

# Central Washington University

## College of Education and Professional Studies

### Department of Industrial and Engineering Technology

Date: \_\_\_\_\_

**Prepared by: Dr. W. J. Bender**

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*Department Chair*

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*College Dean*



# PROGRAM REVIEW

Academic Year 2011-12

## I. Introduction to Department and Programs

### A. Department mission statement

The Industrial and Engineering Technology (IET) Department mission is...

**...to provide a quality education to undergraduate and graduate students who are preparing for professional careers. The department prepares the students for professional technical employment and insightful citizenship.**

### B. Brief description of department, program contexts and date of last review

The IET Department offers Bachelor of Science degree programs in selected engineering technology and technical areas. The department envisions itself as providing an educational service with customers at both ends of the system: students wanting an education leading toward employment in a technical field, and employers seeking employees. The programs are based on a foundation of technical, math, science, communications, and liberal arts courses. All of the Department's programs either have or will have an active industrial advisory committee to ensure that they stay current and meet accreditation guidelines as they apply. The IET Department also offers a Master of Science in Engineering Technology (MSET) degree.

The last **departmental program review** was conducted in Academic Year 2004/2005. Certain programs have had accreditation visits and renewals since this time.

The IET Department curriculum is grouped into seven programs: Construction Management (CMGT), Electronics Engineering Technology (EET), Industrial Technology (InT), Mechanical Engineering Technology (MET), Technology Education (TE), and Safety and Health Management (SHM) and Master of Science in Engineering Technology (MSET).

### C. Departmental governance system and organizational chart

The IET organizational structure is shown in Figure 1.

The IET Department is led by a Department Chair who is elected by the faculty for a 4 year term. The Chair's contract covers a 9.5 month academic year with approximately 60% release from normal faculty expectations for teaching. Summer stipend for a chair is minimal.

IET faculty members are each identified with one of the seven programs within the Department, although teaching duties may cross programmatic boundaries depending on course subject and faculty expertise. Each program is led by a Coordinator who is responsible for point-of-contact duties, as well as some administrative duties associated with curriculum, accreditation, and assessment. Coordinators receive teaching release time approximately equal to one course per year to cover their responsibilities. Part time lecturers and graduate assistants augment the full time teaching staff. Full time faculty vitas are found in Appendix 1.

The Construction Management (CMGT) program serves approximately 75 majors and 85 premajors with four full time faculty. The Electronic Engineering Technology (EET) serves approximately 50 majors, in two locations, with three full time faculty. The Industrial Technology (InT) program serves approximately 40 majors, with one full time faculty member. The Mechanical Engineering Technology (MET) program has three full time faculty and serves approximately 60 majors. The Safety and Health Management (SHM) program serves approximately 60 students and has two full time faculty. The Technology Education (TE) program serves approximately 20 majors and has one full time faculty member. The Master of Science in Engineering Technology (MSET) is offered in two locations and has two full time faculty members.

The department is assisted in accomplishing its mission by three full time staff members. The assistant to the chair supports all programs and faculty as well as the department chair. This position has a crucial role in budgeting, scheduling, coordinating, providing the corporate memory of "how things are done" on campus, and is most often the "go to" person for visitors and students seeking IET services. Although both science laboratory technician positions need to be a "jack of all trades", the positions are roughly divided into: 1) mechanical/ wood/ metal/ construction and 2) electronics/ computers/ web master.

Some programs within the IET have developed policies and procedures manuals, particularly as they may be needed for consistent operation of the academic advising procedures within the program. Department personnel policies are guided by the Collective Bargaining Agreement (CBA), College personnel standards, and the IET Faculty Handbook (Appendix 2). The department is guided by three committees, Personnel, Safety, and Scholarship.

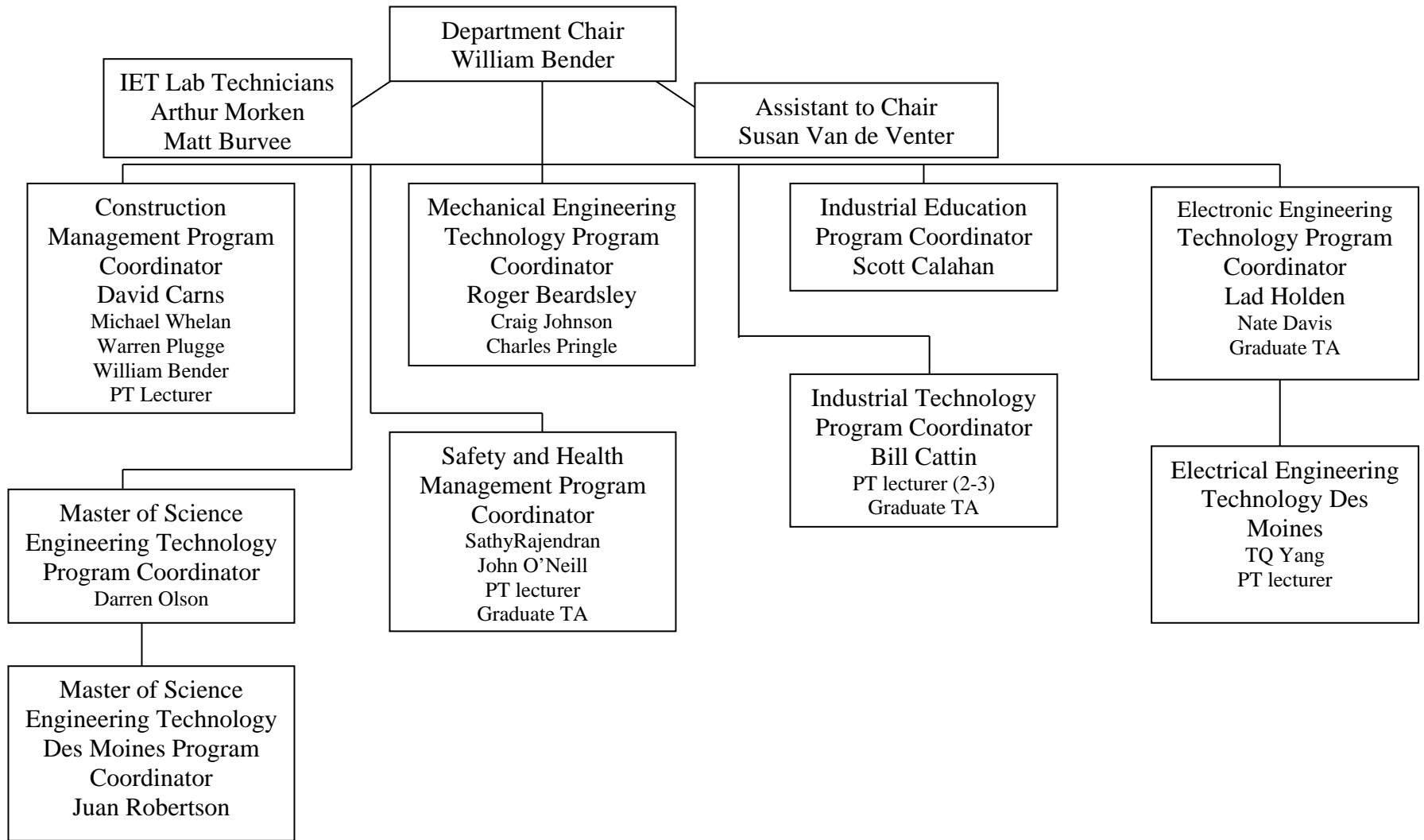


Figure 1. Industrial and Engineering Technology Department Organizational Structure Spring 2012

## **D. Department Programs**

The Construction Management (CMGT) Program's curriculum is fully accredited by the American Council for Construction Education (ACCE). The construction management program is also a member of the Associated Schools of Construction (ASC). Graduates of this program earn a Bachelor of Science in Construction Management. A limited entry program, this major prepares approximately 36 graduates each year for management positions in the construction industry.

Job placement of CMGT graduates is close to 100 percent. Graduates of the construction management program are highly qualified and compete effectively for such jobs as construction managers, cost estimators, project schedulers, field engineers, project engineers and project coordinators. The majority of graduates are employed by commercial building general contractors that build complex construction projects such as large retail stores, K-12 schools, higher education buildings, and commercial and public buildings. Approximately 30 to 40 % of the graduates pursue careers with heavy/civil construction contractors that build highways, bridges, tunnels, utility infrastructure, and other similar projects. Graduates of this program generally do not work in the home construction industry.

The Electronics Engineering Technology (EET) Program's curriculum is accredited by the Technology Accreditation Commission of ABET, Inc. (TAC/ABET). Technologists graduating from this program are applications oriented, building upon a background of mathematics, science, and technology related to electronic areas of study. Interfacing with design engineers at the product level, EET graduates install and operate technical systems, devise hardware from proven concepts, service machines and systems; manage production facilities; and produce prototypes from conceptual designs.

The Industrial Technology (InT) Program is a baccalaureate degree program designed to prepare individuals for technical management, production supervision, and similar types of professional leadership positions. The curriculum has a balanced program of studies drawn from a variety of disciplines relating to industry. Included are a sound knowledge and understanding of materials and manufacturing processes, principles of distribution, concepts of project management, human relations, communications skills, humanities, social sciences, the physical sciences, mathematics, design, and technical skills that permit the graduate to capably cope with typical managerial and production problems. The InT Program is maintained as a non-accredited program of instruction.

The Mechanical Engineering Technology (MET) Program's curriculum is accredited by the (TAC/ABET). Technologists graduating from this program are applications oriented,

building upon a background of mathematics, science, and technology related to mechanics, thermodynamics, fluids, and materials related to mechanical areas of study. Interfacing with design engineers at the product level, MET graduates develop and install mechanical systems, devise mechanical hardware from proven concepts, service machines and systems, produce functioning prototypes from conceptual designs, and manage production facilities

The Safety and Health Management (SHM) Program prepares students to fill professional positions within the broad area of safety and health management. Placement of graduates in recent years has been excellent with most finding employment with construction companies, industrial manufacturing facilities, or safety and health enforcement agencies throughout the Pacific Northwest region. The SHM Program plans to acquire accreditation through the Applied Sciences Accreditation Commission (ASAC/ABET) of ABET, Inc.

The Technology Education (TE) Program's curriculum follows guidelines approved by the Professional Educator Standards Board (PESB), the unit that oversees teacher preparation in Washington State. The Technology Education Program prepares and qualifies graduates to provide technology education instruction at the secondary level of public school systems, at community colleges, or at trade schools sponsored by industry. Students selecting this major will complete a basic background equivalent to one year of high school wood, metals, and ACAD, as well as mathematics through trigonometry. As the only Technology Education Program offered in the State of Washington, placement has been exceptionally high for several years.

The Master of Science in Engineering Technology (MSET) Program is multi-disciplinary, having the specific purpose of broadening the managerial and productivity capabilities of graduates from engineering technology, industrial technology, engineering, or other similar programs.

## **1. Department goals**

The following ten goals were listed as IET Departmental Goals in the 2004-05 Program Review report. Individual program goals were developed by programs in the 2009/10 timeframe. Updated departmental goals are found in section E.

- A. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs:
  - Maintain TAC/ABET accreditation for EET and MET
  - Maintain ACCE accreditation for CMGT

- Maintain NCATE accreditation for Industrial Education (Technology Education)
  - Obtain accreditation for SHM from American Society of Safety Engineers (ASSE)
  - Develop, publish and periodically update program strategic plans
- B. Strengthen the preparedness of freshman and transfer students.
- For Engineering Technology via participation in Washington Council for Engineering and Related Technical Education(WCERTE)
  - Maintain and publish mutually beneficial articulation agreements and policies with the state's community colleges
  - Proactive advising of campus students
- C. Serve the educational needs of the place-bound students.
- Offer Bachelor of Applied Science (BAS) and certificate programs where appropriate with attention on CWU centers
  - Offer distance education where appropriate
  - Develop and maintain appropriate virtual courses where appropriate
  - Offer Bachelor of Science in EET and other appropriate IET degrees at selected CWU Centers
- D. Continuously improve physical educational environment.
- Occupy a new building by 2009
  - Maintain and improve lab equipment and lab experiences consistent with current industry practices
  - Maintain and upgrade educational delivery tools such as visual aids, electronic media and audio visual systems
- E. Continuously improve the cultural educational environment
- Promote student professional organizations and professional activities
  - Encourage and recognize collaborations in research and publications
  - Encourage service learning from students
- F. Develop a diversified funding base to support academic and student programs.



- Establish and maintain at least one foundation account for each program
  - Develop a budget plan for foundations funds and actively seek funding from external sources
  - Establish a software fund
  - Establish endowed foundations for professorships and specific programs as appropriate
- G. Build mutually beneficial partnerships with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations.
- Every program served by an advisory board
  - Encourage faculty membership in professional societies
  - Encourage service learning by students
  - Sponsor student and professional activities
  - Identify and develop community ties
  - Work in conjunction with the CWU Development Office support an alumni database
- H. Continuously improve support for the faculty and staff in their respective fields.
- Increase opportunities for service and scholarship
  - Provided resources for each faculty and staff member to attend one conference or offsite training session per year.
  - Obtain necessary secretarial help for the department
  - Obtain student help for labs and educational support activities
- I. Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility.
- Sponsor seminars or lectures on diversity
  - Support the recruitment of a culturally diverse student and faculty population
  - Incorporate these diverse ideas and their assessments into courses and student activities
- J. Promote lifelong learning for students, faculty and staff.

- Sponsor professional short courses
- Sponsor professional seminars
- Encourage undergraduate student research with faculty mentors

**2. Describe the relationship of each department's goal to relevant college and University strategic goals. In section E the updated IET goals will be mapped to relevant strategic goals for the University and college.**

The University has recently finalized a new Strategic Plan that embodies revised Mission and Vision statements, seven Core Values, and a listing of five Core Themes that are further broken out into 16 Objectives and 35 Outcomes. A university level committee is currently finalizing indicators and data collection methods.

**3. Identify what data was used to assess goal attainment.**

I. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs:

- Maintain TAC/ABET accreditation for EET and MET
- Maintain ACCE accreditation for CMGT
- Maintain NCATE accreditation for Technology Education
- Obtain accreditation for SHM from American Society of Safety Engineers (ASSE)
- Develop, publish and periodically update program strategic plans

The IET Department has six undergraduate programs. Four of these programs (CMGT, EET, MET, and TE) have been accredited with their respective accreditation agencies for many years. The other two programs (SHM and InT) are currently not accredited. Data used to measure goal attainment includes whether or not regularly scheduled accreditation visits occurred, and what the results of those visits were.

II. Strengthen the preparedness of freshman and transfer students.

- For Engineering Technology via participation in Washington Council for Engineering and Related Technical Education (WCERTE)
- Maintain and publish mutually beneficial articulation agreements and policies with the state's community colleges

- Proactive advising of campus students

Data to measure attainment of this goal takes the form of active participation in WCERTE, continued creation and maintenance of articulation agreements and policies as needed, and procedures to provide academic and career advice to students who have an interest in programs offered by the IET Department.

III. Serve the educational needs of the place-bound students.

- Offer Bachelor of Applied Science (BAS) and certificate programs where appropriate with attention on CWU centers
- Offer distance education where appropriate
- Develop and maintain appropriate virtual courses where appropriate
- Offer Bachelor of Science in EET and other appropriate IET degrees at selected CWU Centers

Bachelor of Applied Science (BAS) degrees in SHM and Industrial Technology has been offered both at the Ellensburg campus and at the CWU – Des Moines and CWU – Lynnwood Centers. In addition, the SHM degree has been offered at the CWU – Lynnwood Center primarily by means of distance education. Virtual versions of courses (currently referred to as “online courses”) have been developed for a few IET courses. Finally, the EET, Industrial Technology, and MSET degrees have been offered at the CWU – Des Moines Center for many years. Attainment of the goal of serving the educational needs of the place-bound students can be measured by how successful these efforts have been.

IV. Continuously improve physical educational environment.

- Occupy a new building by 2009
- Maintain and improve lab equipment and lab experiences consistent with current industry practices
- Maintain and upgrade educational delivery tools such as visual aids, electronic media and audio visual systems

The IET Department has occupied Hogue Hall since its construction in the 1970. Goal attainment is measured against occupying a new building and maintaining proper labs and with modern AV systems.

V. Continuously improve the cultural educational environment

- Promote student professional organizations and professional activities
- Encourage and recognize collaborations in research and publications
- Encourage service learning from students

Student professional organizations that are actively involved in professional activities are one means of improving the cultural educational environment. Another means of improving the cultural educational environment is to encourage some level of undergraduate research with the associated presentation or publication of results. Finally, service learning has been widely recognized as a meaningful way to improve the cultural educational environment for students. Data to measure goal attainment would include the number of student professional organizations and their activity levels, the number and nature of research projects and resulting presentations, and the participation level in service learning or civic engagement projects by departmental students.

VI. Develop a diversified funding base to support academic and student programs.

- Establish and maintain at least one foundation account for each program
- Develop a budget plan for foundations funds and actively seek funding from external sources
- Establish a software fund
- Establish endowed foundations for professorships and specific programs as appropriate

The most appropriate measure of goal attainment is a citation of foundation accounts that have been established to support academic programs, a description of active and successful development efforts to increase funding levels from external sources, a listing of software funds that have been established to provide and update computer software used by IET students, and an enumeration of endowed foundation accounts for professorships and other specifically identified programs.

VII. Build mutually beneficial partnerships with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations.

- Every program served by an advisory board

- Encourage faculty membership in professional societies
- Encourage service learning by students
- Sponsor student and professional activities
- Identify and develop community ties
- Work in conjunction with the CWU Development Office support an alumni database

Measures of attainment for goals listed in this section would include: 1) a listing of programs that have industry advisory boards, and another listing of those programs that do not, 2) an indication of how many faculty members currently hold professional society memberships, 3) a repeated listing of the information given in Item V above regarding student participation levels in service learning or civic engagement projects, 4) a partial listing of the student and professional activities that faculty and staff have participated in, 5) a sampling of community ties between the IET Department and various entities associated with Ellensburg, and 6) data supporting an improved alumni database located in the CWU Development Office.

VIII. Continuously improve support for the faculty and staff in their respective fields.

- Increase opportunities for service and scholarship
- Provided resources for each faculty and staff member to attend one conference or offsite training session per year.
- Obtain necessary secretarial help for the department
- Obtain student help for labs and educational support activities

Increased opportunities for service and scholarship are goals that are quantifiable by comparing accomplishments in Annual Activity Reports to past reports. Providing resources for each faculty and staff member to attend a conference or training opportunity annually is measured by listing faculty and staff who have been able to attend such an event. Accomplishing additional secretarial help can be measured with a description of current and past employment for the office. A description of what has been accomplished with regard to student help for labs and educational support is the best indicator of goal attainment.

IX. Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility.

- Sponsor seminars or lectures on diversity
- Support the recruitment of a culturally diverse student and faculty population
- Incorporate these diverse ideas and their assessments into courses and student activities

Data to measure attainment of this goal would be a listing of seminars or lectures on diversity that the Department has sponsored, a description of efforts the Department has made to recruit diverse student and faculty populations, and a compilation of assessment results showing the inclusion of diverse ideas and student activities into our programs.

X. Promote lifelong learning for students, faculty and staff.

- Sponsor professional short courses
- Sponsor professional seminars
- Encourage undergraduate student research with faculty mentors

Data supporting attainment of this goal would include listings of professional short courses sponsored by the IET Department or by individual faculty members, and listings of student research carried out with faculty mentors.

**4. Describe the criterion of achievement (standard of mastery) for each goal.**

I. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs:

- Maintain TAC/ABET accreditation for EET and MET
- Maintain ACCE accreditation for CMGT
- Maintain NCATE accreditation for Technology Education
- Obtain accreditation for SHM from American Society of Safety Engineers (ASSE)
- Develop, publish and periodically update program strategic plans

The criterion for maintaining accreditation is to receive a positive endorsement by the accrediting team. The most common result of a visit is a positive report listing a limited number of weaknesses, concerns, and/or observations, and a requirement for an interim report in two or three years. All four of the IET Department's accredited programs received positive endorsements, with three of the programs (EET, MET,

and CMGT) required to submit an interim report addressing actions taken to alleviate noted concerns; Technology Education was not required to submit an interim report.

The EET Program received a report listing three Weaknesses, one Concern, and one Observation. The MET Program's report also listed three Weaknesses, but with no Concerns. The three Weaknesses listed were the same for both programs. Both the EET and the MET Programs were subsequently reaccredited in August, 2011, with the requirement to submit Interim Reports regarding progress at remedying the identified weaknesses. Both Interim Reports were submitted; results will be announced in August, 2012.

The CMGT Program hosted a four-person team of ACCE accreditors on campus in March, 2009 and was reaccredited in July 2009. The resulting report listed nine Strengths, one Weakness, four Concerns, and two Undeveloped Potentials. A Third Year Progress Report is required during May, 2012. That report will indicate that all the Weakness, Concerns, and Undeveloped Potentials have been eliminated, or otherwise addressed.

The Technology Education Program was visited during the most recent Washington State approval visit, Professional Educator Standards Board (PESB) in 2007. All CWU education programs were NCATE accredited at that time. An interim Washington State review was completed in 2008 and all CWU education programs were fully approved by the PESB. Recently the University elected to drop NCATE accreditation and use only the PESB process. Washington State is an NCATE partnership state and standards closely mirror NCATE standards. The next PESB approval review is scheduled for Spring, 2013.

The goal of maintaining TAC/ABET accreditation for the EET and MET Programs, ACCE accreditation for the CMGT Program, and the Washington State PESB approval of the Technology Education Program was achieved.

The SHM Program was to be submitted for initial accreditation from the Applied Science Accreditation Commission of ABET, Inc. (ASAC/ABET) in 2009. For a variety of reasons, the initial request for accreditation was postponed, and is now tentatively targeted for 2016 when the next regularly scheduled visit of an ABET accreditation team will occur in AY 2015/16. The goal of obtaining accreditation for the SHM Program has not yet been achieved.

The criterion for achieving this goal would be the existence of a complete, up-to-date set of strategic plans for all seven of the programs in the IET Department. While some strategic planning has occurred as a part of continuous improvement plans required for accreditation, a complete strategic plan covering all six programs

has not been completed. Achievement of the goal to develop, publish, and update program strategic plans for all programs has not yet been fully achieved.

II. Strengthen the preparedness of freshman and transfer students.

- For Engineering Technology via participation in Washington Council for Engineering and Related Technical Education (WCERTE)
- Maintain and publish mutually beneficial articulation agreements and policies with the state's community colleges
- Proactive advising of campus students

One criterion of achievement for this goal would be attendance at WCERTE meetings and activities. Although active in the past 2004 to 2009, the department has not recently been active in WCERTE. The criterion of achievement for the goal of maintaining and publishing mutually beneficial articulation agreements and policies is difficult to quantify. We have not rescinded any of the agreements and policies currently in effect, and the Department is always open to forming others as needed. As for proactively advising campus students, faculty and sometimes student representatives of the IET Department actively participate in freshman and transfer student orientation sessions, majors fairs, campus advising days, open houses, and other similar events sponsored by the Academic Advising Center. IET faculty members maintain an open-door policy with regard to students (and parents) who arrive at Hogue Hall with advising questions. Finally, students who have declared one of the majors or minors offered in the Department are strongly encouraged to establish and maintain an active relationship with their assigned academic advisor. We are lacking in actively participating in recent WCERTE meetings, we are available and interested in appropriate articulation relationships with community colleges, and we are successful in proactive advising of students interested in IET Department programs.

III. Serve the educational needs of the place-bound students.

- Offer Bachelor of Applied Science (BAS) and certificate programs where appropriate with attention on CWU centers
- Offer distance education where appropriate
- Develop and maintain appropriate virtual courses where appropriate
- Offer Bachelor of Science in EET and other appropriate IET degrees at selected CWU Centers

The IET Department currently offers Bachelor of Applied Science (BAS) degrees in the Industrial Technology Program and in the SHM Program. Neither of these BAS



degrees has attracted enrollments sufficient to make them worthwhile. Both BAS degrees have been recommended for elimination by the university and the IET department concurs with this. Both BAS degrees will be discontinued within the year.

Distance Education (DE) using interactive TV, offerings have been used to support IET Department programs at the CWU – Des Moines and CWU – Lynnwood Centers. However, with the termination of the SHM Program at the centers in 2009 and lack of instructor interest, DE offerings have become nonexistent. Since the Hogue Hall renovation project includes additional distance education resources, but CWU is shifting away from this type of delivery, the IET department anticipates minor use of distance education mode of course delivery.

The IET Department has developed and regularly delivers a handful of virtual courses. IET 101 (Modern Technology and Energy), IET 260 (NURBS Modeling), and IET 301 (Engineering Project Cost Analysis) are regularly and most successfully offered as summer session courses via a web delivery method. As additional and appropriate opportunities arise, we will continue expanding our offerings of virtual courses.

The undergraduate EET and Industrial Technology degrees, as well as the graduate MSET degree, have been offered at the CWU – Des Moines Center for many years. In spite of the challenges associated with limited resources, nontraditional student needs, and the arms-length control of the operation, the effort has been mixed or marginally successful. The potential for IET Department degrees to meet the growing needs of the aerospace and associated industries located in the Puget Sound area is significant enough that we plan to continue offering these programs at the CWU – Des Moines Center. We also expect to expand offerings at other centers as demand dictates and new resources allow. The IET Department will continue to grow its CWU Center programs, potentially including distance education offerings where appropriate, and to develop more online versions of courses where possible.

#### IV. Continuously improve physical educational environment.

- Occupy a new building by 2009
- Maintain and improve lab equipment and lab experiences consistent with current industry practices
- Maintain and upgrade educational delivery tools such as visual aids, electronic media and audio visual systems

Construction of a new building was authorized by the Washington State Legislature in 2009. Construction started on the new addition in November, 2009, and the department started operations in the addition in the Fall of 2011. Renovation of the

original Hogue Hall is scheduled for turnover to CWU in the late spring of 2012 and classes are scheduled for Fall 2012. Substantial expansion in the variety and capability of lab equipment has been achieved as a part of the furniture, fixtures, and equipment budget for the project, as have the audio visual systems and electronic media equipment in the new building. These goals will have been met in 2012.

V. Continuously improve the cultural educational environment

- Promote student professional organizations and professional activities
- Encourage and recognize collaborations in research and publications
- Encourage service learning from students

The IET Department sponsors a wide range of professional organizations, including student chapters of: 1) Associated General Contractors (AGC), 2) American Society of Mechanical Engineers (ASME), 3) American Foundry Society (AFS), 4) American Society of Safety Engineers (ASSE), 5) Central Technology Education Association (CTEA), 6) Institute of Electrical and Electronic Engineers (IEEE), 7) Mechanical Contractors Association (MCA), 8) National Association of Home Builders (NAHB), and 9) Sigma Lambda Chi ( $\Sigma\Lambda\chi$ ). Most of these chapters are active, meeting at least monthly, and engaging in a variety of educational, social, and service learning activities. Faculty members act as student chapter advisors, and students are encouraged to become members of the appropriate organization based on their interest and career direction. IET sponsors one or more active student professional organizations for each program in the Department.

Students and faculty members collaborate on a regular basis on a variety of research projects. Research efforts may be in the form of a Masters or senior project, a final project for a course, or as part of an individual studies course. Most of these efforts include a publication or presentation that may take place as a part of a course or as part of a scholarly venue such as CWU's annual Symposium On Undergraduate Research and Creative Expression (SOURCE) event. IET Department students and faculty have presented about a dozen times during the last five years. While publication or presentations are not always made using an archival venue, undergraduate research, usually in conjunction with a faculty member, is solidly encouraged within the IET Department.

Service learning activities have most commonly occurred one of four ways. First, student chapters may provide their student members with one or more opportunities to participate in a service project. Secondly, some IET students enroll in the IET 309 (Civic Engagement) course for credit, and complete an organized service learning project. A professor may make service learning an educational outcome in one of their classes. Finally, students have volunteered for activities such as Habitat for

Humanity on a personal basis. In a small community such as Ellensburg, and with service learning being a high priority on campus, service projects are very common for many students in the IET Department.

- VI. Develop a diversified funding base to support academic and student programs.
- Establish and maintain at least one foundation account for each program
  - Develop a budget plan for foundations funds and actively seek funding from external sources
  - Establish a software fund
  - Establish endowed foundations for professorships and specific programs as appropriate

The goal of establishing and maintaining at least one foundation account for each program has been met. The CMGT, EET, MET, and SHM Programs all have one or more foundation accounts in place. A few of the accounts, particularly the larger ones, are endowed but most are not. Each of these accounts has enjoyed a fairly steady level of donations that continue to grow the size of the accounts.

The two programs that do not have foundation accounts are the Technology Education and Industrial Technology Programs. The nature of these two programs is such that they do not or cannot attract sizeable donations from their associated career fields. In these two cases, there is more work to do to accomplish this goal.

The goal of actively seeking external funding for foundation accounts has been greatly helped by the participation of the University Advancement Office and the Development Officer for the College of Education and Professional Studies (CEPS). In addition to the regular program for giving, we have mounted a successful program of naming spaces in Hogue Hall in return for a sizeable donation to support departmental programs. Approximately \$310,000 has been raised for student and program support through this effort.

Funding to support updating and maintaining computer software used in IET departmental courses has been increased significantly over the past few years. Student fees tied directly to courses using computers, increased levels of support from the university Information Technology Services budget, and cost-sharing of software expenses with the Facilities Management Department on campus have all been used to increase the level of support for this important need. Most recently, a modest technology fee (\$5) attached to all departmental courses has been requested in an effort to keep the best hardware and software in front of the students.

Finally, one endowed foundation account for a professorship and associated program improvement has been established using matching state funds in the Construction Management Program. Endowed professorships are difficult to come by, and we don't expect to endow a professorship in every program in the near future. However, we continue to pursue this goal as opportunities arise.

The current state of higher education support requires every department in the university develop a diversified funding base to better support their academic and student programs. We have made progress in this area, but have a continuing need to improve on our results.

VII. Build mutually beneficial partnerships with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations.

- Every program served by an advisory board
- Encourage faculty membership in professional societies
- Encourage service learning by students
- Sponsor student and professional activities
- Identify and develop community ties
- Work in conjunction with the CWU Development Office support an alumni database

Industry advisory boards are in place and functioning for TE, SHM, MET, EET, and CMGT Programs; an industry advisory board is not operational for the Industrial Technology Program and MSET program.

A sampling of some professional societies that IET faculty are members of include the following:

- American Foundry Society
- American Society of Safety Engineers
- American Society of Civil Engineers
- American Society of Engineering Educators
- American Society of Mechanical Engineers
- American Solar Energy Society

- Association of Energy Engineers
- Association of Technology, Management, and Applied Engineering
- Construction Management Association of America
- Design-Build Institute of America
- Foundry Educational Foundation
- Institute of Electrical and Electronic Engineers
- International Council on Systems Engineering
- Society for Industrial and Applied Mathematics
- Society of American Military Engineers
- Society of American Value Engineers
- Transportation Planning Board
- U.S. Green Building Council

Many of the IET faculty members belong to more than one of the organizations listed above. Likewise, many of the organizations listed have more than one IET faculty member on their membership rosters. As a part of their membership and participation in professional organizations, IET faculty members have achieved many certifications and registrations associated with these groups. Examples include:

- Professional Engineer (PE)
- Leadership in Energy and Environmental Design Accredited Professional (LEED AP)
- Certified Safety Professional (CSP)
- Construction Risk and Insurance Specialist (CRIS)
- Certified Manufacturing Engineer (SME)
- Certified Manufacturing Technologist (SMT)
- Certified Erosion and Sediment Control Lead (CESCL)
- Certified Construction Manager (CCM)
- Design-Build Designated Professional (DBIA)
- Associate Value Specialist (AVS)

This partial list demonstrates achievement of the goal: Encourage faculty membership in professional societies.

Achievement of the goal: Encourage service learning by students is discussed in Item V above.

Sponsor student and professional activities goal is met during the course of any given academic year. Examples of this support and sponsorship include the following:

- CMGT students (three teams) who practice for and compete in the ASC Construction Management Competition. (Reno, NV, every year)
- MET, EET, and Industrial Tech. students who built a robot, then competed in a robotic skills competition. (Florida, 2010)
- SHM students attended an ASSE annual meeting. (Portland, OR, 2010  
Spokane, WA, 2011)
- MCA students who competed in the National Mechanical Contractors Student competition. (Texas, 2009, Hawaii 2008)
- Tech. Ed. students who competed in the Skills USA Competition. (Bellevue, WA, 2011)
- Regional ASME Student Competition. (Victoria, B.C., 2011, Ellensburg, WA, 2012)
- CMGT students who competed in the NAHB Student Construction Management Competition. (Orlando, FL, 2011)
- IET faculty members participating in an ABET Assessment Workshop. (Lake Tahoe, NV, 2008)
- IET faculty member attending AGCA 93<sup>rd</sup> Annual Convention. (Honolulu, HI, 2012)
- IET faculty members attending ASC Annual Conferences. (at least one faculty member since 2004)

Faculty members have a total of \$1000 per year devoted to professional development. The department augments these funds with summer net revenues so that each faculty member and staff has at one professional development opportunity per year. Student attendance or participation in professional activities is generally funded by industry or student clubs.

Achievement of the goal: Identify and develop community ties have been met by:

- Service learning activities in the community by students and faculty members

- Community service rendered by serving on city, county, school district, church, nonprofit organization committees, boards, and planning groups
- Joint research projects with the City of Ellensburg related to renewable energy projects
- Participation in CWU's membership on the IPZ Board dealing with development of sustainable industries in Ellensburg
- Construction of garages and other projects as a part of the CMGT 245 (Light Commercial Construction) course
- Sponsorship of a Pattern Swap day each spring where interested parties are encouraged to sand-cast a metal object in the foundry

Work in conjunction with the CWU Development Office in support of an alumni database is a work in progress. Most faculty members work with the CEPS development officer to share contact information from alumni, potential donors, and interested parties. However, this process is not hard wired and takes constant updating. In summary, the IET Department, its faculty, its students, and its activities have achieved the goal of building mutually beneficial partnership with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations.

VIII. Continuously improve support for the faculty and staff in their respective fields.

- Increase opportunities for service and scholarship
- Provided resources for each faculty and staff member to attend one conference or offsite training session per year.
- Obtain necessary secretarial help for the department
- Obtain student help for labs and educational support activities

We constantly strive to increase opportunities for service and scholarship. We believe we are accomplishing this goal as much as our resources allow us to. Each faculty and staff member is encouraged to attend one conference or offsite training session per year, nobody from the IET Department has been refused the opportunity to attend such an activity. It should be noted, however, that not all of our faculty and staff members choose to avail themselves of this opportunity, while others choose to participate in more than a single opportunity.

Additional secretarial help for the department has been obtained in an inconsistent fashion. Work-study students and temporary solutions have been utilized at times, but a lack of physical space and funding has hampered the effective use for additional

staffing. However, with the move into the new department offices, and the expansion of the department both physically and numerically, the need for additional office help is greater than it has been in the past. The pursuit of funding this goal will be intensified in the future.

Student help for labs and educational support activities has been somewhat successful in the past, particularly in the areas of tutorial help for some courses, grading help for some faculty members requesting it, and student help for laboratory activities for some classes. However, with the advent of the larger, more complex, and increased number of lab and shop spaces in the new and renovated Hogue Hall, the need for additional student help in the laboratory courses (particularly outside regularly scheduled class periods and for lab preparation) is now becoming a serious issue within the IET Department. Lab and shop support, whether through student employees or an additional staff member, must be increased.

- IX. Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility.
- Sponsor seminars or lectures on diversity
  - Support the recruitment of a culturally diverse student and faculty population
  - Incorporate these diverse ideas and their assessments into courses and student activities

CWU has recently established a program supporting a core value, not just dealing with diversity, but rather with the more appropriate concept of inclusivity. The IET Department fully supports the university's core value in this matter. So far, however, we have not proactively pursued either diversity or inclusivity through an active recruiting program. We have responded to the desirability of inclusivity both in student advising and in faculty recruiting with some success. We have also been at the forefront in support of the University's pursuit of international agreements to bring Asian students to CWU for graduate degrees. In the future, we expect to participate in CWU's international and domestic efforts to create greater opportunities for students and faculty from diverse cultures.

- X. Promote lifelong learning for students, faculty and staff.
- Sponsor professional short courses
  - Sponsor professional seminars
  - Encourage undergraduate student research with faculty mentors



The standard of mastery for each goal has not been established at this time. If we choose to retain this goal for the department, then we will need to redefine what constitutes a promotion of lifelong learning for all parties. We will then have to set targets for how many professional short courses and seminars must be offered each year, and how much undergraduate student research must be accomplished to conclude that we have reached our goal.

**E. Looking to the future and based on the results for the department goals and objectives listed above the faculty and staff updated these in Winter of 2012. IET department goals and objectives are now:**

- I. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs:
  - Maintain TAC/ABET accreditation for EET and MET
  - Maintain ACCE accreditation for CMGT
  - Maintain Washington State PESB accreditation for Technology Education
  - Obtain accreditation for SHM from ASAC/ ABET by 2016
  - Obtain Association of Technology, Management, and Applied Engineering (ATMAE) accreditation for Master of Science in Engineering Technology (MSET) and Industrial Technology (InT) programs by 2016
- II. Strengthen the visibility of the department's programs.
  - Develop, publish (hard copy and online) and periodically update program goals, objectives and assessment plans
  - Format all program and departmental web pages consistently
  - Proactive advising of campus students via major fairs, summer orientation, career fairs, and open house
  - Visit six Community Colleges per year
  - Every program have print media and this media is reviewed every year
- III. Serve the educational needs of the place-bound students.
  - Offer appropriate alternative methods of Distance Education where appropriate, develop and maintain appropriate virtual courses

- Each program shall develop two DE classes in 5 yrs
  - Offer Bachelor of Science in EET and other appropriate IET degrees at selected CWU Centers
- IV. Continuously improve physical educational environment
- Maintain and improve lab equipment and experiences, and visual aids consistent with current industry practices
- V. Continuously improve the cultural, educational, and lifelong learning environment
- Promote student professional organizations and professional activities
  - Encourage and recognize collaborations in research and publications
  - Encourage service learning from students
  - Sponsor professional short courses and professional seminars
  - Encourage undergraduate research with faculty mentors
  - Support the recruitment of a culturally diverse student and faculty population
  - Programs incorporate diversity ideas and their assessments into courses and student activities
- VI. Develop a diversified funding base to support academic and student programs
- Establish and maintain at least one foundation account for each program
  - Each program will develop a budget plan for foundations funds and actively seek funding from external sources
  - Establish a software fund for any software used in IET courses that has a cost associated with its use
  - Establish a fund and plan for departmental hardware replacement
  - Establish endowed foundations for each programs as appropriate
- VII. Build mutually beneficial partnerships with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations
- Every program will be served by an advisory board by Academic Year 2012/13
  - Encourage faculty membership in professional societies

- Identify and develop community ties
  - Supply CEPS Development Officer with alumni data
- VIII. Continuously improve support for the faculty and staff
- Increase opportunities for service and scholarship
  - Provided resources for each faculty and staff member to attend one conference or offsite training session per year
  - Obtain necessary administrative and technical help for the department
    - Obtain student help for each program laboratory
    - Increase administrative support by one FTE
    - Increase technical support by one FTE

Table 1 shows how these departmental goals and objectives are mapped to College and University goals and objectives for the future.

## **II. Description of degree programs and curricula**

**A. Each degree program (undergraduate and graduate) offered in department by location, including minor and undergraduate certificate program are shown in table 2.**

**Table 1  
IET Department Plan**

<b>Department/Program Goals</b>	<b>Related College Goals</b>	<b>Related University Goals</b>	<b>Method(s) of Assessment (What is the assessment?)</b>	<b>Who/What Assessed (population, item)</b>	<b>When Assessed (term, dates)</b>	<b>Criterion of Achievement (Expectation of how good things should be?)</b>
1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation	1. outstanding academic and professional growth experience for students	1 - Teaching and learning: Student success is the highest priority	Compare to accreditation outcomes	Programs	Next visit is in 2015	Re-accredit CMGT, EET, MET, and TE. Initial accreditation for SHM, InT and MSET
2. Strengthen the visibility of the department's programs	1. outstanding academic and professional growth experience for students	1...provide its students with accessible, diverse, personalized, distinctive, and rigorous curricular	Compare attendance of events to opportunities	Outreach Events	Each AY at culmination department meeting	100% participation of all on campus events
3. Serve the educational needs of the place-bound students	1. outstanding academic and professional growth experience for students all locations	1 - Teaching and Learning: Student success is the highest priority	Compare number of students to base line of AY 2011/12	Number of students at centers and registered online	Each AY at culmination department meeting	Grow programs at centers to have classes with at least 12 UG and 8 G Each program have 2 online classes
4. Continuously improve physical educational environment	5. Provide professional, high-quality staffing, facilities...	5 - Resource Development and Stewardship	Compare new lab equipment to existing inventory	Programs in their lab spaces	June each AY	Equipment is new
5. Continuously improve the cultural, educational, and lifelong learning environment	1. outstanding academic and professional growth experience for students and 2. ... diversity	2 - CWU is committed to providing all faculty, staff, and students a diverse working and learning environment	Compare activities and events to existing programs	Programs review accomplishments	June each AY	Document accomplishments

<b>Department/Program Goals</b>	<b>Related College Goals</b>	<b>Related University Goals</b>	<b>Method(s) of Assessment (What is the assessment?)</b>	<b>Who/What Assessed (population, item)</b>	<b>When Assessed (term, dates)</b>	<b>Criterion of Achievement (Expectation of how good things should be?)</b>
6. Develop a diversified funding base to support academic and student programs	5. Provide professional, high-quality staffing, facilities, technologies...	5 - Resource Development and Stewardship	Amount of funds raised	Amount of funds received	June each AY	Compare % growth per AY
7. Build mutually beneficial partnerships with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations	1. outstanding academic and professional growth experience for students 4. Build mutually beneficial partnerships...	4. CWU is committed to serve external communities	Compare activities to baseline of AY 2012	Number of activities	June each AY	Maintain level consistent with annual average
8. Continuously improve support for the faculty and staff	3. Recruit and retain a diverse and highly qualified faculty	5 - Resource Development and Stewardship	Compare activities to baseline of AY 2012	Number of activities	June each AY	Maintain level consistent with annual average

**Table 2**  
**Programs Offered in Department**  
**Year 5 is most recent**

Degree Program	Delivery Location(s)	Instructional Staff		# Students in Major					# Degrees Awarded				
		Faculty FTE	Grad Assist. FTE	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
CMGT	Ellensburg	4.0	0.0	73	71	83	80	76	37	32	44	33	38
EET	Ellensburg	2.0	1.0	25	24	20	32	33	9	3	2	7	9
EET	Des Moines	1.2	0.0	8	7	9	10	14	5	5	6	3	5
IT	Ellensburg	1.5	1.0	20	24	20	31	33	8	10	7	7	14
IT	Des Moines	0.2	0.0	0	1	5	6	8	0	0	0	0	2
MET	Ellensburg	3.0	0.0	58	47	51	58	58	23	13	16	17	11
SHM	Ellensburg	2.5	1.0	40	64	60	32	33	12	14	23	24	27
SHM	Des Moines/ Lynnwood	0.0	0.0	12	10	15	27	0	10	12	15	27	0
TE	Ellensburg	1.0	0.0	7	12	12	12	14	1	2	1	4	5
MSET	Ellensburg	1.0	0.0	3	2	4	6	20	3	1	2	3	20
MSET	Des Moines	1.0	0.0	13	10	11	17	6	5	4	4	4	6
Minor Programs	Delivery Location(s)	Instructional Staff		# Students in Minor					# Minors Completed				
		Faculty FTE	Grad Assist FTE	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Construction Safety	Ellensburg	In # Above	0	Unable to collect reliable data, however, the number of students and minors completed is a small component but complementary to degrees offered									
Safety and Health MGT	Ellensburg	In # Above	0										
Traffic Safety Ed	Ellensburg	In # Above	0										
Certificate Programs	Delivery Location(s)	Instructional Staff		# Students in Program					# Cert. Completed				
		Faculty FTE	Grad Assist FTE	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
None													

Charts 1- 7 show the numbers of students graduating from majors in the IET department.

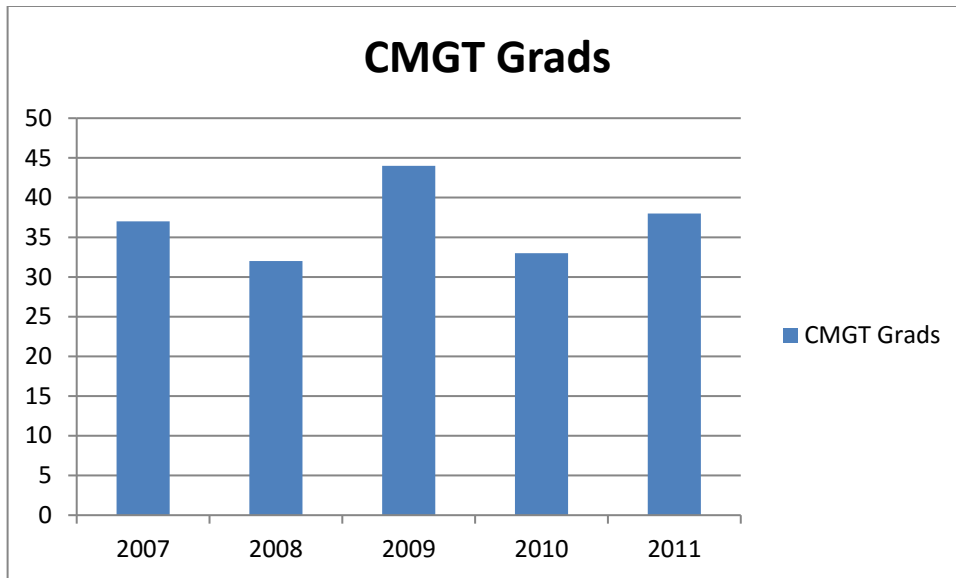


Chart 1 Construction Management Graduates

The CMGT program has a healthy enrollment and produces the highest number of graduates in the department.

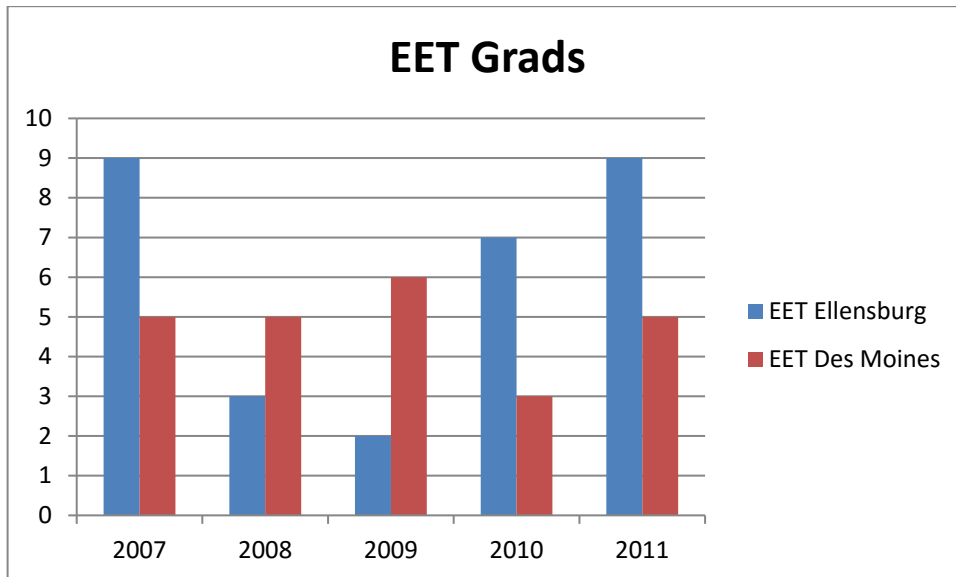


Chart 2 Electronic Engineering Technology Graduates

The EET program enrollments are relatively small, however graduates are in high demand and command high salaries.

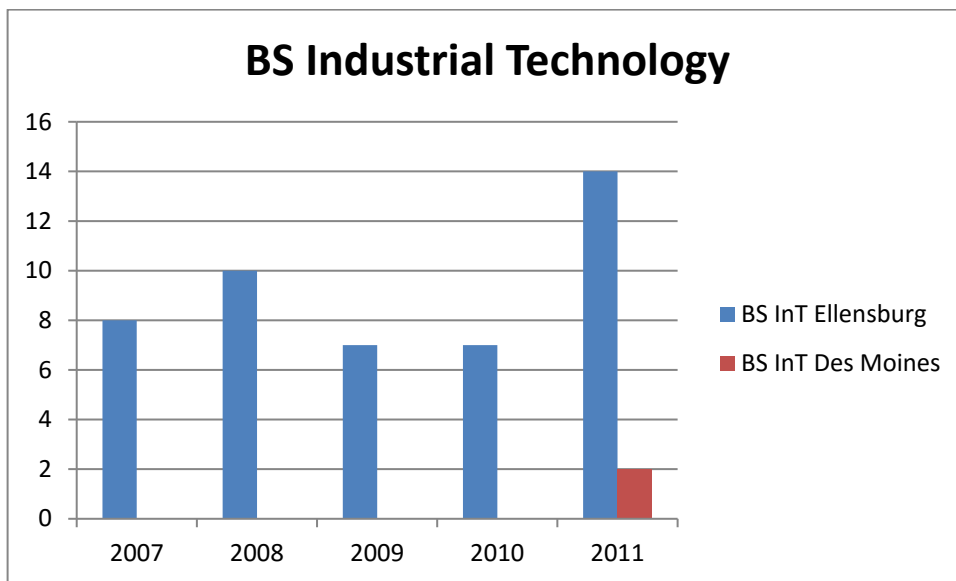


Chart 3 BS Industrial Technology Graduates

This program is located both in Ellensburg and Des Moines. The program in Des Moines was started in 2009 in conjunction with the MSET program. Enrollments have remained low and the program has stopped accepting new students beginning Fall 2012. The program in Ellensburg is a combination of several programs offered by the IET department.

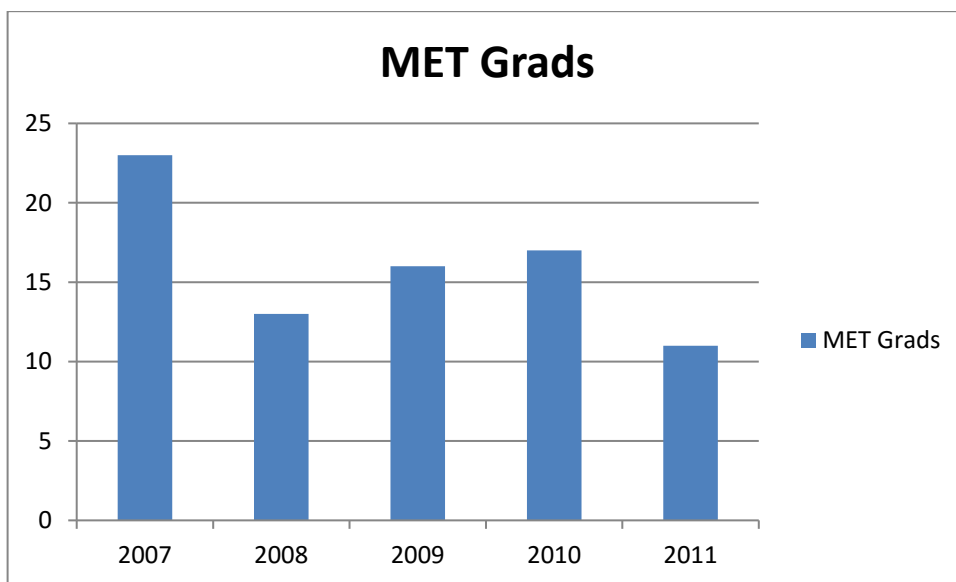


Chart 4 Mechanical Engineering Technology Graduates

The program has seen some recent growth and it is expected graduates will number about 20 for the next couple of years.



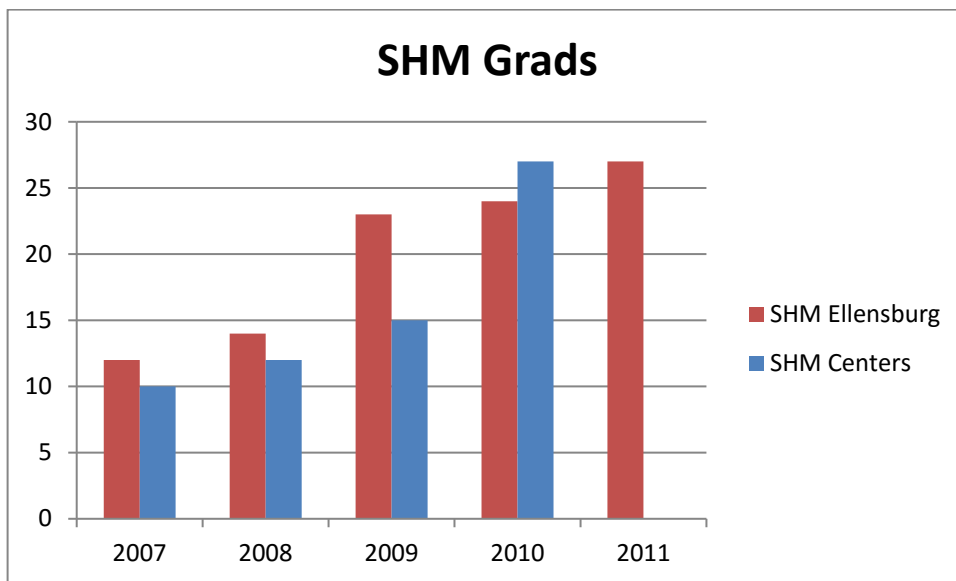


Chart 5 Safety and Health Management Graduates. The SHM program was offered in both Des Moines and Lynnwood but was discontinued in 2009 due to staffing issues.

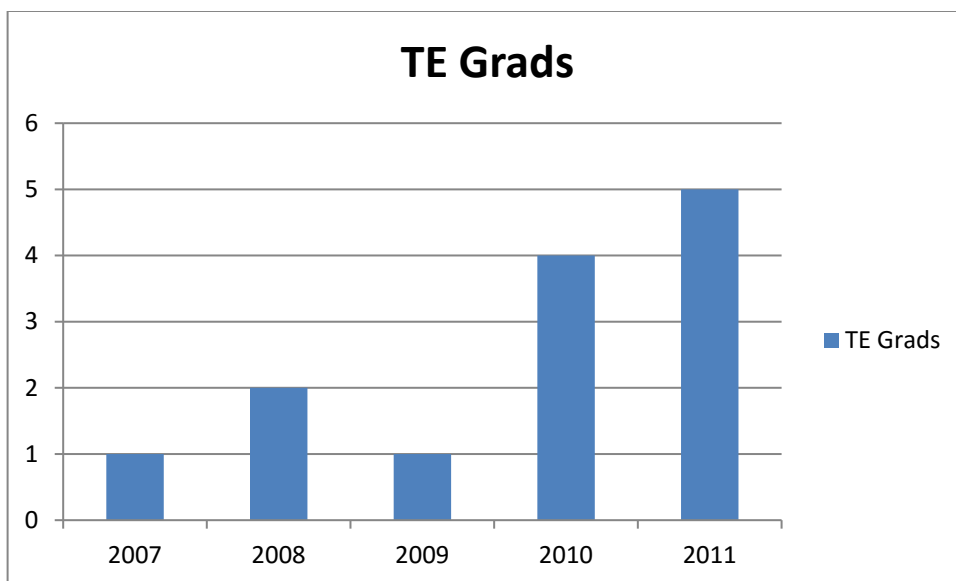


Chart 6 Technology Education Graduates. This program is unique in the state and has been steadily growing.

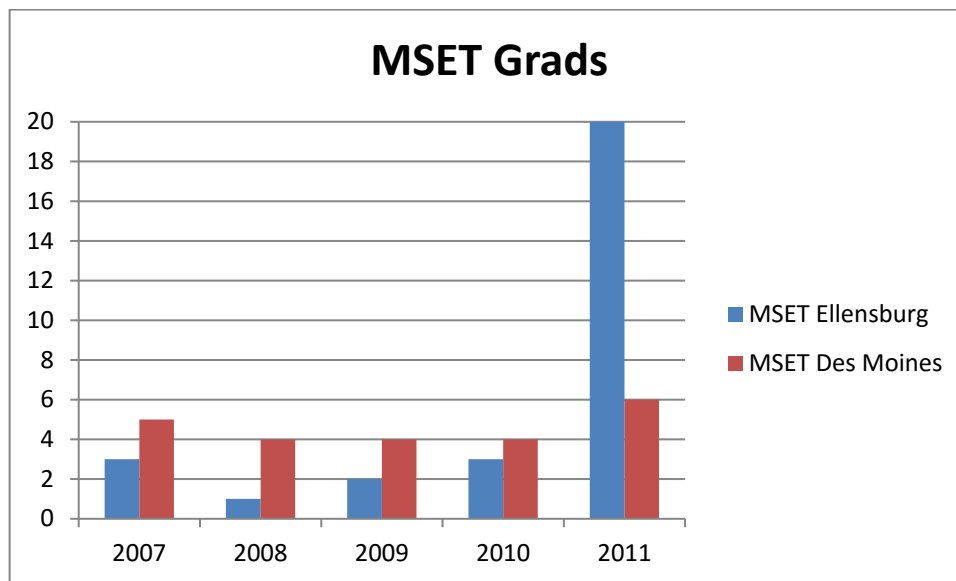


Chart 7 Master of Science in Engineering Technology Graduates. The huge spike in MSET graduates in 2011 was due to hosting 20 Chinese graduate students.

**B. The following section lists the department’s contribution to general education, service and professions educators.**

**1. General Education contributions**

- a. Courses delivered: IET 101 Modern Technology
- b. Location: Ellensburg
- c. Instructional staff: Approximately one half time Lecturer
- d. Number of students: 50 students a class offered 4 or 5 times per year

**2. Professional Educators contributions**

- a. None Provided

**3. Service Course delivery**

- a. Classes are not provided that are specifically required for another major, however, students from across campus take the following classes as an introduction or on a space available basis, for example IET 145 Machine Woodworking, IET 161 AutoCAD, IET 360 Brewing Process Technology, CMGT442/IET552 LEED. IET 442/ 552 Alternative Energy cross listed with GEOG 442/ 552.
- b. Location: Ellensburg
- c. Instructional staff: Approximately 8 additional workload units or two classes offered
- d. Number of students: Approximately 60 students per AY

**C. Required measures of efficiency for each department for the last five years**

Table 3 Student / Faculty Ratios (FTES/FTEF) disaggregate data

	2007	2008	2009	2010	2011
IET Full-time Equivalent Faculty (FTEF)	15.2	13.1	15.0	13.4	12.6
IET Full-time Equivalent Students (FTES)	222.1	228.6	243.5	272.8	255.9
IET Student-to-Faculty Ratio (SFR)	14.6 : 1	17.5 : 1	16.2 : 1	20.4 : 1	20.3 : 1

Tables 4, 5, 6 and 7 Average class size; disaggregate upper and lower division and graduate courses.

Table 4 CWU Overall Average Lecture Class Size

<b>CWU Overall Average Lecture Class Size: AY 2007 through 2011</b>				
<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
22.9	21.9	22.8	23.9	24.2

Table 5 IET Overall Average Lecture Class Size

<b>IET Overall Average Lecture Class Size: AY 2007 through 2011</b>				
<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
17.6	17.8	17.6	19.7	17.7

IET class sizes are smaller in size when compared to the CWU average. This is due to the high number of upper division and laboratory classes offered by the IET department.

Table 6 CWU Upper/ Lower/ Graduate class size

<b>CWU Upper v. Lower v. Graduate Average Lecture Class Size: AY 2007 through 2011</b>					
	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Graduate</b>	8.5	7.4	8.0	8.8	8.9
<b>Lower</b>	32.3	30.8	31.7	34.4	31.8
<b>Upper</b>	19.0	18.1	18.8	19.5	19.6

Table 7 IET Upper/ Lower/ Graduate class size

<b>IET Upper v. Lower Average Lecture Class Size: AY 2007 through 2011</b>					
	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Graduate</b>	7.7	5.1	6.3	8.5	6.7
<b>Lower</b>	27.0	26.9	25.6	27.3	25.0
<b>Upper</b>	16.0	16.8	16.9	19.1	17.4

Comparing table 7 to table 6, IET class sizes are slightly smaller than the CWU averages.

Table 8 All Locations, All IET programs FTES

	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Lower Division</b>	65.1	74.6	71.3	81.6	77.4
<b>Upper Division</b>	145.1	143.3	159.0	176.1	163.1
<b>Graduate Level</b>	11.8	10.7	13.2	15.1	15.4
<b>Total</b>	222.1	228.6	243.5	272.8	255.9

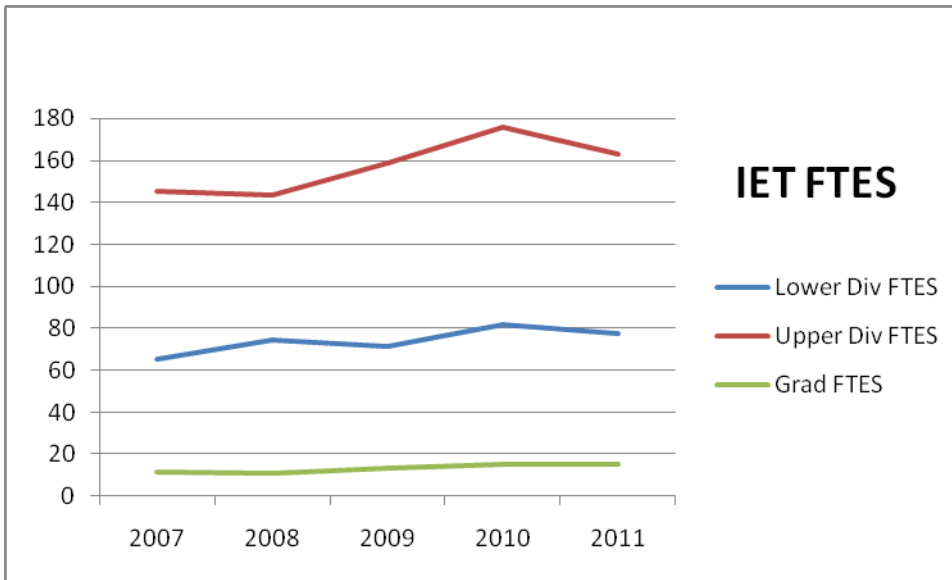


Chart 8 IET Full Time Equivalent Students. The department shows a slight growth in the number of students over the past five years

**D. Describe currency of curricula in discipline. How does the curriculum compare to recognized standards promulgated by professionals in the discipline (e.g., state, national, and professional association standards)?**

Currency of curricula in discipline is maintained by two main methods 1) Advisory councils and 2) Accreditation.

Each program except for BS in Industrial Technology (InT) and the Master of Science in Engineering Technology (MSET) have advisory councils. These councils help to keep the program's curricula current by periodically reviewing courses and program degree requirements. It is anticipated that in the near future both of these programs will have functioning council.

Accreditation provides national standards developed by professional organizations. Only three programs within the department are not accredited; InT, MSET, and SHM. The department plans to commit resources to obtain accreditation for these three programs.

**E. Effectiveness of instruction - Describe how the department addresses the scholarship of teaching with specific supporting documentation including each of the following:**

- 1. Departmental teaching effectiveness – report a five-year history of the “teaching effectiveness” department means as reported on SEOIs, indexed to the university mean on a quarter-by-quarter basis.**

Table 9 shows the departmental averages for “teaching effectiveness” compared to the university. These scores are from Student Evaluation Of Instruction (SEOI) sheets completed toward the end of each class. This score is based on a scale of 1 to 5 with 5 being Excellent. Teaching effectiveness was meant to convey a general overall evaluation and was one of 29 scores collected. This category was discontinued in the spring of 2011.

The IET’s departmental average generally tracks the university’s score for teaching effectiveness. For the 14 scores provided, the IET average is slightly below the CWU average 10 times. We do not feel this is an indication of slightly less quality in teaching but more a reflection in the rigor required in most IET courses.

Table 9 Student Evaluation Of Instruction (SEOI) CWU VS IET departmental averages

	2007		2008		2009		2010		2011	
Quarter	CWU	IET	CWU	IET	CWU	IET	CWU	IET	CWU	IET
Fall	4.30	4.37	4.31	4.04	4.33	4.31	4.32	4.25	4.31	4.15
Winter	4.33	4.21	4.33	4.06	4.31	4.17	4.30	4.22	4.20	4.35
Spring	4.33	4.10	4.35	4.09	4.21	4.36	4.35	4.21	N/A	N/A

**2. What evidence other than Student Evaluation of Instruction (SEOI) is gathered and used in the department to evaluate the effectiveness of instruction?**

The IET department uses four other significant means to evaluate the effectiveness of instruction; 1) assessment, 2) peer evaluation, 3) individual faculty continuous quality improvement for courses, 4) individual faculty self reflection statements.

Assessment plans are developed for each program. These plans identify what, when and the expected level of mastery will be for specific learner outcomes. Annually the results of these assessments are reviewed by the programs faculty and any needed improvements are acted on.

The IET department conducts peer evaluation of its faculty members on a regular basis. Faculty members should have two conducted per academic year, one of these should be conducted by the department chair. These peer evaluations are provided to give faculty members regular feedback on their teaching skills.

Since most faculty members only teach one section of a class only once a year, each faculty member is required to write a short one page assessment after each course is taught. The requirement is intended to provide a continuous feedback loop to improve the quality of instruction.

Faculty members who submit a portfolio for reappointment, tenure and promotion, promotion, and post tenure review are required to write a self reflective statement about their teaching effectiveness. This self reflective statement is meant to allow a faculty member to reflect on their classes and how to continuously improve them.

**3. Effectiveness of instructional methods to produce student learning based upon programmatic goals including innovative and traditional methods – examples include:**

**a. Collaborative research between student and faculty**

Faculty and students frequently team up to collaboratively work on projects to present on campus. A good example is SOURCE and presentations made to advisory councils.

**b. Use of field experiences**

The SHM, CMGT, and Industrial Technology programs either require an internship or offer this field experience for credit as an elective.

**c. Service learning or civic engagement**

Several faculty in the department have a service learning component in their courses. Examples of service learning projects include building projects for Head Start, visiting local schools to introduce students to engineering and technology and helping with the local Habitat for Humanity chapter.



**F. Degree to which distance education technology is used for instruction.**

**1. ITV**

Departmental faculty have taught ITV courses within the last 10 years, however, it has not been used much lately. Although additional compensation is provided, generally faculty do not like this method of instructional delivery. This is due to student dissatisfaction, technical problems, early evening offerings and potential travel across Snoqualmie pass.

**2. Online**

During the summer several courses are offered online verses the traditional method normally taught during the academic year. This format allows student to work and attend classes. Most faculty use Black Board (BB) to some degree. For some BB is very minimal and others use it for quizzes, assignment posting, discussions, and exams.

**G. Assessment of programs and student learning**

1. Assessment of student learning reports can be found at:

<http://www.cwu.edu/~avpugrad/programreview/oneyearceps.html>

**III. Faculty**

**A. Faculty profile – Table 10 shows faculty participation for mentoring student research, professional service activities, scholarly activities including grant writing and teaching.**

Faculty annual activity reports and faculty vita formed the basis of collecting this data.

**B. Copies of all faculty vitae are in Appendix 1.**

**C. Faculty awards for distinction: instruction, scholarship, and service**

Annually a departmental faculty award is presented to a faculty member in the areas of teaching, scholarship and service. During the last eight years the department's faculty have not received awards from outside the department.

**D. Appendix 2 is performance standards for the department and college.**

**Table 10 IET Department  
Tenured and Tenure-track Faculty Profile**

	2006-2007		2007-2008		2008-2009		2009-2010		2010-2011				
	# faculty TT - T	% of faculty	# faculty TT - T	% of faculty	# faculty TT - T	% of faculty	# faculty TT - T	% of faculty	# faculty TT - T	% of faculty	<b>5-yr total</b>	Annual avg	% of faculty
<b>* Scholarship Measures: (Use categories applicable to your departmental &amp; college criteria)</b>													
(e.g. peer reviewed articles)	4	27	3	23	4	27	3	23	3	23	17	3.4	24
(e.g. abstracts/conference proceedings)	1	7	2	15	1	7	2	15	1	8	7	1.4	10
(e.g. conference presentation)	5	33	6	46	5	33	6	46	5	38	27	5.4	39
<b>* Grants: (Use categories applicable to your departmental &amp; college criteria)</b>													
External	2	13	2	15	2	13	2	15	1	8	9	1.8	13
Funded / Unfunded	2/1		2/2		1/2		2/2		0/1		7/9		
Internal	3	20	1	8	2	13	2	15	2	15	10	2	14
Funded / Unfunded	3/0		1/0		2/0		2/0		2/0		10/10		
<b>* Service measures: (Use categories applicable to your departmental &amp; college criteria)</b>													
CWU Committees	7	47	8	62	9	60	8	62	7	54	39	7.8	56
State Committees	2	13	3	23	3	20	3	23	3	23	14	2.8	20
Leadership & Service - Professional Organizations	6	40	6	46	5	33	6	46	7	54	30	6	43
Community Service	10	67	13	100	12	80	15	100	13	100	66	13.2	94
<b>* Faculty Mentored Research: (Use categories applicable to your departmental &amp; college criteria)</b>													
Undergrad projects / SOURCE	2	13	3	23	2	13	4	31	4	31	15	5	36
Graduate Committees – Supervising thesis/projects	7	47	6	46	5	33	7	54	8	62	34	6.8	49
Graduate Committees – Participation thesis/projects	2	13	5	38	8	53	6	46	5	38	26	5.2	37
Other													

The details to support each category are applicable to your department & college criteria and based on Annual Activity Reports and Vitas.

#### **IV. Students – For five years**

- A. Student accomplishments (include SOURCE, career placement information, etc.). List students working in field; students placed in master's or doctoral programs.**

Career placements for all graduates within the IET department remain very high. Even the CMGT program has a placement approximating 100%. TE students are sought by high schools. MET and EET graduates work for smaller firms up to Boeing, often earning very competitive salaries. Safety students are sought by the construction, manufacturing, agricultural, and service industries.

- B. Provide one masters project (if applicable); two will be randomly selected during site visit.**

I. Samples of Masters projects are available from Dr. Olson.

- C. Describe departmental policies, services, initiatives, and documented results for successful student advising.**

Each student electing to undertake a major within the IET department is assigned an advisor based on their particular interest. An advisor meets with each student for an initial counseling session where the course of study, prerequisites, general education requirements and careers are discussed. Each quarter students meet with their advisor to plan upcoming quarters and discuss course selection and options. Some programs have student handbooks which are available on the web. Faculty members also provide advising services for employment, scholarships, career choices and provide recommendations to employers and others.

- D. Describe other student services offered through the department including any professional societies or faculty-led clubs or organizations and their activities.**

Some clubs include

- Society of Women Engineers (SWE)
- Student Chapter of Association of General Contractors
- Sigma Lambda Chi (Construction Honor Society)
- Student Chapter of the Mechanical Contractors Association of American
- National Association of Homebuilders
- Student Chapter of American Society Safety Engineers
- Student Chapter of American Society of Mechanical Engineers
- Student Chapter of IEEE
- Technology Education Student Club
- Robotics Club

## **V. Facilities & Equipment by location**

- A. Describe facilities available to department and their adequacy (program delivery location, size, functionality, adjacencies, lighting, ventilation, finishes, plumbing, electrical outlets, etc.). Describe anticipated needs in the next three to five years.**

With the addition and renovation to the Hogue Technology building, facilities are outstanding. The department has been fortunate to acquire such state of the art facilities.

- B. Describe equipment available to department include program delivery location and its adequacy (office furniture, instructional fixtures, lab equipment, storage cabinets, specialty items, etc.) Describe anticipated needs in the next three to five years.**

As part of the construction process our furniture, fixtures and equipment has been vastly updated. We do not anticipate any needs in the near future.

- C. Describe technology available to department include program delivery location and its adequacy (computers, telecommunications, network systems, multi-media, distance education, security systems, etc.). Describe anticipated needs in the next three to five years.**

As part of the construction process our furniture, fixtures and equipment has been vastly updated. We do not anticipate any needs in the near future.

## **VI. Library and Technological Resources by location**

- A. Describe general and specific requirements for library resources by program and location that assist in meeting educational and research objectives. Indicate ways in which the present library resources satisfy and do not satisfy these needs. Describe anticipated needs as to the next 5 year period.**

The department's requirements for library resources include a few periodicals and serials in order to meet our educational and research objectives. Students are encouraged to utilize the library resources via assignments and projects. The library also provides a service of being able to put books on reserve for course specific work.

For the level of research undertaken by the department's faculty, the on campus library will never be satisfactory. Faculty members may utilize an interstate library system and have books sent to the Ellensburg campus for literature reviews. An impressive engineering library is available at the University of Washington in Seattle that faculty members have access to. Generally the library provides outstanding service considering its limited resources.

**B. Describe the information technologies faculty regularly and actively utilize in the classroom. Describe anticipated needs as to the next five year period.**

Each classroom is provided a computer and LCD projector. Faculty members have access to shared and networked drives, and the web. This suite also plays CD and videos.

Several classes in the departmental major require extensive use of the MS office suite of tools. Several classes require advanced computer skills and a working knowledge of software that is provided in the departmental computer lab or EET lab.

Specific Courses

- Architectural CAD
- Solid Works
- Master CAM
- Lab View
- Finite Element Analysis (FEA)
- Construction estimating, scheduling and project management software
- Simulation, ProModel

**C. Describe technology available to department and its adequacy. Describe anticipated needs as to the next five year period.**

Software and hardware upgrades and licensing fees are a major unfunded liability for the department. Student fees are applied to all courses that require specific software. Recently a global \$5 fee per class within the IET department was submitted to the administration. The fee is intended to go toward hardware replacements.

The department will need to replace approximately 100 computers within the next 4-5 years, based on a four year replacement cycle. These computers are used in labs and faculty offices.

**VII. Analysis of the Review Period**

A departmental retreat was held in January 2010 and goals were updated in March 2012. The following section forms the basis for academic planning by the department.

**A. What has gone well in the department:**

1. Explain accomplishments of the past five years.

**a. For the Department**

The department has seen a minor growth in faculty and staff during these difficult times for higher education. Currently there are 13 full time faculty and three full time staff members. This is up from about 11 full time faculty and 2.75 full time staff members. The slight increase has enabled the course offerings to slightly expand and allow for a slight increase of frequency of offerings. Additionally faculty members teaching load, although high, now

accommodates scholarship, service and the ability to offer new faculty slightly reduced teaching loads.

The new addition and renovation of the Hogue Technology Building has boosted departmental visibility on campus, provided modern facilities and delivered new equipment for labs.

Student enrollments for IET programs continued to remain high and programs with lower enrollments saw slight growth.

**b. For Programs:**

**Construction Management CMGT**

1. Accomplishments of the last five years supported through external and internal resources
  - Enrollment continues to be capped. Until fall 2011 many more applicants than openings; better quality of student
  - ACCE on-site visit spring 2009, full six year re-accreditation with many strengths cited in the visiting team report
  - Money has been generated from endowed professorship position to hire adjuncts for CMGT 443 and 452
  - Donations for naming opportunities for rooms in the new building will provide program support and student scholarships
  - Advisory Council Scholarship established and awarded
  - Reorganization of industry Advisory Council. New by-laws, functional committee structure
  - Golf tournament continues to raise money for the program. Participation is strong
  - Student Accomplishments: Had a student serve as the Honors Convocation Student Speaker at graduation
  - CMGT/IET Career Fair continues to prosper
  - Many industry speakers in CMGT courses
  - Heavy/civil option continues to grow and courses are now established
  - New building addition and renovation of the existing building
  
2. What challenges exist for the CMGT program? Explain major challenges of the past five years.
  - Outdated labs and equipment (prior to new building)
  - Outdated computers and software (prior to new building)

- Limited student study space (prior to new building)
- Limited funding for faculty travel, development
- Limited time for faculty scholarship
- Inadequate administrative support

List likely causes of each challenge as supported by documented evidence.

- No replacement budget or planning for equipment and computers
  - Old building (prior to new building)
  - Declining state support for CWU
  - Heavy teaching/service load
  - Declining state funding
3. What recommendations from the previous program review have been implemented by the CMGT program?
    - a. How has each recommendation been implemented and how have the department and degree programs been impacted?
      - CMGT has developed an excellent comprehensive program assessment process to measure student learning outcomes and program outcomes (more faculty workload)
      - CMGT has audited curriculum through ACCE on-site visit (and made changes) and through the industry advisory council curriculum review committee (better courses for students)
      - Added more options for business courses for students (more flexible for students)
      - Faculty workloads have been standardized through the collective bargaining agreement (less disparity)
    - b. Which recommendations were not implemented and why?
      - Faculty mix has not been changed (plan was developed but new hires did not change faculty mix)
      - Articulation agreements with community colleges have not changed (lack of faculty resources to review courses)
  4. Make a comparison between the last program review and where the CMGT program is now.
    - a. How have the advances been supported (e.g. internal and external resources)?
      - New building was supported with state money
      - Most other advances were funded from industry

- b. Are there still outstanding, unmet needs/challenges from the last program review? What has the CMGT program done to meet these challenges?
- Computer/software support (will be made available when building is renovated)
  - Administrative support (nothing yet)
  - Lab equipment support (nothing yet)
  - Not enough computers (will be made available when building is renovated)

**For the EET Program**

**For the Industrial Technology Program**

**For the TE Program**

1. What has gone well in the program
  - Added second general education course (IET 201 bio-related technologies)
  - Developed new on-line course (IET 260 NURBS modeling)
  - Increase in TE enrollment (hit all-time high of 20 students at one point)
  - Increase in student membership in professional organizations (WITEA)
2. What challenges exist for the program?
  - New building brought smaller labs...will likely have to change outcomes, limit what can be done, alter enrollments, SAFETY issues
  - Need to continue to increase enrollment in TE program
  - Limited/lack of funding (needed for software, equipment, supplies, at, etc.) without student at, labs are not open enough for students to complete projects
  - Programs with only 1 (or 2) faculty members have additional burdens. Also program decisions come from only the one individual.
3. What past recommendations from the previous program review have been implemented?
  - AutoCAD software was able to be upgraded due to agreement with FMD
  - Student fees have been adjusted to reflect additional costs
  - Foundation accounts have been used



## **For the MET Program**

1. What has gone well in the program
  - Renewed ABET accreditation, 2009 (initial accreditation in 1996)
    - Documentation: MET Self Study Report & accreditation documents
  - Funding: Internal resources for release time, ABET fees etc
  - Maintained MET Enrollment Levels
    - Documentation: MET Self Study & CWU Institutional Research data
  - Note: 5 yr running average has been stable around 16.5 grads/yr; the 2013
    - undergraduate cohort (juniors in 2011-12) is the largest ever with approx 25-28
  - Developed student funding opportunities
  - Foundry Education Foundation (FEF) scholarships
  - Documentation: FEF Scholarships 2/yr @ \$1000 + trip to Foundry convention
  - Funding: External funding by FEF
  - Heacock Family Scholarship for MET women (\$1000/yr)
  - Funding: external alumni funding developed by CWU Foundation officer
  - Utilized Work-Study Opportunities for lab support & research mentoring
    - Tim Broweleit & Steven Morton et al
  - Active ASME Professional Society Student Section
  - Biweekly general meetings; Won 2009 ASME Regional Student Design Competition Documentation: [www.cwu.edu/~asme](http://www.cwu.edu/~asme)
  - Continuous annual faculty scholarship products
    - NSF Materials Education Project (see [www.cwu.edu/~cjohnson](http://www.cwu.edu/~cjohnson) for links)
    - ASEE annual international conference proceedings papers,
    - Documentation: [www.asee.org/conference](http://www.asee.org/conference) proceedings;

- Search authors Craig Johnson, Charles Pringle, Roger Beardsley
  - CWU SOURCE presentations & Sessions Chair (Beardsley)
- Initiated new core class, MET488 Professional Exam Preparation to review topics for WA state Fundamental of Engineering licensing exam (FE exam)
2. What challenges exist for the program?
- New equipment and technology has increased demands on support staff that may limit their availability for support of new instructional initiatives (they are stretched very thin, especially during move in and set up of new building space, but continuing after also).
  - B2: Maintaining and improving technical resources (i.e., software & hardware; i.e., Solidworks + plug ins, AutoCAD, MasterCam programs) to maintain relevance to industry. Software funding has been a constant challenge, and recent budget pressures have caused the IT services to offload the responsibility & expense of software
    - maintenance and computer hardware expense on the IET dept.
  - Need to continually improve curriculum to maintain and improve program relevance for students & employers, and meet ABET accreditation requirements.
  - Additional administrative load to develop/maintain/utilize continuous quality improvement data; Required for ABET accreditation at a level that exceeds university CQI requirements; professors are best able to develop metrics and perform task
    - Documentation: CQI for MET classes, trend analysis. or examples see the IET S drive
    - IET/15. MET/Assessment/FE.ReviewCQI.doc or MET.FE.Practicescores.xls
- What past recommendations from the previous program review have been implemented?
  - New Hogue Lab building came with much new equipment, including CNC machine tools (Lathe & 2 mills) with automatic tool changing capability (common in industry but a capability we did not have at previous review). Also added capability of 3D printing of plastic parts from Solidworks CAD files and Laser machining and etching capabilities.

- Faculty retention (an issue in the 2004 - 2008 timeframe) has become more stable
- Improved visibility in industry through attendance at CAMPS meetings (Center for Advanced Machining Puget Sound) (Pringle, Cattin)

### **For the SHM Program**

1. What has gone well in the SHM programs?
  - New program coordinator was hired in AY 2011/12 and is getting the SHM program back on track.
2. What challenges exist for the SHM program?
  - Explain major challenges of the past five years
    - SHM Faculty Turnover/Program leadership
    - SHM Reduced enrollment
  - List likely causes of each challenge as supported by documented evidence.
    - Faculty turnover has been from a desire to return to industry, mostly as a function of salary. Faculty are paid on a nine month contract versus twelve months in industry and salaries for educators is generally less than industry. Other issues may be related to the rural location of Ellensburg and the difficulty of establishing consulting or other summer work.

## **VIII. Future directions**

### **A. Describe the department's aspirations for the next three to five years.**

#### **For the Department**

The department needs to find its footing in the new building spaces. The interdisciplinary lab provides opportunities for students from different programs to collaborate on projects and team learning. There is a need (how industry works) and desire for more interdisciplinary work among faculty and students.

Some development of online courses will be offered by all programs. This will enable students the flexibility of when learning occurs and potentially reach students outside of a main or center campus location.

There is a huge potential to develop a sustainability or renewable energy program within the IET department. This concept has CWU administrative support but currently lacks funding.

International opportunities exist in several programs, specifically in the MSET and SHM programs.

### **For the CMGT Program**

A. The CMGT program's aspirations for the next three to five years.

- Hire a new tenure track faculty member by fall 2012
- Increase number of pre-majors to assure a strong CMGT pipeline of students
- Continue to maintain and upgrade labs
- Add more lab exercises for CMGT 320, 442, 440, 460, 346/347. These would include hands-on student trainers
- Maintain strong industry participation in CMGT courses and Career Fair
- Continue to have the Advisory Council grow and become even more involved with the program
- Develop a plan for utilizing the high demand and endowed professorship earnings

### **For the TE Program**

A. TE's aspirations for the next three to five years.

- Learn and utilize the new equipment purchased with the new building
- Continue to work with (collaborate) other programs to strengthen classes/programs
- Increase enrollments in smaller programs
- Obtain outside resources for new equipment and repair of existing equipment
- Hire full or part-time support for Matt Burvee (Science Lab Technician)

### **For the MET Program**

- Learn to utilize the new equipment & technology in the Machine Tool Lab, Thermo-Fluids Lab, and Materials lab areas
- Improve industry contacts through CAMPS etc
- Grow program to a consistent average graduating class of 20 (30% increase)
- Develop more accessible system for assessment data
- Increase Faculty retention & stability

### **For the SHM Program**

A. The SHM program's aspirations for the next three to five years

- Top program in the western United States

- Establish and have a world class SHM Lab by end of 2012
- Build and maintain enrollment at 45 students per year.
- SHM program ABET accreditation by 2016
- Re-establish the SHM Industry Advisory Board
- Re-establish west side “only” when Ellensburg is stabilized
- Build healthy and sustainable SHM Foundation Accounts

**B.In this context, describe ways the department or unit plans to increase quality, quantity, productivity, and efficiency as a whole and for each program. Provide evidence that supports the promise for outstanding performance.**

**For the department**

The department needs to obtain additional funding for faculty, staff, goods and services. Additional funding may come from higher allocations, restored goods and services or added faculty and staff lines.

Quality and productivity may be improved by not trying to provide everything to everyone. For example reduce electives, limit class or program sizes, cut the level service, or limit the departments offerings in number and location.

**For the CMGT program**

- No plan to increase quantity; keep enrollment the same
- More student help, especially with CMGT 245

**For the TE Program**

- Develops and updates advising handbooks
- Be sure course outcomes meet the needs of majors in program

**For the MET Program**

- Develop curriculum incorporating new technology into coursework
- B2: Continued involvement with CAMPS member companies et al
- B3: Improve visibility of program on campus, at Comm Colleges, High Schools etc
- B4: Link assessment data through database or software system on shared drive
- B5a: Develop endowed chair in MET
- Improve faculty development opportunities

### **For the SHM Program**

- Improve SHM course flow. Need to rearrange some courses and avoid redundancy of materials covered in different course.
- More hands on teaching with SHM (Lab use, industry professional lectures, field trips)

## **C. What specific resources would the department need to pursue these future directions?**

### **For the Department**

#### **Faculty**

Current full time faculty are augmented with quarter by quarter lecturers and graduate assistantships. For program expansion more full time faculty are needed to gain consistency in courses and provided service within programs. Additional faculty would be required to develop a renewable energy program or expand programs at the centers.

#### **Staff**

The newly expanded building space and equipment has put a strain on our existing three staff members. One additional lab technician and at least part time office help would offer faculty and students a greater level of service.

#### **Goods and Services funding**

Current funding for normal operations has been reduced eliminated. Funding for paper, phones, the copier, etc currently comes out of our summer net revenue, or profit we earn in the summer or through offering income producing educational services, for example the cohort of 20 MSET students.

### **For the CMGT Program**

More money for work-study (or other) students...perhaps as source of private funds to help students

### **For the TE Program**

What specific resources would the department need to pursue these future directions?

- Hire ½ time secretary
- Hire TA to assist in labs (woods, metals, etc.)

### **For the MET Program**

- Use research and/or release time to become familiar with new resources

- Support resources for time & travel expense to attend meetings
- Support resources for more career days, developing faculty connections
- Admin time for developing assess system using available resources
- Develop external sponsorship from industry, alumni
- Admin support for sabbaticals, research buyouts for industry projects, develop industry partnerships

**For the SHM Program**

- Industry Support
- Staff Support
- Reduced Faculty turnover

# Appendix 1 Faculty Vitas



## **Roger A. Beardsley, P.E.**

[beardslr@cwu.edu](mailto:beardslr@cwu.edu)

### **Education**

**Central Washington University**, Ellensburg, Washington  
Master of Science, Engineering Technology, December 2005  
Masters Project: *Pilot Scale Production System for Making High Quality Biodiesel Fuel From Vegetable Oil*

**California Polytechnic University**, San Luis Obispo, California  
Bachelor of Science, Mechanical Engineering, June 1979  
Capstone Project: *Methane (Biogas) Digester*

**Merritt College**, Oakland, California, 1973 - 1976

### **Certificates & Licensure**

**Professional Engineer License, Mechanical**, Washington  
License #22781, September 20, 1985

**Certified Manufacturing Engineer (Society of Manufacturing Engineers) CMfgE Certification**  
#0988634, June 30, 1991 (lapsed 6/30/94)

### **Professional/Relevant Experience**

**Assistant Professor, Mechanical Engineering Technology**  
Central Washington University, Ellensburg, Washington  
September 2006 to present

- Classes Taught:
  - MET 314 Applied Thermodynamics
  - MET 315 Fluid Dynamics
  - MET 316 Heat Transfer
  - MET 327 Technical Dynamics
  - MET 411 Energy Systems
  - MET 419 Machine Design 2
  - MET 495C Senior Project III
  - Fundamentals of Engineering Exam Review (to be MET488)

- IET 360 Brewing Technology
  - Advisor to CWU student clubs
- American Society of Mechanical Engineers (ASME)

**Adjunct Lecturer, Mechanical Engineering Technology**

Central Washington University, Ellensburg, Washington

Taught MET419,316,327 January 2006 to June 2006

**Graduate Assistant, Mechanical Engineering Technology**

Central Washington University, Ellensburg, Washington

Summer 2005

- Researched, designed, and constructed a Biodiesel Processor
- Tutored Independent Study on Process Simulation

**President and Chief Engineer, Roslyn Brewing Company**

Roslyn, Washington, 1990 to 2004

- Designed and engineered manufacturing system
- Directed marketing and distribution
- Administered microbrewery business

**Senior Manufacturing Engineer, FLUKE Corporation**

Everett, Washington, 1981 to 1991

- Supported production line for high precision voltmeters and signal generators
- Introduced new products to manufacturing
- Compiled, edited, and published in-house Sheet Metal Design Manual

**Manufacturing Engineer, Varian Associates**

Palo Alto, California, 1979 to 1981

- Supported production line for microwave power vacuum tubes

**Research Interests**

- The processes, technologies, and economics of Alternative Energy systems
- Specific renewable energy research interests include biofuels, hydrogen, wind, solar energy, energy storage systems and energy conservation.

## Teaching Interests

Thermodynamics, Fluid Mechanics, Heat Transfer, Energy Conversion and Renewable Energy

## Peer Reviewed Papers Published

Machine Design Lab: Using Automotive Transmission Examples to Reinforce Understanding of Gear Train Analysis Paper ASEE AC2011-838, ASEE Conference, Vancouver BC, June 26-29, 2011

Determining the Greenhouse Gas Effect of University-Sponsored Air Travel, Paper ASEE AC2009-679, ASEE National Conference, Austin TX June 14-17 2009

Biofuels in the Classroom: Using the Biodiesel Process to Demonstrate Chemical and Physical Principles, Paper ASEE2008-570  
ASEE National Conference, Pittsburgh PA, June 22-26, 2008

## Other Scholarship Products

Assessing the Greenhouse Gas Impact of CWU  
SOURCE presentation, CWU Ellensburg, May, 2010

Determining GHG Footprint of CWU Sponsored Air Travel  
SOURCE Presentation by coauthor Steven Morton, MET Junior  
CWU Ellensburg, May 2008

Biofuels, Energy Dependence, and What You Can Do About It  
SOURCE Presentation, CWU Ellensburg, May 2007

Results of Varying Catalyst and Excess Methanol Rates in a Biodiesel Reaction  
SOURCE Presentation, CWU Ellensburg, May 2006

## Professional Development

**Carbon Capture and Storage and Potential Storage Solutions**, Jan 21, 2011  
Brad Bates, Chemistry Professor, Chandler-Gilbert Com College, Mesa AZ  
Web seminar presented by MATEC Networks with partial funding by NSF

**Granta CES Edu-Pack Seminar, Austin TX June 14, 2009**  
Materials selection & characterization software training

**Faculty Workshop on Assessing Program Outcomes**  
Incline Village, NV October 30, 2007  
Sponsored by ABET (Accreditation Board for Engineering and Technology)

**Grant Writing 101, The Grant Institute Vancouver, BC Sept 13-15, 2007**  
Held at Simon Fraser University, Downtown Vancouver BC, this workshop was an introduction to grant writing concepts. I attended at the invitation of the graduate studies department to help them evaluate the value of bringing the workshop to the CWU campus.

**ASME Essential Teaching Seminar, San Luis Obispo, CA Sept 5-8, 2007**  
Sponsored by ASME and hosted by Cal Poly College of Engineering, this was an engineering topic specific seminar on teaching methods

**Biodiesel Technology Workshop, Moscow, Idaho March 14 - 18, 2005,**  
Sponsored by the University of Idaho, Iowa State University,  
and the National Renewable Energy Laboratory (NREL)

## **Professional Affiliations**

**American Society of Mechanical Engineers, 1975 to present**  
**American Society for Engineering Education, November 2006 to present**

## **References**

**Phillip Jones**  
**Cogentrix**  
**9405 Arrow Point Boulevard**  
**Charlotte, North Carolina 28273-8110**  
**704-525-3800**  
[PhilJones@Cogentrix.com](mailto:PhilJones@Cogentrix.com)

**Andre Letourneau**  
**Senior Manufacturing Engineer**  
**Intermec Technologies Corporation**

**6001 - 36th Avenue West  
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andre.letourneau@intermec.com**

**William J. Bender**  
509-963-3543    benderw@cwu.edu

**Position**

Interim Associate Dean College of Education and Professional Studies  
Professor Industrial and Engineering Technology Department  
College of Professional and Education Studies, Central Washington University, Ellensburg, WA.

**Education**

BSCE 1981 Washington State University  
MSCE 1989 Oregon State University  
PhD 2001 University of Maryland, College Park

**Professional Experience**

Central Washington University 1998-Present.  
Construction management consultant 2000- Present.  
Industrial and Engineering Technology Department Chair 2004-2009  
Builder & construction manager for US Navy, instructor Naval Academy 1981-1998.

**Courses Taught**

Fall '10		Winter '11		Spring '11	
IET 311 Statics	4	CMGT 343 Estimating I	3	CMGT 344 Estimating II Lab	4
CMGT 495 Competition Prep	1	CMGT 343 Lab Estimating I Lab	2	CMGT 344 Estimating II	3
CMGT 452/ IET 552 Sustainable Construction	4	CMGT 455 Principles Commercial	4	CMGT 320 Electrical	4
		CMGT 455 Principles Heavy Civil	4	CMGT 245 Light Commercial	3

Taught undergraduates courses in Blueprint Reading, Methods and Materials, Mechanical Systems, Electrical Systems, Contract Law, Construction Accounting, Construction Project Management, Engineering Economics, Ocean and Civil Engineering Design, and Naval Architecture. Taught graduate courses in Project Management and Simulation.

**Refereed Publications**

“Sustainable Design Strategies That Succeed II” A refereed paper for the Associated Schools of Construction Proceedings 2011. Annual Proceedings of the 46<sup>th</sup> Meeting of the Associated Schools of Construction **Currently under review**

“Green Roof Storm Water Runoff” Ting Anthes and W. J. Bender. A refereed paper for the Associated Schools of Construction Proceedings 2011. Annual Proceedings of the 46<sup>th</sup> Meeting of the Associated Schools of Construction **Currently under review**

*“Educational Operations Four Days a Week”* Pringle, C. and W. J. Bender. A refereed paper for the American Society of Engineering Educators annual conference 2010. **June 2010**

*“Sustainable Design Strategies That Succeed”* **K. Bicchieri and W. J. Bender.** A refereed paper for the Associated Schools of Construction Proceedings 2009. Annual Proceedings of the 44 rd Meeting of the Associated Schools of Construction **April 2009**

*“Construction of a Wind Farm and Case Study”* W. J. Bender and D. Carns. A refereed paper for the **Associated Schools of Construction Proceedings 2008. Annual Proceedings of the 43 rd Meeting of the Associated Schools of Construction** April 2008

*“Teaching Leadership”* W. J. Bender and B. Bain. A refereed paper for the **Associated Schools of Construction Proceedings 2006. Annual Proceedings of the 41 st Meeting of the Associated Schools of Construction** April 2006.

*“Risk Assessment for Construction Clients”* Paper for the **Association for the Advancement of Cost Engineering International Proceedings 2004**, Washington DC, June 2004.

*“Construction Estimating”* W. J. Bender. A refereed paper published in the **Associated Schools of Construction Proceedings 2004.**

*“Case Study of Construction Project Delivery Types”* W.J. Bender. A refereed paper published in **Construction Research Congress Proceedings** March 2003.

*“Constructors Qualification Exam Preparation Course”* D. Carns and W. J. Bender. A refereed paper for the **Associated Schools of Construction Proceedings 2002. Annual Proceedings of the 38th Meeting of the Associated Schools of Construction** April 2002.

*“Team Building in Construction”* W. J. Bender and D. Septelka. **Association for the Advancement of Cost Engineering International Proceedings 2002**, June 2002.

*“Risk-based Cost Control for Construction”* W. J. Bender and B. M. Ayyub. A Paper for the **Association for the Advancement Of Cost Engineering International Proceedings 2001**, Pittsburgh, PA, June 2001.

*“Mobile Offshore Base Construction Feasibility”* W.J. Bender and B.M. Ayyub, **Journal of Offshore and Petroleum Engineers.** Paper is published in the proceedings and was presented at the International Society of Offshore and Petroleum Engineers conference in Seattle, May 2000.

“*Fuzzy Stochastic Risk-Based Decision Analysis: MOB Case Study*” A. N. Blair, B.M. Ayyub, and W.J. Bender, **Marine Structures Journal**, by the Society of Naval and Marine Engineers, October 2000.

“*Risk-based Simulation Models for the Construction of the Mobile Offshore Base*” W.J. Bender, B.M. Ayyub, and A. N. Blair, published in **The Journal of Ship Production**, by the Society of Naval and Marine Engineers.

## Selected **Published Works That Contribute to the Profession**

“Daily Observation Reports Save Costs” Paper for the **Association for the Advancement of Cost Engineering International Proceedings 2006**, Las Vegas, NV, June 2006.

“*Timberline Estimating Lab Exercises*” W. J. Bender and D. Septelka. Exercises for Construction Management educators to use in their Timberline estimating classes. Published by the Timberline Software Co., Portland OR, June 2001.

“*Assessment of the Construction Feasibility of the Mobile Offshore Base, Part I Risk Informed Assessment Methodology*” January 1999 with Bilal M. Ayyub and Andrew N. Blair, University of Maryland. This 35-page report is a contract deliverable for the Office of Naval Research (ONR). It introduces the topic of risk analysis and describes the methodology that will be applied to assess the construction feasibility of the MOB.

“*Assessment of the Construction Feasibility of the Mobile Offshore Base, Part II Construction Systems*” May 1999 with Bilal M. Ayyub and Andrew N. Blair, University of Maryland. This 72-page report for ONR estimated and scheduled five potential MOB concepts. Additionally the US capacity to build a MOB was documented and potential risk areas were identified.

“*Assessment of the Construction Feasibility of the Mobile Offshore Base, Part III Risk Analysis*” July 1999 with Bilal M. Ayyub and Andrew N. Blair, University of Maryland. This 119-page report for ONR performed a construction risk analysis using simulation, decision tree analysis and fuzzy techniques.

“*Assessment of the Construction Feasibility of the Mobile Offshore Base, Part IV Constructability Guidelines*” September 1999 with Bilal M. Ayyub, University of Maryland. This 55-page report for ONR developed construction guidelines to efficiently build a MOB.

“*Assessment of the Construction Feasibility of the Mobile Offshore Base, Part V Special Construction Methods and Weather Risk Analysis*” April 2000 with Bilal M. Ayyub, and Andrew N. Blair, University of Maryland. This 95-page report for ONR developed a novel



construction method to build a MOB and used risk methods to assess weather impacts to a long term construction window.

### **Selected Articles in Non-refereed Journals**

“*Simulation and Modeling of the Construction of a Mobile Offshore Base*” M. K. Cybulsky, R. L. Currie, W.J. Bender, A. N. Blair, and B.M. Ayyub, Proceedings of the United States and Japan Cooperative Program for Natural Resources, May 2000.

“*Fuzzy Stochastic Risk Assessment for Mobile Offshore Base Construction*”, W. J. Bender, B. M. Ayyub and A. N. Blair, Proceedings of the Very Large Ocean Structures Conference, September 1999.

### **Selected Presentations:**

“*Aviation, Construction and Engineering Academy*” Poster Session College of Education and Professional Studies Professional Colloquium, Fall 2004, Ellensburg, WA

“*Risk Assessment for Construction Clients*” Annual meeting of the **Association for the Advancement of Cost Engineering International 2004**, Washington DC, June 2004.

“Construction Estimating” W. J. Bender. Annual conference for the **Associated Schools of Construction 2004**, Provo UT 2004.

“*Case Study of Construction Project Delivery Types*” W.J. Bender. **Construction Research Congress**, Honolulu, HI, March 2003.

“*Team Building in Construction*” W. J. Bender and D. Septelka. Presented at the **Association for the Advancement of Cost Engineering International Annual Meeting**, in Portland OR, June 2002.

“*Timberline Estimating Lab Exercises*” Presented as part of a panel discussion at the **Timberline Educator Conference**, Portland OR, June 2001.

“Timberline Estimating Lab Take Home Exam” Panel member and delivered working paper to the **Timberline Educators Conference** Portland, OR, June 2000.

## **Selected Examples of Other Scholarly Work**

LEED for Contractors, taught daylong seminar for Associated General Contractors in Seattle , July 2009.

“Risk based Cost Control Seminar” Developed and seminar provider for a two day seminar e presented at the Association for the Advancement of Cost Engineering International, Las Vegas NV, June 2006.

“Time Lapse Digital Photography Applied to Steel Construction of the Music Facility” T. Tabert and W. Bender research project presented at Symposium on Undergraduate Research and Creative Expression, Central Washington University, May 2003.

Leadership seminars for the Association of General Contractor to be given in Yakima and Wenatchee, WA January 2001.

“Study of efficient air flow in HVAC Ducts” C. Lang and W. Bender research project presented at Symposium on Undergraduate Research and Creative Expression, Central Washington University, May 2000.

## **Credentials**

Professional Engineer, Civil, Washington State

Leadership in Energy and Environmental Design (LEED) Accredited Professional

Certified Trainer Timberline Estimating software

Certified Erosion and Sediment Control Lead (CESCL)

## **Selected Institutional and Professional Service in the Last Five Years**

Chair Industrial Engineering Technology (IET) Department 2004-2009

Chair, Hogue Technology Building Committee, AY 2007/08, Summer 2008, AY 2008/09

Several Search Committee memberships; Electrical Engineer within the Facilities Management Department, Faculty within IET, Provost, Dean/ Associate Dean CEPS

Faculty Advisor, Construction Management Honor Society, AY 2004-2007

Associated General Contractors of Washington Board of Trustees member, AY 2004- 2007

## **Memberships**

American Society of Civil Engineers

Association for the Advancement of Cost Engineering International

Society of American Military Engineers



## **Scott Calahan**

Associate Professor, Traffic Safety Studies, Technology Education  
Industrial & Engineering Technology Department  
Central Washington University  
Appointed September 16, 2000

### **Academic Degrees**

M.A. 1996 Heritage College  
B.S. 1992 Central Washington University

### **Professional Education Experience**

2000 – Present Central Washington University, Dept. of Industrial & Eng. Tech.  
1992 – 2000 Kittitas, Washington, high school industrial/technology and traffic  
safety education teacher  
Summer 1999 Obtained certification as a trainer-of-teachers for the National  
Driver Education Teacher Preparation and Recognition Program,  
Indiana University of Pennsylvania  
1996 – 1999 Central Washington University, adjunct instructor  
1993 – 1995 CWU Driver Skill Enhancement Workshop Instructor  
1993 – 1994 Ellensburg, Washington, high school teacher for summer school  
traffic safety program

### **Courses Taught**

IET 101 Modern Technology, 5 credits  
IET 145 Machine Woodworking, 4 credits  
IET 160 Computer Aided Design, 4 credits  
IET 165 Engineering Drawing I, 4 credits  
IET 201 Bio-related Technologies, 5 credits  
IET 260 NURBS Modeling, 4 credits  
IET 389 Technical Presentations, 3 credits  
IET 430 Methods of Teaching Industrial Education, 3 credits  
IET 433 Industrial Education Laboratory Planning, 3 credits  
OCED 410 Principles of School to Work Program, 1 credit  
SED 180 Principles of Accident Prevention, 3 credits  
SED 382 Driver Task Analysis, 3 credits  
SHM 375 Transportation Safety, 4 credits  
SED 480 Teaching Safety in the K-12 Curriculum, 3 credits  
SED 481 Teaching TSE: Classroom & Simulation, 3 credits  
SED 482 Teaching TSE: Behind-The-Wheel, 5 credits  
SED 484 Organization & Administration of TSE, 3 credits

### **Current Professional Association Memberships**

\* Washington Traffic Safety Education Association (Past President)

- \* Washington Technology Student Association (Board of Directors)
- \* American Driver and Traffic Safety Education Association
- \* Kittitas Parent Teacher Group
- \* International Technology & Engineering Education Association
- \* Washington Industrial Technology Education Association (Board of Directors)
- \* Handyman Club of America
- \* Washington Association of Vocational Administrators
- \* Washington Association for Career & Technical Education

**Professional Assignments and Activities (non-teaching)**

Event coordinator for annual Energy Transfer Device competition 2009 – 2011  
 Event coordinator for TSA state competition (dragster design, problem solving)  
 WTSEA board member 1996 to present  
 WITEA board member 2005 to present  
 TSA board member 2005 to present  
 CTE advisory board Kittitas High School 2008 to present  
 STEM regional advisory committee (ESD 105) 2009 to present  
 Hiring committee chair for SHM position 2010  
 Restore the Funding Initiative committee member 2006-07  
 CEPS Salary Adjustment Performance Committee 2007  
 Competency revision committee member for Technology Education 2007  
 Competency revision committee member for Engineering 2008  
 Competency revision committee member for Traffic Safety 2006  
 Higher Education Division Chairperson for ADTSEA  
 Editor for the Journal of the Washington Traffic Safety Education Association  
 Hiring committee chair for SHM position 2005  
 Hiring committee for MET position 2002  
 Faculty Senate representative for the IET Department 2002-2006  
 Academic Advisor/Coordinator Traffic Safety Studies, CWU  
 Academic Advisor/Coordinator Industrial/Technology Education, CWU  
 CEPS scholarship committee 2001  
 Library committee representative for IET Department, fall 2001-fall 2003  
 Conditional Certificate Examiner, Washington WorkSafe Institute  
 Central Washington University Traffic Safety Education Advisory Board  
 Co-advisor, American Society Safety Engineers, student section  
 Advisor, Central Technology Education Association  
 Career and Technical Ed. Model Curriculum Framework steering committee  
 Kittitas County Traffic Safety Corridor Project  
 President of WTSEA  
 Hogue Technology Building Committee (pre-design and design phase)  
 Host committee for WTSEA annual conference, 1999, 2000, 2004, and 2005  
 Leader, Pocket Pigs 4-H club  
 Textbook reviewer, Responsible Driving, copyright 1997 and 2000

Textbook reviewer, Washington TSE Student Manual, copyright 2003

### **Publications/Books/Papers**

“Energy Week: Curriculum and Activities,” S. Calahan, C. Pringle, developed for The Foundation for Private Enterprise Education (Washington Business Week), August 2010.

“*Geothermal Technology-A Smart Way to Lower Energy Bills*” S. Calahan. Techdirections, February 2007.

“*Old Relic Goes High Tech*” S. Calahan and M. Andler. Popular Mechanics. Manuscript submitted for publication. Short-version appeared in Popular Mechanics May, 2006. Full-version appeared in web edition at popularmechanics.com.

“*The Traffic Stop*” S. Calahan and K. Kersten. The Chronicle of the American Driver & Traffic Safety Education Association, fall issue 2005, Vol. 53 No. 4

“*The Traffic Stop - Improving Relations with Law Enforcement*” S. Calahan and K. Kersten. The Journal of the Washington Traffic Safety Education Association, winter 2005, Vol. 31 No. 5

“*Improving Behind the Wheel Instruction*” S. Calahan. The Chronicle of the American Driver & Traffic Safety Education Association, fall, 2004, Vol. 54 No. 4

“*Improving Behind the Wheel Lessons with “Behaviors”*” S. Calahan. Journal of the Washington Traffic Safety Education Association, fall issue 2003, Vol. 32 No. 1

“*Has TSE Been a Bargain for Washington State?*” Washington State Legislature Resource Guide Committee. Journal of the Washington Traffic Safety Education Association, spring 2002, Vol. 30 No. 2

Washington State Legislature Speakers Resource Guide. Washington State Legislature Resource Guide Committee, 2002

“*National Survey of Driver Education Teacher Preparation Programs*” The Chronicle of the American Driver & Traffic Safety Education Association, fall issue, 1995, Vol. 43 No. 4

## **Textbook Reviews**

Washington Traffic Safety Education Student Manual, Propulsion International, Canada

Responsible Driving, Glencoe/McGraw-Hill, Princeton, New Jersey. Copyright 2000

Responsible Driving, Glencoe/McGraw-Hill, Princeton, New Jersey. Copyright 1997

## **Conference Presentations**

*“Using ExamView to Improve Teacher-made Tests and Student Assessment”* Calahan S. Presented at the Washington Traffic Safety Education Association & Department of Licensing’s Annual Conference, Bellevue, Washington, October 2011

*“Pathways to Success: A Focus on Energy”* Calzadillas H, Calahan S, Pringle C. Presented at the Washington Industrial Technology Education Association’s Annual Conference, Wenatchee, Washington, March 2011

*“Energy Week: Curriculum and Activities”* Calahan S., Pringle C. Presented to Central Washington Resource Energy Collaborative, Puget Sound Energy, and The Foundation for Private Enterprise Education, Issaquah, Washington, August 2010

*“Manufacturing Production a High School/University Collaboration Project”* Calahan S, Cattin W. Presented at the International Technology Education Association’s Annual Conference, Louisville, Kentucky, March 2009

*“State Status of Driver Education”* Panel discussion. Presented at the Pacific Northwest Regional Traffic Safety Conference, Portland, Oregon, March 2008

*“Teenage Driving in Washington: Changing a Culture”* Panel discussion. Presented at the Teen Driving Symposium, SeaTac, Washington, September 2007

*“Teacher Preparation, Responsibility, and Litigation”* Calahan S, Hansen A, and Kinnunen D. Presented at the American Driver and Traffic Safety Education Association’s Annual Conference, Honolulu, Hawaii, August 2005

*“The Traffic Stop and the Novice Driver”* Calahan S. Presented at the American Driver and Traffic Safety Education Association’s Annual Conference, Honolulu, Hawaii, August 2005

*“A Career in Technology Education”* Calahan S and Cattin W. Presented at the Technology Student Association’s Annual Conference, Bellingham, Washington, March 2005

*“The Traffic Stop”* Calahan S, and Kersten K. Presented at the Washington Traffic Safety Education Association’s Annual Conference, Federal Way, Washington, March 2005

*“Technology Education at CWU”* Calahan S. Presented at the Washington Industrial Technology Education Association’s Annual Conference, Wenatchee, Washington, March 2005

*“Creating Data Driven Lesson Plans”* Calahan S, Hansen A, Doane D. Presented at the American Driver and Traffic Safety Education Association’s Annual Conference, Portland, Oregon, July 2004

*“Graduated Driver Licensing Update”* Calahan S., Kinnunen D., Goudrian, D. Presented at the Washington Traffic Safety Commission’s 15<sup>th</sup> Annual Impaired Driver Traffic Safety Conference, Olympia, Washington, December 2002

*“Creating Lesson Plans for Classroom & BTW w/Drive Routes”* Calahan S. and Hansen A. Presented at the Annual Conference of the Washington Traffic Safety Education Association, Spokane, Washington, fall 2001

*“National Survey of Driver Education Teacher Preparation Programs”* Calahan S. and Hales R. Presented at the Annual Conference of the American Driver and Traffic Safety Education Association in Huntsville, Alabama, 1995

## **Workshops**

*“Coordinators Curriculum Workshop”*; presenters: Calahan S., Kinnunen D., and Hansen A., presented at CWU, January 2006

*“CWU and OSPI Traffic Safety Education Workshop”*; presenters: Kinnunen D., Muzzy S., and Calahan S., presented at CWU, November 2003

*“Classroom Curriculum Improvement and Enhancement”* Calahan S. Pre-conference workshop presented at the Washington Traffic Safety Education Association’s Annual Conference, Ellensburg, Washington, fall 2002

*“Enhancing Behind-the-Wheel Instruction”* Calahan S. and Freeman D. Pre-conference workshop presented at the Washington Traffic Safety Education Association’s Annual Conference, Spokane, Washington, fall 2001



**Grants**

June 2010. \$25,000 from Central Washington Resource Energy Collaborative for the release time and procurement of materials for Scott Calahan and Charles Pringle to develop curriculum and activities for “Energy Week” in conjunction with Washington Business Week at CWU.

**Research**

Conducted a nationwide survey to determine the status of driver education teacher preparation programs and licensing procedures in the United States. 1995

**Awards**

IET Department’s “*Distinguished Professor for Scholarship*” award, 2010/11

IET Department’s “*Public Relations Event*” award, 2008/09

IET Department’s “*Distinguished Professor for Service*” award, 2008/09

IET Department’s “*Distinguished Professor for Service*” award, 2005/06

“*Distinguished Service*” award Presented by the Washington Traffic Safety Education Association, March 2005

David W. Carns  
 (509) 963-1762  
 carnsd@cwu.edu

**Rank:** Professor, Industrial and Engineering Department, College of Education and Professional Studies.

**Education:** 1986 Master of Science in Civil Engineering, Oregon State University, Corvallis, OR Major: Structural Mechanics; Minor: Construction Engineering Management  
 1974 Bachelor of Science in Civil Engineering, Oregon State University, Corvallis, OR

**Professional Experience:** 1985 Engineer, Weyerhaeuser Co., Paperboard Division, Springfield OR. Project design and contract administration.

1984 Engineer, Weyerhaeuser Co. Lumber Products Division, Raymond, WA. Project design and contract administration.

1976-1984 Licensed general contractor, Corvallis, OR. Residential and small commercial projects. 1975-76 Civil Engineer, U.S. Forest Service, Corvallis, OR. Building and facilities design and contract administration.

1974-75 Project Engineer, Weyerhaeuser Co., Pulp and Paperboard Division, Longview, WA. Project design, estimating, scheduling and contract supervision.

**Courses Taught and Quarter Credits:**

<b>Fall 2010</b>	<b>Winter 2011</b>	<b>Spring 2011</b>
CMGT 447, Construction Planning, Scheduling and Control (4 credits, 5 contact hours)	CMGT 442, Building Service Systems (3 credits, 3 contact hours)	CMGT 267, Construction Surveying (4 credits, 7 contact hours)
CMGT 450, Soils and Foundations (4 credits, 7 contact hours)	CMGT 441, Wood and Steel Construction (4 credits, 4 contact hours)	CMGT 460, Concrete Construction (4 credits, 4 contact hours)
CMGT 495, Competition Preparation (1 credit, 2 contact hours)	CMGT 488, Professional Certification (1 credit, 1 contact hour)	

## **Teaching Awards:**

### **IET Department Award**

“Most Valuable Professor” award for teaching excellent, May 2006.

### **Distinguished Professor in Teaching, Spring 2003**

I am honored to be the recipient for the "Distinguished Professor in Area Teaching for Central Washington University".

This award is certainly an indication of the confidence that fellow faculty, students, alumni and industry professionals have in my teaching efforts and abilities.

### **Presidential Award, Center for Excellence in Leadership 2003-2004, June 2004**

Presented by President Jerilyn McIntyre on behalf of the Center for Excellence in Leadership to recognize my contributions to teaching, service and scholarship at CWU.

### **Associated General Contractors of Washington Excellence in Teaching Award**

Presented in January 2004 as recognition for contribution to construction education.

### **Most Inspirational Educator**

**On May 22, 2003 I was presented with the “Most Inspirational Educator” award by the Center for Excellence in Leadership at Central Washington University.**

### **Award for Teaching**

On May 28, 2002 I received an award from the College of Education and Professional Studies for excellence in teaching within the Industrial and Engineering Technology Department.

## **Scholarship:**

### **Publications:**

“Creating and Utilizing a ‘Working Model Heat Pump’ to Enhance Student Learning in a Construction Management Program”, David W. Carns and P. Warren Plugge, peer-reviewed and published in the 46<sup>th</sup> Annual Associated Schools of Construction International Conference, Boston, Massachusetts, April 2010.

“Construction of a Wind Farm and Case Study”, David W. Carns and William J. Bender, peer-reviewed and published in the 44<sup>th</sup> Annual Associated Schools of Construction International Conference, Auburn, AL, April 2008.

“Developing a Laboratory for a Soils and Foundations Course in a Construction Management Program”, peer-reviewed and published in the 42<sup>rd</sup> Annual Associated Schools of Construction Conference, April 2006.

"Certification Preparation Class", David W. Carns and William J. Bender, peer-reviewed and published in the 38<sup>th</sup> Annual Associated Schools of Construction Conference proceedings, April 2002.

Concrete Curing, P. 19-22, Vol. II, No. 6, March 1993. The Journal of Light Construction.

The Critical Path Method of Scheduling, p. 137-142, August 1992, "Managing the Small Construction Business." The Builderburg Group, Inc., Richmond, VT.

**Introduction to Critical Path Scheduling, p. 38-41, Vol. 9, No. 12, September, 1991. The Journal of Light Construction.**

Foundation Layout By Transit, p. 16-18, Vol. 9, No. 6, March, 1991. The Journal of Light Construction.

**Seismic Response of an Elevated Steel Water Pipe, p. 574-579, Vol. 116, No. 4 Jul/Aug, 1990. Journal of Transportation Engineering, American Society of Civil Engineers.**

Grants Received:

**June 2004 to 2007. Assisted Dr. Bender in acquiring a \$250,000 state match to create an endowed faculty position in the Construction Management program. I was very instrumental in raising the \$250,000 in private donations over the last few years that allowed CWU to secure this state funding.**

Summer 2006. \$3340. National Science Foundation grant participant. ILAP project in cooperation with Dr. Lundin of the Math Department, "Writing Equations for Deflected Beam Shapes", August 2006.

June 2005. \$186 from the CWU Instructional/Research Equipment Committee to purchase surveying equipment for the CMGT 267, Plane Surveying course.

**September 2004. Assisted CMGT students in raising over \$10,000 from industry to help fund their trip to the Associated Schools of Construction competition to be held in February of 2005.**

**June 2004. \$4925 grant from the Mechanical Contractors Association of America to construct a working model heat pump display to incorporate into the CMGT 442, Building Service Systems course.**

**May 2004. \$612 from the CWU Instructional/Research Equipment Committee to purchase lab equipment for the CMGT 450, Soils and Foundations course.**

November 2002. \$4774 in the form of a brand new heat pump from the Carrier Corporation for instructional use in conjunction with the CMGT 442, Building Service Systems, class.

April 2002. \$1272 from the Instructional/Research Committee for the purchase of two surveying instruments for use in several Construction Management courses.

September 2002. \$3,826 from Associated General Contractors of Washington for microcomputers used in the Construction Management program.

September 2001. \$1572 from the Associated General Contractors of Washington Education Foundation for the purchase of two new self-leveling levels for use in the CMGT 267, Plane Surveying course.

September 2000. \$10,350 from the Associated General Contractors of Washington Education Foundation to supplement the 2000 fiscal year budget of the CMGT Advisory Council.

September 1998. \$8860 from the Associated General Contractors of Washington Education Foundation. Funds to supplement the 1999 fiscal year budget of the CMGT Advisory Council.

June 1997. \$7,182 from the Associated General Contractors of Washington Education Foundation for computers for the microcomputer lab for Construction Management students.

July 1996. \$11,970 from Microsoft Corporation in the form of a software license and support for Microsoft Project for use in the microcomputer lab for the Construction Management program.

September 1995. \$15,000 from the AGC of Washington Education Foundation for the microcomputer lab for the Construction Management program.

September 1994. \$5,000 from the AGC Education Foundation for operating funding for the Construction Management program.

September 1992. \$12,500 from the AGC of Washington Education Foundation for computer workstations and digitizers.

September 1990. \$70,000 from the Associated General Contractors of Washington to assist in hiring a new tenure track faculty for the Construction Management program.

### Text and Course Reviews

January 2008. Course review: "Construction Technology" component for "High School Introduction to Engineering Curriculum". For the Research and Development Center for the Advancement of Student Learning, Colorado State University.

August 2006. "Advanced Project Control and Scheduling", John Wiley.

March 2003. Vector Mechanics for Engineers, Statics, by Beer and Johnson, McGraw Hill, Burr Ridge, Illinois.

June 1999. "Wall and Roof Details", International Thompson Publishing.

September 1997. Reading Building Plans, Delmar Publishers, Albany, N.Y.

August 1997. Managing Waste at the Home Construction Site, Delmar Publishers, Albany, N.Y.

December 1995. Construction Contract Administration and Jobsite Management, Delmar Publishers, Albany, NY.

February 1993. Construction Materials by William P. Spence (21 chapter text), West Education Publishing, Highland Park, IL.

**Seminars and Presentations:**

April 2011. Taught an introductory blueprint reading course for the Associated General Contractors of Washington Education Foundation.

July 2008. Taught an introductory blueprint reading course for the Associated General Contractors of Washington.

June 4, 2008. "Working Together to Increase Student Interest in the Mechanical Contracting Industry", MCA luncheon presentation, Seattle, WA.

July 2007. Taught a component of "Washington Construction Week" on concrete mix design and concrete utilization to high school students.

May 2006. Taught a class for industry professionals, "Introduction to Scheduling" for the AGC of Washington.

May 2005. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA.

March 2005. Presented a short course entitled "Scheduling, Communicating the Construction Plan" to 25 construction industry professionals at the Associated General Contractors of Washington in Yakima, WA.

January 7, 2004. AGC Leadership Breakfast speech/presentation at the Washington Athletic Club.

October 2003. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA.

October 2002. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA.

October, 2001. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA. This presentation led directly to the formation of an MCA student chapter on campus and the establishment of an annual scholarship for students interested in mechanical contracting.

March 7, 2001. "Developing a Working Relationship between Mechanical Contractors in Washington and University Construction Management Programs", Mechanical Contractors Association of Washington (MCA), Seattle, WA.

November 6, 2000. Delivered a short presentation to The Associated General Contractors of Washington and the AGC Education Foundation to welcome new CWU President Jerilyn McIntyre and to highlight the accomplishments of the CMGT program at Central, Seattle, WA.

February 1995. Delivered a presentation to Foushee and Associates, a Seattle area general contractor, on Construction Scheduling.

May 11, 1993, May 10, 1994, Coordinated two seminars: A Practical Approach to Concrete Pumping, on CWU Campus.

November 1990. Coordinated "Construction Risk Management - Minimizing Your Exposure", on Central Washington University campus.

March 16 and 17 1990. Delivered "Job Planning, A CPM Approach", CWU Campus.

**Service:**

**Internal:**

Member IET Department Personnel Committee.

Chairman Construction Management Search Committee, 2005/2006 and 2006/2007.

Member IET Scholarship Committee Chair, 2004-present.

Faculty advisor to the Associated General Contractors Student Chapter.

Faculty advisor to the Mechanical Contractors Association Student Chapter.

Chair Safety and Health Management Faculty Search Committee, November 2004-June 2005.

Member CEPS Salary Equity Adjustment Committee, Plan B, Spring 2004.

Associate Member, Graduate Faculty, 2001-present, attended a number of master's examination presentations as a representative of the Graduate Council. Served as a committee member for:

- Connie Kolokotronis, M.A., An Interior Design program in Family and Consumer Sciences at Central Washington University, May 2006.
- Miwa Aoki, M.S., Effects of 9/11 on Flight Training, December 2005.

Member, College of Education and Professional Studies Scholarship Incentive Committee (mini-grants), 2002.

Member Leonard Thayer Small Grants Committee, 1999.

Member Academic Appeals, Academic Standing Committee, 1999-2003.

Member of the IET Department Personnel Committee, 1996-2001.

Chairman Construction Management Search Committee, fall 1997-spring 1998.

Member Flight Technology Search Committee, 1998.

Past Faculty Senate Representative for the IET Department.

Past member Faculty Senate Executive Committee.

**External:**

Member of the American Council for Construction Education (ACCE). Served as a full member of a visiting accrediting team to review the Construction Management Program at Colorado State University in Fort Collins, CO. in April 2002.

Member of the ACCE Development Committee.

Member of the Associated General Contractors of Washington Education Foundation.

Chairman of the Building Appeals Board, City of Ellensburg.

Member of the Building Appeals Board, Kittitas County.

Registered Professional Engineer in Oregon and Washington.



## **Nathan Davis**

*January 2012*

### **Position**

Assistant Professor, Industrial and Engineering Technology Department,  
Central Washington University, Ellensburg, WA. 2011 - Present

### **Education**

Boise State University, Boise, Idaho  
Master of Art, Curriculum and Instruction, May 2005

Boise State University, Boise, Idaho  
Bachelor of Science, Mathematics, December 2004

DeVry Institute of Technology, Kansas City, Missouri  
Bachelor of Science, Electronic Engineering Technology, February, 1996

### **Related Professional Experience**

Assistant Professor, Electronic Engineering Technology  
Central Washington University, Ellensburg, Washington  
September 2011 to Present

Classes Taught:

- EET 221 Basic Electricity
- EET 477/IET 577 Robotics
- EET 312 Basic Electronics
- IET 373/IET 522 Programmable Logic Controller Applications

Instructor, Electronic Engineering Technology  
Salina Area Technical College, Salina, Kansas  
August 2009 to June 2011

Classes Taught

- EET 105 DC Circuits
- EET 106 AC Circuits
- EET 110 Solid State Principles
- EET 115 Digital Circuits
- EET 116 Digital Systems
- EET 220 Microcontrollers
- EET 230 Programmable Logic Controllers

Senior Field Service Engineer,

KLA-Tencor Corporation, Boise, ID, 1997-2003

Associate Test Engineer,  
KLA-Tencor Corporation, Santa Clara, CA, 1996-1997

### **Consulting and Patents**

### **Professional Licenses and Certifications**

### **Principal Publications of the Last Five Years**

### **Scientific and Professional Societies Membership**

Member, Institute of Electrical and Electronics Engineer (IEEE)

Member, Society of Industrial and Applied Mathematicians (SIAM)

Member, Association of Technology, Management, and Applied Engineering (ATMAE)

### **Honors and Awards**

### **Selected Institutional and Professional Service in the Last Five Years**

### **Selected Professional Development Activities in the Last Five Years**

## **Lad Holden**

*June 2009*

### **Position**

Associate Professor

### **Education**

Master of Technology in Computer and Electronic Engineering Technology  
Arizona State University, August 1994

Bachelor of Science in Electronics Engineering Technology  
Central Washington University, June 1990

### **Related Professional Experience**

Boeing Commercial Airplane Company  
Everett, WA, June 1990 – September 1994

### **Consulting and Patents**

### **Professional Licenses and Certifications**

### **Principal Publications of the Last Five Years**

### **Scientific and Professional Societies Membership**

### **Honors and Awards**

### **Selected Institutional and Professional Service in the Last Five Years**

IET Department Personnel Committee 2005 - Present

### **Selected Professional Development Activities in the Last Five Years**

Attended Microchips MASTERS Conference 2006 2007 2008 2009  
University Online Learning training courses

### **Time available for research, scholarly activities, or professional development:**

5%

**Percentage of time commitment to the MET/ EET/ SHM program**  
100%

## **Craig Johnson Curriculum Vitae**

**January 2011**

509-963-1118 cjohnson@cwu.edu

### **Position**

Professor and Coordinator of Mechanical Engineering Tech. and Industrial Tech: Cast Metals

College of Professional and Education Studies, Central Washington University, Ellensburg, WA.

### **Education**

BSPHysSci 1979 University of Minnesota

BSME 1983 University of Wyoming

MSMSE 1987 University of California, Los Angeles

PhD 1994 Washington State University

### **Related Professional Experience**

Central Washington University 1996-Present.

Metallurgical Engineering Consultant 2000- Present.

Washington State University 1995-1996 (contract).

Engineer, Rockwell International 1988

Engineer, NDE Technology 1986-1987

Teacher, Sheridan High School 1980-1981

### **Courses Taught**

Fall '10 Winter '11 Spring '11

MET495A Sr. Project 3 MET495B Sr. Project 3 IET457 Adv Casting 3

MET351 Metallurgy 4 MET483 Plastics & Comp 4 MET426 Appl Str. Materials 4

IET496 Ind. Project IET583 Plastics & Comp 4 MET257 Casting Processes 4

Historically taught undergraduates courses in Metallography, Plastics, Ceramics, Composites, Casting, Advanced Foundry, Statics, Strengths, Industrial Design, CAD, CAD/CAM, FEA, Machine Design, Diffraction, Economics, Dynamics, Tool Design, Aviation Systems, Aerodynamics, Hydraulics.

Taught graduate courses in Numerical Analyses and Composites

### **Consulting and Patents**

Consultant: City of Ellensburg, Gas Division, annual weld procedures and welder certifications.

Consultant: EADS, quarterly calibration of wire-crimping device, composites research.

Consultant: AMTECH, characterization of composite panel in bending.

### **Professional Licenses and Certifications**

WA Professional Engineer, Metallurgical, #36590

### **Principal Publications of the Last Five Years**

Johnson, CH., "Asynchronous Use of Educational Videos", ASEE Annual Conf, 2011

Johnson, CH., "Educational Use of Videos", ASEE Annual Conf, 2010

Johnson, CH., "Casting Castings", National Educators Workshop, ASEE Annual Conf, 2009

Johnson, CH., "Composite Column Design/Test Lab", National Educators Workshop, ASEE Annual Conf, 2008

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Johnson, CH., Rogers, B, Manweller, O., "Soap Casting Materials Education Activity", ASEE Conf, 2007

Johnson, CH, Druschitz,E, Druschitz,A, “Ultrasonic Leak Test for Automotive Brake Caliper”, THERMEC 2006

Johnson, CH., Protzeller, J, Fuerte, J, “Program Synergy: Eng. Labs using Foundry Resources”, ASEE Conf, 2006

### Scientific and Professional Societies Membership

| @□, TMS-AIME, ASME, ASEE, AFS, FEF, ASM

### Honors and Awards

2010 ASEE Outstanding Zone Campus Representative

THERMEC '06 Invited Speaker

### Selected Institutional and Professional Service in the Last Five Years

MET Program Coordinator since 2003

IT/CastMetals Coordinator since 2001

Kittitas County Airport Advisory Committee Representative since 2000 (political app.)

### Selected Professional Development Activities in the Last Five Years

ASEE Annual Conferences since 1999

National Educator Workshops annually since 2007

ABET Training in 2010

NSF ATE in Materials Technology (MatEd) Partner (CWU Rep) since 2005

Percentage of time available for research, scholarly activities, or professional development

Three workload units out of forty-five (7%).

### Percentage of time commitment to the MET program

Thirty-six workload units (teaching) plus four service (coordinator) units shows (40/45) 89%.

## Darren C. Olson, Associate Professor

### Education

- |             |  |
|-------------|--|
| May 2004    | Ph.D. in Technology Management, Quality Systems Specialization<br>Indiana State University |
| May, 1997   | M. Ed. in Career and Technology Education<br>Bowling Green State University                |
| April, 1991 | B.S. in Mechanical Engineering<br>Brigham Young University                                 |

### Professional History in Education

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**9/08 – Present:** Central Washington University, Department of Industrial and Engineering Technology

Associate Professor  
Coordinator, Master of Science in Engineering Technology

#### Service to the University

- Faculty sponsor for the student chapter of ATMAE
- Faculty senate, March 2010 - Present

#### Professional Activities

- Member, Association for Technology, Management, and Applied Engineering (ATMAE)
- Certified by ATMAE as an accreditation site visit team member

#### Service to the Profession

- Team member for ATMAE re-accreditation site visit to the University of California Polytechnic, San Luis Obispo. April, 2009.
- Team member for ATMAE re-accreditation site visit to San Jose State University. April, 2010.

#### Honors and Awards

- Outstanding Teacher Award for 2010-2011, Dept. of Industrial and Engineering Technology
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**8/02 – 7/08:** Bemidji State University, Department of Technological Studies

Department Chair (1/06 – 7/08)  
Associate Professor (8/07 – 7/08)  
Assistant Professor (8/02 – 7/07)

#### Service to the University

- Faculty Senate (1/07 – 5/08)
- University Curriculum Committee (8/04 – 5/08)

- University Academic Affairs Planning Committee (1/05 – 5/06)
- Sat on several university- and department-level hiring committees, chaired search committee for Director, Center of Excellence
- Advised 20-25 undergraduate students and 2-5 graduate students annually
- Served on four master's committees, one as chair

### **Service to the Community**

- Represented Rotary International during a Group Study Exchange to Iceland, May, 2006
- Assistant Scout Master 2002-2006
- Served in various church positions at the local and regional level 2002-2008

### **Notable Achievements**

- Led the department's self-study and wrote the self-study report for the department's 2002-2006 planning and assessment cycle
- Led the development of, and authored, the department's five year strategic and assessment plans for the 2007-2011 cycle
- Worked with the coordinator of the Industrial Technology Program to achieve accreditation for the Industrial Technology Program through the National Association of Industrial Technology (NAIT), effective Fall 2007.
- Coordinated outreach and recruitment efforts between the department and the Center of Excellence in Manufacturing and Applied Engineering
- Led the department during the transition back into its renovated and expanded facilities
- Developed curriculum and won approval for the Engineering Technology Program.
- Was integral in the process of defining two new Engineering Technology faculty positions, securing the positions for the department, and hiring the faculty members
- Helped to win multi-million dollar funding for, and to establish a Minnesota Center of Excellence in Manufacturing and Applied Engineering. The center ties Bemidji State University, with seven two-year colleges to create integrated curriculum, and with industry partners to conduct applied research.
- Visited Iceland as a team member for the Rotary Foundation's Group Study Exchange (May 1-30, 2006), in which I met with officials from government, education, and industry to discuss the ways that Iceland has approached the challenges of economic diversification and development.

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<b>8/01 – 5/02</b>	Instructor, Eastern Kentucky University, College of Business and Technology
<b>8/00 – 5/01</b>	Instructor, Bowling Green State University, College of Technology
<b>9/98 – 5/00</b>	Graduate Assistant, Bowling Green State University, College of Technology
<b>2/97 – 8/98</b>	Instructor, ITT Technical College, Dayton, OH
<b>8/95 - 12/96</b>	Graduate Teaching Assistant, Bowling Green State University, College of Technology

### **Other Professional History**

**8/94 - 6/95** Product Engineer: Kern-Liebers USA - Holland, OH



5/93 - 8/94      Quality Engineer: Toledo Molding and Die - Carey, OH  
4/92 - 4/93      Manufacturing Engineer: Hansen Machine Corp. - Auburn, WA

## Scholarly Achievements

- Olson, D. C. (2004). *Assessment of current quality management practices* (Doctoral dissertation, Indiana State University, 2004). Dissertation Abstracts International. (UMI No. 0388150)
- Olson, D. C. (2006). *Innovation and Diversification in the Icelandic Industrial Sector: A Case Study and Comparative Analysis*. Presented at the annual conference of the National Association of Industrial Technology, in Cleveland, OH. November, 2006.
- Olson, D. C. (2009). *Using Team Projects to Teach a Project Management Course: A Case Study Involving the Formation of an ATMAE Student Chapter*. Presented at the annual conference of the Association for Technology, Management, and Applied Engineering, in Louisville, KY. November, 2009.
- Olson, D. C., & Morken, A. (2010). *Synthesizing Managerial and Technical Knowledge and Skills: Guiding a Student Team Through the Process of Developing a Robot for the ATMAE Student Competition*. Presented at the annual conference of the Association of Technology, Management, and Applied Engineering, in Panama City Beach, FL. October, 2010.
- Olson, D. C., & Sinn, J. W. (1999). An update on Applied Quality Science at Bowling Green State University and the instructional use of student-based applied research as a technology transfer mechanism: A critical element of education for technologists. *Journal of Industrial Technology*, *15* (4), [On-Line Journal]. Available: <http://www.atmae.org>
- Olson, D. C., & Sinn, J. W. (2002). *Quality management in the global economy: Relationships between the quality management body of knowledge and organizational effectiveness*. Presented at the annual convention of the National Association of Industrial Technology, in Panama City Beach, FL. November 2002.
- Olson, D. C., & Sinn, J. W. (2004). *Correlations between quality management practices and compliance with quality system requirements: Results of a study comparing implementation of ASQ CQM practices to success as measured by ISO 9001: 2000 and the MBNQA Criteria*. Presented at the annual conference of the National Association of Industrial Technology, in Louisville, KY. November, 2004.
- Olson, D. C., & Whelan, M. (2011). *Delivering a Master of Science program in Engineering Technology to cohorts of Chinese nationals: An analysis of the challenges, the benefits, and the pursuit of continuous improvement*. Presented at the annual conference of the Association for Technology, Management, and Applied Engineering, in Cleveland, OH. November, 2011.
- Olson, D. C., & White, K. (2007). *Establishing a Center of Excellence: Building Partnerships with Industry and Two-Year Institutions*. Presented at the annual convention of the National Association of Industrial Technology, in Panama City Beach, FL. October, 2007.

- Sinn, J. W., & Olson, D. C. (1999). *Technologists' core knowledge: Web-based strategy for defining our discipline*. Presented at the annual convention of the National Association of Industrial Technology in Panama City, FL. November 1999.
- Sinn, J. W., & Olson, D. C. (2000). *Technical management core knowledge: User's web-based research group for defining our discipline*. Presented at the annual convention of the National Association of Industrial Technology in Pittsburgh, PA. November 2000.
- Sinn, J. W., & Olson, D. C. (2001). An Industrial Technologist's Core Knowledge: Web-based Strategy for Defining Our Discipline. *Journal of Industrial Technology*, 17 (2), [On-Line Journal]. Available: <http://www.atmae.org>

**JOHN O'NEILL**  
1405 Radio Road  
Ellensburg, Washington 98926  
Office Phone: (509) 963-1740  
oneillj@cwu.edu

## **EDUCATION**

### **Doctor of Education**

Higher Education Administration (anticipated June 2013)  
Washington State University  
College of Education  
Pullman, Washington 99164

### **Master of Public Administration**

#### **California State University, Chico**

College of Behavioral and Social Sciences  
Chico California, 95929

### **Bachelor of Science: Industrial Technology**

#### **California State University, Chico**

College of Engineering, Computer Science & Technology  
Chico, California 95929

### **Associate in Science: Industrial Technology**

Sierra College,  
Rocklin, California, 95677

### **Hazardous Materials Management Certificate (21 semester units)**

#### **University of California, Santa Cruz Extension**

Santa Cruz, California 95060

## **EMPLOYMENT HISTORY**

### **08/08 – present – Assistant Professor**

**Central Washington University  
Industrial and Engineering Technology Department  
Safety and Health Management Programs  
400 East University Way  
Ellensburg, WA 98926-7584**

**Supervisor's Name(s): Dr. Michael Whelan, Department Chair**

**Telephone number: (509) 963-1756**

Assistant Professor for Safety and Health Management programs for Industrial and Engineering Technology Department, full time tenure track professor instructing for occupation safety, risk Management, American's with Disabilities Act, industrial hygiene, hazardous materials management and emergency response classes. Curriculum supports Safety and Health Management four year Bachelor of Science Degree specialization. Program Management responsibilities include oversight of Safety and Health Management including budget, course scheduling, industrial relations, internship and experiential education coordination, advisor to undergraduate students on academic and scholastic planning issues for engineering and technology Bachelor degree programs. Faculty advisor of university students participating in experiential educational internships and student organization associated with safety engineering. Responsibilities include functioning as Academic Advisor for Central Washington University Student Chapter American Society of safety Engineers. Central Washington University Committee work consists of participation and standing member of the General Education Committee and the Campus Inclusiveness and Diversity Committee. Additionally my responsibilities at the university include functioning as the contracted Principal Investigator managing facility audits at United State Forest Service facilities.

**2/06 to 8/08 – Hazardous Materials Management Specialist  
Butte County Environmental Health  
202 Mira Loma Drive  
Oroville, California 95927  
Supervisor's name: Mike Huerta  
Telephone number: (530) 538-7281**

Duties include development and coordination of the activities to the Hazardous Materials Management Specialist; assists in the creation of and participates in training and public outreach regarding hazardous materials for industry; research and participate in the development of new program policies.

Responsibilities include conducting regulatory oversight of inspections on industrial and laboratory facilities to ensure compliance with Federal and state regulatory standards. Participate in the supervision of underground storage tank inspections, emergency response to releases and spills of hazardous materials/waste as well as oversight of remedial actions for waste contaminated sites and illegal methamphetamine laboratories.

Interpret new regulations and implement environmental program revisions and enforcement requirements to assure compliance; conduct inspections as a means of identifying transportation, processing, storage and handling of hazardous

materials/waste which create fire and other safety hazards; assists in plan check review for hazardous materials facilities; under emergency conditions may enter areas where hazardous materials are present to evaluate and determine the degree of hazard and advise other public safety personnel of their findings.

Assist emergency response to emergency situations and utilize required tools and equipment; may appear in court to provide expert testimony in case of criminal complaints filed by County of offenses on fire/hazardous waste laws, ordinances and regulations and on civil suits involving responsibility for effects of a hazardous material; present clear and concise reports commensurate with responsibilities; complete related work thorough knowledge of environmental regulatory provisions regarding chemicals and their potential hazard individually and in combination with other chemicals; working knowledge of transportation, processing, storage and handling methods of hazardous materials/waste; participate in teaching/training workshops, gather, analyze and present data clearly; analyze situations and make appropriate recommendations.

**1/99 to 4/04 – Administrator - Human Resources Manager- Safety Coordinator  
California State University, Chico  
Office of the Vice Provost for Human Resources  
400 West 1<sup>st</sup> Street  
Chico, California 95929 – 0019  
Contact name: Lisa Nix-Baker, Vice Provost  
Telephone number: 530-898-5029**

Duties included the management of the University Staff Development and Employee Training Programs providing guidance and training to the campus community in a wide variety of Human Resources related areas such as employee recruitments, staffing, classification, employee relations, training, educational fee waiver, and employee performance evaluations. Additionally, this administrative managerial position coordinates the University's Special Consultant Program, participates as a member of the University's Transitional Employment Team, and oversees recruitment, employee classification, staff training and employee relations functions for the Human Resources Department.

I was charged with providing guidance and training to the campus community in a wide variety of human resources related areas such as staffing, employee relations, training, and employee performance evaluations. I was also responsible for the development and management of all aspects of the University's Staff Development and Educational Programs. I oversaw training programs, educational presentations and instructional seminars for all university staff personnel and facilitated presentations for University personnel regarding human resources regulatory matters such as Sexual Harassment, Americans with Disabilities Act, and Diversity.

I administered, developed, and conducted required safety training in the areas of New Employee Training, Hazard Communications, Hazardous Materials/Waste, Asbestos Awareness, Blood Borne Pathogens and spill response, Fall Protection, Respiratory Protection, Confined Space entrant/attendant/supervisor and rescue, Forklift safety and general safety. Additionally, develop and conduct Superiors Safety Training program.

Responsibilities also included coordination of In-Range Progression evaluations, Re-classification request reviews, and the Educational Fee Waiver program. Additionally, I reviewed and approved staff personnel status transitions from temporary to permanent employee standing. I participated as a member of the Employee Assistance Program and the Disability Management and Transitional Work Program Committees designing adaptive standards and scheduling to coordinate employees back to work following an injury or illness. I participated in the investigations of employee accidents associated with Worker Compensation claims. I represented the University's Administration on the Assistive Device Committee/Auxiliary Assistance Program reviewing and investigating employee requests for specialized and/or adaptive equipment or services to aid employees with specialized needs.

**6/96 to 1/99 – Environmental Health and Safety Manager  
Louisiana-Pacific Corporation  
P.O. Box 1879  
4801 Feather River Boulevard  
Oroville, California 95965  
Supervisor's name: Dwayne Arino  
Telephone number: (615) 986-5600**

Duties included the direction and coordination of environmental and safety compliance projects at the Louisiana-Pacific Oroville Hardboard manufacturing facility and Feather Falls Timber Track to insure worker safety and environmental compliance. Responsible for directing environmental and safety administrative and engineering controls, and employee training programs required to achieve compliance with state and federal regulations.

Collaborated with the Human Resources Departments and the Employee Assistance Programs with coordination and support of all Disability Management and Transitional

Work employees. Designed adaptive standards and scheduling to coordinate employees back to work following an injury or illness.

Coordinated and developed required safety training in the areas of Hazard Communications, asbestos awareness, hazardous materials/waste handling and spill response, fall protection, respiratory protection, confined space entrant/attendant/supervisor and rescue and general industrial safety. Was responsible for designing the Illness and Injury Prevention Program, formulation of Safety Committee and other safety communications projects. Received the Safety Recognition Award from California Lumbermen's Accident Prevention Association for successfully reducing incident rate by 53% within one year.

**4/94 to 6/96 – Air Quality Specialist II  
Tehama County Air Pollution Control District  
1750 Walnut Street  
Red Bluff, California 96080  
Supervisor's name: Gary Bovee  
(530) 527-3717**

Duties included conducting engineering facility evaluations for proposed and existing air pollution stationary source operational permits. Coordinated Tehama County Air Pollution Control District emission reduction credit program. Inspection of existing or potential sources of air pollution. Advised public and private officials of air pollution regulations and enforcement procedures. Coordinated the Public Outreach and Educational programs, conduct workshops for industrial, agricultural, and community organizations. Conducted public classroom educational information presentations at schools and environmental/education camps. Responsible for ambient air sampling, contaminant monitoring program and emission inventory reporting in compliance with state and federal air quality regulations. Directed air quality planning issues and coordinate rule development efforts. Oversaw agricultural and biomass burning throughout the District, issue burn permits, review prescribed burns plan on federal and state forested land. Enforce environmental regulations and laws. Issued violation notices, prepared materials for legal hearing, and appeared as an expert witness in judicial procedures.

### **Other Qualifications**

**Driver's License # V9087229, State of California, Class "C", Expiration date 9/14/2009**

**Lead Inspector Assessor Certification, Certification # 17868, State of California, Department of Health Services, Childhood Lead Poisoning Prevention Branch, April 18, 2007**

**Lead-Based Paint Inspection & Lead-Based Paint Assessor**, University of California, Berkeley Center for Occupational & Environmental Health, US EPA , Section 402 of Toxics Substances Control Act. January 29- February 2, 2007

**Underground Storage Tank Inspector Certification**, International Code Council (ICC) **Certification No. 5282059-UI**, December 18, 2006

**Certified Manufacturing Technologist**, Society of Manufacturing Engineers. **(Certification No. 2077956)**

**Certified Senior Industrial Technologist**, National Association of Industrial Technology. **(Registration No. 1018)**

**Hazardous Waste Operations and Emergency Response**, Annual 8 Hour Refresher Training, in accordance with Title California Code of Regulations, Section 5192(e)(8) and Title 29. Code of Federal Regulations 1910.120 (e)(8), A/C Industrial Services, December 1, 2005.

**Emergency Management Institute**, FEMA IS 700 National Incident Management System, April 4, 2006

**California Incident Command System ICS-1-100**, Chico Fire Department April 4, 2006,

**Risk Management Authority**, California State University , Workers Compensation Training, Session 6, Medical-Legal Issues, Claims/Legal Management of Medical Care, April 16, 1999

**Disability Management**, California State University, Training Program, Milt Wright & Associates, Inc. in association with California State University, Chico California, January 2000.

**Project Designer for Asbestos Abatement**, in accordance with AHERA requirements for inspectors and management planners, University of California, Berkeley Extension

**Building Inspection and Management Planning for Asbestos**, in accordance with AHERA requirements for inspectors and management planners, University of California, Berkeley Extension

Certificate in **General Industrial Health and Safety**: Title 8 Standards for Managers and Supervisors, University of California San Diego Extension, July 1996.



Butte-Glenn Community College District, **Hazardous Materials/Environmental Technology Vocational Advisory Committee Member.**

**Registered Environmental Assessor** (application review pending), California Environmental Protection Agency.

## **P. Warren Plugge, Ph.D.**

### **Education**

Ph.D. (2007)

Education and Human Resource Studies  
Interdisciplinary Studies Concentration: Civil Engineering and  
Construction Management  
Colorado State University, Fort Collins, Colorado  
Dissertation Title: *An Evidenced-Based Comparison of  
Construction Project Delivery*

M.S. (2003)

Construction Management  
Colorado State University, Fort Collins, Colorado  
Thesis Title: *A Qualitative Comparison of Risk Communication  
and Management Factors Associated With Large Design-Build  
Infrastructure Projects: I-25 (TREX) Denver, Colorado and I-15  
Salt Lake City, Utah*

B.S. (1994)

Construction Management  
Colorado State University  
Fort Collins, Colorado

### **Professional Experience**

#### ***Higher Education***

9/2006- Present

#### ***Assistant Professor***

***Central Washington University, Ellensburg, Washington***

Primary instructor for construction blueprint reading and construction graphics, construction competition preparation, introduction to civil construction, civil construction means and methods, heavy civil estimating temporary structures, heavy civil utilities, civil construction contract law, heavy civil project management, civil land surveying (lab instructor), pavement design and construction and the American Institute of Constructors (AIC) certification preparation course.

7/2001- 5/2006

#### ***Graduate Teaching Assistant***

***Colorado State University, Fort Collins, Colorado***

Primary instructor for Primavera "Expedition" Project Administration software. Assist professor by teaching under-grad and graduate students the basic elements of construction project management, based on personal field experience. Wrote the "Expedition Tutorial" to reflect new teaching modules and goals in project administration. Developed curriculum for teaching Primavera Expedition, Excel, HTML, Microsoft

Project, and Microsoft Frontpage to be used as construction management project administration tools.

## ***Construction Industry***

### **Kittitas County Public Works, Ellensburg, Washington**

6/2011-9/2011

#### ***Engineering Technician, Ellensburg, Washington***

Provided project engineering and management support to the county construction manager as a survey technician, coordinating document control and consulting with engineering sub-consultants.

### **Granite Construction Company, Everett, Washington**

2/2009-9/2009

#### ***Project Engineer, Everett, Washington***

Provided project engineering support coordinating self performed and subcontracted work on the removal and rehabilitation airport runways and installation of drainage structures on Snohomish County's Paine Field Runway Rehabilitation and Expansion Project in Everett, Washington.

6/2008-9/2008

#### ***Project Engineer, Everett, Washington***

Supported the project management team by providing field oversight through managing quality, daily quantities, subcontractor and supplier management on the demolition of the Tolt River Bridge and the 92<sup>nd</sup> Ave to 5<sup>th</sup> Street I-5 Soundwall projects. Additional duties included maintaining schedule, budget, safety, and environmental correspondence with representatives of the Washington Department of Transportation (WSDOT).

6/2007-8/2007

#### ***Project Engineer, Everett, Washington***

Provided quantitative analysis and tracking for \$5.5 Million pavement replacement project on U.S. 2 West Stevens Pass. Responsible for tracking daily costs, site coordination, and field inspection.

6/2006-8/2006

#### ***Estimator, Everett, Washington***

Assisted lead estimator in quantitative takeoffs on heavy civil road and bridge and city municipal projects ranging in project value from \$50 million to \$700,000.

9/2003-8/2006

### **Self Employed**

#### ***Claims Engineer, Fort Collins, Colorado***

Team member responsible for managing, collecting, processing, and synthesizing project data for use in construction claims cases.

6/1997-4/2001

### **PCL Civil Constructors**

- Representative Responsibilities on Projects***
- 4/2000-4/2001 ***Project Engineer, Lutz, Florida,***  
 Assisted Project Manager and Superintendent on the construction of a \$25 million dollar roadway and bridge expansion project for the Florida Department of Transportation. Tracked and maintained daily production reports used to manage the project budget by upper level management. Managed permanent materials and reported quantity information to subcontractors, engineers, and upper level management. Estimated and managed change orders and extra work orders. Prepared daily reports of construction activities for upper level management. Closed out project on schedule and budget.
- 12/1999-4/2000 ***Assistant Estimator, Tempe, Arizona***  
 Provided quantitative estimates for road and bridge, wastewater treatment plant, and pump station projects ranging in value from \$9 million to \$50 million dollars.
- 12/1998-12/1999 ***Project Engineer and Field Engineer, Glendale and Phoenix, Arizona***  
 Managed and distributed costs and production reports to upper level management for the construction of a \$17 million dollar waste water treatment plant and a \$15 million dollar effluent wastewater treatment plant upgrade. Prepared weekly production reports, documented and controlled jobsite correspondence, coordinated subcontracts, submittals, shop-drawings, and requests for information between subcontractors and engineers.
- 6/1998-12/1998 ***Field Engineer and Materials Coordinator, Mooresville, Indiana***  
 Procured material, equipment, and services from suppliers and company-owned resources during the pre-construction phase of a \$50 million dollar amusement park. Updated and controlled project record drawings. Established a labor and quantity tracking system. Co-wrote the project construction plan to establish policies on safety, payment, and general construction procedures.
- 6/1997-6/1998 ***Field Engineer, Denver, Colorado***  
 Documented and controlled submittals and project documentation for construction of a \$9 million, 900 car parking garage. Responsible for verifying all shop drawing information with construction documents and submitting them to the architect and engineer. Documented field quantity takeoff and production rate information for cost reporting, labor distribution, and cost projection.

7/1996-3/1997

**The Neenan Company**

***Representative Responsibilities on Projects***

***Field Engineer, Denver, Colorado***

Assisted with the management of subcontractors and carpenters during the successful completion of 3 commercial/light industrial projects ranging in value up to \$20 million dollars. Responsible for verifying performance of subcontractors, coordinating drawing documentation, providing take-off information for procurement of materials, providing survey points, documenting daily site activities, and insuring employee safety on the job site.

1/1995-7/1996

**Rocky Mountain Prestress**

***Manufacturing Responsibilities***

7/1995-7/1996

***Production Controller, Denver, Colorado***

Documented and controlled the issue and consumption of production material (concrete, strand, and mesh) for multiple projects. Projects ranged in value up to \$20 million. Responsible for tracking and communicating progress of production schedules for drawings to all production departments in the architectural and structural plants. Tracked and communicated quantity takeoff information to the steel shop, wood shop, quality control, and production. Provided engineering support to production by calculating stressing for all stressed concrete beds.

1/1995-7/1995

***Quality Control Inspector, Denver, Colorado***

Responsible for finished product (structural double-tees, wall panels, beams, and AASHTO girders) quality. Conducted pre-pour and post-pour inspections, updated and maintained shop drawings, conducted tests of all concrete batches for consistency, air content, strength, and unit weight. Programmed concrete beds via computer model to maximize unit strength. Prepared performance data reports for management.

1/1989-8/1994

**McKinney Construction**

***Carpenter, Ridgecrest, California***

Performed labor and carpentry on speculation built and custom built homes for construction activities in framing, roofing, insulation, demolition, finish carpentry, painting, and ceramic tile.

1/1985-8/1994

**Baskin Robbins**

***Customer Service, Ridgecrest, California***

Responsible for customer service and performed maintenance on equipment within the store.

**Publications**

***Refereed Journal***

Moore, J.M. & Plugge, P.W. (May 2008). Perceptions and Expectations: Implications for Construction Management Internships. *International Journal of Construction Education and Research*.4, 82-96.

Moore, J.M. & Plugge, P.W. (2006). Employer Perceptions of Student Internships: Implications for Building an Internship Program. *Journal of Construction Education Associated Schools of Construction*. April 2006, Colorado State University, Fort Collins, Colorado.

### ***Refereed Proceedings***

Bender, B & Plugge, P.W. (2011). Sustainable Design Strategies That Succeed II. Proceedings at the Associated Schools of Construction (ASC) International Conference, Birmingham City University, England April 12, 2012 (In Progress)

Carns, D. & Plugge, P.W (2010). Creating and Utilizing a “Working Model Heat Pump” to Enhance Student Learning in a Construction Management Program. *Proceedings at the Associated Schools of Construction (ASC) International Conference*, Boston, Massachusetts April 7, 2010.

Plugge, P. W., DeMiranda, M.A., & Hauck, A.J. (2003). Qualitative Comparison of Two Design-Build Infrastructure Projects. *Proceedings of the International Conference on Information Systems in Engineering and Construction (ISEC 2003)* June 12, 2003, Cocoa Beach, Florida.

### ***Refereed Abstracts***

An Analysis of Experiential Learning in Construction Management. *Program and Proceedings at the 16<sup>th</sup> Annual Symposium on University Research and Creative Expression* at Central Washington University, Ellensburg, Washington May 19, 2011

Analysis of Green Technology in Utility Construction. *Program and Proceedings at the 16<sup>th</sup> Annual Symposium on University Research and Creative Expression* at Central Washington University, Ellensburg, Washington May 19, 2011

Frontend Loader vs. Hydraulic Excavator: Battle of the Earthmovers. Program and Proceedings at the 16<sup>th</sup> Annual Symposium on University Research and Creative Expression at Central Washington University, Ellensburg, Washington May 19, 2011

Creating and Utilizing a “Working Model Heat Pump” to Enhance Student Learning in a Construction Management Program. *Proceedings at the Associated Schools of Construction (ASC) International Conference*, Boston, Massachusetts April 7, 2010.

Employer Perceptions and Expectations: Implications for Construction Management Internships. *Associated Schools of Construction (ASC) International Conference*, Poster Session, University of Cincinnati, Cincinnati, Ohio, April 6, 2005.

Employer Perceptions and Expectations: Implications for Construction Management Internships. *Associated Schools of Construction (ASC) International Conference*, Poster Session, University of Cincinnati, Cincinnati, Ohio, April 6, 2005.

Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects. *Associated Schools of Construction (ASC) International Conference*, Poster Session, Brigham Young University, Provo, Utah, June 9, 2004.

A Qualitative Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects: I-25 (TRES) Denver, Colorado and I-15 Salt Lake City, Utah. *Colorado State University Construction Management Masters Symposium* (2003) April 9, 2003, Fort Collins, Colorado.

Qualitative Comparison of Two Design-Build Infrastructure Projects. Presentation to the Third *International Conference on Information Systems in Engineering and Construction (ISEC 2003)*. June 12, 2003, Cocoa Beach, Florida.

### ***Professional Articles***

Plugge, P.W. (2006). Wilder Partners with Central Washington University. *Streetbeat, Granite Employee Development*. Volume 5, issue 3, August 2006.

### **Presentations**

#### ***International***

Role of Construction Management in Organizing the Building of NAWAPA. North American Water & Power Alliance (NAWAPA), Ellensburg, Washington November 19, 2010. Web presentation at: <http://www.larouchepac.com/node/16607>

Managing & Reducing Construction Costs. *Conference Speaker for Bridge Knowle Events* in Dubai, United Arab Emirates, October 25 & 26, 2010.

Creating and Utilizing a “Working Model Heat Pump” to Enhance Student Learning in a Construction Management Program. *Proceedings at the Associated Schools of Construction (ASC) International Conference*, Boston, Massachusetts April 7, 2010.

Employer Perceptions of Student Internships: Implications for Building an Internship Program. *Presentation at the Associated Schools of Construction (ASC) International Conference* at Colorado State University, Fort Collins, Colorado April 7, 2006.

Qualitative Comparison of Two Design-Build Infrastructure Projects. *Presentation to the Third International Conference on Information Systems in Engineering and Construction (ISEC 2003)*. June 12, 2003, Cocoa Beach, Florida.

#### ***National***

Analysis of Green Technology in Utility Construction. *Symposium on University Research and Creative Expression (SOURCE)*, May 19, 2011, Ellensburg, WA.

An Analysis of Experiential Learning in Construction Management. *Symposium on University Research and Creative Expression (SOURCE)*, May 19, 2011, Ellensburg, WA.

Central Washington University’s Construction Management Program. *Washington Asphalt Pavement Association Annual Meeting*, May 19, 2011, Coeur d’Alene, Idaho.

A Qualitative Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects: I-25 (TRENCH) Denver, Colorado and I-15 Salt Lake City, Utah. *Colorado State University Construction Management Masters Symposium* (2003) April 9, 2003, Fort Collins, Colorado

**Poster Sessions**

Employer Perceptions and Expectations: Implications for Construction Management Internships. *Associated Schools of Construction (ASC) International Conference*, Poster Session, University of Cincinnati, Cincinnati, Ohio, April 6, 2005.

Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects. *Associated Schools of Construction (ASC) International Conference*, Poster Session, Brigham Young University, Provo, Utah, June 9, 2004.

**Service**

**University**

September 2009 to June 2011 Appointed to Central Washington University's Faculty Development & Research Committee. Purpose of this committee is to recommend policies and programs of faculty development, and recommend research awards to the Dean for Graduate Studies & Research.

May 2009 to June 2011 Central Washington University's Faculty Senate Executive Council Representative and Parliamentarian

May 2008 to May 2009 Senator on Central Washington University's Faculty Senate

**College, Department and Program**

September 2011 to Present – New Construction Management Faculty Search Committee Chair

2009 to Present Central Washington University Industry Board Events Committee Chair

2008 to Present, Appointed Faculty Advisor to the student chapter of Sigma Lambda Chi Construction Honor Society.

September 2007 to June 2011 Appointed to the Hogue Technology Building Committee Representative

2006 to Present Central Washington University Construction Management Industry Advisory Board Member and Events Committee Chair

2006 to Present Central Washington University Civil Construction Management Coach – Heavy Civil Team

2005 to 2006, President of the Graduate Student Council of Construction Management, at Colorado State University.

**Professional**

2008 to Present, Reviewer for the International Journal of Construction Education and Research

2003 to Present, Member of Associated Schools of Construction Research Committee

2003 to 2006 Member of the Society of American Military Engineers (SAME) for Construction Education



2001 to 2006 Graduate Student Member of the Construction Management Association of America (CMAA) in Denver, Colorado.

1996 to 2006 Member of the American Association of Cost Engineers (AACE) in Denver, Colorado.

2005 Assistant Coach for the Colorado State University Design Build Construction Competition Team.

President and Secretary of Associated Builders and Contractors student club at Colorado State University, 1993 and 1994.

### **Honors and Awards**

2010 Outstanding Service Award within the Industrial Engineering and Technology Department by the College of Education and Professional Studies at Central Washington University

2009 2<sup>nd</sup> Place Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition, Reno, Nevada.

2008 3<sup>rd</sup> Place Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition in Reno, Nevada.

2007 2<sup>nd</sup> Place as Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition in Reno, Nevada.

2007 Outstanding Research Award with the Industrial Engineering and Technology Department by the College of Education and Professional Studies at Central Washington University

2003 Recipient of the Rocky Mountain Design Build Institute of America Scholarship Award.

2002 Recipient of Colorado State University's International Management Concept Management Scholarship Award.

Inducted into Sigma Lambda Chi (construction leadership honor society) 1994.

Awarded Letter of Achievement from President Al Yates of Colorado State University for participation in the construction of the Vietnam Era Memorial Bridge at Colorado State University, 1992.

### **Professional Development**

2011 Completed Training on Preventing Sexual Harassment Training

2011 Kiewit Professors Tour Dallas/Fort Worth, Texas

2010 HCSS Training Program in Heavy Bid and Heavy Job, Sugarland, Texas.

Participant in the Associated Schools of Construction (ASC) Construction Management Graduate Competition in Reno, Nevada, 2002, 2003, and 2004.

2002 Completed Primavera's Scheduling P3 Train the Trainer Program, San Francisco, California.

2001 Completed Primavera's Expedition 7.5 Project Management Train the Trainer Program Modules, San Francisco, California including:

Module 202A- Using Expedition for Contract Administration

Module 202B- Contract Management with Expedition

Module 203- Using Primavera Expedition with Infomaker 6.5

Completed Autocad 2000 training in Tempe, Arizona from Mesa State Community College.

## **Charles O. Pringle**

October 2011

### Position

Assistant Professor, Industrial and Engineering Technology Department, Central Washington University (CWU), Ellensburg, Washington 2008-Present.

### Education

MS Engineering Technology, 2007, CWU

BS Mechanical Engineering Technology, 1992, CWU

### Related Professional Experience

IT Supervisor 2007 – 2008

Information Technology Specialist III 2003 – 2007

Engineering Aide II 2001 – 2003

Mechanical Engineer 1992 – 2001

### Consulting and Patents

Professional Technical Instructor Training

SolidWorks training

AutoCAD training

### Professional Licenses and Certifications

N/A

### Principal Publications of the Last Five Years

“Machine Design Lab: Using Automotive Transmission Examples To Reinforce Understanding of Gear Train Analysis,” American Society for Engineering Education Annual Conference, Vancouver, 2011.

“Educational Operations Four Days a Week,” American Society for Engineering Education Annual Conference, Louisville, 2010.

“No Vehicles on the Mall,” International Symposium of the International Council on Systems Engineering”, San Diego, 2007.

### Scientific and Professional Societies Membership

International Council on Systems Engineering

American Society for Engineering Education

American Society of Mechanical Engineers

### Honors and Awards

N/A

### Selected Institutional and Professional Service in the Last Five Years

Center for Advanced Manufacturing Puget Sound (CAMPS), 2010  
Sustainable Energy Education Development member, 2010  
Kittitas Valley Renewable Energy Consortium member, 2009/2011  
Site and Development Committee, AY 2009/2011  
Hogue Technology Building Committee, AY 2008/09

### Selected Professional Development Activities in the Last Five Years

“Pathways to Success: A Focus on Energy” Calzadillas H, Calahan S, Pringle C. Presented at the Washington Industrial Technology Education Association’s Annual Conference, Wenatchee, Washington, March 2011  
ASEE Reviewer for Annual Conference, Systems Engineering Division, 2011.  
Advising Electric Vehicle (EV) Club with the alternate purpose of education research into synergistic pedagogy to support the MET program, 2011 - present.  
Consulting with Hydrovolts Inc. primarily through the MET Senior Project course. This will also be another avenue for synergistic pedagogy to support the MET program, 2010 - present.  
Attend American Society for Engineering Education Annual Conference, Louisville 2010.  
Attend National Electronic Distributors Association Conference, Chicago, November 2008.  
Conducted research to analyze the impacts of a policy to reduce or eliminate vehicles on the Central Washington University malls for the CWU Site and Development Committee, 2007.

### Percentage of time available for research, scholarly activities, or professional development

13% Divided between engineering education research, technical projects, and system projects.

### Percentage of time commitment to the MET/ EET/ IET program

82% Teaching MET and IET classes.  
4% Service  
1% Friction loss

### Grant Experience

Central Washington Resource Energy Collaborative Grant to develop curriculum for Energy Week in conjunction with Washington Business Week at CWU, 2011  
SOAR Grant – R.E.S.T., 2010  
US Dept of Energy Wind Consortia Grant, peer reviewer, 2009

## **Sathyanarayanan (Sathy) Rajendran**

400 E University Way  
Safety and Health Management Program  
Industrial Engineering and Technology  
Central Washington University  
Tel.: (509) 963-1152  
[rajendrns@cwu.edu](mailto:rajendrns@cwu.edu)

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### **ACADEMIC BACKGROUND**

- Ph.D. (2007) School of Civil and Construction Engineering, Oregon State University  
Construction Engineering and Management Program  
Minor: Environmental Health and Occupational Safety Management  
Dissertation: *Sustainable Construction Safety and Health Rating System*
- M.S. (2004) School of Civil and Construction Engineering, Oregon State University  
Construction Engineering and Management Program  
Minor: Transportation Engineering  
Thesis: *Solid Waste Generation in Asphalt and Reinforced Concrete Roadway Life Cycle*
- B.E. (2002) College of Engineering, Anna University, India  
Civil Engineering Program  
Thesis: *Modeling of Groundwater Pollution due to Adyar River using Visual Mod Flow*

### **PROFESSIONAL EXPERIENCE**

- |                                       |  |
|---------------------------------------|--|
| Program Coordinator<br>2011 – Present | Assistant Professor, Safety and Health Management Program<br>Industrial and Engineering Technology Department<br>Central Washington University, Ellensburg, WA   |
| EHS Program Mgr.<br>2010 - 2011       | Intel D1X Base Build Construction Project (Hillsboro, OR)<br>Hoffman Construction Company of Oregon, Portland, OR<br>Responsibilities: Develop and implement the overall construction environmental, health, and safety program for the mega project.                        |
| Safety Manager<br>2009 - 2010         | Legacy Emanuel Children's Hospital Construction<br>Oregon Health and Science University C-Wing Expansion<br>Hoffman Construction Company of Oregon, Portland, OR<br>Responsibilities: Develop and implement the safety and health program for the 10 story hospital project. |

<p>Safety Manager 2009</p>	<p>Port of Portland Headquarters Building Hoffman Construction Company of Oregon, Portland, OR Responsibilities: Assist in the implementation of the site safety program.</p>
<p>Safety Manager 2007 - 2009</p>	<p>Genentech Hillsboro Fill Finish Pharmaceutical Facility Hoffman Construction Company of Oregon, Portland, OR Responsibilities: Develop and implement the overall construction environmental, health, and safety program for the pharmaceutical project.</p>
<p>Safety Engineer 2006 - 2007</p>	<p>The Nines Hotel; Pollock Condo; Park 5 Garage, and The Civic Condo Hoffman Construction Company of Oregon, Portland, OR Responsibilities: Assist in the implementation of the site safety program by doing periodic audits.</p>
<p>Safety Intern Summer 2006</p>	<p>Parsons Corporation, Pasadena, CA/Oregon State University Responsibilities: Evaluation of the effectiveness of Parsons Corporation's Safety, Health and Risk Program manual across all Global Business Units of the company</p>
<p>Research Assistant 2003 - 2006</p>	<p>School of Civil and Construction Engineering Oregon State University, Corvallis, OR Projects:</p> <ul style="list-style-type: none"> <li>• <i>Forensic Investigation of Pavement Failure due to Moisture damage</i> Oregon Department of Transportation, SPR Project 637</li> <li>• <i>Development of Part 645 – Construction Inspection of the NRCS National Engineering Handbook</i>, U.S. Department of Agriculture (USDA), National Resources Conservation Service (NRCS)</li> <li>• <i>Optimum Illumination for Nighttime Flagger Operations</i> Oregon Department of Transportation, SPR Project 617</li> </ul>
<p>Teaching Assistant 2003 - 2006</p>	<p>School of Civil and Construction Engineering Oregon State University, Corvallis, OR Courses: Heavy Civil Construction Management; Structures; Contracts and Specifications</p>
<p>Teaching Assistant 2004 - 2006</p>	<p>College of Public Health and Human Sciences Oregon State University, Corvallis, OR Course: <i>Safety and Health Standards and Laws</i></p>
<p>Safety Intern Summer 2005</p>	<p>OHSU Patient Care Facility; OHSU River Campus; The Meriwether Condo Hoffman Corporation, Portland, OR Responsibilities: Assist in the development of several safety and health management tool as part of Hoffman's corporate safety program.</p>

## PROFESSIONAL CERTIFICATIONS/REGISTRATIONS

CSP (2010), *Certified Safety Professional*, Board of Certified Safety Professionals, (CSP NO. 21517)

LEED AP (2009), *LEED Accredited Professional*, United States Green Building Council

CRIS (2009), *Construction Risk and Insurance Specialist*, International Risk Management Institute

## PROFESSIONAL SOCIETY MEMBERSHIPS

American Society of Safety Engineers (ASSE), Professional Member, 2004 – Present

American Society of Civil Engineers (ASCE), Associate Member, 2004 – Present

## PEER-REVIEWED JOURNAL ARTICLES

1. **Rajendran, S.** and Gambatese, J.A. (2011). “Risk and Financial Impacts of Prevention through Design Solutions.” *Periodical on Structural Design and Construction*, ASCE. (Submitted for Review)
2. Gambatese, J.A. and **Rajendran, S.** (2011). “Flagger Illumination during Nighttime Construction and Maintenance Operations.” *Journal of Construction Engineering and Management*, ASCE. (Accepted for Publication October 2011).  
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3. **Rajendran, S.** and Clarke, B. (2011). “*Building Information Modeling - Construction Safety Benefits and Opportunities.*” *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), October 2011, 44-51
4. Gambatese, J.A. and **Rajendran, S.** (2011). “Assessment of Nighttime Flagger Illumination Practices.” *Periodical on Structural Design and Construction*, ASCE, 16(3), 95-105.
5. **Rajendran, S.** and Clarke, B. (2011). “Construction Hoist Safety Program.” *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), July 2011, 28-34
6. **Rajendran, S.** and Gambatese, J.A. (2009). “Impacts of Green Design and Construction on Construction Worker Safety and Health.” *Journal of Construction Engineering and Management*, ASCE, 135 (10), 1058-1066
7. **Rajendran, S.** and Gambatese, J.A. (2009). “Development and Initial Validation of Sustainable Construction Safety and Health Rating System.” *Journal of Construction Engineering and Management*, ASCE, 135 (10), 1067-1075
8. Gambatese, J.A., Behm, M., and **Rajendran, S.** (2008). “Design’s Role in Construction Accident Causality and Prevention: Perspectives from an Expert Panel.” *Safety Science*,

Special issue for selected papers from the CIB W99 *International Conference on Global Unity for Safety & Health in Construction*, Beijing, China, June 28-30, 2006. Elsevier, 46, 675-691

9. Gambatese, J.A., **Rajendran, S.**, and Behm, M.G. (2007). "Green Design & Construction: Understanding the Effects on Construction Worker Safety and Health." *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), 52 (5), 28-35.
10. **Rajendran, S.** and Gambatese J.A. (2007). "Solid Waste Generation in Asphalt and Reinforced Concrete Roadway Life Cycles." *Journal of Infrastructure Systems*, ASCE, 13(2), 88-96.
11. **Rajendran, S.** (2007). "Constructability – A Review of Literature." *Constructability Concepts and Practice*, Construction Institute, ASCE, Reston, VA. (Gambatese, J.A., Pocock, J.B., and Dunston, P.S., Editors).

### PEER-REVIEWED CONFERENCE PROCEEDINGS

1. Gambatese, J.A. and **Rajendran, S.** (2007). "Sustainable Construction Safety and Health Rating System: A Feasibility Study." *Proceedings of the 2007 ASCE Construction Research Congress*, ASCE, Grand Bahama Island, Bahamas, May 6-8, 2007.
2. Gambatese, J.A., Behm, M., and **Rajendran, S.** (2006). "Additional Evidence of Design's Influence on Construction Fatalities." *International Conference on Global Unity for Safety & Health in Construction*, sponsored by the International Council for Research and Innovation in Building and Construction (CIB) W99 Working Commission and Tsinghua University, Beijing, China, June 28-30, 2006.
3. Gambatese, J.A. and **Rajendran, S.** (2005). "Sustainable Roadway Construction: Energy Consumption and Material Waste Generation of Roadways." *Proceedings of the Construction Research Congress 2005*, San Diego, CA, April 5-7, 2005. Reston, VA: ASCE, 104-110.

### CONFERENCE PROCEEDINGS

1. Gambatese, J.A., **Rajendran, S.**, and Behm, M.G. (2006). "Building toward Sustainable Safety and Health." *Proceedings of the ASSE Professional Development Conference*, Seattle, WA, June 11-14, 2006.

### OTHER PUBLICATIONS AND MANUSCRIPTS

1. Scholz, T.V. and **Rajendran, S.** (2009). "Investigating Premature Pavement Failure due to Moisture," *Research Project SPR 632 Report*. Oregon Department of Transportation (ODOT) and U.S. Department of Transportation, Federal Highway Administration (FHWA), Report No. FHWA-OR-RD-10-02, July 2009.

2. **Rajendran, S.** (2006). "Sustainable Construction Safety and Health Rating System." *Doctor of Philosophy Dissertation*, Oregon State University, Corvallis, Oregon, December 2006.
3. Pocock, J.B, Kuennen, S.T, Gambatese, J.A., and Rauschkolb, J. (2006). "Constructability State of Practice Report." *Journal of Construction Engineering and Management*, ASCE, 132(4), 373-383. (Role: Literature Summary on implementing constructability).
4. Gambatese, J.A. and Dunston, P.S. (2006). "Constructability as a Project Lifecycle Property." *Constructability Concepts and Practice*, Special Publication of the ASCE Construction Institute, Construction Research Council, and Constructability Committee. (Role: Data Summary/Analysis).
5. **Rajendran, S.** and Gambatese, J.A. (2006). "Sustainable Construction Safety and Health." *Means, Methods, and Trends*, on-line journal of the Architectural Engineering Institute (AEI) and Construction Institute (CI) of ASCE. <[www.mmtmagazine.org/fall\\_2005\\_6\\_raj.html](http://www.mmtmagazine.org/fall_2005_6_raj.html)>, Jan. 5, 2006.**Rajendran, S.** (2004). "Sustainable Roadway Construction-A study of the Material Waste Generation in the Life Cycle of Roadways." *Master of Science Thesis*, Oregon State University, Corvallis, Oregon, March 2004.
6. **Rajendran, S.** et. al., (2002). "Modeling of Groundwater Pollution due to Adyar River using Visual Mod Flow." *Bachelors of Engineering Thesis*, Anna University, Chennai, India, April 2002.

## PROFESSIONAL PRESENTATIONS/LECTURES

1. "Sustainable Construction Safety and Health Rating System." Health and Safety in Green Construction. *CPWR 2009 Training Enhancement Conference*, Portland, Sep 28-30, 2009. (80 attendees from across the nation)
2. "Construction Site Safety Assessment." *Department of Public Health*, Oregon State University, Corvallis, OR, May 2009 (~100 attendees)
3. "Construction Worker Safety Training." *Department of Public Health*, Oregon State University, Corvallis, OR, May 2008 (~100 attendees)
4. "Impacts of Green Design on Worker Safety and Health." *Northwest Occupational Health Conference, Seaside, October 18, 2007.*
5. "Construction Worker Safety and Health Management Tool for LEED Projects." *American Society of Safety Engineers*, Columbia-Willamette Chapter, Portland, OR, February 2007. (~30 attendees)
6. "Building Towards Sustainable Construction Safety and Health." *American Society of Safety Engineers Professional Development Conference & Exposition*, Seattle, WA, June 12-14, 2006.
7. "Construction Hazards and Prevention.", *Department of Public Health*, Oregon State University, Corvallis, OR, May 2006 (~ 100 attendees)
8. "Concept of Sustainable Construction Safety and Health." *School of Civil and Construction Engineering*, Oregon State University, Corvallis, OR, February, 2006. (~80 attendees)
9. "Sustainable Roadway Construction: Energy Consumption and Material Waste Generation of Roadways." *American Society of Civil Engineers, Construction Research Congress 2005*, San Diego, CA, April 5-7, 2005.



10. "Mold Prevention during Construction." *School of Civil and Construction Engineering*, Oregon State University, Corvallis, OR, 2005
11. "Sustainable Roadway Construction: Material Waste Generation." *Sustainable Engineering Expo*, Oregon State University, Corvallis, OR, May 2004.

## **TEACHING**

### **Central Washington University:**

SHM 351 – Incident Analysis (4 qtr. crs.; 17 students; Fall 2011)

SHM 474 – Safety and Health Management Systems (4 qtr. crs, Winter 2012)

### **Oregon State University:**

H 385 - Safety and Health Standards and Laws (3 qtr. crs.; ~ 90 students; Spring 2006)

## **INDUSTRY AND PROFESSIONAL SERVICE**

Manuscript Reviewer, ASCE Journal of Construction Engineering and Management, 2009-present

Manuscript Reviewer, ASSE Journal of Safety, Health and Environmental Research, 2010 – present

Manuscript Reviewer, Journal of Construction Management and Economics, 2010 – present

**Juan P. Robertson**  
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Normandy Park, Washington 98148  
Home: 206-431-9118  
Office: 206-439-3800 ex 3847  
juant1@mindspring.com

## **Recent Professional Experience**

Senior Lecturer and Program Coordinator – **Advising, instructing, and administering a Master of Science Program in Engineering Technology.**

**Professional Management Consultant** - providing productivity improvement guidance for managers of machined products and service organizations.

### **Boeing Commercial Airplane Group - Senior Engineering Specialist** (Early Retirement)

Development of System Practices and User Interface for an expert system supporting material and process selection for aircraft designer engineers. The new system improves new aircraft designs and factory fabrication processes dramatically while eliminating several classes of drawing design errors entirely. (Materials Technology Organization.)

Review new or troubled production processes and develop redesign recommendations for a wide variety of assembly and fabrication processes. Develop proposals and designs for new production process layouts and facilities. (Manufacturing Research and Development Organization).

Establish a new series of university research activities in manufacturing technology to support internal factory process development. Identify promising technology developments at leading universities and establish technology transfer programs to support Boeing needs. Negotiate intellectual property rights and support student research activity with MIT, Georgia Tech, Texas A&M, BYU, University of Washington, and Rensselaer Polytechnic faculty and students.

Develop a new inter-divisional information system to manage facility engineering and construction projects, production equipment maintenance, facility resource management, and capital budgeting techniques. Fabrication Division Long Range Planning Group. My proposals provided several hundreds of thousands of dollars in savings while increasing functionality, reliability, and compatibility.

### **Boeing Defense and Space Group - Engineering Specialist**

Develop Engineering Design Automation Systems to assure Engineering productivity improvement and a favorable impact on factory processes. Negotiate with Managers of related activities to establish a compatible first design for installation of CAD systems. Introduced many human resource development and design strategy issues into these projects.

Survey and critique engineering practices to identify engineering and factory productivity improvement opportunities. Develop improvement proposals and plans.

Systems engineering analysis of maintenance operations in a new space vehicle that could replace the NASA shuttle to operate at considerable cost savings and increased safety.

### **The RAND Corporation - Resident Consultant**

Projects related to development of data analysis systems, internal computing support for a wide variety of analysts, and research of issues for command and control systems development. Test a new statistical analysis software system. Study state of the art in computer voice input technology.

#### **Perkin-Elmer Corporation - Research Engineer**

Design and direct manufacture of ultra-high vacuum research vessels for use in physical chemistry and semiconductor fabrication research.

#### **Lockheed Missiles and Space Company- Research Engineer**

Research and building of test facilities for ballistic re-entry guidance systems of the Poseidon missile. Experimentation in liquid level measuring devices, injector pumping using rocket exhaust, and high altitude instrumentation.

#### **Aerojet-General Corporation - Associate Engineer**

Research in sealing problems, combustion stability, and fluid dynamics in liquid rocket engines. Involved redesign of injector components and experimentation with combustion chamber materials for photographic imaging of combustion events.

#### **University Teaching - Adjunct Professor**

Adjunct Instructor at University of Washington, Seattle Pacific University, Pacific Lutheran University, Seattle University, Central Washington University, and Western Washington University in the following undergraduate subject areas: Operations Management, Management Information Systems, Statistical Data Analysis, Human Resources, Organization Theory and Development, Engineering Statistical Process Control, Engineering Economics (Financial Analysis and Project Costing).

### **Education**

University of California at Los Angeles, Los Angeles, California. PhD in Management with a specialization in work operations analysis and redesign. Supporting minors in Management Information Systems, Organizational Development, Labor Relations, Statistics, and Social Psychology.

San Jose State University, San Jose, California. MBA with a specialization in Decision Making processes and techniques.

BS Mechanical Engineering.

### **Publications**

*AThe Assessment of Production Technologies*@ PhD dissertation, University Microfilms, Ann Arbor, Michigan.

*AFactors Influencing Health Care Worker=s Satisfaction with Supervisor*@ Journal of Health Care and Human Resources Administration V1, No. 3, February 1979, with Dr. R. C. Myrtle.

*AIntegrating Design and Manufacturing for Competitive Advantage*@ Book Review for the Journal of Engineering and Technology Management, June 1994.

## **Awards**

Structures Engineering Employee of the Month, June 1994, (18,000 employees) Boeing Commercial Airplane Group.

1986 Member of the Year, Seattle Professional Engineering Association (20,000+ members)

Citation for Public Service from the Mayor of Kent, Washington for participation in a multi-year Fire and Police operations advisory committee, and for acting as Publicity Chairman in a \$50 million 1986 Safety Bond Issue to upgrade Police and Fire equipment and facilities.

## **Professional Presentations**

Highline Community College: Technological Employment Opportunities and Liabilities@ Des Moines, Washington. 1988

Northcon 1988 Technical Conference (IEEE). Certification: Objectives and Obstacles@ Seattle Center Coliseum. October 1988.

Northcon 1994 Technical Conference (IEEE). AProject Management Techniques@ Seattle Conference Center.

## **Voluntary Activities**

American Society for Quality, Examiner for the Washington State Quality Award and instructor of courses

Technology Curriculum Advisory Board at South Seattle Community College, 1987-1992

Past Chairman (for five years) Computer and Automated Systems Association of the Society of Manufacturing Engineers, Seattle CASA Chapter 282. Produced a yearly seminar on manufacturing management for about 300 local managers and engineers.

Instructor for the King County Library System ANetmaster@ program instructing "Introduction to the Internet," Des Moines, Washington. 1999 to present

President of Spyglass Homeowners Association Board, Des Moines, Washington, 1997-1999.

Instructor in Photography, Summer 2001, for the Des Moines Senior Center.

## MICHAEL L. WHELAN

### Contact Information:

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Ellensburg, WA 98926-7584

Phone: (509) 963-3544 (office)

Email: [mwhelan@cwu.edu](mailto:mwhelan@cwu.edu)

### Educational Background:

Doctor of Philosophy (Engineering Valuation) - Iowa State University [1981]  
Master of Science (Civil Engineering - construction management major) - UNM [1971]  
Bachelor of Science in Civil Engineering - University of New Mexico [1970]

### Positions Currently or Previously Held:

- (Sep, 2007 – Present) **Associate Professor, Construction Management Program, Industrial and Engineering Technology Department, Central Washington University**, Ellensburg, WA [Course topics: light commercial construction, construction methods & materials, building codes and contract law, principles of project management, construction accounting & finance, cooperative education, statics, engineering economics, and alternative energy technology; Principal investigator for data collection and analysis for alternative energy electricity generators project; Administrative position – Chair, IET Department (Jul, 2009 – Feb, 2012).]
- (Jan, 2006 – May, 2007) **Visiting Professor, Building Construction Management Department, University of North Florida**, Jacksonville, FL [Course topics: estimating, construction safety, and construction contract law.]
- (Jan, 2000 – July, 2005) **Associate Professor of Construction Engineering Technology, Department of Civil Engineering, Montana State University**, Bozeman, MT [Course topics: planning & scheduling, estimating, heavy equipment, soils & foundations, safety, risk management, and temporary structural systems; Co-principal investigator for performance based warranties on roadways project; Administrative positions - Program Coordinator, Construction Engineering Technology and Assistant Department Head, Civil Engineering Department.]
- (July, 1980 – Jan, 2000) **Associate Professor of Civil Engineering, Department of Civil and Architectural Engineering, University of Wyoming**, Laramie, WY [Course topics: contract documents, construction materials, estimating, organization & management, project management, heavy equipment, planning & scheduling, engineering economics, professional ethics, design of temporary structures, cost engineering, engineering mechanics, senior project, and calculus; Principal investigator for several research projects; Administrative position – Coordinator, Construction Engineering Option.]
- (November, 1974 – July, 1980) **Instructor and Assistant Professor of Construction Engineering, Department of Civil Engineering, Iowa State University**, Ames, IA [Course topics: construction materials & methods, contract documents, cost estimating, concrete formwork design, planning & scheduling, and contractor organization & management.]

(August, 1971 – November, 1974) **Estimator, Field Engineer, and Office Engineer, Hunt Building Corporation, El Paso, TX** [Duties included cost estimating, field layout, planning & scheduling, progress payment preparation, shop drawing & submittal processing, change order pricing & negotiation, and quality assurance/quality control.]

Other Positions Held:

(May, 2004 – Dec, 2005) **Residential contractor, Bozeman, MT** (Aardvark Construction Company)

(January – August, 1991: on leave of absence from the University of Wyoming) **Associate Professor of Construction, Department of Construction, Arizona State University, Tempe, AZ** [Taught AutoCad, management & safety, and cost estimating courses.]

(September, 1988 – August, 1989: on sabbatical leave from the University of Wyoming) **Visiting researcher, U.S. Army Construction Engineering Research Laboratory, Champaign, IL** [Worked with the Military Engineering Team developing computer software for U. S. Army engineering units.]

(July, 1981 & July, 1982) **Slipform Inspector, Todd and Sargent, Inc., Ames, IA** [Duties included quality control for reinforcing steel placement.]

(June – August, 1975) **Field Engineer, J. P. Cullen and Sons, Inc., Janesville, WI** [Duties included jobsite layout of foundation components.]

(June – October, 1969) **Highway Designer, T. T. Burnett Engineering, Albuquerque, NM** [Duties included highway design and drafting.]

(June – August, 1966, 1967, and 1968) **Surveyor, Electrical Inspector, and Pile-driving Inspector, New Mexico State Highway Department, Santa Fe, NM** [Duties included member of a construction survey crew, and inspection of electrical and timber pile installations.]

Professional Engineer Registration:

EIT 919 - New Mexico  
P.E. 8388 - Iowa (Civil) (inactive)  
P.E. 3819 - Wyoming (Civil) (inactive)

Teaching and Advising Activities

Awards Received:

Co-recipient of the “1995-96 ASCE Outstanding Faculty Member”, Department of Civil Engineering, University of Wyoming (1996)

Recipient of the University of Wyoming’s “Excellence in Advising” award (1996, 1998)

College of Engineering Outstanding CET Professor, Montana State University (2001)

Civil Engineering Outstanding CET Professor, Montana State University (2002)

Faculty Advisor of the Year, Building Construction Management Department, University of North Florida (2007)

Course/Curriculum Development:

Iowa State University:

Developed Con.E. 460 - Senior Study Project, as a capstone to the Construction Engineering Curriculum

University of Wyoming:

Developed and implemented the Construction Engineering Option. Development included formulation of the curriculum, approval of the new curriculum, and creation and approval of eight new 3-credit courses (1980-1986)

Proposed and developed CE 3190 – Introduction to Construction Contracting as a University Studies second level writing course for civil & architectural engineering students.

Montana State University:

Proposed and obtained approval for numerous course changes and realignments for the CET program including creation of 5 new courses, elimination of 5 courses, and modification of 7 existing courses.

Primary author of “TC2K Part I – Self-Study Report for Construction Engineering Technology” (July, 2002) - required for the Accreditation Board for Engineering Technology visit in November, 2002. (CET curriculum was subsequently reaccredited by ABET for 6 years)

Central Washington University:

Co-author of “A Self Study Report for the Construction Management Program” (June, 2008) – required for the American Council of Construction Education accreditation visit in November, 2008. (CMGT curriculum was subsequently reaccredited by ACCE for 6 years)

Course Topics Taught: (See **Positions Held** section above)

Short Courses, Seminars, and Workshops Offered:

"Welcome to the World of Construction" - two day short course on highway construction contract documents and cost estimating techniques for Wyoming DBE-MBE-WBE contractors (March, 1985)

“Construction Management” and “Route Surveying” - three week short courses sponsored by USAID-VITA and presented to Afghan engineers and technicians in Peshawar, Pakistan (March, 1992)

"Project Management" - four hour compressed video seminar presented through the Office of Conferences and Institutes, School of Extended Studies and Public Services, University of Wyoming (November, 1994)

"An Overview of Construction Scheduling" - half day seminar presented to select Wyoming Department of Transportation personnel (December, 1994)

"The Many Faces of Construction Scheduling" - two hour seminar presented at the Wyoming Engineering Society 75th Annual Convention (February, 1995)

"Project Management: Time Management Aspects" - four hour compressed video seminar presented through the Office of Conferences & Institutes, School of Extended Studies & Public Services, University of Wyoming (March, 1996)

"Project Management Software: An Overview" - one hour seminar presented at the Wyoming Engineering Society 77th Annual Convention (February, 1997)

### Graduate Committee Memberships

University of Wyoming:

- 8 - M.S. students in the Colleges of Engineering and Business (major professor for 3)
- 1 - Ph.D. student in the College of Engineering
- 1 - Ed.D. student in the College of Education

Montana State University:

- 26 – MCEM students (major professor of record for all 26)

Central Washington University:

- 2 – MSET students

### **Research Activities:**

#### Grants Received:

"Valuation of Manufacturing Equipment for Ad Valorem Tax Purposes - Phase II," Varied Industries Group, Iowa (1978 - \$14,062) (with H. A. Cowles, Ph.D. major professor).

"A Comparison of Production Rates for Union and Nonunion Masons in Central Iowa," Engineering Research Institute, Iowa State University (1979 - \$1,425).

Continued support for implementation of the Construction Engineering Option at the University of Wyoming, Wyoming Construction Advancement Program, Casper, Wyoming (1981 - \$25,000).

The William A. Klinger Memorial Award, Associated General Contractors Education and Research Foundation, Washington, D.C. (1983 - \$15,000).

"Elemental Masonry Unit Shape Modification to Improve Productivity of Placement," Faculty Grant-in-Aid, University of Wyoming (1983 - \$2,495).

College of Engineering Faculty Development Award to purchase microcomputer hardware and software (1986 - \$2,500).



Intergovernmental Personnel Act (IPA) grant for sabbatical leave at the U.S. Army Construction Engineering Research Lab (CERL), Champaign, IL (1988 - \$37,884).

IPA grant to support work on the Theater Construction Management System (TCMS), U.S. Army CERL (1989 - \$5,309).

Short Form Research Contract (SFRC) to provide student support for the TCMS project, U. S. Army CERL (1989 - \$2,760).

IPA grant continuation for TCMS project, U. S. Army CERL (1990 - \$6,636).

SFRC grant continuation for TCMS project, U. S. Army CERL (1990 - \$1,840).

"Pavement Overlay Design", Mountain-Plains Consortium (1992 - \$77,129, 1993 - \$37,600) (with K. Ksaibati, co-principal investigator)

"Design Considerations and Economic Impacts of Near-Freezing Soil Temperatures on Soil Compaction", Mountain-Plains Consortium (1995 - \$26,031)

"Data Collection and Analysis for the Pacific Northwest Smartgrid Demonstration Project", Department of Energy-Battelle Memorial Institute-City of Ellensburg (2011 - \$72,000)

#### Publications:

##### Refereed Publications:

Whelan, M. L., "Construction Engineering: The Wyoming Experience," Civil Engineering Education, American Society of Engineering Educators (March, 1984).

Whelan, M. L., "Hollow Concrete Masonry Unit Shape Modification to Improve Productivity of Placement: Results of the Preliminary Research Effort," Proceedings of the Third North American Masonry Conference, The Masonry Society (June, 1985).

Cowles, H. A., and Whelan, M. L., "Estimation of Declining Operation Returns," Engineering Economist, Vol. 31, No. 2 (Winter, 1986).

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##### Other Publications:

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Cowles, H. A., and Whelan, M. L., "Final Report: The Estimation of Declining Operation Returns," ERI Project 1375, Engineering Research Institute, Iowa State University, Ames, IA (September, 1981)

Whelan, M. L., "Concrete Formwork Design: Using the Computer to Shorten the Problem," Proceedings of the 3rd National Conference on Microcomputers in Civil Engineering, Orlando, FL (November, 1985).

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Carson, Marvin, and Whelan, Michael, "Construction Network Bulletin Board System CNET Users Manual", Department of Construction, Arizona State University, Tempe, AZ (August, 1991).

Farrar, M., Ksaibati, K., Beamer, A., and Whelan, M. L., "Selection of Subgrade Modulus for the Revised AASHTO Pavement Overlay Design Procedures," Proceedings of the First Falling Weight Deflectometer User's Group Meeting, Maplewood, MN (1992).

Ksaibati, K., Whelan, M., Burczyk, J., and Farrar, M., "Factors Influencing the Determination of a Subgrade Resilient Modulus Value," a research report, MPC-19, Mountain-Plains Consortium (1993).

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Whelan, Michael L., and Stahl, Sandy, "The Impact of Near Freezing Soil Temperatures on Soil Compaction," Proceedings of the Fifth International Symposium on Cold Region Development, Anchorage, AK (May, 1997)

Whelan, M., Knoll, P., Jost, D., and Rabern, D., "Outcome Assessment of Construction Engineering Technology Programs Using the Constructor Qualification Examination Level I," Proceedings of the Pacific Northwest Region Meeting, ASEE, Bozeman, MT (May, 2000)

Stephens, J., Whelan, M., and Johnson, D., "Use of Performance Based Warranties on Roadway Construction Projects", technical report prepared for the State of Montana Department of Transportation Research Bureau, (November, 2002)

#### Papers Presented without Publication

Whelan, Michael L., "Design of Concrete Wall Formwork with the Aid of a Microcomputer," Associated Schools of Construction, North Central Region Conference, Kansas State University, Manhattan, KS (1985).

Whelan, Michael L., "Frontend Loader vs. Hydraulic Excavator: Battle of the Earthmovers," SOURCE 2011, Central Washington University, Ellensburg, WA (2011) (refereed abstract)

Whelan, M. and Cattin, W., "Acid Test: Detecting One Student's Dishonest Submittal of Another's Work," SOURCE 2011, Central Washington University, Ellensburg, WA (2011) (refereed abstract)

Olson, D. and Whelan, M., "Delivering a Master of Science Program in Engineering Technology to Cohorts of Chinese Nationals: An analysis of the Challenges, the Benefits, and the Pursuit of Continuous Improvement," The Association of Technology, Management, and Applied Engineering, ATMAE 2011 Conference, Cleveland, OH (2011).

## TaiQian Yang

September 2011

### Position

Electronics Engineering Technology, Department of Industrial and Engineering Technology,  
Central Washington University, Des Moines, WA

Professor 2004 – present

Associate Professor 2000-2003

Assistant Professor 1997-1999

CWU Graduate Faculty

### Education

BSEE, Jiaotong University, P. R. China, 1970

MSEE, Northwestern Polytechnic University, P. R. China, 1982

PhD, Electrical Engineering, Washington State University - Pullman, 1993

### Related Professional Experience

Summer 01 Washington State University, Research Associate, funded by the Office of Naval  
Research (ONR)

Summer 00 Washington State University, ONR funded research

Summer 99 Washington State University, ONR funded research

Summer 98 Washington State University, ONR funded research

Summer 96 Intel, Professor Summer Hire, Aloha, Oregon

Summer 95 Intel, Professor Summer Hire, Aloha, Oregon

9/94 - 12/96 Pierce College EET Puyallup, Tenure-track Full-time Instructor/Coordinator  
1/97 – Central Washington University EET Professor (EET Program moved from  
Puyallup to CWU-Des Moines in summer 2006)

8/93 - 8/94 Post-doctoral, Research Associate, Washington State University

8/89 - 8/93 Research Associate, Washington State University

8/86 - 8/89 Visiting Scholar, Washington State University

8/82 - 8/86 Assistant Professor (TTFT), Northwestern Polytechnic University

7/77 - 7/80 Production Manager, BaoJi Radio & Digital Equipment, Shaanxi, P. R. China

7/70 - 7/77 Production Engineer, BaoJi Radio & Digital Equipment, Shaanxi, P. R. China

### Industrial Experience

Industrial experience in the areas of electronics and electrical systems; electric power systems;  
machining and tool design; instrumentation and process control; production management;  
electronic communications; semiconductor manufacturing technologies.

### Teaching Experience

Teach large number courses in Electronics Engineering Technology in areas of electric circuits  
and network analysis; analog and digital electronics; microcontrollers; instrumentation and  
process controls; electric power systems; microwave systems & telecommunications.

Teach Mathematics courses of Linear Algebra, Statistics and Differential Equations.

Teach MSET courses of Engineering Economics, Quality Control, etc.

## Research Experience and Interest

Research experience and interest areas include: power system analysis; wave propagation and rough interface scattering; control system; wireless and telecommunications; emerging technology; education in engineering technology.

## Publications

- “Using Wireless Sensor Networking (*WSN*) to manage Micro-Climate in Greenhouse” co-author, paper presentation at the *MESA08*, Beijing, October 2008
- “ A Topology-Based Single-Phase Three-Winding Shell-Type Transformer Model,” work in progress, to submit to the *IEEE Trans. On Power Apparatus and Systems*.
- “ Project – Based Learning for Industrial and Engineering Technology”, Abstract Accepted for *ASEE CIEC07* , Hawaii, June, 2007.
- “ Curriculum Innovation – An Integral Approach”, peer-reviewed paper accepted for publication. *ASEE CIEC Annual Conference*, Palm Springs, California, February 2007.
- “ A BSEET Program in the Community”, Abstract accepted for the proceedings of *ASEE- Conference for Industry and Education Collaboration (CIEC05)*, and presented January 2006 in San Antonio, TX.
- “A Comparison of Perturbation and the Small Slope Approximation for Acoustic Scattering from a Rough Interface for a Biot Medium,” *IEEE Journal of Oceanic Engineering*, July 2002, Vol.27 No3, pp403 – 412.
- “ Program Assessment Enhances Student Centered Learning”, the *Proceedings of 62<sup>nd</sup> ASEE PSN Annual Conference*. April 2000.
- “Acoustic Scattering from a Fluid-Elastic Solid Interface Using Small Slope Approximation,” *Journal of Acoustic Society of America*, Vol. 96 (3), pp1796-1804, September 1994.
- “ Numerical Studies of Rough Surface Scattering”, *Ph D Dissertation* August 1993.
- “ A Comparison of Scattering Model Results for Two-D Randomly Rough Surfaces,” *IEEE Transactions On Antennas and Propagation*, Vol. 40, pp1505-1512, December 1992.
- “Multi-Objective Approach to the Optimization of Electrical Machines,” *Micromotors*, Vol. 48, No.1, 1985.
- “The CAD Study of REPM Synchronous Aero-generator,” *Proceedings of the 7<sup>th</sup> International Workshop on REPM and Their Applications*, September 1983.

## Conferences & Presentations

- Pacific Northwest power system symposium on Smart Grid, Seattle, WA, Feb 17-19, 2010.
- IEEE Wireless Communications Symposium, Seattle, A, Oct. 28-30, 2009.
- Microchip 2009 Masters Conference & Workshop, Phoenix, AZ, July 2009
- Embedded Systems Networking: Hands-on Workshop, NSF funded, Wayne State University, Detroit, MI May, 2008
- National Conference for Telecommunication Technology (NCTT) & workshop Boston, MA. July, 2007
- The Boeing Welliver Faculty Fellowship Program Application package, January 2007.

- ASEE CIEC06, January 2006, San Antonio, Texas.
- Professional Colloquium, CEPS Central Washington University, Ellensburg, November, 2004.
- ABET Program Evaluator Workshop, Salk Lake, Utah, June 2004.
- Washington State Collation for Engineering Education, Seattle, October 2002.
- 140<sup>th</sup> ASA (Acoustic Society of America) conference presentation, Newport Beach, California, December 5, 2000.
- 62<sup>nd</sup> ASEE-PNW Annual conference paper presentation: “ Program Assessment Enhances Student Centered Learning”, Montana State University, April 29, 2000.
- Research presentation on Rough Interface Scattering, the *Applied Physics Laboratory* at the *University of Washington*, December 28, 1998.
- Research presentation on Rough Interface Scattering, the *Department of Physics* at the *Washington State University*, September 15, 1998.
- 59<sup>th</sup> ASEE Annual Conference presentation, “Balancing the needs of education and industry,” Western Washington University, May 2, 1997.
- IEEE / Radio Union International Annual Conference paper presentation, Ontario, Canada July 1992.
- 7<sup>th</sup> International Workshop on Rear-Earth Permanent Magnets and Their Applications, conference paper presentation, Beijing, September 1983.

### Scientific and Professional Societies Membership

Member of the Institution of Electrical and Electronic Engineers (IEEE)

### Institutional and Professional Service in the Last Five Years

IEEE Region 6 student paper contest Judge

39<sup>th</sup> ASEE/IEEE *Frontiers in Education (FIE)* conference paper reviewer, April, 2009

ASEE-CIEC session co-moderator & paper reviewer, May, 2006

Central Washington University Graduate Faculty

MSET Graduate Committee Chair, CWU-Des Moines

Faculty advisor; EET programs Advisory Board members at CWU, Pierce and North Seattle Community Colleges

Steering Committee members with the P3C and South King County Tech Prep consortium

EET- Des Moines program promotion and student recruit

# Appendix 2 IET Faculty Handbook

**Central Washington University  
Industrial and Engineering Technology Department**

# **I&ET Faculty Handbook**

**Revised April 2009**



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## **A Letter to Faculty**

Welcome to the Industrial and Engineering Technology Department! The purpose of this handbook is to address issues relevant to all faculty in the I&ET Department as they continue to advance their careers at Central. This document was written with input from all faculty members in the department but is not intended to serve as a stand alone document. Rather it is intended to supplement the “University Faculty Performance Standard for Reappointment, Tenure, Promotion and Post-Tenure Review” (per the Collective Bargaining Agreement, CBA) and the “College of Education and Professional Studies Faculty Performance Standard for Reappointment, Tenure, Promotion and Post-Tenure Review.”

The I&ET Department is a diverse community consisting of tenured, tenure-track, non tenure track and adjunct faculty members, all of who bring new ideas and perspectives to the department. It is in the best interests of the students and department as a whole that all department members work together to create a healthy environment for students, faculty and staff. To this end, this policy manual addresses some of the expectations of the faculty and offers guidelines for success.

The I&ET Personnel Committee cares about your career and will respond to your questions.

Sincerely,

I&ET Personnel Committee

## **B. Process for Reviewing and Updating the Industrial and Engineering Technology Faculty Handbook**

- All IET Department faculty members are invited to propose changes to the Handbook at any time by submitting the proposed changes to the IET Department Personnel Committee by January 15. The Personnel Committee will then meet for the specific purpose of reviewing the proposed changes.
- The Personnel Committee will then present a recommendation to the IET Department at the February department meeting. The recommendation will come in the form of a line item proposal. The intent is to provide a forum for discussion of the proposal.
- Proposed changes will be put to a vote at the winter faculty day meeting.
- Accepted changes will become effective immediately and incorporated into the Handbook.

## **I. PROGRAM COORDINATORS**

General Statement:

A specific faculty member is assigned to each program in the I&ET Department to serve as coordinator for that program. The program coordinator is the primary contact for that particular program and is responsible for the managing the program.

Duties of Program Coordinators:

- Serve as the primary contact for the program
- Manage and coordinate curriculum in the program
- Seek or maintain appropriate accreditation. Includes managing accreditation documents and accreditation visits
- Maintain industry contacts, including an industry advisory council
- Manage foundation funds for the program
- Maintain program correspondence with alumni and industry, including creation and distribution of newsletters
- Manage and document ongoing program and course assessment, including continuous quality improvement
- Manage and coordinate, with the I&ET Chair's assistance, faculty teaching assignments
- Manage and coordinate student advising for the program
- Coordinate faculty advising for student organizations in the program

## **II. MENTORING**

All new faculty in the I&ET Department shall be assigned a faculty mentor. This assignment shall be made by the I&ET Department Chair and the mentoring process shall follow the guidelines of the CEPS Mentoring Policy.

A faculty mentor is assigned to each new tenure-track faculty member. It is the role of the mentor to advise the new faculty in creating his/her portfolio and on the teaching, research and service aspects at Central. All of these activities are appropriate and should be submitted as evidence in the portfolio, which is submitted each academic year to the Department Chair. See appendix B for a mentoring plan worksheet.

## **III. PROCEDURE FOR PROMOTION and RELATED ISSUES**

This part of the booklet is intended to be used as an information tool for faculty seeking an advance in their career through promotion or salary increase. Tenure-track faculty can use it as a tool to help them through the process of being considered for promotion and/or tenure within the Industrial and Engineering Technology Department and tenured faculty can use it as a tool to help with post-tenure review, and performance adjustment process.

These procedures are affected by two other policies, as mentioned earlier; the University Faculty Performance Standards and the CEPS Faculty Performance Standards. It is the responsibility of each faculty member to become familiar with these documents. Departmental guidelines are outlined in Appendix A.

## **Eligibility for Promotion and Tenure**

Newly hired tenure-track faculty have a “letter-of-hire” stating salary, other funding (moving expenses, research start-up, etc.) and the number of years experience recognized toward the tenure process at CWU. Adjunct and contract faculty will have letters defining their salary, duties and period of employment.

### Tenure and Promotion to Associate Professor.

Faculty members who are appointed to academic rank of Assistant Professor or higher may be granted tenure and promotion effective the beginning of the academic year following a six (6) year period of full-time employment with the university. The application process and decision for tenure must take place in the sixth year, subject to the current CEPS policy and the Collective Bargaining Agreement

### Promotion.

A faculty member applies for promotion from Assistant Professor to Associate Professor at the same time the member applies for tenure. For consideration for promotion from Associate Professor to Professor a faculty member must have five years of exemplary performance in teaching, service and scholarship at Central Washington University.

To identify faculty eligibility, each academic year the Dean of the College of Education and Professional Studies will prepare a list of all faculty in the College that appear to be eligible for promotion and this list will be forwarded to the I&ET Department.

### Early Tenure and Promotion.

Associate Professors cannot be promoted before completing a minimum of four years of service in their current rank; however four years in a current rank does not guarantee promotion. Candidates must be exemplary in teaching, service and scholarship. Potential candidates should consult with their mentors, the Department Chair, or a personnel committee member before applying. Any suggestions, recommendations or approval during these consultations cannot be taken as a positive endorsement of early promotion and tenure.

#### **IV. REVIEW PROCESS**

A portfolio of evidence is required for tenure, promotion and post-tenure review submissions. The details pertaining to the type and quantity of evidence are contained in this policy manual and the University and CEPS Faculty Performance Standards documents. It is the faculty member's responsibility to compile all necessary materials.

##### **I&ET Personnel Committee**

A committee consisting of three I&ET Department faculty members, other than the current I&ET Department Chair, will review and evaluate the candidate's application materials. This committee may meet with the candidate (prior to creating their recommendation letter) to discuss the application and will prepare a written report and recommendation regarding performance adjustment, promotion, tenure, post-tenure review, or reappointment to be forwarded to the Dean. A copy of this report will also be placed in the faculty member's file in the I&ET Department.

##### **I&ET Department Chair**

During the same time period the personnel committee is reviewing the application, the I&ET Department Chair will prepare an independent review of the application, to be forwarded to the Dean.

##### **Review by Faculty**

Faculty Applying for Reappointment, Promotion, Tenure and Post-Tenure Review.

All tenured and tenure-track faculty within the I&ET Department will be given the opportunity to prepare an individual written response, including comments and recommendations, to the applicant's request for reappointment, promotion, tenure or post-tenure review. These individual recommendations will also be forwarded to the Dean.

##### **Dean of College of Professional Studies**

After the Dean has received the faculty member's application and the review from the I&ET Personnel Committee, the I&ET Chair and from individual tenured and tenure-track I&ET faculty, the CEPS Personnel Committee will then make a recommendation to the Dean on matters concerning tenure, promotion and post-tenure review. The CEPS dean will then make a recommendation and forward it to the Provost. For reappointments, only the Dean will make a recommendation to the Provost.

## **Provost and Vice President for Academic Affairs and the President**

The Provost shall consider the materials forwarded from the Dean and shall make a recommendation to the President. The President reviews and forwards the recommendation to the Board of Trustees.

## **Board of Trustees**

The Board of Trustees for the University shall make the final decision with respect to reappointment, promotion and tenure of all faculty members.

## **Feedback to and from Faculty**

The I&ET Personnel Committee and I&ET Department Chair shall meet separately with each individual candidate prior to forwarding their reviews to the Dean.

Faculty members should refer to the CBA on matters concerning correcting errors of fact after the department level review period or rebuttals after the CEPS review period.

## **V. APPLICATION PREPARATION AND EVALUATION**

The application is to consist of a Professional Record detailing evidence of accomplishment in the three categories of Teaching, Scholarship and Service. This application is to be clear and concise and is to be submitted in two binders per CEPS policy. It is not the intent of the I&ET Department to conflict in any manner with the CEPS policy, the University policy or the Collective Bargaining Agreement.

The following appendix was generated as a guide to help faculty prepare a portfolio. Note that the percentages listed are intended to define the relative importance to the I&ET Department of the categories identified in the professional record. The CEPS and University Faculty Performance Criteria minimum requirements must be met in all categories for a positive endorsement. Candidates will not be ranked or compared to one another.

## APPENDIX A PROFESSIONAL RECORD

### **Part A Teaching Effectiveness (50%)**

Part A requires the candidate to submit items related to teaching and education. Specific evidence is detailed in CEPS policy.

1. (15%) **Write a personal statement of your teaching effectiveness.** The statement may address:

- Your current inventory of your teaching duties and a summary of your perceived performance. For example: discuss things that went well or did not go so well, provide a short synopsis of each class, discuss efforts to engage students, discuss how you made improved performance, or discuss your frustrations or shortcomings.
- Any special or innovative teaching methods or other educational pedagogy that you have incorporated into your courses.
- How well you handle teaching related assignments such as student advising, office hours, club advisement, etc.

2. (45%) **Student Evaluation.** Include as a minimum the summary sheet for student evaluation of instruction forms for *each* class (except as noted per CWU policy) taught for the past fall quarter plus fall, winter and spring quarters of all prior years during the review cycle. Additional evaluations may be included at the discretion of the candidate. Place these evaluations in reverse chronological order separated by class. Some guidelines for student evaluations are:

- Students should understand the importance of these evaluations. Faculty members should stress these evaluations are used for personnel decisions and to improve the quality of the teaching and the delivery of a course.
- Evaluations shall be strictly confidential. Explain why the forms are important, pass them out, have an appointed student return them to the I&ET office assistant. Allow plenty of time for students to complete the form.
- Evaluations should be completed toward the end of the term. Evaluations should not be completed the day you return a major exam or after a final exam.

3. (10%) **Peer Evaluation.** It is intended that review and evaluation be an ongoing process. As part of this process, it is the faculty member's responsibility to invite faculty peers to sit in on his or her courses and prepare a standard written evaluation of the faculty member's teaching effectiveness within that particular course. See Appendix C for a suggested format. The faculty member shall strive to provide at least one such evaluation for fall, one for winter and one for spring quarter for each of the previous academic years during the review cycle. At least one peer review per year must be performed by the Department Chair, and it is the Department Chair's responsibility to schedule and accomplish this task.



4. (10%) **Continuous Quality Improvement.** Provide a summary and evidence of your participation in “continuous quality improvement” (CQI) of your education activities. Evidence should include copies of syllabi for all courses taught for the appropriate period of evaluation. Refer to CEPS policy for appropriate syllabi structure and content. Other evidence of CQI should include past and current course CQI documents. These may include course CQI’s, assessments, reviews, action items, and subsequent actions (e.g. evidence of continuous improvement). See Appendix E for a suggested course CQI format or use a format that supports you or your program’s needs. For examples see your program coordinator.

5. (20%) **Administrative Duties.** Advising is a critical aspect of the operation of our university. Administrative duties are increasingly placed on the shoulders of faculty. Provide evidence of advising activities such as numbers of students advised, types of advising (majors, prospective students, recruiting) and related activities such as master’s theses. Faculty who serve as program coordinators should include evidence of their duties and activities such as advisory group activity, accreditation activity, recruitment, diversity, and program development.

### **Part B Scholarly Productivity (25%)**

To complete Part B the candidate must organize, list and describe his/her significant contribution in the area of scholarly productivity. **Please follow the CEPS guidelines for the amount and types of evidence.** This typically means letters and cover pages in lieu of longer documents. Assessment will consider ‘continuous productivity’ as an appropriate aspect of good scholarly activity.

#### **Some Category A examples of evidence that may include information related to:**

- Refereed professional journals
- Books by reputable publishers
- Peer reviewed external grants for lead investigator.
- Peer reviewed course development material including education modules, special topics, and workshops or seminars.
- Refereed conference proceedings publications in Associated Schools of Construction Annual Proceedings, American Society for Engineering Education Annual Conference & Proceedings, and National Association of Industrial Technology Conference Papers

#### **Some Category B examples of evidence that may include information related to:**

- Refereed Conference Proceedings other than listed in A, above
- Published works that contribute to the profession.
- Articles in non-refereed journals or magazines.
- Published book reviews.
- Conference presentations.
- Productivity in organizing symposia, colloquia, or chairing conference symposium
- CEPS Symposium, SOURCE, or other university wide research dissemination

- events
- Internal to CWU small grants

Department evaluation of scholarly productivity will be made using the following guidelines:

When evaluating published material, the “level of sophistication” of the journal, magazine or text in which a manuscript is published will be taken into consideration. Assessment of presentations and speeches at conventions, conferences, workshops and seminars will be based both on the content of the presentation and the organization sponsoring the presentation; whether it is national, statewide, regional or local in nature.

Additionally, the amount of activity will be considered. A general guideline is that some annual scholarly activity is expected. The I&ET Department is interested in the growth and stature of all faculty and will advise faculty on ways to promote scholarly activity.

The impact on the discipline, the university, and the students will be considered. Scholarly activity that promotes a discipline; the related impact on the university’s goals and the impact on students through undergraduate and graduate research can be immeasurable.

**Some Category C examples of evidence that may include information related to:**

Please note that Category C does not count toward A or B and may be better listed under service.

- Non published book review
- Presentations to university, community, and professional audiences
- Non peer reviewed small grants

**Part C Service to the Profession, University and Community (Service 25%)**

To complete Part C the candidate must list and describe service contributions to his/her profession, department, program, the University and the community. Assessment will be based on a number of criteria, including the amount of service, the impact of the service, the collegiality of service, and other aspects such as a continuous record of service.

List and describe all service activities. If you served on a committee or board, define what sector it serves (e.g. national, university, department, community), indicate its purpose and the dates and capacity in which you served. You should support your statement with evidence such as appointment letters or minutes. Some examples which may be included:

- National, statewide, regional or local committees representing your discipline or a related discipline.
- Membership on national, statewide, regional or local boards.
- Membership in professional organizations.
- Membership and participation in service-related organizations.
- Sponsorship of student organizations or honor societies.
- Membership on university committees, whether standing or ad hoc.

- Any public service in a professional capacity.
- Any professional licenses, certificates or awards.
- Paid or unpaid consulting.
- Involvement with program accreditation.
- Involvement with program articulation.
- Involvement with student recruitment.
- Participation in university, college and department meetings and workshops.
- Peer reviewer of higher level (state and national) grants and education material.

This I&ET Policy manual is generated and reviewed by the I&ET Personnel Committee. It is intended to support all I&ET faculty, but in no way conflict with the policy of CEPS or other University policy. Please contact your mentor or I&ET Personnel Committee members if you have any questions or concerns pertaining to 'personnel' matters. The committee intends for every member of our department to succeed in their careers, all of our programs to excel, and that all of our students achieve their goals.

## APPENDIX B Mentoring Plan Department of Industrial and Engineering Technology

Faculty Member: \_\_\_\_\_ Date of Tenure-Track Appointment: \_\_\_\_\_

Current Rank and Date Achieved: \_\_\_\_\_ Anticipated Date of Tenure and/or Promotion: \_\_\_\_\_

Mentor(s): \_\_\_\_\_

Topic	Goals	Activities To Be Completed	Comments
General Customs, history CWU, Dept., College University Governance and Committee Structure CBA Tenure/Promotion/Reappointment Program Structure and Accreditation Academic Advising/ Office Hours Industry/Advisory Council Relations Maintaining a Professional Record Purchasing/ Travel			
Teaching Program Outcomes Course Outcomes and Assessment Student Evaluations Peer Evaluations Technology in the Classroom			
Scholarship Publications Seminars Presentations, etc.			
Service University Service Department College University Professional Service Community Service Development/ Fund Raising			

## APPENDIX C Evaluation of Instruction

This form is to be used to evaluate an individual faculty member within the Industrial and Engineering Technology Department based upon personal observation of the faculty member in a teaching/learning environment. It is intended to improve teaching by providing feedback to the instructor and also to serve as verification of teaching effectiveness for the faculty member's professional record.

Instructions: Please complete this form, either during or immediately after observing the faculty member, and return it to the I&ET Department Personnel Committee, at which time copies will be made available to the faculty member. Please feel free to attach additional sheets if needed.

Date: \_\_\_\_\_ Faculty member observed: \_\_\_\_\_

Observed activity: \_\_\_\_\_

Course number and title: \_\_\_\_\_

Approximate number of students present: \_\_\_\_\_

1. Identify and describe strengths you observed:

2. Identify and describe improvements you can suggest:

Your name: \_\_\_\_\_

Signature: \_\_\_\_\_

# APPENDIX D Documentation of Category A Peer Review

## Associated Schools of Construction Annual Proceedings



*The professional association for the development and advancement of construction education.*

November 10<sup>th</sup>, 2006

**William J. Bender Ph.D., PE**  
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### Board Members

#### Officers:

**Dr. David Regge**  
*President*

**Dr. Charles Gaines**  
*1<sup>st</sup> Vice Pres.*

**Dr. Charles Berryman**  
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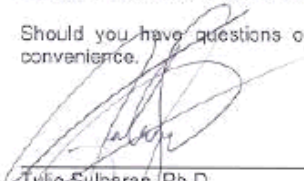
Annual International Associated Schools of Construction Conference Proceedings

The Associated Schools of Construction (ASC) mission is *the development and advancement of construction education, where the sharing of ideas and knowledge inspires, guides and promotes excellence in curricula, teaching, research and service.* The ASC has a long history of fostering excellence in construction communication, scholarship, research, education, and practice.

The ASC has organized 42 Annual International Conferences. The full papers that are published in the Proceedings of Annual International ASC Conferences have passed through a rigorous peer review process. Publication in the ASC proceedings represents an important milestone of accomplishment for the authors, due to the rigorous review process as well as the diverse and challenging configuration of the ASC Board of Reviewers. The ASC Board of Reviewers is formed by Architects, Engineers and Construction scholars well anchored in their corresponding disciplines. The ASC Board of Reviewers' expectations demand the best from all authors wishing to publish their work in the ASC Proceedings.

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Should you have questions or suggestions, please do not hesitate to contact me at your convenience.

  
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## APPENDIX E Dossier/ Professional Record Clarifications

### Definitions

Dossier = portfolio = the two notebooks/ three ring binders that contain your letters of recommendation, vita, professional record, evidence, etc.

Professional Record = Documents relating to teaching, scholarship and service over the course of a review period.

### Clarifications:

**Book 1** (needs book end with your name, cover sheet/ cover page is nice)

Use checklist (next page) as table of contents

Tab 4

Include completed outline of “Professional Record Guidelines” that follows checklist.

Includes items (list of classes, scholarship, service, etc) for the review period. For example would include items for a faculty members first two years for a member in their third year, not just the previous year. Write self reflective statement of teaching/ administrative duties with focus on last year within the context entire review period. For example how well was your perceived performance in a certain class compared to previous offerings?

Tab 8

Only include chair, committee, dean and provost recommendation letters. All previous years until promoted/ tenured, keep each together and reverse chronological order, i.e. all dean recommendation together, most recent on top. Do not include notice of reappointment i.e. notice from dean/provost being reappointed.

**Book 2** (needs book end with your name, cover sheet/ cover page is nice)

Tab 10 Teaching

Use section from professional record to provide context/ contents

List of class this reporting period

Personal statement for this reporting period...include admin duties

Table of SEOI 28 & 29 scores, for all classes taught since last promotion/ tenure

Tab or separate each class for all classes taught since last promotion/ tenure

- Only one syllabus per class (most recent),
- CQI for all since last promotion/ tenure
- SEOI for all since last promotion/ tenure, reverse chronological order

Tab for Peer evaluations of teaching

Tab 11/ 12/

Use section from professional record to provide context/ contents

Keep all evidence since last promotion/ tenure, separate years by tab

## **APPENDIX E CEPS/ I&ET Department Professional Record**

For current information on the required CEPS format for the Professional Record please visit the CEPS website.



# APPENDIX F Continuous Quality Improvement (CQI) Example

## IET 312 Strengths Spring 08 Quality Improvement

26 students

### Grading:

Item	Points
Exams 3 @ about 50 pts	150
Homework Assignments about 10 about 5-10pts each	100
Final Project	50
Final Exam	100
Total	400
Each point counts the same ie Test/ hwk/project	

A 3 C 7  
 A- 2 C- 4  
 B+ 2 D+  
 B 1 D  
 B- 5 D-  
 C+ 2 F

Test averages

T1	T2	T3	F
80%	76%	84	81%

Test scores were skewed higher....Students had the ability to rework test problems and turn back in for ½ the credit. Had some really low test scores without this ability. ..Not sure I like this...tried after first test then students expected it.

### Homework:

Grades on BB to track progress

### **SEOI**

1-14 above dept and ceps av... taught this class last spring

15-24 above dept and ceps av,

28 and 29 above dept and ceps av

Course was added as an overload....like application to real world...field trips and guest lectures

Scores higher? Due to “redo” ability?

### **Suggested improvements/ areas to work on**

Continue field trips...make more efficient

Need to pass out samples of past final papers to ensure correct formatting.

### **Assessment**

Able to draw and apply shear and moment diagrams

Problem 1 Final exam, % grade = 71%, % score out of 20pts

Lower this year ..added pick beam size and since students were told that they must do this problem/ will be on the test was graded harshly

Math error -2

Failure to check shear -2

Failure to calculate correct moment by drawing wrong shear and moment diagram -10

## APPENDIX F Continuous Quality Improvement (CQI) Example

**Course Summary** for MET351, 3-5 MWF, HT 111, Fall 2008, Instructor: Craig Johnson. Key: italics = old

### Assessed Course Outcomes:

Outcome #2. design and process materials to obtain predicted properties via labwork and project work (ABET outcome 3a,3b, 3f, 9b, 9d, 9e, 9f, MET metric 351a, Data to G/MET Asses/MET351, CQI to G/MET CQI/MET351)

Results: Metric 351a was new this fall. No action items were filed at program level.

### Student Body / Schedule:

This quarter's class was comprised of 28 students. This still filled the available seats (4 rows of 6 chairs). Again, the majority were Industrial/Ed Technology majors, and the minority were MET program majors. No students were female, but there were Asian and Middle East students.

### Events:

Friday 'classes' were spent on-line. Students took weekly quizzes, labs and/or activities, as in the past few years.

No guest speakers this year. (Action)

*We need a new Rack for Jominy bars to cool in (instead of a pan). We need it for better results (Action). Brad delivered this part of the lab, but he is gone now. Status? Matt is now on to this.*

### Student Performance:

Students wanted study material, so examples of both quantitative and some concepts were posted. More info is posted every year on Bb.

The microscope camera is still not working (CCD bought in 1998). Perhaps a slide show on micros is in order.

### Classroom teaching/environment/learning:

HT111 was not substantially changed during the past year.

*Unitron with CCD and connect to TV? TO DO. 04.12: Brad is gone. Note, I adapted a light source (original failed) on 11/07*

*We need a TTT diagram! TO DO (12/08)*

*We also needed the other hardness testers (now stored under the front cabinet). ACTION (12/08)*

### Text:

*We used Eng Mat Tech (Jacobs & Kilduff). It has lots of mistakes, but is relatively cheap and has a lot of info. Else? (12/08 TO DO)*

### ACTION ITEMS:

*Get a speaker in this class! Still!*

*Get the video hooked up with the Unitron. TO DO! (since 1997)*

*Tech: make a Jominy cooling rack. 12/06: Still (since 2001).*

*We need a TTT diagram! Still (since 2003)*

Put together a slide show on steel microstructures