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September 5, 2002

**MEMORANDUM**

**To:** Mr. Dalton B. Floyd, Jr., Chairman, and Members, Commission on Higher Education

**From:** Ms. Dianne Chinnes, Chairman, Committee on Academic Affairs and Licensing

**Consideration of Consultants' Review of Existing Programs in Computer Science, FY 2000-01**

**Summary of Process**

Please find attached a summary of a report drafted by a Commission external consultant team on existing academic degree programs in computer science. The team visited South Carolina during the week of October 1, 2000, conducting site visits of the ten public universities that offer degrees in computer science.

The Commission staff requested that the team make recommendations on program status for each of the degree programs under review (i.e., commendation of excellence, continuing approval, provisional approval, termination) and that it base these recommendations on the self-study documents provided by the institutions along with perceptions gained on the site visits to the individual campuses. **Attachment 1** details the institutions and programs that the team reviewed as well as final recommendations for program status.

In terms of operational definitions for program status classifications, commendations of excellence are given to undergraduate programs that exhibit few if any weaknesses and that are of regional distinction; graduate programs qualify for commendations when they exhibit few if any weaknesses and are deemed of national distinction. Continuing approval status is awarded to programs that meet the general expectations of the peer review team; in these

cases, some improvements may be in order. Provisional approval status is recommended for programs that require certain modifications or corrective actions in order to improve the quality of the program. Termination status is recommended in cases where, in the professional judgment of the peer reviewers and the Commission, programs lack the quality or student enrollment to justify continuation.

The following consultants served on the Commission's review team:

Dr. Janet Hartman, Professor of Applied Computer Science, Illinois State University

Dr. John Impagliazzo, Professor of Computer Science, Hofstra University

Dr. Sundaraj Iyengar, Professor and Chair of Computer Science, Louisiana State University – Baton Rouge

Dr. Richard LeBlanc, Professor and Associate Dean of the College of Computing, Georgia Institute of Technology (Team Chair)

Dr. Stan Thomas, Associate Professor of Computer Science, Wake Forest University

Dr. John Tyler, Professor of Computer Science, Louisiana State University – Baton Rouge

The Commission staff selected consultants based on a competitive process that integrated institutional nomination and review of top faculty in the field of computer science with criteria specific to South Carolina's system of higher education. No consultant chosen for the review team holds a degree from or has ever been employed by any institution under review.

Unlike most of the Commission's program reviews, which are reviewed by the Committee on Academic Affairs and the full Commission within six months of the site visits, the Commission staff did not receive a complete draft of the review of programs in computer science from the team chair until April 2002, some 18 months after the campus visits. Owing to the inordinately long delay in receiving the draft report, the staff requested that the institutions under review provide information on changes made within their programs since October 2000 that might mitigate team recommendations. After reviewing the institutional responses, the staff concluded that significant strides have been made in the quality of programming in several computer science programs that the consultant team had originally awarded provisional approval status. (These programmatic

improvements are detailed in the “Institutional Findings” section below.) Consequently, the staff disagrees with the original team recommendations for provisional approval at The Citadel, Francis Marion University, Lander University, and South Carolina State University, and recommends that the Committee consider continuing approval status for programs at these institutions.

## **Summary of Findings**

### Statewide Observations

In general, the consultant team found that the array of degree programs in computer science at South Carolina’s public, senior institutions is of sufficient quality and number to meet most of the needs of the state’s students and employers. As is the case in the fields of computer science and computer information systems nationwide, the demand for graduates in these fields in South Carolina still outstrips the supply of graduates. Nevertheless, the team did not feel that the state needs additional degree programs in computer science at present, only that it needs to bolster the quality of existing programs and continue recruiting efforts that seek to enroll additional students in these programs.

From a statewide perspective, the consultant team made the following observations about computer science programming in South Carolina:

1. The single greatest concern relative to computer science programming is unusually high teaching loads for faculty. Team members identified high teaching loads or inadequate commitment of full-time faculty to the computer science program as a problem at nine of the ten institutions they reviewed. High teaching loads prevent faculty from giving individualized attention to students, both in class and in terms of academic advising. Furthermore, high teaching loads prevent faculty from engaging in the professional development activities that are critical in a fast-changing field such as computer science. The team suggested that many institutions should work harder to recruit and retain new faculty in computer science, especially those who hold the doctorate in the field. (It should be noted, however, that faculty hiring in computer science is a national problem given the large salaries many graduates in the field can command from private sector firms.)
2. Equipment at some institutions is out-of-date or inadequate to meet the changing needs of students and faculty. At many institutions, additional dedicated laboratory space is required to meet student and faculty needs.

3. Curricula in most programs are traditional yet typical of academic degree programs throughout the country. South Carolina institutions offer an adequate mix of theoretical and applied courses and programs.
4. Library resources are generally adequate, although a few institutions manifest significant problems in this regard. The team commends those institutions that invest in and share electronic databases pertinent to the field.
5. Enrollments are sound, especially in baccalaureate programs. Graduate enrollments are of some concern, especially at the doctoral level, where programs at Clemson and USC-Columbia are very small. Team members were quick to point out that this, too, is a national problem since many students never opt to gain the doctorate: high salaries in the private sector often win out over the desire or need to gain the terminal degree.
6. The strongest programs maintain reasonable teaching loads relative to their missions (College of Charleston is cited here). Additionally, these programs can count on strong administrative support from university administration as seen in the form of commitment to the following: faculty hiring, accreditation (College of Charleston, Clemson, USC-Columbia, and Winthrop maintain accreditation through the Computing Sciences Accreditation Commission), library support, a progressive attitude toward equipment purchasing (e.g., wireless networking at the College of Charleston), adequate laboratory space, and personalized student advising.

#### Institutional Findings and Recommendations

The team reviewed 21 programs at the ten institutions they visited. Of these, the team recommended commendation of excellence status for three programs (all at the College of Charleston), continuing approval status for 14 programs, and provisional status for four programs (baccalaureate degree programs at The Citadel, Francis Marion, Lander, and South Carolina State, respectively).

However, as noted above, the Commission staff favors modifying the team recommendations for provisional approval status to continuing approval status on the basis of information provided by the institutions originally slated to receive provisional approvals. Listed below are the specific enhancements made to these programs since October 2000—enhancements that the staff believes have mitigated recommendations for provisional approval status.

***The Citadel:*** The consultant team's main concern at The Citadel was with the inadequate number of faculty (three at the time of the visit) with primary commitment to the BS in Computer Science. In June 2002 correspondence to the Commission staff, the administration at The Citadel informed the staff that the institution has boosted the number of full-time faculty dedicated to the program from three at the time of the site visit to four in academic year 2001-02. While the new faculty member is a full-time temporary instructor with a primary background in mathematics, The Citadel also plans to hire a new tenure-track faculty member with the PhD in computer science to join the department in academic year 2002-03. Additionally, The Citadel has supplemented its full-time faculty complement with two new part-time hires, and one of the full-time tenured faculty has, since the October 2000 site visit, attained the PhD in computer science from Georgia Tech. Thus, the new hires at The Citadel—both full-time and part-time—should strengthen the program's ability to meet the needs of both students and faculty by reducing some of the strains on an overburdened department.

***Francis Marion University:*** Team members expressed concern about the high turnover rate of faculty in the BS program in Computer Science. Also, they lodged significant concerns about the adequacy of the equipment available to students and faculty. Recent correspondence received from the administration at Francis Marion indicates that the University has made three new hires in the department since the October 2000 site visit, one with a PhD in Computer Science and the other two with master's degrees in the field. Currently, the University is advertising for two additional hires in the department, one a tenure-track appointment and the other a three-year visiting appointment. Additionally, the chair of the department has remained in the position since the site visit, thereby adding a degree of stability to the program. Also, Francis Marion has dedicated new laboratory space and new equipment to the program and anticipates moving the program into a completely new facility in 2006.

***Lander University:*** Team members felt that the University was seriously compromising the quality of instruction in the BS in Computer Science program by failing to devote enough faculty and technical support to meet the needs of students and faculty. Since the site visit, Lander has hired two additional full-time faculty, one with a PhD in computer science, a part-time faculty member, and is in the process of searching for a technician to support laboratory space devoted to the major. These increases in full-time equivalent faculty and staff should enable the department to offer required coursework in a more timely fashion, enable faculty to engage in necessary professional development related to the discipline by reducing high teaching loads, and provide an adequate level of technical support for the program.

*South Carolina State University:* The consultant team expressed concerns regarding the high teaching loads at the University as well as inadequate laboratory space, equipment, and library holding related to the major, the BS in Computer Science. In correspondence dated February 28, 2002, the University administration provides ample evidence to suggest that South Carolina State has made great strides in resolving these concerns. The University has reduced teaching loads in the program to nine hours a semester, as suggested by the consultant team, has hired three new full-time faculty in the program (two with the PhD in computer science) and anticipates hiring a fourth, has allocated additional laboratory space for the program, and has significantly increased the number of library holdings in computer science.

It is also important to note that the consultant team recommended awarding commendations of excellence to the three programs in computer science at the College of Charleston that underwent review in October 2000. A new joint master's program in computer science with The Citadel had not been implemented at the time of the site visit. Consultants praised the productivity and teaching expertise of the faculty and were very impressed with the level of support for the program at every administrative level—department chair, dean, provost, and president.

### **Recommendation**

The Committee recommends that the Commission accept the consultants' review of existing academic degree programs in computer science and approve the designated status levels for individual programs reviewed as detailed on **Attachment 1**.

(Note: The full consultants' report is available upon request.)

**Review of Existing Academic Degree Programs in Computer Science,  
Fiscal Year 2000-01**

*Programs Reviewed and Program Status Recommendations*

Code	Degree	Program	Institution	NA	Recommendation
110101	BS	Comp. Science	The Citadel	NA	Approval
110101	BS	Comp. Science	Clemson	NA	Approval
110101	BA	Comp. Science	Clemson	NA	Approval
110101	MS	Comp. Science	Clemson	NA	Approval
110101	PhD	Comp. Science	Clemson	NA	Approval
110401	BS	Info. Systems	Clemson	NA	Approval
110101	BS	Comp. Science	Coastal Carolina	NA	Approval
110101	BS	Comp. Science	College of Charleston	NA	Excellence
110101	BA	Comp. Science	College of Charleston	NA	Excellence
110401	BS	Info. Systems	College of Charleston	NA	Excellence
110101	BS	Comp. Science	Francis Marion	NA	Approval
110101	BS	Comp. Science	Lander	NA	Approval
110101	BS	Comp. Science	SCSU	NA	Approval
110101	BSCS	Comp. Science	USC-Columbia	NA	Approval
110101	MS	Comp. Science	USC-Columbia	NA	Approval
110101	PhD	Comp. Science	USC-Columbia	NA	Approval
110401	BS	Info. Systems	USC-Columbia	NA	Approval
520204	BS	Admin. Info. Management	USC-Columbia	NA	Approval
110101	BS	Comp. Science	USC-Spartanburg	NA	Approval
110401	BA	Info. Systems	USC-Spartanburg	Univ. Center of Greenville	Approval
110101	BS	Comp. Science	Winthrop	NA	Approval