**JAVAIRIA REHMAN**

**19P-0020**

**BS(CS) 19-5A**

**“technical and business writng”**

**assignment**

**To:** abc department

**From:** Javairia rehman (CEO Cyber Security)

**Date:** 14-10-2021

**Subject: Activities Responding to the Computer Science Program**

**MEMORANDUM REPORT**

In February 2021, the Computer Science Department participated in a program review, specifically the Bachelor of Science in Computer Science. The purpose of this report is to document the steps taken by the Department, the College of the Sciences and the University in response to the suggestions outlined in the reviewer’s recommendations. In an effort to set a context for our continuing program development and assessment, the report will begin with discussing departmental activities that correspond to comments by the reviewer found in the middle of his evaluation in the section titled “Major Areas of Review.” In particular, the report will focus on activities and results related to program and curriculum planning and assessment.

**Program Development and Assessment**

We begin with a listing of the programmatic outcomes and then note how outcomes are correlated with courses and other measures. We then present eight measures that the department uses in assessment, summarize how the curriculum has changed and finally detail how those changes were identified through each of the eight measures.

**Programmatic Outcomes**

A. Graduates will have a reasonable level of understanding of each of the subject areas that define the discipline as well as the interrelationships that exist among them: algorithms, architecture, artificial intelligence and robotics, data structures, database and information retrieval, human-computer interaction, operating systems, programming languages, and software engineering.

B. Graduates will have the ability to utilize appropriate theoretical constructs: definitions, and axioms, theorems, proofs, and interpretation of results.

C. Graduates will have the ability to utilize appropriate abstractive constructs: hypothesis formation, data collection, modeling and prediction, experimental design, and analysis of results.

D. Graduates will have the ability to utilize appropriate design constructs: requirements analysis and specification, design, implementation, and testing.

E. Graduates will be exposed to ethical and societal issues associated with the computing field.

F. Graduates will be familiar with recent technological and theoretical developments, general professional standards, and have an awareness of their own strengths and limitations as well as those of the discipline itself.

G. Graduates will be aware of the history of computing, including those major developments and trends - economic, scientific, legal, political, and cultural - that have combined to shape the discipline.

H. Graduates will be able to appreciate the intellectual depth and abstract issues that will continue to challenge researchers in the future. They should have a strong foundation on which to base lifelong learning and development.

I. Graduates will have the necessary background for entry into graduate study.

J. Graduates will have the ability to communicate effectively.

**Courses and other measures**

A. Graduates will have a reasonable level of understanding of each of the subject areas that define the discipline as well as the interrelationships that exist among them: algorithms, architecture, artificial intelligence and robotics, data structures, database and information retrieval, human-computer interaction, operating systems, programming languages, and software engineering.

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E. Graduates will be aware of the history of computing, including those major developments and trends - economic, scientific, legal, political, and cultural - that have combined to shape the discipline.

F. Graduates will be able to appreciate the intellectual depth and abstract issues that will continue to challenge researchers in the future. They should have a strong foundation on which to base lifelong learning and development.

G. Graduates will have the ability to communicate effectively.

**2**. All seniors participate in a two-term capstone sequence of courses, CS 480 and 481.

**The senior capstone courses are used to help determine the following student outcomes:**

B. Graduates will have the ability to utilize appropriate theoretical constructs: definitions, and axioms, theorems, proofs, and interpretation of results.

C. Graduates will have the ability to utilize appropriate abstractive constructs: hypothesis formation, data collection, modeling and prediction, experimental design, and analysis of results.

D. Graduates will have the ability to utilize appropriate design constructs: requirements analysis and specification, design, implementation, and testing.

H. Graduates will be able to appreciate the intellectual depth and abstract issues that will continue to challenge researchers in the future. They should have a strong foundation on which to base lifelong learning and development.

I. Graduates will have the necessary background for entry into graduate study.

J. Graduates will have the ability to communicate effectively.

**3**. All seniors participate in a senior colloquium, CS 489.

The senior seminar is used to help determine the following student outcomes:

E. Graduates will be exposed to ethical and societal issues associated with the computing field.

J. Graduates will have the ability to communicate effectively.

**Students in this class go through an in-depth study of professional codes of ethics, ethical systems and reasoning and case studies. They also are responsible for preparing a major research paper and making an oral presentation on it. Faculty alternate supervising the seminar.**

**4**. Once a decade, computer professionals from business, industry, and education get together and analyze the needs and trends in computer education. The most recent curriculum review was published with the title Curriculum 2001.

**Assessment plan**

The department specifically considers the results of the following in measuring and assessing the student learning outcomes, reviewing the curriculum and making alterations.

1. All seniors participate in the Major Field Test published by ETS. In addition to an overall score, the test provides scores on three (formerly four) major indicators in undergraduate computer science education. 2. All seniors participate in a two-term capstone sequence of courses. Results of this sequence course form part of the consideration of our assessment of student learning outcomes.

3. All seniors participate in a senior colloquium. Results of this course form part of the consideration of our assessment of student learning outcomes.

4. All seniors participate in exit interviews. Feedback from these interviews form part of the consideration of our assessment of student learning outcomes.

5. The department interviews recent graduates. Results of these interviews form part of the consideration of our assessment of student learning outcomes.

6. Many students participate in undergraduate research, independent studies, cooperative education and internships. The faculty considers the effectiveness of these projects and activities in furthering the goals of the students.

7. All students participate in the core curriculum. Review of these courses and student performance help measure the breath of the program.

8. The faculty conducts an annual peer review of instruction. The primary purpose of this review is two-fold. In addition to reviewing faculty performance, it allows the faculty to take an in-depth look at courses.

**Assessment results**

**Notes about how curriculum has been modified**

Over the last year the department noted several concerns and several positives in assessing the program curriculum.

**Changes**

**1**. Senior project courses – CS 480 and 481 – a redesign will be undertaken to increase the breadth of available projects, to provide increased emphasis on the testing component, and to include a different collection of documents for the research oriented projects.

**2**. A networking focus area will be developed for our students by combining CS theory courses with IT application courses.

**3**. A new course will be developed in network security to complement courses offered in IT and provide expanded resources and opportunities to our students.

**4**. The faculty will investigate building a follow on course to Math 260 and 330.

**Positives**

1. The material of CS 470 was found directly applicable many work situations.

2. Increased lab space and equipment and travel funds have been used to good purpose by our undergraduate students.

**Notes about how curriculum has been modified**.

Of course, few if any of these assessment results are affected by just one of the factors.

1. All seniors participate in the Major Field Test published by ETS. In addition to an overall score, the test provides scores on three major indicators in undergraduate computer science education.
2. Currently, approximately 150 computer science departments across the country use this test as part of their assessment process. The faculty have reviewed the list of institutions participating in the computer science MFT and feel it provides a fair cross section of computer science programs, many from what are considered peer-institutions.
3. All seniors participate in a two-term capstone sequence of courses. Results of this sequence course form part of the consideration of our assessment of student learning outcomes. At this year’s annual review of the capstone courses, two concerns were raised. First, the breadth of projects seemed to be narrowing, and second, there seemed to be a continuing problem designing technical documents to be produced by teams working on more research oriented projects.
4. All seniors participate in a senior colloquium. Results of this course form part of the consideration of our assessment of student learning outcomes. A review of the results of the senior colloquium demonstrates that students are demonstrating practical knowledge of ethics. Also, via this class and the senior project class, students are demonstrating adequate written and oral communications skills.
5. All seniors participate in exit interviews. Feedback from these interviews form part of the consideration of our assessment of student learning outcomes.
6. The department interviews recent graduates. Results of these interviews form part of the consideration of our assessment of student learning outcomes.
7. The recommendation for change was relative to our senior project course. More and more of our graduates are being hires as software testers. It was pointed out that currently this tends to be a minor portion of the project.
8. Many students participate in undergraduate research, independent studies, cooperative education and internships. The faculty considers the effectiveness of these projects and activities in furthering the goals of the students.
9. All students participate in the core curriculum. Review of these courses and student performance help measure the breath of the program.
10. The faculty conducts an annual peer review of instruction. The primary purpose of this review is two-fold. In addition to reviewing faculty performance, it allows the faculty to take an in-depth look at courses.

**Reponses to “ Immediate Needs ”**

1. **Air-conditioning**

Since the funding would be available in August 2021 at the earliest, the estimate was that the air conditioning project could be completed by the summer of 2022.

1. **Multimedia presentation equipment for labs and classrooms**

All classrooms that Computer Science uses for instruction will have new multimedia presentation equipment installed since the program review.

**3. Space**

**A. Faculty/Student Research Labs**

A new distributing computing research lab was developed in the space vacated by the Imaging Lab, HB 205. A research lab dedicated to Accessibility computing was built in HB 204A. This lab is used to support the research of students. Computing equipment was upgraded for each of these labs. Finally, the Linux and Networking Lab in HB 207 had its equipment upgraded this summer. Dr. Nauman and his students conduct projects in this lab.

**B. Adjunct Office Space**

At this point the department has two adjunct faculty sharing one office. We do not agree with the reviewer that changing this room assignment is an immediate need.

**Responses to “Other Department Needs and Suggestions”**

1. **Lab equipment replacement planning.**

It is important to note here that ITS has been successful in designing and implementing a policy to assure that all computing lab equipment rolls over in a less than four year timeframe. Further, ITS has been an advocate for adding and improving other IT infrastructure such as the installation of wireless on campus.

1. **PC upgrade for the Computer Science**.

The computing equipment for the Computer Science secretary has been upgraded.

1. **Use junior and senior female CS majors as role models to promote retention of women in CS**

Due to this recommendation, the chair has been asking senior female computer science majors to mentor newly declared female majors.

1. **Problems with scheduling CS courses (conflicts)**

The chair as schedule designer is cognoscente of this problem. Every effort is made to avoid such conflicts. On the other hand, given the number of courses that need to be scheduled and the number of periods available for scheduling, it is impossible to avoid all conflicts. When such conflicts do arise, the chair works with any students affected to revamp their graduation plan to avoid lengthening time to graduation. During the tenure of the current chair (eight years) no student graduations have been extended by such a conflict.

1. **university housing have poor internet service**

It is our understanding that Housing continues to improve IT facilities for students

1. **Students would like to see stronger ties to industry**

Last year the department, through meetings of the student chapter of the ACM, brought in several industry representatives to describe job and internship opportunities. This program is continuing this year

**ANSWERS:**

* This memo provides all information and good complete introduction.
* The purpose of this report is to document the steps taken by the Department, the College of the Sciences and the University in response to the suggestions outlined in the reviewer’s recommendations
* Yes, there is a road map.
* Yes, they are numbered properly.
* At the end clear end is given included responses of other departments

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