PROGRAM REVIEW REPORT SUMMARY: SHORT PROGRESS REPORT

1. Reporting Institution: Eastern Illinois University

2. Program Reviewed: B.S. in Computer Science (CIP 11.070)

3. Date: January 22, 2021

4. Contact Person: Dr. Marshall Lassak, Chair

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5. Summary of Program Goals and Objectives and Progress at Meeting Them

Background

The B.S. in Computer Science program (created in Fall 2017) was a renaming and revision of an existing degree program, (B.S. in Computer Science and Mathematics). The current degree program is consistent with the curriculum recommendations of the Association for Computing Machinery (ACM), the largest international computing organization. The mission of the revised degree program is to make students marketable as professionals in the area of computer science in a variety of career settings and to position them to pursue advanced degrees in Computer Science.

The revised degree program supports Eastern's mission in several ways through superior undergraduate education, meets growing demand and student needs, and offers two opportunities for immediate application of knowledge outside of the classroom through the programming team and internship. The faculty engage in teaching, research, and creative activity appropriate for the field and the students. The coursework requires students to learn how to clearly communicate both in person and through code in solving real world problems and designing algorithms and ideas for problems yet unspecified.

Graduates are versatile and able to adapt to the changing field with or program emphasis on the development and front end knowledge rather than emphasizing the use and implementation of computer systems. Graduates of the program will be poised to enter Illinois' workforce ready to contribute in nearly any environment requiring a computer scientist.

Curriculum and Goals

The fundamental change to the curriculum for this revised proposed degree program was increased core courses (66-68 semester hours) devoted specifically to computer science and 10 semester hours of electives. All courses in the program have been offered at least once and slight adjustments have been made to course sequencing. Additionally, through partnerships with both CIT and MIS, some sharing of courses across degree programs takes place. Appendix A shows the coursework alignment of goals

Faculty
When the program began, the department had 3 tenured computer science faulty. Since that time two faculty have retired and one has been hired. The department recently hired an additional computer science faculty member and we have one part time and one adjunct teaching some courses. As the number of students grows, the need for faculty will also grow.

Student Enrollment The table below shares enrollment data. Because this program was initiated in Fall 2017, the old program has had a slow phase out and thus, the number of majors declared is across both programs. As of Fall 2020, only one student remains with a major in the previous program.

Semester	Majors
Fall 2017	27
Fall 2018	31
Fall 2019	47
Fall 2020	50

Dean's Comment:

The BS in Computer Science is off to a strong start. As of fall semester 2020, it had grown to 50 enrolled majors midway through its fourth year of existence. As the chart above suggests, the program has noted steady growth since fall 2017. The department also recently hired a new Unit A Computer Science faculty member as a retirement replacement. A partnership with the Computer and Information Technology (CIT) and Management Information Systems (MIS) housed in the Lumpkin School of Business and Technology allows for greater use of university resources and provides students with a broader instructional base. As growth in the program continues, the addition of CS faculty members will be warranted.

We recommend a decision of **Program in Good Standing.**

6. Academic Affairs Decision:

__X_ Program in Good Standing

_____ Program flagged for Priority Review

_____ Program Enrollment Suspended

6.2 Explanation of Decision

In year 3, the program already exceeds critical IBHE APEER benchmarks for enrollment. Hence, the program is viable with sustained growth and is in "good standing". The department faculty and program are to be applauded for their detailed mapping of content based on the ACM standards (see Appendix). In future years, the Office of Academic Affairs looks forward to learning more about the program's student learning outcomes and broader continuous improvement efforts (i.e., assessment).

Appendix A: Curriculum and alignment to ACM recommendations

Required Computer Science Core
MAT 1441G - Calculus and Analytic Geometry I
CSM 2170 - Computer Science I
MAT 2345 - Elements of Discrete Mathematics
MAT 2442 - Calculus and Analytic Geometry II
MAT 2550 - Introduction to Linear Algebra
CSM 2670 - Computer Science II
CSM 3570 - Numerical Analysis
CSM 3670 - Principles of Computer Systems
MAT 3701 - Probability and Statistics I
CSM 3770 - Combinatorial Computing
CSM 3870 - Data Structures
MIS 4700 – Advanced Networking
MIS 4770 – Database and Data Management
CSM 3980 - Parallel Programming
CSM 4270 - Principles of Programming Languages
CSM 4275 - Internship in Computer Science I
CSM 4880 - Design and Analysis of Algorithms
CSM 4885 - Theory of Computation
CSM 4970 - Principles of Operating Systems
CSM 4985 - Artificial Intelligence and Machine Learning

Electives From: (Choose 3-4 courses)
CSM 3070 - Programming Team
MAT 3501 - Differential Equations I
MAT 3502 - Differential Equations II
MAT 3530 - Abstract Algebra
MAT 3702 - Probability and Statistics II
CSM 4170 - Programming for Mobile Devices
CSM 4370 - Topics in Computer Science
MAT 4750 - Linear Programming
MAT 44901 - Independent Study
CSM 4873 - Introduction to Cryptography
PHY 3150 - Electronics.

ACM Knowledge areas

Algorithms and Complexity (AC)	Networking and Communication (NC)
Architecture and Organization (AR)	Operating Systems (OS)
Computational Science (CN)	Platform-based Development (PB)
Discrete structures (DS)	Parallel and Distributed Computing (PD)
Graphics and Visualization (GV)	Programming Languages (PL)
Human-Computer Interaction (HC)	Software Development Fundamentals (SD)
Information Assurance and Security (IA)	Software Engineering (SE)
Information Management (IM)	Systems Fundamentals (SF)
Intelligent Systems (IS)	Social Issues and Professional Practice (SP)

Connection of ACM Knowledge areas to required Coursework

		Knowledge Areas																	
		AC	AR	CN	DS	GV	HC	IA	IM	IS	NC	OS	PB	PD	PL	SD	SE	SF	SP
Course	MAT 1441 G			X															
	MAT 2345	X			X											X	X		
	MAT 2442			X															
	MAT 2550			X	X														
	MAT 3701			X															
	CSM 2170	X				X	X								X	X			X
	CSM 2670	X			X	X	X								X	X	X		X
	CSM 3570	X		X	X														
	CSM 3670		X												X			X	
	CSM 3770	X			X											X			
	CSM 3870	X			X											X	X		
	MIS 4700	X		X			X	X	X		X		X				X		X
	CSM 3980	X	X								X	X		X				X	
	CSM 4270				X										X				
	CSM 4275																		X
	CSM 4880	X			X							X				X	X		
	CSM 4885	X																	
	CSM 4970	X					X	X			X	X	X	X				X	
	MIS 4770		X	X				X			X	X	X	X				X	
	CSM 4985	X					X			X									