

**COASTAL CAROLINA UNIVERSITY  
Conway, South Carolina**

**Proposal to  
The South Carolina Commission on Higher Education**

**To establish a  
Bachelor of Science in Information Technology**

**January 15, 2014**

**Program Contact:**

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**Signature is available on the original**

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**David A. DeCenzo  
President**

## I. Classification

<b>Program Title:</b>	Bachelor of Science in Information Technology
<b>Academic Unit Involved:</b>	College of Science Dept. of Computer Science & Information Systems
<b>Designation, Type, and Level:</b>	4-year Bachelor of Science degree in Information Technology
<b>Proposed Date of Implementation:</b>	Fall 2014
<b>CIP Code:</b>	11.0103
<b>Site:</b>	Main Campus – Coastal Carolina University
<b>STEM, Palmetto Fellows and Life Scholarship Designation:</b>	Yes
<b>Delivery Mode:</b>	Traditional and online

## II. Institutional Approval

List of all internal institutional bodies of which approval was required and the dates on which each such body approved the program.

Internal Institutional Body	Date of Required Approval
Curriculum Committee, College of Natural and Applied Science	April 16, 2012
Academic Affairs Committee	April 18, 2012
Faculty Senate	May 10, 2012
Provost	May 11, 2012
President	May 11, 2012
Board of Trustees	Pending Feb., 2014

## III. Purpose

### Purpose of the Program

While there is still a strong existing need for graduates from traditional computer science and information systems programs, at the same time, there is also a critical *shortage* of information technology specialists who can understand, develop, and maintain information infrastructure. South Carolina's Department of Commerce and the Governor's Office have created the South Carolina Technology Alliance, and this organization recommends "increased support for college and university educational programs to align them with the needs of technology-intensive industries" [1]. Likewise, nationally, the Bureau of Labor Statistics indicates that employment in the area of information technology will grow faster than most other areas through the year 2020. Hands-on problem solving skills and broad background knowledge concerning various ways to integrate technology into new and existing systems will allow students to be ready to fill this important infrastructure area in the increasingly expanding field of Information Technology. Graduates of the proposed program will be particularly well suited for careers in some of the fastest growing occupations, as shown in the examples listed in Table 1.

[1] South Carolina Technology Alliance website. <http://www.sctech.org/advocacy.php>

Job Title	2010 Median Pay	Entry-Level Education	Job Outlook 2010-20	Employment Change 2010-20
Information Security Analysts, Web Developers, and Computer Network Architects	\$75,660 per year \$36.37 per hour	Bachelor's degree	22% (Faster than average)	65,700
Network and Computer Systems Administrators	\$69,160 per year \$33.25 per hour	Bachelor's degree	28% (Faster than average)	96,600
Computer System Analysts	\$77,740 per year \$37.38 per hour	Bachelor's degree	22% (Faster than average)	120,400
Database Administrators	\$73,490 per year \$35.33 per hour	Bachelor's degree	31% (Much faster than average)	33,900

Table 1. IT Job Outlook (Data obtained from [2] Bureau of Labor Statistics Occupational Outlook Handbook 2012-13)

The Association of Computing Machinery (ACM) recognizes this natural evolution and separation of the major computing disciplines and has published a curriculum guide which emphasizes the differences between theoretical computer science, information systems, and information technology. The proposed B.S. in I.T. program is designed to match these curricular recommendations from the ACM and from the accreditation board (ABET). **Currently, there are only twenty-one ABET-accredited four-year information technology degrees in the nation, none in South Carolina.** Coastal Carolina University would like to be among the first accredited I.T. programs in the state.

### Objectives of the Program

The B.S. in Information Technology degree program (1) will prepare graduates to apply technology to solve problems in business, industry, government agencies, and institutions. (2) Graduates will be prepared to design, implement, manage, and evaluate technology systems and infrastructure. (3) They will be able to integrate emerging information technologies into an organization. (4) Graduates will also be prepared to pursue graduate studies in information technology. The proposed program will include courses in web application development, systems administration, virtualization, information security, networking, project management, human-computer interaction, and systems integration. In addition to technical skills, (5) the program will emphasize development of strong communication and management skills through courses such as business communication and technical writing.

[2] Bureau of Labor Statistics Occupational Outlook Handbook 2012-13, Computer and information technology occupations. <http://www.bls.gov/ooh/computer-and-information-technology/>.

## **IV. Justification**

### **Need for the Program in the State**

Information Technology (IT) pervades nearly every area of modern life, from financial transactions, to smartphone applications, to national critical infrastructure. In order to support existing and future technology demands and help drive innovation, a large, educated IT workforce is needed. According to the (U.S. Department of Labor) Bureau of Labor Statistics, the IT industry is expected to grow 6.1% annually from 2010-2020, more than double the average projected growth rate for all industries. Much of this growth is driven by demand in cloud computing and information security, as well as in health care IT, mobile networking, and data management [3]. The Association for Computing Machinery, the primary resource for computer science and information systems curricula guidance, released a recommended curricula for four-year IT programs in 2008, and the Accrediting Board for Engineering Technology (ABET) began accrediting four-year IT programs in 2003.

While there are many information technology-related degrees offered at two-year institutions across South Carolina, there are relatively few four-year degree programs in information technology in the state. The increasing dependence upon, complexity of, and demand within the information technology sector support the need for four-year degree programs in information technology, both for students starting at four-year institutions and for students with associates degrees interested in bachelor's degree completion programs. In particular, Coastal Carolina University plans to provide a path for nearby Horry-Georgetown Technical College (HGTC) students with an A.A.S. degree in Computer Technology to complete our related B.S.I.T. degree with just an additional two years at Coastal Carolina University (CCU).

In order to help fill this demand for educated IT workers and to produce highly-employable graduates, Coastal Carolina University proposes to offer a Bachelor of Science in Information Technology starting in Fall 2014. Since 1986, Coastal Carolina University has offered a Bachelor of Science in Computer Science, and, since 2010, a Bachelor of Science in Information Systems. These current programs allow students to choose courses with either a theoretical emphasis or an information systems emphasis to complement a common core of foundation courses in computer science. Both programs emphasize software engineering and programming as fundamental areas of knowledge. Although the proposed information technology degree will include some programming, it will focus more on system administration, networking, and security aspects of the design, implementation, management, and evaluation of technology. This program is also designed to allow a student with an A.A.S. degree in Computer Technology from a school in the South Carolina Technical College System to potentially complete the Bachelor's degree at Coastal Carolina University in two years.

Coastal Carolina University currently enrolls approximately 290 majors in computer science and information systems, with approximately fifty percent of the majors in each discipline. It is anticipated that some of the existing computer science and information systems students would select the new information technology major as a better fit for their interests, skills, and career goals. An improvement in retention with the department's majors is anticipated as well, since the IT program will be a new option for students who tried computer science or information systems but didn't find either a perfect fit. Coastal Carolina University completed an initial analysis of the potential market for this proposed program in the spring of 2012. In an e-mail survey conducted among all students, 49.86% of respondents (178 of 357) indicated they would be interested in pursuing the B.S. in I.T. program. In addition to these new college freshmen and existing Coastal Carolina University students, we also hope to attract graduates from

technical colleges throughout the state who have a two-year A.A.S. degree in computer technology and who will use the proposed program at Coastal Carolina for completion of a bachelor's degree. Future accreditation of the program would likely attract even more majors.

[3] Csorny, L. (April 2013). Careers in the growing field of information technology. *Employment & Unemployment 2(9)*. Bureau of Labor Statistics. Retrieved September 17, 2013 from <http://www.bls.gov/opub/btn/volume-2/careers-in-growing-field-of-information-technology-services.htm>.

### **Centrality of Program to the Mission of Coastal Carolina University**

This new degree proposal directly supports Coastal Carolina University's mission to offer "baccalaureate and selective master's 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.

Coastal Carolina University will be seeking ABET accreditation for the proposed information technology degree. The existing degree in theoretical computer science has been accredited by ABET, Inc. since 2002. The same accrediting board will assess both the computer science and information systems degree in 2014. ABET accreditation is based on the evaluation of a program's student achievement, program improvement, faculty, curricular content, facilities, and institutional commitment.

### **Relationship of Program to Existing Programs at Coastal Carolina University**

The proposed program will require the use of some specific courses that are currently being taught on a regular basis by the Department of Computer Science and Information Systems, the Mathematics Department, and the English Department at Coastal Carolina University. These are already required or elective courses for the computer science and information systems degree programs. The proposed degree in information technology will share a core of required courses with the current degrees in computer science and information systems, along with a specific set of information technology specialization courses, some of which may also be taken as electives in the other programs. Three (3) new courses have been created specifically for this proposed degree program.

Information technology is an applied science discipline which involves the application of technology to real-world organizational problems. As such, this degree will require a cognate or minor to provide some knowledge of a specific application domain. The program could also be complementary to several other degrees as a double major. Many disciplines involve the use of information technology in some way, such as mobile devices and networks in health care systems and technology used to enhance learning in education. Students majoring in any health care, business, science, or education discipline would be able to apply information technology knowledge and skills to their primary major field. Information technology is a virtual requirement to support all disciplines with computer networks, computer systems, data storage and analysis of technology needs.

### **Listing of Similar Programs Within the State**

This proposed program is related in nature to programs offered by Furman University (B.S. in Information Technology), Bob Jones University (B.S. in Information Technology), Limestone College (B.S. in Computer/Information Technology Services Administration), South University (B.S. in Information Technology), and the University of South Carolina (B.S. Integrated

Information Technology from the College of Hospitality, Recreation & Sport Management). Each of these schools offers a bachelor's degree in information technology, but all differ in terms of course requirements.

### **Relationship of Proposed Program to Existing Programs Within the State**

None of the programs listed is currently accredited by ABET, and none of these programs directly serves Horry and Georgetown counties. The proposed program does not constitute unnecessary duplication of programs in the state; it will service the eastern portion of the state, one of the fastest growing regions in the southeast, and provide opportunities for the planned growth in our student population in the coming years.

There are multiple accredited computer science and information systems programs throughout South Carolina and most other states as well. In the event that another program would become accredited by ABET in the field of information technology, it is not believed that multiple programs in different state economic and geographic areas constitutes unnecessary duplication.

Likewise, Horry-Georgetown Technical College is located immediately next to Coastal Carolina University. Annually, over twenty-five students graduate with an A.A.S. in Computer Technology from HGTC. Currently, there is no local program in which they can maintain residency in Horry or Georgetown County and matriculate for a baccalaureate degree in their field. The only alternative advertised by HGTC is to complete a B.S. from Western Kentucky University through distance education. It is important to provide these students an opportunity to complete a four-year degree locally. Many of these students are already employed in the area, have families in the area, and consequently cannot easily contemplate a move to another region in South Carolina or outside the state.

### **Similarities and Differences of Proposed Program to Other State Programs**

The in-state institution offering a somewhat similar Information Technology B.S. degree that is closest geographically to Coastal Carolina University is the University of South Carolina, which is approximately 200 miles away in Columbia, South Carolina. CCU's proposed B.S. in Information Technology program will provide needed opportunities to a region of the state where distance may pose a barrier to further training in this growing and important field. Local students from Horry and Georgetown Counties, as well as recent A.A.S. graduates from nearby Horry-Georgetown Technical College, will find it more convenient and financially viable to pursue this degree close to home and to take advantage of the seamless transition from similar programs into this new one, thereby better serving the needs of our service area and producing the technology training so crucial to our region's success and to the success of the state. The program, itself, is not unique, but the opportunities it offers are.

## **V. Admission Criteria**

An application for undergraduate admission must be submitted and approved with an official letter of acceptance issued before any person may enroll in an undergraduate course. Before action can be taken on an application for admission, all required credentials must be submitted for review by an admissions professional.

### **Freshman Admission**

A freshman applicant is a person who has not attended a regionally accredited college or university after high school graduation. Any applicant who has attended classes from a post-secondary institution while still in high school is still classified as a freshman and must submit official college transcripts of coursework whether credit is expected or not. Freshman applicants

must have either a high school diploma or its equivalent General Educational Development (GED) certificate prior to enrolling. Accepted students must submit senior grades and the final official high school transcript with the date of graduation posted on the transcript. Applicants who did not graduate from high school must send transcripts of all available work and a copy of the GED certificate or satisfactory GED score. Applicants who submit the GED credentials must be at least 17 years of age or older.

Freshman applicants are encouraged to apply in the fall prior to the fall for which they seek admission. Priority consideration will be given to complete applications received by December 1. Applications submitted after December 1 will be reviewed on a rolling basis until April 15 and thereafter on a space available basis. Freshman applicants who desire to be considered for University Merit Scholarships and the University Honors Program must apply and submit all credentials by January 1.

Freshmen applicants must submit:

1. Completed Undergraduate Application;
2. Specified non-refundable application fee;
3. Official high school transcripts up until the time of the application;
4. Official entrance examination scores on the SAT or ACT including the writing portion of one of these exams. (Applicants 22 years of age or older are not required to submit SAT or ACT examination scores).

The quantitative and qualitative measures, as well as the scored writing exam, guide the Office of Admissions in reaching a final admissions decision. Admission as a freshman to Coastal Carolina University is based on the student's overall performance in high school courses, achievement in the college preparatory core prerequisites (listed below), the SAT or the ACT test scores, and other documentation (essays and recommendations) provided by the student.

### **Transfer Admission**

An applicant who has attended another regionally accredited post-secondary institution in any capacity, regardless if credit is earned, after the completion of high school is a transfer student.

Transfer applicants for admission must submit:

1. Completed Undergraduate Application;
2. Specified non-refundable application fee;
3. Official transcripts from all postsecondary institutions attended; (A final official transcript must also be submitted for all coursework in progress up until the time of enrollment prior to beginning classes at the University.)
4. High school transcript and official SAT/ACT scores if less than 24 transferable credits of college-level work have been earned from a regionally accredited college or university. (Applicants 22 years of age or older are not required to submit SAT or ACT examination scores.)

Transfer applicants with advanced standing from colleges and universities not accredited by a regional accrediting association must validate, by examination, all credits presented for transfer.

### **Evaluation of Transfer Credit**

After having completed all requirements for transfer admission, matriculated students will be given a statement of credits accepted for transfer by the University within the first semester of enrollment. Students from regionally accredited colleges and universities may transfer credit for academic courses completed with grades of C (meaning C-, C or C+) or better, but the University

reserves the right to determine what credit, if any, for courses taken elsewhere will be counted toward its degrees.

A maximum of 76 transferable credits from any regionally accredited two-year college transfer program will be applicable toward a Coastal Carolina University degree.

**Program Specific Admission**

Students transferring with an A.A.S in Computer Technology from Horry-Georgetown Technical College will follow general transfer admissions procedures. Credit will be awarded on a course-by-course basis, as per the Memorandum of Agreement between Coastal Carolina University and Horry-Georgetown Technical College. Students may transfer into the B.S. in Information Technology program regardless of whether they have completed the A.A.S degree. However, for students who have completed the A.A.S in Computer Technology degree, the Minor requirement (18 hours) will be waived, as per the Memorandum of Agreement between Coastal Carolina University and Horry-Georgetown Technical College. It would generally be in the student’s best interest to complete the A.A.S. degree before entering the B.S degree program.

**VI. Enrollment**

PROJECTED TOTAL ENROLLMENT						
YEAR	FALL		SPRING		SUMMER	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Credit Hours
2014-2015	9	135	13	194	NA	NA
2015-2016	20	294	22	334	NA	NA
2016-2017	23	342	25	376	NA	NA
2017-2018	25	368	27	399	NA	NA
2018-2019	25	382	27	411	NA	NA

**Discussion of How Estimates Were Made**

Based on the existing information systems concentration enrollment trends over the past three years and the planned growth of the University as described in its Strategic Plan, we conservatively estimate a 10% increase in enrollment each year. In addition, our initial estimates for the size of the program are conservative, in order to illustrate that the program will be financially successful even with relatively low enrollment numbers. Depending on the popularity of the program, enrollment numbers could be higher, especially if a larger than expected number of transfer students from Horry Georgetown Technical College enroll in the program, or if a larger than expected number of existing computer science and information systems students change to the new major. In the latter case, the total enrollment within the department would remain constant, since the internal enrollment growth would represent changes of major of existing students, as opposed to completely new students.

Students will likely average 15 credit hours per each fall and spring semester. Summer school course offerings are typically limited to freshman-level introductory courses, although major course work will be offered in summer when justified by student demand. Present Coastal Carolina University policies require summer classes to be self-supporting, which requires a minimum enrollment of 8 to 10 students in order to run a summer class. Demand for upper-level computer science and information systems courses has historically been too weak to support these enrollment levels, largely due to limited student financial aid availability during the summer. If these conditions change, a larger number of 12-month enrollment opportunities may become available.

### **Projected New Students**

It is expected that initial enrollments in the Information Technology degree program will be modest, as the degree program will be new and will not be up for ABET accreditation for some years after initial development. Most of the new students will enter the program from three groups: new freshmen, existing Coastal Carolina University students who change into the Information Technology major, and transfer students from Horry Georgetown Technical College.

Among students who enter Coastal Carolina University as freshmen, it is the experience of the Department of Computer Science and Information Systems that the majority of these students initially declare a major in computer science. Of these incoming students, approximately 75% change to a major outside the Department of Computer Science or leave the University entirely. Among the 25% remaining, roughly half elect to remain in the computer science degree program, while the other half switch to the information systems program. It is expected that the Information Technology degree program will allow the department to retain more of the 75% of students who elect not to continue in a software development-oriented degree. Although some students who might otherwise have remained in the computer science or information systems majors could potentially switch to Information Technology, we expect these impacts to be minimal.

Estimates for the number of incoming students from Horry Georgetown Technical College were obtained by utilizing actual transfer enrollment numbers from similar transfer arrangements in the past, as well as estimates from Horry Georgetown Technical College. These latter estimates were based upon the number of students electing to continue in the online 4-year B.S. Information Technology program offered by Western Kentucky University, with which Horry Georgetown Technical College has an existing transfer articulation agreement. Since the proposed Information Technology program at Coastal Carolina University will be offered in a traditional format, it is likely that some Horry Georgetown Technical College students who continue to a 4-year degree will continue to enroll at Western Kentucky University for the online degree format.

<b>ESTIMATED NEW ENROLLMENT</b>						
<b>YEAR</b>	<b>FALL</b>		<b>SPRING</b>		<b>SUMMER</b>	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Credit Hours
2014-2015	9	135	5	75	0	0
2015-2016	9	135	5	75	0	0
2016-2017	9	135	5	75	0	0
2017-2018	9	135	5	75	0	0

### **VII. Curriculum**

The proposed information technology curriculum shares a common core of required courses with the information systems program and also takes advantage of the more IT-related information systems electives and web application development minor courses. Majoring in IT allows students to focus on computing infrastructure, systems security, and systems analysis, as opposed to the software engineering and web application development focus of the IS program.

Furthermore, the program may be completed in four years by students starting out at CCU, or in two years by students transferring in with an A.A.S. in Computer Technology from HGTC (assuming specific advisement for this program while at HGTC in order to take the most applicable electives).

By leveraging existing courses within the information systems major, the existing web application development minor, and other existing programs, only three new courses will need to be created to support the IT program. Despite the overlap, these three new courses, along with a specific combination of courses which are only electives in other programs, will distinguish the IT curriculum from the other departmental programs.

#### **INFORMATION TECHNOLOGY MAJOR Degree: Bachelor of Science**

Students must earn a grade of **C** or better in all Foundation and Major Requirement courses.

I. CORE CURRICULUM (34-41 Credits)..... 34-41

II. FRESHMAN GRADUATION REQUIREMENT (0-3 Credits)

Minimum grade of **C** is required.

UNIV 110 The First-Year Experience ..... 3

UNIV 110 is required for all new entering freshmen and for new transfer students with fewer than 12 transfer credit hours unless the transfer student has satisfactorily completed a college transition course.

- III. FOUNDATION COURSES (25-41\* Credits)\*
- Choose one of the following: (3 credits) ..... 3
    - ENGL 211\* Technical Writing (3)
    - ENGL 102\* Composition and Critical Reading (3)
  - Communication
  - Choose one from the following: (3 Credits)..... 3
    - ENGL 290\* Introduction to Business Communication (3)
    - ENGL 390 Business and Professional Communication (3)
    - COMM 140\* Oral Communication (3)
  - Choose one of the following: ..... 3-4
    - STAT 201/201L\* Introductory Statistics /Laboratory (4)
    - CBAD 291\* Business Statistics (3)
    - PSYC 225/225L\* Psychological Statistics/laboratory (4)
  - Choose one of the following:..... 3-4
    - MATH 132\* Business Calculus (3)
    - MATH 160\* Calculus (4)
  - Choose one of the following:..... 3
    - CSCI 101 Intro to the Internet and World Wide Web (3)
    - CSCI 130 Introduction to Computer Science (3)
  - CSCI 110 Enterprise Business Solutions..... 3
  - CSCI 120 Intro to Web Application Development..... 3
  - Choose one of the following:..... 3-4
    - CSCI 135 Intro to Programming (3)
    - CSCI 140 and CSCI 140L Introduction to Algorithmic Design (4)
  - CSCI 170 Ethics in Computer Science ..... 1
  - CSCI 211 Computing Infrastructure-Hardware..... 3
  - CSCI 225 Intro to Database Management Systems..... 3
  - CSCI 203 Introduction to Web Application Development..... 3
- Problem Solving, Critical Reasoning, Professional Development..... 6
- Choose 6 hours from the following (These courses may not overlap with the minor/cognate requirements):

CSCI 300 or higher	ENVI 331/MSCI 331 and	PHIL 110
CSCI 150 and CSCI 150L	ENVI 331L/MSCI 331L	PHIL 220
CSCI 210	GEOG 200	PHIL 315
BINF 101 and BINF 101L	GEOG 204	PHIL 321
BIOL 122 and BIOL 122L	GEOG 311	PHYS 212 and PHYS 212L
CBAD 203	GEOG 400	PHYS 213 and PHYS 213L
CBAD 292	GEOL 112 and GEOL 112L	PHYS 321
CBAD 393	BSHA 455	PHYS 432
CBAD 364	HPRO 380	POLI 311
CHEM 112 and CHEM 112L	MSCI 112 and MSCI 112L	POLI 421
COMM 274	MATH 161	PSYC 303
COMM 341 or THEA 341	MATH 174	RSM 394
ECON 321	MATH 220	ROTC 201 and ROTC 201L
ENGR 101	MATH 242 and MATH 242L	STAT 318
ENVI 201 and ENVI 201L	MATH 260	THEA 255

	MATH 320 MATH 408	THEA 356
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\*Credits for courses taken as part of the Core Curriculum are not counted elsewhere in the major.

IV. MAJOR REQUIREMENTS (24 Credits)

CSCI 335 Software Project Management.....	3
CSCI 370 Networking .....	3
CSCI 385 Intro to Computer Security.....	3
CSCI 415 System Administration.....	3
CSCI 416 Linux System Administration .....	3
CSCI 427 System Integration.....	3
CSCI 444 Human Computer Interaction.....	3
CSCI Elective 300 level or higher .....	3

V. Minor (Web Application Development minor or Computer Science minor may not be used to satisfy this requirement) (18-24 Credits)

**Students who transfer with an approved A.A.S in Computer Technology from a South Carolina Technical College may waive the minor requirement.**

V. ELECTIVES (0-6 Credits) .....0-6

TOTAL CREDITS REQUIRED .....120

**New Courses**

The following courses will be offered for the first time as requirements for the information technology major:

CSCI 211: Computer Infrastructure

This course covers core computer hardware, including the relationships between components of a computer system. Software components are also introduced, including the fundamentals of the computer operating system and an introduction to virtualization systems.

CSCI 427: System Integration

Introduction to, and practice of, designing and integrating large-scale information processing systems, with a focus on selecting and implementing hardware and software systems to develop an appropriate IT solution. Topics include systems provisioning, software integration, hardware management, availability, scalability, and disaster recovery capability. Students will design an integrated information system to implement a solution to a case study problem.

CSCI 444: Human Computer Interaction

A large percentage of the world’s software is devoted to the interface between computers and their users, and usability is one of the key factors deciding whether a software project succeeds or fails. This course explores the requirements analysis, design and evaluation of the User Interface in the context of Software Engineering Processes. Specific methods and design problems will be illustrated with real-world examples in information technology, the Internet, communications, mobility, multimedia, and speech technologies.

The addition of these courses allows the program to meet curriculum requirements for future accreditation of the information technology degree.

### **VIII. Assessment**

By offering a B.S. in Information Technology, Coastal Carolina University will continue to serve the community by providing a high-quality educational experience for students and by producing graduates who can contribute to society and economic development through successful design, development, and/or management of the technologies that support computer information systems.

#### **Program Objectives/Student Learning Goals**

Computer science/computer information systems/information technology graduates should:

- I. Contribute to society and/or economic development through the application of strong core competencies in the field
- II. Advance in their careers and/or education by applying their:
  - a. communication and collaboration skills
  - b. problem solving abilities
  - c. appreciation of and commitment to professional ethics
  - d. knowledge of computer science/information systems
- III. Successfully adapt to technological, societal, and environmental change by building upon strong foundational competencies and continuing lifelong learning in computer science/information systems/information technology or related areas.

Each Program Objective is assessed using both direct and indirect methods, with at least one direct method of assessment per objective. A triangulation strategy of data collection is used to validate the assessment data for each SLO assessed. Triangulation requires us to collect data from multiple sources using both direct and indirect methods. Direct assessment methods generally evaluate the skills of students by testing factual knowledge (e.g.: test questions).

Indirect methods generally evaluate the interpretation of learning achieved (e.g. survey questions). We achieve triangulation by targeting three main data sources (each with numerous individual data points): Course data reported via Faculty Course Assessment Reports (FCARs), knowledge-based questions of the Senior Exit Exam, and survey-based questions of the Senior Exit Exam. For a more detailed description of the data collection process, please refer to Appendix B. Assessment.

#### **Student Learning Outcomes (as required by ABET)**

##### **Computer Science, Information Systems, and Information Technology**

- a) An ability to apply fundamental principles of computing and mathematics.
- b) An ability to analyze a problem, and identify and define the requirements appropriate to its solution.
- c) An ability to design, implement, and evaluate a solution to meet specific requirements subject to a set of constraints.
- d) An ability to function effectively on multidisciplinary teams to accomplish a common goal.
- e) An understanding of professional and ethical responsibilities.

- f) An ability to communicate effectively, both verbally and in writing.
- 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 life-long learning.
- i) An ability to use current techniques, skills and tools necessary for computing practice.

**Information Technology**

- j) An ability to use and apply current technical concepts and practices in the core information technologies.
- k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
- l) An ability to effectively integrate IT-based solutions into the user environment.
- m) An understanding of best practices and standards and their application.
- n) An ability to assist in the creation of an effective project plan.

The Student Learning Outcomes can be mapped to the Program Objectives but are individually assessed as they relate to current students, as required by ABET. These outcomes are evaluated twice within each evaluation cycle, using the same process employed to evaluate the Program Objectives. After gathering assessment results in the first year of the cycle, they are evaluated during the second year, which may result in curricular changes. This assessment is repeated a second time within each cycle, so that prior changes can be evaluated and any additional modifications can be recommended. In addition to a department-level evaluation, Student Learning Outcomes are also evaluated at the course level. Evaluation methods at the course level include individual embedded exam questions, assignments, and course surveys. Department-level evaluation methods include exit exams and surveys. Because we have a set assessment schedule (meaning we know which SLOs are to be measured each year), we have opportunities to make modifications in our program after our analysis and evaluation, yet before the next data collection cycle. For a more detailed explanation of the assessment process, please refer to Appendix B. Assessment.

**IX. Faculty**

<b>List Staff by Rank (e.g. Professor #1, Professor #2, Associate Professor #1, etc.)</b>	<b>Highest Degree Earned</b>	<b>Field of Study</b>	<b>Teaching in Field (Yes/No)</b>
Associate Professor #1	Ph.D.	Computer Engineering	Yes
Assistant Professor #1	Ph.D.	Computer Engineering	Yes
Assistant Professor #2	Ph.D.	Computer Information Systems	Yes
Assistant Professor #3	Ph.D.	Computer Information Systems	Yes
Assistant Professor #4	Ph.D.	Computer Science	Yes
Assistant Professor #5	Ph.D.	Computer Science	Yes
Assistant Professor #6	Ph.D.	Computer Science	Yes
Assistant Professor #7	M.S.	Computer Science	Yes
Lecturer #1	M.S.	Computer Science	Yes
Lecturer #2	M.S.	Computer Science	Yes

Lecturer #3	M.Ed.	Educational Technology	Yes
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**Necessary Qualifications of New Faculty**

Since ABET does not require a specific terminal degree in information technology for accreditation, new hires could be credentialed in computer science, information systems, information technology, or a closely related area. In addition to teaching information technology courses, any new faculty member would be able to teach courses in the computer science or information systems degree programs as well.

**Explanation of Proposed Changes in Assignment**

Current computer science and information systems faculty will staff the proposed new program. Because most of the courses in the proposed program are currently offered as a concentration within the existing computer science and information systems degrees, there will be minimal changes of assignment for existing faculty. As enrollments increase in all three degree programs offered by the department, it may be necessary to increase the number of full-time faculty to maintain the student-to-faculty ratio. Any future hires will be triggered by student demand and justified by increased tuition revenues.

**Institutional Plan for Faculty Development**

The University promotes professional development and growth through an ongoing process involving all faculty, and this will apply to the new B.S. in Information Technology. The Office of the Provost and Senior Vice-President for Academic Affairs oversees travel, reassigned time, small grants, and community service opportunities. Grants made available through the Office of the Provost include the following: Professional Activities Travel Mini-Grants, Academic Enhancement Grants, Assessment Mini-Grants, and Proposal Writing Grants. Support for faculty travel for presentation at professional conferences is available from the College of Science. Scholarly activities are also supported by the Office of the Vice-President for Research, providing pre-award and post-award support services for faculty seeking external funding.

**Institution’s Definition of Full-time Equivalent**

Every 21 credit hours taught during the academic year is equivalent to one Full-Time Equivalent (FTE).

**Unit Administration, Faculty, and Support Table**

UNIT ADMINISTRATION/FACULTY/STAFF SUPPORT						
Year	New		Existing		Total	
	Headcount	FTE	Headcount	FTE	Headcount	FTE
<b>Administration</b>						
2014-2015	0	0.00	1	0.33	1	0.33
2015-2016	0	0.00	1	0.33	1	0.33

<b>UNIT ADMINISTRATION/FACULTY/STAFF SUPPORT</b>						
<b>Year</b>	<b>New</b>		<b>Existing</b>		<b>Total</b>	
	Headcount	FTE	Headcount	FTE	Headcount	FTE
2016-2017	0	0.00	1	0.33	1	0.33
2017-2018	0	0.00	1	0.33	1	0.33
2018-2019	0	0.00	1	0.33	1	0.33
<b>Faculty</b>						
2014-2015	0	0.00	11	2.24	11	2.24
2015-2016	0	0.00	11	2.24	11	2.24
2016-2017	0	0.00	11	2.24	11	2.24
2017-2018	0	0.00	11	2.24	11	2.24
2018-2019	0	0.00	11	2.24	11	2.24
<b>Staff</b>						
2014-2015	0	0.00	1	0.33	1	0.33
2015-2016	0	0.00	1	0.33	1	0.33
2016-2017	0	0.00	1	0.33	1	0.33
2017-2018	0	0.00	1	0.33	1	0.33
2018-2019	0	0.00	1	0.33	1	0.33

### **X. Physical Plant**

**Explanation of the Proposed Program’s Effect on the Physical Plant’s Ability to Support the New Program**

At present, the Department of Computer Science and Information Systems is located in the Coastal Science Center, a 68,202 square foot classroom and laboratory facility. Within this building, the department has 6,513 square feet of office, laboratory, and student study space. Also, this building provides 13,303 square feet of shared teaching space among thirteen classrooms.

The department has three computer labs available for student use: a computer-based teaching lab, in which introductory programming courses are offered; a student research and study lab; and a student study lounge with additional computers. Students have access to additional study space in the area adjacent to faculty offices, encouraging faculty-student interaction. Since the IT program will leverage existing resources with the addition of only a few extra courses, current department facilities will be adequate to support the proposed program for the first five years.

### **Discussion of Additional Physical Plant Requirements**

The proposed B.S. in Information Technology program requires no additional physical plant requirements. Any changes will be dictated by growth in enrollment.

## **XI. Equipment**

The Department of Computer Science and Information Systems has three teaching and study labs equipped with computer workstations that provide both Linux and Windows operating environments. Hardware upgrades for these systems are in progress, with additional upgrades planned within the next two years.

In addition to lab computers, the department also possesses specialty equipment that will directly support the IT program. For example, the department has a collection of network switches and devices that already support the existing networking class. Human interface devices, such as Leap Motion controllers and Xbox Kinect units already used in software engineering, could be leveraged to support the human-computer interaction class scheduled to run in Fall 2014. Server resources are available to host student websites and programming projects, and former lab machines are retained in storage to decompose into parts for the computing hardware and infrastructure course, which is also scheduled for Fall 2014.

For general-purpose computing needs, students in the department are required to own personal laptop computers. Customized software environments suitable for system administration exercises can be deployed on top of these laptops using freely available virtualization software. As a result, the department is able to leverage students' own devices in order to ensure access to the technologies required in the classroom.

Since the department is in a strong position with existing technology supplies, no new major equipment items will be needed for at least the first five years of the program.

## **XII. Library**

### **Effect of the Proposed Program on the Library's Ability to Support the Program**

A quantitative comparison of Kimbel Library's holdings was conducted using *Bowker's Book Analysis System*. This collection tool compares current library holdings against a core list of monographs recommended for academic libraries by subject bibliographers. Comparison with such a list controls for age of collection held by peer libraries and offers a standard by which any library's holdings may be measured. The library's collection also includes media formats. Media materials may be an important part of the library's holdings for information technology, and while not considered "core" titles, must be included in a quantitative assessment of titles that support the program. Likewise, Kimbel Library's journal holdings were examined in *Ulrich's Serials Analysis System*, which compares our total periodical holdings with a recommended core list of periodicals for academic libraries. Online access to periodicals is provided via aggregator databases, publisher packages, open access titles, and direct online

subscriptions. Kimbel Library provides access to 1,091 print and online-accessible periodicals relevant to the proposed major (using the Ulrich's subject *Computers*). 37.9% of these represent core titles in the relevant subject areas.

The Library likely cannot be expected to reach a sufficient percentage of core titles within just the first five years of the program, but it can make judicious use of electronic resources and state-wide systems to supplement what it needs. The following quantitative summary lists the specific estimates of need.

### **Quantitative Analysis of Library Holdings**

- Thirty-seven subject areas and corresponding Library of Congress (LC) call number ranges were identified for the B. S. – Information Technology program. Of the 4,148 total titles owned, 948 (22.9%) are print, 3,197 (77%) are e-books, and 3 (0.1%) are media items. The e-book collection is *strong* in the areas of general science, computer science and mathematics (Q/QA) with 2,042 titles (63.9%) followed by technology (T/TA/TK/TR) with 994 (31.3%).
- Using *Bowker's Book Analysis System* as a reference point, Kimbel Library owns 73 (4.5%) of recommended core titles for the subject areas identified.
- Kimbel Library owns over 4,100 titles to support information technology studies; of these, only 4.5% overall are considered “core” titles for an academic collection. Ten percent (10%) is used as a practical benchmark for meeting core collection holdings to support a program. Actual cost of core titles not held among the subject areas that would be considered more constituent to the program is at least \$34,000. The Library realizes that these acquisition projections are based on an ideal collection of core titles; the numbers reported above are to be considered benchmarks to guide acquisition activities. Given the proposed program of study's computer utilization and the transitional nature of computer applications and technologies, should the emphasis be to move away from print monographs, electronic book options can be explored. The faculty may wish to adjust these figures based on curricular needs.
- Kimbel Library anticipates an allocation of \$34,000 (based on the actual cost of core titles not owned), or \$6,800 per year for five years for monographic acquisitions. Realistically, the Library cannot also be expected to reach the desired number of titles within the first five years of the program. At the end of the first five years of the program, the Library should review its holdings to ascertain the need for further funding in support of this major. In the meantime, students enrolled in the program can utilize external resources through South Carolina's shared resource program, PASCAL Delivers, or through interlibrary loan, both of which have provided excellent service and dependable resource acquisition for our students and faculty members.
- Journal subscriptions are an ongoing cost. The average cost of information technology-related journals in 2011 is \$1,593, with an average annual increase of 7%. The Library's budget would need to be increased to cover the continuation of any new journal titles added. Selection of journal titles should closely conform to titles indexed in sources available to CCU students. (See Appendix for a full explanation of the Library analysis.)

### **Qualitative Analysis of Library Holdings**

In the LC Classification areas reviewed, Kimbel library holds 4,148 titles in all supporting areas. Of the 4,148 titles analyzed, 563 (13.6%) were published prior to 2000, oldest dated 1925. Average publication year of the collection is 2004 (or average age eight years); median publication year is 2007 (or median age 5 years); most frequent publication year is 2009. Electronic books make up 77% (3,197) of the analyzed total.

Circulation statistics available since 1997 (the year Kimbel Library implemented its automated library system) show that of 1,020 *physical* items (electronic books are not included in circulation statistics), 621 were checked out 1,748 times, or on average two times each. More precisely, 399 physical items (dating from 1925 through 2011) had no circulation incidents, and 249 had two or more circulation incidents, up to 10 or more incidents for 10 titles. These "Top 10" titles have circulation counts ranging from 10 to 19 uses; all books are in the QA call number range (mathematics and computing machinery.) DVDs had only one or two circulation incidents. There is no correlation between publication date and item circulation.

In-house use (tracked from 1999) for the same 1,020 physical items show that 624 (61%) of these have no record of internal use, while 396 items were used in-house at least once, up to more than 10 uses for two titles. These two high internal use titles, dated 1986 and 2004, demonstrate that there is no correlation between in-house use and publication date. Internal use of DVDs is zero, since security cases for these items require that they be checked out (circulated) in order to be used. (Please see Appendix for full analysis.)

### **XIII. Accreditation, Approval, Licensure or Certification**

#### **Discussion of the Impact on Program Accreditation**

Coastal Carolina University will seek accreditation for the degree in information technology within four years of program initiation. The degree in theoretical computer science has been accredited by the Accreditation Board for Engineering and Technology (ABET) since 2002, and they will assess the information systems degree in 2014. The same accrediting board will later assess the information technology degree. ABET accreditation is based on the evaluation of a program's student achievement, program improvement, faculty, curricular content, facilities, and institutional commitment.

ABET Curriculum Requirements for Information Technology [4]

Students must have course work or an equivalent educational experience that includes:

a. Coverage of the fundamentals of

1. the core information technologies of human computer interaction, information management, programming, networking, web systems and technologies. [IT]
2. information assurance and security. [IT]
3. system administration and maintenance. [IT]
4. system integration and architecture. [IT]

b. Advanced course work that builds on the fundamental course work to provide depth. [IT]

[4] Criteria for Accrediting Computing Programs, 2013-2014. ABET Website.  
<http://www.abet.org/DisplayTemplates/DocsHandbook.aspx?id=3148>

### **XIV. Articulation**

The Bachelor of Science in Information Technology is designed to allow students with an A.A.S. degree in Computer Technology from Horry Georgetown Technical College to earn a Bachelor's degree in two years beyond the Associate's degree. A Memorandum of Understanding between HGTC and CCU, which ensures that HGTC credits transfer favorably, is attached in the Appendix C. A mapping of HGTC courses into the proposed IT program is included in the MOU document.

### XV. Estimated Costs and Sources of Financing

<b>ESTIMATED COSTS BY YEAR</b>						
<b>CATEGORY</b>	<b>1<sup>ST</sup></b>	<b>2<sup>ND</sup></b>	<b>3<sup>RD</sup></b>	<b>4<sup>TH</sup></b>	<b>5<sup>TH</sup></b>	<b>TOTALS</b>
Program Administration <sup>1</sup>	\$26,219	\$26,743	\$27,278	\$27,824	\$28,380	\$136,445
Faculty Salaries <sup>2</sup>	\$122,024	\$124,465	\$126,954	\$129,493	\$132,083	\$635,020
Graduate Assistants	0	0	0	0	0	0
Clerical/Support Personnel <sup>3</sup>	\$12,076	\$12,318	\$12,564	\$12,815	\$13,071	\$62,844
Supplies and Materials	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000
Library Resources	\$6,775	\$6,775	\$6,775	\$6,775	\$6,775	\$33,874
Equipment	0	0	0	0	0	0
Facilities	0	0	0	0	0	0
Other	0	0	0	0	0	0
<b>Totals</b>	<b>\$168,094</b>	<b>\$171,301</b>	<b>\$174,571</b>	<b>\$177,907</b>	<b>\$181,310</b>	<b>\$873,183</b>
<b>SOURCES OF FINANCING BY YEAR</b>						
<b>CATEGORY</b>	<b>1<sup>ST</sup></b>	<b>2<sup>ND</sup></b>	<b>3<sup>RD</sup></b>	<b>4<sup>TH</sup></b>	<b>5<sup>TH</sup></b>	<b>TOTALS</b>
Tuition Funding (all students)	\$197,856	\$380,190	\$437,773	\$471,015	\$490,921	\$1,977,755
Program-Specific Fees						0
State Funding						0

Reallocation of Existing Funds						0
Federal Funding						0
Other Funding (Endowment, Auxiliary etc.)						0
<b>TOTALS</b>	\$197,856	\$380,190	\$437,773	\$471,015	\$490,921	\$1,977,755

**Statement About Assumptions for Cost Table**

The following items have dictated estimates about funding:

- (1) Program administration is based upon .30 of Director's salary plus 28% fringe for year one. Years 2-5 are based on a 2% increase.
- (2) 28% Fringe Benefits are included with faculty salaries. Years 2-5 are based on a 2% increase.
- (3) Clerical/Support salary includes 28% fringe for year one. Years 2-5 are based on a 2% increase.

**Statement About Unique Costs or Other Special State Appropriations**

Tuition fees are estimated to cover the cost of this new program. The proposed B.S. in Information Technology program has no unique costs or other special state appropriations associated with it. No funding will be requested from the state.

**Information Regarding Estimated Program Costs**

Program costs are covered by students' tuition payments. Estimates indicate a potential for sustained growth over the first five years of the program.

## Appendix A. Library

### Library Resources

Kimbel Library is a small academic library with holdings of over 200,000 items in all formats. We currently subscribe to over 17,000 magazines, newspapers, scholarly journals and proceedings in print and online formats. The Library provides access to its holdings and to about 100 online citation, abstracting, full-text and reference resources via the World Wide Web at <http://www.coastal.edu/library>. Library instruction sessions cover general library usage as well as project or course-specific sessions for upper-level research oriented courses.

### SECTION 1. Quantitative Comparison of Library Holdings

#### Monographs

Thirty-seven subject areas and corresponding Library of Congress (LC) call number ranges were identified for the B. S. – Information Technology program (Table 1). Although a few areas (e.g. teaching, education, and library information networks) may seem unrelated to the field of information technology, the subject matter of items analyzed would correlate to topics addressed in the ethics and human-computer interaction courses. **Of the 4,148 total titles owned, 948 (22.9%) are print, 3,197 (77%) are ebooks, and 3 (0.1%) are media items.** The ebook collection is strong in the areas of general science, computer science and mathematics (Q/QA) with 2,042 titles (63.9%) followed by technology (T/TA/TK/TR) with 994 (31.3%); the remainder are 127 titles in social sciences (HD/HE/HF), 23 in Information Resources (Z/ZA), 9 in Law (K/KF), and 2 in Education (LB).

A quantitative comparison of Kimbel Library's holdings was conducted using *Bowker's Book Analysis System*. This collection tool compares current library holdings against a core list of monographs recommended for academic libraries by subject bibliographers. Comparison with such a list controls for age of collection held by peer libraries and offers a standard by which any library's holdings may be measured. The library's collection also includes media formats. Media materials may be an important part of the library's holdings for information technology, and while not considered "core" titles, must be included in a quantitative assessment of titles that support the program. **Quantitatively, Kimbel Library owns 73 (4.5%) of recommended core titles for the subject areas identified.** The highlighted information in Table 1 are addressed in the quantitative estimate of acquisitions needed (SECTION 3).

<b>Table 1. Quantitative Summary of Library's Monograph Holdings</b>						
<b>Library of Congress Subject Heading</b>	<b>Corresponding Call # Range or Ranges</b>	<b>CCU Owns</b>	<b>Core Titles Owned</b>	<b>Core Titles not Owned</b>	<b>% Core Titles Owned</b>	<b>Cost of Core not Owned</b>
Management, industrial management	HD 28 – 70	3	0	395	0%	\$22,304.00
Web site development industry	HD 9696.82	1	0	9	0%	\$503.00
Online information service industry. ISPs	HE 7581 – 7583	1	0	2	0%	\$68.00
Telecommunications industry—Internet	HE 7601 - 700.9	1	0	37	0%	\$2,617.40

<b>Table 1. Quantitative Summary of Library's Monograph Holdings</b>						
<b>Library of Congress Subject Heading</b>	<b>Corresponding Call # Range or Ranges</b>	<b>CCU Owns</b>	<b>Core Titles Owned</b>	<b>Core Titles not Owned</b>	<b>% Core Titles Owned</b>	<b>Cost of Core not Owned</b>
Business ethics	HF 5387	1	0	22	0%	\$1,424.30
Office management	HF 5546 - 548.6	112	0	11	0%	\$1,315.65
Personnel management	HF 5549 - 5549.5	1	0	63	0%	\$3,546.93
Business communication	HF 5717 - 5734.7	78	2	17	10.5%	\$644.47
Online social networks	HM 742	9	0	0		\$0.00
Information society (sociology)	HM 851	1	1	14	6.7%	\$629.54
Crimes and offenses	HV 6251 - 773.55	20	2	247	0.8%	\$14,335.43
Intellectual property/copyright	K 1401 - 1485	3	0	6	0%	\$256.94
Federal law (dealing with Internet and Web)	KF 390.5, 2979, 3020-3030, 4150, 4772	12	3	19	13.6%	\$772.29
Teaching (principles and practice)	LB 1025 - 050.75	2	0	167	0%	\$10,425.65
Higher education	LB 2300 - 2430	2	0	77	0%	\$4,946.80
Commercial art	NC 997 - 1003	1	0	31	0%	\$1,362.11
System theory, information modeling	Q 295	1	0	0	0%	\$0.00
Machine learning	Q 325.5	1	0	5	0%	\$483.45
Electronic computers/computer science	QA 75.5 - 76.95	1,873	17	148	10.8%	\$11,470.80
Mathematical statistics	QA 273 - 280	552	18	70	20.5%	\$11,384.83
Calculus	QA 300 - 316	251	18	29	38.3%	\$1,693.94
Technical writing	T11 - 11.3	34	7	10	41.1%	\$676.85
System analysis	T 57.5 - 57.97	2	0	22	0%	\$2,840.59
Information technology	T 58.5 - 58.64	7	0	4	0%	\$279.95
Patents/trademarks	T 201 - 342	1	0	0		\$0.00

<b>Table 1. Quantitative Summary of Library's Monograph Holdings</b>						
<b>Library of Congress Subject Heading</b>	<b>Corresponding Call # Range or Ranges</b>	<b>CCU Owns</b>	<b>Core Titles Owned</b>	<b>Core Titles not Owned</b>	<b>% Core Titles Owned</b>	<b>Cost of Core not Owned</b>
Computer graphics	T 385	153	0	5	0%	\$303.95
Human engineering	TA 165 – 167	2	0	11	0%	\$1,538.85
Image processing	TA 1637	2	0	1	0%	\$95.95
Mobile communications systems	TK 5103.2 - 5103.4885	6	0	10	0%	\$1,151.95
Computer networks	TK 5105.5 5105.9	932	5	25	16.7%	\$2,140.89
Mobile communications systems	TK 6570.M6	5	0	0		\$0.00
Computer engineering	TK 7800 – 8360	31	0	74	0%	\$9,967.37
Computer animation	TR 897.7	15	0	1	0%	\$49.95
Desktop publishing	Z 253.53 - 53.532	1	0	0		\$0.00
Copyright—electronic information resources	Z 653.7	1	0	0		\$0.00
Library information networks	Z 674.7 - 674.83	4	0	0		\$0.00
Web searching/WWW/internet	ZA 4150 – 4380	26	0	2	0%	\$54.90
Total		4,148	73	1,534	4.5%	\$109,286.73
Total needed						\$33,874.08

Kimbel Library's journal holdings were examined in *Ulrich's Serials Analysis System*, which compares our total periodical holdings with a recommended core list of periodicals for academic libraries. Online access to periodicals is provided via aggregator databases, publisher packages, open access titles, and direct online subscriptions. Kimbel Library provides access to 1,091 print and online-accessible periodicals relevant to the proposed major (using the Ulrich's subject *Computers*). 37.9% of these represent core titles in the following relevant subject areas in Table 2 below.

<b>Table 2. Quantitative Summary of Library's Serial Holdings</b>				
<b>ULRICH'S SUBJECT</b>	<b>Library List Count</b>	<b>Number of Ulrich's Core with this Subject</b>	<b>Library Count as Percentage of Core</b>	<b>Ulrich's Core Titles Library Does Not Hold</b>
Computers (general)	213	760	28.0%	547
Artificial intelligence	148	363	40.8%	215
Automation	39	119	32.8%	80
Circuits	7	20	35.0%	13
Computer architecture	23	33	69.7%	10
Computer assisted instruction	15	24	62.5%	9
Computer engineering	38	114	33.3%	76
Computer games	9	21	42.9%	12
Computer graphics	56	115	48.7%	59
Computer industry	3	3	100.0%	0
Computer networks	61	128	47.7%	67
Computer programming	34	82	41.5%	48
Computer security	33	99	33.3%	66
Computer simulation	16	46	34.8%	30
Computer systems	67	168	39.9%	101
Cybernetics	20	51	39.2%	31
Database management	28	58	48.3%	30
Data communications and transmission systems	15	34	44.1%	19
Electronic data processing	20	37	54.1%	17
Hardware	6	9	66.7%	3
Information science and theory	78	260	30.0%	182
Internet	61	135	45.2%	74
Machine theory	2	8	25.0%	6
Microcomputers	16	19	84.2%	3
<b>Minicomputers</b>	<b>0</b>	<b>2</b>	<b>0.0%</b>	<b>2</b>
Personal computers	13	16	81.3%	3
Software	65	140	46.4%	75
Theory of computing	5	14	35.7%	9
<b>Total</b>	<b>1,091</b>	<b>2,878</b>	<b>37.9%</b>	<b>1,787</b>

Percentage-wise, the Library's core serials holdings are well met in all subject areas, with the exception of Minicomputers (highlighted below). There are two core serials, one of which is a foreign language title with no English equivalent (text in Chinese, according to Ulrich's). The

other title, *Proceedings of the International Symposium on Mini and Microcomputers*, can be requested through interlibrary loan.

## **Periodicals**

### Aggregators and Publisher Packages

Kimbel Library subscribes to the following [online databases](#) (subject: Computer Science).

[Academic Search Premier](#) covers the social sciences, humanities, education, and more.

[ACM Digital Library](#), published by the Association of Computing Machinery includes full-text articles from journals, magazines, and conference proceedings.

[Business Source Premier](#) includes scholarly business journals and other sources, including full text for peer-reviewed business publications.

[Computer Source](#) contains full text journals and magazines covering topics such as computer science, programming, information systems, and software. Geared towards researchers, undergraduates, and graduates.

[IEEE Computer Science Digital Library](#) publishes research on theory and application of computer and information-processing technology. It also provides online access to 26 society magazines and transactions and more than 2,700 conference publications.

[Science Direct](#) articles are full-text from 1995 to present, and include pre-prints.

[SpringerLink](#) provides online, full-text access to Springer's journal titles as well as journals from other publishers. (Kimbel Library also subscribes to this publisher's e-book/electronic monograph content.)

[Wiley Online Library](#) generally covers the health, business, education, and social sciences.

[Sage Journals Online](#) focuses on criminology, health sciences, business, history, sociology, and psychology.

[Web of Science](#) (abstracting and indexing source) contains bibliographic and citation information in the sciences, social sciences, arts, and humanities.

### Other

To supplement print monograph, ebook, and online journals, the Library provides access to the following:

[Films on Demand](#), a video-streaming database, has over 200 films on the subjects of Computers and Technology. The topics covered are graphics, games, and multi-media; programming and software; hardware and architecture; business and e-commerce; security and computer crime; technology and society; telecommunications, networking, and the Internet; technology and applications; and careers in technology.

## **SECTION 2. Qualitative Analysis**

In the LC Classification areas listed above in Table 1, Kimbel library holds 4,148 titles in all supporting areas. Of the 4,148 titles analyzed, 563 (13.6%) were published prior to 2000, oldest dated 1925. Average publication year of the collection is 2004 (or average age eight years); median publication year is 2007 (or median age 5 years); most frequent publication year is 2009. Electronic books make up 77% (3,197) of the analyzed total.

Circulation statistics available since 1997 (the year Kimbel Library implemented its automated library system) show that of 1,020 *physical* items (electronic books are not included in circulation statistics), 621 were checked out 1,748 times, or on average two times each. More precisely, 399 physical items (dating from 1925 through 2011) had no circulation incidents, and 249 had two or more circulation incidents, up to 10 or more incidents for 10 titles. These “Top 10” titles have circulation counts ranging from 10 to 19 uses; all books are in the QA call number range (mathematics and computing machinery.) DVDs had only one or two circulation incidents. There is no correlation between publication date and item circulation.

In-house use (tracked from 1999) for the same 1,020 physical items show that 624 (61%) of these have no record of internal use, while 396 items were used in-house at least once, up to more than 10 uses for two titles. These two high internal use titles, dated 1986 and 2004, demonstrate that there is no correlation between in-house use and publication date. Internal use of DVDs is zero, since security cases for these items require that they be checked out (circulated) in order to be used.

### **SECTION 3. Quantitative estimate of acquisitions needed**

Kimbel Library owns over 4,100 titles to support information technology studies; of these, only 4.5% overall are considered “core” titles for an academic collection. Ten percent (10%) is used as a practical benchmark for meeting core collection holdings to support the program. Subject areas of business communication, federal law (on matters of the Web), mathematical statistics, calculus, and technical writing meet or exceed this benchmark, and are therefore not included in the estimate of need.

Though computer science and computer networks are also above the 10% benchmark, these subjects are significant to the proposed program and the percentage of core titles owned are comparatively lower than those of the foundation courses (technical writing and calculus and statistics).

Actual cost of core titles not held among the subject areas that would be considered more constituent to the program (the information highlighted in Table 1) is at least \$34,000 but does not include the cost of materials to support areas with no identified core titles (online social networks, patents/trademarks, mobile communications systems, desktop publishing, copyright, and library information networks). The Library realizes that these acquisition projections are based on an ideal collection of core titles; the numbers reported above are to be considered benchmarks to guide acquisition activities. Given the proposed program of study’s computer utilization and the transitional nature of computer applications and technologies, should the emphasis be to move away from print monographs, electronic book options can be explored. The faculty may wish to adjust these figures based on curricular needs. Faculty may also consider additional monographs to cover business management, relevant industries, and sociology to help build upon the core title holdings in the social sciences.

Kimbel Library anticipates an allocation of \$34,000 (based on the actual cost of core titles not owned), or \$6,800 per year for five years for monographic acquisitions. It must be emphasized that the allocation is contingent upon the resources currently available and may change accordingly. Realistically, the Library cannot also be expected to reach the desired number of titles within the first five years of the program. At the end of the first five years of the program, the Library should review its holdings to ascertain the need for further funding in support of this major. In the meantime, students enrolled in the program can utilize external resources through South Carolina's shared resource program, PASCAL Delivers, or through interlibrary loan.

Journal subscriptions are an ongoing cost. The average cost of information technology-related journals in 2011 is \$1,593, with an average annual increase of 7%. The Library's budget would need to be increased to cover the continuation of any new journal titles added. Selection of journal titles should closely conform to titles indexed in sources available to CCU students.

## Appendix B. Assessment

### SECTION 1: INTRODUCTION

The information provided below is used to explain the accreditation processes that are in place for the programs in the Department of Computer Science and Information Systems. The Department of Computer Science & Information Systems has two degrees: (1) computer science [CS], and (2) information systems [IS]. A video providing an overview of our assessment process may also be found at <http://www.youtube.com/watch?v=u2q7p2TDwjc> .

Our assessment process is based on a "continuous improvement" methodology. The main goal is to always show improvement, or **positive trends**, in our assessment results -- even when performing "well" in a particular category. The idea of continuous improvement across all SLOs, rather than simply aiming at a static target for performance, fosters motivation in improving all aspects of the program. Our assessment process has the following steps: DATA COLLECTION --> ANALYSIS --> EVALUATION OF RESULTS / REFLECTION --> MODIFICATION / TAKE ACTION --> REPEAT...

### SECTION 2: ABET

One of our main departmental goals is to have each of our degree programs accredited by ABET (our CS degree is accredited and our IS degree is going up for accreditation for the first time this year). ABET is the accrediting body for engineering and computing degrees. ABET uses a six year assessment cycle, and both the CS and IS degrees follow the ABET cycle of assessment. While our assessment strategies incorporate the guidelines of ABET, the procedures followed also meet (or exceed) University requirements.

### SECTION 3: DATA COLLECTION

We use a **triangulation** strategy of data collection to **validate** our assessment data for each SLO assessed. Triangulation requires us to collect data from multiple sources using both **direct** and **indirect** methods. Direct assessment methods generally evaluate the skills of students by testing factual knowledge (e.g.: test questions). Indirect methods generally evaluate the interpretation of learning achieved (e.g. survey questions). We achieve triangulation by targeting three main data sources (each with numerous individual data points): Course data reported via Faculty Course Assessment Reports (FCARs), knowledge-based questions of the Senior Exit Exam, and survey-based questions of the Senior Exit Exam.

#### SECTION 3.1: FCARs (Faculty Course Assessment Reports)

Course data are generally categorized as direct data sources. Course data is reported in the form of Faculty Course Assessment Reports (FCARs). We target approximately 24 individual courses for assessment each year, depending on which courses are offered and which SLOs are measured in each course. FCARs are course assessment reports that are completed by the professor of the course after the end of the semester. The reason the teaching professor completes the report is due to the fact that faculty expertise is required to determine whether or not a student meets the various criteria for each assessment (project, exam, etc.). The reports focus on the specific SLOs that are being measured by a particular class (how this is determined is explained in the Schedule of Assessment -- Section 6 -- of this overview). The faculty member reports a **success ratio** for each SLO measured. This success ratio is based on the number of students who have successfully met a particular criterion versus the total number of students assessed.

**Success Ratio Explained:** During the 2012/2013 academic year, we measured SLO B. CSCI 450 01 (Principles of Compiler Design) which was *one* of the courses targeted for assessment for that particular year. In the example in Figure 1, the FCAR excerpt shows that Exam 1, Question 2 measured Course Objective 2. Course Objective 2 mapped to SLO B in this particular class. The ratio presented shows the number of correct scores versus the number of students who were evaluated. For example, if seven of eight students got Question 2 correct on Exam 1, then the ratio measuring success entered is as 7/8, as shown in Figure 1.

Method of Assessment	Course Objective Measured						
	1	2	3	4	5	6	7
Exam 1 Q2		7/8					

Figure 1: Success Ratio in an FCAR

A ratio is displayed for each assessment method in the class and a complete listing of ratios is obtained. If the course measures one SLO and used five different test questions to measure that SLO, we will obtain five different success ratios. We then compile the success ratios for use in our data analysis. For example, if there were five different exam questions measuring a particular SLO, and the success ratios were 7/8, 3/8, 6/7 (maybe a student was absent that day, leaving only 7 students to evaluate), and 6/8, the compiled success ratio would be 22/31.

### SECTION 3.2: Senior Exit Exam (Knowledge-Based Sections)

The Knowledge-based questions on the Senior Exit Exam provide a direct assessment. The Senior Exit Exam is a two-part evaluation of student knowledge that takes place just before a student graduates. The exam was developed in-house. The knowledge-based questions of the Senior Exit Exam are designed to test the students' knowledge on topics directly related to the outcomes being measured. Only correct answers are considered meeting each criterion in determining the score explained in the introduction. The Senior Exit exam knowledge-based questions are categorized by the SLO measured. For example, Questions 1 – 4 measure SLO A, as displayed in Figure 2, so forth and so on...

**SLO A: An ability to apply fundamental principles of computing and mathematics**

1) The object-oriented paradigm is characterized by which of the following properties?

I. Polymorphism  
 II. Inheritance  
 III. Recursion

a) I only  
 b) II only  
**c) I and II only**  
 d) II and III only  
 e) I, II, and III

2) Consider the following pseudocode:

4) Consider the following recursive function.

```
int Fun ( int n)
{
    if (n == 4)
        return 2;
    else
        return 2 * Fun (n + 1);
}
```

What is the value returned by the function call Fun (2) ?

a) 2  
 b) 4  
**c) 8**  
 d) 16  
 e) 24

**SLO B: An ability to analyze a problem, and identify and**

Figure 2: Senior Exit Exam Direct Assessment (Knowledge-based Questions)

When students complete the exam, a success ratio is counted for each individual question. For example, if 12 students took the exit exam and 3 of them got Question 1 correct, the success ratio for that question will be 3/12. As shown in Figure 2 (above), SLO A, for example, has four questions. The success ratio will be counted for each question. For example, if 3 students

answered Question 1 correctly, 8 answered Question 2 correctly, 12 answered Question 3 correctly and 1 answered Question 4 correctly, we would report success ratios of 3/12, 8/12, 12/12, and 1/12 respectively.

**SECTION 3.3: Senior Exit Exam (Survey-Based Sections)**

The Survey-based questions on the Senior Exit Exam provide an indirect assessment. The survey-based questions of the senior exit exam are designed to assess the strength of the department to cover the outcomes being measured in addition to the ability of the student to perform tasks related to the SLO being measured. The survey question answers range from 'strongly disagree' to 'strongly agree' for each question. Only answers that result in an 'agree' or 'strongly agree' are considered as successfully meeting the criteria, so a success ratio would be based on the number of students answering 'agree' or 'strongly agree' for each survey question. As shown in Figure 3, there are four separate performance criteria that measure SLO A. Because we ask both “strength of coverage” and “ability (to perform)” the tasks listed, we will obtain eight separate success ratios for SLO A on the Senior Exit Exam specifically measuring indirect (survey-based) data.

*STRENGTH OF COVERAGE: Please rate the STRENGTH OF COVERAGE of the skills listed by CCU's Computer Science Department using the scale provided.*  
*YOUR ABILITY: Please rate YOUR ABILITY to perform the skills listed using the scale provided.*

STRENGTH OF COVERAGE					YOUR ABILITY				
5	4	3	2	1	5	4	3	2	1
<b>SLO A: An ability to apply fundamental principles of computing and mathematics</b>									
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use an algorithm to solve a given problem.					<input type="radio"/>				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Analyze a design along dimensions of complexity, performance, reliability, or security of a system.					<input type="radio"/>				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interpret data abstractions or binary encodings.					<input type="radio"/>				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrate smaller or partial system components to solve larger problems.					<input type="radio"/>				
<b>SLO B: An ability to analyze a problem, and identify and define the requirements appropriate to its solution</b>									
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform tasks and/or operations.					<input type="radio"/>				

Figure 3: Survey-based Question on the Senior Exit Exam

**SECTION 4: ANALYSIS**

We collect the success ratios for all individual data sources and compile them. We then convert the ratios to a four-point scale, ranging from 1.0 - 4.0, to score each SLO. **The scores are simply a numerical way to represent the data and to mathematically compare the scores each time an SLO is evaluated.** Scores can be mathematically analyzed and are in a format that is familiar to faculty since the assessment scores use the same score values as student GPAs. For example, any faculty member can relate to the scores naturally, extrapolating from the assessment scores that a 1.0 represents a poor score (similar to a grade of a D), a 2.0 represents a fair score (similar to a grade of C) a 3.0 represents a good score (similar to a grade of a B), and a 4.0 represents an excellent score (similar to a grade of A). As previously mentioned, even when SLOs score "well" (a minimum of a 3.0 score), there is still opportunity for improvement. To demonstrate, examples used in the 2012/2013 report are explained below. This process is repeated for each SLO measured.

**SECTION 4.1: FCARs (Faculty Course Assessment Reports)**

Figure 4 shows an example of the data for SLO B from all course FCARs. As previously explained, each course may have multiple sources of assessment, which are compiled into one success ratio for each course. The score of 2.6 for this SLO from the FCAR data is calculated. As shown, a 2.6 is in the middle of the "C" or "fair" range.

SLO B			
Total	181	280	2.6
Course	Accept	Total	Score
CSCI 350	86	144	2.4
CSCI 450	49	72	2.7
CSCI 390	31	44	2.8
CSCI 220	15	20	3.0

Figure 4: FCAR Data for SLO B in 2012/2013

**SECTION 4.2: Senior Exit Exam (Knowledge-Based Sections)**

Figure 5 shows that Questions 5 – 9 on the knowledge-based questions were mapped to SLO B and a point was given for each correct answer. The Accept/Total results (in Figure 5) are then converted to the 4-pt scale. As shown, there is an overall score of 2.0 (after compiling all of the results for this particular SLO). This would indicate that the direct assessment score of 2.0 is at the lower end of the "C" or "fair" range.

			SLO B				
			2.00				
SCORE							
Accept			3	3	4	0	0
Total			4	4	4	4	4
Score			3.00	3.00	4.00	0.00	0.00
Semester	Last	First	Q5	Q6	Q7	Q8	Q9
iP13			1	0	1	0	0
iP13			0	1	1	0	0
iP13			1	1	1	0	0
iP13			1	1	1	0	0

Figure 5: Senior Exit Exam (Direct Measure) for SLO B in 2012/2013

**SECTION 4.3: Senior Exit Exam (Survey-Based Sections)**

Figure 6 shows that Questions 1 – 3 on the survey portion of the exam measure both strength of coverage and ability to perform tasks associated with SLO B. A point was given where scores were a 5 (Strongly Agree) or a 4 (Agree). The Accept/Total scores shown in Figure 6 were then compiled and a score of 2.8 was calculated for this SLO, which measures at the higher end of the "C" or "fair" range.

			SLO B						
			SCORE						
			2.8						
			Accept	2	3	4	2	3	3
			Total	4	4	4	4	4	4
			Score	2	3	4	2	3	3
			SurveyST			SurveyAB			
Semester	Last	First	Q1	Q2	Q3	Q1	Q2	Q3	
P13			0	0	1	0	1	1	
P13			1	1	1	1	1	0	
P13			0	1	1	0	0	1	
P13			1	1	1	1	1	1	

Figure 6: Senior Exit Exam (Indirect Measure) for SLO B in 2012/2013

**SECTION 4.4: Compiled Results**

Once the scores are recorded from the data sources, they are compiled and a final score is calculated. As shown in Figure 7, for SLO B, **324 individual data points** (the total number of assessed data points) were collected from both direct and indirect sources with a final success ratio of 208/324, which translated into a 2.6. This would indicate that the overall score for this SLO in this particular year scored at the mid-point of the "C" or "fair" range.

	OVERALL			DIRECT						INDIRECT				
	Score	Accept	Total	FCAR		OUTCOMES			SCORE	OUTCOMES			SCORE	
				Accept	Total	Score	Accept	Total		Score	Accept	Total		Score
SLO A														
SLO B	2.6	208	324	181	280	2.6	10	20	2.0	2.5	17	24	2.8	2.8

Figure 7: Compiled Results for SLO B in 2012/2013

**SECTION 5: EVALUATION OF RESULTS**

Once the overall score for an SLO is calculated, it is then compared to the prior scores according to the assessment schedule. Figure 8 shows a comparison of scores from one year to another. By the end of the six year cycle, each SLO will be measured three times.

SLO	Description	Year 1 09-10	Year 2 10-11	Year 3 11-12	Year 4 12-13	Year 5 13-14	Year 6 14-15
A	An ability to apply fundamental principles of computing and mathematics	CS: 2.8 IS: 2.0		CS: 2.8 IS: 2.7		X	
B	An ability to analyze a problem, and identify and define the requirements appropriate to its solution		CS: 2.6 IS: 2.7		CS: 2.6 IS: 2.1		X

Figure 8: Comparison of Scores

**We use this historical data to find patterns in our assessment. If we see a trend (either positive or negative), we can drill down to the exact data sources (questions on an exam in a course, survey questions, etc...) that contribute to the trend. The evaluation is used to practice continuous improvement. For example, if we see a particular question on the exit exam is consistently being answered incorrectly by a significant number of students, we can see if the question is appropriate. Sometimes our academic goals shift and a question becomes outdated. Other times, we will see that we need to address the situation by**

***targeting courses where more attention is needed to class material that measures a particular SLO. We repeat this process according to our assessment schedule and make adjustments as necessary.***

#### **SECTION 6: SCHEDULE OF ASSESSMENT**

We do not report assessment results for every SLO every year. While we would perform assessment regardless of accreditation, we do follow the assessment schedule for ABET accreditation. We have worked with both the College of Science and University assessment committees to create an assessment plan that satisfies the University assessment requirements while also fulfilling ABET requirements.

For example, ABET is very prescriptive in terms of its program assessment. In the computing fields, ABET requires at least nine SLOs to be measured for each program. In addition to the nine core SLOs, each individual program of study has its own additional SLOs that must be assessed. SLOs A-I measure the core computing requirements, SLOs J and K are two additional computer science SLOs, and SLO L is the additional information systems SLO. Each SLO is mapped to one of three goals as shown in Figure 9. Because we have so many SLOs, we assess and analyze collected data on a rotating basis (also shown in Figure 9).

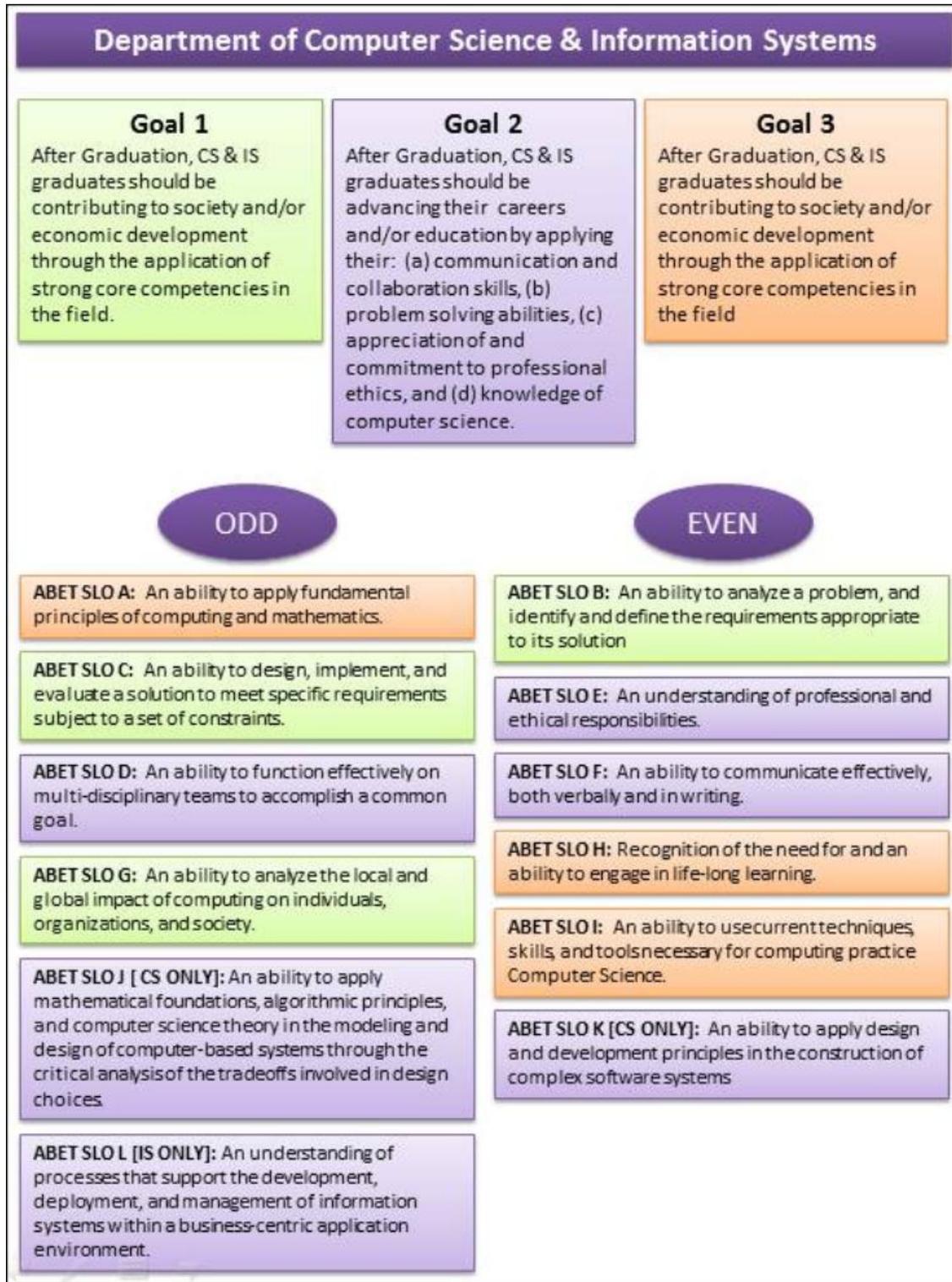


Figure 9 Mapping SLOs to Goals / Assessment Rotation

In addition to knowing which SLOs are to be measured each year, we also know in advance where the sources of data originate. The courses we target for assessment purposes depend on what SLOs are measured by which courses. We have faculty members called “course

coordinators” who are responsible for the content each course. In addition to keeping up with textbook and syllabus consistency, the course coordinator is also responsible for maintaining which SLOs are covered by a course.

For example, Figure 10 shows the information for CSCI 130, Introduction to Computer Science. As shown, we have a chart that maps each course objective (found on the syllabus) to an ABET SLO. We have one of these charts for every course in the program; thus we know which courses are covering which SLOs. *(This information is reviewed every semester the course is taught and updated as needed.)*

Course Objectives		SLO												
Upon completion of this course, the student should be able to:														
1. Demonstrate an understanding of basic computer science topics including algorithms, operating systems, hardware, software, and networking														
2. Demonstrate an understanding of data-related topics including data definitions, data manipulation, data abstractions, data storage, encoding, and database systems														
3. Demonstrate ways computer science topics can be used for solving problems.														
4. Demonstrate an understanding of introductory software engineering concepts														
5. Research current topics in the field of computer science														
6. Demonstrate an improvement in communication skills														
Course Objectives Mapped to Student Learning Outcomes		SLO												
		a	b	c	d	e	f	g	h	i	j	k	l	
CO	1											X		
	2	X												
	3									X				
	4												X	
	5								X					
	6						X							

Figure 10: Map of Course Objectives to SLOs

We use the mappings to determine which courses are going to be targeted for assessment during a particular semester. The assessment schedule is completed by the spring semester prior to the next academic year. For example, Figure 11 shows the targeted courses for FA12 and SP13 courses. This schedule was set in the SP12 semester, so there is plenty of notice for teaching faculty.

As shown in Figure 11, several courses were identified for assessment of SLO B during the 2012 academic year. There are times when a course will not provide the data necessary. For example, if a class does not make due to low enrollment, an alternate course is targeted. Getting replacement data is not difficult because we can easily determine which course can fill the need. An example of this is shown in the SP13 semester. The data for the CS degree was collected from CSCI 450 instead of CSCI 310 for that semester.

SLO	Description	Method of Assessment	
		FA12 Courses	SP13 Courses
A	An ability to apply fundamental principles of computing and mathematics		
B	An ability to analyze a problem, and identify and define the requirements appropriate to its solution	CSCI 350 (CS) [Brian] CSCI 370 (IS) [Mike]	<del>CSCI 310 (CS) [Will]</del> CSCI 450 (CS) [Brian] CSCI 409 (IS) [Chad]

Figure 11: Targeted Courses for Assessment for SLO B in 2012/2013

While the rotating schedule of the SLO assessment remains constant (see Figure 9), the targeted courses vary each year, depending on the class schedule.

The Senior Exit Exam (which consists of both the "direct" and "indirect" portions) is given every semester. It is given once at the end of the fall semester for December graduates, and once at the end of the spring semester for May and August graduates. The exam is given in the first open exam time block. We have had little conflict with this time block. If a student has an exam at that time, a makeup time is granted.

### **SECTION 7: MODIFICATIONS**

Because we have a set assessment schedule (meaning we know which SLOs are to be measured each year), we have opportunities to make modifications in our program after our analysis and evaluation, yet before the next data collection cycle.

**Senior Exit Exam** - Changes to the Senior Exit Exam are usually minimal. Modifications are made when the assessment analysis supports a change. For example, in the 2012 academic year, we found that no students scored a particular question of the exit exam correctly. Upon examining the question, we found that it was not a good measure of the skills learned in the curriculum. Our curriculum had changed, yet the exam was scoring outdated skills. The question was replaced with a more relevant question. Not all poor scores result in replacing an exam question. Noticing that we did not have a positive trend for one of the SLOs, we found that we were not emphasizing an important skill in our classes. We targeted the course where the skill was not being emphasized, and the material is now included in the course.

**FCARs / Courses** - At the end of each semester, FCARs are completed by faculty, who are required to reflect on the course and suggest changes for improvement after the close of the course. Not only do the FCARs collect success ratios for assessment data analysis, but the following questions are also asked:

1. Modifications Made to Course - Faculty members need to identify changes made since the last time they taught the course.
2. Evaluation of Course Objectives - This is the faculty member's written analysis of the data collected for each course objective.
3. Student Feedback - If a faculty member takes a course survey, this data is included. Otherwise, the faculty evaluation data (provided after the end of the semester) will be included.
4. Reflections - This section allows the faculty member to give personal reflections on the course (what worked, what didn't, etc.).
5. Proposed Actions for Course Improvement - This section is used to identify areas where improvements are needed. This will feed into the Modifications Made to the Course the next time the course is taught.

The written portions are used to provide continuity from one semester to another and from one faculty member to another (as some courses are taught by different faculty members over the years). If a faculty member is teaching a class for the first time, then both the existing syllabus and FCAR are available for guidance, in addition to personal guidance by the course coordinator for the course. The FCARs are essential to tracking areas where modifications are necessary in topics covered in courses.



Office of Risk Management

## MEMORANDUM

To: Susan Talbot, Provost Office

Subject: Contract (s) to include

RE: #487 HGTC MOA ITS

Date: December 16, 2013

Enclosed you will find two copies of the original Contract (s) for the above referenced. Please have the authorized representative complete the execution of the Contract (s) and return the original (s) to Rose Marie Johnson, Office of Risk Management, Singleton 106. Should you have any question, please do not hesitate to call Rose Marie at 349-6448.

Enc: Contract

**Memorandum of Agreement – Transfer Partnership  
Associate of Applied Science in Computer Technology  
to  
Bachelor of Science in Information Technology**

This Memorandum of Agreement establishes a partnership between Horry-Georgetown Technical College and Coastal Carolina University for the implementation of a completion program (2+2) for the Bachelor of Science degree in Information Technology awarded by Coastal Carolina University. This partnership is designed to increase the higher education opportunities for the graduates of Horry-Georgetown Technical College's Associate in Applied Science degree program in Computer Technology (Transfer Path).

Coastal Carolina University and Horry-Georgetown Technical College agree to provide the opportunity for a seamless transition for Computer Technology graduates of Horry-Georgetown Technical College to the Bachelor of Science in Information Technology at Coastal Carolina University. Horry-Georgetown Technical College is a multi-campus, publicly supported comprehensive community/technical college, part of the South Carolina Technical College System, and is authorized to award associate degrees, diplomas and certificates. Coastal Carolina University is a public, mid-sized, comprehensive liberal arts-oriented institution offering bachelor's and Master's degrees, and a doctoral level degree in Marine Science. Both institutions are accredited by the Southern Association of Colleges and Schools, Commission on Colleges.

Horry-Georgetown Technical College agrees to:

- Provide coursework for the completion of the Associate in Applied Science degree (75 credit hours) in Computer Technology, with student advisement for transfer coursework.
- Assist with the marketing and recruiting of associate degree graduates.

Coastal Carolina University agrees to:

- Give admissions preference to HGTC Computer Technology graduates.
- Accept a maximum of 76 credit hours of articulated Horry-Georgetown Technical College coursework towards the Coastal Carolina University Bachelor of Science in Information Technology (60 credits of A.A.S. in Computer Technology required coursework).
- Facilitate advising of Horry-Georgetown Technical College students for a seamless transfer of courses to Coastal Carolina University. Coastal Carolina University will provide staff for collaboration in order to advise Horry-Georgetown Technical College students who wish to transfer to Coastal Carolina University.

Horry-Georgetown Technical College and Coastal Carolina University both agree:

- Certain core curriculum requirements for CCU may be completed at either institution with a maximum of 76 credit hours accepted in transfer.
- Collaborate, as feasible and in accordance with each institution's policies, for joint utilization and/or scheduling of facilities, faculty and support services.
- Review this Memorandum annually and amend, in writing, as mutually agreed upon and with approval of authorized officials. At minimum, the Memorandum will be renewed every three years, if mutually acceptable.
- Monitor and adapt, as needed, to ensure successful implementation to meet the needs of Horry-Georgetown Technical College transfers. The institutions will continue to coordinate for the purpose of curriculum alignment.
- Communicate any proposed curriculum or admissions revisions prior to implementation.

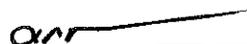
In order to receive transfer credit, students must do the following:

1. Complete the Associate in Applied Science Degree in Computer Technology that includes specific courses identified by this agreement.
2. Earn no less than the grade of C in any course.
3. Meet with a Coastal Carolina University advisor before enrolling in Coastal Carolina University coursework. This is recommended prior to graduation from Horry-Georgetown Technical College or as soon as possible following associate degree completion.
4. Meet admission criteria for Bachelor of Science in Information Technology at Coastal Carolina University by fulfilling the requirements specified in the catalog which is current at the time of application to the program.

Attachments: Advisement Plan for Students

AFFIRMED BY:

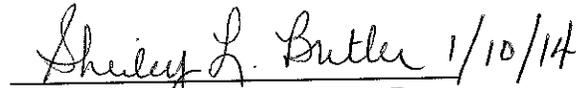
**Coastal Carolina University**

  
\_\_\_\_\_  
Michael Roberts                      12/17/13  
Dean                                      Date  
College of Science

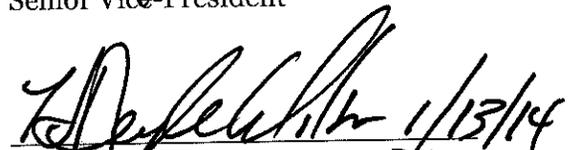
  
\_\_\_\_\_  
Ralph Byington                      12/12/13  
Interim Provost                      Date

  
\_\_\_\_\_  
David A. DeCenzo                      12/13/13  
President                                  Date  
Coastal Carolina University

**Horry-Georgetown Technical College**

  
\_\_\_\_\_  
Shirley Butler                      1/10/14  
Assistant Vice President – Dean of                      Date  
Academic Affairs

  
\_\_\_\_\_  
Marilyn Fore                      1/10/14  
Senior Vice-President                      Date

  
\_\_\_\_\_  
H. Neyle Wilson                      1/13/14  
President                                  Date  
Horry-Georgetown Technical College

Attachment: Advisement Plan for Students

**HGTC (Advisement Sheet for Transfer to B.S. in I.T. at CCU) [Programming Track]**

Degree: Associate in Applied Science

Major: Computer Technology

Emphasis: Programming

Credit Requirements: 75 semester credit hours

A.A.S in Computer Technology	Transfers as
<b>First Semester (Fall)</b> CPT 168 CPT 170 CPT 209 MAT 101, SUB MAT 110 (College Algebra) PHI 103, SUB PHI 110	CSCI 130 Intro to CS (Foundation) CSCI 110 Business Apps (Foundation) CSCI 211 Computer Infrastructure (Foundation) MATH 130 College Algebra PHIL 102 Intro to Ethics (Core)  Total transferred hours: 15
<b>Second Semester (Spring)</b> CPT 176 CPT 187 CPT 270 IST 166 MAT 122 (SUB MAT 120)	CSCI 1xx (Cognate) CSCI 140 Intro Algorithm Design (Foundation) CSCI 106 Advanced Comp Apps (Cognate) CSCI 1xx (Cognate) STAT 201 Statistics (Foundation)  Total transferred hours: 15
<b>Third Semester (Summer)</b> CPT 186 CPT 260 ENG 155 or SPC 205  IST 226 PSY 103, SUB PSY 201	CSCI 1xx (Cognate) CSCI 2xx (Cognate) ENGL 290 Business Communication or COMM 140 Oral Communication (Core, Foundation) CSCI 2xx (Foundation) PSYC 101 General Psych (Core)  Total transferred hours: 15
<b>Fourth Semester (Fall)</b> CPT 162 CPT 163 CPT 242 IST 271 Elective (CPT 213)	CSCI 120 Web Page Design(Foundation) CSCI 1xx (Cognate) CSCI 225 Intro DB and SQL (Foundation) CSCI 2xx (Cognate) CSCI 208 Visual Basic Programming (Cognate)  Total transferred hours: 15
<b>Fifth Semester (Spring)</b> ENG 160 or ENG 102  CPT 262 CPT 264 Major Elective (IST 236) Major Elective (IST 271)	ENGL 211 Technical Writing or ENGL 102 Composition and Critical Reading(Core, Foundation) CSCI 203 Intro Web App Dev. (Foundation) CSCI 2xx (Cognate) CSCI 2xx (Cognate) CSCI 2xx (Cognate)  Total transferred hours: 15
	Total Transferred Credits: 75

	<p>Total Remaining for degree requirements (59-64)</p> <p>Core: 28-29  Foundation: 7-11  Major: 24  Minor/Cognate: 0</p>
<b>CCU Semester 1 (Fall)</b>	<p>CSCI 370 Networking  CSCI 385 Information Security  Core (World Cultures 1)  Prob Solv. Crit Reas. Prof Dev. Elective 1  Core (Effective Communication*)</p> <p>*ENGL 101 or ENGL 102 or 211 or 290, depending on which ENGL courses student transfers from HGTC)</p> <p>Total: 15</p>
<b>CCU Semester 2 (Spring)</b>	<p>CSCI 335 Software Project Management  CSCI 3xx+  Core (World Cultures 2)  Core (Humanistic Concepts)  Prob Solv. Crit Reas. Prof Dev. Elective 2  CSCI 170 Ethics in Computer Science</p> <p>Total: 16</p>
<b>CCU Semester 3 (Fall)</b>	<p>CSCI 415 System Administration  CSCI 444 Human Computer Interaction  Core (Creative Expression)  Math 160 Calculus or Math 132 Business Calc  Core (Government)</p> <p>Total: 15-16</p>
<b>CCU Semester 4 (Spring)</b>	<p>CSCI 416 Linux System Administration  CSCI 427 System Integration  Core (Global Studies)  Core (Scientific Concepts)  STAT 201/L or CBAD 291 or PSYC 225/L*</p> <p>*If not transferred from HGTC</p> <p>Total: 13-17</p>

## HGTC (Advisement Sheet for Transfer to B.S. in I.T. at CCU) [Networking Track]

Degree: Associate in Applied Science

Major: Computer Technology

Emphasis: Networking

Credit Requirements: 75 semester credit hours

HGTC	Transfers to CCU as
<b>First Semester (Fall)</b> CPT 168 CPT 170 CPT 209 MAT 101, SUB MAT 110 (College Algebra) PHI 103, SUB PHI 110	CSCI 130 Intro to CS (Foundation) CSCI 110 Business Applications (Foundation) CSCI 211 Computer Infrastructure (Foundation) MATH 130 College Algebra PHIL 102 Intro to Ethics (Core)  Total transferred hours: 15
<b>Second Semester (Spring)</b> CPT 176 CPT 187 CPT 270 IST 166 MAT 122, SUB MAT 120	CSCI 1xx (Cognate) CSCI 140 Intro Algorithm Design (Foundation) CSCI 106 Advanced Comp. Apps (Cognate) CSCI 1xx (Cognate) STAT 201 Statistics  Total transferred hours: 15
<b>Third Semester (Summer)</b> CPT 260 ENG 155 or SPC 205  IST 161 IST 162 PSY 103, SUB PSY 201	CSCI 2xx (Cognate) ENGL 290 Business Communication <u>or</u> COMM 140 Oral Communication (Core, Foundation) CSCI 1xx (Cognate) CSCI 1xx (Cognate) PSYC 101 General Psych (Core)  Total transferred hours: 15
<b>Fourth Semester (Fall)</b> ENG 160 or ENGL 102  CPT 242 IST 165 IST 291 Elective (CPT 213)	ENGL 211 Technical Writing <u>or</u> ENGL 102 Composition and Critical Reading (Core, Foundation) CSCI 225 Intro to DB and SQL (Foundation) CSCI 1xx (Cognate) CSCI 2xx (Cognate) CSCI 208 Visual Basic Programming (Cognate)  Total transferred hours: 15
<b>Fifth Semester (Spring)</b> CPT 264 IST 209 IST 261 Major Elective, (IST 292) Major Elective, (IST 290)	CSCI 2xx (Cognate) CSCI 2xx (Cognate) CSCI 2xx (Cognate) CSCI 2xx (Cognate) CSCI 2xx (Cognate)  Total transferred hours: 15
	Total Transferred Credits: 75 (Math 130 is general elective)

	<p>Total Remaining for degree requirements (68-70)</p> <p>Core: 28-29  Foundation: 16-17  Major: 24  Cognate: 0</p>
<b>CCU Semester 1 (Fall)</b>	<p>CSCI 120 Web Page Design  CSCI 203 Intro Web App Development  Core (World Cultures 1)  Prob Solv. Crit Reas. Prof Dev. Elective 1  Core (Effective Communication*)  CSCI 170 Ethics in Computer Science</p> <p>*ENGL 101 <u>or</u> ENGL 102 <u>or</u> 211 <u>or</u> 290,  depending on which ENGL courses student  transfers from HGTC)</p> <p>Total: 16</p>
<b>CCU Semester 2 (Spring)</b>	<p>CSCI 335 Software Project Management  CSCI 3xx+  Core (World Cultures 2)  Core (Humanistic Concepts)  Prob Solv. Crit Reas. Prof Dev. Elective 2  Core (Government)</p> <p>Total: 18</p>
<b>CCU Semester (Summer)</b>	<p>STAT 201/L <u>or</u> CBAD 291 <u>or</u> PSYC 225/L*</p> <p>*If not taken at HGTC</p>
<b>CCU Semester 3 (Fall)</b>	<p>CSCI 415 Systems Administration  CSCI 444 Human Computer Interaction  CSCI 370 Networking  CSCI 385 Information Security  Math 160 Calculus <u>or</u> Math 132 Business Calc</p> <p>Total: 15-16</p>
<b>CCU Semester 4 (Spring)</b>	<p>CSCI 416 Linux System Administration  CSCI 427 System Integration  Core (Global Studies)  Core (Creative Expression)  Core (Scientific Concepts)</p> <p>Total: 16</p>

**Based on Proposed Fall 2014 IT curriculum:  
 INFORMATION TECHNOLOGY MAJOR  
 Degree: Bachelor of Science**

Students must earn a grade of **C** or better in all Foundation and Major Requirement courses.

I. CORE CURRICULUM (34-41 Credits)..... 34-41

II. FRESHMAN GRADUATION REQUIREMENT (0-3 Credits)

Minimum grade of **C** is required.

UNIV 110 The First-Year Experience ..... 3

UNIV 110 is required for all new entering freshmen and for new transfer students with fewer than 12 transfer credit hours unless the transfer student has satisfactorily completed a college transition course.

III. FOUNDATION COURSES (25-41\* Credits)\*

Choose one of the following: (3 credits) ..... 3

ENGL 211\*: Technical Writing (3)

ENGL 102\*: Composition and Critical Reading (3)

Communication

Choose one from the following: (3 Credits)..... 3

ENGL 290\*: Introduction to Business Communication (3)

ENGL 390: Business and Professional Communication (3)

COMM 140\*: Oral Communication (3)

Choose one of the following: ..... 3-4

STAT 201/201L\*: Introductory Statistics /Laboratory (4)

CBAD 291\*: Business Statistics (3)

PSYC 225/225L\*: Psychological Statistics/laboratory (4)

Choose one of the following:..... 3-4

MATH 132\*: Business Calculus (3)

MATH 160\*: Calculus (4)

Choose one of the following:..... 3

CSCI 101: Intro to the Internet and World Wide Web (3)

CSCI 130: Introduction to Computer Science (3)

CSCI 110: Enterprise Business Solutions..... 3

CSCI 120: Intro to Web Application Development..... 3

Choose one of the following: ..... 3-4

CSCI 135: Intro to Programming (3)

CSCI 140 and CSCI 140L: Introduction to Algorithmic Design (4)

CSCI 170: Ethics in Computer Science ..... 1

CSCI 211: Computing Infrastructure-Hardware..... 3

CSCI 225: Intro to Database Management Systems..... 3

CSCI 203: Introduction to Web Application Development..... 3

Problem Solving, Critical Reasoning, Professional Development..... 6

Choose 6 hours from the following (These courses may not overlap with the minor/cognate requirements):

CSCI 300 or higher	ENVI 331/MSCI 331 and	PHIL 110
CSCI 150 and CSCI 150L	ENVI 331L/MSCI 331/L	PHIL 220
CSCI 210	GEOG 200	PHIL 315
BINF 101 and BINF 101L	GEOG 204	PHIL 321
BIOL 122 and BIOL 122L	GEOG 311	PHYS 212 and PHYS 212L
CBAD 203	GEOG 400	PHYS 213 and PHYS 213L
CBAD 292	GEOL 112 and GEOL 112L	PHYS 321

CBAD 393	BSHA 455	PHYS 432
CBAD 364	HPRO 380	POLI 311
CHEM 112 and CHEM 112/L	MSCI 112 and MSCI 112L	POLI 421
COMM 274	MATH 161	PSYC 303
COMM 341 or THEA 341	MATH 174	RSM 394
ECON 321	MATH 220	ROTC 201 and ROTC 201L
ENGR 101	MATH 242/L	STAT 318
ENVI 201 and ENVI 201L	MATH 260	THEA 255
	MATH 320	THEA 356
	MATH 408	

\*Credits for courses taken as part of the Core Curriculum are not counted elsewhere in the major.

IV. MAJOR REQUIREMENTS (24 Credits)

CSCI 335: Software Project Management.....	3
CSCI 370: Networking .....	3
CSCI 385: Intro to Computer Security .....	3
CSCI 415: System Administration .....	3
CSCI 416: Linux System Administration .....	3
CSCI 427: System Integration.....	3
CSCI 444: Human Computer Interaction.....	3
CSCI Elective 300 level or higher .....	3

V. Minor (Web Application Development minor or Computer Science minor may not be used to satisfy this requirement) (18-24 Credits)

Students who transfer with an approved A.A.S in Computer Technology from a South Carolina Technical College may waive this requirement.

V. ELECTIVES (0-6 Credits) .....	0-6
TOTAL CREDITS REQUIRED .....	120