

Annual Assessment Report

Name of academic program: Computer Science

Report Summary

This report contains the basic information of annual assessment on QU computer science program. Since our program just lost Dr. Robinson, not all data in our program were accessible, the course level evaluation result and analysis of the result is not complete. Based upon the feedback and evaluation at both course level and program level, a few ongoing changes and directions towards which our program may move are listed. A few program aspirations are included. Some recent graduates testimonials are used in the pertinent information section.

Our program's mission statement, program goal/objectives, program learning outcomes also are still under revision, any feedback or suggestions are welcome.

Quincy University Mission Statement

Quincy University stands as a Catholic, independent, liberal arts institution of higher learning in the Franciscan tradition. Inspired by the spirit of Francis and Clare of Assisi, we respect each person as a sister or brother with dignity, value, and worth. We work for justice, peace and the integrity of creation. We prepare men and women for leadership and for the transformation of the world by educating them to seek knowledge that leads to wisdom. We welcome and invite all to share our spirit and life.

Program Mission Statement

All aspects of our personal lives and our work lives are affected by computers. **We do live in a digital age, our students need to understand about the tools that we're working with. Computer Science is a way of thinking, it is a way of viewing the world.**

Our program prepares students in business, industry, education, or government careers by applying computing concepts in the areas. Our curriculum is based on the recommendations of the Association of Computing Machinery (ACM), it guides students in mastering the principles of software engineering, algorithms, database systems, operating systems, computer networking and programming. Student will be prepared to solve the problems of today and to respond quickly to new developments in this dynamic field.

Program Goals/Objectives

1. Student will practice critical reasoning and problem-solving using appropriate computer software and programming languages.
2. Student will develop the knowledge, skills and tools to pursue a career in Computer Science and Information Technology.
3. Student will develop the understanding of the theoretical foundations and breadth of Computer Science, allowing themselves to continue to learn and to pursue advanced studies.

Program Learning Outcomes

In order to achieve the goal of the major, the following set of learning outcomes were established:

Students in computer science program will be able to:

- 1. write program effectively in high level programming languages such as C++/java, utilizing appropriate IDEs.**
CSC150 Programming I CSC160 Programming II and majority of subsequent courses
- 2. identify the architecture of the digital computer and the principles and functionalities of modern operating systems**
CSC115 Introduction to Computer Science CSC250 Software System CSC330 Operating System CSC340 Computer Architecture
- 3. use algorithm and data structures in software development**
CSC115 CSC300 Data Structure CSC310 Algorithm Analysis
- 4. design, implement, test and document large programming projects**
CSC260 Introduction to Software Development CSC320 Database Systems CSC390 Web Programming CSC410 Computer Networks CSC496 System analysis and Design CSC430 Mobile Programming
- 5. establish a sufficient background in computer science theory and mathematics to pursue graduate studies and lifelong work in the area**
MAT250 Discrete Math CSC310 and majority of computer science courses
- 6. demonstrate effective communication and presentation skills**
majority of computer science courses

I. Program learning outcomes assessed for the current school year

Learning outcomes are assessed in each individual courses based upon assessment tools used in the courses and the student course evaluation. ETS major field test scores are used to assess graduating seniors.

II. A detailed description of the methods of program assessment used this year

1. Major Field Test

The ETS (Educational Testing Service) Computer Science Major Field Test was

administered to all graduating students during the spring 2015 semester. The test results were first available to us during the current academic year. This test is very widely used by many schools to assess undergraduate learning in Computer Science.

2. Assessment tools used in courses

Various assessment tools including homework assignments, quizzes, individual projects, group projects and exams were extensively used to assess student learning. Occasional project demonstrations and presentations also provided valuable feedback on student learning.

3. Student Course evaluation

Students completed anonymous course evaluations in most Computer Science courses.

4. Student Program Evaluation

Students in our senior capstone course (CSC496 System Analysis and Design) completed an evaluation instrument intended to elicit their overall view of the program.

III. **Results of this year's assessment**

1. Major Field Test (for graduating seniors)

DEPARTMENTAL ROSTER

Test: Computer Science

Form Code: 4HMF

Institution: Quincy University

Cohort: PPT-COMPUTER SCIENCE SENIORS-SPRING 2015

Closed on: April 13, 2015

STUDENT NAME	STUDENT ID	AUTHORIZATION	TOTAL SCORE
████████████████████	██████	██████	142
████████████████████	██████	██████	147
████████████████████	██████	██████	165
████████████████████	██████	██████	139

Number of students tested: 4

2015 Comparative Data

MFT for Computer Science **Individual** Students Total Score Distribution

Data includes seniors from domestic institutions who tested between September 2011 and June 2015.

Number of Examinees: 7530

Mean: 149.3

Median: 147

Std: 15.3

MFT for Computer Science **Institutional Means Total Score Distribution**

Data includes seniors from domestic institutions who tested between September 2011 and June 2015.

Number of Institutions: 214

Mean: 147.2

Median: 147

Std: 9.7

2. Assessment tools used in courses

Refer to:

- 1) the digital copies of solutions to the assignments, submitted by students.
- 2) the course grading sheet that contains the grades of every assignments and exams.

3. Student Course evaluation

Refer to the student course evaluation document for each course.

4. Student Program Evaluation

No access this year.

IV. **Analysis of assessment results**

1. Major Field Test

At individual level:

7530 seniors from domestic institutions who took the ETS test, the mean value is at 149.3 while ours is at 148.25.

At institution level:

214 domestic institutions participated in the ETS test, the mean value is at 147.2 while ours is at 148.25.

The statistic result shows that, at both individual level and institution level, from certain perspective, the quality of QU CS graduates are comparable to others.

2. Student Course evaluation

1) In CIS101, in both sessions of Fall 2014 semester, all students participated in the course evaluation. Students gave positive feedbacks on the contents of basic IT knowledge and the enhanced lab assignments such as excel labs, video creating/editing, database, website creation.

2) In CSC115, 13 out of 13 students participated in the course evaluation. Students showed more interests in the newly designed assignments based upon MIT app inventor for entry level android mobile app development, comparing to previous years of using Alice by CMU, which focused on OOP.

3) In CSC160, 9 out of 11 students participated in the course evaluation. Object-oriented programming was the main focus of our lectures. Students liked the lab assignments since they were designed in such way that the main concepts of each chapter were well emphasized.

4) In CSC300, only 3 out of 7 students participated in the evaluation. Different data structures were introduced and entry level algorithm analysis techniques were covered. Students showed the interested on the term project, using trie data structure to implement a spell checker program. It took some time for students to learn the Java language as well as how to use the Netbeans IDE. This grants them the valuable skill of grasping new language/IDE based upon what they previously learned.

5) In CS320, 4 out of 4 students participated in course evaluation. Students work mostly with the MySQL DBMS, together with PHP programming for web-based database application development. Since the re-designed project from last academic year got really well feedback, this year we did not change the project requirements.

6) Dev C++ IDE was used by the students to do their programming in CSC 150/160. MIT App Inventor 2 was used in CSC115. NetBeans 6 IDE, together with JDK, were used in CSC 300. Visual studio .NET express 2010 was used in CSC 360. Mysql DBMS was used in CSC420. These tools are free and popularly used in industry. It is easy for students to download and install these IDEs on their personal computers; multiple course feedback showed that students were able to use these IDEs successfully, positive responses to this.

V. **Planned program changes based on assessment results**

To make our program more attractive to our potential students, to boost the enrollment of computer science program, a lot of efforts have been made. Several changes are undergoing or planned:

1. At program curriculum level

1) CSC260 replaces CSC360

CSC260 Name: Introduction to Software Development

CSC260 course description:

This course introduces the basic concepts of software application development. Students will learn software design techniques using event-driven programming languages, user interface design and coding with integrated development environments (IDEs), and develop skills in writing entry-level mobile applications.

2) CSC320 replaces CSC420

CSC320 Name: Database Systems

CSC320 course description:

This course introduces basic concepts of database systems, with emphasis on the relational data model and SQL, conceptual modeling and database design, and database programming techniques. Students will develop a nontrivial web-based database application system using query language and a high-level programming language.

3) Adding new computer ethics course CSC350, which will be cross listed as PHI course

CSC350 Name: Computer and Information Ethics

CSC350 course description:

This course introduces the major issues surrounding the use of computers in our society, covering different theories of ethical decision-making, current information technology related issues, such as networked communication, intellectual property, information privacy, privacy and government, computer and network security and professional ethics.

4) Adding new programming course CSC430

CSC430 Name: Mobile Programming

CSC430 course description:

This course covers topics on mobile application programming, including use of a standard integrated development environment, debugging, user interface creation, and development of application of graphics, animation, database, multithreading, networking and interaction with hardware sensors.

5) A new Information/Computer Security course is being considered to be added.

6) Several other courses are under the consideration of reinventing/updating (CSC330 Operating System/CSC340 Computer Architecture).

2. At course level

More IT emphasis will be put in several courses, while not losing our original focus on software development contents, theory and hands-on implementation will be more balanced.

The following new IDEs will be updated/introduced: CODE::BLOCK replacing dev c++, NetBeans 8 with Java SE and PHP, MS Studio 2013 replacing 2010 version, Android Studio.

3. Outreaches

Putting more efforts to keep in touch with our alumni and employers that employ our students and to take into consideration the suggestions that they have to offer.

VI. **Program Aspirations**

1. We want to boost the number of graduates to be around 10 in next 3-6 years. (past data: 2012-2015 5/2/4/4 majors, minor is not included)

2. We want the school to consider adding an entry level CS course as an optional choice in our Bonaventure Program.

2. We want our program to be **better advertised**, on our school website, among regional high schools etc. Several sources, including government data, shows that nationally, the CS majors has been increasing since 2012, but it is not seen here.

3. We want to make our program more flexible to the markets needs, adding/adjusting current curriculum so that we can offer different emphasis or tracks such as IT, Game design and development, AI, etc.

VII. **Possible changes (additions/modifications) in assessment methods for the future**

VIII. **Other pertinent information** (optional)

The data from our career service office shows that most CS students got their first full time job after graduation within 6 months period of time, some positions are from top national/regional companies such as Rockwell Collins Inc. (S&P top 500 company), AT&T, Northwestern University, Knapheide, Blessing Hospital etc.

Recent graduates' testimonials show the support of our students to our program.



Implementation consultant at Fast Enterprises in Nashville, TN

“The computer science program at Quincy University not only educated me in the principles of the science, but also taught me the vital skills that I needed in order to secure excellent career opportunities directly following graduation. I highly recommend the CS program at Quincy University.”

██████████ '13

User Support Administrator at Northwestern University's NUCATS (Northwestern University Clinical and Translational Sciences) Department, Chicago, IL

“... The knowledge that I have gathered throughout the CS program at QU has definitely jump started my career in the world outside of schooling. The professors are pretty cool too.”

██████████ '14

Software Engineer at Rockwell Collins, Inc.

“Quincy University's Computer Science program really prepared me for my role as a Software Engineer. I now write software that controls airplanes in the same programming language that I first learned at QU.”

“The Computer Science program allows you to explore a variety of programming methods and languages in order to help each student decide which path and career they would enjoy the most.”

██████████ '13

Systems/Application Analyst, Blessing Hospital.

“A Computer Science degree at QU gave me the tools I need for my job every day. Companies everywhere are looking for proficient developers.”