



College of Charleston

66 George Street
Charleston, South Carolina 29424-0001

Office of the President

April 21, 2008

Dr. Gail M. Morrison, Director and Deputy Director
Academic Affairs and Licensing Division
South Carolina Commission on Higher Education
1333 Main Street, Suite 200
Columbia, SC 29201

Dear Dr. Morrison:

Please find enclosed the Program Planning Summary for the Bachelor of Science degree program in Service-Oriented Systems and Management (SOSM). It is a new interdisciplinary program being offered in the Department of Computer Science with involvement of the School of Business and Economics. The curriculum has a blend of existing courses offered by Computer Science, Mathematics, Communications, the School of Business, and the Discovery Informatics program. In addition, new courses unique to the SOSM program will be developed and offered by Computer Science.

The College plans to submit a new program proposal for the Service-Oriented Systems and Management program in the very near future and looks for a favorable review from the Commission Staff. Please contact me if you have any questions.

Sincerely,

P. George Benson

PGB/ch

Program Planning Summary

**Bachelor of Science
Service-Oriented Systems and Management**



College of Charleston, South Carolina
May 1, 2008

P. George Benson

P. George Benson, President

DESIGNATION: New Program Proposed: Service-Oriented Systems and Management

Academic Units Involved: Department of Computer Science in
School of Sciences and Mathematics
Degree: Bachelor of Science
Hours Required: 122
CIP Code: 11.0103 (Information Technology)

The College of Charleston proposes an interdisciplinary Bachelor of Science degree program in Service-Oriented Systems and Management (SOSM). This new interdisciplinary program will be housed in the Department of Computer Science with involvement from the School of Business and Economics. The curriculum is truly trans-disciplinary with a blend of existing courses offered by Computer Science, Mathematics, Communications, the School of Business and Economics, and the Discovery Informatics program. In addition, new courses unique to the SOSM program will be developed and offered by Computer Science. The 122 credit hour program will require 36 hours in Computer Science (CSCI, DISC and SOSM course designations), 21 hours in Business, 10 hours in Mathematics and 3 hours in Communications. When one considers the DMAIC (define, measure, analyze, improve, and control) approach to process management, it is easy to see the necessity to have coursework in each area. The courses can be completed in eight semesters. The final semester includes a capstone software development course in software service modeling and enactment.

Program Objectives

- To prepare graduates to model processes, particularly those in business applications.
- To prepare graduates to build services to enact process models.
- To prepare graduates to analyze and optimize processes.
- To prepare graduates for a computationally sophisticated workforce.
- To offer an integrated program in computer science, mathematics and business.
- To mount a program of national distinction through its quality and uniqueness.

IMPLEMENTATION

Proposed date of implementation is the fall of 2009. This program will replace the existing BS program in Computer Information Systems offered in the Computer Science Department.

JUSTIFICATION OF NEED

The health of the global economy continues an unabated dependence upon growth in service sector offerings. According to a National Academy of Engineering report issued in 2003, the service sector now accounts for more than 80% of the US gross domestic product. As interesting as this statistic is, it has also revealed a surprising gap in the educational offerings from colleges and universities worldwide; there is no focused discipline that studies service systems. To that end, within the past five years, IBM has been facilitating a global conversation about the boundaries, topics and research problems that belong to an emerging field of study referred to as SSME – Service Science Management and Engineering. (Engineering in this context refers to software engineering and applied computing.)

Due to the strategic importance of the service sector and its relationship to the national economy, on August 9, 2007, President Bush signed into law “The National Competitiveness Investment Act” which includes Section 1106 regarding the study of service science. The act defines service science as:

4(d) Service Science Defined- In this section, the term 'service science' means curricula, training, and research programs that are designed to teach individuals to apply scientific, engineering, and management disciplines that integrate elements of computer science, operations research, industrial engineering, business strategy, management sciences, and social and legal sciences, in order to encourage innovation in how organizations create value for customers and shareholders that could not be achieved through such disciplines working in isolation.

Computer Science and Information Technology are integral to visions of service science. To this end, the Computer Science Department at the College of Charleston has been participating in discussions, both internally and externally, regarding the creation of an undergraduate degree that would serve to produce technologists that can participate in the delivery of service systems. Just as the Discovery Informatics program sits between the disciplines of math and computer science, the proposed new curriculum, Service-Oriented Systems and Management sits at the intersection of computer science and business. The intent is to replace the Computer Science Department's current Bachelor's Degree in Computer Information Systems with this program.

ANTICIPATED DEMAND AND PRODUCTIVITY

As of August 2007, IBM was tracking approximately 70 programs worldwide that had an emphasis in SSME, indicating a growing demand for this new approach for the application of computing in business. The majority of these programs are offered at the graduate level and within business schools. Inspiration for the proposed program was in part motivated by participation in IBM's SSME Education Summit in October of 2006. The structure of the proposed program has also benefited from insight and advice offered by colleagues in the School of Business and Economics, as well as input from the Computer Science Department's Industrial Advisory Board.

The number of majors in SOSM is expected to be approximately 50 (headcount) by year five. An additional cohort of non-majors will elect to take the Introduction to SOSM course. Program production is expected to be between 20 to 30 graduates per year by year five.

The program is expected to draw students from computer science, who would in the past have majored in Computer Information Systems, but choose SOSM because of their interest in business applications of computing. The program is also expected to attract students from the School of Business and Economics who want to pursue the application of computing to enact, model and analyze business processes. The program will be marketed across the state and nationally to attract highly qualified students. Although more than 70 graduate programs in SSME exist, this program will be one of the first *undergraduate* programs of this type in the United States.

Professionals sitting on the Joint Industrial Advisory Board for Computer Science at the College of Charleston and The Citadel, have expressed initial support of the SOSM program. These representatives work for businesses and government agencies in South Carolina and include SPAWAR, Modus21, ICF Consulting, Blackbaud Corporation, Automated Trading Desk, Life Cycle Engineering, ARINC Charleston Office, South Carolina Research Authority, VeloceNet, Inc., Northrop Grumman Corp., and Benefitfocus.com.

PROGRAM DUPLICATION

Undergraduate programs are being promoted and developed in the US and other countries including Brazil, Germany, Japan, Russia and Italy. Nearer Charleston, Florida A&M is also

developing an SSME program at the undergraduate level. Currently no undergraduate or graduate programs in SSME are offered in South Carolina.

RELATIONSHIP TO PROGRAMS AT THE COLLEGE OF CHARLESTON

The College of Charleston is in a unique position to offer an undergraduate degree program of national caliber in SOSM by combining the strengths of the School of Science and Mathematics and the School of Business and Economics. The College's nationally accredited programs, the strengths of its liberal arts and sciences programs, its unmatched number of Commendations of Excellence from the state and its high caliber faculty attest to and validate the position of leadership. A national leadership position established by the interdisciplinary SOSM program is strategically consistent with the college's Fourth Century Initiative and the state's economic growth strategy.

The interdisciplinary nature of this program is emphasized in the structure of the curriculum and the objectives of the program involving concepts and courses in business, communications, computer science, and discovery informatics. The most closely aligned program is the B.S. program in Computer Information Systems housed within the Computer Science Department.

SOSM does not closely align with current programs in the School of Business and Economics but will integrate courses in economics, accounting, marketing, management and organizational behavior. The B.S. program in Mathematics (with an emphasis in Discrete Mathematics) is most closely aligned with SOSM, but the math degree is significantly different and distinguishable by at least four mathematics courses in math theory and in numerical analysis and the SOSM design to emphasize business process modeling and service-oriented business applications. The relationship between SOSM and the computer science program is strong. SOSM will share computer programming and database courses. SOSM remains distinctive from the B.S. and B.A. programs in Computer Science. SOSM does overlap substantially with the B.S. in Computer Information Systems, and as a result the plan is to phase out Computer Information Systems program as the current cohort of students graduates, pending the approval of the SOSM program.

RELATIONSHIP TO PROGRAMS IN THE STATE

At this time, there are no other undergraduate programs in South Carolina in SOSM listed in the Inventory of Academic Programs. The undergraduate program inventory by CHE lists 22 accounting programs and 58 business programs (general, administration, organization and management). At the intersection of these two disciplines, students can also study Management Information Systems, combining computing and business with a business emphasis. Likewise, students can study computing in business through Computer Information Systems programs. The proposed program does not duplicate any program in South Carolina, although some may appear to be similar or have some overlap. The significant distinction is in focus on business process modeling and enactment through Web services.

TOTAL NEW COSTS

Due to a significant decline in students entering the Computer Science degree programs and a concomitant decrease in the number of students electing computing fluency courses, there is currently sufficient faculty teaching capacity to mount the program during the first five years of projected enrollment. No new faculty, classroom space or library budget will be required.