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SYSTEM

**ELECTRICAL ENGINEERING TECHNOLOGY / ELECTRONICS
SYSTEM-CALLED MEETING**

Fox Valley Technical College, D.J. Bordini Center
September 21-22, 2017

AGENDA

Thursday

12:45 PM	Registration
1:00 PM	Welcome and Introductions
1:15 PM	EET Engineering Documentation *(Dave Schmocker, Milwaukee/ all)*
2:15 PM	Break
2:30 PM	Women in Electronics & Engineering - Deconstructing Gender Bias (Gail Coover, Wisconsin Louis Stokes Alliance for Minority Participation) - Improved instructor recruitment and retention - Improved student recruitment and retention
4:30 PM	Adjourn
5:30 PM	*Optional* – MSOE meeting, MSOE hosted dinner*

Friday

8:00 AM	Registration
8:15 AM	Welcome and Introductions
8:30 AM	Plexus Industry Tour: 2444 Schultz Drive, Neenah, WI 54957
10:00 AM	State Update (Chrystal Seeley-Schreck, WTCS)
10:30 AM	College Updates (all)
12:00 PM	LUNCH
1:00 PM	Industry Certification Landscape (survey for industry certifications, provide overview of different options)
1:45pm	TSA review (*What is TSA, Phase 1, Phase 2, implementation, revisions*)
2:30 PM	FVTC Site Tour
3:00 PM	Adjourn

Notes taken by Robert Strangeway, MSOE

In attendance: 16

John Horkdy, Blackhawk
Stephen Saindon, FVTC
James Jazdzewski, Gateway
Jacob Eapen, Madison
Ann Thompson, Madison
Randy Way, Madison
Tom Heraly, MATC-Milw
Ken Holmes, FVTC
David Schmocker, MATC-Milw
Dave Kacynski, NWTC
Ron Ropson, NWTC
Edward Chandler, MSOE
Robert Strangeway, MSOE
Kathleen Bachhuber, WCTC
Mitch Schultz, Western
Brandon Trujillo, WTCS

Welcome

Brandon Trujillo welcomed everyone and introduced Steve Straub, Associate Dean at FVTC. Steve welcomed all, briefly discussed the Bordini Center renovation, and explained logistics for the industry tour tomorrow.

EET Engineering Documentation (Dave Schmocker, MATC-Milw)

Dave explained the stakeholders' context of engineering documentation: industry and transfer partners (MSOE present today, their format was available as a handout). The "soft note" approach is now prevalent in industry. Microsoft Office is used by several companies. The platform should be operating system independent. The pilot courses were DC/AC III in Fall 2016 and Electronic Circuit Analysis in Spring 2017. Students were given the choice of hardcopy lab notebooks and OneNote lab notebooks to submit their lab reports. About two thirds selected OneNote and one third selected hardcopy. An initial challenge was to authenticate the instructor to view the students OneNote entries. OneNote is save in the cloud. Some (5%) Bode plots and Excel graphs did not show up initially, usually dependent on the MS-Office version, but after fixing it, this was not an issue thereafter. OneNote retains the identity of the author fairly well.

Benefits: something new for students to try; students' familiarity with MS-Office; no new license required; approvals and electronic signature process is straightforward; the instructor could add comments next to the work; embedded picture quality sometimes varies

Dave gave a OneNote demonstration. Each lab was a separate notebook. Each notebook has multiple pages. The instructor has access to each of the student's notebooks (labs) once the instructor can access the link. It is unknown whether OneNote retains history. Does Mathcad embed in OneNote? OneNote can be used as an engineering notebook and/or for lab reports.

Engineering documentation no longer is applicable to patent protection, but is pertinent to electronic search ability, documentation to protect against legal challenges, and health/safety documentation.

Ed Chandler is teaching senior design at MSOE this academic year. Students were given the choice between hardcopy engineering notebooks and OneNote (or the like).

Steve Saindon presented his experiment documentation outline:

- Introduction
    - Objective
    - Approach
- Predictions (Analysis)
- Simulation
- Comparison Simulation to Prediction
    - Analysis of Results
- Measurement (Experiment)
- Comparison: Measured to Predicted
    - (n/% error)
        - Analysis of results
- Conclusions

When AAS-EET transfer students come to MSOE, they ask "What do you want?" to instructors with regards to engineering documentation because of the variety of approaches they have experienced, none of which appear to "sink in." There was interest within the faculty present to investigate forming a more-common basis for engineering documentation to improve learning this skill.

Developing Leadership to Broaden Participation in STEM guest speaker Gail Coover, UW-Mad

Developing racial-ethnic diversity is the theme. The WiscAMP alliance includes several centers and universities. The results are based on multiple well-founded sources

Unconscious (implicit) bias: competency bias, stereotype threat, microaggressions

Diversity improves productivity, creativity, critical analysis level, innovation, mentoring,, fairness,, and equity

The percentage of females earning science and engineering AAS degrees increased from 53% in 2004 to 64% in 2014, but dropped to 16% to 14% if health technologies are removed. The WTCS average for EET colleges was about ten percent (2016-17).

National Academy pf Sciences concludes that stereotypes about gender and race affects self-perception, personal interactions, evaluative process, and culture of the work environment.

Unconscious bias: cultural stereotypes attached to gender, race/ethnicity, sexual orientation, weight, and age/height.

Stroop Color Naming Task: mismatched color and word caused interference; seeing the word is a bias vs. identifying the color. This simple cognation issue is how unconscious bias work.

Masculine vs. feminine example

The biases that arise from stereotypes are internalized by people in those stereotypical groups.

Racial and gender stereotypes "lack of fit" (role incongruity) portray women and underrepresented minorities (URMs) in science and medicine as deficient in their skills and competence and manifests in doubting ability, requiring proof, requiring higher quality of work, and devaluing attributing accomplishments or attributing to

others. This effect occurs in grant evaluations and even blind reviews for papers. Often, women will go "far beyond" men in preparation, self-scrutiny, and so forth, due to actual and perceived male bias.

Impact: competency bias in evaluation processes and (day-to-day) microaggressions (microassults, microinsults, microinvalidations)

Shift in perceptions: from a "bad person" to we have these biases, how do we deal with them. Stereotype suppression or belief in objective thinking techniques do not work.

Mindset research; strategies that do work:
- Instruction: emphasize growth over fixed mindset
- Selection and Promotion: use pre-established observable standards for evaluation; self-efficacy" I can do this despite initial failure – must address the initial failure
- Deliberately question possible influence of implicit bias
- Watch for and address microaggressions

The attendees split into groups and discussed four scenarios from Gail's handout.

Scenario 1: collect more information to identify the reason for the behavior change, instructor discusses with the student of how (and why) to interact and help them grow

Scenario 2: ask how you are doing; if anything in the learning environment that inhibits learning; go over the exam with the student; what's going on external in life, test anxiety, …; communications can help reduce biases; multiple communication paths help; sharing your professional identity reduces biases (how do you learn how to be in this profession includes treating your colleagues as professionals)

Scenario 3: attitude cannot be the crutch; role reversal, build empathy; students assuming they are smarter than the remainder of the group (connect to industry/professional expectations); the female perhaps agreed with affirmative action comment but did not want to be identified with it; if you don't react as a faculty member, then students perceive it as acceptance and being condoned ("Leadership" in the title of this tale!); the student perceptions may be knowledge gaps

Scenario 4: this starts at the top (administration); colleague disrespect feeds student disrespect; discuss these results with women/URMs/… and the administration to collect a more accurate perception; the disrespected people must "stand up" against such statements

The meeting was adjourned at 3 p.m.

2017 WTCS EET/Electronics System-Called Meeting
Fox Valley Technical College, Bordini Center
September 22, 2017

In attendance: 14

John Horkdy, Blackhawk
Stephen Saindon, FVTC
James Jazdzewski, Gateway
Jacob Eapen, Madison
Ann Thompson, Madison
Tom Heraly, MATC-Milw
David Schmocker, MATC-Milw

Ron Ropson, NWTC
Edward Chandler, MSOE
Robert Strangeway, MSOE
Joe Sroda, MSTC
Tom Trawicki, WCTC
Mitch Schultz, Western
Chrystal Seeley-Schreck, WTCS

State Updates (Chrystal)

Colleen McCabe has replaced Cathy Cullen

Office of Instructional Services is a new name for Office of Academic Excellence

Several new personnel have joined the WTCS office.

Credit for prior learning efforts (Jim Mackey): consistency efforts

Apprenticeships: expanding (55% growth from 2013 to 2017: especially IT; mechatronics; new funding is available

Career Pathway Definition: increasing focus; alignment of programs and adult career pathways; defining multiple entry points; articulation

Tableau interface: improved data access for utilization in program improvement
Advocacy resources are available.

Technical Skills Attainment TSA: updating, revisions; Electronics and EET are in the queue

Credit for Prior Learning (CPL) summit: Jan. 21, 2018
C3Pre conference: Dells, Feb. 1, 2018 (see my.wtcs website, calendar of events)

Transfer outcome documents are under Instructional Services; they are available in WIDS and can be cross-referenced to competencies in your curriculum

ESM Educational Services Manual: includes how much work is required outside of the classroom; updates forthcoming

Electronics/EET Programs Overview (Chrystal; mostly derived from Tableau)

Four active 605-1 Electronics programs and four Biomedical Electronics programs are active.

Several corrections are needed to the Program status chart – communicate with Chrystal asap.

Eight Electronics / Electrical Engineering Technology programs are active. FVTC has two programs, but one of them is transferrable (Electrical Engineering Technology is the transferrable version). Thus, seven of the Electronics / Electrical Engineering Technology programs are transferable.

Chrystal would like to improve consistency in program labeling.

Enrollments have generally decreased in the last few years due to the good economy. Most programs have grown well since 2006, which was a down year.

Should we have a committee on forming a consistent technical documentation recommended standard for early courses so that students learn one technical documentation well before diversifying into other documentation formats? It appears that the attendees desire a collaborative document on the guidelines and best practices document. Then it should be placed into a repository. Tom Heraly will take the lead on this effort, Google collaboration.

College Updates

Blackhawk (John Horkey): several changes; Electronics Technology terminated about 10 years ago. New President, VP Learning, and Dean; increased efforts to increase revenue by adding programs. The Electromechanical program has moved to 1-credit modules (often in 5 week modules) and evolving to an open lab format. An Electronics program is being re-considered in this context.

FVTC (Steve Saindon): Tom Stark is a new electronics faculty member. The FVTC Electronics Engineering Technology curriculum (non-transfer) was reviewed, now 64 credits and 60 credits for Fall 2018; an Intermediate Algebra + Apps course will be used to reduce credits, but only 40% of the students over the past ten years qualify for this math course; and DC/AC credits is to be reduced; electronic communications will be a 1 cr exposure; physics is removed; a calculus-based physics course is being created for the manufacturing engineering technology transfer; a template for a standard college-wide course syllabus was distributed in response to HLC feedback on course documentation, which is to be implemented by next year; this effort is occurring at Gateway also; increased syllabus documentation was reported by several colleges; the open-lab concept is not used for DC/AC II and second year classes; Steve has implemented extra lab time to help students when questions occur; Steve uses his developed lecture notes instead of textbooks.

Gateway (James Jazdzewski): about 60 incoming students; the Elkhorn campus is adding capability and renovating the manufacturing lab; AMS is now a technical diploma only, with 605 classes being removed; started a technical diploma in electronics; all CNC had been moved to IMET, with triple the amount of students; Foxconn effect; the Electromechanical program started the Real School program with Racine Unified district; UW-Parkside has not worked with Gateway, but UW-Milwaukee signed a 2+3 transfer agreement into the BSEE program; McGraw-Hill online e-learning textbooks, $95 per semester per student access fee

Madison (Ann Thompson, Jacob Eapon): ET/EET enrollments are about the same as last year (50 first semester); a full-time instructor retired, and a Digital 1 section and was cancelled; Gashwin Saleno is not the Department Chair; Randy Way is the new associate dean; two new articulation agreements: Edgewood and UW-GB; discussions with UW-Platteville with engineering transfer agreements, which likes the MSOE approach; UW-Platteville has been using the Madison College labs for their students in the Madison area; graduate 17% of students who enter the program, so using coaches and advanced students to help retention; need electronics mentors for Promise program students; Madison requested that MSOE compile a list of scholarships that have been to transfer, women, and URMs to illustrate why a private, non-profit university is affordable

Midstate (Joe Sroda): 9 first-year and 6 second-year students in the Power program; technical divisions re-organization changes; marketing efforts increasing; good relationships with high schools; Midstate is making the 60 credit push; an enrollment center has been built to help secure enrollments; Instrumentation instructor retired; the Instrumentation program is to be re-named

Milwaukee (Tom Heraly, Dave Schmocker): 158 registered in four tracks, but 58 in program courses; EET enrollment 55, 20 graduates; issues in math area: 63% pass rate in tech math 1; DCAC 1 enrollments down about 15%; quality review process (QRP) data: 17% graduation rate (5 year); EET retention grant provides for a tutor; DC/AC 1 attrition has been identified as an issue; employer demand is high despite the enrollments. Smaller urban high schools are more responsive to MATC recruiting efforts. The Promise program has not

produced good return. The interconnect program connects with internships, but cannot fulfill internship needs. An automation faculty with an electronics background is needed. Two faculty retirements are impending.

MSOE – updates given at the AAS-EET to BSEE Transfer Track Subcommittee meeting yesterday.

NWTC (Ron Ropson): NWTC has operated in the open lab mode for about ten years, at least three faculty on staff at a time. Stable enrollments, a touch down this fall. Program changes: full Biomed Electronics program; PLCs is included in the transfer agreement, robotics in the Electronics track. Retention: 60% of students enrolled graduated from the college, but only 32% graduated from electronics (most of the remainder changed programs). The average student changed programs twice. Visiting high schools with modular trailers is part of the marketing strategy. They use the 6 month period of textbooks along with hardcopy add-on because some texts are used three semesters. Homework is on Blackboard, students get two to four attempts allowed. Program facilitators are rotated.

WCTC (Tom Trawicki): Bob Steker retired last May. Two new faculty: Kathleen Bachhuber and Karl Buschhaus; enrollment is somewhat down (24 EETs in Fall 2016 to 14 EETs in Fall 2017; ET program enrollments are way down - 5); major renovation to the ET program is expected; many ET students change program to the AST program, which attracts mostly those from industry with several years of experience, so average starting salaries are inflated; the EET program has been re-accredited by ETAC-ABET; high school recruitment efforts are being stepped up. Industry demand for graduates is strong, but not enrollments.

Western (Mitch Schultz): 17 incoming student, 16 second year students, about 45% transfer to UWL, a few to MSOE, and the rest go into the workforce. No females entered any of four programs in Fall 2017. Data Comm/networking will replace Electronics Communications in the curriculum.

Other comments:

Open lab comment: embedding questions in materials that force the students to interact with the instructor is recommended

Building relationships with high schools, including dual enrollments, is a good enrollment strategy

Industry Certification Landscape

Survey results: 12 responses from 9 colleges; 60% programs prepare for industry certifications, 25% offer the certifications; CerTEC (Gateway), $70 per test, bundled with the textbook; Snap-On (Gateway); IPC (Madison + 1 other college); no SME, ETA-I, or NICET certifications; five other miscellaneous certifications are offered; no consensus on certifications

TSA Review

Revisions are starting, and electronics / EET are being evaluated for the need for revisions. Phase 1 is completed. Both programs are in phase 2 (assessment). All programs have the rubrics and are/have implemented. The EET Transfer Outcomes are not tied to TSA. The TSA matrix was complimented. The assessment should be concentrated into one or two courses. Chrystal will follow-up on TSA and determining the need for revision.

Next Meeting

Some indicated the desire for two meetings per year, perhaps one day each. Hold a webinar (about 3 hour) in spring? Avoid spring breaks. Call for agenda items desired. Topics: Inspire.

Sept. 20, 2018 timeframe for next year. Milwaukee tentatively offered to host.

The attendees thanked Chrystal for arranging this SCM.

Steve Saindon will lead a tour of FVTC laboratories after the meeting.

The meeting was adjourned at 2:43 pm.

CS Follow-up:
- Send out TSA information to do a quick needs assessment for revisions
- Tom Hearly is creating a best practices/guidelines document to highlight best practices in regards to Lab Documentation across the colleges. In [Google Drive](#)
- Schedule spring webinar for touching base and hot topics (avoid spring breaks)
- Schedule fall meeting at MKE for Sept 20, 2018

Humor from Ron Ropson
Groaners: World's Best Bad Jokes and Puns
The roundest knight at King Arthur's round table was Sir Cumference. He acquired his girth from too much pi.