

Undergraduate Software Engineering Programs

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Abstract—Undergraduate programs in software engineering are relatively new. The first ABET accredited programs received accreditation in 2001. There are currently 31 ABET accredited software engineering programs worldwide with additional programs being added each year. In this session, panelists will discuss their experience starting new programs, developing curriculum, and navigating accreditation issues.

Keywords—new program, software engineering, accreditation, curriculum, panel

I. DISCUSSION TOPICS

The panelists will discuss the following topics:

- Starting a new software engineering program
 - Leveraging existing resources
 - Generating stakeholder buy-in
- Curriculum
 - Sustainable evolution to keep curriculum current
 - Relationship to industry needs
- Accreditation
 - Changes caused by pursuit of accreditation
 - Lessons learned

Priority will be given to audience questions.

II. PANELISTS

A. Chris Taylor, Milwaukee School of Engineering

Chris Taylor is the program director for the undergraduate Software Engineering (SE) program at the Milwaukee School of Engineering (MSOE). MSOE is a private non-profit institution that offers 15 undergraduate programs and 11

graduate programs. The SE program was started in 1999 and received ABET accreditation in 2001. The program graduated 45 students last year and has a little over 200 students enrolled. In addition to senior capstone design, the curriculum includes a year-long software development lab sequence where students work on projects for non-profits and local industry.

B. Kevin Gary, Arizona State University

Kevin Gary is the Program Chair for the Bachelor and Master's degrees programs in Software Engineering at Arizona State University. These programs are housed in the School of Computing, Informatics, and Decision Systems Engineering of the Ira A. Fulton Schools of Engineering. The undergraduate program is offered both on-campus (approximately 325 students) and online (743 students), and is the first Software Engineering online program accredited by ABET. The undergraduate program emphasizes hands-on learning through a sequence of project-centric courses known as the Software Enterprise that run from the sophomore through the senior years in addition to the capstone sequence.

C. James Kiper, Miami University

Jim Kiper is the chair of the Department of Computer Science and Software Engineering (CSE) in the College of Engineering and Computing at Miami University. Miami University is the top rated public university in the nation in undergraduate teaching and learning. The CSE Department has offers two undergraduate majors, Computer Science and Software Engineering, and a Masters of Science in Computer Science. The SE program was established in 2009. Currently, the department has about 630 students, 136 of whom are SE majors. The curriculum includes courses in requirements engineering, UI/UX, software architecture and design, software quality and testing, and software construction, in addition to a yearlong senior capstone project.

D. Carol Wellington, Shippensburg University

Carol Wellington is the Chair of the Department of Computer Science and Engineering at Shippensburg University. Her department houses Software Engineering in addition to Computer Science, Computer Engineering, Electrical Engineering, and Mechanical Engineering. The Software Engineering program was created in 2012 and received ABET accreditation in 2014. The program graduated 12 students last year and has about 60 students enrolled. The focus of the program is agile software development of large scale systems, so our students learn test driven development in their first programming experience and the curriculum requires them to build increasingly large and complex systems. For us, in addition to a focus on process, software engineering has a focus on design and system architecture.

E. Norha M. Villegas, Universidad Icesi, Colombia

Norha M. Villegas is the Director of the Software Systems Engineering (SSE) program at Universidad Icesi, in Cali, Colombia. Icesi is a non-profit, private university that offers 28 undergraduate programs, 44 graduate programs between masters and medical surgical specializations, and one doctorate program offered by 6 schools (business, engineering, social sciences, natural sciences, health sciences, and education). Universidad Icesi is highly recognized in the country as one of the most prestigious universities for its commitment to high quality education. The SSE program was established in 1983, has a current enrollment of 309 students and about 800

graduates, offers a five-year curriculum that follows engineering education best practices proposed by CDIO and offers two capstone courses that expose students to solve problems from industry. All students must conduct a six-month professional internship at the end of the program as a requirement for graduation.

The program received its first national accreditation in 2002 and its first time ABET accreditation this year, being the only software engineering program accredited by ABET in Colombia.

F. Lily Chang, University of Wisconsin - Platteville

Lily Chang is the program coordinator for the undergraduate software engineering program at the University of Wisconsin (UW)-Platteville. UW-Platteville is one of the four-year universities in the UW system, and is well-known for its engineering programs. The software engineering program was implemented in 1999 and is one of the ABET accredited engineering programs in the College of Engineering, Math and Science at UW-Platteville. The enrollment for the software engineering program is around 200 students. The program graduated 29 students in the 2016 academic year. The curriculum emphasizes hands-on and includes senior design courses spanning two semesters where students work on real-world projects in collaboration with local industry.