

MS Computer Science

Annual Program Report Template

Year:	2022 - 2023
Program:	MS Computer Science
Contact Person (include email & phone#)	Jing Zhang (jzhang9@lamar.edu , 409-880-8776), Sujing Wang (swang3@lamar.edu)

Summary of Continuous Improvement Efforts since Last Report

Provide a brief description of how assessment results have been used for program improvement. Point to a specific example of how an assessment provided the program with data it could use for improvement and what that improvement was, if possible, also show evidence of the improvement. You may look at data from the two previous academic years to support this case.

Respond here:

Assessment results are collected every semester based on the feedback from students and faculty to improve the BSCS program by analyzing areas of strength and areas that require improvement. This includes (1) identifying gaps in student learning outcomes and performance to specify actions that need to be taken to assist students in overcoming challenges and improving their understanding; (2) guiding curriculum enhancement efforts to identify topics or skills that may require more emphasis in the curriculum; and (3) providing valuable information about the effectiveness of instructional methods to better support student learning and engagement.

The following improvement efforts have been made:

1. The Computer Science graduate program catalog has been revised and improved to ensure the accuracy and relevance of program information. The catalog now provides up-to-date details about the graduate program's structure, requirements, specialization options, and recent program updates. These enhancements enable prospective and current graduate students to access reliable and comprehensive information about the MSCS program.
2. The Computer Science graduate course description has been revised and improved to provide accurate and detailed descriptions of course content, prerequisites, learning objectives, and any special requirements. These enhancements can help graduate students select courses that align with their academic and career goals.
3. The syllabi for graduate-level courses have been updated to enhance rigor and clearly outline the differences in learning outcomes and objectives compared to undergraduate-level courses. By enhancing the syllabi with the appropriate level of academic rigor, the program ensures that graduate students are challenged appropriately and can develop advanced skills and knowledge in their chosen field of study. These updates also help differentiate between the expectations and academic achievements of graduate and undergraduate students.
4. Online submission systems for advisement and graduate forms have been designed and developed. These systems provide a convenient and efficient way for students to submit advisement requests, course registration forms, thesis application forms, and other necessary documents. By transitioning these processes to an online platform, administrative burdens are reduced, allowing for faster processing times and improving overall efficiency.

Program Highlights Since Last Report

Identify and briefly discuss any programmatic curriculum changes made since the last report (e.g. new courses, course changes, SLO changes, course deletions).

Respond here:

1. Dr. Sujing Wang became the director for the Computer Science Graduate Program. This appointment ensures effective management and strategic development of the graduate program.
2. The department hired a new assistant professor, Dr. Sinan Kockara, specializing in machine learning and artificial intelligence. This addition brings expertise and fresh perspectives to the department and enables the improvement of courses in these cutting-edge areas. The courses are COSC 4370: Machine Learning and COSC 4375: Artificial Intelligence.
3. The Computer Science Graduate Program has experienced a remarkable increase in enrollment, with a growth of 128.34%. In Fall 2022, the headcount rose from 187 to 427 students. The enrollment is a testament to the program's quality in meeting the demands of students seeking advanced education in the field of computer science.
4. Interdepartmental Collaboration: The program has initiated collaborations with other departments to enhance the program offerings and provide students with a broader range of courses. By leveraging the expertise of faculty members from different disciplines, the program aims to provide interdisciplinary perspectives and innovative courses that address the intersection of computer science with other fields, fostering a well-rounded and comprehensive educational experience.
5. New teaching materials have been developed for selected courses, for example, COSC 5100 and COSC 5369, to enhance the learning experience and ensure up-to-date content.

Table 1. Assessment Results and Analyses for Current Cycle.

STAGE 1: PLAN				STAGE 2: DO		STAGE 3: STUDY
Departmental Student Learning Goal	Program Student Learning Outcome	Assessment	Assessment Method/Location	Benchmark Expectations	Data Results	Actions/Goals Based on Data Results* What do the data tell you? How will you use this data? How were data from the last cycle used to make changes during this cycle, and What were the results of those changes?
Competence in discipline-specific knowledge and skills	Students will have solid computer science knowledge and skills and be prepared for their further studies or first jobs.	Thesis or Final Graduate Project	Faculty Assessment, Student Exit Survey, Exit Interview, Alumni Survey, and Student Evaluations/Department of Computer Science	Faculty Assessment > 4 points; Alumni Survey > 4 points; Exit Interview > 3.75 points; Exit Survey > 4 points; Student evaluations > 3.75 points;	Faculty Assessment=4.623 Exit Survey=4.419 points Exit Interview=4.443 points Alumni Survey=4.438 points Student Evaluation=4.461	Met Expectation The faculty met, discussed, and concluded that the data demonstrated that most students had a strong foundation of computer science and were ready for their future careers and advanced studies. The data were used to improve the CS curriculum and teaching methods to enhance the learning experience and facilitate deeper understanding.
Use of Mathematical and Scientific Principles in multidisciplinary teams	Students will be able to employ mathematical tools, scientific principles, and fundamental knowledge of Computer Science to solve problems and work in	Thesis or Final Graduate Project	Faculty Assessment, Student Exit Survey, Exit Interview, Alumni Survey, and Student Evaluations/Department of Computer Science	Faculty Assessment > 4 points; Alumni Survey > 4 points; Exit Interview > 3.75 points;	Faculty Assessment=4.576 Exit Survey=4.431 points Exit Interview=4.430 points Alumni	Met Expectation The faculty met, discussed, and concluded that the data confirmed that most students could solve multidisciplinary problems using learned mathematical tools, and scientific

	multidisciplinary teams.			Exit Survey > 4 points; Student evaluations > 3.75 points;	Survey=4.440 points Student Evaluation=4.441	principles. The data were used to improve foundation CS courses and the integration of cross-disciplinary knowledge in CS courses.
Social Impact, Ethics, and Life-long Learning	Students will have an excellent awareness of the social and technical context of their professional responsibility, ethics, and the need to engage in life-long learning.	Thesis or Final Graduate Project	Faculty Assessment, Student Exit Survey, Exit Interview, Alumni Survey, and Student Evaluations/Department of Computer Science	Faculty Assessment > 4 points; Alumni Survey > 4 points; Exit Interview > 3.75 points; Exit Survey > 4 points; Student evaluations > 3.75 points;	Faculty Assessment=4.544 Exit Survey=4.437 points Exit Interview=4.403 points Alumni Survey=4.394 points Student Evaluation=4.471	Met Expectation The faculty met, discussed, and concluded that the data indicated most students were aware that social impact and ethics were important for their careers and were willing to engage in lifelong learning. The data were used to improve the target teaching goals, incorporating social impact and ethics into the curriculum and fostering a culture of continuous learning.
Critical Thinking, Communications, and Leadership	Students will have the critical thinking, communication, teamwork, and leadership skills necessary to function productively and professionally.	Thesis or Final Graduate Project	Faculty Assessment, Student Exit Survey, Exit Interview, Alumni Survey, and Student Evaluations/Department of Computer Science	Faculty Assessment > 4 points; Alumni Survey > 4 points; Exit Interview > 3.75 points; Exit Survey > 4 points; Student evaluations > 3.75 points;	Faculty Assessment=4.638 Exit Survey=4.434 points Exit Interview=4.412 points Alumni Survey=4.406 points Student Evaluation=4.456	Met Expectation The faculty met, discussed, and concluded that the data confirmed that most students were equipped with critical thinking, communication, and teamwork abilities, which would help them to develop leadership. The data were used to improve learning activities, such as developing group projects that require students to

						make informed decisions, take on leadership roles, and think independently.
--	--	--	--	--	--	---

Goal 1:

Faculty Assessment Questions - 1, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16

Alumni Survey Questions - 1, 2, 3, 6, 11, 12, 13, 15, 16, 17.

Exit Interview Questions - 1, 2, 3, 6, 7, 11, 12, 15, 16, 17.

Exit Survey Questions - 1, 2, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, 16.

Student Evaluation Questions - 25, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38.

Goal 2:

Faculty Assessment Questions - 1, 2, 8, 11, 13, 14, 15, 16, 17.

Alumni Survey Questions - 1, 2, 3, 4, 6, 7, 8, 12, 16, 17.

Exit Interview Questions - 1, 2, 3, 4, 6, 7, 8, 11, 12, 13, 15, 16, 17.

Exit Survey Questions - 1, 2, 4, 5, 6, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20.

Student Evaluation Questions - 25, 26, 27, 28, 37.

Goal 3:

Faculty Assessment Questions - 1, 6, 7, 8, 9, 11, 12, 13, 16, 17, 18

Alumni Survey Questions - 2, 3, 5, 8, 9, 10, 11, 13, 14, 15, 17.

Exit Interview Questions - 2, 3, 4, 5, 8, 9, 10, 11, 13, 14, 15.

Exit Survey Questions - 1, 2, 4, 5, 7, 9, 11, 12, 13, 14, 15, 16, 17, 19, 20.

Student Evaluation Questions - 33, 37, 39, 40, 43.

Goal 4:

Faculty Assessment Questions - 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 16, 18.

Alumni Survey Questions - 1, 3, 6, 8, 9, 10, 13, 14, 15, 17.

Exit Interview Questions - 1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17.

Exit Survey Questions - 1, 2, 4, 5, 7, 9, 11, 12, 13, 14, 15, 17, 18, 19, 20.

Student Evaluation Questions - 26, 37, 38, 40, 41, 42, 43.

Table 2. Continuous Improvement Results Since Last Report

Stage 4: ACT		
Actions/Goals Based on Data Results <i>*Copy last cycle's actions/goals and report on progress toward continuous improvement on those here.</i>	Status <i>C=Complete P=Progressing N=No Action Taken</i>	Discussion of Status <i>If C, describe efforts that led to accomplishment of actions/goals. If P, provide update on progress made toward accomplishing actions/goals and what tasks remain If N, discuss why action toward accomplishing actions/goals has been delayed and what work will be initiated toward accomplishment.</i>
Develop and add new 5000-level graduate courses based on the needs of society and industry, delete courses that are outdated, update course prerequisites, and modify existing courses to integrate new knowledge and techniques,	P	Prerequisite courses have been checked and change requests will be submitted. Some potential new courses have been discussed and will be created accordingly.
Collaborate with Math Department to offer new courses/programs to improve students' competitiveness.	P	The initial meeting has been done and will continue to discuss potential courses that need to be offered.
Hire a new assistant professor to teach computer science courses in various areas, conduct cutting-edge research, and apply for external grants.	P	A search committee has been formed and is actively searching for the best candidates for these positions.
Actively involve graduate students in research projects to increase their research skills and experiences.	P	The department has several ongoing research projects supported by NSF, NIH, USDA, and Lamar University. Many students have been employed as research assistants to participate in those projects.
Hire a new academic advisor to assist the program director with graduate student advisement.	C	Mrs. Juliana Rutledge has been hired and started to advise and register students.
Updated the syllabi to increase the rigor of 5000-level graduate courses along the curricular ladder in association with SACSCOC requirements.	C	The syllabi have been updated, focusing on objectives, outcomes, and assessment, to distinguish undergraduate-level and graduate-level courses. This differentiation ensures that the unique academic needs and expectations of students at each level are effectively addressed.
Integrate the American Association of Colleges and Universities (AACU) rubric into the current rubric to evaluate the program comprehensively.	P	The assessment committee will continue to study the AACU rubric to align the criteria and expectations of the AACU rubric with the existing rubric's structure and objectives.