UCC Program Review Committee summary of review

Program – School of Electrical Engineering and Computer Science

This program includes the following degrees and certificates:

- B.S. degrees in Electrical Engineering and Computer Science
- M.S. degrees in Electrical Engineering and Computer Science
- Ph.D. degrees in Electrical Engineering and Computer Science
- A minor in Computer Science
- Undergraduate and Graduate Certificates in Bioinformatics

Recommendation

This program is found to be viable, see report for commendations, concerns, and recommendations.

Comments – non-binding

This review was one of several to use the program’s accreditation process as part of the review, in this case only for the undergraduate program.

The next review may be timed to coincide with the accreditation of the undergraduate program in order to reuse some self-study materials, but, there should be a site visit involving internal and external reviewers.

Date of last review – AY 2006
Date of this review – March 2014

This review has been sent to program chair, his comments are attached to the report.
This review has been sent to program college dean, his comments are attached to the report.
This review has been sent to graduate council, they have no comment.
The School of Electrical Engineering and Computer Science offers three graduate programs: Master of Science in Electrical Engineering, Master of Science in Computer Science, and Doctor of Philosophy in Electrical Engineering and Computer Science. The School also offers two undergraduate majors (Electrical Engineering and Computer Science), one minor (Computer Science), and certificates in bioinformatics at the undergraduate and graduate level. The undergraduate degree programs are accredited by their respective commissions of the Accreditation Board for Engineering and Technology (ABET). The most recent accreditation visit for the Electrical Engineering undergraduate program was in 2010. The Computer Science undergraduate program has been accredited since 2000, and its most recent accreditation visit was in 2007.

Commendations

EECS is one of the most research active units on campus, receiving almost $62 million of external support for research in the review period. Two faculty (Kodi and Jadwisienczak) are current recipients of the NSF CAREER Award. Four students won nationally competitive awards, and one started a successful internet company (Imgur.com). Placement rates for undergraduates in full-time employment or graduate school are close to 100%.

Concerns and Recommendations

No concerns mentioned in the report. This appears to be a highly successful program.

Program Review

Faculty Profile

The School of Electrical Engineering and Computer Science is currently staffed by 24 Group I faculty members, 3 Group II faculty members, and two faculty on early retirement. Since the last academic program review, the School has had 6 new hires at Assistant Professor rank or above and 8 retirements or departures of faculty at Assistant Professor rank or above. In addition, 2 faculty have moved into full-time administrative positions.

Gender and racial diversity are below average for the university: female (2), male (25); African American (1), Caucasian (21), Asian (5). Many of the faculty are non-resident aliens from a wide array of countries.

Programmatic Practices

1 Prepared by Neil W. Bernstein (Dept. of Classics and World Religions), member of UCC Academic Program Review committee, 2013-, based on self-study materials provided by the school, and the ABET accreditation report on their undergraduate programs.
EECS follows college guidelines for faculty workload. The typical teaching load is between 12 and 16 credit hours per academic year for Group I faculty and 24 hours for Group II faculty. New faculty are typically given a one-course reduction for the first one or two years and five summer months’ salary over two years. Chairs and Associate Chairs have reduced teaching loads. Faculty may release themselves from one course per semester in exchange for 30% of their salary for that semester. Junior faculty are typically given lower service loads than senior faculty.

Research, Scholarship, and Creative Activity

EECS is one of the most research active units on campus. It has received $62 million of external support for research in the review period, mostly from federal sources. Total external funding (new awards) in the School of Electrical Engineering and Computer Science reached $7.6 million in FY 2012. During the review period, faculty received 657 grants, published 199 journal articles, presented 457 conference and workshop papers, published 105 books or chapters in books, and engaged in 1154 other creative activities (including patents, patent applications and disclosures, conference presentations, and proposals).

Resources

The School has indicated that adequate resources are available to fulfill its mission. The department employs six full-time staff members.

EECS occupies 34,000 sq ft. of space in Stocker Center and 715 sq ft. in the Convocation Center for computer servers. The Avionics Engineering Center occupies significant space at the Ohio University airport.

EECS maintains three computer laboratories: two general purpose labs with UNIX-based workstations, and one internet teaching laboratory that contains five Linux-based PCs, five Macs and five Windows-based work stations, six high-end Cisco routers, twenty switches and hubs, and a complete network patch panel. EECS maintains five EE related labs for undergraduate education. EECS also maintains well-equipped Communications and Electromagnetics Laboratory and an Industrial Digital Control Laboratory.

Undergraduate Program Review

EECS offers two undergraduate majors (BS in Electrical Engineering and BS in Computer Science), one minor (Computer Science), and a certificate in bioinformatics. The undergraduate degree programs are accredited by their respective commissions of the Accreditation Board for Engineering and Technology (ABET). The most recent accreditation visit for the Electrical Engineering undergraduate program was in 2010. The Computer Science undergraduate program has been accredited since 2000, and its most recent accreditation visit was in 2007.

It also teaches four service courses for other majors in the Russ College of Engineering and Technology. After the change to semesters, CS majors are now required to take four additional computer science and electrical engineering courses.
During the review period, EECS enrolled between 309 and 358 undergraduate majors per year. Four students won nationally competitive awards, and one started a successful internet company (Imgur.com). Placement rates in full-time employment or graduate school are close to 100%. Average salaries were roughly $52,000 for both BSCS and BSEE graduates.

Diversity greatly improved during the review period. Gender diversity changed from 15:1 male/female to 7:1. Racial diversity changed from 7:1 Caucasian/nonCaucasian to 2:1.

**Commendations**

EECS is one of the most research active units on campus, receiving almost $62 million of external support for research in the review period. Two faculty (Kodi and Jadwisienczak) are current recipients of the NSF CAREER Award. Four students won nationally competitive awards, and one started a successful internet company (Imgur.com). Placement rates for undergraduates in full-time employment or graduate school are close to 100%.

**Concerns and Recommendations**

No concerns were mentioned in the report. This appears to be a highly successful program.
11-12 March 2014

Review of Electrical Engineering & Computer Science (EECS), MS and PhD

Angie Bukley & Orianna Carter, Reviewers

Recommendation: Viable

This review is based on a visit to the Russ College of Engineering and Technology 11-12 March 2014. The review team met with Dr. David Juedes, department chair, Dr. Doug Lawrence, graduate chair, Dean Irwin, graduate students from the College, tenured faculty, and probationary faculty. A facility tour was provided. A read-ahead package containing a Russ College general overview briefing deck, enrollment and graduation statistics for Engineering graduate programs, the department self-assessments, and general guidelines for the review was provided. In addition, a copy of the Russ College Strategic Plan and dashboard metrics were provided upon request of the reviewers.

The EECS Department graduate programs comprise an MS in EE, MS in CS, and a PhD in EE & CS. A new online MS program was introduced last year.

Faculty Profile

Current faculty size and distribution

According to the EECS Self-Assessment document, as of September 2012, there were 24 Group I faculty members, 3 group II, non-tenure track faculty members, and two on early retirement. According to the department senior management, faculty staffing is less than optimal as they have recently experienced four retirements and two departures, which have not have been replaced. Currently, there is a proposal to replace two faculty members.

The distribution of rank is reasonable. As well, the enrollment in the MSEE program has decreased in recent years with the PhD enrollment holding steady. Emphasis is now on growing the PhD program. The online MS program is oriented more towards a professional degree, whereas the PhD program is more research based.

For the scope of the program and the future planned increases in PhD program enrollment, the two additional hires should be considered in the future.

Research, Scholarship, and Creative Activity

Current department RSCA

The latest information available in the EECS Self-Assessment indicated an average of over six publications per year per faculty member with 88% participation rate in 2011. This seems appropriate.

External funding
The EECS department is one of the most active research units at OU generating over $62M over the period of the seven-year self-assessment period. According to the department chair, over the last three years the funding has been between ~$5M and $7M/year, which is over $200K per faculty member per year on average.

**Resources (financial, space, personnel)**

No significant concerns regarding financial resources were raised. However, the reviewers were told that there is essentially no space for graduate student offices. This issue should be addressed.

**Educational Quality**

**Students**

According to the statistics provided, the number of students enrolled in the EECS programs is \( \approx 100 \). As mentioned earlier, the number of resident MS students is down over the last years, but there has been a steady increase in the number of PhD students. The diversity in the student body results from the international students comprising ~70% of the EECS graduate student populace. The vast majority of the US domestic students is white male and earned their undergraduate degrees at OU. There are no direct efforts being undertaken to recruit from underrepresented groups, though the department does participate in the McNair Scholars’ program and the Ohio Celebration of Women in Computing Conference.

There was a concern voiced regarding the need for marketing and recruiting support at the College level to attract more US domestic students into the program. A suggestion was also made that a college subscription to a GRE search service might be helpful in targeting potential students.

**Faculty Diversity**

The faculty members originate from 10 different countries, includes two females, and is \( \approx 80\% \) Caucasian. Future hires from underrepresented groups would improve the diversity of the department and potentially that of the graduate student population.

**Curriculum**

The curriculum described in the self-study document is appropriate for the graduate programs offered. The department employs a number of quality control mechanisms, including annual reviews of the graduate courses offered. The program offers interdisciplinary focus through its various faculty projects across campus, specifically within physics, but also in osteopathic medicine and the Diabetes Institute, in which 4-5 EECS graduates are involved.

**Mentoring and advising of students**

According to student comments, there is sufficient mentoring and advising of student progress in the program. The faculty to student ratio is about 1:5, though a number of faculty members advise more than others as a function of research funding/activities. EECS provides an annual retreat comprised of
advisors, invited graduate and undergraduate student speakers, other universities and industry contacts designed to expand student opportunities for growth and job placement. In addition to the campus wide Research, Scholarship and Creative Activity Fair, an annual departmental research showcase emphasizing synergies and shared resources provides a social event, and is attended by the advisory board.

**Financial Support of graduate students**

The stipends paid in general seem low across the board. To attract high-quality domestic students, this point needs to be reviewed and action taken to bring stipends up to a more competitive level.

**Teaching assessment**

The department uses the standard student survey tools and the annual review process to provide feedback to the faculty to maintain/improve the quality of academic content delivery. Teaching assessments consider student evaluations, content learning, the quality of instruction and level of difficulty correlated with grade assignments. Combined undergraduate/graduate courses under ABET have data based on outcomes based assessments.

**Post graduation career placement**

Students completing the graduate programs readily find employment in industry, government, and academic positions. In fact, some students are recruited and take jobs before completing their degrees (generally the thesis). According to the self-assessment document, the completion rate is 95%.

**Areas of concern**

No significant areas of concern identified.

**Recommendations**

- Consider increasing stipends to a more competitive level.
- Explore ways to raise the profile and visibility of the graduate programs at a national level to attract more domestic graduate students.
- Provide office space for graduate students.

**Commendations**

The students that we met during the visit were knowledgeable and enthusiastic about their research. In addition, they had a good understanding of how the work they were doing fit in the over-all research activities of the profession. They also had a well-defined vision of their future career paths based on a critical review of their options.

**Overall judgment: the programs are viable.**
Date: April 14, 2014  
To: David Ingram, Chair, University Curriculum Committee Academic Program Review Committee  
From: David Juedes, Chair, School of Electrical Engineering and Computer Science  
Subject: 14 Day Response, 7 year review for the School of Electrical Engineering and Computer Science

To Whom It May Concern:

I am writing this memo as my official response to the two reports relating to the 7 year review for the School of Electrical Engineering and Computer Science. I have reviewed the report prepared by Angie Bukley and Orianna Carter for our graduate programs and the report prepared by Neil W. Bernstein on our undergraduate programs. I have found no factual errors in either report, and I am satisfied with the conclusions made in both reports. Thank you for your efforts in this regard.

David W. Juedes, Ph.D., and Professor  
Chairman, School of Electrical Engineering and Computer Science
-----Original Message-----
From: Ostermann, Shawn
Sent: Monday, April 14, 2014 11:13 AM
To: Ingram, David
Cc: Ostermann, Shawn; Giesey, Jeffrey; Juedes, David
Subject: Re: EE&CS seven-year review

David,
I read through both reports and discussed them with Dennis.

The college has no concerns regarding the content of the EECS reports.

Shawn

On Apr 3, 2014, at 11:07 PM, David C Ingram <ingram@OHIO.EDU> wrote:

> Shawn, Jeff, and David
> Please find attached two reports which I plan to present to UCC for
> their approval and in demonstration that all the programs in EE&CS
> have been reviewed and found to be viable.
> At this stage I should like David to look over the report and let me
> know of any concerns he has or factual corrections he should like us to make.
> Likewise, someone needs to do the same for the Dean and I will leave
> Shawn and Jeff to figure out how that will be done.
> UCC policy is that Deans and Chairs/Directors have 14 days to let me
> know of any issues. If I hear nothing I am to assume you have no concerns.
> I will then pass the reports on the graduate council representatives
> for their information any comments they have.
> Once all that is done it will be presented to UCC for their approval,
> which will now be in Fall 2014.
>
> Let me know if you have any questions.
> Thanks