Proposal

Conversion of Computer Science Concentration of the B.S. in Computer Science and Information Systems (CSIS) to a Full Degree Program

Proposed new degree:
B.S. in Computer Science

Prepared by

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CONVERTING OPTIONS/CONCENTRATIONS WAIVER

Institutions requesting a waiver to the New Degree Program Review Process when converting an existing option or concentration into full program must answer the following questions:

1. Is the program degree level within the mission designation of the college?

The proposed conversion will result in a B.S. in Computer Science, which is within Stockton's current mission level of Masters.

2. What is the need/impetus for the requested change?
- external review?
- accreditation review?
- other? (please explain below)

We plan to pursue accreditation for the new degree program through the Accreditation Board for Engineering and Technology (ABET). To do so, the current Computer Science (CS) concentration must first be converted to a full degree program. Additionally, during our most recent five-year review of the existing program in Computer Science & Information Systems (CSIS), our external evaluator recommended that we convert the CS concentration to a full degree program regardless of our pursuit of ABET accreditation.

3. How long has the option/concentration been offered?

The existing Computer Science concentration of the B.S. in Computer Science and Information Systems has been offered since 1988.

4. What is the enrollment history?

The number of students enrolled in the Computer Science concentration for the past several years is as follows:

	Fall '06	Fall '07	Fall '08	Fall '09	Fall '10	Fall '11	Fall '12	Fall '13	Fall '14	Fall '15	Fall '16
# students	22	26	27	27	24	32	37	52	101	138	186

We have seen a significant increase in enrollments in the conceother? (please equ l ȳ D l l Ṃ m O

The new program, B.S. in Computer Science, will consist in: (a) 46 credits of CS courses (30 required CS credits + 16 CS elective credits), (b) 31-34 credits of mathematics and science (credit variation derives from student choice of lab science), and (c) 0-3 additional credits of CS, CIS, math, or science electives. All of the required courses in the proposed new B.S. in Computer Science already exist in the current concentration, except for a new 2-credit senior seminar. The proposed new B.S. in Computer Science will introduce 2 new elective courses, replacing two current electives. In one case, a course that is currently an elective will become required in the new degree. The lab science requirement is new to the proposed new degree. The curriculum of the proposed B.S. in Computer Science is designed to meet the accreditation requirements of ABET.

6. Will the college continue to offer the existing major?
- In establishing the new major, what will be the impact on the existing major?

The existing CS concentration of the existing B.S. in Computer Science & Information Systems will be phased out. It will continue until all current students in the concentration either graduate or switch to the new degree, but no new students will be enrolled into the existing concentration. There should be no effect on the ability to serve students who remain in the existing CS concentration as all of the required courses of the existing concentration will still exist in the new CS degree or will otherwise continue to be offered in support of other concentrations or programs (e.g., although the new CS degree is replacing the current freshmen level Statistics course, CSIS 1206, with a junior-level Calculus-based Probability and Statistics course, the CSIS 1206 course will still be offered in support of the Business Studies major, etc).

7. Would students currently enrolled in the option/concentration be "grandfathered" as to their degree title?
- Can students choose either the title of the existing degree program or the title of the degree program created from the option/concentration as their graduation major?
- Will current students receive the new degree designation?

Current students of the existing CS concentration can choose whether to retain their current degree title or switch to the newly formed B.S. in Computer Science. If they choose to switch to the new degree, they will be required to meet all of the requirements of the new degree.

8. Are sufficient resources available to support the new program in the following areas:
- Personnel such as faculty and support staff?
- Facilities?
- Operating expenses -- equipment, library resources, etc.?

Given that the requirements of the proposed new degree program have significant overlap with the existing concentration's requirements, the new degree program should have a minimal effect on our resource needs. For example, the existing degree option and the new degree that results from the conversion require students to take the same number of courses offered by the CSIS program. The new degree, therefore, does not directly impact our resource needs. However, due to increasing enrollments, we estimate a need to offer approximately 3 additional course sections per semester, regardless of conversion.

9. Since the proposed option/concentration is part of an approved ongoing program, will the proposed conversion create any additional duplication with ongoing programs at other colleges in New Jersey?

The proposed conversion should not create any additional duplication with ongoing programs at other colleges in New Jersey.

Program Announcement Narrative Proposal

a. Program Objectives

Computer Science (CS) professionals design and develop innovative solutions to computing problems in a broad range of disciplines, such as science, engineering, aerospace, medicine, and entertainment. The

a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline.
b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
d) An ability to function effectively on teams to accomplish a common goal.
e) An understanding of professional, ethical, legal, security and social issues and responsibilities.
f) An ability to communicate effectively with a range of audiences.
g) An ability to analyze the local and global impact of computing on individuals, organizations, and society.
h) Recognition of the need for and an ability to engage in continuing professional development.
i) An ability to use current techniques, skills, and tools necessary for computing practice.
j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
k) An ability to apply design and development principles in the construction of software systems of varying complexity.

Performance Indicators: Our assessment plan utilizes a mixture of direct and indirect measures, such as assessment problems embedded into exams, term projects in upper level courses, etc. We use the following set of performance indicators to assess student progr

Curriculum Mapping: The proposed B.S. in Computer Science includes required CS courses offered by the CSIS program as well as required courses from the Mathematics program. Additionally, there are elective CS courses offered by the CSIS program, elective Math courses, and a choice of lab sciences. The curriculum mapping (mapping courses to performance indicators) presented here includes only a mapping of courses offered by the CSIS program, and does not include courses offered by other academic programs, whether required or elective.

and intensive investigation of one discipline should prepare graduates to move into appropriate fields of employment, or to continue with graduate academic or professional study"

The educational goals of the CS curriculum emphasize breadth, as well as depth. The students will be required to take courses including Programming & Problem Solving I & II, Computer Networking Principles, Computer Organization, Data Structures & Algorithm

47	Front End Developer/Engineer	$81,000	27%
50	IT Security Director	$147,000	15%
70	Applications Engineer	$81,900	19%
80	Software Developer	$96,600	13%

The following 8 schools within the State of New Jersey are the only NJ institutions to currently offer undergraduate Computer Science degrees that are accredited by the Accreditation Board for Engineering and Technology (ABET), under ABET's Computer Science criteria:

Institution	**Degree Offered**	**Years ABET Accredited**
Fairleigh Dickinson University (Metropolitan Campus)	B.S. in Computer Science	1987-present
Monmouth University	B.S. in Computer Science with a concentration in Advanced Computing	2010-present
Montclair State University	B.S. Computer Science - concentration in Professional Computing	1993-present
New Jersey Institute of Technology	B.S. in Computer Science B.A. in Computer Science	1986-present (B.S.) 1995-present (B.A.)
Rowan University	B.S. in Computer Science	1999-present
Stevens Institute of Technology	B.S. in Computer Science	1986-present
The College of New Jersey	B.S. in Computer Science	1997-present
William Paterson University of NJ	B.S. in Computer Science	2006-present

Additionally, the following 13 schools within the State of NJ currently offer undergraduate Computer Science degrees that are not accredited by ABET. We have included our own institution in this list, with our current degree offerings B.S. in Computer Science and Information Systems / B.A. in Computer Science and Information Systems. Our proposed new B.S. in Computer Science is a conversion of our existing Computer Science concentration of our current B.S. degree. We intend to phase out the existing concentration that this proposed degree is designed to replace. Thus, we are not proposing any additional redundancy beyond the degree programs currently available within the State of NJ.

Institution	**Degree Offered**
College of Saint Elizabeth	B.S. in Computer Science
Drew University	B.A. in Computer Science B.A. in Mathematics & Computer Science
Felician College	B.S. in Computer Science
Georgian Court University	B.S. in Computer Science
Kean University	B.S. in Computer Science
New Jersey City University	B.S. in Computer Science
Princeton University	B.S.E. in Computer Science B.A. in Computer Science
Ramapo College of New Jersey	B.S. in Computer Science
Stockton University	B.S. in Computer Science and Information Systems B.A. in Computer Science and Information Systems

B.A. in Comput

Saint Peters University	B.S. in Computer Science
Seton Hall University	B.S. in Computer Science

e. Students

Anticipated enrollments in the proposed CS major are estimated directly from the enrollment history of the existing CS concentration of the current B.S. in CSIS major. Recent enrollment history in the concentration that this degree will replace is as follows:

Degree Requirements

Computer Science Degree Program Requirements (80 credits total):		
Computer Science (46 credits):		
Computer Science Core (required courses): 30 credits		
CSIS 2101	Programming & Problem Solving I	4 credits
CSIS 2102	Programming & Problem Solving II	4 credits
CSIS 3230	Computer Networking Principles	4 credits
CSIS 3250	Computer Organization	4 credits

Students may also choose to tak