MILWAUKEE SCHOOL OF ENGINEERING
B.S. COMPUTER ENGINEERING
INDUSTRY ADVISORY COMMITTEE
Thursday, October 29, 2020

Attendees

Industry Members

Mr. Ryan Barnett, Collins Aerospace
Mr. James Conigliaro, Olive Branch Technology
Mr. Joe Izzo, Rockwell Automation (retired)
Mr. Keyur Khambholja, Direct Supply
Mr. Tom Kraus, GE Healthcare
Mr. Nick LaBonte, Milwaukee Tool
Mr. Dave Neuman, Brady Corporation
Ms. Cynthia Petterson, Milwaukee Tool
Mr. Joel Rondeau, Cognex Corporation
Mr. Jeff Zingsheim, IAC Chair, Northwestern Mutual

Student Representatives

Mr. Tom Burback, MSOE '21
Mr. Jaden DeFields, MSOE '21
Mr. Tanner Miller, MSOE '24
Mr. Jacob O'Shaughnessy, MSOE '24

MSOE Faculty and Staff

Dr. Eric Durant, Professor and Program Director
Dr. Adam Livingston, Assistant Professor
Dr. Darrin Rothe, Associate Professor
Dr. Steve Williams, Professor and EECS Chair

Recorded by: Dr. Durant

Meeting called to order at approximately 8:30 a.m.

Note: All items on the agenda were discussed, but several informational items are not repeated in these minutes.

Welcome and Introductions

IAC Chair Mr. Zingsheim welcomed the members to this virtual meeting, hosted on Microsoft Teams, and invited everyone present to introduce themselves.

Previous Minutes

Dr. Durant asked the members to review the previous meeting minutes, which are available on the website, and to send him any corrections or additions in the next few days.

Discussion of Hybrid Delivery

Mr. DeFields: EE3032 even the 1 in-person day is very valuable, and this format is working well. The online classes are a lot less convenient, so I appreciate having the in-person days.

Mr. Burback: Agrees the in-person days help a lot so that you can ask questions. It is not too bad even with synchronous online lectures – not as good as an in-person class, but not too bad.

Mr. O'Shaughnessy: Most of my classes were just plopped right into Teams, not a lot of asynchronous stuff. I don't have a lot to compare it to. I think it's been working okay.

Dr. Livingston: teaching embedded and intro to programming. Programming is online. I do synchronous lectures, not pre-recorded content. Randomly calling on people when I can find the time is effective, since it simulates what I'd do in class. In embedded, our labs are also meeting remotely. So, we pre-soldered and pre-configured their boards, which they picked up. Did midterm in person. I did meet with a couple of students in person; one had a faulty board, did as much as possible online. Even in person I use Teams to see their screen without having to look over their shoulder – most students are comfortable with this. One of the students I advise is considering taking winter and probably spring off since the online is not working well for them. The first year programming lab does meet in-person; we use the basement of the Direct Supply building, which has plenty of space. Performance of students is on par with previous quarters.

Dr. Williams: We are figuring out which activities are best suited to which modalities; it is not obvious. We recognize that in-person is costly and valuable in many ways. So, the faculty are working a lot harder and are adapting as they learn what works best in various modalities. One of the fall accommodations we made was the hand on work with faculty, so we adjusted the fall schedule in real time (and planned for winter) to have two adjacent lab rooms for all of EECS, so we allow full in-person cohorts. That has worked out well. From the students' perspective, we are learning how much more work the students are going through now. Part of the faculty adaptation is how to meter out the student work so that it is reasonable and gets us to course learning outcomes. This is an iterative learning process. A tremendous amount of adaptation is going on right now. I was in an institutional strategic planning meeting yesterday, our first since the pandemic, and Dr. Walz is going to launch another strategic planning effort that will focus on what MSOE does differently post-pandemic. What have we learned and what do we instantiate to make ourselves better? He expects to launch this in early 2021.

Mr. Izzo asks if students are still able to get together with other students outside of class to work and study together. Mr. DeFields notes that most of the campus buildings are open and can be used for this, but it is a lot less convenient with online classes since it is harder to mention than in an in-person class.

Mr. O'Shaughnessy: the ***1st year students don't know each other as well***, so it is very hard to do things like this. One person in CS1011 did reach out to me, but there is not much of this. Mr. Burback has the opposite experience, although not in person, we are using Discord as well as Teams in senior design and then discuss our other classes.

Mr. Izzo has been teaching his functional safety class online. He uses multiple whiteboards using the Microsoft Whiteboard program. Dr. Livingston adds, in the first software class the faculty had trepidation about bringing students together unless there was a clear value; we are doing the lab in person; if it were a 3rd year software-only class, we'd be doing it online. The purpose to have it in person

is to help foster building the cohort. Maybe this is only happening in 1 or 2 of the 4-5 classes a 1st year student takes, to Mr. O'Shaughnessy's point.

IEEEXtreme

Dr. Livingston reported on IEEEXtreme. Some places in the world had students together in person, which caused him some concern. Our students were completely remote. We had a 2CE+1SE team that finished 1st at MSOE, 1st in R4, 1st in North America, and 19th in the world. That is very impressive. These students are part of MSOE's competitive coding group that is within MSOE's Society of Software Engineers student organization. Our 2nd place team was 3 senior CEs and they finished 10th in North America. About 2200 teams were actively engaged with the problems. Those are not official results, but they will be reviewed and announced likely in a few weeks. Then we'll get it out via marketing. Our total participation was down this year; we had about 17 students compete this year.

Discussion of PEOs

The members reviewed and discussed the Program Educational Objectives as published in the 2020-2021 Academic Catalog.

Mr. Izzo: Engineers do much more beyond the things that are listed for "successful delivery" – some of our engineers go into sales, management, etc. Less than half, even early in their careers, go into development of products – sales is a big one, quality control, manufacturing engineering.

Ms. Petterson: Another is test engineering. We often must tell students about this as a career path when we speak at career fairs, etc. Dr. Livingston does talk about test in his classes. Mr. DeFields says professors do a good job of explaining the broader opportunities available to graduates. Mr. Zingsheim agrees with updating the wording to reflect this. Dr. Durant will draft updated wording to be reviewed by the IAC.

New Curriculum and Semesters

There were concerns about the removal of a computer graphics class from the draft semester curriculum outline presented. Mr. DeFields found computer graphics as it is valuable; he will be moving into a position that uses this material. Mr. Burback: With the industry moving more toward AR applications, the graphics background could be valuable. Maybe also cover OpenCV/image processing.

Mr. Zingsheim: It is important for CE to keep itself differentiated from CS/SE. It is important to stay close to hardware. So, an in-depth course in python (which was considered) is not urgent. C++ is nice since it gives you OO in a machine-oriented way. Students make a choice to be in CE, so would lean towards emphasizing hardware/software interface topics. The CS3210 early material about displays, blanking, etc., is very valuable. Also, the current OS class has C material, which is valuable.

Mr. Conigliaro: There are so many languages and the dominant ones keep changing, so it is more important to expose students to different concepts: C++ has different concepts than C#, than python, etc. This enables students to teach themselves; they should understand pointers, interpreted languages, compilers, etc.

Mr. Izzo: The electives EECS is offering are very strong – he wishes he were back in school.

Adjournment

At approximately 10:30 AM the meeting was adjourned.