, and Fuzzy Approaches, 3 cr
___ ElecEng 712 Image Processing, 3 cr
___ ElecEng 713 Computer Vision, 3 cr
___ ElecEng 715 Introduction to Modern Control Theory, 3 cr
___ ElecEng 718 Nonlinear Control Systems, 3 cr
___ ElecEng 720 Digital Control Systems, 3 cr
___ ElecEng 721 Digital Communications, 3 cr
___ ElecEng 741 Electromagnetic Fields and Waves, 3 cr
___ ElecEng 742 Electromagnetic Wave Theory, 3 cr
___ ElecEng 751 Switching & Automata Theory, 3 cr
___ ElecEng 755 Information and Coding Theory, 3 cr
___ ElecEng 758 Advanced Computer Architecture, 3 cr
___ ElecEng 760 Computer Systems Performance Evaluation, 3 cr
___ ElecEng 762 Fault-Tolerant Computing, 3 cr
___ ElecEng 765 Introduction to Fourier Optics and Optical Signal Processing, 3 cr
___ ElecEng 766 Introduction to Nonlinear Optics, 3 cr
___ ElecEng 771 Advanced Electric Power Systems Theory, 3 cr
___ ElecEng 781 Advanced Synchronous Machinery, 3 cr
___ ElecEng 782 Dielectrics and High Voltage Insulation, 3 cr
___ ElecEng 810 Advanced Digital Signal Processing, 3 cr

Please check the courses that the student has completed
___ ElecEng 816 Optimal Control Theory, 3 cr
___ ElecEng 819 Adaptive Control Theory, 3 cr
___ ElecEng 872 Computer Analysis of Electric Power Systems, 3 cr
___ ElecEng 890 Special Topics, 3 cr
___ ElecEng 990 Master's Thesis, 1 - 9 cr*
___ ElecEng 999 Advanced Independent Study, 1 – 3 cr*

* A maximum of 3 credits of ElecEng 990 or 999 may be included.

EFFECTIVE: Spring 2004 (was named Electrical Engineering Conc. For Fall 2003 only)

ENERGY ENGINEERING CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ MechEng 432 Internal Combustion Engines, 3 cr
___ MechEng 434 Air Conditioning System Design, 3 cr
___ MechEng 435 Power Plant Theory and Design, 3 cr
___ MechEng 436 Solar Engineering, 3 cr
___ MechEng/ Intermediate Control Systems, 3 cr
ElecEng 574
___ MechEng/ Advanced Linear System Analysis, 3 cr
ElecEng 701
___ MechEng 702 Advanced Engineering Thermodynamics, 3 cr
___ MechEng 703 Principles of Combustion, 3 cr
___ MechEng 710 Advanced Transport Processes, 3 cr
___ MechEng 711 Thermal Radiation and Conduction, 3 cr
___ MechEng 712 Convection Heat and Mass Transfer, 3 cr
___ MechEng 714 Energy Transport in Microscale Systems, 3 cr
___ MechEng 716 Two-Phase Flow, 3 cr
___ MechEng/ Nonlinear Control Systems, 3 cr
ElecEng 718
___ MechEng 721 Fundamentals of Fluid Flow, 3 cr
___ MechEng 722 Advanced Fluid Mechanics, 3 cr
___ MechEng 723 Computational Fluid Dynamics and Heat Transfer, 3 cr
___ MechEng 725 Fluid Power and Turbomachinery, 2 cr
___ MechEng/ Adaptive Control Theory, 3 cr
ElecEng 819
___ MechEng/ Automotive Power Systems, 3 cr (TBD)
ElecEng XXX
___ MechEng/ Renewable Energy Systems, 3 cr (TBD)
ElecEng XXX
___ ElecEng 471 Electric Power Systems, 3 cr
___ ElecEng 572 Power Electronics, 3 cr
___ ElecEng 575 Analysis of Electric Machines and Motor Drives, 3 cr
___ ElecEng 781 Advanced Synchronous Machinery, 3 cr
___ ElecEng 816 Optimal Control Theory, 3 cr
___ ElecEng 872 Computer Analysis of Electric Power Systems, 3 cr
___ ElecEng 890 Special Topics: Advanced Power Electronics subtitle, 3 cr

EFFECTIVE: Fall 2009

ENGINEERING MECHANICS CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ Civ Eng 401 Intermediate Strength of Materials, 3 cr
___ Civ Eng 463 Introduction to Finite Elements, 3 cr
___ Civ Eng 502 Experimental Stress Analysis, 3 cr
___ Civ Eng 580 Engineering Analysis in Applied Mechanics, 3 cr
___ Civ Eng 701 Advanced Strength of Materials, 3 cr
___ Civ Eng 702 Elastic Stability, 3 cr
___ Civ Eng 705 Energy Analysis – Continuous Media, 3 cr
___ Civ Eng 725 Finite Element Methods in Engineering, 3 cr
___ Civ Eng 726 Mechanical Vibrations, 3 cr
___ Civ Eng 732 Fatigue in Engineering Materials, 3 cr
___ Civ Eng 774 Shock and Vibration Analysis, 3 cr
___ Civ Eng 801 Applied Elasticity, 3 cr
___ Civ Eng 804 Theory of Plasticity, 3 cr
___ Civ Eng 805 Applied Elasticity, 3 cr
___ Civ Eng 890 Advanced Topics in Engineering Mechanics, 1 - 3 cr
___ Civ Eng 990 Master's Thesis, 1 - 9 cr*
___ Civ Eng 999 Advanced Independent Study, 1 - 3 cr*

* A maximum of 3 credits of Civ Eng 990 or 999 may be included.

EFFECTIVE: Fall 2003

MATERIALS ENGINEERING CONCENTRATION

Minimum of 15 graduate credits

Please check the courses that the student has completed
___ MatlEng 701 Properties of Solids, 3 cr
___ MatlEng 702 Advanced Materials Thermodynamics, 3 cr
___ MatlEng 710 Advanced Mechanical Behavior of Materials, 3 cr
___ MatlEng 720 Kinetic Processes in Materials, 3 cr
___ MatlEng 731 Deformation Processing, 3 cr
___ MatlEng 732 Solidification Processing, 3 cr
___ MatlEng 740 Heterogeneous Equilibria, 3 cr
___ MatlEng 750 Thin Solid Films, 3 cr
___ MatlEng 760 Surface Analysis of Solids, 3 cr
___ MatlEng 890 Advanced Topics in Materials, 3 cr
___ MatlEng 990 Master's Thesis, 1 - 9 cr*
___ MatlEng 999 Advanced Independent Study, 1 - 3 cr*

* A maximum of 3 credits of MatlEng 990 or 999 may be included.

EFFECTIVE: Spring 2004 (Originally part of the Fall 2003 Industrial and Manufacturing concentration)

I. Pre-Authorization: Notice of Intent

BACHELOR OF SCIENCE DEGREE IN APPLIED COMPUTING

University of Wisconsin-Milwaukee
University of Wisconsin-Oshkosh
University of Wisconsin-Platteville
University of Wisconsin-River Falls
University of Wisconsin-Stevens Point

With administrative and financial support from the University of Wisconsin-Extensi

A. Name of proposed degree, institutional setting, mode of delivery, and institutional contact information.

Name of Proposed Degree:	Bachelor of Science in Applied Computing
Institutional Setting:	Collaborative program across the UW System
Mode of Delivery:	Online
Institutional Contact Information:	David Schejbal, Dean
	University of Wisconsin-Extension
	Continuing Education, Outreach and E-Learning
	Email: David.Schejbal@uwex.edu
	Phone: 608-262-2478

B. Clear statement on how the program fits with institutional mission, strategic plan, and existing program array.

The collaborative online B.S. in Applied Computing degree-completion program contributes directly to the institutional mission of the University of Wisconsin System which defines a commitment to "discover and disseminate knowledge, to extend knowledge and its application beyond the boundaries of its campuses." Consistent with the mission of UW-Extension, the proposed online degree program allows working adults located across the state and region to access university resources and engage in learning, wherever they live and work, through the use of technologies.

The degree also supports the institutional missions of the five partner campuses by developing the students' competencies in communication, critical thinking, problem solving, analytical skills, leadership, teamwork, and collaboration. Furthermore, this will be a multidisciplinary degree that will help build bridges between disciplines and develops students' abilities to think in terms of systems and interrelationships, and within complex organizations. There is consensus among the five academic partners that the B.S. in Applied Computing degree program will serve as a valuable complement to their existing undergraduate program array and will not compete with any program currently offered through their institution.

C. Program description.

The online B.S. in Applied Computing degree program represents a fixed curriculum comprising 20 three-credit courses and a one-credit capstone preparation course. The program offers a balance of coursework primarily in the areas of theoretical and applied computing and information systems to prepare a student for multiple pathways into the information technology workforce or support their career advancement if already working in the field. Additional coursework in math, communications, ethics, and project management will serve to further enhance their skills and professional competencies. The capstone course, which serves as the culminating experience in the program, will provide students with the opportunity to participate in

a practical, project-based learning experience to demonstrate technical proficiency, analytical thinking and problem solving abilities, project management skills, and communication expertise. Students completing the B.S. in Applied Computing will leave the program as professionals with the following established competencies:

- Demonstrate a solid foundation in core computer science
- Demonstrate a solid foundation in software engineering practices

Recognize and address security issues

- Implement a computing solution for a business problem
- Demonstrate effective oral and written communication skills
- Demonstrate a solid foundation in data management

It is anticipated that the online program will predominantly attract adult and nontraditional students who possess a minimum of a completed associate's degree or equivalent credits and have a desire to continue their education toward a bachelor's degree, primarily to expand knowledge and specialized skills in the field and for career advancement. Students will apply to one of the five partner institutions. Upon a student's admittance, that institution will become the student's administrative home for the degree through graduation. The program will have an academic director at each institution, and each campus will host four to five courses in the curriculum. Students will receive academic advising regarding admission and graduation requirements, and financial aid through their home institution. UW-Extension will provide administrative and financial support to the program.

D. Need for program

Based on our research, that includes direct input from industry professionals, there is a clear and growing demand for people who can provide the technical knowledge to support an array of computer systems and applications and possess the skills needed to develop working solutions for computing challenges. In early 2014, UW-Extension commissioned the Education Advisory Board (EAB) to conduct research regarding the market demand and viability of an online bachelor's degree in the area of computer science. The resulting Custom Research Brief (January 2015) identified strong demand in the Midwest region for professionals with this background based a comprehensive labor market analysis with employers in the region posting nearly 80,000 job opportunities for computer science professionals from January 2014 to December 2014. Professional, technical, and scientific companies posted the highest number of job opportunities for computer science professionals as well as insurance carriers and financial corporations. Typical positions/job titles included software development engineer, software developer, business analyst, applications developer, systems engineer, web developer and database administrator. The report also identified strong student demand for online bachelor's-level computer science programs in the region. The program also represents a unique online offering within the UW-System.

Employment in computer occupations is expected to increase by 22 percent through 2020, according to the U.S. Bureau of Labor Statistics. The median annual wage for computer and information technology occupations nationally was $81,430 in May 2015, which was higher than the median annual wage for all occupations of $36,200. According to PayScale, an online salary database, computer science consistently rates as one of the most popular bachelor degrees based on high earning potential, low unemployment rates and a range of career options for graduates.

M.S in Computer Science Program Change

Online Program Change Form

Action	CHANGE	Degree Type	Major/Degree Program	Owner	mukul
School/College		Level of Degree		Name of Major	
College of Engineering & Applied Science		Master of Science		Computer Science	

Current	**Admission** An applicant must meet Graduate School requirements and either of the following program requirements to be considered for admission: • Undergraduate major in Computer Science, or • Satisfactory completion of two programming courses (such as CompSci 201 and 251); at least 6 additional credits of coursework in CS; and Math 231 and 232 or their equivalents. Applicants may be admitted with specific program-defined course deficiencies provided that the deficiencies amount to no more than two courses. The student is expected to satisfy deficiency requirements within three enrolled semesters. The deficiencies are monitored by the Graduate School and the individual graduate program unit. No course credits earned in making up deficiencies may be counted as program credits required for the degree. Major Professor as Advisor The student is assigned an initial faculty advisor at the time of admission. The student selects a faculty member as a capstone or thesis advisor, respectively, as they follow the thesis or non-thesis option, after consultation with that faculty member. Any change in faculty advisor requires the documented permission of the new faculty member and the Department. An initial Program of Study with student, advisor and Department approval should be completed prior to the completion of 9 credits in the program. The final Program of Study must be approved by the thesis or capstone advisor, as appropriate. **Credits and Courses** The following is a requirement for both options: The student must have taken six Computer Science courses (specified below) or their equivalents prior to completion of the M.S. Program. Appropriate courses taken by a student in another program that are considered equivalent to the courses below can be used to satisfy this requirement with the approval of the Department. The six courses are: • CS315 Introduction to Computer Organization and Assembly Language Programming • CS317 Discrete Information Structures • CS351 Data Structures and Algorithms • CS458 Computer Architecture • CS535 Algorithm Design and Analysis • CS537 Introduction to Operating Systems At most six credits of the courses used to satisfy this requirement (excluding 315, 317 and 351) and taken as a graduate student may be used in either option of the program. All students must submit an approved Undergraduate Requirements Assessment (which explains how the requirement will be met) prior to registering for any courses. **Thesis Option** The minimum credit requirement is 30, comprising (i) 18 credits of 700 or higher level courses including CompSci 700 (CEAS Graduate

	Seminar 3 credits), CompSci 704 (Analysis of Algorithms) and excluding CompSci 990 (Master's Thesis), (ii) (6 credits of additional courses that carry graduate credit, and (iii) (6 credits of CompSci 990. All courses must be approved in the Program of Study. The student must not register for more than 4 credits of CompSci 990 in any one semester. The student must write an acceptable thesis under the supervision of a faculty advisor and pass a final comprehensive examination which will normally focus on the thesis. Once a student begins a thesis under the supervision of an advisor, the graduate program director must approve any change to a new thesis advisor. **Non-Thesis Option** The minimum credit requirement is 31, comprising (i) 19 credits of 700 or higher level courses including CompSci 700 (CEAS Graduate Seminar 1 credit only), CompSci 704 (Analysis of Algorithms) and excluding CompSci 995 (Master's Capstone Project), (ii) 9 credits of additional courses that carry graduate credit, and (iii) 3 credits of CompSci 995. All courses must be approved in the Program of Study. The student must complete a capstone project under the supervision of a faculty advisor and pass CompSci 995 with a grade of B or better. For either option, all courses must be approved in the Program of Study. Non-CompSci courses must be approved prior to registration. Time Limit All students must complete the degree requirements within five years of initial enrollment.
Proposed Change Summary	`The proposed changes will introduce a new "Professional" track in the MSCS  program.`
Justification	`The objective of the new track is to prepare students for successful careers in CompSci-related industries. The original "regular" track will now have the objective to prepare students for research in Computer Science. The new track is designed to meet the needs of professionals looking for more accessible graduate education in Computer Science and should significantly improve enrollment in this program.`
New Copy	**1. Tracks** The Master of Science in Computer Science (MSCS) degree offers a regular track and a professional track. The regular track is designed to prepare students for PhD research in Computer Science. The professional track is designed to prepare students, possibly with undergraduate majors other than computer science, for success in their industrial careers. Students in the professional track are not eligible for financial aid from Computer Science department. **2. MSCS Regular Track** **Admission** An applicant must meet Graduate School requirements to be considered for admission. Additionally, the applicants must meet either of the following program requirements: * Undergraduate major in Computer Science, or * Satisfactory completion of two programming courses (such as CompSci 250 and 251); at least 6 additional credits of coursework in CS; and one course in calculus (such as Math 211 or Math 231). Applicants without sufficient Computer Science background are encouraged to apply to the professional track. Applicants not admitted to the regular track may be offered admission to the professional track instead. Applicants may be admitted with specific program-defined course deficiencies provided that the deficiencies amount to no more than two courses. The student is expected to satisfy deficiency requirements within three enrolled semesters. The deficiencies are monitored by the Graduate School and the individual graduate program unit. No course credits

earned in making up deficiencies may be counted as program credits required for the degree.

Credit and Course Requirements

The student must have taken six Computer Science courses (specified below) or their equivalents prior to completion of the M.S. Program. Appropriate courses taken by a student in another program that are considered equivalent to the courses below can be used to satisfy this requirement with the approval of the Department. The six courses are:

* CompSci315 Introduction to Computer Organization and Assembly Language Programming
* CompSci317 Discrete Information Structures
* CompSci351 Data Structures and Algorithms
* CompSci458 Computer Architecture
* CompSci535 Algorithm Design and Analysis
* CompSci537 Introduction to Operating Systems

At most six credits of the courses used to satisfy this requirement (excluding 315, 317 and 351) and taken as a graduate student may be used in either option of the program. All students must submit an approved Undergraduate Requirements Assessment (which explains how the requirement will be met) prior to registering for any courses. The students in the regular track must write a thesis or complete a capstone project.

Thesis Option

The minimum credit requirement is 30, comprising
* 18 credits of 700 or higher level courses including CompSci 700 (CEAS Graduate Seminar 3 credits), CompSci 704 (Analysis of Algorithms) and excluding CompSci 990 (Master's Thesis),
* 6 credits of additional courses that carry graduate credit, and
* 6 credits of CompSci 990.

All courses must be approved in the Program of Study. The student must not register for more than 4 credits of CompSci 990 in any one semester. The student must write an acceptable thesis under the supervision of a faculty advisor and pass a final comprehensive examination which will normally focus on the thesis. Once a student begins a thesis under the supervision of an advisor, the graduate program director must approve any change to a new thesis advisor.

Capstone Option

The minimum credit requirement is 31, comprising
* 22 credits of 700 or higher level courses including CompSci 700 (CEAS Graduate Seminar 1 credit only), CompSci 704 (Analysis of Algorithms) and CompSci 995 (Master's Capstone Project 3 credits),
* 9 credits of additional courses that carry graduate credit.

The student must complete a capstone project under the supervision of a faculty advisor and pass CompSci 995 with a grade of B or better.

For both thesis and capstone options, all courses must be approved in the Program of Study. Non-CompSci courses must be approved prior to registration.

3. The Professional Track

Admission

An applicant must meet Graduate School requirements to be considered for admission. We expect that students admitted to the professional track will have knowledge of computer programming to the extent of CompSci 250 and CompSci 251. Applicants can demonstrate this knowledge via academic coursework or online courses. Applicants can also explain in their "Statement of Purpose" if they gained this knowledge via work experience. All admitted students must take a placement test on their knowledge of computer programming. The students may be required to additionally take CompSci 250 and 251 based on their performance in this test.

Credit and Course Requirements

The student must demonstrate knowledge equivalent to the following four Computer Science courses prior to completion of the M.S. Program:
* CompSci317 Discrete Information Structures
* CompSci351 Data Structures and Algorithms
* CompSci535 Algorithm Design and Analysis

* CompSci537 Introduction to Operating Systems
This requirement can be met in one of the following ways:
* A grade B or better in these courses or equivalent CompST courses;
* Passing the sufficiency exams offered by the course instructors;
* Prior academic coursework approved by the academic advisor. The credits earned while taking these courses as a graduate student may be used to meet the credit requirements of the program. All students must submit an approved Undergraduate Requirements Assessment (which explains how the requirement will be met) prior to registering for any courses.

The minimum credit requirement is 31 graduate credits, comprising
* At least 16 credits of 700-level CompSci courses including CompSci 700 (CEAS Graduate Seminar 1 credit only) and optional CompSci 995 (Master's Capstone Project);
* Up to 9 graduate credits of courses selected from a pre-approved list of non-CompSci courses considered useful for professionals in CompSci-related industries;
* Remaining credits must come from graduate-level or U/G-level CompSci courses.

Up to 12 credits of prior graduate-level course work (including up to 6 credits of prior graduate-level Computer Science courses) can be used to meet the credit requirements. All courses must be approved in the Program of Study. Any non-CompSci courses must be approved prior to registration.

Capstone Requirement
The student must demonstrate the ability to integrate the knowledge of the discipline in one of the following ways:
* A capstone project completed under faculty supervision by completing the 3-credit CompSci995 course with a B or better grade. These credits can be applied towards the requirement regarding 700-level CompSci courses.
* An oral exam based on a prior open-source or professional project completed by the student. The student must ensure that faculty can review the actual implementation of the project.

Financial Aid
Students enrolled in the professional track are not eligible for financial aid from Computer Science department including research assistantships, teaching assistantships, project assistantships, fellowships and/or tuition waivers. However, such students are still eligible for financial aid available elsewhere on the campus.

4. Major Professor as Advisor
The student is assigned an initial faculty advisor at the time of admission. The student selects a faculty member as a thesis or capstone advisor, respectively, as they follow the regular or professional track, after consultation with that faculty member. Any change in faculty advisor requires the documented permission of the new faculty member and the Department. An initial "Program of Study" with student, advisor and Department approval should be completed prior to the completion of 9 credits in the program. The final "Program of Study" must be approved by the thesis or capstone advisor, as appropriate.

5. Industrial Internship
With faculty advisor's approval, one credit per semester of CompSci 990 or CompSci 995 may be satisfied with a supervised industrial internship for a maximum of two credits.

6. Switching between Tracks
A student in the regular track may switch to the professional track at any time. However, such a student will no longer be eligible for research/teaching/project assistantships or any other financial aid from Computer Science department. A student admitted under the professional track may switch to the regular track after completing at least 15 credits of the professional track with at least 3.5 cumulative GPA. Note that not all courses acceptable under the professional track may be acceptable under the regular track.

	7. Time Limit All students must complete the degree requirements within five years of initial enrollment.
Proposed Effective Date	Spring 2017
Additional Faculty Required	None
Four-Year Faculty Needs	None
Library Resources	None
Required Additional Facilities	None
Program Costs	None
Resource Reallocation	None
Comment	
Routing Information	

UNIVERSITY OF WISCONSIN-MILWAUKEE
COLLEGE OF ENGINEERING & APPLIED SCIENCE

EXPECTATIONS OF CHAIRPERSIONS

FOR EFFECTIVE LEADERSHIP OF DEPARTMENTS
The following supplements but does not replace the duties of the department chair as specified in section 4.07 of the Faculty Policies and Procedures (FP&P). Following the FD 2381, this document elaborates on FP&P 4.07 (9), which specifies that the Department Chair "acts as the executive of the department" and provides definition to the expectations for an "executive of the department". Further, the department chair is reminded to be aware of the responsibilities of the executive committee as defined in section 4.05 of the UWM FP&P.
A chairperson in the CEAS is expected to provide leadership for the department. These include the following over-arching leadership responsibilities:

1. Working with the faculty and staff to develop, implement, and achieve a vision that inspires and unites them to work together collegially to achieve the mission of the department, college and university.
2. Developing and executing a well-defined and articulated strategic plan that the faculty, staff, students, alumni and external advisory board supports. The plan must be in alignment with the initiatives and strategic plan of the college and the university.
3. Providing leadership to improve the level of excellence and prominence of the department.
4. ~~Promoting a well-managed office and support staff that supports administratively the instruction and research mission of the department.~~
5. Fostering and ensuring a departmental climate that is supportive and collegial, including taking steps to ensure that no one in the department is subjected to bullying or harassment.
6. Developing and implementing an advancement model to enhance alumni relations and engage in philanthropic activities that will benefit the department, college, and university and that aligns with those of the college and the university.
7. ~~Developing and implementing for all faculty, staff and students a safety plan for instructional and research activities that includes periodic training as well as annual safety inspections of laboratories.~~

The specific duties of the chair may differ from department to department based on personal style and departmental policy. In general, however, leadership encompasses the key responsibilities and accountabilities outlined below. Although the chair is responsible for ensuring that these expectations are met, many but not all of these activities can be delegated within the department. This "expectations" document should be used as a guideline by a chairperson and the departmental executive committees in establishing the delegation of duties and administrative structure of a department.

I. THE CHAIR IS EXPECTED TO BE THE CHAMPION OF FACULTY CAUSES
Example activities include, but not limited to:
   a. Assuming the primary responsibilities for ~~recruiting faculty and~~ retaining an excellent and diverse faculty;

b. Ensuring appropriate mentoring and professional development programs exist for faculty, including assisting faculty to develop effective teaching, research and service efforts;
c. Providing systems for continuous development and implementation of the strategic plan;
d. Providing faculty with meaningful feedback on their performance annually, which could include explaining to faculty the basis for annual salary raises and promotions;
e. Maintaining equity in faculty workloads, including teaching assignments;
f. Establishing an active program for nominating faculty for awards both internally and externally;
g. Bringing faculty concerns to the attention of the Dean and the APC.

II. THE CHAIR IS EXPECTED TO BE THE CHAMPION OF STUDENT INTERESTS
Example activities include, but not limited to:
a. Striving for continuous improvement in the quality of instruction;
b. Soliciting student feedback regarding teaching performance, course offerings and program quality;
c. Responding to student concerns regarding department courses and program;
d. Encouraging and supporting student participation in student organizations, national competitions, and leadership development opportunities;
e. Ensuring effective student advising within the department;
f. Nominating students for internal and external awards;
g. Recruiting and retaining a diverse student population.

~~III. THE CHAIR IS EXPECTED TO BE CHAMPION OF ADMINISTRATIVE STAFF~~
~~Example activities include, but not limited to:~~
a. ~~Organizing and maintaining effective staff support within the department;~~
b. ~~Providing opportunities for training and professional development for staff that will benefit them, the department, and the college;~~
c. ~~Providing, on an annual basis, direction and feedback regarding performance.~~

IV. THE CHAIR IS EXPECTED TO BE STEWARD OF DEPARTMENTAL RESOURCES
Example activities include, but not limited to:
a. Managing department financial resources in a manner that provides opportunity while remaining within budget;
b. Using UWM Foundation funds to benefit the department, and stewarding the donors who provided the funds;
c. Striving for continuous improvement in quality in all departmental operations in a manner consistent with available resources;
d. Providing oversight of faculty research expenditures;
e. Managing facilities including assignment of space allocated to the department by the College as well as the periodic review and assessment of space utilization.

V. ACCOUNTABILITY AND PERFORMANCE

The department chair will provide a concise annual report to the Dean of the College that includes:

a. The state of the department, including an assessment of the performance of the department in achieving its goals and deliverables as articulated in the department's strategic plan;
b. A concise statement of the department's goal and deliverables to be achieved in the next academic year. This should include such items as a hiring plan for faculty, lecturers, and staff; instruction and research infrastructure needs, financial resources needed, etc.;
c. Progress on and changes to the departmental strategic plan, and initiatives of the department, and how they align with the initiatives and strategic plan of the college and university;
d. A self-assessment of the activities of the department chair during the current academic year and a concise statement of goals for the coming academic year.

The annual report must be received in the College no later than the last Monday in May of each year.

This document may be revised on an annual basis at the discretion of the APC or the Dean of the CEAS.