NEW PROGRAM PROPOSAL FORM

Name of Institution: **University of South Carolina Beaufort**

Name of Program (include degree designation and all concentrations, options, or tracks):
Bachelor of Science in Information Science and 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.)

Consider the program for supplemental Palmetto Fellows and LIFE Scholarship awards?

☒ Yes

☐ No

Proposed Date of Implementation: **Fall 2019**

CIP Code: **11.0103**

Delivery Site(s):
Historic Beaufort Campus (HB) - 50901
Hilton Head Gateway Campus (HHG) - 50903

Delivery Mode:
☒ Traditional/face-to-face   ☒ Distance Education
*select if less than 25% online   ☐ 100% online

                                        ☐ Blended/hybrid (50% or more online)

                                        ☒ Blended/hybrid (25-49% online)

                                        ☐ Other distance education (explain if selected)

Program Contact Information (name, title, telephone number, and email address):

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Institutional Approvals and Dates of Approval (include department through Provost/Chief Academic Officer, President, and Board of Trustees approval):

Institutional Approvals and Dates of Approval

Evaluating Unit	Dates of Approval
School Dean	07-11-2018
Academic Affairs & Institutional Effectiveness	08-07-2018
Academic Steering Committee	08-20-2018
Dean's Council	09-25-2018
Courses & Curricular Committee	09-26-2018
Faculty Senate Chair	10-05-2018
Chancellor	10-22-2018

| USC System President | 12-18-2018 |

Background Information

State the nature and purpose of the proposed program, including target audience, centrality to institutional mission, and relation to the strategic plan.

The goal of the proposal is to develop a Bachelor of Science degree in Information Science and Technology (ISAT) at the University of South Carolina Beaufort (USCB). The program is central to USCB's mission "*to respond to regional needs*", and is designed to train students to advance new technology, "*and prepare graduates to contribute*" to various science and industry fields "*locally, nationally, and internationally.*"

ISAT is a field of <u>computer and information sciences and support services</u>, and the goal is to advance knowledge about information, apply information technologies to practice, and provide services to the society. ISAT complements the present B.S. in Computational Science (CSCI) at USCB in that CSCI emphasizes applied computing while ISAT trains information technology professionals. Consequently, ISAT offers an attractive degree program for a broad range of students, including students who are more interested in information management and institutional technology than computational science.

The program will "*draw students from the South Carolina Lowcountry*, *from around the country, and from around the world*." It will continue with the success of the current baccalaureate degree in CSCI and "*serve a racially and culturally diverse student body, including military personnel, veterans and their dependents.*" The program will spur the creation and deployment of information technology in the region; the program will also produce graduates who will not only have a broad knowledge in the design and integration of information technologies but also will enable new technologies for various science and business sectors.

The program will increase the number and diversity of well-trained scientists and technicians for careers in new technology-oriented industries in South Carolina.

The program is an ideal fit with the goals and objectives of the USCB Strategic Plan 2021. One of USCB's goals is to "*expand and enhancing the rigorous, experiential academic environment.*" This is accomplished through strategic plan objectives; 1) Strengthen and develop academic opportunities to meet the needs of a dynamic and changing world, and 2) Offer experiential learning so every graduate will have at least one internship, research, service learning, or applied learning experience to enhance career preparation. The program curriculum offers two courses, ISAT 399 Independent Study and ISAT 499 Internship where students can achieve these experiences.

Another goal of the strategic plan is to "*equip students for success within the university and beyond graduation*." The program will prepare graduates not only for careers in the business and science sectors but also for graduate education in the future. The program aims to increase the number and diversity of well-trained scientists and technicians in South Carolina and beyond.

Program Objectives in Relation to the USCB Strategic Plan Goals and Objectives

1) Develop and offer modern curricula for a bachelor's degree program in ISAT,
   a. Offer students with the knowledge and technical skills in information science and information technology.
   b. Foster a cutting-edge practice in entrepreneurial thinking and technical communication for problem solving in other science, engineering, social, and business fields.
   c. Prepare students for careers in broad areas that require proficiency in information and data analysis, system design and project management, and advanced technical services.
   d. Prepare graduates to become not only information technology professionals but also information technology leaders in growing digital culture and economy.

   Strategic Plan Goal 2: Expand and enhance the rigorous, experiential academic environment.

Objective I: Strengthen and develop academic opportunities to meet the needs of a dynamic and changing world.
Objective II: Offer experiential learning so every graduate will have at least one internship, research, service learning, or applied learning experience to enhance career preparation.

Strategic Plan Goal 5: Equip students for success within the university and beyond graduation.
Objective I: Foster a campus culture of collective responsibility for improving student achievement, retention, persistence to graduation, and success beyond the university.

2) Engage students in research and training programs and prepare them for careers in ISAT fields.
Strategic Plan Goal 5: Equip students for success within the university and beyond graduation.
Objective I: Foster a campus culture of collective responsibility for improving student achievement, retention, persistence to graduation, and success beyond the university.

3) Implement a degree program that will enroll at least 25 students per year after 3 years of implementation.
Strategic Plan Goal 5: Equip students for success within the university and beyond graduation.
Objective I: Foster a campus culture of collective responsibility for improving student achievement, retention, persistence to graduation, and success beyond the university.

Assessment of Need

Provide an assessment of the need for the program for the institution, the state, the region, and beyond, if applicable.

The need for a B.S. Information Science and Technology program is driven by three main factors, including:
1) Growing demand for information science and technology professionals. As we will discuss in the next section, the demand for technology professionals is high and forecasts are that it will get even higher. According to the U.S. Bureau of Labor Statistics, the employment in ISAT fields is projected to grow 17.8% nationwide by 2024 (See "Employment Opportunities" table on the next page). In addition, according to the SC Works online service (as retrieved Apr. 2018), ISAT occupations in the state of South Carolina are projected to grow even higher than the national forecast during the same time frame, at 25.3%. In 2018, there are approximately 13,321 total positions available in ISAT fields in South Carolina (table on next page), however, in striking contrast to the actual job vacancies, the state only generates about 450 graduates (2014 data) in computer and information science & technology related fields each year. We therefore believe that innovative educational programs, like the ISAT program proposed herein, are critical for many South Carolinians and for the economic future of the state.

2) Promote science education and increase the number and diversity of scientists and technicians in the state of South Carolina. The new program proposal is centrally related to the USCB mission statement, including 1) public service to the region, the state and the globe, 2) promoting knowledge, and 3) diversity. Our present Computational Science undergraduate program serves many students from rural, impoverished homes, and among them, 24% of students are female and 43% are underrepresented minorities (specifically 9% Hispanic, 5% American Indian, and 29% African American, based on 2017-18 statistics). We expect the diversity of the proposed ISAT program will be similar to that of the current CSCI undergraduate program.

3) <u>Stimulate economic development in the Lowcountry</u>. Although the average income and level of college education in Beaufort County is skewed by the presence of a high number of wealthy retirees, the rest of the residents lag behind the state and the nation in both areas. The current economy of the region is based heavily on the agriculture and hospitality/tourism industries, both of which rely primarily on low paying jobs. According to the U.S. Census Bureau, the average weekly wages in all four counties in the Lowcountry (Beaufort, Colleton, Hampton, and Jasper) are well below both the state and national averages (Beaufort - $729, Colleton - $607, Hampton - $747, and Jasper $715, while the state is $761 and the national average is $1031). Among the many possible factors that could influence the economy, it is not difficult to identify one particular parameter – education – that plays a critical role. In fact, the percentage of persons at age 25 years and above who have a bachelor's degree or higher is very low across the area (i.e., Colleton – 15.3%, Hampton – 11.1%, and Jasper – 14.5%) while for the state the rate is 26.5% and for the nation 30.3%. Therefore, we believe that the proposed ISAT program will provide many fellow citizens — especially those in poverty — with the opportunity to become members of a well-educated workforce, to pursue high-paying jobs in the state, and to help revitalize the Lowcountry economy.

Transfer and Articulation
Identify any special articulation agreements for the proposed program. Provide the articulation agreement or Memorandum of Agreement/Understanding.
    N/A

Employment Opportunities

Occupation	State		National		Data Type and Source
	Expected Number of Jobs (2016)	Employment Projection (2016-2026)	Expected Number of Jobs (2016)	Employment Projection (2016-2026)	
Computer and Information Research Scientists	360	3.4% ↑	27,900	19% ↑	
Computer and Information Systems Managers	3160	14.4% ↑	367,600	12% ↑	
Computer Network Architects	1450	13.0% ↑	162,700	6% ↑	
Computer Systems Analysts	6200	13.6% ↑	600,500	9% ↑	1. U.S. Bureau of Labor Statistics[1]
Database Administrators	1110	14.1% ↑	119,500	11% ↑	
Information Security Analysts	1410	22.3% ↑	100,000	28% ↑	2. Projections Central[2]
Network and Computer Systems Administrators	5310	11.2% ↑	391,300	6% ↑	
Software Developers	3710	33.7% ↑	1,256,200	24% ↑	
Web Developers	1120	16.1% ↑	162,900	15% ↑	
Average Growth		**16.8% ↑**		**14.4% ↑**	

[1] https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm
[2] http://www.projectionscentral.com/Projections/LongTerm

Total Available Jobs	**10,140 (Year 2016)**	**11,845 (Year 2026)**	**1,810,400 (Year 2016)**	**2,071,902 (Year 2026)**	

Supporting Evidence of Anticipated Employment Opportunities

Provide supporting evidence of anticipated employment opportunities for graduates.

1. The B.S. program in Computational Science at USCB has a job-placement rate near 100% (2013 - 2017 data).
2. South Carolina needs to deliver more graduates for the growing job market in computer science and information systems & technology fields. According to the "South Carolina Higher Education Statistical Abstract 2017[3]" (page 68), the total awarded Bachelor's Degrees and Master's Degrees from all SC public and independent institution between July 1 2015 and June 30 2016 in "Computer & Information Science & Support Services" are only 627 and 81, respectively. This covers only 6.98% (i.e., (627+81)/10140 = 6.98%) of total expected number of jobs in 2016 (see the table above).

Description of the Program

Projected Enrollment			
Year	Fall Headcount	Spring Headcount	Summer Headcount
2019-20	15	15	-
2020-21	30	30	-
2021-22	45	45	-
2022-23	70	70	-
2023-24	70	70	-

Explain how the enrollment projections were calculated.

Conservatively, we anticipate adding 15 new students each year into the program through year three. Then we anticipate 25 new students each year thereafter. Considering graduates, transfers, and dropouts, the program expects 70 students after five years of implementation.

Besides the general institutional admission requirements, are there any separate or additional admission requirements for the proposed program? If yes, explain.

☐Yes

☒No

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[3] http://www.che.sc.gov/CHE_Docs/finance/abstract/Abstract-2017-web.pdf

Curriculum

New Courses

List and provide course descriptions for new courses.

Course Name	Description
ISAT 104 Software Design and Development	(Prereq: two years of college preparatory mathematics). Develop a basic competence in scientific computing using Matlab, Python, or another appropriate programming language. Previous programming experience is not required.
ISAT 150 Intro to Computer Science	(Prereq: MATH 115 or ISAT 104 or consent) Topics include computing theories, programming languages, modeling/simulation and visualization tools, and case studies of problem solving and high performance computing in natural sciences.
ISAT 145 Object-Oriented Programming I	(Prereq: Placement in MATH 141 or grade of C or better in MATH 115) Problem solving, algorithmic design and programming. Three lectures and two laboratory hours per week. Open to all majors.
ISAT 146 Object-Oriented Programming II	(Prereq: Grade of C or better in CSCI 145 and grade of C or better in MATH 141) Continuation of ISAT 145. Rigorous development of algorithms and computer programs; elementary data structures. Three lecture hours and two laboratory hours per week. Open to all majors.
ISAT 201 Intro to Computer Security	(Prerequisite or Co-requisite: CSCI B101 or consent of instructor) Introduction to the theory and practice of computer security, including security policies, authentication, digital certificates, firewalls, malicious code, legal and ethical issues, and incident handling.
ISAT 202 Intro to Front-End Web Development	(Prereq: CSCI 150 and CSCI 145, or consent) Application of programming techniques to the development of interactive, event-driven web applications. Brief coverage of document markup (HTML) and styling (CSS) essentials, followed by significant coverage of scripting languages, libraries, and frameworks for manipulating the Document Object Model.
ISAT 211 Digital Logic Design	(Prereq: MATH 141) Number systems, Boolean algebra, logic design, sequential machines.
ISAT 207 Computer System Administration	(Prereq: ISAT 150 and ISAT 145, or consent) Account maintenance, backups, restoration, system configuration, resource allocation and monitoring, network management, peripheral administration, emphasis on Microsoft Windows and UNIX/Linux systems.
ISAT 212 Intro to Computer Architecture	(Prereq: ISAT 211) Organization and architecture of computer systems hardware; instruction set architectures; addressing modes; register transfer notation; processor design and computer arithmetic; memory systems; hardware implementations of virtual memory, and input/output control and devices.
ISAT 240 Intro to Software Engineering	(Prereq: ISAT B145 or consent of instructor) Fundamentals of software design and development; software implementation strategies; object-oriented design techniques; ethics in software development.
ISAT 320 Database Systems and Management	(Prereq: ISAT 145 or consent) Provides foundations of database systems for students with little prior database experience, topics include relational algebra, data model, schema design and normalization, storage management, query, transaction, concurrency control and consistency.
ISAT 321 Database-Driven Applications Development	(Prereq: ISAT 320) Development of data-driven software for devices including smart phones, tablets, handheld units, and other general-purpose computing platforms. Emphasis on database connectivity, design patterns, human-computer interfaces and usability.

Note: many of ISAT courses are cross-listed with existing CSCI courses. Present CSCI course descriptions (in the course catalog and program homepage) will be updated upon the approval of this proposal.
New courses (cont.)

ISAT 350 Intro to Data Structures and Algorithms	(Prereq: ISAT 146 or consent). Introduce core techniques involved in scientific computing process; the focus is on numeric methods, data structures, and computing optimization.
ISAT 416 Intro to Computer Networks	(Prereq: ISAT 145 and ISAT 212, or consent). Fundamental concepts in computer networks, protocols, and applications. Topics include: network architectures, transmission media, protocols, wireless networks, routing, security and latest topics.
ISAT 437 Information Technology Project Management	(Prereq: ISAT 150, or consent) Introduction of project management concepts, techniques, and tools used by project managers to plan, initiate, manage and close information technology projects. Topics include: the systems approach to project management; application of a project management framework to the planning and management of scope, cost, people, expectations, risk, communications, and procurement; agile methodologies; project management software.
ISAT 421 Information Security Principles	(Prereq: ISAT 201 or consent) Principles and practices of computer system security including operating system security, network security, software security and web security. Topics include attacking techniques, formalisms of information security, security policies, cryptography, and real system implementations.
ISAT 470 Software System Process and Management	(Prereq: ISAT 437 and ENGL 462, or consent) Software system process theories and management issues for software systems; software development process, specification, testing planning, skills and operations, and documentation.
ISAT 499 Internship	(Prerequisite: ISAT major or consent of instructor) Practical full-time work experience in an area of Computational Science, selected by the student and approved by the Department Chair or Computational Science Program Coordinator. For 1 credit, 45 minimum internship work hours required; for 2 credits, 90 work hours, and for 3 credits, 135 work hours
ISAT 250 Mobile Application Development	(Prereq: ISAT 145 or consent.) Introduction to mobile application development fundamentals including development platforms, user interface design, data persistence, map Application Programming Interface.
ISAT 265 Graphics, Multimedia and User-Interface Design	(Prereq: ISAT 145 or consent.) Principles of windowing systems; Graphical interface design and implementation; Processing graphical data using a high level programming language.
ISAT 365 Computer Graphics	(Prereq: ISAT 240 or consent.) Graphics pipeline; 2D and 3D geometric objects and transformations; 2D and 3D viewing, clipping, lighting, and rendering processes; Perspective projections; Lighting and reflectance models; Shading models; Hidden surface elimination; 3D curves and surfaces; Color perception and color models.
ISAT 450 Modeling and Simulation	(Prereq: ISAT 350 or consent, and STAT 240) An introduction to modeling and simulation. Topics include fundamental techniques in designing, coding, and use of simulation software to represent actual or theoretical systems in order to observe their behavior and evaluate design correctness.
ISAT 469 High Performance Computing	(Prereq: CSCI 104 or CSCI 145, MATH 230 or CSCI/MATH 280, and CSCI 150) Architecture and interconnection of parallel computers; parallel programming models and applications; issues in high performance computing; programming of parallel computers; general purpose GPU programming and applications.
ISAT 422 Intro to Data Mining	(Prereq: ISAT 320, ISAT 350, and STAT 240) Introduction to information processing techniques and mathematical tools to assemble,

	access, and analyze data for decision support and knowledge discovery.

New courses (cont.)

Course Name	Description
ISAT 399 Independent Study	Contract approval by instructor, advisor, Department Chair and Vice Chancellor for Academic Affairs is required.
STAT 240 Fundamentals of Probability and Statistics	(Prerequisite: MATH B141 or consent of instructor) Basics of probability, random variables, binomial and normal distributions, central limit theorem, hypothesis testing, linear regression, and selected topics for descriptive and inferential statistics.

Total Credit Hours Required: 120

Course Name	Credit Hours	Course Name	C H
— Curriculum by Year			
Year 1			
Fall		**Spring**	
ISAT 102 General Applications programming	3	ISAT 104 Software Design and development	3
MATH 115 (Pre-Cal)	4	MATH 141 (Cal I)	4
GE Elective	3	ISAT 150 Intro to ISAT	3
GE Elective	3	GE Elective	3
GE Elective	3	GE Elective	3
Total Semester Hours	16	Total Semester Hours	1(
Year 2			
Fall		**Spring**	
ISAT 145 Object Oriented Application Development	3	ISAT 146 Object Oriented Application Development II	3
ISAT 201 Intro to Computer Security	3	ISAT 207 Computer System Administration	3
ISAT 211 Digital Logic Design	3	ISAT 212 Intro to Computer Architecture	3
GE Elective	3	GE Elective	3
GE Elective	3	GE Elective	3
Total Semester Hours	15	Total Semester Hours	15
Year 3			
Fall		**Spring**	
ISAT 320 Database Management Systems I	3	ISAT 321 Database-Driven Applications Development	3
MGMT B371 Principles Of Management and Leadership	3	ISAT 416 Intro to Computer Networks	3
ISAT 350 Intro to Data Structures & Algorithms	3	ENGL 462 Technical (or Business) Writing	3
STAT 240 Fundamentals of Probability and Statistics	3	Elective	3
Elective	3	Elective	3
Total Semester Hours	15	Total Semester Hours	15
Year 4			
Fall		**Spring**	
ISAT 421 Information Security Principles	3	ISAT 470 Software System Process and Management	3
ISAT 437 Information Technology Project Management	3	ISAT 499 (internship)	1-
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
Total Semester Hours	15	Total Semester Hours	12

Curriculum by Category			Credit Hours
General Education Requirements			**38-49**
Required courses	English	ENGL B101, B101L, B102	6-7
	Numerical and Analytical	MATH B 115, plus an additional course in mathematics, logic, statistics, or computer science.	7
	Speech	COMM B 104 B201, or B230	3
	Liberal Arts	Liberal Arts Electives	6
		One course from each 1) History, 2) Final Arts, and 3) Social/Behavioral Sciences	9
	Natural Sciences	Two courses in natural sciences, one of which must include a laboratory	7-8
	Foreign Languages	SPAN or FRAN, etc.	0-6
	Citizenship and Multicultural	ANTH, GEOL, etc.	0-3
Program Requirements (each with a grade of "C" or higher)			**34**
Required courses	ISAT Requirements	ISAT B104 Software Design and Development	3
		ISAT B150 Intro to Computer Science	3
		ISAT B145, ISAT B146 Object-Oriented Programming I & II	6
		ISAT 201 Intro to Computer Security	3
		ISAT 211, 212 Digital Logic Design, Comp Architecture	6
		ISAT 207 Computer System Administration	3
	Mathematics	MATH 141 Cal I	4
	Technical Writing	ENGL 462 Technical Writing	3
	Statistics	STAT 240 Fundamentals of Probability and Statistics	3
Major Requirements (each with a grade of "C" or higher)			**25-30**
Required courses	Database	ISAT 320 Database Management Systems	3
		ISAT 321 Database-Driven Applications Development	3
	Data Structures and Algorithms	ISAT 350 Intro to Data Structures and Algorithms	3
	Project Management	MGMT 371 Principles of Management and Leadership	3
		ISAT 437 Information Technology Project Management	3
		ISAT 470 Software System Process and Management	3
	Systems	ISAT 416 Intro to Computer Networks	3
	Security	ISAT 421 Information Security Principles	3
	Internship	ISAT 499 Internship	1-6
Electives (each with a grade of "C" or higher)			**8-24**
Available electives	Application Development	ISAT 202 Intro to Front-End Web Development	3
		ISAT 250 Mobile Application Development	3
		ISAT 265 Graphics, Multimedia and User-Interface Design	3
	Graphics	ISAT 365 Computer Graphics	3
	Modeling and Simulation	ISAT 450 Modeling and Simulation	3
	High Performance Computing	ISAT 469 High Performance Computing	3
	Data Analytic	ISAT 422 Intro to Data Mining	3
	Research	ISAT 399 Independent Study	0-3

TOTAL PROGRAM HOURS	120 hrs

Similar Programs in South Carolina offered by Public and Independent Institutions

Identify the similar programs offered and describe the similarities and differences for each program.

Program Name	Total Credit Hours	Institution	Similarities	Differences
Computational Science	120	USC Beaufort	The two programs have similar core courses in computer science	Computational Science emphasizes computing while the proposed new ISAT program trains information technology professionals. ISAT complements the computational science program by offering an attractive option for broader students who do not relate well to computing but on the other hand would excel when it comes to applications.
Applied Computer Science	120	USC Aiken	The two programs have similar core courses in computer science	Applied Computer Science at USC Aiken focuses more on fundamentals of computer programming, while ISAT emphasizes more on computer system administration, database, IT project management, and leadership and technical communications.
Computer Information Systems	120-128	USC Upstate	The two programs have similar core courses in computer science	Computer Information Systems at USC Upstate requires only pre-calculus, and it offers three focus areas, including networking and information security, system analysis, and automation.
Information Management and Systems	120-128	USC Upstate	The two programs have similar core courses in computer science	Information Management and Systems at USC Upstate focuses on information creation, access, analysis, and dissemination for business applications. ISAT covers those aspects and at the same time, it provides training on algorithms and hardware knowledge for both software and hardware system management.
Computer Science	120	USC Upstate	The two programs have similar core courses in computer science	Computer Science at USC Upstate offers two focus areas in scientific computing and enterprise solutions, each with a minimum of 9 hours.
Computer Science	122-131	USC Columbia	The two programs have similar core courses in computer science	Computer Science at USC Columbia requires intensive math skills; it is a more traditional field that emphasizes the theoretical aspect of computer science. ISAT is more practical and it focuses on information processing, information technologies practices, and human factors on system projects.

Similar Programs in South Carolina offered by Public and Independent Institutions (cont.)

Program Name	Total Credit Hours	Institution	Similarities	Differences
Computer Information Systems	121-131	USC Columbia	The two programs have similar core courses in computer science	Computer Information Systems at USC Columbia require two capstone project courses and the system category requires "Operating Systems". ISAT, on the other hand, requires three project management courses and one internship course. In addition, the system category requires "computer networks".
Integrated Information Technology	120	USC Columbia	The two programs have similar core courses in computer science	Integrated Information Technology at USC Columbia emphasizes "technology" in business applications. ISAT, on the other hand, focuses on both science and technology, in addition, it requires software process and development management experience for all students.
Computer Science	121	Clemson University	The two programs have similar core courses in computer science	Computer Science at Clemson University is also more traditional, with a requirement of Math for Cal II and Linear Algebra as well as typical computer science core courses including operating systems and programming languages.
Computer Science	129	The Citadel Charleston	The two programs have similar core courses in computer science	Computer Science at the Citadel is similar to other computer science programs at USC Columbia and Clemson. ISAT is more practical and focuses on information science (IS) or IT processing & practices, and human factors.
Computer Science	122	College of Charleston	The two programs have similar core courses in computer science	Computer Science at the CoC is also more traditional, it emphasizes programming languages, compiler design, and software engineering, but it also offers courses in artificial intelligence, computer graphics, and architectures. Some of these courses are not required by ISAT although students may take them as electives, as mentioned earlier, ISAT emphasizes IS/IT processing & practices, and human factors.
Computer and Information Sciences	122	Charleston Southern University	The two programs have similar core courses in computer science	Computer and Information Sciences (CIS) at CoC requires business courses such as accounting and management information systems. ISAT does not

				require those courses; instead, it requires a management leadership course. It also requires a technical or business writing course for all majors.

Similar Programs in South Carolina offered by Public and Independent Institutions (cont.)

Program Name	Total Credit Hours	Institution	Similarities	Differences
Computer Science	120	Coastal Carolina University	The two programs have similar core courses in computer science	Computer Science at Coastal focuses on parallel computing, theory of computation, and artificial intelligence. ISAT does not focus on computing.
Information Systems	120	Coastal Carolina University	The two programs have similar core courses in computer science	Information Systems at Coastal focus more on software aspect while ISAT also offers computer architecture related courses.
Computer Science	125	South Carolina State University	The two programs have similar core courses in computer science	Computer Science at SC State offers traditional courses in the program, including operating systems, computer networks, database and software engineering; ISAT allows students to take similar courses, and in addition, ISAT majors are also able to take other core courses in IS and IT.
Computer Science	121	Voorhees College	The two programs have similar core courses in computer science	Computer Science at Voorhees requires 45 hours of core courses including operating systems, software engineering, database, and languages. ISAT offers similar courses as either requirements or electives, in addition, ISAT also offers other core courses in IS and IT.
Computer Science	120	Winthrop University	The two programs have similar core courses in computer science	Computer Science at Winthrop also requires 45 hours of core courses in languages, database, and systems (operating systems or computer networks). ISAT shares many similar courses as requirements or electives, and it also offers IS/IT specific courses for information processing & practices.
Applied Computer Science	120	Southern Wesleyan University	The two programs have similar core courses in computer science	Applied Computer Science at Southern Wesleyan requires 60 hours of major courses that cover programming, networking, database, and computing. ISAT shares many similar courses as requirements or electives, and it also offers IS/IT specific courses for information processing & practices.
Computer Information Systems	120	Southern Wesleyan University	The two programs have similar core courses in computer science	Computer Information Systems at Southern Wesleyan offers three concentrations in Business,

				Media, and Music, with 18 or more credit hours required for each concentration. ISAT is more generic but the knowledge from ISAT is able to be applied to most application fields including science research and business applications.

Similar Programs in South Carolina offered by Public and Independent Institutions (cont.)

Program Name	Total Credit Hours	Institution	Similarities	Differences
Computer Science	120	Francis Marion University	The two programs have similar core courses in computer science	Computer Science at Francis Marion requires 36 hours of core courses that focus on programming, system design, computer architecture, and operating systems. ISAT is more applied and emphasizes IS/IT processing & practices, and human factors.
Computer Science	128	Benedict College	The two programs have similar core courses in computer science	Benedict hosts a more theoretical Computer Science program, and the focus is on programming, algorithms, and operating systems. ISAT emphasizes more on application aspects and human factors.

Faculty

Rank and Full- or Part-time		Courses Taught for the Program	Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major	Other Qualifications and Relevant Professional Experience (e.g., licensures, certifications, years in industry, etc.)
Professor	Full-time	• Computer Science • Computational Science • Computational Engineering	• Ph.D. in Computer Science and Engineering • M.S. in Engineering	Taught CS/CSci courses since spring 2006
Associate Professor	Full-time	• Computer Science • Computational Science • Computational Engineering	• Ph.D. in Integrative Biosciences • Graduate minor in Computational Science	Taught CS/CSci courses since spring 2011
Associate Professor	Full-time	• Computer Science • Computational Science • Applied Statistics	• Ph.D. in Computer Science • M.S. in Applied Statistics • M.E. in Computer Engineering	Taught CS/CSci courses since fall 2011
Associate Professor	Full-time	• Mathematics	• PhD in Applied Mathematics	Taught Math courses since fall 2013
Assistant Professor	Full-time	• Computer Science • Computational Science	• Ph.D. in Computer Science and Engineering	Taught CS/CSci courses since fall 2016
Assistant Professor	Full-time	• Computer Science • Computational Science	• Ph.D. in Information Technology	Taught CS/CSci courses since fall 2017
Assistant/ Associate Professor*	Full-time	• Computer Science • Computational Science	Ph.D. in Computer Science	To be hired in spring/fall 2019
Assistant/ Associate Professor*	Full-time	Computational Science	Ph.D. in Computer/Computational Science	To be hired in fall 2019
Assistant/ Associate Professor*	Full-time	Computational Science	Ph.D. in Computer/Computational Science	To be hired in fall 2020

Total FTE needed to support the proposed program:
Faculty: **2.16**
Staff: **0.25**
Administration: **0.33**

Faculty, Staff, and Administrative Personnel
Discuss the Faculty, Staff, and Administrative Personnel needs of the program.

Full-time faculty members are defined as those teaching four courses (12 hours) during the fall semester and four courses (12 hours) during the spring semester. Summer teaching loads are not factored in for full-time faculty, as summer teaching is optional and faculty are paid according to specific summer schedules. To determine full-time equivalents, the total number of course hours

taught each semester is divided by 12 hours for the fall semester and 12 hours for the spring semester, resulting in FTEs for each of these semesters. For an annual FTE, the total course hours for fall and spring semesters are added together and then divided by 24. Tenured and tenure-track faculty carry a load of twelve credit hours per semester, which satisfies the 12 credit hour requirement.

Supported by an NSF EPSCoR grant, there will be three new faculty hires for the department of Computer Science. Assistant/Associate Professor 7 and 8 will be hired in fall 2019, and Assistant/Associate Professor 9 will be hired in fall 2020. Assistant/Associate Professors 7 and 8 will devote 2/3 of their time to teaching in the proposed program and Assistant/Associate Professor 9 will devote 1/3 of his/her time to teaching in the program, with the remaining portions of their time dedicated to the Computational Science program. All other ISAT courses will be taught by qualified, existing full-time faculty who already teach in the CSCI program—approximately .5 FTE total commitment to the B.S. ISAT program. As the program grows, adjunct and full-time faculty will be added. All new adjunct and instructor hires will have a terminal degree in ISAT, CS, CSci, or a closely related field. Tenure-track faculty will also be terminally degreed.

The Program Coordinator for the B.S. in ISAT, reporting to the Chair of the Department of Computer Science, will be appointed to manage the day-to-day operations of the degree program, including the student internship program. The Program Coordinator will serve in a 1/3 administration and 2/3 teaching role.

Resources

Library and Learning Resources
Explain how current library/learning collections, databases, resources, and services specific to the discipline, including those provided by PASCAL, can support the proposed program. Identify additional library resources needed.

USCB offers a rich array of resources, including 91,000+ books on campus, 500,000+ E-books, subscriptions to 100+ databases, and the availability of 200,000+ online journals in all discipline areas. Also through comprehensive interlibrary loan services and delivery systems provided by a regional consortia, USCB provides access, for both undergraduate and graduate students, to resources available nationwide. In SC alone, by being a member of PASCAL, students and faculty have access to over 9 million books and other academic materials. USCB also is a member of KUDZU, a group of 17 southeastern university research libraries that shares resources among its members. Specifically relating to the proposed degree track, USCB has over 4,457 monographs with titles in mathematics/computer science [LC call number range QA1-939], cybernetics/information theory [Q300-390] and mathematical geography [GA1-116]. The USCB Library also provides full-text access (either online, in print, or both) to all of the professional journals recommended by Magazines for Libraries (23rd ed.) as basic core serials specific to the needs of mathematics, and 83% specific to computers and information technology. Additional resources will be purchased to broaden and deepen the libraries holdings in these areas. For example, relevant database subscriptions such as: Access Science, Computer Source, MathSciNet, and Science Direct, will be renewed annually or replaced with equal or improved databases. Additionally, the library plans to continue purchasing Springer E-books. Similar to print books, Springer E-books are perpetually owned archival access. Thousands of science-related titles are published annually, relevant subject areas include: Computer Science, Mathematics & Statistics, and Professional & Applied Computing. Furthermore the USCB library will consider the prospects of adding new resources to support the program by reviewing future library consortium offers for program relevancy and affordability.

Student Support Services
Explain how current academic support services will support the proposed program. Identify new services needed and provide any estimated costs associated with these services.

Student support services, programs, and activities are available to students taking courses on the Beaufort campus, on the Bluffton Campus, on the Hilton Head campus, and via distance education. Because the services are already in place, there are no other associated costs. These services include computer support, Career Services, Counseling and Disability Services, libraries, and the Student Success Center (academic advising, tutoring, and the Writing Center).

Physical Resources/Facilities

Identify the physical facilities needed to support the program and the institution's plan for meeting the requirements.

Startup equipment for new faculty in fall 2020 will be supported by an existing NSF EPSCoR grant. Educational and research equipment have also been planned, from the EPSCoR grant, to build research infrastructure for year 2 (2020-21). Computer maintenance, research and general supplies, library materials, and software licenses will be purchased as needed.

The program, faculty will be located primarily on the Bluffton Campus. However, faculty may have offices and students may take some classes on the Beaufort campus. Currently, USCB does not have any graduate assistants.

Equipment

Identify new instructional equipment needed for the proposed program.

NA

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

Financial Support

Sources of Financing for the Program by Year												
	1st		2nd		3rd		4th		5th		Grand Total	
Category	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Tuition Funding	155,160	155,160	310,320	310,320	465,480	465,480	724,080	724,080	724,080	724,080	2,478,120	2,478,120
Program-Specific Fees												
Special State Appropriation												
Reallocation of Existing Funds												
Federal, Grant, or Other Funding												
Total	155,160	155,160	310,320	310,320	465,480	465,480	724,080	724,080	724,080	724,080	2,478,120	2,478,120
Estimated Costs Associated with Implementing the Program by Year												
	1st		2nd		3rd		4th		5th		Grand Total	
Category	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Program Administration and Faculty/Staff Salaries	11,188	11,188	11,188	11,188	11,188	11,188	11,188	11,188	11,188	11,188	55,939	55,939
Facilities, Equipment, Supplies, and Materials	-	-	-	-	-	-	-	-	-	-	-	-
Library Resources	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	10,000	10,000
Other (recruitment/marketing)	500	500	500	500	500	500	500	500	500	500	2,500	2,500
Total	13,688	13,688	13,688	13,688	13,688	13,688	13,688	13,688	13,688	13,688	68,439	68,439
Net Total (Sources of Financing Minus Estimated Costs)	141,472	141,472	296,632	296,632	451,792	451,792	710,392	710,392	710,392	710,392	2,409,681	2,409,681

Note: New costs - costs incurred solely as a result of implementing this program. Total costs - new costs; program's share of costs of existing resources used to support the program; and any other costs redirected to the program.

Budget Justification

Provide an explanation for all costs and sources of financing identified in the Financial Support table. Include an analysis of cost-effectiveness and return on investment and address any impacts on tuition, other programs, services, facilities, and the institution overall.

Tuition funding is based on resident-student tuition rate only, and each student is assumed to take 12 credit-hour courses per semester.

There are not costs for facilities, equipment, supplies, and materials; there are also no plans for "other" costs.

Evaluation and Assessment

Program Objectives	Student Learning Outcomes Aligned to Program Objectives	Methods of Assessment
Develop and offer modern curricula for a bachelor's degree program in ISAT	Proficiency with the knowledge in algorithms, programming languages, and application development skills	Completion of relevant courses with a grade of C or above
Develop and offer modern curricula for a bachelor's degree program in ISAT	Proficiency with the knowledge in system management, including security, information systems, and applications of information technology	Completion of relevant courses with a grade of C or above
Engage students in research and training programs and prepare them for careers in ISAT fields	Ability to apply reasoning, problem solving, and technical skills to solve a problem with minimal guidance	Projects and/or industrial/research internship programs
Engage students in research and training programs and prepare them for careers in ISAT fields	Ability to communicate technical concepts and results to audiences in the form of a technical report and/or an oral presentation to a review committee	Projects and/or industrial/research internship programs

Explain how the proposed program, including all program objectives, will be evaluated, along with plans to track employment. Describe how assessment data will be used.

Achievement of student learning outcomes will be assessed using a number of measurable assessments:

1) Direct assessment methods, which include critiques, project evaluations, research papers, assignments, oral exams, grading rubrics, and standardized tests, will be used to assess student-learning outcomes.

- Students in the program must maintain a GPA of 3.0 or higher to remain in good academic standing.
- Semester and annual reviews of students' academic progress, which include course theory, assignments, projects and research, and/or internship programs.

2) Indirect assessment methods, which include focus groups, exit and other interviews, graduation rates, transfer rates, interviews, written surveys and questionnaires to include student perception, the Rising Junior Survey, graduating student survey and alumni survey.

- Student satisfaction with the program will be surveyed every semester.
- Students will be tracked in terms of the successfulness in obtaining (or enhancing) employment.

Program evaluation is an important aspect of USCB's ability to communicate to various constituencies that its academic programs are strong, relevant to the mission, continuously improving, and performing at a level worthy of institutional, state and regional support. To accomplish this, USCB implemented an Institutional Effectiveness & Strategic Planning Framework (IESPF) that includes both a series of activities and a timeline; IESPF ensures a continuous planning process, including a feedback loop targeting the desired outcomes of USCB's educational

programs as well as USCB's academic and educational support services. Part of this framework is the annual Institutional Effectiveness and Outcomes Assessment (IE-OA) process where program objectives and student learning outcomes are assessed, the results of which are used for program improvement. The IE-OA Plans articulate the program's purpose, goals, student learning outcomes, program objectives and action plans with budget implications for the coming year. The IE-OA Close Reports are due at the end of each academic year and include findings based on assessment activities. The reports are reviewed by the Institutional Effectiveness Council, and a final report is sent to the Chancellor, Cabinet, and Budget Committee for review.

Students evaluate the course and course instructor both qualitatively and quantitatively each semester. Faculty and their Department Chair use the data to assess the strengths and weaknesses of the course both in terms of course content and teaching approach. The Department Chair is required to evaluate faculty in the classroom. After the in-class evaluation, the Department Chair meets with the instructor to offer feedback and discuss continuous improvement strategies.

Beginning with the first class of graduates from the program, the Department, in collaboration with the Director of Career Services will develop, administer, and evaluate surveys to gauge graduate employment rates, student satisfaction, and employer satisfaction. The Department will survey field placement sites where ISAT majors intern. Lastly, an external advisory board will be developed to provide guidance in program development and improvement, to identify ways to enhance USCB's service to private and non-profit sectors, and to impart a competitive advantage to the state of SC. ISAT faculty will routinely review feedback from the above assessments and surveys, revising revise policies, curriculum, and recruitment efforts accordingly.

Accreditation and Licensure/Certification

Will the institution seek program-specific accreditation (e.g., CAEP, ABET, NASM, etc.)? If yes, describe the institution's plans to seek accreditation, including the expected timeline.

☒Yes

☐No

We plan to pursue additional accreditation by ABET in Information Technology or Information Systems after the program is implemented. According to the "Information for programs seeking initial accreditation"[4], *ABET accreditation can be granted only if at least one student has graduated from the designated program*. We therefore plan to seek the ABET accreditation in 2023/2024.

Will the proposed program 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.

If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)? If yes, describe the institution's plans to seek national recognition, including the expected timeline.

☐Yes

☒No

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[4] http://www.abet.org/wp-content/uploads/2015/04/New-Program-FAQ-10-11.pdf