

Response to the External Review of Computing and Information Science (CIS) Master Program

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It is my personal and department's pleasure to have invited Dr. Nohpill Park, the Graduate Coordinator of Computer Science at Oklahoma State University, to review our Master Program of Computing and Information Science (CIS). During his visit between March 19 and 21, Dr. Park actively interacted with university/college/department administrators and interviewed relevant faculty and graduate students. Dr. Park also provided invaluable comments and recommendations both during and after the visit, which are greatly appreciated and will be significantly helpful in our future planning and implementation of improvements to and growth of the program. The rest of this document is the response to Dr. Park's review comments and recommendations.

Underpopulated enrollment

- The recent Spring 2014 CIS enrollment was 25. While this number is probably small compared to large research universities such as Oklahoma State University, it has been overall stable in the past 10 years, although we hope and plan to grow the program both quantitatively and qualitatively. The 8 faculty members Dr. Park mentioned were currently occupied across three different graduate programs as well as undergraduate programs within the department. Due to the fact that more than 80% of our CIS students are international (mostly from India), consequent factors such as visa acceptance, financial support, and application results received from other universities, among others, all affect greatly our new enrollments. Despite the fact that the new enrollment count fluctuated from semester to semester, the yearly average enrollment however has been relatively stable.
- On the other hand, I completely agree with Dr. Park that in order to expand the program, especially quantitatively, we should proactively recruit from populated countries like China and India. To address this effort, multiple faculty members have reached out to foreign universities, e.g. Dr. Lei Chen has visited Ocean University of China (ranking top 40 in China) in both 2011 and 2013, and Dr. Qingzhong Liu has visited Tianjin Polytechnic University (located in the 3rd largest city in China) in 2013, both of which have shown great interest and potential to collaborate with our department for providing their top students as well as establishing joint or dual-degree graduate programs. For this purpose, we have the go-ahead and support at all university levels.
- We will also seek other channels to better advertise the program, including but not limited to international conferences and events, current students' contacts and networks in their home countries, as well as our current faculty's contacts and networks. With support and available resources, the Graduate Advisor is willing to travel, both domestic and international, for recruiting high quality graduate students.
- Graduate Studies is offering \$10,000 in scholarships for program recruitment. Additionally, the graduate program marketing and recruitment team will meet with the department to discuss a recruitment plan and provide \$20,000 in recruitment funds.

Program duration

- I concur with Dr. Park on the program duration of 24 months is somewhat rigid and not providing enough flexibility to all students. As suggested, we will consider offering CIS core courses, especially those previously offered only in Fall semesters when most new students joined the program and crowded the classes, in Summer.

Course/project-oriented vs. research oriented options

- Dr. Park is accurate that the current curriculum of CIS was designed mainly for a course/project oriented program. Although we have always been offering two program options to students: project-option and thesis-option, only one student in the history had chosen the thesis-option and completed the program. While in the recent years the department has gradually increased the emphasis of research and successfully hired multiple new faculty members who are actively engaged in research, the research emphasis, however, has not been effectively implemented as far as the curriculum structure is concerned. In an effort to align the curriculum with the emphasis of research, the followings will be addressed and discussed in Fall 2014 Graduate Curriculum Committee (GCC) meetings.
 - While project vs. research option is clearly distinguished in graduate advising, it should be well defined and clearly listed and introduced in program description, admission requirements (e.g. thesis-option may require stronger quantitative and theoretical backgrounds), new student orientation, as well as through all advising in the program.
 - It has recently drawn my attention that certain CIS students claimed that some of the CIS core graduate courses have much content similar to their undergraduate counterparts. While this might be somewhat overstating, our faculty teaching CIS graduate courses should incorporate more advanced topics and implement more research and theory components in course content in their teaching, including but not limited to complex projects that require the incorporation of a wide range of knowledge and problem solving skills as well as programming languages and skills, studying, reviewing, and summarizing scholarly published papers, writing technical reports and scholarly papers for publications and conference presentations, and research projects aiming to developing new algorithms, methods, and approaches.
 - More CIS faculty should be actively engaged in research-oriented activities, such as research grant writing and research project development involving graduate students.
 - In addition to the above, new research oriented courses should be added to the current curriculum, including but not limited to Research Methods, Research Seminar, Directed Study, etc. These will be completed by the curriculum committee for next year's curriculum cycle.

Other recommended curriculum changes

- The GCC will have discussion on adding more contemporary CS courses, as recommended such like Big Data Computing, and Cloud Computing, in Fall 2014 GCC meetings.
- In current curriculum, most of the content in Computer Architecture is distributed in various courses despite the fact that it is not listed as an individual course. GCC will discuss in Fall 2014 meetings the possibility of having it listed as an individual course.

- GCC will also discuss the possibility of moving certain current core courses such as Software Engineering to elective, and adding new core course such as Formal Language Theory.

The necessity of comprehensive exams

- The GCC has seriously discussed the necessity and handling of comprehensive exams after Dr. Park's visit. In response to his recommendations, starting in late Summer 2014, all thesis-option students will be waived from taking comprehensive exams, and all project-option students will be waived on the comprehensive exam subjects if they have secured an "A" in the corresponding core courses. The GCC considers that this is an effective solution that students who perform well in core subjects do not have to spend extra time in preparing for comprehensive exams, while the other students may use the exams to refresh their knowledge and revamp the content they were weak on.

Title of newly proposed doctoral program

- The Digital Forensics doctoral program is not within the sphere of this review.

Faculty and research

- Dr. Park has pointed out an excellent point that publications in the CS areas should take more account in the peer reviewed, especially highly ranked, conferences/workshops/symposiums papers. The nature of CS makes average publication cycle much shorter than most other fields, and therefore most of the new advancements in CS research were first published in high quality international conferences, and their extended versions may later then be published in journals. Consequently the evaluation of both faculty and student performance should take into account both the quality, e.g. public rankings and paper acceptance rates, of conferences and the quantity of scholarly works. The department, college dean, and Provost are all aware of the type of publications in the area and take this into account.
- Dr. Park also mentioned that some of our faculty members are very competent and highly engaged in research, even compared to research and doctoral universities where more attractive teaching and research environment and better compensation are provided. The university does offer limited funds for market increases as well as for merit pay to address any discrepancies.
- Given the fact that we have three graduate programs and around 100 master students within the department of computer science, I completely agree with Dr. Park on the need of faculty resources. As recommended, at current stage, CIS is in need of 2 more full time faculty (FTEs), DF is in need of 1 full time faculty (FTE), IAS is in need of 1 full time faculty (FTE), in addition to at least 1 more system administrator (or DF director for new doctoral DFS program) at the department level. In addition to the above, we should have additional staff to support and assist the Graduate Advisor on general advising and communications, e.g. the Graduate Advisor receives and responds to an average of 35+ emails and multiple phone calls every day just on providing general information and responding to low level requests, such as graduate admission information inquiries, course registration and unblocking, etc. With sufficient staff support, the Graduate Advisor can be more involved in strategic and planning work, such as curriculum developments and revise, national and international recruitments, joint program establishment, etc. Graduate Studies will request a Graduate Assistant for the next fiscal year to help with some of the paperwork. The dean will request new faculty for the 2015-2016 year.

- We are thankful for Dr. Park mentioning the reduction of teaching load of graduate faculty, who are (will be) heavily involved in the future doctoral DFS program. The recommended load is no more than 2+2 each year. It is also recommended by Dr. Park that faculty should receive more incentive to teach the online and hybrid courses, given that these courses and classes require more faculty involvement and can be extremely time consuming to meet various students' demands. The administration offers an incentive to faculty to build the first courses. After that, the college receives 65% of the distance learning fee to support faculty and student needs.
- Dr. Park also pointed out that the Department Chair Dr. Peter Cooper has been seriously overloaded and his teaching load should be reduced to 1 or at most 2 each year, so that he can be more engaged in other efforts such as bringing in external funding and research projects. The chair is subject to the workload policy that governs the entire university. Faculty are a priority for the 2015-2016 budget request for the dean.

Facilities and external resources

- Dr. Park has mentioned that to be prepared for the new doctoral DFS program and accommodate the growth of the department, there is need for higher end cloud servers and storage to meet the increasing educational and research demands. The department will get an estimate for the equipment, and HEAF funds will be reserved to handle the equipment.