Georgia Southwestern State University
School of Computing and Mathematics
Department of Computer Science

Comprehensive Program Review
Bachelor of Science in
Computer Science/ Information Technology

(Report from the External Program Review Team)

March 2015
REPORT FROM THE EXTERNAL PROGRAM REVIEW TEAM

Background

The purpose of this paper is to report the findings of the Comprehensive Program Review Committee on the BS in Computer Science and BS in Information Technology degree programs. According to GSW publications, a Comprehensive Program Review serves four primary purposes:

- To elicit informed judgment about how well an academic unit is performing given its collective resources.
- To make projections about emerging opportunities and the ways unit may take advantage of those opportunities.
- To ensure the unit has a strategic plan and is implementing its plan.
- To access how well a unit is implementing its strategic plan

The review committee consisted of an external chair, two faculties from external departments and two alumni. The committee reviewed the self studies of both CS and IT programs and then met for two days for fact finding and issue identifications. What follows is the findings and recommendations of the committee.

Program Strengths

Strong Faculty

There are five full time faculties including the Dean, four of whom have PhD’s with strong scholarship credentials. Faculty morale seems high as well as student satisfaction with the faculty.

Strong Leadership

Strong academic leadership in the College and Department is attributed to the high level of stability enjoyed by the school. All external committee members – faculty from other departments and alumni -were highly complimentary of the leadership.

Student Faculty Ratio

The student to faculty ratio is reasonable with about 30 students in lower division classes and less than 20 in upper level classes. Small class sizes allow for more interaction between the students and the instructors.

Continuous Development of the Infrastructure

Starting from the Fall 2011 academic year, the School of Computing and Mathematics initiated development of the state-of-the-art computing
infrastructure which was built on the basis of virtualization technology. The infrastructure allows all graduate students as well as all faculty members with an opportunity to request pre-configured personal virtual workstations to meet any requirement in terms of installed software and accessibility to other resources of the infrastructure. The department is a member of Academic Alliances with Microsoft and with VMware. Participation in these alliances opens access to various software products including operating systems, development environments, virtualization solutions and others.

Enrollment Trends

In 2002, the School of Computing and Information Sciences – now called School of Computing and Mathematics, was thriving with enrollment growth including a growing number of international students and industry supported projects. Because of stricter immigration rules the source of international students has dried up and because of the economic downturn of 2007 industry funding of projects also dried up resulting in a major decrease in enrollment. However, the department enrollment has nicely recovered from 55 in 2007 to 130 in 2013 -- more than doubling.

Areas for Improvement

Department Workload

Five full time faculties and few part time instructors carry the department workload. In addition to delivering two bachelor programs and an MS program, the department provides service courses for more than 200 students each semester in programming, computer applications, and multimedia and desktop publishing. The department works with the local schools, which is one of the strategic goals of GSW. For a department with such a small faculty size, these activities are above and beyond.

Online Courses

Quality control of Online Courses needs improvement. Students and alumni report academic dishonesty is more prevalent.

Unprepared Students

Too many students entering BSCS/BSIT programs are unprepared for CSCI 1301 Programming I. The failure rate is 40%. Many students are not demonstrating the study skills and habits that are being taught in UNIV 1000.
Availability of Courses

The curriculum block system constrains some students from timely graduation. Two junior-senior level courses -- CSCI 3100 and CIS 4200 – are available only during the summer, requiring students to go to summer school instead of work. Some courses are offered only once every two years. This lack of availability leads to too many independent study courses being offered in order for students to graduate.

Faculty Workload

Faculty workload is hard to define and seems unrealistic. WebBSIT consortium involvement further strains faculty.

List of Recommendations

Reduce failure rate in CSCI 1301 Programming I by:

- Delay enrollment in CSCI 1301 until students demonstrate adequate skills in Math and English, such as requiring Pre calculus (MATH 11130) as a prerequisite.
- Placement test for Math, English, and Logic skills. Remedial instruction where necessary prior to taking CSCI 1301.
- Only offer CSCI 1301 once per year, in order to ensure that students have adequate training in other core courses, and lower workload for faculty.

Establish a group account on LinkedIn for alumni to increase interaction between alumni, faculty and students.

Expand membership of the advisory council to include budget managers and solicit project sponsorship and internship or coop slots.

Reinstate ACM chapter.

Seek Abet accreditation for Computer Science and Information Technology programs.

All faculty need to make contributions to Capstone project class.

Strategic Goals

The department’s strategic plan identifies two major strategic goals with a number of activities identified for accomplishing each goal. The two goals are Improving Program Quality and Improving Program Productivity.

Improving Program Quality

- Improve Critical Thinking Skills of CS/IT students. Work with the UNIV 1000 curriculum to identify that the needs of freshmen CS/IT students are being met.
- Update the CS curriculum according to recommendations of the ACM Computer Science Curricula 2013. The high demand for job market topics, such as virtualization, big data, and programming of mobile devices should be added to the CS curriculum.
- Introduce emerging technology topics like virtualization, big data, and mobile computing in CS/IT curriculum.
- Increase the number of internships.

Improving Program Productivity

- Expand tutor services and their availability.
- Inform advisees about the existing three or four year plans of study in CS/IT.
- Implement Beacon and DegreeWorks in the advisement system.
- Increase the number of group social activities.
- Attract a range of students (from freshman to seniors) for participation in job showcase events.
- Experiment with new teaching and learning approaches in the high failure rate courses.
- Revive the two-year college agreements.
- Increase readiness of students from the local High Schools to study in a university.

Emerging Opportunities

The Bachelor in Computer Science degree program and Bachelor of Science in Information Technology are geared towards current industry demands and prepares the students equipped with the latest technology. The classrooms and computing laboratory are equipped with state-of-the-art technology. Currently all CS faculty and graduate students have their own virtual workstations, fully loaded with required programming tools and applications.

Overall Conclusions

The committee finds the Bachelor of Science in Computer Science and Bachelor of Science in Information Technology programs to be healthy as measured by graduates finding employment, quality of instruction, excellent IT infrastructure, strong faculty credentials and their devotion to the profession. Needless to say, good programs can become better programs using continuous improvement processes. Implementing the newly drafted strategic plan by placing adequate resources assures continuous improvements.

Program’s Viability at GSW

Strong Faculty

Faculty members of the department of Computer Science hold expertise in various fields of the Computer Science discipline. They can also be seen as active community servants.
They prepare and conduct presentations for middle- and high-school students, lead chapters of various academic organizations and clubs, organize development seminars and workshops for students and other faculty members.

Viable Program

The Computer Science program attracts many new freshmen students. Official numbers show six-year enrollment grows at the rate of 21.4%. To keep up with emerging technology, recently CIS3000 Internet Technologies and CIS4200 Computer Security were added to the required courses that must be taken to graduate with a Computer Science degree. The addition of these classes will help to insure that the students are familiar with the most up to date technology available and will also satisfy the requirements of the official ACM Curriculum Guidelines.

Service Courses

The department provides service courses for more than 200 students each semester in programming, computer applications, and multimedia and desktop publishing.

Students

Despite the fact that the GSW location is not as attractive as the location of other universities, graduates pointed out that they like to study here because of a number of unique opportunities including a small and friendly environment.

Summary and Conclusion

CS Program: Demand for software developers is growing rapidly and will continue to grow. The job market is favorable for Computer Science majors in the next 10 years. Growth will be driven by the very rapid progress in computer technology, which is projected to be the fastest expanding industry in the US economy. We recommend that this program be continued.

IT Program: Program has the potential to grow. The job market is favorable for Information Technology majors in the next 10 years. Growth will be driven by the very rapid progress in computer technology, which is projected to be the fastest expanding industry in the US economy. We recommend that this program be continued.
Georgia Southwestern State University  
School of Computing and Mathematics

Comprehensive Program Review (BSCS/BSIT)

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Georgia Southwestern State University  
School of Computing and Mathematics  
Comprehensive Program Review (BSCS/BSIT)  
External Review Team Schedule

**February 8, Sunday**

External Reviewer arrives

**February 9, Monday**

9:30 a.m. to 10:30 a.m.  
Meeting of the External Review Team, Conference Room, CWH 106

10:30 a.m. to 11:00 a.m.  
Meeting with the Dean and the Department Chair, Conference Room, CWH 106

11:00 a.m. to 11:50 a.m.  
Meeting with the students, Conference Room, CWH 106

12:00 noon to 1:00 p.m.  
Lunch (Review Team members), Lunch will be served, Faculty Private Dining Room

1:15 p.m. to 2:45 p.m.  
Meet with faculty, Conference Room, CWH 106

3:00 p.m. to 6:00 p.m.  
Work Session I, Conference Room, CWH 106

**February 10, Tuesday**

8:30 a.m. to 9:30 a.m.  
Follow-up meeting with the students or the faculty representatives, Conference Room, CWH 106

9:30 a.m. to 10:30 a.m.  
Work Session II, Conference Room, CWH 106

10:30 a.m. to 11:30 a.m.  
Preparations of recommendations for the exit interviews, Conference Room, CWH 106
11:30 a.m. to noon  Oral reports to the faculty and Dean, Room 221

12:15 p.m. to 12:45 p.m.  Oral exit report to the VPAA, Academic Affair Office

1:00 p.m. to 2:00 p.m.  Lunch (Review Team members)
Lunch will be served, Conference Room, CWH 106

2:30 p.m.  Adjourn.
Georgia Southwestern State University

School of Computing and Mathematics

Department Computer Science

Program Review

Bachelor of Science in
Computer Science/Information Technology

(Department Response)

May 2015
DEPARTMENT'S RESPONSE TO THE PROGRAM REVIEW

Review Team Recommendations:

1. Online Courses

Quality control of Online Courses needs improvement. Students and alumni report academic dishonesty is more prevalent.

2. Availability of Courses

The curriculum block system constrains some students from timely graduation. Two junior-senior level courses -- CSCI 3100 and CIS 4200 -- are available only during the summer, requiring students to go to summer school instead of work. Some courses are offered only once every two years. This lack of availability leads to too many independent study courses being offered in order for students to graduate.

3. Reduce failure rate in CSCI 1301 Programming I by:
   • Delay enrollment in CSCI 1301 until students demonstrate adequate skills in Math and English, such as requiring Pre calculus (MATH 11130) as a prerequisite.
   • Placement test for Math, English, and Logic skills. Remedial instruction where necessary prior to taking CSCI 1301.
   • Only offer CSCI 1301 once per year, in order to ensure that students have adequate training in other core courses, and lower workload for faculty.

4. Establish a group account on LinkedIn for alumni to increase interaction between alumni, faculty and students.

5. Expand membership of the advisory council to include budget managers and solicit project sponsorship and internship or coop slots.

6. Reinstate ACM chapter.

7. Seek Abet accreditation for Computer Science and Information Technology programs.

8. All faculty need to make contributions to Capstone project class.
Department’s Response

The Department of Computer Science in the School of Computing and Mathematics operates with a few, yet stable faculties. We require additional funding for faculty. The review committee found that the Bachelor of Science in Computer Science and Bachelor of Science in Information Technology programs are healthy as measured by graduates finding employment, quality of instruction, excellent IT infrastructure, strong faculty credentials and their devotion to the profession.

1. The growing number of courses are offered online to meet the needs of the diverse population of students enrolled in BSCS and BSIT degree programs. The department recognizes the need to improve the quality of online courses. There is a need to standardize, at minimum, the content that should appear in the online course delivery portal. The following steps will be taken in Fall 2015 and onwards.

   - Create a template for contents to be made available to instructors of the online courses. Each instructor must prepare the contents as per the template.
   - Department Chair and Dean of the School will audit the course content of online classes
   - The department will continue taking advantage of the services of ProctorU.

2. The department will reevaluate the summer schedule and find an optimal solution.

There are only a few courses which are offered once in two years. This scheduling has not been an issue in the past. Students have been able to take classes as needed.

3. During our meeting with the reviewer, we mentioned that CSCI 1301 needs to be offered each semester, otherwise those who need to retake the class will have to wait another year.

4. The department will establish a group account on LinkedIn for alumni to increase interaction between alumni, faculty, and students. This can create opportunity for internships.

5. The Advisory Council has great input in shaping the curriculum. The members of the advisory council comes from the industry as well as other academic institutions. The department will work to expand membership of the advisory council and continue to solicit project sponsorship and internship or coops.

6. The UPE and ACM Advisors will work to recruit students. The Advisors will also look for funding to pay students’ membership fees.

7. The department will work on required steps to meet the required ABET standards.

8. The department will create a variety of projects to be offered in the Capstone class. From Fall 2015, all faculties in the department will provide projects for the Capstone class.