Assessment Report

PART 1: CONTACT & PROGRAM IDENTIFICATION

Report Year and Contact Information:		
2019-2020	Chu Jong	cjong@cnm.edu
Academic Year	**Contact Person**	**Email**

Name of Program:	**Courses:**
Computer Science Degree	CSCI 1108 CSCI 1152 CSCI 2201 CSCI 2251

PART 2: PROGRAM SUMMARY

Provide a high-level review of the program to include highlights, successes, challenges, significant changes, and significant resources needed to support the program.

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 national wide recognition and to provide our graduates the opportunity of pursuing advanced degrees at colleges/universities under their choice.

We have minimum assessment results for the Computer Science program in this period because: First, this program started fall 2015 and only taught two non-major computer science courses (CSCI 1151 and CSCI 1153) with low enrollment. 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 conducted with ABET committee in November 2018 and the meeting result concluded that there is no CS AS accreditation, but the CE AS accreditation is available. Currently, we are seeking resources and alternatives to complete the accreditation process.

The year of 2018-2019 we hired a full time CS instructor, however due to personal reason, this new hire decided to not continue working with us anymore. In the spring semester 2020, we reopened the hiring and identified two new CS faculties. Both start their academia career at CNM in the fall semester of 2020.

The two new faculty will not only fulfil the resource shortage but also provide opportunities to enhance CS curriculum with more optional elected courses and external activities.

The six regular courses of the CSCI program are:

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 as the CS1 in general by many institutions, it normally indicates the actual student enrollment of the computer science program by all higher education institutions. 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. CNM also participated the 2018 Swarmathon Physical Competition and 2019 Swarmathon non-Physical Competition (because the funding ended).

Although the number of CS AS graduates is still low (almost all CS students want to acquire a BS degree, thus they may not consider an AS degree is their goal), the increasing CS AS degree indicates that students recognize that reaching a milestone is significant. We have increased the number of CS graduates from 10 to 23, a 130% increase, compare to the year 2018 – 2019. In the last year report we said that we were expecting more than 20 students will acquire the CS AS degree in the year of 2019-2020 and we are exceeding 15% more than we were targeting. With proper organizing and planning, we are expecting more than 40 students will graduate from CNM with CS degree in the year of 2020 – 2021. We will put more efforts to prepare the increasing student enrollment to our CS program by broaden the scope of our CS offerings such as the CSCI 1108 – CS for All, new electives, and topic classes for special activities. We will continue encouraging our students to complete the requirements for their AS degree and move forward to acquire advanced degrees for building their career pathway.

The resource improvement of our CS teaching staff has been addressed in the previous paragraph. We have conducted weekly CS staff meeting starting from Fall 2020. This meeting covers all aspects of the CS teaching methodology, education quality, culture adaptation, coordination, student interaction, . . ., etc. plus the troubleshooting of the challenges from the pandemic.

Part 3: DATA REVIEW

Program Data (Each Review Year is defined as Summer, Fall, and Spring terms)	Review Year 19-20	Review Year 18-19	Review Year 17-18
Annual number of graduate awards is greater than 10	23	10	3
Number of declared majors	685	722	684
Average class size	22	23	20
Annual Average class retention rate is 70% or above (SAGE 65%)	74%	78%	76%
Annual C-Pass rate for coursework is 60% or above	53%	55%	53%
Average class fill rate at 60% or above capacity within a term or over a year	72%	74%	71%
Transfer numbers/percent	NA	5 (50%)	1 (33%)
Full-time to part-time faculty ratio	11: 3	9: 2	7: 1

Summarize how your program met or did not meet the target measures based on the data above.
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Part 4: PROGRAM LEARNING OUTCOME ANALYSIS.

Learning Outcome	Population or Course(s) Assessed	Assessment Methods	Summary of Assessment Results
Able to solve problem cross network and platform via both lower and higher-level API	CSCI 2251	Final Exam, Test or quiz, Class project, Instructor observation, and Homework assignments.	Semester project -- student present their ability of integrating learned topics and work with others as a team. A student team is composed by two to three student members.

Learning Outcome	Population or Course(s) Assessed	Assessment Methods	Summary of Assessment Results
Apply algorithms to problems involving complex computation, compare and analyze different approaches of computation problems	CSCI 2201	Final Exam, Test or quiz, Instructor observation, and Homework assignments.	From the assignments, programming, and exams students will demonstrate their computational thinking methodologies, algorithm design, and program solving skills
Apply appropriate data structure, access of data, operate data stored in both internal and external computation devices	CSCI 1152/1151	Final Exam, Test or quiz, Class project, In-class activities, Instructor observation, and Homework assignments.	From the programming assignments and semester project, student will apply different data structures to solve computational problems.
Apply software package (such as MATLAB) to solve computation problems.	CSCI 1153	Final Exam, Test or quiz, In-class activities, Instructor observation, and Homework assignments.	The MATLAB programming assignment provide students different ways of solving their engineering equations and problems.
Apply the principles of a variety computation theories and techniques to solve problems.	CSCI 2201	Final Exam, and Test or quiz.	The results of the assignments are used to measure the outcome of theory learning.
Demonstrate an understanding of algorithm, problem solving by creating algorithmic solutions, and provide practical implementations.	CSCI 1152/1151	Final Exam, Test or quiz, Class project, Instructor observation, and Homework assignments.	Programming assignments and tests/exams are used to demonstrate the level and capacity of understanding and implementations.

Learning Outcome	Population or Course(s) Assessed	Assessment Methods	Summary of Assessment Results
Demonstrate knowledge of class and object, and apply to the Software Development Life Cycle (SDLC)	CSCI 2251	Final Exam, Test or quiz, Class project, Instructor observation, and Homework assignments.	Semester project and programming assignments and tests/exams are used to demonstrate the ability of system integration and software development life cycle.
Develop moderate complex computer programs using programming languages	CSCI 1152/1151	Homework assignments, In-class activities, and Class project.	Programming assignments are the evaluation method for the ability of how to develop a computation solution.
Develop the knowledge of computational thinking skills and build the fundamental structures for agent-based computer modeling.	CSCI 1108 – CS for All: Introduction to Computer Modeling	Final Exam, Test or quiz, Class project, and In-class activities.	Students use the NetLogo programming environment to model the real-world activities which bring them from conceptual thinking to reality.
Write programs using predefined functions and procedures, conditional statements, control structures, matrix computations, and graphing and plotting (using MATLAB).	CSCI 1153	Final Exam, Test or quiz, Instructor observation, and Homework assignments.	Get familiar with the widely used engineering tool, MATLAB, not only model the real problems but also provide adequate programming for students to implement their learning.

Interpretation of Assessment findings
N/A

Part 6: ADDITIONAL ACTION PLAN IN SUPPORT OF STUDENT LEARNING (IF APPROPRIATE)

Upcoming year	Changes planned for the upcoming year	Data motivating this change
2020-2021	Streamline the teaching of CSCI 1108, CSCI 1152, and CSCI 2251	Graduation numbers and successful rate (the C-passing rate)
2020-2021	Establish a new elective course to allow student to explore and expand their computation scope.	Enrollment and retention rate
2020-2021		

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

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

Part 6: COMMENTS

Use this section to record any comments, notes, or questions from individuals who reviewed this report.

School Dean:
SAAC Representative: