CNM ANNUAL STUDENT LEARNING ASSESSMENT REPORT

Due to the Student Academic Assessment Committee by October 15

Central New Mexico Community College

PART 1: REPORT INFORMATION

Report Year and Contact Information			
2017-2018	Chu Jong	cjong@cnm.edu	52704
Academic Year	**Contact Person**	**CNM Email**	**CNM Office Extension**

Subject of this Report
BIT--CSCI_AS--Computer Science Degree

PART 2: CONTEXT IN WHICH THE ASSESSMENT TOOK PLACE

Program/Area Highlights and Successes (Wherever applicable, include course completion rates, job placement outcomes, and licensing examination pass rates. See the program information dashboard at https://livecnm.sharepoint.com/sites/Dashboards/SitePages/Program%20Information%20Dashboard.aspx (access restricted to CNM employees) and other reports at https://www.cnm.edu/depts/opie.)

The Computer Science (CSCI) program at CNM was initiated by the School of Mathematics, Sciences, and Engineering (MSE), although it may be dated 2015 (or even earlier) but the actual starting date recorded by the School of Business and Information Technology (BIT) is the spring semester 2016, the CSCI program officially transferred to BIT. The CSCI program curriculum has revised significantly based on the curriculum guidelines for undergraduate degree programs in Computer Science, the "Computer Science Curricular 2013" by the ACM/IEEE join task force. Two major goals are: to ensure that our program acquires the nationwide recognition and to provide our graduates the opportunity of pursuing advanced degrees at colleges/universities under their choice.

We do not have the assessment results for the Computer Science program in this period because: First, this program started four semesters ago with low enrollment (please refer to the actual enrollment in the following paragraph). Second, the program objectives were revised (as described above) after it was transferred. Currently we are moving toward the direction to ensure our SLO and Assessment in compliant with the ABET (Accreditation Board for Engineering and Technology) accreditation process to accredit our Computer Science AS degree in the future. A meeting has setup to meet local ABET committee in November 2018.

Currently the CSCI program offers six regular courses as the followings:

CSCI 1108 – CS For All: Introduction to Computer Modeling

CSCI 1153 – Programming in Matlab

CSCI 1151 -- Introduction to Computer Programming for Non-Majors Computer Science

CSCI 1152 -- Introduction to Programming and Problem Solving, the CS1 in the Computer Science Curriculum Guideline by ACM/IEEE

CSCI 2251 -- Intermediate Computer Programming, the CS2 in the Computer Science Curriculum Guideline by ACM/IEEE

CSCI 2201 -- Mathematical Fundamentals of Computer Science

The CSCI 1152 (possibly CSCI 1151) also named CS1, they normally indicate the actual student enrollment of the computer science program by all colleges and universities. Starting from spring 2016, only one session of CSCI 1152 per semester for the first three semesters, two sessions of CSCI 1152 thereafter. The actual number of computer science students slowly but steadily increasing.

In addition to the regular courses, we had a few topic courses. Two for the robotic and one for the programming contest. We participated two different competitions, one was the ACM ICPC (International Collegiate Programming Contest) and the other was the NASA Swarmathon Physical Competitions. The CNM team acquired the second place at the 2016 Swarmathon Competition and the second best technical report at the 2017 Swarmathon Competition.

At the time of writing this report, six students have acquired the AS degree in Computer Science, a small number but indicates that students recognize that reaching a milestone is significant. We are continue encouraging our students to complete the requirements for their AS degree and move forward to acquire advanced degrees for building their career pathway.

Changes Implemented During the Past Year in Support of Student Learning

A new course CSCI 1108, CS For All: Introduction to Computer Modeling was added to the CSCI curriculum in fall 2018. Computer Science for All is the formal President Obama's bold new initiative to empower all American students from kindergarten through high school to learn computer science and be equipped with the computational thinking skills they need to be creators in the digital economy, not just consumers, and to be active citizens in our technology-driven world. We worked with the UNM CS department and proposed a new course, CSCI 1108, in spring 2018, this course is intend to all majors which also include high school students who are interested in building their computational skills. We start deliver this course in fall semester 2018.

To enhance CSCI program education and improve student learning, we add a new full time faculty in fall 2018 and a couple of part time faculties (one in spring 2018 and one in fall 2018). Bi-weekly CSCI faculty meetings mainly focus on how to build better mechanisms for the computer science education at CNM.

PART 3: REPORT ON ASSESSMENT OF STUDENT LEARNING

Assessment Method	**Type of Assessment Tool**	**Population or Course(s) Assessed**	**Graduate Learning Outcome(s) Assessed**	**Mastery Level** (E.g., "Minimum score of 3 on a rubric scaled 0-4" or "Minimum score of 75%")	**Targeted % Achieving Mastery**	**Outcome**
	Direct & Internal	CSCI 1108 – CS For All	Develop the knowledge of computational thinking skills and build the fundamental structures for agent-based computer modeling.			N/A

	Direct & Internal	CSCI 1152/1151, the CS1	Develop moderate complex computer programs using programming languages			N/A
	Direct & Internal	CSCI 1152/1151, the CS1	Apply appropriate data structure, access of data, operate data stored in the both internal and external computation devices			N/A
	Direct & Internal	CSCI 1152/1151, the CS1	Demonstrate an understanding of algorithm, problem solving by creating algorithmic solutions, and provide practical implementations.			N/A
	Direct & Internal	CSCI 2251, the CS2	Demonstrate knowledge of class and object, and apply to the Software Development Life Cycle (SDLC)			N/A
	Direct & Internal	CSCI 2251, the CS2	Able to solve problem cross network and platform via both lower and higher level API			N/A
	Direct & Internal	CSCI 2201	Apply the principles of a variety computation theories and techniques to solve problems.			N/A
	Direct & Internal	CSCI 2201	Apply algorithms to problems involving complex computation, compare and analyze different approaches of computation problems			N/A

	Direct & Internal	CSCI 1153	Apply software package (such as MATLAB) to solve computation problems.			N/A
	Direct & Internal	CSCI 1153	Write programs using predefined functions and procedures, conditional statements, control structures, matrix computations, and graphing and plotting (using MATLAB).			N/A

Summary of Assessment Findings
N/A

Interpretation of Assessment Findings
N/A

Action Plan in Support of Student Learning (Describe changes to be made that are based at least in part on the assessment interpretation. If the assessment did not yield useful information, describe changes to be made in the assessment methodology and/or criteria.)
Continue improving/developing the students' learning mechanisms based on the curriculum guidelines for undergraduate degree programs in Computer Science, the "Computer Science Curricular 2013".

Please select all of the following that characterize the types of changes described in the above action plan:

- ☒ Assessment criteria revision
- ☒ Budgetary reallocation
- ☒ Curricular Revision
- ☐ Assessment methodology revision
- ☐ Change in teaching approach
- ☒ Faculty training/development
- ☐ Assignment revision
- ☒ Course content revision
- ☐ Process revision

Recommendations, Proposals, and/or Funding Requests	**Budget Needed**
Not yet – under development	TBD

PART 4: REMAINING YEARS IN CURRENT ASSESSMENT CYCLE PLAN (including any revisions) **– OR -- UPCOMING ASSESSMENT CYCLE PLAN** (if this was the final year)

Years of Full Cycle	**Next Year's Assessment Focus** (Describe how the next planned assessment is expected to provide information that can be used toward improving student learning.)
2016-2021	SLO and Assessment in compliant with the ABET accreditation process

Graduate Learning Outcomes to Be Assessed	Years in which Assessment Is Planned	Population/Courses to Be Assessed	Planned Assessment Approach
Develop the knowledge of computational thinking skills and build the fundamental structures for agent-based computer modeling.	After completion of the CS For All class (no year restriction)	CSCI 1108 – CS For All: Introduction to Computer Modeling	Programming assignments, exams, and project
Develop moderate complex computer programs using programming languages	After completion of the CS1 class (first year)	CSCI 1152/1151	Programming assignments, homework, and project
Apply appropriate data structure, access of data, operate data stored in the both internal and external computation devices	After completion of the CS1 class (first year)	CSCI 1152/1151	Programming assignments, homework, and project
Demonstrate an understanding of algorithm, problem solving by creating algorithmic solutions, and provide practical implementations.	After completion of the CS1 class (first year)	CSCI 1152/1151	Programming assignments, homework, and exams
Demonstrate an understanding of algorithm, problem solving by creating algorithmic solutions, and provide practical implementations.	After completion of the CS2 class (second year)	CSCI 2251	programming assignments, exams, and team project (software evaluation)
Able to solve problem cross network and platform via both lower and higher level API	After completion of the CS2 class (second year)	CSCI 2251	Programming assignments, exams, and team project (reports, team work, and software package evaluation)
Apply the principles of a variety computation theories and techniques to solve problems.	After completion of the Discrete Math class (second year)	CSCI 2201	Homework assignments (include programming logic), class discussion, short exercises, and exams.
Apply algorithms to problems involving complex computation, compare and analyze different approaches of computation problems	After completion of the Discrete Math class (second year)	CSCI 2201	Homework assignments (include programming logic), class discussion, short exercises, and exams.
Apply software package (such as MATLAB) to solve computation problems.	After completion of the Programming in MATLAB class (first or second year)	CSCI 1153	Lab assignments, homework, and exams

Write programs using predefined functions and procedures, conditional statements, control structures, matrix computations, and graphing and plotting (using MATLAB).	After completion of the Programming in MATLAB class (first or second year)	CSCI 1153	Lab assignments and exams