PROGRAM MODIFICATION PROPOSAL FORM

Name of Institution: Coastal Carolina University (CCU)

Nature of the Proposed Modification: The proposed modification is for a curriculum change.

Current Name of Program: Bachelor of Science (B.S.) in Information Technology

Proposed Name of Program: Bachelor of Science (B.S.) in Information Technology

Program Designation:

- ☐ Associate's Degree
- ☐ Master's Degree
- ☒ Bachelor's Degree: 4 Year
- ☐ Specialist
- ☐ Bachelor's Degree: 5 Year
- ☐ Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA)
- ☐ Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.)

Does the program currently qualify for supplemental Palmetto Fellows and LIFE Scholarship awards?

- ☒ Yes
- ☐ No

If No, should the program be considered for supplemental Palmetto Fellows and LIFE Scholarship awards?

- ☐ Yes
- ☐ No

Proposed Date of Implementation: Fall 2019

CIP Code: 11.0103

Current delivery site(s) and modes: CCU Main Campus, Traditional/Face-to-face and distance
Proposed delivery site(s) and modes: CCU Main Campus, Traditional/Face-to-face and distance

Program Contact Information:

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Institutional Approvals and Dates of Approval:

Department of Computing Sciences Information Technology Curriculum Committee	December 6, 2017
Chair, Department of Computing Sciences	February 14, 2018
College of Science Curriculum Committee	March 20, 2018
Dean, College of Science	March 20, 2018
University Academic Affairs Committee	April 16, 2018
Faculty Senate	May 7, 2018
Provost	May 16, 2018
President	May 16, 2018

Background Information

This modification will remove the requirement for a student majoring in Information Technology (IT) to have a minor in addition to the major. IT majors will take an additional 18 hours of Computer Science (CSCI) courses in place of the minor, which will increase the technical rigor of the degree program. The target audience for this revised program will be incoming freshman students who start directly at Coastal Carolina University (CCU) without first attending a technical college, and who are interested in career paths in IT services, including technical support and system administration.

By strengthening the quality of the degree program, this modification directly supports CCU's mission to offer "undergraduate and graduate degree programs of national and/or regional significance in the arts and sciences, business, humanities, education, and health and human services." It further supports the institution's mission by preparing knowledgeable, productive, and responsible graduates to contribute positively to society and to economic development, in this case through the development and management of computer information systems.

This modification supports Objective 1.4.5 of the Coastal Carolina University Strategic Plan 2016-2021: "CCU will support high-quality innovative programs and curricula aligned with student demands, accreditation and standards expectations, regulatory requirements, and supportive professional preparation such that the CCU graduate student FTE population can reach 18 percent of the student population and the CCU undergraduate student FTE population can increase by 5 percent over 2015-2016."

Assessment of Need

When the B.S. in IT program was established in 2014, it was initiated as a degree completion program with Horry Georgetown Technical College (HGTC). The expectation was that the majority of enrolled students would have completed an Associate of Applied Science (A.A.S.) degree in Computer Technology at HGTC (or at another South Carolina technical college) prior to enrolling in the B.S. in Information Technology at CCU. Students with the earned A.A.S. degree in Computer Technology would have completed the minor requirement of the B.S. in IT. As such this part of the program would be waived, thereby creating a 2+2 program. The minority of students expected as freshman enrollments directly into the B.S. IT program would have to complete a minor in addition to the major requirements. At the time the program was originally submitted to the SC Commission on Higher Education (SCCHE) for approval in 2014, the projected enrollment headcount for the Fall 2018 semester was 25 students.

In reality, enrollment headcount for the B.S. in IT as of Fall 2018 is 158 students, only 6 of whom have previously earned the A.A.S. degree in Computer Technology. Freshman enrollment directly into the IT degree program has greatly exceeded expectations, and the IT major will likely become the largest of the three degree programs offered by the Department of Computing Sciences within the next 1-2 years, eclipsing both Computer Science and Information Systems. Much of this growth has been due to new students entering IT, as the Computer Science and Information Systems enrollments are also growing.

As the department prepares to present the B.S. in IT degree program to the Accreditation Board for Engineering and Technology, Inc. (ABET), for program accreditation in the 2020-2021 academic year, assessment data indicates a few weaknesses in technical preparation among the first graduating cohorts. In addition, ABET revised the guidelines this year, and all programs in the Department of Computing Sciences will be expected to adhere to the new guidelines when submitting for accreditation. Accordingly, the faculty determined that it is necessary to add technical content to the degree program to meet ABET requirements:

- The new ABET guidelines require coursework in web development. CSCI 120: Introduction to Web Interface Development is already a required course for the IT degree, but it only covers the client-side aspects of web development. To cover the server-side aspects, the department proposes to add CSCI 303: Introduction to Server-side Web Application Development. The department regularly offers CSCI 303 as part of the Information Systems degree program, so it will not be a new course. This change will add three credit hours to the program.

- A course in system and computer architecture is needed under the new ABET guidelines. This new course will be CSCI 311: System Architecture, and it will add three credit hours to the program.
- Coursework that builds upon previous coursework and adds depth is needed. Since Linux system administration is a departmental strength, the two courses to be added are CSCI 216: Linux Fundamentals I and CSCI 316: Linux Fundamentals II. These courses will be combined with existing CSCI 416: Linux System Administration course to create a three course sequence offering depth for the ABET requirement as well as preparing students to sit for the Red Hat Certified System Administrator and Red Hat Certified Engineer certification exams. Since CSCI 416 already exists and is already a program requirement, the addition of CSCI 216 and CSCI 316 will add six credit hours to the program.
- Some additional technical breadth is needed in order to ensure that a sufficient number of hours of technical coursework is provided. The department proposes to add this breadth by increasing the number of upper-division elective CSCI courses required by the IT major from two to four, adding six credit hours to the program.

A total of 18 credit hours of additional technical coursework is to be added to the program. In order to keep the total number of credit hours for the B.S. degree fixed at 120, the recommendation is to remove the minor requirement, which accounts for 18-24 credits. This change has been deemed substantive for SCCHE program modification purposes.

Transfer and Articulation

Not applicable for this program. The previous articulation agreement for IT with Horry Georgetown Technical College has expired. Fewer than 10 students were enrolled under the prior articulation agreement, of which six are still enrolled (out of 158 total IT majors).

Description of the Program

Projected Enrollment						
Year	Fall Headcount		Spring Headcount		Summer Headcount	
	New	Total	New	Total	New	Total
2018-2019	34	154	2	138	0	0
2019-2020	36	166	2	149	0	0
2020-2021	38	178	2	160	0	0
2021-2022	41	191	3	172	0	0
2022-2023	44	204	3	184	0	0

This curriculum modification is being implemented in order to meet the ABET requirements.

Information Technology began as a new program in Fall 2014. Recently, this program has experienced a growth of 26% over two years. The first row of the table above, that is 2018-2019, is based on actual student enrollment at CCU in the Information Technology program. The remaining years (2019-2020 to 2022-2023) were estimated using a linear growth model of 20% from 2018-2019 to 2022-2023.

Curriculum

B.S. in Information Technology (120 Credit Hours)

- University Core Curriculum Requirements (38-40 credits)
- Graduation Requirements (3-6 credits)

- Foundation Courses (6-17 credits)*
  - Choose one from the following (3 credits):
    - COMM 140 – Modern Human Communication: Principles and Practices (3)*
    - ENGL 290 – Introduction to Business Communication (3)*
    - ENGL 390 – Business and Professional Communication (3)
  - Choose one from the following (3 credits)**:
    - MATH 130 – College Algebra (3)
    - MATH 130I – College Algebra Intensive Study (3)
  - Choose one from the following (3-4 credits):
    - CBAD 291 – Business Statistics (3)*
    - PSYC 225/L – Psychological Statistics [and Laboratory] (4)
    - STAT 201/L* – Elementary Statistics [and Computer Laboratory] (4)
  - Choose one from the following calculus options (3-7 credits):
    - Business Calculus Option (3 credits)
      - MATH 132 – Calculus for Business and Social Science (3)*
    - Calculus with Trigonometry Option (4-7 credits):
      - MATH 131 – Trigonometry (3)**
      - MATH 160 – Calculus I (4)*
- Major Requirements (70-72 credits):
  - Choose one from the following (3 credits):
    - CSCI 101 – Introduction to the Internet and World Wide Web (3)*
    - CSCI 130 – Introduction to Computer Science (3)*
  - Choose one from the following (3-4 credits):
    - CSCI 135 – Introduction to Programming (3)
    - CSCI 140/L – Introduction to Algorithmic Design I [and Laboratory] (4)
  - Choose one from the following (3-4 credits):
    - CSCI 145 – Intermediate Programming (3)
    - CSCI 150/L – Introduction to Algorithmic Design II [and Laboratory] (4)
  - Complete the following courses (46 credits):
    - CSCI 110 – Enterprise Business Applications (3)
    - CSCI 120 – Introduction to Web Interface Development (3)
    - CSCI 170 – Ethics in Computer Science (1)
    - CSCI 211 – Computer Infrastructure (3)

- CSCI 216 – Linux Fundamentals I (3)
- CSCI 225 – Introduction to Relational Database and SQL (3)
- CSCI 270 – Data Communication Systems and Networks (3)
- CSCI 303 – Introduction to Server-side Web Application Development (3)
- CSCI 311 – System Architecture (3)
- CSCI 316 – Linux Fundamentals II (3)
- CSCI 335 – Project Management (3)
- CSCI 385 – Introduction to Information Systems Security (3)
- CSCI 400 – Senior Assessment (0)
- CSCI 415 – Windows System Administration (3)
- CSCI 416 – Linux System Administration (3)
- CSCI 427 – Systems Integration (3)
- CSCI 444 – Human Computer Interaction (3)

- Choose four CSCI courses numbered 300 or above (12 credits)***

- Electives (0-4 credits)

* Credits for courses taken as part of the core curriculum are not counted elsewhere in the major.

** Students may exempt (without credit) the MATH 130 requirement with credit for both statistics and calculus. Students who elect to take MATH 160 may exempt (without credit) the MATH 131 requirement with credit for MATH 160.

*** Courses taken elsewhere in the Core, Foundation, or Major may not be used to satisfy these requirements.

Curriculum Changes

Courses Eliminated from Program	Courses Added to Program	Core Courses Modified
Minor requirement	CSCI 216 – Linux Fundamentals I	
	CSCI 303 – Introduction to Server-side Web Application Development	
	CSCI 311 – System Architecture	
	CSCI 316 – Linux Fundamentals II	
	Two elective CSCI courses at the 300-level or above	

New Courses

CSCI 216: Linux Fundamentals I (3 credits) This course provides students with a fundamental understanding of how to use a Linux operating system. Topics include accessing the command line, file manipulation, managing users and groups, file system permissions, controlling services, managing processes, configuring networking, and using package managers. F, S

CSCI 311: System Architecture (3 credits) (Prereq: A grade of 'C' or better in CSCI 211 and CSCI 216) Introduction to the high-level architecture of computer systems and the hardware-software interface. Major design features of hardware components are discussed. Topics include instruction set architectures, processor designs, memory components, power, storage devices, device drivers, kernels, bootloaders, firmware, and partition tables. F, S

CSCI 316: Linux Fundamentals II (3 credits) (Prereq: A grade of 'C' or better in CSCI 216) A continuation of Linux Fundamentals I. Topics covered include file systems, disk partitioning, accessing network storage, SELinux, scheduled tasks, firewalls, and troubleshooting. F, S

Similar Programs in South Carolina offered by Public and Independent Institutions

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
B.S. in Information Technology [CIP 11.0103]	128	Bob Jones University (BJU)	Coverage of both Linux and Windows systems, databases, project management, security principles, and networking.	BJU's degree requires a larger core curriculum. This degree is also greater in breadth and does not prepare students for the Red Hat System Administrator (RHSA) or Red Hat Certified Engineer (RHCE) certifications. It is not accredited by ABET.
B.S. in Integrated Information Technology [CIP 11.0103]	120	University of South Carolina (USC) - Columbia	Coverage of database systems, hardware and software, networking, and human-computer interaction.	USC-Columbia's program appears to be more business-focused with coursework in IT management and additional project management coursework. It does not prepare students for the RHSA or RHCE certifications. This program is accredited by ABET (since 2012) under the previous set of accreditation criteria.
Bachelor of Arts (B.A.) in Information Management and Systems [CIP 11.0103]	121	University of South Carolina (USC) – Upstate	Coverage of database systems and networks.	Despite sharing a CIP code, USC-Upstate's program is based on the business and informatics disciplines, and is not a technical Information Technology program. It is not ABET accredited and does prepare students for technical certifications.
B.S. in Computer Sciences / Information Technology [Similar Name]	123	Limestone College	Coverage of networking, database systems, programming, web	Limestone College's program is a specialization in the Computer Science degree instead of an

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
			development, and project management.	independent degree. It does not include depth in the area of system administration, nor does it appear to prepare students for certifications. It is also not ABET accredited.
B.S. in Information Technology [Similar Name]	180	South University (SU)	Coverage of security, networking, database systems, human-computer interaction, programming, and project management.	SU's program is housed in the business college and is more business-focused. Despite the high number of credit hours, South University's B.S. IT program is not ABET accredited and does not appear to prepare students for certifications.
B.S. in Healthcare Informatics (Information Technology Track) [Similar Name]	121	Francis Marion University (FMU)	Coverage of basic computer programming and information systems.	FMU's program is focused on healthcare informatics, which is a different discipline from Information Technology. It is not ABET accredited and does not appear to prepare students for the RHCSA or RCHE certifications.
Bachelor of Science, Business – Applied Computing in Business [CIP 11.0103]	128	Anderson University (AU)	Coverage of basic networking, security principles, databases, and spreadsheets.	AU's program is a business-oriented program as opposed to a technical program. It is not ABET accredited and does not appear to prepare students for technical certifications.
Bachelor of Business Administration Applied Computing in Business [CIP 11.0103]	N/A	Anderson University (AU)	This program is listed on the SCCHE website but is not listed in the academic catalog for Anderson University. It appears that this program is not currently active.	

Faculty

No changes in faculty, staff, or administrative personnel are needed as a direct result of this program modification. Existing faculty have the necessary expertise to teach the courses that have been added to the program.

Resources

Library Resources: No new library resources are needed.

Equipment: No new equipment is needed.

Facilities: No new facilities are needed.

Impact on Existing Programs

Will the proposed program impact existing degree programs or services at the institution (e.g., course offerings or enrollment)? If yes, explain

☒ Yes

☐ No

The removal of the minor requirement will reduce enrollments in minor courses offered by other departments at the institution. However, since the current body of IT majors (approximately 150) are enrolled in a wide variety of minor courses, the enrollment impact per course is expected to be minimal.

Financial Support

Estimated Sources of Financing for the New Costs						
Category	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Total**
Tuition Funding						
Program-Specific Fees						
Special State Appropriation						
Reallocation of Existing Funds						
Federal, Grant, or Other Funding						
Total	0	0	0	0	0	0
Estimated New Costs by Year						
Category	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Total**
Program Administration and Faculty and Staff Salaries						
Facilities, Equipment, Supplies, and Materials						
Library Resources						
Other (specify)						
Total	0	0	0	0	0	0
Net Total (i.e., Sources of Financing Minus Estimated New Costs)						

Budget Justification

The program modification is for a curriculum change. No new costs are associated with this curriculum modification.

Evaluation and Assessment

The Student Learning Outcomes (SLOs) for the program are specified by the ABET accreditation criteria[1], which have been revised significantly for the 2019-2020 review cycle. The B.S. in IT program will be submitted for initial accreditation during the 2020-2021 academic year and must therefore meet these new criteria.

Program Objectives	Student Learning Outcomes Aligned to Program Objectives	Methods of Assessment
1. Graduating students should be able to contribute to society and/or economic development through the application of strong core competencies in their particular field of study.	ABET SLO 1. Graduates of the program will have an ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. ABET SLO 2. Graduates of the program will have an ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline. ABET SLO 6-IT. Graduates of the program will have an ability to Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.	Course activities (assignments, quizzes, tests, examinations, etc.) mapped directly to ABET SLOs and assessed each semester on a per-course basis through Faculty Course Assessment Reports; Senior Exit Exam is given to graduating students in their final semester of the program; Exit Survey is given to graduating students in their final semester of the program; evaluation of courses twice during each evaluation cycle (with curricular changes made as needed to ensure compliance with the current applicable version of the ABET accreditation guidelines).
2. Graduating students should be able to advance in their careers and/or education by applying: a. Communication and collaboration skills, b. Problem-solving abilities, c. Appreciation of, and commitment to, professional ethics, and d. Knowledge of their field of study.	ABET SLO 3. Graduates of the program will have an ability to communicate effectively in a variety of professional contexts. ABET SLO 5. Graduates of the program will have an ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.	Course activities (assignments, quizzes, tests, examinations, etc.) mapped directly to ABET SLOs and assessed each semester on a per-course basis through Faculty Course Assessment Reports; Senior Exit Exam is given to graduating students in their final semester of the program; Exit Survey is given to graduating students in their final semester of the program; evaluation of courses twice during each evaluation cycle (with curricular changes made as needed to ensure compliance with the current applicable version of the ABET accreditation guidelines).
3. Graduating students should be able to successfully adapt to	ABET SLO 4. Graduates of the program will have an ability to	Course activities (assignments, quizzes, tests, examinations,

[1] ABET, Inc. Criteria for Accrediting Computing Programs, 2019 – 2020. https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-computing-programs-2019-2020/

Program Objectives	Student Learning Outcomes Aligned to Program Objectives	Methods of Assessment
technical, societal, and environmental changes by building upon strong foundational competencies and continuing lifelong learning in computing sciences or related areas.	recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.	etc.) mapped directly to ABET SLOs and assessed each semester on a per-course basis through Faculty Course Assessment Reports; Senior Exit Exam is given to graduating students in their final semester of the program; Exit Survey is given to graduating students in their final semester of the program; evaluation of courses twice during each evaluation cycle (with curricular changes made as needed to ensure compliance with the current applicable version of the ABET accreditation guidelines).

The Program Educational Objectives are reviewed by the Advisory Board at least once per ABET accreditation review cycle, or more frequently, if necessary. The Advisory Board consists of employers related to the discipline. Recommendations from the Advisory Board are used as part of the program's continuous improvement process.

Will any the proposed modification impact the way the program is evaluated and assessed?

☐ Yes

☒ No

Will the proposed modification affect or result in program-specific accreditation?

☒ Yes

☐ No

The department will be seeking ABET accreditation for the Information Technology program in the 2020-2021 academic year, when the other two programs (Computer Science and Information Systems) are up for re-accreditation. These curriculum changes are necessary to meet the new ABET requirements for initial program accreditation.

Will the proposed modification affect or lead to licensure or certification? If yes, identify the licensure or certification.

☒ Yes

☐ No

Explain how the program will prepare students for this licensure or certification.

The Linux system administration course sequence, to consist of CSCI 216, CSCI 316, and CSCI 416, will prepare students to sit for the optional RHSA and RHCE certification exams. Students will have discounted access to these exams as part of the Red Hat Academy program with Red Hat Corporation (to

be acquired by IBM). These certifications are well-respected in the industry and can assist graduates in securing initial career positions after graduation. In addition, the existing CSCI 211 (Computer Infrastructure) course maps to the examination topics for the A+ certification. CSCI 270 (Data Communications Systems and Networks) covers the examination topics for the Network+ certification. CSCI 385 (Introduction to Information Systems Security) covers the topics required for a student to sit for the Security+ certification. All certification examinations are optional for the students.

If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)?

☐ Yes

☒ No

Not applicable for this program.