

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

FACULTY MEETING

Friday, September 30, 2016 1:30 P.M. EMS E180

AGENDA

I. ANNOUNCEMENTS

- A. UWM Gives to UWM Campaign – Jean Opitz
- B. Academic Misconduct – Associate Dean Ethan Munson
- C. CEAS Department Support Services – Paul Klajbor / Gerri Meloy

II. INTRODUCTIONS

A. Staff

- 1. David Raschke, Laboratory Manager
- 2. Nakeesha Brown, Graduate Office
- 3. Gary Billington, Corporate Relations

III. INFORMAL REPORTS – See Attachment 1

- A. Opportunity for questions regarding Informal Reports

IV. AUTOMATIC CONSENT BUSINESS

- A. New Courses and Course Discontinuations – See Attachment 2

V. SPECIAL ORDER OF BUSINESS -- Nominations

A. Awards and Recognition Committee

Only members of Electrical Engineering and Computer Science and Materials Science and Engineering may be nominated. Two members are to be elected.

Already Nominated:

Prof. Ichiro Suzuki – Computer Science

Continuing members:

Prof. Rani El-Hajjar – Civil and Environmental Engineering

VI. NEW BUSINESS

- A. Ph.D. Program Change – See Attachment 3
- B. M.S. Program – BME Concentration – See Attachment 4
- C. Proposal for the Institute for Physical Infrastructure and Transportation – See Attachment 5
- D. Dean Peter’s Fall 2016 CEAS Update

VII. GENERAL GOOD AND WELFARE

VIII. 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

- 1) APC reviewed a proposal presented by Prof. Bravo for “Intent to Plan for BSE degree program in Environmental Engineering” and provided suggestions for revision.
- 2) The committee reviewed and endorsed an “Intent to Plan” for BS degree in Applied Computer Science in collaboration with four other UW campuses.
- 3) A revised version of “Expectations of Chairperson” was considered and Dean Peters was advised to advance it to CEAS faculty.
- 4) A proposal to establish an Institute for Physical Infrastructure & Transportation was reviewed and endorsed.
- 5) APC continues discussions on the work-load policy, post-tenure review, program assessment, and UWM budget status and its impact on CEAS.

Biomedical and Health Informatics – Prof. McRoy
No Report

Graduate Faculty Committee – Prof. Hosseini

GFC met on Sept 20, 2016 and Hosseini as a member of the UWM Research Policy Committee reported to GFC that UWM has planned to start to review UWM centers and Institutes every five years.

Faculty Senate – Prof. Reisel

Chancellor Mone presented his fall plenary address. As has been announced by Chancellor Mone, faculty who are deemed by their departments to be solid performers will be receiving a one-time lump sum compensation of 1.75% of their salaries. Funds for this are primarily from returned money from the UW System for overpayment of fringe benefits last year (due to fewer employees) and lower utility costs last winter.

The Senate considered the proposed revised post-tenure review policy for tenured faculty. Comments were made, and the document was referred back to the hard-working University Committee to make revisions.

There is still a need to fill several campus-wide committee positions. If you are interested in serving on such a committee, please contact John Reisel.

NEW COURSES

BME 700	CEAS GRADUATE SEMINAR, 1-3 cr. G Seminar in professional ethics, oral and written communication, contemporary social issues, career development, time management, and laboratory safety. BME 700, CivEng 700, CompSci 700, ElecEng 700, IndEng 700, MatEng 700 & MechEng 700 are jointly offered and count as repeat of one another. Prereq: grad st
BME 888	CANDIDATES FOR DEGREE, 0 cr., G Available for graduate students who must meet minimum credit load requirement. Fee for 1 cr assessed. Prereq: grad st.
BME 890	SPECIAL TOPICS: (SUBTITLE), 3 cr., G Lectures on special topics in biomedical engineering. Variable content course. Specific topics and any additional prerequisites will be announced in the schedule of classes each time the course is offered. May be repeated w/ chg in topic to 9 cr max. Prereq: grad st.
BME 990	MASTERS THESIS, 1-9 cr., G Prereq: grad st; cons instr.
BME 998	DOCTORAL THESIS, 1 cr., G Prereq: grad st; cons instr.& grad. prog comm.
BME 999	ADVANCED INDEPENDENT STUDY, 1-3 cr., G Prereq: grad st; & cons instr.
COMPSCI 160	INTRODUCTION TO COMPUTER GAME DESIGN AND PROGRAMMING, 3 cr., U An overview of computer game history; design concepts and considerations; implementation using a modern software development platform, such as GameMaker. Prereq: None.

COURSE DISCONTINUATIONS

COMPSCI 152	COMPUTER PROGRAMMING I
IND ENG 420	TOOL ENGINEERING
IND ENG 702	ENGINEERING SYSTEMS ECONOMY

Ph.D. Program Change

New Text: (Changes highlighted)

The major area of concentration must be in one of the **seven** areas approved for the Ph.D. degree in the College. These areas are: **Biomedical Engineering**, Civil Engineering, Computer Science, Electrical Engineering, Industrial Engineering, Materials, and Mechanical Engineering. The minor is normally in another area offered in the College or in the physical sciences or mathematics or in management sciences. Consideration of any other area as a minor requires the prior approval of the GPSC.

Current Text:

The major area of concentration must be in one of the six areas approved for the Ph.D. degree in the College. These areas are: Civil Engineering, Computer Science, Electrical Engineering, Industrial Engineering, Materials, and Mechanical Engineering. The minor is normally in another area offered in the College or in the physical sciences or mathematics or in management sciences. Consideration of any other area as a minor requires the prior approval of the GPSC.

Master of Science in Engineering: Biomedical Engineering Concentration

Formal name of concentration

Biomedical Engineering

Degree Program

Master of Science in Engineering

General Requirements

A minimum of 15 credits of graduate courses from the following list; may include up to 3 credits each of BME 990 and BME 999.

Qualifying Courses

BME 733 Sensors and Systems

BME 890 Special Topics

BME 990 Masters Thesis

BME 999 Advanced Independent Study

COMPSCI/ELECENG 710 Artificial Intelligence

ELECENG/MECHENG 701 Advanced Linear System Analysis

COMPSCI/ELECENG 711 Pattern Recognition - Statistical, neural, and fuzzy Approaches

COMPSCI/ELECENG 712 Image Processing

ELECENG/MECHENG 718 Nonlinear Control Systems

ELECENG 737 Fundamentals of Neuroimaging

ELECENG 765 Intro to Fourier Optics and Optical Signal Processing

ELECENG 810 Advanced Digital Signal Processing

MECHENG 715 Numerical Methods in Engineering

BMS 765 Molecular Pathophysiology

OCCTHPY 701 Advanced Measurements and Instrumentation in Healthcare

PH 702 Introduction to Biostatistics

PH 704 Principles and Methods of Epidemiology

PH 706 Perspectives on Community & Behavioral Health

PH 709 Public Health Informatics

PH 711 Intermediate Biostatistics

PH 712 Probability and Statistical Inference

Physics 705 Molecular, Cellular, and System Biophysics

Physics 706 Biophotonics

Physics 782 Physics of Medical Imaging

Compelling reasons

Due to diverse technical areas in engineering and common practice by most engineering institutions in the US, M.S. degree in engineering lists the area of concentration in the student's academic records. This describes the student's background better and enhances employment opportunities for the student. It also aids the department in tracking graduate students. The above-described plan aligns the BME program with other engineering concentrations of the CEAS.

Compliance with GFC Doc.878

This concentration meets the requirements of GFC Doc. 878. Students who wish to receive multiple concentrations within the MS in Engineering must complete 15 credits from the approved list of courses for each concentration.

PROPOSAL TO FORM A UWM INSTITUTE

(September 8, 2016)

A. PROPOSED NAME: INSTITUTE FOR PHYSICAL INFRASTRUCTURE & TRANSPORTATION (IPIT)

B. BRIEF DESCRIPTION, PURPOSE, AND JUSTIFICATION

Effective infrastructure and transportation network are considered as primary factors that enhance economic growth and competitiveness in any society. While significant investments have been made in our state and nation to create adequate infrastructure and transportation networks, we are now faced with many challenges in dealing with outdated facilities that exhibit signs of deterioration and poor performance and with transportation issues that can significantly benefit from the infusion of new and advanced technologies. These challenges create a unique prospect where human intellect and creativity may be combined with the integration of available and new technologies to address many of the infrastructure and transportation problems we face today.

The UWM College of Engineering & Applied Science (CEAS) and School of Architecture and Urban Planning (SARUP) propose to establish a new Institute for Physical Infrastructure & Transportation (IPIT). The primary objective of the Institute will be addressing the current infrastructure and transportation challenges we face in our state and nation. The Institute will initially leverage the expertise of UWM faculty and available research and development (R&D) facilities. It will serve as an umbrella organization to enhance collaboration and growth for multi-disciplinary research and teaching activities in all areas of physical infrastructure and transportation. These areas of interest include roads, bridges, buildings, ports, airports, water and electricity facilities, construction, and transportation mobility, congestion, safety, policy, finance, products, and others. The activities of the Institute will include teaching, outreach, research and development, and job training that will enhance the state of our infrastructure and transportation, leading to economic development for our region and nation.

Currently, there are more than 25 UWM faculty who are known to have expertise and interest related to various issues in infrastructure and transportation. These and other UWM faculty from all schools and colleges who have interest will be invited to collaborate by becoming affiliated members of the Institute. Several faculty with relevant expertise have expressed interest in joining the Institute. They are from academic departments including Civil and Environmental Engineering, Urban Planning, Electrical Engineering, Computer Science, Materials Engineering, Industrial Engineering, Economics, History, Political Science, Sociology, and the Lubar School of Business. Faculty from other departments will also be invited to join the Institute. Several of these faculty members have enjoyed national recognition, held leadership positions, and had lengthy established records of funding and scholarship in topics related to infrastructure and transportation.

UWM is home to several infrastructure and transportation related facilities including major laboratories, computing laboratories, and Centers. These facilities will offer a solid foundation for the work of our faculty and students in the Institute's areas of interest. The expertise of the faculty and available facilities offer a unique advantage to UWM to formally establish the Institute for Infrastructure and Transportation and become a leader in offering solutions to many infrastructure and transportation challenges our nation faces today. The Institute's eventual goal is to benefit from even broader collaborations with people from other academic, government, and private organizations. Through exploratory discussions, enthusiastic support for the creation of IPIT at UWM has been expressed by the Secretary of the Wisconsin Department of Transportation, Office of the Milwaukee County Executive, Office of the City of Milwaukee Mayor, Office of Congresswoman Gwen Moore, and Office of US Senator Tammy Baldwin.

C. ORGANIZATIONAL STRUCTURE, INCLUDING THE METHOD OF APPOINTMENT AND TERM OF OFFICE FOR THE DIRECTOR

It is proposed that Professor Al Ghorbanpoor, Fellow of the American Society of Civil Engineers, be appointed as the Founding Director of the Institute. The appointment will be made by the Dean of the College of Engineering & Applied Science. Dr. Ghorbanpoor currently serves as a Professor in the Department of Civil & Environmental Engineering. He is a nationally recognized transportation leader and over the last 30 years at UWM, he has continuously received major research funds to address various transportation infrastructure problems. The primary sponsors of the majority of Dr. Ghorbanpoor's past and current sponsored research have been the US and various state Departments of Transportation.

Dr. Ghorbanpoor has a long history of collaborative research with UWM faculty and others and has established close working relationships with infrastructure and transportation leaders at the national and local governmental and professional levels. The most recent example of a collaborative effort that was led by Dr. Ghorbanpoor is preparing and submitting a major research proposal to establish a Tier 1 Transportation Research Center (5-years, \$7.5 M – currently pending approval) at UWM. This effort was made possible by active participation by fifteen UWM faculty members, faculty from four other major universities, and partnerships by state and local government entities.

Dr. Ghorbanpoor's initial appointment as Founding Director of IPIT will be for five years. Appointment renewal will be contingent upon positive reviews based on evidence of growth in research collaboration among UWM faculty, collaboration and partnerships with industry, state, and local government entities, growth in external funding, educational impact on undergraduate and graduate students and practicing professionals, and other relevant performance measures.

An Oversight Board with membership from the CEAS, SARUP, and UWM administrators, UWM faculty, and representatives from the government and industry partners will be formed to guide the direction and operation of the Institute. The Institute Director will participate at the meetings of the Board as appropriate and required. The Board will meet twice per year, or as needed, to fulfill its goals. The following is a preliminary

organization chart for the Institute. There will be several other facilities and affiliate faculty who will be included in the organization chart after the completion of the approval process for the proposed Institute.

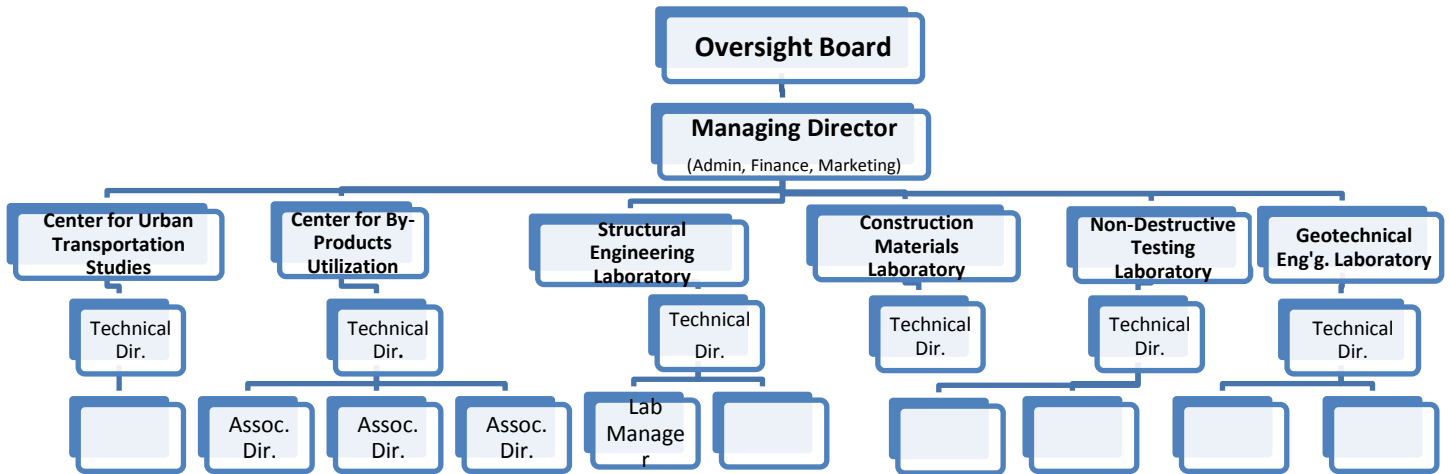


Fig. 1 - Organization Chart for the proposed Institute for Physical Infrastructure & Transportation (IPIT)

D. LIST OF RESOURCES TO BE COMMITTED TO THE CENTER, INCLUDING THEIR SOURCE

Facilities:

The Institute for Physical Infrastructure & Transportation will be comprised of several existing laboratories, centers, and facilities that are currently active and operate independently. These include the Structural Engineering Laboratory, Center for Urban Transportation, Center for By-Products Utilization, Construction Materials Laboratory, Concrete Laboratory, Non-Destructive Evaluation (NDE) Laboratory, Geotechnical Engineering Laboratory, computing facilities within the College of Engineering & Applied Science, various laboratories of affiliated faculty, and other facilities as they become available. IPIT’s physical presence will be at the recently assigned office space at the NWQ Building. As external funding of the affiliated faculty increases, additional space may be required that will be discussed with CEAS and UWM as appropriate.

Operation:

The College of Engineering & Applied Science has agreed to provide \$15 k per year for the first 3 years of the existence of the Institute to cover relevant start-up operating expenses. These will include seed funding for small exploratory efforts of the affiliated faculty to enhance potential research proposals, travel funds to meet research program directors, and

covering expenses for holding meetings, and workshops. Negotiation will be made with CEAS and UWM to secure a percentage of the generated indirect cost from external funding by the IPIT affiliated faculty to cover the operating expenses of the Institute in subsequent years.

Preliminary discussion has taken place with the Wisconsin Department of Transportation to secure ongoing external funding that can support research projects and operation costs of IPIT. These discussion will be finalized after the UWM approval process is completed for the Institute.

Funding Overview:

Several of the listed IPIT affiliated faculty have been very active in securing external funds to direct their research in the areas of infrastructure and transportation. The collective level of research funding by the faculty exceeds \$15 M over the last 10 years. It is expected that collaborative efforts of the faculty within IPIT will result in higher success to secure significant external funds. This will become possible through exploring large multi-disciplinary research funding opportunities that are more appropriate for entities such as IPIT.

Major sources of potential funding for the Institute will include the US Department of Transportation, Departments of Transportation from different states, National Transportation Safety Administration, National Cooperative Highway Research Program, local governments including City of Milwaukee and Milwaukee County, National Science Foundation, Department of Energy, Department of Defense, US Department of Homeland Security, and private industry.

E. PARTIAL LIST OF UWM FACULTY AS AFFILIATED MEMBERS OF THE INSTITUTE

Faculty from departments across UWM schools and colleges are invited to join IPIT as affiliated members. While a majority of the current IPIT's affiliated members are from the College of Engineering & Applied Science, it is anticipated that many faculty members from other UWM schools and colleges will join the Institute. The following UWM faculty members (listed in alphabetical order) have agreed to be affiliated with IPIT. Many of these colleagues have active ongoing research with major external funding in the areas of infrastructure and transportation.

Aneesh Aneesh, Associate Professor, Sociology
 Edward Beimborn, Professor Emeritus, Civil & Environmental Engineering
 Niloy Bose, Professor, Economics
 Roshan D'Souza, Associate Professor, Mechanical Engineering
 Nancy Frank, Associate Professor, Urban Planning
 Al Ghorbanpoor, Professor, Civil & Environmental Engineering
 Alan Horowitz, Professor Emeritus, Civil & Environmental Engineering
 Lingqian Hu, Associate Professor, Urban Planning
 Marc Levine, Professor, History
 Troy Liu, Associate Professor, Civil & Environmental Engineering

Matthew Petering, Associate Professor, Industrial Engineering
Xiao Qin, Associate Professor, Civil & Environmental Engineering
Joel Rast, Associate Professor, Political Science
Robert Schneider, Assistant Professor, Urban Planning
Konstantin Sobolev, Professor, Civil & Environmental Engineering
Habib Tabatabai, Associate Professor, Civil & Environmental Engineering
Hani Titi, Associate Professor, Civil & Environmental Engineering
Lingfen Wang, Associate Professor, Electrical Engineering
Jie Yu, Assistant Professor, Civil & Environmental Engineering
Jian Zhao, Associate Professor, Civil & Environmental Engineering

Additional UWM faculty members have expressed informal interest in joining the Institute and will be welcomed as affiliated members after the approval process is completed. Also after the UWM approval, faculty and researchers from our local and regional academic institutions, industry and government bodies will be invited to join the Institute and collaborate as appropriate. It is expected that a large number of undergraduate and graduate students will be involved in the research and education efforts of the IPIT affiliated faculty.

F. LONG-TERM OBJECTIVES AND PLAN FOR IPIT

The overall long-term goal of the proposed Institute for Physical Infrastructure & Transportation is to enable the faculty and students at UWM to grow their research, scholarship, teaching, outreach, and job training activities to solve many of our current infrastructure and transportation problems. This will in turn result in economic development and competitiveness for our region and nation. The overall goal of the Institute will be accomplished through meeting the following objectives:

- Promote the capabilities and activities of UWM faculty and available research facilities
- Facilitate interaction among faculty, students, and other collaborators
- Remove barriers against collaboration
- Identify appropriate sources of extramural research funding
- Organize and lead efforts to secure major funding for multi-PI/Multi-institution/multi-disciplinary programs
- Promote the culture of technology transfer and entrepreneurship among UWM faculty and students
- Promote integration of green technologies into transportation mobility and safety products
- Develop, Implement, Evaluate, and Promote safe, efficient, and cost-effective surface transportation
- Develop new technologies to offer more durable, safer, and cost effective materials and structures for transportation and other applications
- Develop new technologies and capabilities to assess the condition of various physical infrastructure
- Develop effective and economical rehabilitation and repair solutions

- Promote the interchange of transportation research and product development knowledge among scientists, engineers, and entrepreneurs
- Promote public-private-academic partnerships in the Wisconsin's Transportation industry.
- Foster education and career development
- Promote the institute's work through legislative contacts
- Provide suitable research and scholarship infrastructure
- Provide direction and management to reach short-term and long-term goals
- Offer administrative and support staff
- Offer financial management support