

QUESTIONNAIRE FOR REVIEW
of the
COMPUTER SCIENCE PROGRAM

submitted by

Stony Brook University

Institution

5/20/2005

Date

Primary contact: *Professor Steven S. Skiena*

Telephone number: *631-632-9026* **FAX Number:** *631-632-8334*

Electronic mail: *skiena@cs.sunysb.edu*

Computing Accreditation Commission

ABET

111 Market Place, Suite 1050
Baltimore, Maryland 21202-4012

Phone: 410-347-7700

Fax: 410-625-2238

e-mail: cac@abet.org

www: <http://www.abet.org/>

Table of Contents

| | |
|---|-----------|
| I. OBJECTIVES AND ASSESSMENTS | 4 |
| A. OBJECTIVES | 4 |
| B. IMPLEMENTATION OF OBJECTIVES | 7 |
| C. ASSESSMENTS | 9 |
| D. PROGRAM IMPROVEMENT | 13 |
| E. PROGRAM EVOLUTION | 14 |
| F. PROGRAM CURRENT STATUS | 16 |
| II. STUDENT SUPPORT | 18 |
| A. FREQUENCY OF COURSE OFFERINGS | 18 |
| B. INTERACTION WITH FACULTY | 20 |
| C. STUDENT GUIDANCE | 22 |
| D. STUDENT ADVISEMENT | 22 |
| E. ACCESS TO QUALIFIED ADVISING | 23 |
| F. MEETING THE REQUIREMENTS | 24 |
| III. FACULTY | 27 |
| A. FACULTY SIZE | 27 |
| B. FACULTY WITH PRIMARY COMMITMENT | 27 |
| C. FACULTY OVERSIGHT | 33 |
| D. INTERESTS, QUALIFICATIONS, SCHOLARLY CONTRIBUTIONS | 36 |
| E. SCHOLARLY ACTIVITIES | 37 |
| F. SUPPORT FOR ADVISING | 37 |
| G. INFORMATION REGARDING FACULTY MEMBERS | 37 |
| IV. CURRICULUM..... | 39 |
| A. TITLE OF DEGREE PROGRAM..... | 39 |
| B. CREDIT HOUR DEFINITION..... | 39 |
| C. PREREQUISITE FLOW CHART..... | 39 |
| D. COURSE REQUIREMENTS OF CURRICULUM (TERM BY TERM AND YEAR BY YEAR)..... | 40 |
| E. COURSE DESCRIPTIONS..... | 53 |
| V. LABORATORIES AND COMPUTING FACILITIES..... | 54 |
| A. COMPUTER FACILITIES..... | 54 |
| B. STUDENT ACCESS..... | 56 |
| C. DOCUMENTATION..... | 58 |
| D. FACULTY ACCESS..... | 58 |
| E. SUPPORT PERSONNEL..... | 58 |
| F. INSTRUCTIONAL SUPPORT..... | 59 |
| VI. INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES..... | 60 |
| A. FACULTY STABILITY | 60 |
| B. FACULTY PROFESSIONAL ACTIVITIES | 61 |
| C. OFFICE SUPPORT | 64 |
| D. TIME FOR ADMINISTRATION..... | 65 |
| E. ADEQUACY OF RESOURCES..... | 65 |
| F. LEADERSHIP..... | 66 |
| G. LABORATORY AND COMPUTING RESOURCES..... | 66 |
| H. LIBRARY RESOURCES..... | 67 |
| I. CONTINUITY OF INSTITUTIONAL SUPPORT | 67 |
| VII. INSTITUTIONAL FACILITIES..... | 69 |

| | |
|---|-----------|
| A. LIBRARY | 69 |
| B. CLASSROOM EQUIPMENT | 71 |
| C. FACULTY OFFICES | 72 |
| APPENDIX I. INFORMATION RELATIVE TO THE ENTIRE INSTITUTION..... | 74 |
| A. GENERAL INFORMATION:..... | 74 |
| B. TYPE OF CONTROL | 75 |
| C. REGIONAL OR INSTITUTIONAL ACCREDITATION. | 75 |
| D. ENROLLMENT..... | 76 |
| E. FUNDING PROCESS. | 76 |
| F. PROMOTION AND FACULTY TENURE..... | 77 |
| G. RETIREMENT AND BENEFITS. | 78 |
| APPENDIX II. GENERAL INFORMATION ON THE UNIT RESPONSIBLE FOR THE COMPUTER SCIENCE PROGRAM | 79 |
| A. TYPE OF UNIT..... | 79 |
| B. ADMINISTRATIVE HEAD OF COMPUTER SCIENCE PROGRAM UNIT | 79 |
| C. ORGANIZATION CHART | 79 |
| D. COMPUTER-RELATED UNDERGRADUATE DEGREE PROGRAMS. | 82 |
| APPENDIX III. FINANCES | 84 |
| A. FINANCES RELATED TO THE COMPUTER SCIENCE PROGRAM(S). | 84 |
| B. OPERATING AND COMPUTING EXPENDITURES FOR THE FIVE FISCAL YEARS IMMEDIATELY PRECEDING THAT REPORTED IN III A..... | 85 |
| C. ADDITIONAL FUNDING. | 86 |
| APPENDIX IV. COMPUTER SCIENCE PROGRAM PERSONNEL AND POLICIES TOWARDS CONSULTING, PROFESSIONAL DEVELOPMENT, AND RECRUITING..... | 87 |
| A. TERM OF APPOINTMENT OF ADMINISTRATIVE HEAD..... | 87 |
| B. NUMBER OF PERSONNEL ASSOCIATED WITH PROGRAM. | 87 |
| C. POLICIES. | 87 |
| APPENDIX V. COMPUTER SCIENCE PROGRAM ENROLLMENT AND DEGREE DATA..... | 90 |
| APPENDIX VI. ADMISSION REQUIREMENTS..... | 92 |
| A. ADMISSION OF STUDENTS | 92 |

I. Objectives and Assessments

INTENT: The program has documented, measurable objectives, including expected outcomes for graduates. The program regularly assesses its progress against its objectives and uses the results of the assessments to identify program improvements and to modify the program's objectives.

The **Intent** must be met in order for a program to be deemed accreditable. One way to meet the **Intent** of this criterion is to satisfy each one of the **Standards** listed below. To do this, answer the questions associated with the **Standards**. If one or more **Standards** are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the **Intent** is met in some alternative fashion.

We believe our program meets this Intent by satisfying each of the Standards listed below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

Standard I-1. The program must have documented, measurable objectives.

Standard I-2. The program's objectives must include expected outcomes for graduating students.

A. Objectives.

Please attach items that support or precede the objectives, e.g.

- mission statements from institution, college, department, program
- plans (institution, college, department, etc.)
- all objectives including student outcomes (itemize)
- process for assessments
- who is involved in assessment and improvement?
- data from assessments
- inputs from any supporting Office of Assessment

1. Indicate below or attach to this document your educational objectives for this program. These objectives must include expected outcomes for graduating students.

The Department of Computer Science at the University of Stony Brook has established the following objectives for our undergraduate Computer Science Program:

On completion of the program, undergraduates should be able to:

S1: design, develop, test, and evaluate software systems.

S2: recognize the need for and expect to engage in lifelong learning for continued professional excellence.

S3: apply their knowledge to the solution of practical and useful problems.

S4: communicate effectively.

S5: work collaboratively.

In addition, undergraduates must:

S6: have a solid understanding of computational theory and foundational mathematics.

S7: have substantial exposure to advanced topics in software and computing systems.

S8: have a comprehensive general education background.

S9: be prepared to successfully enter the job market and/or graduate studies.

S10: understand professional responsibility.

Faculty Objectives: Each faculty member should:

F1: be able to teach a variety of CS undergraduate courses.

F2: actively participate in the undergraduate program.

F3: strive to improve the quality of their teaching.

F4: be aware of recent developments in the fields that they normally teach so as to introduce undergraduates to recent research advances and practices.

F5: should be active in the research fields where they formally teach and/or be involved in the field of computing education.

F6: actively participate in the departmental, college, and university shared governance process.

2. Describe how your program's objectives align with your institution's mission.

The Department of Computer Science, College of Engineering and Applied Science, and Stony Brook University have all established mission statements, and all are consistent with our program objectives. In particular:

The Department of Computer Science at Stony Brook University has established the following missions:

- 1. Educate undergraduates for professional jobs*
- 2. Educate M.S. students for development jobs*
- 3. Educate Ph.D. students for academic / research & development positions*
- 4. Conduct first-class research*
- 5. Secure research funding*
- 6. Serve the Department, College of Engineering and Applied Science (CEAS), University, and professional communities*
- 7. Interact with and transfer technology to industry*
- 8. Collaborate with the Brookhaven National Laboratory (BNL), Cold Spring Harbor Laboratory (CSHL), and Long Island communities*
- 9. Interdisciplinary interaction with other SBU units*

Our department's first three missions concern education, and our primary mission concerns undergraduate education.

The mission of the College of Engineering and Applied Sciences is to provide:

- 1. Comprehensive high-quality undergraduate education*
- 2. Advanced graduate education and research opportunities for graduate students and practicing professionals*

3. *Leading-edge research programs that probe the frontiers of knowledge and contribute to the development of globally competitive economies, both regionally and nationally.*
4. *Technology transfer that promotes industrial development, with particular emphasis on the needs of Long Island industry.*

Stony Brook University has a five-part mission:

1. *To provide comprehensive undergraduate, graduate, and professional education of the highest quality.*
2. *To carry out research and intellectual endeavors of the highest international standards, that advance theoretical knowledge and are of immediate and long-range practical significance.*
3. *To provide leadership for economic growth, technology, and culture for neighboring communities and the wider geographic region.*
4. *To provide state-of-the-art innovative health care, while serving as a resource to a regional health care network and to the traditionally underserved.*
5. *To fulfill these objectives while celebrating diversity and positioning the University in the global community.*

The department and Computer Science program mission statements are prominently displayed to our students at <http://www.cs.sunysb.edu/admissions/Objectives.html>.

Our undergraduate program objectives are completely consistent with the first stated mission of our College of Engineering and SUNY Stony Brook Mission Statements. Further, our faculty objectives concerning research mesh with the other major college and university missions.

Note: On the following page is a table which can be filled out with pertinent information relating to objectives, their measurement, and their effect on the implementation of program improvements.

B. Implementation of Objectives.

Please complete the following table.

| Objective | How Measured | When Measured | Improvements Identified | Improvements Implemented |
|--|--|---|--|--|
| <i>S1 Design, develop, test, and evaluate software systems</i> | <i>(1) Student performance in associated course sequence (114, 214, 219, 308) (2) UG committee faculty analysis of industry feedback (3) Industrial advisory board/alumni feedback (4) Student Exit survey</i> | <i>(1) Per semester (2) Regular discussions (3), (4) Annually</i> | <i>(1) Increased experience in designing and developing large programs.</i> | <i>(1) CSE 219 was created to provide this experience.</i> |
| <i>S2 Recognize need for lifelong learning</i> | <i>(1) Student Focus Groups (2) Student Exit Survey (3) UG committee/faculty analysis of student interactions</i> | <i>(1) Per semester (2) Annually (3) Ad hoc</i> | <i>(1) Five year BS/MS program (2) Need more research-oriented undergraduate special topics courses.</i> | <i>(1) Five-year BS/MS program implemented (2) Frequency and variety of research-oriented undergraduate special topics courses increased.</i> |
| <i>S3 Apply knowledge for practical problems</i> | <i>(1) Student performance in advanced elective courses (2) Industrial advisory board/alumni feedback (3) Student Exit Survey</i> | <i>(1) Per semester (2), (3) Annually</i> | <i>(1) Additional management and communication skill development in the face of outsourcing threats.</i> | <i>(1) Introduced specialization in information assurance, (2) revised CSE 300 to teach better communications skills</i> |
| <i>S4 Communicate effectively</i> | <i>(1) Student performance in CSE 300 and CSE 308 (2) Industrial advisory board/alumni feedback</i> | <i>(1) Per semester (2) Annually</i> | <i>(1) Increased oral communications component of curriculum. (2) Improved written communications skills component of curriculum</i> | <i>(1) Improved administration of CSE 300 with decoupling from CSE 308. (2) Reduction in upper-division class sizes (3) Improved oral communications component in CSE308</i> |
| <i>S5 Work together</i> | <i>(1) Student performance in CSE 308 and other advanced project courses. (2) Industrial advisory board/alumni feedback</i> | <i>(1) Per semester (2) Annually</i> | <i>(1) Increased faculty supervision of group projects</i> | <i>(1) CSE 308 split into multiple sections to accommodate closer supervision. (2) Increased offering of specializations, which frequently include team projects.</i> |
| <i>S6 Solid foundational math and theory</i> | <i>(1) Student performance in mathematics and theory courses. (2) student focus groups</i> | <i>(1) Per semester (2) Per semester</i> | <i>(1) Required junior/senior algorithms course</i> | <i>(1) Both algorithms (CSE 373) and theory of computing (CSE 303) courses to be required.</i> |

| Objective | How Measured | When Measured | Improvements Identified | Improvements Implemented |
|---|--|---|---|---|
| <i>S7 Substantial exposure to advanced topics</i> | <i>(1) Student performance in advanced courses, (2) Industrial advisory board/alumni feedback</i> | <i>(1) Per semester (2) Annually</i> | <i>(1) Core technical elective requirements. (2) Increased frequency of research-oriented undergraduate special topics courses.</i> | <i>(1) Core technical elective requirements instituted and strengthened. (2) Frequency of research-oriented undergraduate special topics courses increased.</i> |
| <i>S8 Comprehensive education background</i> | <i>(1) Student performance in DEC requirements (2) Industrial advisory board/alumni feedback</i> | <i>(1) Per semester (2) Annually</i> | <i>(1) Strengthen science pre-requisites</i> | <i>(1) Geology sequence removed as a science requirement option</i> |
| <i>S9 Prepared for future career</i> | <i>(1) Student exit survey (2) Industrial advisory board/alumni feedback</i> | <i>(1), (2) Annually</i> | <i>(1) Additional management & communication skill development in the face of outsourcing threats.</i> | <i>(1) Information assurance specialization established, (2) additional specializations in progress.</i> |
| <i>S10 Understand professional responsibility</i> | <i>(1) Student performance in ethics-related courses, particularly CSE 308 (2) Student exit survey (3) Industrial advisory board/alumni feedback</i> | <i>(1) Per semester (2), (3) Annually</i> | <i>(1) Ethics assignment in CSE 308 (2) A 1-credit required ethics course</i> | <i>(1) Ethics assignment in CSE 308 implemented, until (2) ethics course (CSE 302) implemented</i> |

| Objective | How Measured | When Measured | Improvements Identified | Improvements Implemented |
|--|---|---|--|--|
| <i>F1 Teach a variety of courses</i> | <i>(1) Course portfolios (2) Faculty review (3) Promotion evaluation</i> | <i>(1) Per semester (2) Annually (3) Occasionally</i> | <i>(1) Regularly vary the faculty member assigned to a course</i> | <i>(1) New instructor assigned for several courses (2) More sections of upper-division courses offered</i> |
| <i>F2 Participate in Undergraduate program</i> | <i>(1) Faculty review (2) Promotion evaluation (3) Faculty meetings/retreat</i> | <i>(1) Annually (2) Occasionally (3) Annually</i> | <i>(1) Curricular review committee (2) Develop new course coordinator system</i> | <i>(1) Curricular review committee implemented (2) Course coordination implemented</i> |
| <i>F3 Improve quality of their teaching</i> | <i>(1) Student evaluations (2) Promotional evaluations (3) Peer teaching review</i> | <i>(1) Per semester (2) Occasionally (3) Occasionally</i> | <i>(1) Greater student – faculty interaction (2) Feedback to instructors</i> | <i>(1) Split up large upper – division courses (2) Midterm and Objective survey implemented</i> |
| <i>F4 Aware of recent developments</i> | <i>(1) Faculty review (2) Promotion evaluation</i> | <i>(1) Annually (2) Occasionally</i> | <i>(1) Better departmental support for instructor professional development</i> | <i>(1) Instructor conference/training opportunities expanded</i> |
| <i>F5 Active CS research programs</i> | <i>(1) Faculty Review (2) Promotion evaluation</i> | <i>(1) Annually (2) Occasionally</i> | <i>(1) Increased emphasis on research funding</i> | <i>(1) Research funding substantially increased</i> |
| <i>F6 Participate in Governance process</i> | <i>(1) Faculty meetings/retreat (2) Faculty review (3) Promotion evaluation</i> | <i>(1) Monthly (2) Annually (3) Occasionally</i> | <i>(1) Distribute department governance responsibility</i> | <i>(1) Instituted Associate Chair & additional advisory committees</i> |

Standard I-3. Data relative to the objectives must be routinely collected and documented, and used in program assessments.

Standard I-4. The extent to which each program objective is being met must be periodically assessed.

Standard I-5. The results of the program’s periodic assessment must be used to help identify opportunities for program improvement.

C. Assessments.

Describe your procedure for periodically assessing the extent to which each of the above objectives is being met by your program.

Include:

- frequency and timing of assessments
- what data are collected
- (should include information on initial student placement and subsequent professional development)
- how data are collected
- from whom data are collected
- (should include students and computing professionals)
- how assessment results are used and by whom
- Attach copies of the actual documentation that was generated by your data collection and assessment process since the last CSAC visit (or for the past three years if this is the first visit). Include survey instruments, data summaries, analysis results, etc.

We employ the following formal assessment procedures:

- (1) *University end-of-semester course evaluations*
- (2) *Departmental mid-semester course evaluations*
- (3) *Departmental course objective surveys*
- (4) *Graduating senior exit / alumni surveys*
- (5) *Student focus groups*
- (6) *Industrial advisory board/alumni feedback*
- (7) *Industrial visits/interviews*
- (8) *UG committee meetings*
- (9) *Faculty meetings*
- (10) *Faculty retreat*
- (11) *Course portfolio evaluations*
- (12) *External faculty review*

Each is described in more detail below:

University end-of-semester course evaluations:

Stony Brook University administers a standard end-of-semester instructor evaluation form for all university courses. Summary results for each course are distributed to the appropriate instructor and the chair, summarizing the course-specific results and comparing them to the average across the university. Students are encouraged to write specific comments about the positive and negative aspects of the course. The statistical summary and student comments are presented and also submitted to the department chairman for review.

Departmental mid-semester course evaluations:

The Computer Science department has been conducting mid-semester reviews via a WWW survey for all of our courses since Fall 2002, although mid-semester reviews were conducted more sporadically before this. All departmental students are encouraged to fill out a brief survey

on the state of the courses they are currently taking, and space is provided for a written comment. Faculty are strongly encouraged to review these evaluations, and draft a brief response on how they will react to correct any deficiencies noted by the students. The results are reviewed by departmental faculty (all faculty have permission to read results for all courses), particularly the UG and departmental chairs.

Departmental course objective surveys:

The Computer Science department has been conducting end-of-semester course objective surveys via the WWW for all of our courses since Fall 2002, although such reviews were conducted more sporadically before this. All departmental students are encouraged to fill out a brief survey on the state of the courses they are currently taking, and space is provided for a written comment. Faculty are strongly encouraged to review these evaluations, and draft a brief response on how they will react to correct any deficiencies noted by the students. The results are reviewed by departmental faculty (all faculty have permission to read results for all courses), particularly the UG and departmental chairs. The results of how our courses satisfy their objectives are discussed at an annual faculty meeting, typically the departmental retreat. For certain courses, this feedback has led to changes in the subject matter and/or minor clarifications to the course objectives.

Graduating senior / alumni surveys:

The Computer Science department has been conducting a WWW survey of all graduating seniors since Spring 2004, although exit feedback was solicited more sporadically before this. This instrument seeks to assess how students view the department's program in retrospect. We also use this survey to study our alumni's feelings after they have spent time in the working world.

Student focus groups:

The Computer Science department has been conducting formal student focus groups since Spring 2004, although student discussion sessions had been held more sporadically before this. Through these focus groups (self-selected students, typically but not exclusively associated with the ACM student chapter) we seek a better understanding of what issues trouble our current students about the program.

Industrial Advisory board/alumni feedback:

The Computer Science department has a formal Industrial Advisory Board, composed primarily of leaders from Long Island industry. A substantial percentage of the board consists of alumni of our department. The IAB communicates to us about the expectations that industry has of our students, and their opinions of how well our program is producing students which meet these expectations. A special, one-time forum for alumni feedback was the gala 35th anniversary celebration for Computer Science at Stony Brook University, held on May 10, 2005.

Industrial visits/interviews:

Beyond the IAB, our department maintains an extensive set of less formal contacts with area and national industry. Several faculty members have been involved with startup companies in the Stony Brook High Technology and Software incubators, as well as consulting. The College of Engineering's SPIR (Strategic Partnership for Industrial Resurgence) program provides an

effective mechanism for joint research projects between faculty and local industry, and helps keep us connected with the needs and expectations of local industry.

UG committee meetings:

The Computer Science Undergraduate Committee, consisting of five to seven faculty members, meets at least monthly. The committee devotes a substantial amount of time to formal and informal discussions assessing the state of our program and searching for improvements.

Undergraduate and graduate student members of the committee help provide a student perspective. The graduate student member of the committee is traditionally selected from the alumni of our undergraduate program.

Faculty meetings:

The state of our undergraduate program is always on the agenda at the monthly meeting of our full faculty. All of our non-tenure-track instructors are invited to this meeting to participate equally with the tenure-track faculty.

Faculty retreat:

A special session on the state of our undergraduate program is held at our full-day faculty retreat, usually held each year around May finals. The retreat allows more time for high-level discussions of directions and program objectives than does our in-semester faculty meetings, where discussion is typically limited to deadline-driven “nuts and bolts” issues.

Course portfolio evaluations:

Since Fall 2002, we have collected course portfolios from the instructor of each undergraduate course offered in the given semester. They remain on file for our entire faculty to study. These portfolios help the course coordinator monitor how the course is being taught, and help new faculty understand how more experienced colleagues teach the given course.

With respect to assessment, each portfolio contains two surveys to be filled out by the instructor of the course. The beginning-of-semester survey encourages faculty members to think about what they can do to improve the teaching and administration of their course, compared with the last time they taught it. The end-of-semester survey encourages faculty to record what did and did not work well during this course offering and what changes should be made for the future.

External Faculty Review:

We receive regular feedback about trends in Computer Science research and education through our Citigroup Distinguished Lecture Series, which sponsors visits from between 5-10 prominent computer scientists each year. Our chairman always participates in the bi-annual Snowbird CS Chairs conference. Finally, in October 2004 we had Professor Robert Sloan of the University of Illinois, Chicago conduct an external review of our undergraduate program.

Here we remark on the mechanisms we employ to ensure that this assessment data is used to improve our undergraduate program. Our primary mechanism is dissemination, for we make our entire faculty aware of new feedback when it is obtained. The minutes and analysis of all appropriate feedback, including (1) advisory board meetings, (2) student focus groups, (3) graduation surveys, and (4) alumni surveys are sent via email to the entire faculty. Active

discussion typically then ensues over the next few days (by email and face-to-face discussion) on points raised in the analysis.

This discussion mechanism has proven important in curricula changes and reaching a consensus to act upon them. As particular examples, our resolve to strengthen our oral and written communications requirements emerged only after feedback from our advisory board.

Several of our program objectives are achieved and assessed primarily through specific courses in our curriculum. Table 10 – presents a mapping between our program objectives and specific courses intended to advance them. The objectives defined for each course have been drafted so that satisfying the course objectives implies satisfying the associated program objectives. Our end-of-semester course objective survey provides a mechanism to assess the degree to which each course offering satisfies the course objectives.

The data and analysis of our course objective surveys is provided in the appendix, and demonstrates that the majority of surveyed students believe each course satisfied each objective in the vast majority of course offerings. It is noteworthy that faculty members in several courses (specifically CSE 220 and CSE 336) have proposed changes to the objectives of their courses in response to this feedback and the resulting awareness of what they imply should be covered.

Our belief is that assessment data is most effectively utilized at the level of the instructor teaching the course. Our institutionalized mid-semester and objective evaluations encourage faculty to report what changes have been or should be made in response to feedback. Our beginning-of-semester and end-of-semester course portfolio forms encourage faculty to think about what can and should be done to improve the course. Faculty members are encouraged to review the previous semester's course portfolios prior to teaching a course. These portfolios and beginning/end of semester analysis have proven particularly useful to junior faculty teaching the course for the first time.

Attach copies of the actual documentation that was generated by your data collection and assessment process since the last CSAC visit (or for the past three years if this is the first visit). Include survey instruments, data summaries, analysis results, etc.

This data will be included as an appendix of our self-study report.

Standard I-6. The results of the program's assessments and the actions taken based on the results must be documented.

D. Program Improvement.

Describe your use of the results of the program's assessments to identify program improvements and modifications to objectives.

Include:

- any major program changes within the last five years
- any significant future program improvement plans based upon recent assessments

We regularly evaluate our undergraduate curriculum, and have made changes (some substantial) to strengthen it at several points over the last five years. We summarize the history of these changes below.

In Fall 2000, we made several changes in response to concerns that our undergraduates were not getting enough experience in writing large-scale programs. First, we added a new core course, CSE 219: Computer Science III, providing a systematic approach to program design, coding, testing, and debugging. Second, we increased the number of unrestricted technical electives from two to three in order to increase the technical breadth of our students. Finally, we instituted a requirement that four technical elective courses must be drawn from a list of the core subjects we deemed most important, in particular databases, operating systems, graphics, programming languages, user interfaces, and compilers.

We used the boom period in enrollments to strengthen the program in many ways. First, we raised admissions criteria. Second, we eliminated the co-scheduling of advanced undergraduate and graduate courses as soon as we had sufficient undergraduate demand and adequate teaching resources to teach separate sections. Indeed, in recent years we have been able to offer an extensive series of undergraduate special topics courses (typically two to four such courses per semester) to expose students to advanced research topics at the forefront of contemporary computer science.

In Spring 2003 we instituted the new introductory course for those interested in majoring in computer science, CSE 110: Introduction to Computer Science. We found that many students interested in our major had surprisingly little understanding of what computer science is or even what computer programming entailed. CSE 110 is intended to help bring students who did not receive an adequate introduction to computer programming during high school up to a level appropriate to our CSE 114: Computer Science I course.

Our most recent curricular revisions, implemented in Spring 2005 are a direct consequence of our ABET self-study process. We have taken steps to strengthen our technical communications requirement (CSE 300) by adding a lecture component to the course. We have expanded the oral communications component of our software engineering course (CSE 308). We have strengthened our science prerequisite by eliminating geology from the list of approved sequences. Finally, we have created a new required 1-credit ethics course (CSE 302) to enhance our ethics coverage, previously provided mainly in CSE 110 and CSE 308. This course will be offered for the first time in the Fall 2005 semester.

E. Program Evolution.

1. Describe in what respect, if at all, the philosophy and direction of computer science education has changed at your institution during the last five years (or since the last evaluation, which ever is the shorter duration).

The past six years have been a time of several challenges for our undergraduate program, including (1) the departure of our previous undergraduate program director, (2) the tremendous surge in computer science enrollments, peaking around 2002, and (3) the subsequent decline in undergraduate enrollments in response to economic conditions and the threat of international outsourcing.

There have been several philosophical changes in our curriculum triggered by these events. We have substantially changed the introductory sequence. In particular, (1) we have switched our

introductory programming sequence to Java, where previously we were among the last holdouts using Modula-3, and (2) we now permit our first programming course to be taken independently of our introduction to discrete mathematics course. Previously, the discrete mathematics course (CSE 113) was the single entry point to our core course sequence.

2. Describe any major developments and/or progress made in connection with the program in the last five years (or since the last evaluation, whichever is the shorter duration) that is not included in your response to I.C.

The most important improvement associated with our program is the substantial improvement in the size and quality of our faculty. Since 1999 our tenure-track faculty has grown from 24 to 34, and our instructors from three to eight, even as five other faculty members retired or moved on during this period. This means we have had a tremendous infusion of new blood and energy. We can now offer courses in such cutting-edge areas as mobile computing and system security. Bringing in new people from other institutions brings in new ideas and avoids stagnation. Several of our recent junior faculty hires (particularly Stent and Zadok) have been unusually active in working to improve our program through our undergraduate curriculum committees.

Starting in Fall 2004, our department introduced an honors program, the first such program in the College of Engineering and Applied Sciences. The program focused on a two-semester senior honors project. The honors program is available to freshmen in the computer science major and allows students to select at least one honors course each semester throughout a four-year program of study. The program includes specially-designed introductory sequences that cover the core computer science material at an accelerated pace. The program also includes advanced courses on selected topics to prepare honors students for their senior research project.

Admission to the program is highly selective, and at most 25 freshmen are admitted each year. They are selected by the department among applicants who have been offered direct admission to the computer science major. Currently enrolled students may also apply for admission to the program provided they have completed at least three computer science courses and maintained a grade point average of 3.5 or higher, both overall and in computer science courses.

The Honors Program Director holds academic advising sessions for honors students each semester. Juniors and seniors in the honors program are also guaranteed admission to the joint B.S./M.S. program provided they have maintained a grade point average of 3.5.

Honors students must satisfy the regular computer science graduation requirements plus additional honors requirements. They must complete at least three computer science honors courses, including at least two upper-division courses, and an honors research project, CSE 495 and 496, under the close supervision of a computer science faculty member. Honors projects require a presentation to the honors committee at completion. Grades are assigned by the honors committee in consultation with the project advisor. Honors courses may be used as CSE electives, except that CSE 495 and 496 can not be applied towards computer science graduation requirements.

Conferral of honors is contingent upon completion of all required courses with a grade point average of 3.50 or higher, both overall and in computer science courses.

F. Program Current Status.

1. List the strengths of the unit offering the computer science program.

Established in 1969, the Computer Science Department at Stony Brook University is ranked consistently among the top quarter of Computer Science research departments in North America. We were ranked 31st in the most recent (1993) National Research Council ranking of computer science graduate programs, and the strongest rank among all public universities in the Northeastern United States. The 2000 Graham-Diamond rankings of Computer Science faculty scholarly productivity ranked Stony Brook 17th nationally. Our undergraduate program is similarly regarded. In the most recent Gourman report (1999) Stony Brook's undergraduate Computer Science program was ranked 15th nationwide and second in New York State.

The department is the largest unit in the College of Engineering and Applied Science at Stony Brook. Indeed, we awarded more Computer Science BS degrees than any other United States engineering school program in 2003. Our department of approximately 40 faculty members, 300 graduate students, and 500-600 undergraduate students work closely together in an open, collegial atmosphere. The department is active in many of the major research areas in computer science with specialization in Visual Computing; Computer Systems, Networking, and Security; and Databases, Logic Programming, and Deductive Systems; Concurrency and Verification; and Algorithms and Complexity. Our department is the primary participant in the Center of Excellence in Wireless and Information Technology, a \$230 Million High-Technology Center at Stony Brook and one of only five in New York state.

Several faculty members have written well-regarded textbooks, in such areas as algorithms (Skienna), databases (Bernstein, Kifer, Lewis), and automata theory (Ko).

2. List any weaknesses or limitations of the institution or unit offering the computer science program.

As a research-oriented Computer Science department, we face the same tensions as those at any research-oriented university. In particular, our undergraduate program is not our sole focus, and must compete for attention with our extensive graduate program and supported research. We strive to keep a healthy balance between these activities, and feel that we have succeeded at that balance.

Of course, there are also mutually beneficial relations between our research and educational missions. Many of our faculty members are internationally-recognized leaders in the subjects that they teach. Undergraduate students benefit from having a large variety of undergraduate special topics courses each semester, and have the option of taking graduate courses in their senior year.

3. List any significant plans for future development of the program.

Our undergraduate committee has had active discussions about possible future changes in the program, particularly in response to the challenge of outsourcing.

Computer science continues to develop new subfields in response to technological developments and economic demands. Pursuing a career in one of these fields may require a more concentrated focus than the traditional broad survey of the entire discipline that is prescribed by our undergraduate major requirements.

We recently introduced a specialization in information assurance in response to increasing interest in computer security and related areas. Such a concentration consists of a list of course requirements, which can be satisfied by taking the appropriate technical electives. The specialization in information assurance requires a research/design project in addition to course work.

Administratively, setting up a specialization/concentration can be done largely within the department, making it a more flexible and attractive option than creating new majors or minors. These concentrations can be thought of as providing additional guidance for students interested in particular careers or courses of study. We anticipate establishing concentrations in other areas in the near future.

II. Student Support

INTENT: Students can complete the program in a reasonable amount of time. Students have ample opportunity to interact with their instructors. Students are offered timely guidance and advice about the program's requirements and their career alternatives. Students who graduate the program meet all program requirements.

The **Intent** must be met in order for a program to be deemed accreditable. One way to meet the **Intent** of this criterion is to satisfy each one of the **Standards** listed below. To do this, answer the questions associated with the **Standards**. If one or more **Standards** are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the **Intent** is met in some alternative fashion.

We believe our program meets this Intent by satisfying each of the Standards listed below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

Standard II-1. Courses must be offered with sufficient frequency for students to complete the program in a timely manner.

A. Frequency of Course Offerings.

1. List below the course numbers, titles, and credit hours of courses required for the major which are offered less frequently than once per year. Explain how it is determined when they will be offered, e. g., rotation, odd-numbered years, or whatever.

All of the courses we require for the major are offered at least once per year. In recent years, selections satisfying all dimensions of our course requirements have been offered every semester. Indeed, as our faculty has grown, we are now able to offer multiple sections of particularly popular courses each semester.

A large selection of technical electives are offered each semester, including at least one representative of each of the choices for core technical electives. To be specific, core technical electives are drawn from the three credit courses in the categories listed below:

- *[Advanced Theory] One theory-related course chosen from CSE 303 and CSE 373*
- *[Advanced Software] Three software-related courses chosen from CSE 305; 306; 304 and 307; 328 or 333*
- *[Advanced Hardware] One hardware-related course chosen from: CSE 310, 320, 346, and ESE 345*

These courses are offered with the following frequency:

Table 1 – Frequency of Core Technical Elective Offerings

| Course | Title | Frequency |
|---------------|--|----------------------|
| <i>CSE303</i> | <i>Introduction to the Theory of Computation</i> | <i>Each semester</i> |
| <i>CSE304</i> | <i>Compiler Design</i> | <i>Each year</i> |
| <i>CSE305</i> | <i>Principles of Database Systems</i> | <i>Each semester</i> |

| Course | Title | Frequency |
|---------------|--|----------------------|
| CSE306 | <i>Operating Systems</i> | <i>Each semester</i> |
| CSE307 | <i>Principles of Programming Languages</i> | <i>Each semester</i> |
| CSE310 | <i>Data Communication and Networks</i> | <i>Each semester</i> |
| CSE320 | <i>Computer Architecture</i> | <i>Each year</i> |
| CSE328 | <i>Fundamentals of Computer Graphics</i> | <i>Each semester</i> |
| CSE333 | <i>User Interface Development</i> | <i>Each semester</i> |
| CSE346 | <i>Computer Communications</i> | <i>Each year</i> |
| CSE373 | <i>Analysis of Algorithms</i> | <i>Each semester</i> |

2. List below the course numbers, titles, and credit hours of courses allowed for the major but not required (i.e., either free electives or lists of courses from which students must choose a certain number), and explain how it is determined when they will be offered.

An additional three upper-division CSE or ISE courses must be taken from the above list of courses or any of the following non-core courses:

Table 2 – Frequency of Non-core Technical Elective Offerings

| Course | Title | Frequency |
|---------------|--|----------------------|
| CSE315 | <i>Database Transaction Processing Systems</i> | <i>Each year</i> |
| CSE326 | <i>Digital Image Processing</i> | <i>Occasionally</i> |
| CSE327 | <i>Computer Vision</i> | <i>Each year</i> |
| CSE332 | <i>Introduction to Scientific Visualization</i> | <i>Each year</i> |
| CSE333 | <i>User Interface Development</i> | <i>Each semester</i> |
| CSE334 | <i>Introduction to Multimedia Systems</i> | <i>Each semester</i> |
| CSE336 | <i>Internet Programming</i> | <i>Each semester</i> |
| CSE352 | <i>Artificial Intelligence</i> | <i>Each year</i> |
| CSE355 | <i>Computational Geometry</i> | <i>Each year</i> |
| CSE364 | <i>Advanced Multimedia Techniques</i> | <i>Each year</i> |
| CSE366 | <i>Introduction to Virtual Reality</i> | <i>Occasionally</i> |
| CSE370 | <i>Wireless and Mobile Networking</i> | <i>Each year</i> |
| CSE371 | <i>Logic</i> | <i>Each year</i> |
| CSE375 | <i>Concurrency</i> | <i>Each year</i> |
| CSE376 | <i>Advanced System Programming in UNIX/C</i> | <i>Each year</i> |
| CSE377 | <i>Introduction to Medical Imaging</i> | <i>Occasionally</i> |
| CSE378 | <i>Introduction to Robotics</i> | <i>Occasionally</i> |
| CSE390 | <i>Special Topics: Computer Game Programming</i> | <i>Each year</i> |
| CSE391 | <i>Special Topics: Web Queries</i> | <i>Each year</i> |
| CSE392 | <i>Special Topics: Programming Challenges</i> | <i>Each year</i> |
| CSE393 | <i>Special Topics: Adv. Software Engineering</i> | <i>Each year</i> |
| CSE394 | <i>Special Topics: Computer Animation</i> | <i>Each year</i> |
| CSE408 | <i>Network Security</i> | <i>Each year</i> |
| CSE409 | <i>Computer System Security</i> | <i>Each year</i> |

Note that the topics listed for CSE 390 through CSE 394 are representative of each semester's special topics offerings.

The choices of which of these courses are to be offered in a given semester is made by the chair, in consultation with the undergraduate program director. The primary factors include (a) historical precedent, (b) faculty preferences, and (c) student demand. A selection of three departmental elective courses is typically offered each summer, depending upon the availability of faculty to teach them.

Standard II-2. Computer science courses must be structured to ensure effective interaction between faculty/teaching assistants and students in lower-division courses and between faculty and students in upper-division courses.

B. Interaction with Faculty.

1. Describe how you achieve effective interaction between students and faculty or teaching assistants in lower division courses, particularly in large sections.

It can be challenging to provide meaningful interaction between students and faculty in large lower-division courses. Excessively large classes were unavoidable during the boom period. In recent years, we have significantly enlarged our faculty; this coupled with national declines in undergraduate CS enrollments have significantly improved the situation as per faculty/student ratio in our introductory courses.

To ensure small group interaction, each of our introductory core courses features recitation sections. These recitations, typically taught by teaching assistants, review and expand on material taught in lectures and facilitate small group dynamics and individual attention between students and instructors. Further, the department maintains a tutoring program and help desk, discussed in more detail below.

Our annual allotment of graduate student teaching assistantship lines has been sufficient to meet the needs of our courses in recent years. This allotment has been shrinking, however. We also encourage our better undergraduate students to serve as teaching assistants for the introductory courses. Having recently passed through these courses themselves, the undergraduates prove particularly knowledgeable and enthusiastic. We attract an international pool of graduate students, and there have been occasional problems with teaching assistants whose English is difficult to understand. This problem has abated in recent years, as the graduate school administers a speech test to each incoming teaching assistant. The students who fail are barred from teaching recitation courses until completing special oral communications training.

All faculty members are required to hold regular office hours for interaction with student, as do all teaching assistants who teach recitation sections. Many instructors use BlackBoard (Stony Brook University's web-based course management system) and other web resources to offer on-line bulletin boards and course email-lists to facilitate interaction.

2. Describe how you achieve effective interaction between students and faculty in upper-division courses. Give detailed explanation and/or documentation how you do this for sections with more than thirty students, if applicable.

Many of our upper-division courses, particularly special topics courses, have very low enrollment, and facilitate close student-faculty interaction. Unfortunately, some of our upper-division courses (e.g. databases and Internet programming) have historically had distressingly large sections due to their popularity among students.

Only recently have our resources enabled us to realistically commit to limiting upper-division course sections to 30 students. Indeed, beginning Spring 2005 we have instituted a policy of offering multiple sections of the courses whose recent demand exceeds 30 students per semester.

We have taken several steps to reduce the size of these courses, in particular (1) by offering them more frequently (typically each semester) and (2) offering multiple lecture sections per semester.

The problem of large class sizes is clearly abating due to recent faculty hiring and decreasing undergraduate CS enrollments.

We have established several other mechanisms for student-faculty interaction. There are two undergraduate student societies, the Stony Brook Computer Science Society (ACM student chapter) and UPE Computer Science Honor Society, both of which are advised by Prof. Stoller. The Stony Brook Computer Science Society (SBCSS) runs a tutoring program for lower division students. Our ACM Programming team is advised by Prof. Skiena, and has done very well in recent regional competitions. For the past three years, the activities of our student societies have been generously funded by a grant from Citigroup. The renewal proposal for this funding is written by Prof. Stoller each year. This grant enables our student societies to focus on activities instead of fund raising.

In addition to the SBCSS tutoring program, the department maintains a help desk to answer routine system and programming questions for any of our courses. Typically, the help desk is staffed by two students, each assisting about eight hours per week.

All faculty members and all TAs who teach recitations (and most others) hold regular office hours, typically three hours per week, and most are accessible throughout the week. A particularly healthy aspect of our department culture is that the vast majority of faculty are in the office essentially every day. Such cultures do not exist at many other research departments that we are aware of.

Several faculty regularly hold informal "Pizza with the Prof" sessions with students in their courses; the department as a whole typically runs one such event for majors each year.

Undergraduate research is a final avenue for student-faculty interaction; Stony Brook University is a trailblazer in integrating research and undergraduate education: it was one of the first research universities in the country to establish an office for the specific purpose of promoting undergraduate research and creative activity (1987); one of only ten research universities selected nationwide in 1997 to receive a Recognition Award for the Integration of Research and Education (RAIRE) from the National Science Foundation (NSF); and currently offer many programs that support undergraduate research efforts. The Undergraduate Research & Creative Activities (URECA) Summer Research program at Stony Brook University was recently singled out as an outstanding undergraduate research & creative projects program in U.S. News & World Report's America's Best Colleges (2005 edition).

Prof. Samaras is the department's undergraduate research coordinator, and helped to advise our award-winning undergraduate robotics team. Computer Science undergraduates are introduced to the world of research through research-oriented courses, encouraged to participate in independent research projects, and offered useful support services on writing abstracts, giving presentations, and finding appropriate research mentors. Honors students are required to defend their research to faculty committees. In addition, there are student presentations at our annual undergraduate research day.

Standard II-3. Guidance on how to complete the program must be available to all students.

C. Student Guidance.

Describe what determines the requirements that a student will follow and how the student is informed of these requirements.

Decisions concerning changes in the undergraduate program are typically made by the undergraduate program committee, which includes both faculty and student representatives. They then must be ratified by the full departmental faculty and appropriate college committees.

The graduation requirements that each student must follow are a function of their matriculation date into our program. Grandfather clauses ensure that students are not adversely affected by program changes occurring late in their course of study. In particular, graduation checklists are available on our website for each year of matriculation.

Students are informed of our requirements through a variety of documents available on the department web page and undergraduate departmental office, including the graduation checklist. We also maintain undergraduate email aliases, so important announcements can be sent to all our majors.

Standard II-4. Students must have access to qualified advising when they need to make course decisions and career choices.

D. Student Advisement.

Describe your system of advisement for students on how to complete the program. Indicate how you ensure that such advisement is available to all students.

There are a number of venues on the University campus which provide academic advising services; however, the two primary advising offices are (1) the Academic and Pre-Professional Advising Center, which serves undeclared students and students enrolled in programs of the College of Arts and Sciences, and (2) the College of Engineering and Applied Sciences Advising Center. The academic advising staff in both offices meets with students one-on-one to provide information about academic regulations and requirements; to assist them with course scheduling issues; to provide information about the petition process for appeals of academic standing issues and for waivers of specific requirements; and to make referrals as needed for tutoring or counseling. These are also the offices to which students in academic jeopardy are referred.

All computer science majors are assigned a faculty advisor at the beginning of each semester. Students are encouraged to consult their advisor about academic matters pertaining to the major, in particular, course selection, planning of schedule, and progress towards graduation.

The department requires that freshman see the undergraduate director during the "prime time" advising period (usually week 12 or 13 of the semester) in the fall, to discuss their first-semester experience at Stony Brook and plan the schedule for the second semester. Juniors are required to meet with the undergraduate director during prime time in the spring semester to review their progress towards graduation and their planned schedule for the senior year. These requirements are enforced by placing advising blocks on the course registration system.

General information about the major, including detailed information about graduation requirements, is included in the Undergraduate Bulletin and on the departmental web site. The

undergraduate director has extended office hours for advising students, including non-majors and prospective majors, on a wide variety of questions. Students can also obtain more specific advice from course coordinators. For instance, juniors and seniors interested in participating in a research project can get relevant information from the course coordinator for CSE 488, Research in Computer Science.

The University has established a variety of academic entities with the overall aim of enriching the undergraduate experience through the creation of academic communities that will provide many of the amenities of a small liberal arts college environment within this large research university. Beginning in Fall 2002 with the College of Information and Technology Studies, Stony Brook's Undergraduate Colleges are a group of six academic and social communities designed to support and develop the interests of students and assist them in taking advantage of the vast resources Stony Brook has to offer. Every first-year student enters Stony Brook as a member of one of the colleges organized around themes of general interest to students. Each college is based in one of the residential quadrangles and has a faculty director and college-based academic advisor as well as residence-based support staff.

Faculty members from across campus participate in the Undergraduate Colleges through various events organized within the college, and through special one-credit seminars designed to introduce students to what it means to be a University student and a member of a community of learners. Each seminar addresses some aspect within the broad theme of the college, based on the faculty's expertise and interests, and is limited to no more than 20 students.

E. Access to Qualified Advising.

When students need to make course decisions and career choices, what is their procedure for obtaining advising? Do they have adequate access to qualified professionals when necessary?

Our formal advising procedures were detailed in the previous section. We believe that students have adequate access to qualified career advising through their formal assigned advisor, informal interactions with faculty, and the Career Center (described below). Each faculty member is available for student consultation during posted office hours. Further, our undergraduate chairman (Prof. Bachmair) holds regular weekly office hours for student advising, which proves quite popular among our students.

The Career Center at Stony Brook is a centralized operation, providing services in the areas of career exploration and decision-making, experiential learning (student employment, internships, and community service) and transitional programs (corporate recruiting, alumni networking).

The Career Center supports the academic mission of the University at large, and the College of Engineering and Applied Sciences in particular, by educating students about the career decision-making process, helping them plan and attain their career goals, and assisting with their smooth transition to the workplace or further education. The Career Center supports the economic mission of the University while supplementing the CEAS Internship Program by assisting hiring organizations in accessing and leveraging student talent.

The Center accomplishes this through activities such as their Internet job posting service; campus interviewing program; career and internship fairs; resume referrals; workshops and seminars (e.g. How to Find a Summer Job, Internship Search Strategies, Job Search Strategies, Writing the Cover Letter and Resume, and Interviewing Skills) shadow programs; networking opportunities; and connections to faculty.

During the 2003-2004 academic year, the Career Center:

- *was recognized by JP Morgan Chase's Application Program Management team as a model school for AD (Application Delivery) recruitment;*
- *received partnership awards from the Society of Hispanic Professional Engineers (SHPE) & the Society of Women Engineers (SWE);*
- *registered 4,469 students in the Center's database, 33% of whom were CEAS students*
- *recorded 6,156 individual advising contacts;*
- *total student attendance of 7,334 at 164 career-related presentations;*
- *reached 8,200 students by personal marketing initiatives;*
- *generated \$1,000,000 in off-campus part-time student employment;*
- *hosted 356 hiring organizations on campus (with the major industries being business/finance, human services/health care, engineering/technology);*
- *referred 5,149 resumes on-line;*
- *conducted 480 campus interviews; and*
- *recorded more than 184,000 hits to the Center's website.*

Standard II-5. There must be established standards and procedures to ensure that graduates meet the requirements of the program.

F. Meeting the Requirements.

Describe your standards and procedures for ensuring that graduates have met all of the requirements of the program.

Student must file for graduation by submitting an "Application for Degree" form to the Office of Records/Registrar. The expected graduation date must be indicated on that form. The Computer Science Undergraduate Secretary downloads the list of active degree candidates from the registrar's database (May and August graduation candidates in spring; December graduation candidates in fall) and performs a preliminary review of each student by (partially) completing a graduation checklist for each student.

The department maintains a file for each computer science major that contains relevant documents such as transcripts, transfer course evaluations, and a checklist according to the student's matriculation date. The preliminary review is based on the student's official university record and the departmental file. The majority of students, at the time of the preliminary review, are in the process of completing the last few courses needed for graduation. Thus, most students are cleared for graduation after successful completion of pending courses. The final review usually happens within one or two weeks after the end of the semester, i.e., as soon as grades have been posted. If a student meets all graduation requirements for the major, the Undergraduate Secretary enters the departmental clearance via the registrar's database management system.

If the preliminary review indicates that a student may miss some graduation requirements, the department will contact the student to alert him or her of any potential problems. Difficulties are often caused by incomplete or insufficient documentation, e.g. missing transcripts, transfer course evaluations, or other information that is not included on a student's university record. In

most cases, the issues can be resolved once the student has submitted the proper documentation, and graduation clearance can proceed as usual.

If a student does fall short of the stated requirements (e.g. by failing to successfully complete a required course), the Undergraduate Secretary enters detailed comments via the registrar's database management system to indicate why the student can not be cleared by the department at this time. (This information is available to authorized users in the CEAS Undergraduate Office and the Office of Records/Registrar, but is not directly available to the student.) Students who can not be cleared for graduation are usually referred to the Undergraduate Director for advisement. In many cases, they are able to take courses during the summer to avoid longer delays in graduation.

Departmental clearance certifies that a student has met the computer science major requirements. Students must also meet several university graduation requirements. Clearance for these non-major requirements is done by the CEAS Undergraduate Office and the Office of Records/Registrar. Students with a double major, or with a major and a minor, must be cleared by both departments.

The CEAS Undergraduate Student Office is charged with overall responsibility for advising and ensuring adherence to general education and other University requirements, including the general education (Diversified Education Curriculum) requirements specific to students of the College of Engineering and Applied Sciences. Advisors in this office provide ongoing general education monitoring and advising from the student's first year, culminating in a review in the semester that the student becomes a degree candidate (by self-declaration).

The University degree requirements, including the Diversified Education Curriculum (D.E.C.) checklist, appear in a variety of publications including the Undergraduate Bulletin, the Academic Planning Guide, the Transfer Guide (all given to students at orientation) and the Online Bulletin.

The transcript of each degree candidate is reviewed using the PeopleSoft/Student Administration module's Degree Audit Report, accessible to authorized advisors. (All students can view their own Degree Audit Reports at any time in their academic career using the SOLAR System.) This report includes all University requirements applicable for the student's college and major: Skills requirements; General Education/D.E.C. requirements; credits including upper-division credits (cumulative grade point average and for each requirement includes how the requirement has been met or if it is not yet met. (The Degree Audit report does not include requirements for the program major.) Deficiencies are flagged in boldface type. Students with deficiencies are notified by letter. The Assistant Dean and CEAS Senior Academic Advisor are responsible for issuing the first level of University degree clearance in the Student Administration system, either 'Pending,' 'Denied,' or 'Approved.' and for entry of relevant comments if any, most often to list specific deficiencies.

When both the College's Undergraduate Student Office and the department program have completed their reviews and entered students' final status at the end of the semester, the Office of Records (Registrar) runs a final review process on the Exception Report, to check for any repeated courses, mutually exclusive courses, coursework past degree date, unresolved or missing grades, residency requirement completion, grade point average, and cumulative grade point average. Following this review, the Registrar issues final degree clearance to those students who have met all requirements of their degree program, College, and the University.

The Office of Student Accounts also reviews the list of degree candidates to determine who may have financial obligations to the University. Although the degree is awarded when there are outstanding financial obligations, these must be paid in order to receive the diploma and official transcripts.

At least 120 credits are required for the Bachelor of Science in degree in Computer Science. A minimum of 39 upper-division credits is also required. The cumulative grade point average required for graduation in all University undergraduate programs, without exception, is 2.00.

III. Faculty

INTENT: Faculty members are current and active in the discipline and have the necessary technical breadth and depth to support a modern computer science program. There are enough faculty members to provide continuity and stability, to cover the curriculum reasonably, and to allow an appropriate mix of teaching and scholarly activity.

The **Intent** must be met in order for a program to be deemed creditable. One way to meet the **Intent** of this criterion is to satisfy each one of the **Standards** listed below. To do this, answer the questions associated with the **Standards**. If one or more **Standards** are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the **Intent** is met in some alternative fashion.

We believe our program meets this Intent by satisfying each of the Standards listed below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

If different programs have different faculty members, please identify which faculty are associated with which program(s), and the percentage of time allotted, if they are associated with more than one.

Standard III-1. There must be enough full-time faculty members with primary commitment to the program to provide continuity and stability.

A. Faculty Size.

The purpose of this section is to determine whether you have sufficient faculty to offer courses often enough for students to complete the program in a timely manner.

In the previous section you gave the course numbers of courses required for the major which are offered less frequently than once per year, and those allowed for the major but not required, and explained how it is determined when they will be offered. Explain (if applicable) any difficulties you have offering required or optional courses frequently enough, particularly as they might be affected by faculty size.

As demonstrated in our response to II.A.1 and II.A.2, our department's faculty is large enough to offer each required course at least once per year, and core technical elective courses every semester.

B. Faculty with Primary Commitment.

1. Read the definition of "Primary Commitment" in the *Guidance* (Section III, point 3) and list here the number of faculty whose primary commitment is to this program: 42.

This number reflects the faculty size as of Fall 2004, when we began preparing the self-study report in earnest. One faculty member (Art Bernstein) retired in Spring 2005, but for internal consistency is included in these totals. As a last minute addendum, we note that the faculty size will remain at 42 in Fall 2005. This reflects two new tenure track faculty hires and the departure of Rance Cleaveland to take a position at the University of Maryland.

The purpose of the next questions is to ascertain the degree of continuity and stability provided by these faculty.

- Please list below the number of faculty with primary commitment to the program in each academic rank, broken down within rank by tenure status.

Table 3 – Computer Science Faculty - Professor

| PROFESSOR | DEGREE | UNIVERSITY | INTEREST |
|--------------------------|--|---|---|
| <i>Leo Bachmair</i> | <i>Ph.D., Computer Science, 1987</i> | <i>University of Illinois at Urbana-Champaign</i> | <i>Computational logic, automated deduction, symbolic computation</i> |
| <i>Arthur Bernstein</i> | <i>Ph.D., Electrical Engineering, 1962</i> | <i>Columbia University</i> | <i>Transaction processing, concurrent programming, distributed databases, web services</i> |
| <i>Tzi-cher Chiueh</i> | <i>Ph.D., Computer Science, 1992</i> | <i>University of California, Berkeley</i> | <i>Processor architecture, parallel I/O, high-speed networks, compression</i> |
| <i>Rance Cleaveland</i> | <i>Ph.D., Computer Science, 1987</i> | <i>Cornell University</i> | <i>Specification and verification formalisms, automated verification algorithms and tools, models of concurrent computation</i> |
| <i>Arie Kaufman</i> | <i>Ph.D. Computer Science, 1977</i> | <i>Ben-Gurion University of the Negev, Israel</i> | <i>Computer graphics, visualization, virtual reality, user interfaces, multimedia, computer architecture</i> |
| <i>Michael Kifer</i> | <i>Ph.D., Computer Science, 1984</i> | <i>Hebrew University of Jerusalem, Israel</i> | <i>Database systems, logic programming, knowledge representation, artificial intelligence</i> |
| <i>Ker-I Ko</i> | <i>Ph.D., Computer and Information Science, 1979</i> | <i>Ohio State University</i> | <i>Computational complexity, theory of computation, computational learning theory</i> |
| <i>Philip Lewis</i> | <i>Ph.D., Electrical Engineering, 1956</i> | <i>Massachusetts Institute of Technology</i> | <i>Concurrency and concurrent systems, transaction processing systems, software engineering</i> |
| <i>I.V. Ramakrishnan</i> | <i>Ph.D., Computer Science, 1983</i> | <i>University of Texas, Austin</i> | <i>Computing with logic, machine learning, Internet technologies.</i> |
| <i>Steven Skiena</i> | <i>Ph.D. Computer Science, 1988</i> | <i>University of Illinois at Urbana-Champaign</i> | <i>Algorithms, computational biology, discrete mathematics, computational geometry</i> |
| <i>Scott Smolka</i> | <i>Ph.D., Computer Science, 1984</i> | <i>Brown University</i> | <i>Model checking, semantics of concurrency, CASE tools for safety-critical systems, distributed languages and algorithms</i> |

| PROFESSOR | DEGREE | UNIVERSITY | INTEREST |
|---------------------|--------------------------------------|--|---|
| <i>Eugene Stark</i> | <i>Ph.D., Computer Science, 1984</i> | <i>Massachusetts Institute of Technology</i> | <i>Programming language semantics, distributed algorithms, formal specifications, verification, theory of concurrency</i> |
| <i>Dave Warren</i> | <i>Ph.D., Computer Science, 1979</i> | <i>University of Michigan</i> | <i>Logic programming, database systems, knowledge representation, natural language processing</i> |
| <i>Larry Wittie</i> | <i>Ph.D., Computer Science, 1973</i> | <i>University of Wisconsin</i> | <i>Superconducting computers and networks, massively parallel computation, computer architecture, distributed operating systems</i> |

Table 4 – Computer Science Faculty – Associate Professor

| ASSOCIATE PROFESSOR | DEGREE | UNIVERSITY | INTEREST |
|----------------------------|--------------------------------------|--------------------------------------|--|
| <i>Hussein Badr</i> | <i>Ph.D. Computer Science, 1981</i> | <i>Pennsylvania State University</i> | <i>Computer communication networks and protocols, performance evaluation, modeling and analysis</i> |
| <i>Michael Bender</i> | <i>Ph.D., Computer Science, 1998</i> | <i>Harvard University</i> | <i>Algorithms, data structures, scheduling, cache and I/O-efficient computing, parallel computing.</i> |
| <i>Samir Das</i> | <i>Ph.D., Computer Science, 1994</i> | <i>Georgia Tech</i> | <i>Wireless networking and mobile computing, performance evaluation, parallel discrete event simulation</i> |
| <i>Annie Liu</i> | <i>Ph.D., Computer Science, 1996</i> | <i>Cornell University</i> | <i>Programming languages and systems, program optimization, program analysis and transformation, reactive systems, database systems, algorithm design.</i> |
| <i>Hong Qin</i> | <i>Ph.D., Computer Science, 1995</i> | <i>University of Toronto</i> | <i>Computer graphics, geometric modeling and design, physics-based animation and simulation, scientific computing and visualization, virtual environments, computer vision, medical imaging, applied mathematics</i> |
| <i>C.R. Ramakrishnan</i> | <i>Ph.D., Computer Science, 1995</i> | <i>SUNY Stony Brook</i> | <i>Logic programming, programming languages, verification</i> |
| <i>R. Sekar</i> | <i>Ph.D., Computer Science, 1991</i> | <i>SUNY, Stony Brook</i> | <i>Computer and network security, software/distributed systems, programming languages, software engineering</i> |
| <i>Scott Stoller</i> | <i>Ph.D., Computer Science, 1997</i> | <i>Cornell University</i> | <i>Distributed systems, fault-tolerance and security, software testing and verification, program analysis and optimization</i> |

| ASSOCIATE PROFESSOR | DEGREE | UNIVERSITY | INTEREST |
|----------------------------|---------------------------------|--------------------------------------|--|
| <i>Anita Wasilewska</i> | <i>Ph.D., Mathematics, 1975</i> | <i>Warsaw University, Poland</i> | <i>Data base mining, bioinformatics, knowledge discovery in data bases, machine learning, uncertainty in expert systems, automated theorem proving</i> |

Table 5 – Computer Science Faculty – Assistant Professor

| ASSISTANT PROFESSOR | DEGREE | UNIVERSITY | INTEREST |
|----------------------------|--------------------------------------|--|---|
| <i>Michael Ashikhmin</i> | <i>Ph.D., Computer Science, 2001</i> | <i>University of Utah</i> | <i>Computer graphics, visualization, animation, visual perception</i> |
| <i>Jie Gao</i> | <i>Ph.D., Computer Science, 2004</i> | <i>Stanford University</i> | <i>Mobile computing, computational geometry, data structures</i> |
| <i>Radu Grosu</i> | <i>Ph.D., Computer Science, 1994</i> | <i>Technical University of Munich, Germany</i> | <i>Modeling and analysis of reactive, hybrid, and object oriented systems, model checking, design automation for embedded systems, applied formal methods, software and systems engineering</i> |
| <i>Xianufeng Gu</i> | <i>Ph.D., Computer Science, 2003</i> | <i>Harvard University</i> | <i>Computer graphics</i> |
| <i>Himanshu Gupta</i> | <i>Ph.D., Computer Science, 1999</i> | <i>Stanford University</i> | <i>Wireless networking, database systems, algorithms</i> |
| <i>Alexander Mohr</i> | <i>Ph.D., Computer Science, 2004</i> | <i>U. Washington, Seattle</i> | <i>Networks and their applications, multimedia systems, data compression,; error correcting codes</i> |
| <i>Klaus Mueller</i> | <i>Ph.D. Computer Science, 1998</i> | <i>Ohio State University</i> | <i>Visualization, volume rendering, computer graphics, medical imaging, visual data mining</i> |
| <i>Dimitris Samaras</i> | <i>Ph.D., Computer Science, 2000</i> | <i>University of Pennsylvania</i> | <i>Computer vision, computer graphics, medical imaging, animation and simulation, image-based rendering, physics-based modeling</i> |
| <i>Radu Sion</i> | <i>Ph.D., Computer Science, 2004</i> | <i>Purdue University</i> | <i>Information security, relational databases, distributed systems</i> |
| <i>Amanda Stent</i> | <i>Ph.D., Computer Science, 2001</i> | <i>University of Rochester</i> | <i>Spoken and multimodal dialogue systems, natural language generation, theories of discourse, information extraction</i> |
| <i>Erez Zadok</i> | <i>Ph.D., Computer Science, 2001</i> | <i>Columbia University</i> | <i>Operating systems, storage and file systems, software portability, networking, security</i> |

Table 6 – Computer Science Faculty - Lecturer

| LECTURER | DEGREE | UNIVERSITY | INTEREST |
|-------------------------|---|--|--|
| <i>Ahmad Esmaili</i> | <i>M.A., Computer Science, 1982</i> | <i>SUNY at Stony Brook</i> | <i>Algorithms, information systems.</i> |
| <i>George Hart</i> | <i>Ph.D., Electrical Engineering and Computer Science, 1987</i> | <i>Massachusetts Institute of Technology</i> | <i>Computational geometry, computer-aided geometric design, algorithms and data structures, sculpture.</i> |
| <i>Rob Kelly</i> | <i>Ph.D., Computer Science, 1991</i> | <i>NYU, Courant Institute of Mathematical Sciences</i> | <i>Medical informatics), banking and other Information systems, software engineering and electronic commerce.</i> |
| <i>Richard McKenna</i> | <i>M.S., Computer Science, 2002</i> | <i>SUNY at Stony Brook</i> | <i>Computer science education, computer game programming, Internet commerce programming</i> |
| <i>Shaunak Pawagi</i> | <i>Ph.D., Computer Science, 1986</i> | <i>University of Maryland</i> | <i>Analysis of algorithms, parallel computing</i> |
| <i>Tony Scarlatos</i> | <i>MA, Studio Art, 1995</i> | <i>Adelphi University</i> | <i>Multimedia, interface design, computer-based training, distance learning</i> |
| <i>Michael Tashbook</i> | <i>M.C.S., Computer Science, 2003</i> | <i>University of Virginia</i> | <i>Computer Science education, software engineering</i> |
| <i>Rong Zhao</i> | <i>Ph.D., Computer Science, 2001</i> | <i>Wayne State University</i> | <i>Content-based and semantic-based multimedia information retrieval, Web retrieval and mining, digital library, computer vision, medical imaging.</i> |

Standard III-2. Full-time faculty members must oversee all course work.

Essentially all of our courses are taught by full-time faculty. Adjuncts or graduate students are rarely used for teaching, perhaps only one or two courses every semester. In these cases, a full-time faculty member (specifically, the course coordinator) oversees the instructor. An example is Dr. Ajay Gupta (a recent graduate of the department) teaching one section of CSE310 in Spring 2005 under the oversight of Professor Badr.

Standard III-3. Full-time faculty members must cover most of the total classroom instruction.

C. Faculty Oversight.

Full-time faculty must oversee all course work allowed towards the major. That means that they must either teach a course or be the course chairperson or coordinator for all sections taught by other than full-time faculty, such as adjunct faculty or teaching assistants. For those courses with sections not taught by full-time faculty during the past academic year, list the course numbers

below and the name of the full-time faculty coordinator. (The past academic year is the academic year immediately prior to the year in which this report is prepared.)

As stated above, essentially all of our major courses are taught by full-time faculty. Adjuncts are employed only for non-major courses (e.g., CSE 101) or to teach special topics courses in their area of expertise.

Our program made the decision not to employ adjunct faculty in teaching our major courses, and held to it even during the peak period of undergraduate enrollments. Our use of adjuncts is limited to non-major courses, and the occasional use of senior graduate students teaching an upper-division course in their research area. In all such cases, the course coordinator provides oversight over the adjunct to ensure that appropriate standards are maintained.

For reference, we present a table of our faculty course coordinators below:

Table 7 – Faculty Course Coordinators

| Course | Course Title | Course Coordinator | Credits |
|---------------|---|---------------------------|----------------|
| CSE 101 | <i>Introduction to Computers and Information Technologies</i> | <i>Skiena</i> | 3 |
| CSE 102 | <i>Introduction to Web Design and Programming</i> | <i>Esmaili</i> | 3 |
| CSE 110 | <i>Introduction to Computer Science</i> | <i>Hart</i> | 3 |
| CSE 113 | <i>Foundations of Computer Science I</i> | <i>Bachmair</i> | 3 |
| CSE 114 | <i>Computer Science I</i> | <i>Kelly</i> | 4 |
| CSE 125 | <i>Computer Science & Sculpture</i> | <i>Hart</i> | 3 |
| CSE 130 | <i>Introduction to Programming in C</i> | <i>Zadok</i> | 3 |
| CSE 150 | <i>Foundations of Computer Science: Honors</i> | <i>Bachmair</i> | 4 |
| CSE 160 | <i>Computer Science I: Honors</i> | <i>Stark</i> | 3 |
| CSE 213 | <i>Foundations of Computer Science II</i> | <i>Bachmair</i> | 3 |
| CSE 214 | <i>Computer Science II</i> | <i>Bender</i> | 3 |
| CSE 219 | <i>Computer Science III</i> | <i>Stark</i> | 3 |
| CSE 220 | <i>Computer Organization</i> | <i>Pawagi</i> | 3 |
| CSE 230 | <i>Intermediate Programming in C and C++</i> | <i>Zadok</i> | 3 |
| CSE 260 | <i>Computer Science II: Honors</i> | <i>Stark</i> | 4 |
| CSE/ISE 300 | <i>Writing and Oral Skills in Computer Science</i> | <i>Warren</i> | 1 |
| CSE 301 | <i>History of Computing</i> | <i>McKenna</i> | 3 |
| CSE 302 | <i>Computer Ethics</i> | <i>Stent</i> | 1 |
| CSE 303 | <i>Introduction to the Theory of Computation</i> | <i>Ko</i> | 3 |
| CSE 304 | <i>Compiler Design</i> | <i>Grosu</i> | 3 |
| CSE/ISE 305 | <i>Principles of Database Systems</i> | <i>Gupta</i> | 3 |
| CSE 306 | <i>Operating Systems</i> | <i>Kifer</i> | 3 |
| CSE 307 | <i>Principles of Programming Languages</i> | <i>CR Ramakrishnan</i> | 3 |
| CSE/ISE 308 | <i>Software Engineering</i> | <i>Lewis</i> | 3 |
| CSE/ISE 310 | <i>Data Communication and Networks</i> | <i>Badr</i> | 3 |
| CSE/ISE 315 | <i>Database Transaction Processing Systems</i> | <i>Grosu</i> | 3 |
| CSE 320 | <i>Computer Architecture</i> | <i>Chiueh</i> | 3 |
| CSE 326 | <i>Digital Image Processing</i> | <i>Samaras</i> | 3 |
| CSE 327 | <i>Computer Vision</i> | <i>Samaras</i> | 3 |
| CSE 328 | <i>Fundamentals of Computer Graphics</i> | <i>Qin</i> | 3 |
| CSE/ISE 332 | <i>Introduction to Scientific Visualization</i> | <i>Mueller</i> | 3 |
| CSE/ISE 333 | <i>User Interface Development</i> | <i>Kelly</i> | 3 |
| CSE/ISE 334 | <i>Introduction to Multimedia Systems</i> | <i>Scarlatos</i> | 3 |

| Course | Course Title | Course Coordinator | Credits |
|---------------|---|---------------------------|----------------|
| CSE/ISE 336 | <i>Internet Commerce Programming</i> | <i>Kelly</i> | 3 |
| CSE 346 | <i>Computer Communications</i> | <i>Badr</i> | 3 |
| CSE 352 | <i>Artificial Intelligence</i> | <i>Wasilewska</i> | 3 |
| CSE 355 | <i>Computational Geometry</i> | <i>Mitchell</i> | 3 |
| CSE/ISE 364 | <i>Advanced Multimedia Techniques</i> | <i>Mohr</i> | 3 |
| CSE 366 | <i>Introduction to Virtual Reality</i> | <i>Mueller</i> | 3 |
| CSE 370 | <i>Wireless and Mobile Networking</i> | <i>Das</i> | 3 |
| CSE 371 | <i>Logic</i> | <i>Wasilewska</i> | 3 |
| CSE 373 | <i>Analysis of Algorithms</i> | <i>Skiena</i> | 3 |
| CSE 375 | <i>Concurrency</i> | <i>Smolka</i> | 3 |
| CSE 376 | <i>Advanced Systems Programming in Unix/C</i> | <i>Zadok</i> | 3 |
| CSE 377 | <i>Introduction to Medical Imaging</i> | <i>Mueller</i> | 3 |
| CSE 378 | <i>Introduction to Robotics</i> | <i>Samaras</i> | 3 |
| CSE 390 | <i>Topics in Computer Science</i> | <i>CS UG Director</i> | 3 |
| ISE 390 | <i>Special Topics</i> | <i>IS UG Director</i> | 3 |
| CSE 408 | <i>Network Security</i> | <i>Sekar</i> | 3 |
| CSE 409 | <i>Computer System Security</i> | <i>Sekar</i> | 3 |
| CSE/ISE 475 | <i>Undergraduate Teaching Practicum</i> | <i>CS UG Director</i> | 3 |
| CSE 487 | <i>Research in Computer Science</i> | <i>Stoller</i> | 3 |
| ISE 487 | <i>Research in Information Systems</i> | <i>IS UG Director</i> | 3 |
| CSE 488 | <i>Internship in Computer Science</i> | <i>CS UG Director</i> | 3 |
| ISE 488 | <i>Information Systems Internship</i> | <i>IS UG director</i> | 3 |
| CSE 495 | <i>Senior Honors Research Project I</i> | <i>CS UG Director</i> | 3 |
| CSE 496 | <i>Senior Honors Research Project II</i> | <i>CS UG Director</i> | 3 |

Standard III-4. The interests and qualifications of the faculty members must be sufficient to teach the courses and to plan and modify the courses and curriculum.

Standard III-5. All faculty members must remain current in the discipline.

All of our tenure-track faculty have clearly identified specialties and are active in research. Our non-tenure track instructors are encouraged to maintain active technical interests, through (1) relatively light teaching loads, typically nine contact hours per week, (2) the opportunity to teach upper-division and special topics courses in their areas of interest, and (3) conference travel opportunities funded by the department.

Attendance at professional society meetings is encouraged. Junior faculty members presenting technical papers are supported either by state funds or gifts at about the level of two meetings per year. Travel costs, registration fees, and living expenses are covered. Senior faculty members are expected to pay their meeting and travel expenses from research grants. All faculty are eligible for annual UUP Professional Development Grants, which support conference travel.

Standard III-6. All faculty members must have a level of competence that would normally be obtained through graduate work in computer science.

The few faculty members who do not have computer science graduate degrees (see below) maintain active research programs in computer science, and clearly function as professional computer scientists.

Professional growth of the faculty is primarily measured by teaching evaluations and on both sponsored and departmental research activities, which are expected to be approximately 50% of effort.

Each spring semester the Provost sends a reminder to all faculty members requesting completion of an on-line “Annual Addendum to the Faculty Personnel Form” in order to update the curriculum vitae on file in the Office of the Provost. Teaching activities, current research, university service, community service, published books and articles, and honors and awards are reported on the form.

Each year the Dean of CEAS meets with the Computer Science Department chair to review the Annual Addendum to Faculty Personnel Form and the teaching evaluations from students for each faculty member in the department. These annual faculty performance reviews are one of the factors used to determine recommendations for merit increases.

Faculty members are encouraged to participate in the activities of the technical society representing their discipline and attend technical meetings and conferences. Stony Brook University has a sabbatical leave program, which is described in the Faculty Handbook. More than 90% of the eligible faculty in CEAS participate in the sabbatical leave program.

Standard III-7. Some full-time faculty members must have a Ph.D. in computer science.

All of our tenured and tenure-track faculty have Ph.D. degrees, and all but three of these are in computer science. The exceptions are Profs. Bernstein and Lewis, who received their degrees in electrical engineering prior to the founding of computer science departments, and Prof. Wasilewska, who received her Ph.D. in Mathematics. Among our lecturers, four have Ph.D.s (three in CS) while the remaining four hold Masters degrees. All clearly function as professional computer scientists except perhaps lecturer Tony Scarlatos, whose background in graphic arts uniquely qualifies him to teach our Introduction to Multimedia course (CSE 334).

D. Interests, Qualifications, Scholarly Contributions.

The criteria state that the interests, qualifications, and scholarly contributions of the faculty must be sufficient to teach the courses, plan and modify the courses and curriculum, and to remain abreast of current developments in computer science. This information should be contained in the faculty vitae attached to this report and need not be repeated here. This would be an appropriate place to insert a description of general departmental or institutional activities that promote faculty currency, if such exist. (A sample vita questionnaire is attached in section G below. Although it is not necessary to follow this format, it is important that whatever format is followed contain all the information asked for. And, to make things easier for the visiting team, please see that all faculty vitae are in the same format, whichever format is used.)

See Attached Vitas

Standard III-8. All full-time faculty members must have sufficient time for scholarly activities and professional development.

E. Scholarly Activities.

Describe the means for ensuring that all full-time faculty members have sufficient time for scholarly activities and professional development.

Items (4) through (5) and (7) through (9) of the Department of Computer Science mission statement emphasize the scholarly missions of our department. In particular, our research mission involves all our faculty. The teaching load for most tenure-track faculty is three courses per year) with a few exceptions who teach four. This schedule is light enough to permit every faculty member to establish and maintain a research program. The load for our teaching instructors is higher; typically two courses per semester, but these are larger introductory courses.

We are particularly proud of the degree to which we include our instructors in the scholarly activities of our department. Rob Kelly and Rong Zhao carry on a substantial number of projects related to Internet programming and software engineering. George Hart is world-renowned for his geometric sculptures, and Rich McKenna is pursuing projects in game programming. Several of our previous instructors (e.g. Scharff and Wildenberg) have published during their stay and gone on to tenure-track positions in other departments. Tom Cortina (who has since taken a teaching position at Carnegie Mellon University) was given leave from his position during the crush of large enrollments to complete his Ph.D.

All of our faculty, including instructors, are encouraged to do professional travel. Each faculty member may apply for travel funding through the annual UUP Faculty Development Grant program. Further, the department provides funding to send instructors to appropriate academic conferences.

Standard III-9. Advising duties must be a recognized part of faculty members' workloads.

F. Support for Advising.

Advising duties must be a recognized part of faculty members' workloads, which means that faculty with large numbers of advisees must be granted released time. Explain your advising system and how the time for these duties is credited.

Our teaching loads of three courses per year are low by university standards, and this is partially justified by our faculty's advising load. In recent years, each faculty member has been assigned to be the formal advisor of between 10-20 undergraduates. In practice, this has not proven a substantial burden for the faculty with the exception of our undergraduate director, Leo Bachmair, who does the lion's share of our major advising.

In recognition of this load, our undergraduate director Prof. Bachmair receives one course worth of release time from teaching each year.

G. Information Regarding Faculty Members.

On separate pages, please furnish the following information for all faculty members that teach courses allowed for the major, including those who have administrative positions in the department (chair, associate chair, etc.). Use the form given below as guidance. This form need not be followed exactly, but all the information asked for should be supplied. Please do use a common format for all vitas. Please limit information to no more than three pages per person, if

at all possible. Please place the form(s) for administrator(s) first, followed by the others in alphabetical order.

In case more than one program is involved, especially with separate campuses, please indicate clearly the program(s) an individual is assigned to, and the percentage of time to each, if more than one.

Note: Faculty vita forms are attached separately.

IV. Curriculum.

INTENT: The curriculum is consistent with the program's documented objectives. It combines technical requirements with general education requirements and electives to prepare students for a professional career in the computer field, for further study in computer science, and for functioning in modern society. The technical requirements include up-to-date coverage of basic and advanced topics in computer science as well as an emphasis on science and mathematics.

(Curriculum standards are specified in terms of semester hours of study. Thirty semester hours generally constitutes one year of full-time study and is equivalent to 45 quarter hours. A course or a specific part of a course can only be applied toward one standard.)

We believe our program meets this Intent by satisfying each of the Standards listed below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

A. Title of Degree Program

Give the title of the degree program under review, as specified on the transcript and diploma:

| | |
|-------------|---|
| Transcript: | Bachelor of Science in Computer Science |
| Diploma: | Bachelor of Science in Computer Science |

B. Credit Hour Definition.

One credit hour normally means one hour of lecture or three hours of laboratory per week. One academic year normally represents from twenty-eight to thirty weeks of classes, exclusive of final examinations. Please describe below if your definitions differ from these.

Our notion of credit hour is consistent with this definition. Stony Brook University uses the same definition as the CAC. Like most American universities, we have adopted the traditional Carnegie Unit as a measure of academic credit. One semester credit hour normally represents one class hour or three laboratory hours per week over a 15-week period.

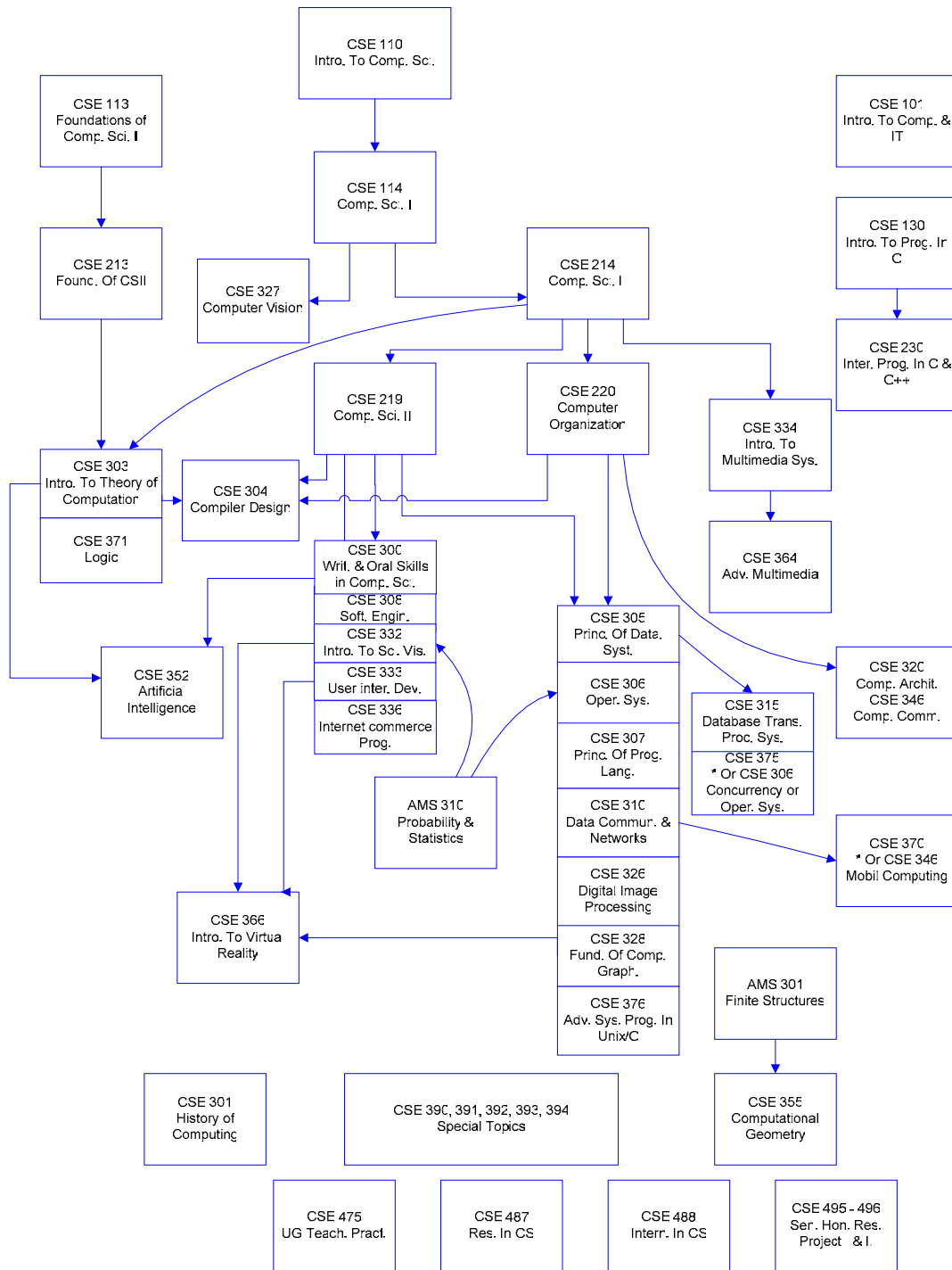
Stony Brook divides the academic year into Fall and Spring semesters, each involving 15 weeks of classes including one week of final examinations. As an example, a three-credit lecture course would meet for 2.67 to 2.75 hours during each of 14 weeks of the semester and be allotted a two hour final examination.

It is anticipated that each engineering student will spend a minimum of two hours of outside study for each hour spent in class lecture, or at least 25 hours for each credit hour earned.

C. Prerequisite Flow Chart.

Attach a flow chart showing the prerequisite structure of computer science courses required or allowed towards the major.

Figure 1 - Course Prerequisite Flow



D. Course Requirements of Curriculum (term by term and year by year)

Required and elective courses: In the tables on the following pages, list the courses in the order in which they are normally taken in the curriculum, classified in the appropriate categories. The

data should clearly indicate how the program satisfies the CAC/ABET/CSAB criteria for curriculum as prescribed in the current issue of Criteria for Accrediting Programs in Computer Science in the United States. These tables are designed for the semester calendar; they may be easily altered for the quarter calendar.

Required courses: List courses by department abbreviation (Math, Chem, CS, etc.), number, title, and number of credits. Apportion the credits for each course by category.

Elective courses: Designate these courses “elective.” If an elective is restricted to a particular category, then tabulate the credit hours in that category and indicate the category in the listing, e. g. “elective—science.” In addition, be sure that you have supplied information elsewhere in this document indicating how you ensure that students take the course in the specified category (e. g. advisement, graduation check sheets, etc.). For free electives (i.e., those not restricted to a particular category), list the credits under Other. Use footnotes for any listings that require further elaboration.

Note: Individual courses may be split between or among curriculum areas if the course content justifies the split. For example, a discrete mathematics course may have some of its credits under mathematics and some under computer science. In such cases, assign credits to categories in multiples of one-half credit.

Table 8 – Lower Division Computer Science Major Program

| Year Semester | Course (Dept., Number, Title) | Category (credit hours) | | | | | |
|---|---------------------------------------|-------------------------|-----------------------------|------|---------|---------------|-------|
| | | Comp Science Core | Comp Science Advanced | Math | Science | General Ed | Other |
| First Semester Freshman Year | <i>CSE 110 Intro to CS</i> | 3 | | | | | |
| | <i>AMS 151 Calculus I</i> | | | 3 | | | |
| | <i>Natural Science Course</i> | | | | 4 | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | <i>EAS/USB 101</i> | | | | | | 1 |
| | | | | | | | |
| Second Semester Freshman Year | <i>CSE 113 Foundations of CS</i> | 2 | | 1 | | | |
| | <i>CSE 114 Computer Science II</i> | 4 | | | | | |
| | <i>AMS 161 Calculus II</i> | | | 3 | | | |
| | <i>Natural Science Course</i> | | | | 4 | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| First Semester Sophomore Year | <i>CSE 213 Foundations of CS II</i> | 1 | | 2 | | | |
| | <i>CSE 214 Computer Science II</i> | 3 | | | | | |
| | <i>AMS 210 Applied Linear Algebra</i> | | | 3 | | | |
| | <i>Natural Science Course</i> | | | | 3 | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | | | | | | | |
| Second Semester Sophomore Year | <i>CSE 219 Computer Science III</i> | 3 | | | | | |
| | <i>CSE 220 Computer Organization</i> | 3 | | | | | |
| | <i>AMS 301 Finite Structures</i> | | | 3 | | | |
| | <i>Natural Science Course</i> | | | | 3 | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | | | | | | | |
| SUBTOTAL | | 19 | 0 | 15 | 14 | 12 | 1 |

Table 9 – Upper Division Computer Science Major Program

| Year Semester | Course (Dept., Number, Title) | Category (credit hours) | | | | | |
|------------------------------------|-------------------------------------|-------------------------|-------------------|------|---------|------------|-------|
| | | Comp Science Core | Comp Science Adv. | Math | Science | General Ed | Other |
| First Semester Junior Year | <i>CSE Core Software Elective</i> | | 3 | | | | |
| | <i>CSE Core Hardware Elective</i> | | 3 | | | | |
| | <i>AMS 310 Prob. & Stat.</i> | | | 3 | | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | <i>Free Elective</i> | | | | | | 3 |
| Second Semester Junior Year | <i>CSE Core Software Elective</i> | | 3 | | | | |
| | <i>CSE 303 or CSE 373</i> | | 3 | | | | |
| | <i>CSE Elective</i> | | 3 | | | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | <i>Free Elective</i> | | | | | | 3 |
| First Semester Senior Year | <i>CSE300 Writing Skills</i> | | | | | | 1 |
| | <i>CSE 308 Software Engineering</i> | | 3 | | | | |
| | <i>CSE Elective</i> | | 3 | | | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | <i>D.E.C.</i> | | | | | 3 | |
| Second Semester Senior Year | <i>CSE Core Software Elective</i> | | 3 | | | | |
| | <i>CSE Elective</i> | | 3 | | | | |
| | <i>D.E.C.</i> | | | | | 3 | |
| | <i>Free Elective</i> | | | | | | 3 |
| | <i>Free Elective</i> | | | | | | 3 |
| SUBTOTALS | | 0 | 27 | 3 | 0 | 15 | 13 |
| TOTALS | | 19 | 27 | 18 | 14 | 27 | 14 |

General

The Intent stated at the beginning of this section must be met in order for a program to be deemed accreditable. One way to meet the Intent of this criterion is to satisfy each one of the Standards listed below. To do this, answer the questions associated with the Standards. If one or

more Standards are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the Intent is met in some alternative fashion.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

Standard IV-1. The curriculum must include at least 40 semester hours of up-to-date study in computer science topics.

1. If it is not obvious from the above tables that the curriculum includes at least 40 semester hours (60 quarter hours) of computer science topics, please explain.

Between our core and advanced courses, each graduating student must have completed at least 48 semester hours of computer science topics.

Standard IV-2. The curriculum must contain at least 30 semester hours of study in mathematics and science as specified below under Mathematics and Science.

2. If it is not obvious from the above tables that the curriculum includes at least 30 semester hours (45 quarter hours) of study in mathematics and science, please explain.

Each graduating student must complete at least 18 hours of mathematics and at least 14 hours of science, for a total of at least 32 semester hours.

Standard IV-3. The curriculum must include at least 30 semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student.

Standard IV-4. The curriculum must be consistent with the documented objectives of the program.

Our program objectives were detailed in A.I. The table below demonstrates that all ten of our student objectives map directly to courses in our curriculum. A “P” denotes that the course provides primary support for the objective in our curriculum, which is a function of both the material covered in the course and its status as a required or elective course. An “S” denotes secondary support for the objective.

Our Masters degree program in Computer Science requires that students demonstrate proficiency in seven different subjects on entry to the program; otherwise they are required to take a course at the undergraduate level to obtain such proficiency. Each of these courses has been denoted as primary to our mission of preparing the student to successfully enter the job market and/or graduate studies, in addition to other courses which are of primarily vocational interest (such as Internet programming).

Table 10 – Mapping Between Courses and Program Objectives

| Course | Course Title | Credits | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------|--------------|---------|---|---|---|---|---|---|---|---|---|----|
|--------|--------------|---------|---|---|---|---|---|---|---|---|---|----|

| Course | Course Title | Credits | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-------------|--|---------|---|---|---|---|---|---|---|---|---|----|
| CSE 101 | Introduction to Computers and Information Technologies | 3 | | | | | | | | | | |
| CSE 102 | Introduction to Web Design and Programming | 3 | | | | | | | | | | |
| CSE 110 | Introduction to Computer Science | 3 | S | P | | | | | | | | P |
| CSE 113 | Foundations of Computer Science I | 3 | | | | | | P | | | | |
| CSE 114 | Computer Science I | 4 | S | | P | | | | | | | |
| CSE 125 | Computer Science and Sculpture | 3 | | | | | | | | | | |
| CSE 130 | Introduction to Programming in C | 3 | S | | S | | | | | | | |
| CSE 150 | Foundations of Computer Science: Honors | 4 | | | | | | P | | | | |
| CSE 160 | Computer Science I: Honors | | P | | P | | | | | | | |
| CSE 213 | Foundations of Computer Science II | 3 | | | | | | P | | | | |
| CSE 214 | Computer Science II | 3 | P | | P | | | | | | | |
| CSE 219 | Computer Science III | 3 | P | | P | | | | | | | |
| CSE 220 | Computer Organization | 3 | | S | | | | | P | | | |
| CSE 230 | Intermediate Programming in C and C++ | 3 | S | | S | | | | | | | |
| CSE 260 | Computer Science III | 3 | P | | P | | | | | | | |
| CSE/ISE 300 | Writing and Oral Skills in Computer Science | 3 | | | | P | | | | | | |
| CSE 301 | History of Computing | 3 | | | | | | | | S | | |
| CSE 302 | Professional Ethics for Computer Science | 1 | | | | | | | | | | P |
| CSE 303 | Introduction to the Theory of Computation | 3 | | | | | | P | | | P | |
| CSE 304 | Compiler Design | 3 | P | | P | | | | | | P | |
| CSE/ISE 305 | Principles of Database Systems | 3 | P | | P | | | | | | P | |
| CSE 306 | Operating Systems | 3 | P | | P | | | | | | P | |
| CSE 307 | Principles of Programming Languages | 3 | P | | P | | | | | | | |
| CSE/ISE 308 | Software Engineering | 3 | P | | S | P | P | | | | P | P |
| CSE/ISE 310 | Data Communication and Networks | 3 | | S | | | | | S | | | |
| CSE/ISE 315 | Database Transaction Processing Systems | 3 | S | | | | | | | | | |
| CSE 320 | Computer Architecture | 3 | | | | | | | P | | | |
| CSE 326 | Digital Image Processing | 3 | | | | | | | S | | | |
| CSE 327 | Computer Vision | 3 | | | | | | | S | | | |
| CSE 328 | Fundamentals of Computer Graphics | 3 | | | | | | | P | | S | |
| CSE/ISE 332 | Introduction to Scientific Visualization | 3 | | | | | | | P | | S | |
| CSE/ISE 333 | User Interface Development | 3 | P | | | | | | | S | | |
| CSE/ISE 334 | Introduction to Multimedia Systems | 3 | | | | | | | S | | | |
| CSE/ISE 336 | Internet Commerce Programming | 3 | S | | S | | S | | S | | P | |
| CSE 346 | Computer Communications | 3 | | | | | | | P | | | |
| CSE 352 | Artificial Intelligence | 3 | | | | | | | S | | | |
| CSE 355 | Computational Geometry | 3 | | | | | | | S | | | |
| CSE/ISE 364 | Advanced Multimedia Techniques | 3 | | | | | | | S | | | |
| CSE 366 | Introduction to Virtual Reality | 3 | | | | | | | S | | | |
| CSE 370 | Wireless and Mobile Networking | 3 | | | | | | | S | | S | |
| CSE 371 | Logic | 3 | | | | | | S | | | | |
| CSE 373 | Analysis of Algorithms | 3 | | | | | | P | | | P | |
| CSE 375 | Concurrency | 3 | S | | | | | | | | | |
| CSE 376 | Advanced Systems Programming in Unix/C | 3 | S | | | | | | | | | |
| CSE 377 | Introduction to Medical Imaging | 3 | | P | | | | | | | | |
| CSE 378 | Introduction to Robotics | 3 | | P | | | | | | | | |
| CSE 390 | Special Topics | 3 | | P | | | | | | | | |

| Course | Course Title | Credits | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-------------|-----------------------------------|---------|---|---|---|---|---|---|---|---|---|----|
| CSE 408 | Network Security | 3 | | P | | | | | | | | |
| CSE 409 | Computer System Security | 3 | | P | | | | | | | | |
| CSE/ISE 475 | Undergraduate Teaching Practicum | 3 | | P | | S | S | | | | | |
| CSE 487 | Research in Computer Science | 3 | | P | | | | | | | S | |
| ISE 487 | Research in Information Systems | 3 | | P | | | | | | | S | |
| CSE 488 | Internship in Computer Science | 3 | | P | | | | | | | S | |
| ISE 488 | Information Systems Internship | 3 | | P | | | | | | | S | |
| CSE 491 | Honors Seminar | | | | | | | | | | | |
| CSE 495 | Senior Honors Research Project I | 3 | | P | | | | | | | S | |
| CSE 496 | Senior Honors Research Project II | 3 | | P | | | | | | | S | |

3. If it is not obvious from the above tables that the curriculum includes at least 30 semester hours (45 quarter hours) of study in humanities, social sciences, arts, and other disciplines that serve to broaden the background of the student, please explain.

Each undergraduate student must complete at least 39 credits of general education courses, which are partitioned between 27 credits of New York State-mandated D.E.C. (Diversified Educational Curriculum) requirements and an additional 12 credits of unrestricted elective courses.

The state mandated DEC requirements cover mathematics, science, and the humanities. For the purposes of the discussion here, the DEC requirements prescribe that each student completes a minimum of 27 credits in the humanities (D.E.C. C and E concern mathematics and the natural sciences), calculated as follows:

- *D.E.C. A (English Composition) = 2 courses = 6 hours*
- *D.E.C. B and G (Humanities) = 2 courses = 6 hours*
- *D.E.C. F (Social and Behavioral Sciences) = 1 course = 3 hours*
- *D.E.C. H (Implications of Science and Technology) = 1 course = 3 hours*
- *D.E.C. I and J (European and Non-European Traditions) = 2 courses = 6 hours*
- *D.E.C. K (American Experience) = 1 course = 3 hours*

In addition to the D.E.C. requirements, our curriculum specifies four additional courses as open electives, totaling 12 credit hours. The open electives are designed to broaden the background of our students. A study of transcripts of December 2004 graduates reveals that the vast majority of students use at least one of these open electives to take additional humanities courses. In particular, only one of 58 students used all of their free electives to take additional computer science courses.

We note that our humanities requirements are stronger than that of the other ABET-accredited engineering programs in the College of Engineering, specifically in that the other engineering programs do not require D.E.C. K (American Experience). Also note that this total does not include our 1-credit technical communications course (CSE 300), as this course stresses writing within our discipline.

For completeness, the specifics of the D.E.C. categories are summarized below. More detail appears in the Undergraduate Student Handbook. The first group of requirements (D.E.C. categories A-C) focuses on ways of learning essential to the entire academic experience and subject matter intrinsic to liberal learning.

- *Category A — English Composition (2 courses) The ability to communicate effectively in written English is essential to success both in the University and society. Students satisfy this requirement by passing WRT 102 Intermediate Writing Workshop A and WRT 103 Intermediate Writing Workshop B.*
- *Category B — Interpreting Texts in the Humanities (1 course) Category B courses help students develop skills of interpretation and analysis that will enable them to examine subject matter critically, not only in the humanities, but in all other college courses.*
- *Category C — Mathematical and Statistical Reasoning (1 course) Category C courses help students understand and use quantitative skills and ideas critical to higher education.*

The second group of requirements (D.E.C. categories E-G) exposes students to the modes of thinking, methods of study, and subject matter of major branches of knowledge — natural and physical sciences, social and behavioral sciences, and arts and humanities.

- *Category E — Natural Sciences (2 courses) Category E courses expand students' knowledge about objects and processes observable in nature, whether animate as in the biological sciences, or inanimate as in the physical sciences of chemistry or physics.*
- *Category F — Social and Behavioral Sciences (1 course) Category F courses focus on individual and group behavior within society. These disciplines use methods such as historical analysis of documents, or survey and interview data, to observe and analyze human activity and society.*
- *Category G — Humanities (1 course) Category G courses examine disciplines and methods that express the way people view the human condition.*

The final group of requirements (D.E.C. categories H-K) challenges students to confront their own perceptions of the world and the people in it. Courses in these categories build on study in the earlier categories.

- *Category H — Implications of Science and Technology (1 course) Category H courses are designed to help students understand the social and global implications of science and technology and to examine examples of the impact of science, culture, and society on one another.*
- *Category I — European Traditions (1 course) Category I courses consider the Western cultural tradition through specialized study of a European nation or area from one or more viewpoints (e.g., historical, artistic, social, political).*
- *Category J — The World Beyond European Traditions (1 course) Category J courses increase students' understanding of a nation, region, or culture that is significantly different from the United States and Europe in at least one respect.*
- *Category K — The American Experience in Historical Perspective [Effective Fall 2004] American Pluralism (1 course) Category K courses enable students to build upon their knowledge of diverse traditions in order to examine in detail the role of these traditions in forming American society. Courses included explore our nation's diversity of ethnic, religious, gender, or intellectual traditions through a multicultural perspective or the relationship of a specific ethnic, religious, or gender group to American society as a whole.*

Standard IV-5. All students must take a broad-based core of fundamental computer science material consisting of at least 16 semester hours.

4. If it is not obvious from the above tables that the curriculum includes a broad-based core of fundamental computer science material consisting of at least 16 semester hours (24 quarter hours), please explain.

Each undergraduate student must complete a core sequence of 19 semester hours of Computer Science. Our core sequence of CSE 110, CSE 113, CSE 114, CSE 213, CSE 214, CSE 219, and CSE 220 contains a total of 22 credits, three of which (from CSE 113 and 213) can properly be considered mathematics. This leaves a core component of 19 semester hours in Computer Science.

Standard IV-6. The core materials must provide basic coverage of algorithms, data structures, software design, concepts of programming languages and computer organization and architecture.

5. The core materials must provide basic coverage of the following five areas. Please indicate below the approximate number of hours in the core devoted to each topic. (This material can be gathered from your course descriptions, but it will ease the job for the visiting team if you do this in advance.)

Algorithms 2.85, Data Structures 4.85, Software Design 4.35,
Concepts of Programming Languages 3.35, Computer Organization and Architecture 3.6.

Standard IV-7. Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials.

6. The following areas must be stressed within the program's core materials. Indicate the course numbers of courses embodying a significant portion of these areas:

| | |
|--------------------------|----------------------------------|
| Theoretical Foundations: | <u>CSE 113, CSE213</u> |
| Problem Analysis: | <u>CSE 114, CSE 214, CSE 220</u> |
| Solution Design: | <u>CSE 219, CSE 308</u> |

Software engineering (CSE 308) is mentioned here, although we have not defined it as a lower-level core course. It is classified as an upper-level course and required of all majors.

Standard IV-8. Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language.

7. Typically, to what programming languages and operating systems are your students exposed?

All students are exposed to Java, C/C++, and ML in our core course sequence, and the Windows and UNIX operating systems. Students who take CSE 307 (Program Languages) as a core

technical elective are exposed to alternate language paradigms, typically including Lisp and Prolog.

8. In what computer language(s) do your students become proficient?

All students become proficient in Java during the core sequence (CSE 114, CSE 214, and CSE 219) and competent in C/C++ during core technical electives.

Standard IV-9. All students must take at least 16 semester hours of advanced course work in computer science that provides breadth and builds on the core to provide depth.

9. If it is not obvious from the tables above that your students take at least 16 semester hours (24 quarter hours) of advanced computer science, please explain.

Each graduating student must complete at least 27 credit hours of advanced computer science. This is partitioned into 12 credit hours of core technical electives, three credit hours of advanced theory courses (CSE 373 or CSE 303), three credit hours of software engineering (CSE 308), and an additional 9 credit hours of CSE elective courses.

10. List below the advanced areas in which your students may study. Make clear by your use of “and” and “or” and parentheses which areas are required and which may be chosen from (e.g., A and two of (B or C or D)).

Our core technical electives requirement ensures students have studied at least 3 of the following advanced subjects: graphics/visualization, operating systems, databases, programming languages/compilers, and computer architecture. Our theory elective requirement ensures students take at least one advanced course in either algorithms or the theory of computation. Special elective clusters can be taken to obtain an official concentration (so denoted on the student’s transcript) in either human computer interaction or information assurance.

Standard IV-10. The curriculum must include at least 15 semester hours of mathematics.

11. If it is not obvious from the tables above that your students take at least 15 semester hours (23 quarter hours) of mathematics, please explain.

Each graduating student must take at least 18 credit hours of mathematics. This includes six credits worth of calculus in a two semester sequence (typically MAT 131/132 or AMS 151/161), three credits of discrete mathematics from our Foundations of Computer Science sequence (CSE 113 and 213), and an additional nine credits of required courses in Applied Mathematics (AMS 210, 301, and 310).

One interesting consequence of the strong emphasis on mathematics in our curriculum is the substantial number of computer science majors who choose to double major in Applied Mathematics. About 15% of our majors complete a double major in Applied Mathematics. Obtaining the double major can require as little as two additional courses more than what is required by the computer science major, making the option very attractive to many students.

Standard IV-11. Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.

12. If it is not obvious from course titles in the above tables, then explain below which required courses contain discrete mathematics, differential and integral calculus, and probability and statistics.

Discrete mathematics is covered in several courses in our curriculum. Roughly half of our two-semester Foundations of Computer Science course sequence (CSE 113 and 213) revolves around discrete mathematics. In addition, we require an advanced course in combinatorics and graph theory, AMS 301 (Finite Mathematical Structures).

Differential and integral calculus is covered in the required two-semester calculus sequence (typically MAT 131/132 or AMS 151/161).

Our probability and statistics requirement is met by the three-credit course AMS 310 (Survey of Probability and Statistics). We also require an additional three-credit mathematics course, AMS 210 (Applied Linear Algebra).

Standard IV-12. The curriculum must include at least 12 semester hours of science.

13. If it is not obvious from the tables above that your students take at least 12 semester hours (18 quarter hours) of science, please explain.

Each graduating student must take at least 14 semester hours in the science sequence. Specifically, students must elect one of the following natural science sequences:

- *Two courses from: BIO 201, 202, 203 (Fundamentals of Biology)*
- *CHE 131, 132, 133 or CHE 141, 142, 143 (General Chemistry)*
- *PHY 131, 132 or PHY 141, 142 or PHY 125, 126, 127 (Classical Physics)*
- *GEO 102, 112, and 309 (Geology)*

Six additional credits from these or other approved natural science courses (biology, chemistry, geology, or physics), must be taken, though not necessarily as sequence. More advanced natural science courses may be substituted with the prior approval of the Computer Science Department.

Our latest curriculum changes (effective for students entering Fall 2005) will reduce the science requirement from 14 to 12 credits. This change frees up credit hours for additional computer science courses, specifically the one-credit ethics requirement (effective for students entering fall 2005) as well as additional required technical electives (currently under discussion).

This change was made in parallel with strengthening our science sequence requirements. Feedback from graduating seniors and student focus groups pointed out recurring problems with our current science requirements, specifically geology. In response, the geology sequence has been dropped from the list of acceptable natural science sequences effective Fall 2005.

Standard IV-13. Course work in science must include the equivalent of a two-semester sequence in a laboratory science for science or engineering majors.

14. If it is not obvious from the tables above and from course descriptions and/or your catalog that the science requirement includes a full-year (two-semester or three-quarter) sequence in a laboratory science for science and engineering majors, please explain.

This is indeed the case. A sequence is any two courses from biology (BIO 201, 202, 203); or chemistry (CHE 131, 132, 133 or 141, 142, 143); or physics (PHY 131/133, 132/134 or 141, 142 or 125, 126, 127).

Standard IV-14. Science course work additional to that specified in Standard IV-13 must be in science courses or courses that enhance the student's ability to apply the scientific method.

15. If it is not obvious from the tables above and from course descriptions and/or your catalog that the remainder of the science requirement is met with science courses or courses that enhance the student’s abilities in the application of the scientific method, please explain. (Mathematics, statistics, and courses normally considered part of the computer science discipline should not be included here).

It is indeed the case that the remainder of the science requirements is met by such courses.

Students take six additional credits of approved natural science courses, though these courses do not necessarily form a sequence. Our departmental approval process ensures these courses enhance the student’s abilities in the application of the scientific method.

Standard IV-15. The oral communications skills of the student must be developed and applied in the program.

Standard IV-16. The written communications skills of the student must be developed and applied in the program.

16. Each student’s oral and written communications skills must be developed and applied in the program, i.e. in courses required for the major. This information should be included in course descriptions; please give course numbers below.

Table 11 – Oral and Written Communications

| Category | Course(s) | Comments |
|-----------------|------------------|---|
| Oral | CSE 308 | <i>In particular, each student is required to give at least one oral presentation in CSE 308 (software engineering) concerning their course project, and the student receives feedback on various oral communications skills important to software engineering.</i> |

| Category | Course(s) | Comments |
|----------|---------------------|---|
| Written | CSE 300, CSE 308 | <p>Feedback from our Industrial Advisory Board (IAB) and other sources repeatedly emphasizes the importance of developing communications skills in our students. In response, we have made substantive changes in our technical writing requirement (CSE 300) over the past few years.</p> <p>Historically, the technical writing requirement was satisfied by having each student turn in a substantive document written for another course (typically CSE 308). This document was approved by the nominal instructor for the course unless a rewrite was required. In this sense, our writing requirement was similar to those of the other departments in the College of Engineering and Applied Science.</p> <p>Starting in Fall 2004, we have been assigning CSE 300 to be the primary teaching assignment of the associated instructor, with the express purpose of strengthening the requirement and increasing the amount of feedback which can be provided to students. The course now includes a lecture component, and requires preliminary drafts of the paper to be submitted for evaluation. We continue to develop the writing requirement in response to student feedback about these improvements.</p> |

Standard IV-17. There must be sufficient coverage of social and ethical implications of computing to give students an understanding of a broad range of issues in this area.

17. Social and ethical implications of computing must be covered in the program. This information should be included in course descriptions; please give course numbers below.

One of the defining characteristics of professionals in any field is that they are ethical. Computer science or information systems professionals are expected to be ethical in all dealings with employers, fellow employees, customers, competitors, and the general public.

Through Spring 2005, the primary course coverage of ethics has been in CSE 308, our required course on Software Engineering. The lecture material covered three different but overlapping aspects of ethics: ethics, computer ethics, and professional computer ethics.

A typical writing assignment in CSE 308 reinforces the lecture material on ethics, consisting of an eight-page double-spaced (i.e. approximately three lines of text per inch) paper on some aspect of professional computer ethics. This paper focuses on the ethics of a computer professional, not just computer ethics; for example, is it ethical to download music over the Internet? Some students who have had professional jobs discuss ethics situations that have come up at their place of employment, while others use some topic we discussed in class or some topic they find on the Internet.

Students are exposed to professional ethics in other courses as well. In particular, we maintain a departmental ethics page <http://www.cs.sunysb.edu/ProfessionalEthics.html> including links to a variety of resources. Professional ethics is a topic in the following major-required courses: CSE110, CSE114, CSE219, and CSE308.

However, as a result of our assessment process, we have concluded that it is difficult to guarantee substantive coverage of professional ethics by partitioning this material through

several courses. For this reason, we have introduced a new one-credit course CSE 302 (Professional Ethics for Computer Science) which will be offered beginning in Fall 2005 as a requirement for all majors. A detailed syllabus for this course appears in the course description section of this self-study.

E. Course Descriptions.

For each required or elective computer science course that can be counted for credit in the curriculum being reviewed for accreditation, include a two-page or three-page course outline at this point in the self-study. If your documentation does not exactly follow this format, be sure that all of the indicated information (if applicable) is present, and please in any case adhere to a common format for all course descriptions.

Note: The outline format calls for information on the content of the course in the areas of computer science theory, communications skills development and application, social and ethical implications of computing, and problem analysis and solution design experiences. This is not intended to suggest that every course must have some coverage of each of these topics. For a given course, please include the information from a listed area only if the course has significant content in that specific area.

In addition, similar outlines should also be included for required mathematics and science courses taken by computer science students.

The course outline for each required or elective computer science course must also be included in a display of course materials that is available for study at all times during the program evaluation site visit. The course material display must include at least the following for each computer science course that can be counted in the computer science segment of the curriculum being evaluated.

- Textbook and other required material (e.g., manuals, reference booklets, standards documents, and so forth)
- Syllabus and course policies
- A complete set of assignments, tests, and important handouts
- Samples of graded student work on all assignments, written reports and other documents, and tests. Examples of excellent, satisfactory, and poor student work should be included.
- If some of the above documentation is online (e. g. in an instructor's web site), please indicate this, and have a computer available at or near the course displays so that the team can view it. Please give here the URL(s) for accessing any such materials:

Our collected course descriptions are attached separately.

Note that each instructor typically maintains a web page for each current course offering. These are accessible from our department web page <http://www.cs.sunysb.edu>, under our undergraduate courses.

V. Laboratories and Computing Facilities

INTENT: Laboratories and computing facilities are available, accessible, and adequately supported to enable students to complete their course work and to support faculty teaching needs and scholarly activities.

The **Intent** must be met in order for a program to be deemed accreditable. One way to meet the **Intent** of this criterion is to satisfy each one of the **Standards** listed below. To do this, answer the questions associated with the **Standards**. If one or more **Standards** are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the **Intent** is met in some alternative fashion.

We believe our program meets this Intent by satisfying each of the Standards listed below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

In Section VI we will ask you to describe laboratory equipment planning and acquisition processes. Please do not repeat any of that information here; simply refer ahead to that section if necessary to avoid duplication.

A. Computer Facilities.

Describe the computer facilities available for use in programs in computer science.

1. Describe the computing facilities used for instruction. Indicate the types of software available in each category. Specify any limitations that impact the quality of the educational experience.

The primary computing facilities available to our Computer Science students fall into two categories: (1) those supported and maintained by the University's Division of Information Technology, and (2) those that are maintained by the Department of Computer Science.

The University's computing Division of Information Technology maintains a continuously changing and updated array of hardware, software, network connections, and consulting services. The Stony Brook Instructional Networked Computing (SINC) sites, with a variety of computers, software, and printers, are located throughout the campus. In addition to the more than 600 general access computers, an additional 150 are available in the residence halls.

The general access (SINC) sites in close proximity to the Computer Science building are:

- *Computing Center - 20 P4 Pentium 4, 2.80 GHz, 512 Mg RAM, printers - Purchased 5/04*
- *Math/Applied Math/Physics - 24 P4, 2.80 GHz, 512 Mg RAM, printers - Purchased 5/04.*
- *13 P4, 2.66 GHz 512 Mg RAM - Purchased 5/03. 30 P4, Linux workstations used by students taking Math, Applied Math or Physics courses.*
- *Computer Science - 34 P4 2.66 GHz, 512 Mg RAM, printers - Purchased 5/03.*

The following educational computing laboratories are maintained by the Department of Computer Science, primarily to support our upper-division courses:

- *2204 (MultiMedia Lab) - 48 Apple I-Mac 512MB RAM running OSX, and 2 667Mhz PIII PC running MS Windows.*
- *2110 (TA/Helpdesk room) - 5 1.2Ghz Celeron PC running MS Windows.*

- 2114 (Advanced Programming Lab) - 22 933 MHz PIII 512MB ram PC running MS Windows. An equipment upgrade is scheduled for Summer 2005.
- 2126 (Transactions lab) - 20 667MHz PIII 512MB RAM running MS Windows. An equipment upgrade is scheduled for Summer 2005.
- 2128 (UG lab) - 38 866Mhz PIII with 256MB Running FreeBSD/MS Windows, 1 dual-processor 2.4Ghz P4 PC with 3GB Running FreeBSD, plus various supporting server systems running FreeBSD. An equipment upgrade is scheduled for Summer 2005.
- 2129 (Programming Techniques Lab) - 48 2.8Ghz P4 512MB RAM PCs running MS Windows.
- 2311 (Wireless and Seminar room) - 20 1.2Ghz Celeron Wireless laptops 14" color display.

In recent years, we have had relatively few concerns about our hardware environment. Students seem to be well-supported by the SINC sites and departmental labs as well as their home machines. Indeed, our primary concerns revolve around maintaining software environments that students can legally replicate on their home computers, more so than upgrading the hardware in our labs.

Software packages available on these labs includes:

Microsoft software in our educational labs includes Windows 2000 SP4, Office 2003, Visio 2002 Professional Edition, Visual Studio .Net 2003, Microsoft Internet Explorer 6.0 SP1, Windows Media Player 9, and DirectX SDK 9.

Other supported software systems include Active Perl 5.6 build 806, Adobe Acrobat 6, Fltk 1.1, Glui v2.1, Glut.dll v3.7.3, JDK v1.4.2_01, MKS Toolkit 7.0, Mozilla Firefox, Netbeans IDE 4.0, Norton Antivirus corporate edition 9, NS2 2.1b9a, PowerArchiver 2004, QUIP upgraded to v2.2.1.1, R-Project 1.6.2, Real Player One v2, Simscript II.5 Rel 2.02, Smart FTP, Spybot 1.3, SSH Secure Shell Ver. 3.2.9 client, VIM 6.2, Xemacs 21.4, XML Spy 2004, and Xwin32 6.

Our database courses primarily use Sybase PC Client Version. 12.5, with jConnect 4.5 and 5.5, Sybase central, and Jisql. Oracle Instant Client 10g is also available.

Other facilities:

2. Are there any labs, courses, or policies that require two or more students to share a lab station? NO If the answer is yes, please describe the situation(s) involved.
3. Briefly describe the laboratory equipment planning, acquisition, and maintenance processes and their adequacy. Include discussion of these topics for university-wide facilities available to all students (if used by your majors), your own laboratories and equipment (if applicable), and facilities controlled by other departments and/or schools (if used by your majors). Discuss how you assess the adequacy of your laboratory and computing support. Please attach documentation (e. g. inventories, equipment replacement plans, etc.) to this report.

The university's instructional computing department, led by Nancy Duffrin, has primary responsibility for general-purpose instructional computing. These are upgraded on a regular basis. Our department's hardware committee is in regular contact with the instructional computing office, and our suggestions are taken seriously.

In recent years, we have had relatively few concerns about our hardware environment. Students seem to be well-supported by the SINC sites and departmental labs as well as their home machines. We assess such concerns primarily from feedback (complaints) from faculty (instructor feedback and the departmental operations committee and undergraduate committee) and students (focus groups and course surveys). These groups have historically not been silent when the environment was substandard. The undergraduate curriculum committee regularly discusses such issues – most recently in Fall 2004. With the exception of the machines used to support the computer graphics courses (which are computationally intensive) we concluded that our undergraduate computing environment was adequate for our needs, and the general upgrades scheduled for Summer 2005 will suffice to keep us up to date.

Standard V-1 Each student must have adequate and reasonable access to the systems needed for each course.

B. Student Access.

Each student must have adequate and reasonable access to the systems needed for each course. State the hours the various facilities are open. State whether students have access from dormitories or off campus by direct access, modem, etc., and describe this access quantitatively.

Unless machines are reserved for specific classes, the equipment in all SINC sites is accessible to any student during operating hours. The SINC sites are staffed by trained student consultants who are available for assistance. The sites listed below are in facilities within CEAS and used heavily by our students.

The department computing labs tend to be available 24 hours per day. Many of our labs are protected by electronic locks requiring either passwords or keycards, which are provided to students in relevant courses.

Students also have remote access to all laboratories through modems (both telephone and high-speed network connections). Further, wireless Internet access is available in the Computer Science building. Students are able to log-on remotely to their Instructional Computing “sparky” and Computer Science departmental “UG” lab accounts. Moreover, the database that is available in the Transaction Processing Laboratory can be accessed remotely through www.translab.sunysb.edu. Based on student and faculty feedback, we believe students have adequate access to computing facilities.

For completeness, we give hours of operation of all Instructional Computing SINC sites below:

Table 12 - Instructional Computing Sinc Sites

| | <i>Chemistry Rm. 434 2-1019</i> | <i>Computer Science Rm. 2116 2-9279</i> | <i>Engineering Rm. 106 2-1017</i> | <i>Fine Arts Rm. 1301 2-1219</i> | <i>Harriman Rm. 318 2-1356</i> | <i>Life Science Rm. 022 2-1363</i> | <i>Main Library Rm. S-1460 2-9602</i> |
|-----------------------|---|---|---|---|--|--|---|
| <i>Monday</i> | <i>10am - 1pm 4-9pm</i> | <i>10am - 3pm</i> | <i>8am - 10pm</i> | <i>7pm - 1AM</i> | <i>10am - 3pm</i> | <i>10am - 6pm</i> | <i>9am - 10:45pm</i> |
| <i>Tuesday</i> | <i>10am - 9pm</i> | <i>7pm - 2AM</i> | <i>8am - 10pm</i> | <i>9:30am - 6:30pm</i> | <i>10am - 5pm</i> | <i>10am - 1pm</i> | <i>9am - 10:45pm</i> |
| <i>Wednesd ay</i> | <i>10am - 9pm</i> | <i>10am - 3pm</i> | <i>8am - 10pm</i> | <i>10am - 2pm 7pm - 1AM</i> | <i>10am - 6pm</i> | <i>10am - 5pm</i> | <i>9am - 10:45pm</i> |
| <i>Thursday</i> | <i>10am - 9pm</i> | <i>6pm - 2AM</i> | <i>8am - 10pm</i> | <i>10am - 1pm</i> | <i>11am - 9pm</i> | <i>10am - 1pm</i> | <i>9am - 10:45pm</i> |
| <i>Friday</i> | <i>10am - 5pm</i> | <i>3 - 10pm</i> | <i>8am - 8pm</i> | <i>9:30am- 12:30pm 2:30- 5:30pm</i> | <i>CLOSED</i> | <i>10am - 6pm</i> | <i>9am - 8pm</i> |
| <i>Saturday</i> | <i>CLOSED</i> | <i>5 - 10pm</i> | <i>CLOSED</i> | <i>CLOSED</i> | <i>CLOSED</i> | <i>CLOSED</i> | <i>10am - 5pm</i> |
| <i>Sunday</i> | <i>CLOSED</i> | <i>5 - 11pm</i> | <i>6-10pm</i> | <i>5 - 10pm</i> | <i>CLOSED</i> | <i>CLOSED</i> | <i>5- 10:45pm</i> |

| | <i>Math/Physics Rm. S-235 2-1021</i> | <i>SBS Rm. N-620 2-0677</i> | <i>Union Rm. 080 (Basement floor) 2-1673</i> | <i>Main Library/Language Center Rm. N-5004 2-7013</i> | <i>Computing Center Rm. 138 2-8039</i> |
|------------------|--|-------------------------------------|--|---|--|
| <i>Monday</i> | <i>10am - 10pm</i> | <i>10am - 10pm</i> | <i>10am - 9pm</i> | <i>8am - 9pm</i> | <i>8:30am - 11:30pm</i> |
| <i>Tuesday</i> | <i>10am - 10pm</i> | <i>10am - 10pm</i> | <i>10am - 9pm</i> | <i>8am - 9pm</i> | <i>8:30am - 11:30pm</i> |
| <i>Wednesday</i> | <i>10am - 10pm</i> | <i>10am - 10pm</i> | <i>10am - 9pm</i> | <i>8am - 9pm</i> | <i>8:30am - 11:30pm</i> |
| <i>Thursday</i> | <i>10am - 10pm</i> | <i>10am - 10pm</i> | <i>10am - 8pm</i> | <i>8am - 9pm</i> | <i>8:30am - 11:30pm</i> |
| <i>Friday</i> | <i>10am - 6pm</i> | <i>10am - 5pm</i> | <i>10am - 5pm</i> | <i>8am - 3pm</i> | <i>8:30am - 10pm</i> |
| <i>Saturday</i> | <i>CLOSED</i> | <i>CLOSED</i> | <i>CLOSED</i> | <i>12 - 5p.m</i> | <i>CLOSED</i> |
| <i>Sunday</i> | <i>5 - 10pm</i> | <i>CLOSED</i> | <i>1-8pm</i> | <i>CLOSED</i> | <i>4 - 11pm</i> |

Standard V-2. Documentation for hardware and software must be readily accessible to faculty and students.

C. Documentation.

Describe documentation for hardware and software systems available to students and faculty in the computer science program. Explain how students and faculty have adequate and timely access to the documentation.

Based on student and faculty feedback, adequate documentation exists for the educational laboratories used by Computer Science majors. In particular, the documentation needed for using programs in the Transaction Processing Laboratory (Translab) can be accessed at www.translab.cs.sunysb.edu. This page provides links to help pages and step by step instructions on how to register to a database and how to go about using it. The ic.sunysb.edu page also provides general information about each SINC sites (hours of operation, installed software, etc.).

Standard V-3. All faculty members must have access to adequate computing facilities for class preparation and for scholarly activities.

D. Faculty Access.

Describe the computing facilities available to faculty for class preparation and for scholarly activities and research. Include specifics regarding resources in faculty members' offices.

Each computer science faculty member at Stony Brook has at least one networked workstation in their office, and access to printing and copying facilities. The most recent systematic upgrade to faculty office workstations occurred in Spring 2005.

Standard V-4. There must be adequate support personnel to install and maintain the laboratories and computing facilities.

E. Support Personnel.

1. What support personnel are available to install, maintain, and manage departmental hardware, software, and networks?

The Department of Instructional Computing supports the basic SINC sites. A team of six system administrators lead by Brian Tria administers the Computer Science department machines: Madhuchhanda Bhowal, Ajay Gupta; Anne Kilarjian, Ashwin Nagrani, Brian Tria, and Bin Zhang.

2. Describe any limitations due to this level of support?

Although the support personnel we have are able and hard working, much of its efforts are by necessity devoted to the extensive research computing demands of the department. In particular, the department has recently received a large (\$1.6 million) influx of research computing equipment as a consequence of the Center for Emerging Wireless and Information Technology (CEWIT). This is of course a blessing, but the task of supporting this equipment will fall upon them.

3. Are any faculty members expected to provide significant hardware, network, or software support? If so, describe this expectation including how such expectations are addressed in evaluation, tenure, promotion, and merit pay decisions, and indicate what, if any, released time is awarded for this effort.

In only a few instances faculty members have primary responsibility for maintaining instructional laboratories (as opposed to research laboratories). The most notable example is Prof. Gene Stark's "UG Lab", a laboratory of roughly 40 UNIX machines used for upper-level programming and systems courses.

Prof. Stark has devoted substantial time to building and maintaining this laboratory. He feels that his service efforts have been acknowledged and rewarded through merit pay increases and were considered during his promotion to full Professor. The other example is Tony Scarlatos who support the Multimedia Lab.

Standard V-5. Instructional assistance must be provided for the laboratories and computing facilities.

F. Instructional Support.

Describe the nature and extent of instructional support available to students in the laboratories.

Instructional Computing provides support for students and faculty using the instructional computing laboratories. Each lab is staffed by trained student computer consultants who are available to assist students who use the facilities. They also maintain and staff a computer hot line for problems that students or faculty may encounter in obtaining access from home or residence hall.

Short courses on standard computer applications are taught by Instructional Computing and are open to all students and faculty. Instructional Computing staff will also teach an introductory computer session for classes as requested. Documentation and Web pages for assistance are provided by Instructional Computing. Assistance is also provided to students in the residence halls who are having difficulty connecting to the campus network.

There are several channels through which students receive instructional support concerning the Computer Science supported laboratories. Many of our upper-division Computer Science courses use specialized hardware and software, and so each of these courses offers the instructional support needed to use the lab in question. Usually the course assignments provide enough information to complete the assignments, or the web page associated with the given course offering contains links to appropriate documentation. The course faculty and teaching assistants are available to help students on technical matters specific to the course offering. Finally, we administer a student help desk to assist students with questions concerning the labs.

VI. Institutional Support and Financial Resources.

INTENT: The institution's support for the program and the financial resources available to the program are sufficient to provide an environment in which the program can achieve its objectives. Support and resources are sufficient to provide assurance that an accredited program will retain its strength throughout the period of accreditation.

The **Intent** must be met in order for a program to be deemed creditable. One way to meet the **Intent** of this criterion is to satisfy each one of the **Standards** listed below. To do this, answer the questions associated with the **Standards**. If one or more **Standards** are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the **Intent** is met in some alternative fashion.

We believe that our program meets this Intent by satisfying each of the Standards listed below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

Standard VI-1. Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.

Standard VI-2. There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.

Standard VI-3. There must be support and recognition of scholarly activities.

A. Faculty Stability

1. One evidence of the long-term stability of a program is its ability to both attract and retain high quality faculty. Describe how your program does this. Some topics the description might address are sabbatical and other leave programs, salaries, benefits, teaching loads, support for and recognition of scholarly activity (including financial support for attendance at professional meetings), departmental and institutional ambiance, etc. Give counts of the total number of faculty and the number of resignations, retirements, and new hires for each of the last five years. Indicate whether there are significant problems attracting and retaining faculty, and if so, the causes.

The quality and quantity of our recent faculty hires demonstrates that we meet this standard. In particular, we have no fewer than 11 tenure-track Assistant Professors. These faculty members come from such top-ranked graduate programs such as Stanford (2), Harvard, Washington, and Columbia. Several of our junior faculty have won National Science Foundation CAREER awards (including Grosu, Gu, Mueller, and Zadok) indicating that they are among the most promising researchers in their fields. That we have been able to grow substantially during the recent period of peak demand for Computer Science faculty demonstrates that we have adequate support for attracting high-quality faculty.

Similarly, we have had excellent success retaining our faculty. Our department now has nine Associate Professors, seven of whom have been tenured in recent years. The department has not lost a faculty member due to the denial of tenure for 15 years; each case we have brought up in this period has been approved by the College and University. This testifies to both a supportive environment and the quality of our candidates.

During the peak period of faculty demand, Computer Science faculties at many universities suffered faculty poaching from other departments. During this time, Stony Brook was quite successful at retaining its faculty; during this time we lost only Amitabh Varshney (to the University of Maryland) and Peter Henderson (to Butler University). By comparison, five of our recent hires were successfully recruited from other universities (Das, Gu, Liu, Qin, Stoller). We also lost four faculty members to retirement (Herbert Gelernter, Theo Pavlidis, Dave Smith, and most recently Art Bernstein).

We attribute our success on faculty recruiting and retention to several factors: competitive salaries, start-up packages, and benefits; the strong international reputation of our department, the friendly and collegial environment of our department; and finally the broad participation of our faculty during the recruiting process.

We have had a higher turnover in our non-tenure track instructors. Three have left for tenure-track or improved positions elsewhere (Cortina, Scharff, and Wildenburg); this is a testimony to the quality of our hires. Unfortunately, Stony Brook does not offer a permanent teaching faculty track, so comparable offers could not be made. However, the issue of permanent teaching faculty is under review by various University committees, and is expected to be considered in the next contract review cycle. We have also lost six other Instructors during this time period. Two (Mathies and Valois) decided to move out of the Stony Brook area; another left due to a visa issue (Kulkarni); three others left by mutual consent. We feel the latter demonstrates that the success of our review system for teaching faculty.

In the following table, we partitioned each count in (tenure-track/instructor) faculty.

Table 13 – Changes in Faculty Size and Composition

| Year | Total Faculty | Resignations | Retirements | New Hires |
|-------------|----------------------|---------------------|--------------------|------------------|
| 2005 | 42 (34/8) | 0 (0/0) | 1 (1/0) | - |
| 2004 | 40 (31/9) | 2 (0/2) | 0 (0/0) | 4 (3/1) |
| 2003 | 40 (31/9) | 0 (0/0) | 0 (0/0) | 0 (0/0) |
| 2002 | 37 (28/9) | 3 (0/3) | 0 (0/0) | 6 (3/3) |
| 2001 | 37 (28/9) | 5 (1/4) | 2 (2/0) | 7 (3/4) |
| 2000 | 30 (24/6) | 1 (1/0) | 0 (0/0) | 8 (5/3) |
| 1999 | 27 (24/3) | 0 (0/0) | 1 (1/0) | 4 (1/3) |

B. Faculty Professional Activities

Summarize the professional activities of your faculty, attendance at meetings, university and professional honors won by individuals, etc. Just summarize here; details should appear in individual faculty vitas.

Our department as an entity has received the following recognition:

- Best public CS Department in the Northeastern United States (by NRC rankings)
- 1999 Gourman Report for undergraduate CS programs – 15th

- 1993 NRC ranking of CS graduate programs – 31st
- 1999 Objective Ranking of CS graduate programs – 15th
- 2000 Graham-Diamond faculty scholarly productivity – 17th

Cumulatively, our faculty series of honors, including:

- 4 IEEE Fellows; 2 ACM Fellows
- 13 NSF Career/Young-Investigator Awards
- 9 NSF ITR Awards 2000-03 (5 in 2003)
- 3 Fulbright Scholars
- Alfred P. Sloan Research Fellow
- Honda Initiation Award
- NYS Entrepreneur Award
- King-Sun Fu Award
- 2 ACM SIGMOD Test of Time Awards
- 5 LISA (Long Island Software Awards) Awards
- 4 Teaching/Education Awards

Brief highlights of individual achievements for each of our faculty are given below. More details appear in the collective vitae:

- *Michael Ashikhmin, Assistant Professor, Ph.D., University of Utah*
Active research in computer graphics; organized and taught an advanced course at SIGGRAPH.
- *Leo Bachmair, Professor, Ph.D., University of Illinois at Urbana-Champaign*
Research fellowship, Alexander von Humboldt Foundation; NSF-funded research in automatic theorem proving.
- *Hussein Badr, Associate Professor, Ph.D., Penn State University*
Excellence in Teaching Award, College of Engineering and Applied Science, SUNY Stony Brook, 1997-1999.
- *Michael Bender, Assistant Professor, Ph.D., Harvard University*
Active research in algorithms; Sabbatical at MIT; winner, Excellence in Graduate Student Teaching Award, SUNY Stony Brook 2005.
- *Arthur Bernstein, Professor, Ph.D., Columbia University*
Professor Emeritus, 2005; ACM Fellow.
- *Tzi-cker Chiueh, Professor, Ph.D., University of California, Berkeley*
Active research in computer systems; NSF Career Award.
- *Rance Cleaveland, Professor, Ph.D., Cornell University*
Active research in concurrency theory; co-founder of Reactive Systems; NSF Young Investigator Award; ONR Young Investigator Award.
- *Samir Das, Associate Professor, Ph.D., George Institute of Technology*
Active research in mobile computing; NSF CAREER Award.
- *Ahmad Esmaili, Lecturer, M.S., Stony Brook University*
Attended SIGCSE 2005; Attended Microsoft Academic Days at MIT, January 2005.

- *Jie Gao, Assistant Professor, Ph.D., Stanford University*
Active research in mobile computing and algorithms; post-doc at Cal Tech.
- *Radu Grosu, Assistant Professor, Ph.D., Technical University of Muenchen*
Active research in model checking; NSF CAREER Award.
- *Xianfeng Gu, Assistant Professor, Ph.D., Harvard University*
Active research in computer graphics; NSF CAREER Award.
- *Himanshu Gupta, Assistant Professor, Ph.D., Stanford University*
Active research in sensor networks.
- *George Hart, Research Professor, Ph.D., Massachusetts Institute of Technology*
Artist-in-residence, MIT 2003; New York State Council for the Arts Individual Artist Award.
- *Arie Kaufman, Distinguished Professor and Chairman, Ph.D., Ben Gurion University*
SUNY Distinguished Professor, 2005; IEEE Fellow; European Academy of Sciences.
- *Rob Kelly, Associate Chair, Ph.D., New York University*
Former Director of Research and Development, Grumman Data Systems; Departmental Undergraduate Teaching Award, 2002; LISA Award (2003); active research in medical informatics.
- *Michael Kifer, Professor, Ph.D., Hebrew University of Jerusalem, Israel*
Active research in intelligent databases; ACM-SIGMOD Test of Time awards, 1999 and 2002.
- *Ker-I Ko, Professor, Ph.D., Ohio State University*
Author of textbooks on complexity theory and automata theory.
- *Philip Lewis, Professor, Ph.D., Massachusetts Institute of Technology*
ACM Fellow; IEEE Fellow.
- *Annie Liu, Associate Professor, Ph.D., Cornell University*
Elected Member of IFIP Working Group 2.1.; Active research in high-level languages and optimization.
- *Richard McKenna, Lecturer, M.S., Stony Brook University*
Active interest/conference attendance in game programming.
- *Alexander Mohr, Assistant Professor, Ph.D., University of Washington*
Active research in computer networks; SIGCOMM attendance.
- *Klaus Mueller, Assistant Professor, Ph.D., Ohio State University*
Active research in visualization and medical imaging; NSF Career Award.
- *Shaunak Pawagi, Lecturer, Ph.D., University of Maryland at College Park*
Conference attendance in computer architecture.
- *Hong Qin, Associate Professor, Ph.D., University of Toronto*
Active research in computer graphics; NSF CAREER Award; Sloan Research Fellow.
- *CR Ramakrishnan, Associate Professor, Ph.D., Stony Brook University*
Active research in software verification and logic programming.
- *IV Ramakrishnan, Professor, Ph.D., University of Texas at Austin*
Active research in programming languages, automated reasoning, and web technologies.
- *Dimitris Samaras, Assistant Professor, Ph.D., University of Pennsylvania*
Active research in computer vision.

- *Tony Scarlatos, Lecturer, M.A., Adelphi University
Active in multimedia projects; senior personnel on NSF CRCRD grant.*
- *R. Sekar, Associate Professor, Ph.D., Stony Brook University
Active research in computer security; Center of Excellence in Information Assurance Education Award by NSA, 2002.*
- *Radu Sion, Assistant Professor, Ph.D., Purdue University
Active research in computer security; nominated for ACM Dissertation Award by Purdue University, 2004.*
- *Steven Skiena, Professor, Ph.D., University of Illinois at Urbana-Champaign
Active research in algorithms; IEEE Computer Science and Engineering Undergraduate Teaching Award, 2001; ONR Young Investigator Award.*
- *Scott Smolka, Professor, Ph.D., Brown University
Active research in verification; Co-founder of Reactive Systems.*
- *Eugene Stark, Professor, Ph.D., Massachusetts Institute of Technology
Active research in formal methods; Academy of Teacher/Scholars, 2000-2003.*
- *Amanda Stent, Assistant Professor, Ph.D., Computer Science, University of Rochester
Active research in natural language processing.*
- *Scott Stoller, Associate Professor, Ph.D., Cornell University
Active research in software testing and verification; ONR Young Investigator Award; NSF Career Award.*
- *Michael Tashbook, Lecturer, M.C.S, University of Virginia
Attended ACM SIGCSE 2004 and 2005.*
- *David Warren, Professor, Ph.D., University of Michigan
Leading Professor; Senior Scientist, XSB Inc; ACM Fellow; LISA Award.*
- *Anita Wasilewska, Associate Professor, Ph.D., Warsaw University, Poland
Sabbatical leave 2002-3 in France, Spain, Sweden, and Poland; Fulbright Scholar.*
- *Larry Wittie, Professor, Ph.D., University of Wisconsin, Madison
Active research in Computer Architecture; Liaison to Computing Institutes of Russian Academy of Sciences for ONR.*
- *Erez Zadok, Assistant Professor, Ph.D., Columbia University
Active research in storage systems; NSF Career Award.*
- *Rong Zhao, Research Asst. Professor/SPIR Coordinator, Ph.D., Wayne State University
Research in multimedia; Three LISA awards.*

Standard VI-4. There must be office support consistent with the type of program, level of scholarly activity, and needs of the faculty members.

C. Office Support

Describe the level and adequacy of office support. The description should address secretarial support, office equipment, and the total group supported by this equipment and staff

Our academic staff includes:

- *Rose Anne Vultaggio, Undergraduate Programs Secretary*

Distributes information regarding Computer Science and Information System undergraduate programs and courses.

- *Dolores Ambrose, Graduate Programs Secretary*
- *Distributes applications for the M.S. or Ph.D. programs. Processes graduate admissions applications.*
- *Edwina Osmanski, Graduate Student Service Secretary*

Our administrative staff includes:

- *Kathy Germana, Assistant to the Chairperson*
- *Betty Knittweis, Research Grants Administrator*
- *Stella Mannino, Administrative Assistant for the chairman and the Center for Visual Computing*
- *Shakeera Thomas, Staff Assistant for Special Projects*

The primary office support for the undergraduate program comes from our full-time undergraduate secretary, Roseann Vultaggio. She is the primary administrative contact with our students. Other significant support comes from our departmental administrator Kathy Germana, particularly concerning course schedules and interactions with the faculty and university. Our other four administrative assistants contribute as needed.

Each support person has adequate access to computing and communications equipment.

Standard VI-5. Adequate time must be assigned for the administration of the program.

D. Time for Administration

Describe the adequacy of the time assigned for the administration of the program.

The primary administrator of our undergraduate program is Prof. Leo Bachmair, the undergraduate director. He works closely with the director of our associated Information Systems major, Prof. Phil Lewis, as well as the full undergraduate program committee of five faculty (Badr, Bender, Kelly, Skiena, and Stent) and two student representatives.

Prof. Bachmair has done an admirable job of maintaining and improving the standards of our program during the expansion period in undergraduate enrollments. He has adequate time and faculty/office help to properly administer the program, and he gets one course release per year.

Standard VI-6. Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.

E. Adequacy of Resources

Describe the adequacy of the resources and the atmosphere provided by the upper administration for the program to function effectively with the rest of the institution.

Our college and university administration properly responded to the increased demand for our undergraduate courses by substantially increasing the faculty size. Other resources, such as teaching assistantship lines, space, and computer laboratory equipment appropriately expanded during this time.

Our department has a good relationship with college and university administration. Improvements in quality and quantity of office space are needed, but these are being addressed via a planned extension to the Computer Science building and the new state CEWIT research center.

F. Leadership

Positive and constructive leadership at the college/school level and within the program's department are especially important to the program's quality. Evaluate this leadership and the interaction between these levels of administration.

A healthy relationship exists between the department chair (Arie Kaufman) and the Dean of Engineering (Yacov Shamash). We feel the Dean has supported the department in efforts to obtain additional resources to meet the demands of our enrollments.

Standard VI-7. Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.

G. Laboratory and Computing Resources.

Briefly describe the resources available for the program to acquire and maintain laboratory facilities. Include information on how the institution determines the adequacy of the resources.

The campus student computing facilities are funded by a \$100 per semester technology fee. Additional instructional computing money, \$23 per student, is available from the State each year for departmental instructional labs. These technology fees support:

- *Networking the residence halls, cabling, switches;*
- *Public area machines including SINC sites and some classrooms, including rehab, networking, and furniture;*
- *Computer Workshops - Dreamweaver, Flash, Resumes, etc.;*
- *Software on the public machines in the SINC Sites (~80 different software packages);*
- *Site license software for students (e.g., Norton Antivirus, Maple, Mathematica and Minitab);*
- *Sparky [student electronic mail system] and webmail;*
- *IC Web server with class, student and club pages;*
- *BlackBoard & BlackBoard Servers;*
- *Printers in SINC Sites;*
- *Supplies (paper and toner) for SINC Sites;*
- *Computers and software for general access areas for the graduate students within a department;*
- *Networking in graduate student offices;*
- *Computers, printers and supplies for the Residential Computing;*
- *Centers in the residence halls (these are not SINC Sites);*
- *Health Science Center computer lab - Barry S. Collier Learning Center, third floor of HSC;*

- *Student consultants and residence hall support students (who troubleshoot ResNet problems in the residence halls); and*
- *Full time staff within the Division of Information Technology.*

We assess the adequacy of departmental educational computing facilities through student and faculty feedback. Although certain facilities were stretched during the years of peak enrollments, our facilities have been adequate for the past several years. With recent and planned upgrades, they appear adequate for the foreseeable future.

Standard VI-8. Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.

H. Library Resources.

Briefly describe the resources available for the support of the library and related information retrieval facilities. Include information on how the institution determines the adequacy of the resources.

The Computer Science Library has holdings of 15,000 books, conference proceedings, and technical reports and 350 journal titles. In addition, the Library has an impressive digital collection of electronic books, journals, and databases that is accessible on-site as well as remotely. The Computer Science Library occupies 1,900 square feet on the second floor of the Computer Science building. We are one of the only departments on campus with our own library in our own building, and have successfully fought attempts to consolidate our library with that of Engineering. Our library is widely used by undergraduates as a study center and reference resource.

The Science and Engineering Library is an additional resource available to Computer Science students. This facility has 488 study spaces on two floors, including two group study rooms. The following collections are arranged on the first floor: biology and engineering monographs; about 900 current periodicals; the reference collection of handbooks, dictionaries and encyclopedias; Engineering Index, Metals Abstracts and Electrical and Electronics Abstracts.

On the second floor there is a section for general science and geoscience monographs, another section of print indexes and a large area for housing bound periodicals arranged by LC call number. A reserve collection, including copies of most currently used textbooks, is serviced from behind the circulation desk on the first floor.

Standard VI-9. There must be evidence that the institutional support and financial resources will remain in place throughout the period of accreditation.

I. Continuity of Institutional Support

Discuss and show evidence of continuity of institutional support for the program in the past, and problems that have existed or are anticipated in this area, if any.

Our faculty and related resources have grown substantially in recent years. We cannot expect these resources to continue to grow at the same rate in the face of declining enrollments; however the college is committed to maintaining a highly-ranked computer science program. In

particular, we have continued to hire, with three new faculty hired in 2004 and two more in 2005.

The state-funded CEWIT research center will be a primary source of future growth for our department, and together with the expansion of the Computer Science Building provides a strong testament to the position of Computer Science at Stony Brook.

VII. Institutional Facilities

INTENT: Institutional facilities, including the library, other electronic information retrieval systems, computer networks, classrooms, and offices, are adequate to support the objectives of the program.

The **Intent** must be met in order for a program to be deemed accreditable. One way to meet the **Intent** of this criterion is to satisfy each one of the **Standards** listed below. To do this, answer the questions associated with the **Standards**. If one or more **Standards** are not satisfied, it is incumbent upon the institution to demonstrate and document clearly and unequivocally how the **Intent** is met in some alternative fashion.

We believe that our program meets this Intent by satisfying each of the Standards below.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

Standard VII-1. The library that serves the computer science program must be adequately staffed with professional librarians and support personnel.

A. Library

1. Library Staffing

Assess the staffing of the library (or libraries) that serve the computer science program. Are there adequate professional librarians and support personnel? Supply documentation if possible.

The Computer Science library is staffed by a half-time professional librarian as well as a number of student assistants. This support is adequate, but represents a decline over the last five years from a full time professional librarian. Additional professional library support is available at the Science and Engineering library in the main library building.

Standard VII-2. The library's technical collection must include up-to-date textbooks, reference works, and publications of professional and research organizations such as the ACM and the IEEE Computer Society.

2. Library Technical Collection

Assess the adequacy of the library's technical collection and of the budget for subscriptions as well as new acquisitions. The library must contain up-to-date textbooks, reference works, and publications of professional and research organizations such as the ACM and the IEEE Computer Society. It should also contain representative trade journals. Supply documentation, if possible. Assess the process by which faculty may request the library to order books or subscriptions.

The Computer Science Library has holdings of 15,553 books, conference proceedings, and technical reports, and 350 journal titles. During the last five years, 2,544 books have been acquired by the Computer Science Library. In addition, the Library has a digital collection of electronic books, journals, and databases that is accessible on-site as well as remotely. The

Computer Science Library occupies 1,900 square feet on the second floor of the Computer Science building.

Ordering, receiving, cataloging and processing of materials for all libraries on campus are performed centrally by the Technical Service Departments of the Libraries. Requests for new books and journals are received from all readers. The CEAS also has a standing Library Committee, composed of representatives of each of the departments, including Computer Science. These liaisons assist the Engineering Librarian in making selections for acquisitions, evaluating and reviewing journal lists for possible cancellations and/or new subscriptions. The Engineering Librarian forwards the requests, together with her own selections, to the acquisitions department. Several essential proceedings series are received automatically upon publication: of particular interest for Computer Science is all ACM publications (as part of the ACM Digital Library) and all IEEE Conferences (as part of IEEExplore).

The table below reflects the total material funds for all of the Main Campus Libraries, and for the Engineering Library and the Computer Science Library combined for the last five years. The table also reflects the amounts expended for material acquisitions as well as the amounts expended for other library related services.

Table 14 - Library Expenditures

| | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 2003-04 |
|-------------------------|-------------|-------------|-------------|-------------|-------------|
| Total Library Funds | \$4,410,975 | \$4,702,093 | \$4,797,426 | \$4,943,716 | \$4,024,863 |
| Engineering Funds Total | \$543,857 | \$607,231 | \$634,321 | \$568,488 | \$614,384 |
| Books | \$52,905 | \$68,286 | \$56,425 | \$53,409 | \$51,633 |
| Periodicals | \$480,952 | \$517,545 | \$548,796 | \$499,079 | \$532,751 |
| Databases ** | \$10,000 | \$21,490 | \$26,000 | \$14,000 | \$17,000 |
| Equipment | NA | NA | \$3,000 | \$2,000 | \$13,000 |

*** Includes Compendex and for 2000-01 and 2001-02 half of the cost of Inspec Other databases are paid for by a general fund.*

The most serious budget problem concerning academic libraries at Stony Brook is common to those across the country: the rising costs of serial subscriptions. Access to increasing numbers of titles has increased nevertheless, through careful negotiations of packages, the move to the electronic format where possible, and judicious cancellations of titles that have become irrelevant. An ever speedier Interlibrary Service usually satisfies needs beyond our own collections.

Across the board our access to journal titles has increased several-fold, from 6,138 subscriptions (total institution) in 1998 to access to approximately 20,000 titles (print and electronic) in 2003/04. The majority of these additional titles are science and engineering titles. The major packages containing engineering and computer science titles are: ACM Digital Library, ASME journals, IEEExplore. Other packages containing many titles related to engineering disciplines are American Chemical Society journals, American Institute of Physics

journals, American Physical Society journals, Institute of Physics journals, Science Direct, and Wiley Interscience.

In summary, the collection is quite adequate for research and teaching needs. Faculty are solicited to recommend books and journals for the collection. A departmental library committee provides oversight of the facility.

Standard VII-3. Systems for locating and obtaining electronic information must be available.

3. Library Electronic Access

Assess the library's systems for locating and obtaining electronic information.

Adequate access for locating library information exists through the main library web page <http://sunysb.edu/~library/index.html>, including the library catalog (STARS) and a collection of databases and electronic journals.

The Main Library contains at least 60 networked computers in various locations, giving access to the campus wide online catalog (STARS) and a large array of online databases, full-text electronic journals and general Internet access. These information sources may also be accessed from anywhere on campus or off campus. Wireless access is provided in several locations and there are numerous Internet jacks for laptop connections, especially in the Main Stacks.

In the last five years the Stony Brook Libraries have been increasing the availability of bibliographic and full text databases in electronic form to an astonishing degree. An annotated list of our approximately 300 databases in all disciplines may found at <http://www.sunysb.edu/library/eresources/finder.html>. Most bibliographic databases offer hyperlinks to the articles in full text databases and the growing list of electronic journals. The Libraries have implemented a service that aids in locating articles found in bibliographic databases, called SFX. Informative web pages have been designed to give more specific information about the various collections or branch libraries.

All of the above is free of charge to the campus community.

Standard VII-4. Classrooms must be adequately equipped for the courses taught.

B. Classroom Equipment.

Describe the equipment typically available in classrooms where you teach your courses. Assess its adequacy for the purpose.

Essentially all classrooms on campus are furnished with blackboards and overhead (transparency) projectors. Laptops, projectors, and laser light pens are available for loan from audiovisual services for use in smaller classrooms. Most large lecture halls (e.g., Javits Lecture Center) are equipped with computers and projectors.

Providing laptop projectors and wireless internet access in all classrooms would be a significant step forward, but it is clear the university is moving in this direction.

Standard VII-5. Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional needs.

C. Faculty Offices

Discuss and assess the adequacy of faculty offices to enable faculty to meet their responsibilities to students and for their professional needs.

Each faculty member has their own individual office with a computer and telephone in the Computer Science Building. The 30 faculty offices so denoted in the architect's report total 5,800 square feet, so on average each faculty office is 193 square feet. The remaining faculty offices have been partitioned from a larger area on our second floor, but are of similar size.

The Computer Science building is in serious need of expansion and rehabilitation. Fortunately, there are clear plans in this direction. After several years of delay, funds for this expansion seem to be in this year's New York State budget. An artist's rendering of the proposed expansion appears below. The Computer Science Building expansion will bring our building from 44,626 square feet to 75,780 square feet, partitioned by mission as follows:

Table 15 – Utilization in Current and Future Computer Science Building

| Category | Existing sf | Future sf |
|------------------------------|--------------------|------------------|
| <i>Administration</i> | <i>994</i> | <i>1,660</i> |
| <i>Faculty Support</i> | <i>12,607</i> | <i>16,580</i> |
| <i>Academic Labs</i> | <i>9,281</i> | <i>13,000</i> |
| <i>Research Labs</i> | <i>12,027</i> | <i>23,000</i> |
| <i>Laboratory Support</i> | <i>3,430</i> | <i>4,120</i> |
| <i>Academic Teaching</i> | <i>1,866</i> | <i>8,660</i> |
| <i>Academic/Bldg Support</i> | <i>4,421</i> | <i>8,760</i> |
| <i>Total</i> | <i>44,626</i> | <i>75,780</i> |

The estimated cost for this project is about \$16 million. The recommended site is located between the Old Engineering building to the west and the existing Computer Science building to the east.

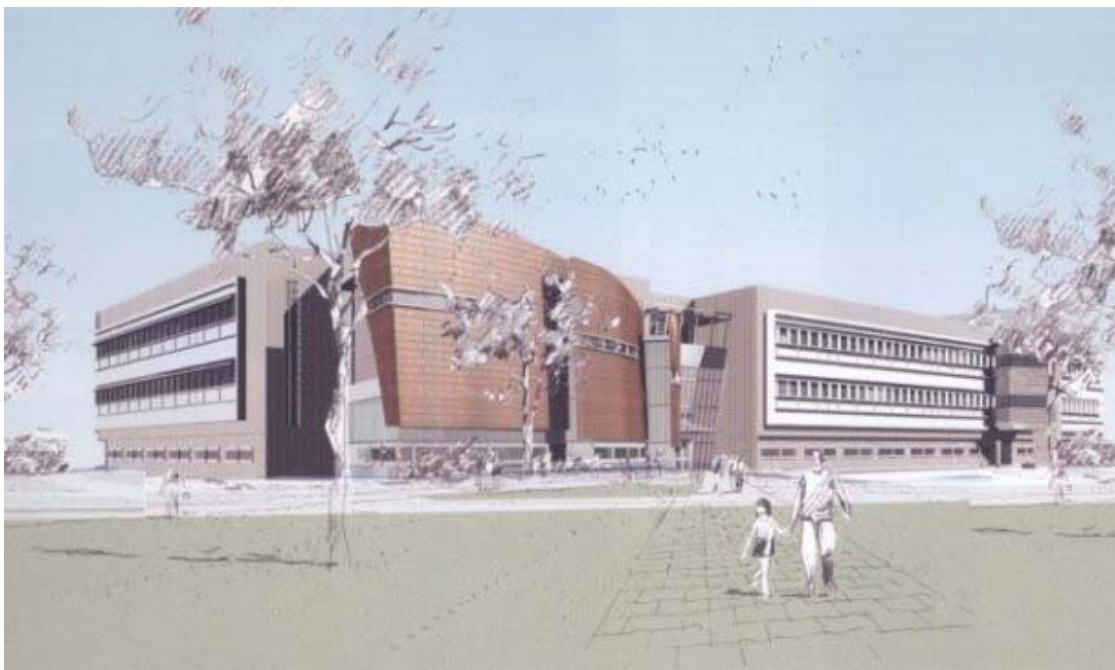
Also in progress is the architectural work for the Center for Excellence in Wireless and Information Technology (CEWIT) building. This \$50 million project will yield a building of 67,750 square feet including state of the art laboratories for research on wireless and IT technologies; flexible incubator space for the use of private industry; substantial computing support space; and office-oriented research space dedicated to the faculty and graduate students themselves.

Although the CEWIT building does not directly address the space needs for the undergraduate program, it does significantly strengthen the department's research mission and will potentially free up some space in our existing building.

Figure 2 – Stony Brook Computer Science Expansion



Figure 3 – Center for Excellence in Wireless & Information technology



Appendix I. Information Relative to the Entire Institution

A. General Information:

Name of Institution: Stony Brook University Date : May 20, 2005

Address: Stony Brook NY 11794
(Street) (City) (State) (Zip)

URL: http://www.sunysb.edu

Name and Title of Chief Executive Officer of Campus (President, Chancellor, etc.)

Dr. Shirley Strum Kenny President
(Name) (Position)

Stony Brook University was originally established in 1957 as a college for the preparation of secondary school teachers of mathematics and science. Our first campus was located at Oyster Bay, Long Island, on the grounds of a former Gold Coast estate. In 1962, a new campus was built in Stony Brook, on land donated by local philanthropist Ward Melville. Part of the State University of New York system, Stony Brook now encompasses 123 buildings on 1,100 acres, with a total enrollment of over 22,000 students. In the forty years since its founding, the University has grown tremendously, and is now recognized as one of the nation's important centers of learning and scholarship—carrying out the mandate of the State Board of Regents in 1960 to become a university that would “stand with the finest in the country.” In 2001 Stony Brook joined the prestigious Association of American Universities. Stony Brook University is listed as one of “The 100 Best Values in Higher Education” among public universities, according to the November, 2003 edition of Kiplinger’s Personal Finance, which annually tracks the best financial value among the nation’s leading institutions.

- *The University offers 124 undergraduate majors and minors, 102 master’s programs, 40 doctoral programs, and 32 graduate certificate programs.*
- *The University is organized into five major academic units: the College of Arts and Sciences, the College of Engineering and Applied Sciences, the College of Business, the Health Sciences Center, and the Marine Sciences Research Center.*
- *The majority of Stony Brook’s more than 1,800 faculty members hold doctoral degrees and more than 90 percent are actively engaged in research leading to publication, much of it supported by external grants and contracts. Eminent faculty members include a Nobel laureate and many internationally recognized scholars.*
- *Ten doctoral programs are ranked in the top 40 nationwide, with two in the top ten and four in the top 20.*
- *Stony Brook is one of ten universities to receive a National Science Foundation recognition award for integrating research and education.*
- *Stony Brook University has been ranked as one of the best universities in the world and one of the 50 best in North America, according to a survey by the prestigious Times of*

London. The November 5, 2004 edition of the newspaper ranks Stony Brook as No. 136 among universities worldwide, and No. 50 in North America. Stony Brook was the only State University of New York institution to be included on both the lists of the Top 200 universities in the world and the Top 50 in North America. In the same survey Stony Brook ranked tied for 33rd in the world in research impact, which the Times calculated by measuring citations per faculty member.

Close by the historic village of Stony Brook at the geographic midpoint of Long Island, the University campus lies about 60 miles east of Manhattan and 60 miles west of Montauk Point. It is only a short distance to the beaches at Fire Island, the elegant resorts of The Hamptons, and the vineyards of the East End. The internationally recognized research facilities of Brookhaven National Laboratory and Cold Spring Harbor Laboratory are nearby.

Founded in 1960, the College of Engineering and Applied Sciences is home to seven academic departments: Applied Mathematics and Statistics, Biomedical Engineering, Computer Science, Electrical and Computer Engineering, Materials Science and Engineering, Mechanical Engineering, and Technology and Society. The College aims to provide students with a solid foundation that prepares them to successfully adapt to advances in technology throughout their careers. Hands-on laboratory courses, the undergraduate internship program, and the senior design project provide practical experience in engineering that complements theoretical training. As of 2003, the college is home to about 2,000 undergraduate students, 1,000 graduate students, and a faculty of 148 engineers and applied scientists. It boasts over 18,000 alumni.

The College of Engineering and Applied Sciences at Stony Brook University (SBU) is an established and internationally recognized leader in education and research. With its growing and well-deserved reputation it has become a vital force for the economy of Long Island and New York State.

B. Type of Control

(Check more than one, if necessary)

| | |
|--|---|
| <input type="checkbox"/> Private, non-profit | <input type="checkbox"/> Municipal |
| <input type="checkbox"/> Private, other | <input checked="" type="checkbox"/> State |
| <input type="checkbox"/> Federal | |

Affiliation, if private: _____

If above classifications do not properly apply to the institution, please describe its type of control.

C. Regional or Institutional Accreditation.

Name the organizations by which the institution is now accredited, give dates of most recent accreditation. Attach a copy of the most recent accreditation action by any organization accrediting the institution or any of its computer-related programs.

Stony Brook University is accredited by the Board of Regents and the Middle States Commission on Higher Education as a Doctoral degree-granting university. Stony Brook is a member of the prestigious Association of American Universities. The University is authorized under federal law to enroll non-immigrant alien students in F1 & J1 status, by the United States Department of

State for Exchange Visitor Program P-I-4840, and by the Veteran's Approval Division of the Office of Military Affairs for attendance by students entitled to veterans benefits. The University is also a member of the National Association of International Educators (NAFSA) and the Institute of International Education.

Individual academic programs are accredited as follows:

- The baccalaureate (Bachelor of Engineering) degree programs in computer engineering, electrical engineering, engineering science, and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering Technology (ABET).
 - The Department of Chemistry is accredited by the American Chemical Society.
- The schools of the Health Sciences Center are accredited as follows:
- School of Nursing - Commission on Collegiate Nursing Education (CCNE); the American Colleges of Nurse Midwives, Division of Accreditation.
 - School of Health Technology and Management – American Occupational Therapy Association, Accreditation Council for Occupational Therapy Education; American Physical Therapy Association, Commission on Accreditation in Education
 - School of Social Welfare – Council of Social Work Education
 - School of Dental Medicine – American Dental Association Committee on Dental Accreditation
 - School of Medicine – Liaison Committee on Medical Education; American Psychological Association Committee on Accreditation; National Accrediting Agency for Clinical Laboratory Science

D. Enrollment

Table 16 - Enrollment

| | |
|---|---|
| Total enrollment for the entire institution (FTE) | 22, 344 (13, 232 Undergrad) |
| Total faculty for the entire institution (FTE) | 1,346 full-time faculty, plus 544 part-time faculty |

E. Funding Process.

Describe the process for allocating institutional funds to the computer science program.

Institutional funds are allocated to the Department of Computer Science from the Dean of the College of Engineering and Applied Science. These funds are divided into two classes: Personnel and OTPS (denoting "other than personnel").

There are two components to personnel funding. The annual funding for existing personnel is union agreement driven, reflecting a negotiated across-the-board increase (recently 2.75%) as well as a fixed percentage (typically 1%) set aside as a pool for merit increases. New lines are the other component of personnel funding, and come from negotiation with the Dean of Engineering. OTPS funding provides our annual budget for supplies, telephone, mail, and the like. We regularly finish spending our OTPS funding well before the fiscal year is out, and

additional funding must be obtained from other sources. The funding for OTPS is negotiated annually with the Dean of Engineering.

The Department has three other, non-state sources of funding:

- *IFR (Institutional Recharge Fund) — The Departmental IFR account contains discretionary funding for the chair, typically transferred from research accounts for faculty teaching buy-outs. This funding is used primarily to hire supplementary personnel.*
- *IDC (Indirect Cost Return) — This money reflects a certain percentage of the indirect costs of faculty research grants which is returned to the department. It is used for general supplies, materials, and building rehabilitation.*
- *Stony Brook Foundation (Donations) — Corporate and private donations to the department are held in an account managed by the Stony Brook Foundation. One of our primary corporate donors is Citigroup, whose \$15,000 annual donation supports both our departmental distinguished lecture series and the activities of our undergraduate student ACM and UPE chapters.*

F. Promotion and Faculty Tenure.

Summarize the promotion and tenure system and the system for merit salary adjustments. (Give an overview of actual practice; do not reproduce an entire section from the faculty handbook.)

Decisions about the appointment, promotion, tenure and salary adjustments for faculty of Stony Brook University are made in accordance with the Policies of the Board of Trustees; the collective bargaining agreement between the State of New York and United University Professions (UUP); and campus, college and school policies developed by the Faculty and the Office of the Provost and approved by the President.

Promotion and tenure are based on criteria set by the Board of Trustees, the collective bargaining agreement between the State of New York and the United University Professions (UUP), the procedures included in the policies of the University and College governance, and the guidelines of the Personnel Policy Committee (PPC) of the College. The CEAS PPC Guidelines have been reviewed extensively over the past two years and various clarifications and recommendations brought to the Executive Committee of the College.

The procedure used by the College of Engineering and Applied Sciences for promotion and tenure is as follows. Proposals for promotion and tenure are prepared in the department with supporting documentation, and forwarded with a departmental recommendation to the PPC. The PPC reviews the file of the faculty member and makes a recommendation to the Dean. The Dean then reviews the file and forwards a recommendation to the Provost. In the event that the Dean's recommendation is different from that of the Personnel Policy Committee, the Dean meets with the PPC to discuss the matter. The Provost adds a recommendation and forwards the file to the President. The President decides the case locally and forwards a recommendation to the SUNY Chancellor for final action.

Salary adjustments are the result of two separate processes. The faculty are represented by a bargaining agent in accordance with New York State law and this agent, the UUP, negotiates directly with the New York State Department of Budget for salary increases. The negotiated

salary increases usually include an across-the-board component and a separate merit component. The latter is allocated to the President on a formula basis deriving from the negotiated contract. The President makes separate allocations and also specified eligibility criteria to the various campus sectors, including the Provost's. The process is repeated by the Provost, the Deans, and the Chairs, with each department specifying the procedure it followed in the process leading to a set of recommendations that then move back up this chain to the President and from her/him to the Chancellor for final approval. In special circumstances, salary adjustments can be made in individual cases, always in conjunction with either an increase in duties or a promotion, following the recommendation of the Chair, Dean, Provost, and President and providing that the funds necessary are available.

G. Retirement and Benefits.

Summarize the retirement program and other faculty benefits.

The fringe benefits associated with salary compensation for faculty members are described in Chapter XI of the State University of New York at Stony Brook Faculty and Professional Employee Handbook .

There are three available retirement plans. These are (1) the Teacher's Retirement System (TRS), (2) the Employee's Retirement System (ERS), and (3) the Teachers Insurance and Annuity Association College Retirement Equities Fund (TIAA/CREF). The most popular of these three options is TIAA/CREF, but all three options are described below.

All faculty members are eligible to participate in either the TRS or ERS. Both are defined benefit plans where the right to a pension and the amount payable is determined by a fixed formula that includes length of service, age and final average salary. The State of New York contributes a lump sum annually to the plans which is actuarially calculated to maintain the integrity of the plans. Faculty enrolled in TRS or ERS before July 26, 1976 do not make a contribution to the plans. Faculty members who enrolled on or after July 27, 1976 contribute 3% of their regular biweekly salary to the plans: after 10 years, the employee contribution is discontinued.

In addition to the option of enrolling in either TRS or ERS, full-time faculty and part-time faculty on term appointments are eligible to enroll in the TIAA/CREF plan instead, which is a defined contribution plan. The employer and employee contribution to TIAA/CREF is determined by the date of enrollment. Eligible faculty enrolled in the TIAA-CREF plan before July 27, 1976 do not make a contribution but SUNY contributes 12% on the first \$16,500 of annual salary and 15% thereafter. Eligible faculty enrolled in the TIAA/CREF plan from July 27, 1976 through July 16, 1992 make a 3% contribution and SUNY contributes 9% on the first \$16,500 of annual salary and 12% thereafter. Eligible faculty enrolled since July 17, 1992 make a 3% (minimum) contribution and the SUNY contributes an amount equal to 8% of annual salary for the first seven years of SUNY employment and 10% thereafter.

Appendix II. General Information on the Unit Responsible for the Computer Science Program

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

A. Type of unit

1. Name of computer science program unit: Dept. of Computer Science
URL <http://www.cs.sunysb.edu>

If the computer science administrative program unit is not a department reporting to an administrative officer (e.g., Dean of College of Arts and Sciences) who in turn reports to president, provost, or equivalent executive officer, describe the unit.

B. Administrative Head of Computer Science Program Unit

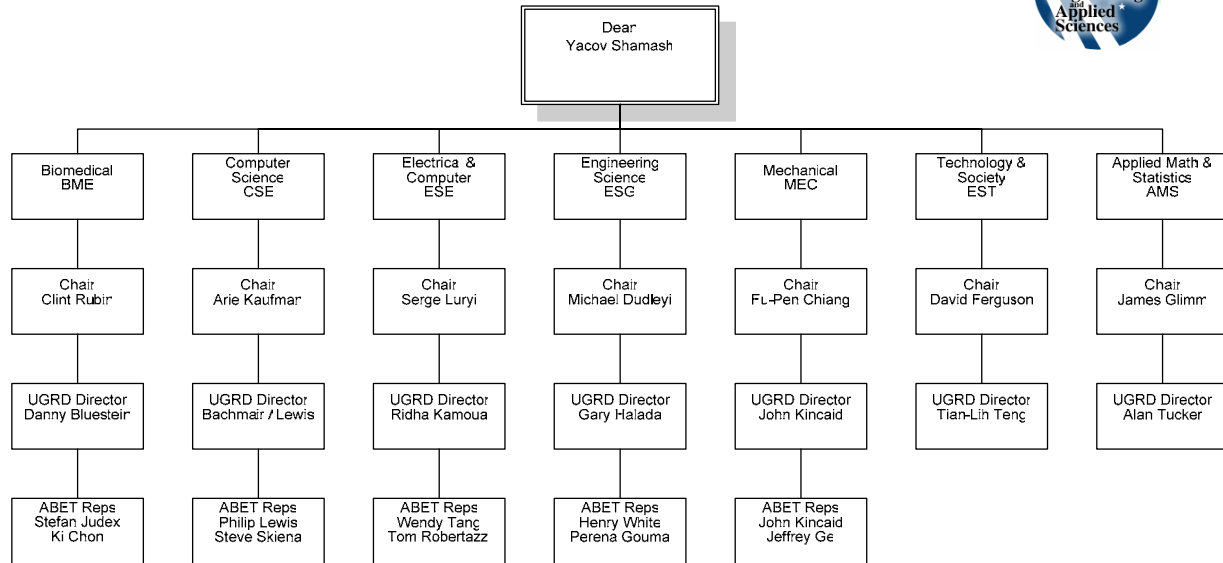
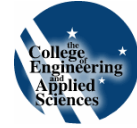
| | |
|---------------------|--------------|
| <u>Arie Kaufman</u> | <u>Chair</u> |
| (Name) | (Title) |

C. Organization Chart.

Attach an organization chart showing how the unit fits into the administrative structure of the institution.

Computer Science is located in the College of Engineering and Applied Science (CEAS), along with six other departments: Applied Mathematics and Statistics, Biomedical Engineering, Electrical and Computer Engineering, Materials Science and Engineering, Mechanical Engineering, and Technology and Society. The organizational chart of these departments and the associated accreditation personnel are included below:

Figure 4 – CEAS Organization Chart

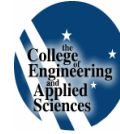
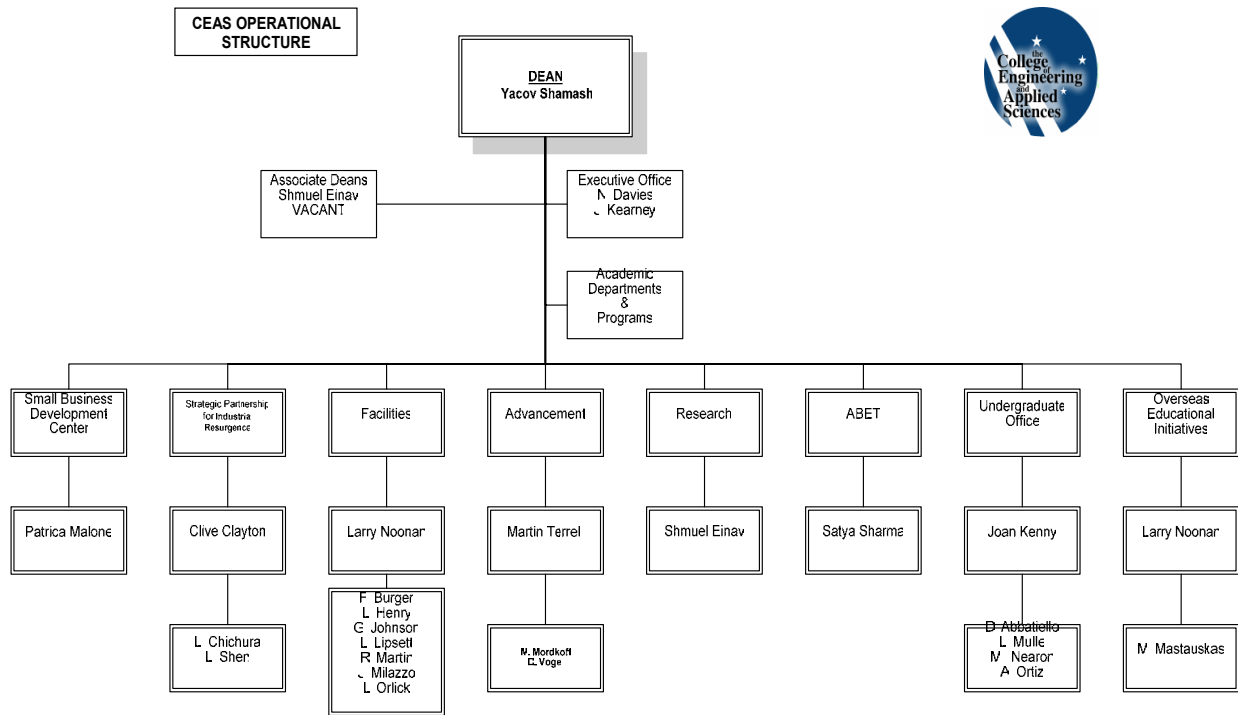


The College of Engineering and Applied Sciences is staffed by a core group of administrators supported by the Dean's Office. There are two Associate Deans, one for Graduate Study and Research, and one for Undergraduate Studies (currently vacant), an Assistant Dean who serves as director of the College's Undergraduate Student Office, a Director for Budget and Special Projects. Also reporting to the Dean are a Director for Advancement, and a Director for Advanced Technical Assistance.

The current administrative personnel are:

- *Dr. Yacov Shamash, Dean*
- *Dr. Shmuel Einav, Associate Dean for Research and Graduate Studies*
- *Ms. Joan Kenny, Assistant Dean for Undergraduate Studies*
- *Dr. Clive Clayton, Director of Center for Advanced Technical Assistance*
- *Dr. Satya Sharma, Director for Special Initiatives*
- *Mr. Larry Noonan, Director for Budget and Special Projects*
- *Mr. Donald Vogel, Director for Advancement*

Figure 5 – CEAS Organization Chart



The College of Engineering and Applied Sciences Undergraduate Student Office is responsible for the administration of student services to the students of the College’s baccalaureate programs and to students seeking admission to these programs. Its staff provides general academic advising and information about requirements for admission to CEAS majors and about the College Diversified Education Curriculum (D.E.C.) requirements. It receives and processes student petitions and grievances for the College Committee on Academic Standing and Appeals as well as allegations of academic dishonesty in CEAS courses, and coordinates the academic judiciary process in these cases. Its staff advises students about administrative procedures, and assists them with the processing of transfer credits. It is the center for the CEAS Internships Program, publicizing internship openings and assisting corporate offices with selection and placement of student interns. It also coordinates the application and selection process for the award of scholarships for students in CEAS majors provided by the College, corporations, and private foundations.

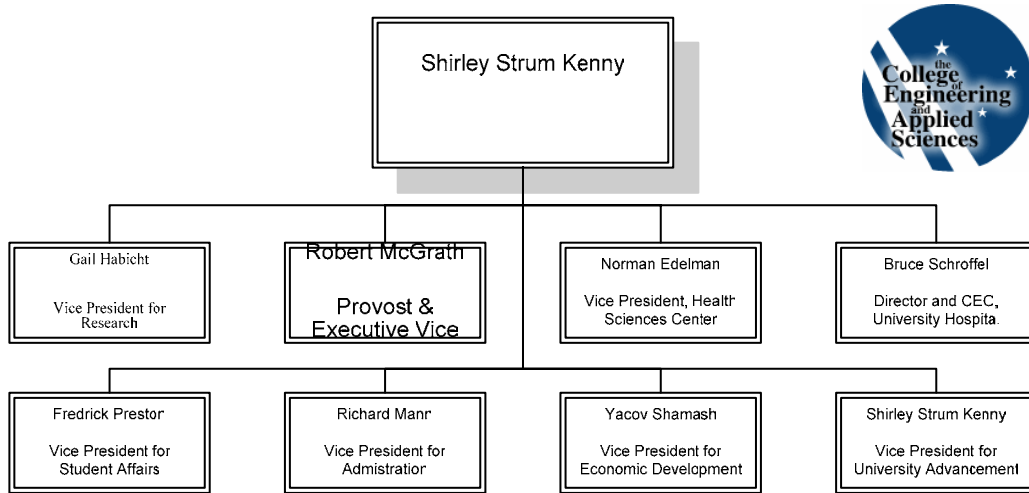
The Staff of the Undergraduate Student Office includes:

- *Joan M. Kenny, Assistant Dean and Director*
- *Loretta Mulle, Senior Academic Advisor*
- *Adam Ortiz, Enrollment Management*
- *Michelle Nearon, Recruitment and Diversification*
- *Danielle Abbatiello, Student Services Coordinator*
- *Marion Mastauskas, Internships and Special Programs*

The organizational chart of the State University of New York at Stony Brook is presented below.

The College of Engineering and Applied Sciences is one of four academic units (excluding the Health Sciences) reporting directly to the Office of the Provost.

Figure 6 – Stony Brook University Organization Chart



Research Organizations.

Describe any research organizations, institutes or other related facilities that are part of the unit responsible for the computer science program or that closely affect its operation.

The primary research institute associated with the Department of Computer Science is CEWIT: the Center of Excellence in Wireless and Information Technology, which was announced by Governor George Pataki in April 2001. New York State has provided \$50,000,000 towards the creation of the Center of Excellence. Planning is moving forward on the construction of a 100,000 square foot new building to house the Center. Ground breaking for the Center is scheduled to take place this year.

The goal of the Wireless technology initiative is to develop the capability for an end user to access any type of information from any geographic location at any time in a secure and user-friendly fashion. Our wireless technology research program will address and solve many of these problems through collaborative research with industry partners such as Computer Associates, Symbol Technologies, Reuters, and other high-tech companies.

D. Computer-Related Undergraduate Degree Programs.

List all undergraduate computer-related degree programs offered by the institution, beginning with the program(s) being evaluated.

Table 17 – Undergraduate Degree Programs

| Program Title | Years Required | Degree Awarded | Administrative Unit | If accredited, by whom |
|---------------------|----------------|----------------|---------------------|------------------------|
| Computer Science | 4 | B.S. | Computer Science | ABET 2006 |
| Information Systems | 4 | B.S. | Computer Science | |

Are these programs adequately differentiated in all university information? Explain how.

Yes. These programs have distinct undergraduate directors (Prof. Leo Bachmair is director of the Computer Science program, while Prof. Phil Lewis is director of the Information Systems program). The programs are separately described on all University and departments' web sites and literature.

Appendix III. Finances

A. Finances Related to the Computer Science Program(s).

For the computer science program, indicate below the funds expended during the fiscal year immediately preceding the visit¹.

Table 18 – Finances Related to Computer Science Program

| | Institutional Funds | Non-recurring or Outside Funds |
|---|----------------------------|---------------------------------------|
| Administrative Salaries | 0 | 0 |
| Faculty Salaries | 3,271,717 | 269,297 |
| Non-teaching Professionals' Salaries ² | 83,094 | 0 |
| Support Personnel Salaries & Wages | | |
| Secretarial | 248,753 | 0 |
| Technician | 265,347 | 0 |
| Other (specify) | | |
| Graduate Students | 634,209 | 986,812 |
| Operating Expenditures (excluding research operations and travel) | 171,031 | 73,005 |
| Capital Equipment Expenditure: (including value of allocated time for teaching and research): <i>See note below</i> | | |
| Teaching | 0 | 0 |
| Research | 0 | 0 |
| Computer Expenditures: (total, including value of allocated computer time for teaching and research) | | |
| Hardware | 112,481 | 46,119 |
| Software | 3,323 | 4,421 |
| Allocated time | 0 | 0.00 |
| Travel Expenditures (non-research funds) | 4,163 | 110,463 |
| Scholarship Awards (if administered by the Computer Science Program Unit) | 783,314 | 37,089 |
| Library (if administered by Computer Science Program Unit) | 0 | 0 |
| Research (if separately budgeted) | 0 | 2,662,333 |
| Other (specify) Lecture series | 0 | 15,000 |
| Total: | 5,577,432 | 4,204,539 |

¹ It is understood that some of the data may have to be estimated to cover the entire fiscal year. In such case, unless the differences are insignificant, an updated report should be provided for the evaluation team at the time of the visit.

² Non-teaching professionals would include research professors, faculty members on paid sabbatical leave, post-doctoral research associates, and other degreed professionals.

Notes:

- (1) Secretarial and technical support personnel are classified as “non-teaching professionals” within the University. Their salaries have been broken out under support personnel for clarity.
- (2) Capital equipment expenditures are defined within the university as single item purchases costing more than \$20,000. Thus the figures listed under “Computer Expenditures” more accurately reflects the level of investment in infrastructure.
- (3) Scholarship awards primarily reflect the tuition for graduate student teaching assistantships.

1. Report funds for the fiscal year immediately preceding year of visit, broken down according to source.

Table 19 – Funds by Source

| | AMOUNT |
|--|-----------|
| Institutional funds (recurring) | 5,577,432 |
| Gifts and non-research grants | 15,000 |
| Research contracts and grants | 4,189,539 |
| Other (explain) | 0 |
| Total | 9,781,971 |

B. Operating and Computing Expenditures for the Five Fiscal Years Immediately Preceding that Reported in III A.

1. Operating expenses for the computer science program unit.

Table 20 – Operating Expenditures by Year

| Fiscal Year | | 03/04 | 02/03 | 01/02 | |
|---------------------|--|---------|---------|---------|--|
| Institutional Funds | | 192,614 | 239,642 | 238,991 | |
| Outside Funds | | 20,373 | 29,976 | 0 | |

Complete figures are not yet available for the 2004/2005 fiscal year. Comparable figures for earlier years were not available due to changes in accounting procedures at the CEAS level.

2. Computer hardware/software capital expenditures (excluding equipment used primarily for research) for the computer science program unit.

Table 21 –Capital Expenditures by Year

| Fiscal Year | 04/05 | 03/04 | 02/03 | 01/02 | 00/01 |
|---------------------|---------|--------|---------|--------|--------|
| Institutional Funds | 110,000 | 94,000 | 125,000 | 20,000 | 92,000 |
| Outside Funds | 6,800 | 8,800 | 8,800 | 8,800 | 9,000 |

C. Additional Funding.

If additional funds, other than those listed in Table A.1 above, are available to faculty to support scholarly activities such as travel to technical meetings, e.g., consulting support, give the number of faculty for whom this type of support is appropriate and an estimate of the amount of support available.

As described above, all faculty are eligible to apply for departmental, college, and university scholarly activity funds.

Appendix IV. Computer Science Program Personnel and Policies Towards Consulting, Professional Development, and Recruiting.

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

A. Term of appointment of administrative head.

9 month X 12 Month _____ Other (specify) _____

B. Number of personnel associated with program.

Table 22 – Breakdown of Personnel by Rank

| | Full-time Number | Part Time | | Total FTE |
|-------------------------------|------------------|-----------|------|-----------|
| | | Number | FTE | |
| Faculty | 41 | 1 | 0.50 | 41.5 |
| Non-teaching Professionals | | | | |
| Administrative | 4 | | | 4 |
| Computer Lab Personnel: | | | | |
| Professionals | 6 | | | 6 |
| Technicians | | | | |
| Secretarial, Accounting, etc. | 3 | | | 3 |
| Graduate Teaching Assistants | 47 | 1 | 0.50 | 47.5 |
| Graduate Research Assistants | 85 | | | 85 |
| Graduate Students | 7 | 4 | 0.50 | 9 |
| Undergraduate Students | | 4 | 0.50 | 2 |

C. Policies.

Provide a brief description to give an overview.

1. Describe policy toward private consulting work, sponsored research projects, and extra compensation.

The consulting and research policies are included in the Faculty Handbook. In brief, faculty members are permitted to spend the equivalent of four days per month during the academic year on consulting work for outside organizations, provided it does not interfere with their primary responsibility to the University. Faculty members are expected to participate in and seek out external funding for research and scholarly activities. No additional compensation is paid to faculty members participating in sponsored activities during the academic year. During the summer months a faculty member may be compensated up to 1/3 of his/her academic year salary for sponsored research, scholarly activities and/or administrative responsibilities.

2. State the standard teaching, administrative, research, and other loads on the faculty, in general terms.

There is no official workload policy for the University. The Chairs have the authority to assign teaching duties and in doing so take into account the research and administrative load of their faculty. Likewise, the Dean is guided in allocating and re-allocating faculty and teaching assistant positions by the research and teaching load in each department. Similarly, research and workload have already been mentioned as deliverables in the context of resource allocation to the College by the Provost. The current College policy is to match moderate undergraduate enrollment growth, particularly at the upper division, and more pronounced graduate enrollment growth, including part-time students employed in local industry, to faculty growth. Raw square footage numbers and the central administration staffing formula each provide both a relative and absolute reference basis.

3. Describe policies and procedures for recruiting faculty for the computer science program. Describe any barriers to hiring the appropriate faculty.

The following procedure is being followed for 2004/2005 faculty recruitment in Computer Science. The procedure is essentially the same as has been employed in previous years.

We advertise open faculty positions in the CRA Bulletin, which is the standard journal for placing CS faculty recruitment ads. The Computer Science publications have proven to be an effective media for our advertisement, yielding up to several hundred applications from one ad. The advertisement is written by the Departmental Recruitment Committee, following University guidelines, and in consultation with all senior faculty in the department. In addition to journal ads, the Department follows the standard University procedures for on-campus postings. The Department also uses personal contacts throughout the U.S. to request names of possible candidates.

We have established a committee for faculty recruiting, which consists of Professor Tzi-cker Chiueh, Faculty Recruiting Chairman; Professors Amanda Stent, Dimitris Samaras, R. Sekar, and Samir Das from the Computer Science Department, and Professor Susan Brennan from the Psychology Department.

The Committee meets and reviews faculty applications. On the basis of this review, they select which candidates will be invited to visit the department. During this visit, they will give a one-hour seminar and be interviewed the Dean of the CEAS, the Department Chair, and a number of senior and junior faculty. After all candidates have visited, the Faculty Recruiting Committee meets to discuss any possible offers. If a candidate is selected, the department faculty as a whole will vote on whether an offer is to be made.

The following general selection criteria are used to evaluate each applicant's qualifications and the method for ranking them:

- *The applicant's specific research area and how it fits into the department's existing research program.*
- *The research contributions as demonstrated by the applicant's publications, and/or attached research papers.*
- *The contents of the recommendation letters, weighted by the authors of these letters.*

- *Past teaching experiences with specific emphasis on capabilities of handling a teaching environment similar to that of Stony Brook.*
- *Industrial working experiences that are related to the educational and research areas.*
- *Additional formal education in areas of management (e.g., MBA) for the Information Systems candidates.*
- *Capabilities of attracting research funding in the form of awards, scholarships, and travel and equipment grants.*

The committee gives each application a score in each criterion, and sums them up in a weighted fashion. Based on total scores, the committee will select about 50 first-round candidates out of the application pool, and solicit input from other CS faculty members in each candidate's research area. Specifically, we would like to have a verbal interaction with at least one of the applicant's references to get a real sense of the caliber of the applicant. Based on this feedback, the committee will finalize the second-round candidates for face-to-face interview. We invited about 10 candidates for this year's recruiting.

Appendix V. Computer Science Program Enrollment and Degree Data

If you are having more than one program evaluated, particularly if the programs are on separate campuses, the answers to these questions may vary from one program to another. If this is the case, please use separate copies of this section for each program, and clearly delineate which program is being described.

Give below enrollment figures for the first term of the current and five previous academic years and the number of undergraduate and graduate degrees conferred. (The current year is the year in which this report is being prepared.) List data beginning with the most recent year first. If part-time students are involved, give the number as FTE/actual number, e.g., 10/40.

Table 23 – Enrollments in Institution as a Whole

| AY | Enrollment | | | | | Total UG | Total Grad | Degree | | |
|-------|------------|------|------|------|-----|----------|------------|--------|-------|--------|
| | 1st | 2nd | 3rd | 4th | 5th | | | B.S. | M.S. | Ph. D. |
| 04/05 | 2784 | 3184 | 3277 | 4462 | | 13707 | 7,510 | | | |
| 03/04 | 2938 | 3247 | 3138 | 4503 | | 13826 | 8,272 | 2,850 | 1,822 | 441 |
| 02/03 | 4346 | 2727 | 2745 | 4018 | | 13836 | 7,765 | 2,922 | 1,191 | 434 |
| 01/02 | 2887 | 3331 | 3016 | 4148 | | 13382 | 7,209 | 2,988 | 1,047 | 361 |
| 00/01 | 3005 | 3076 | 3124 | 3793 | | 12998 | 6,667 | 2,773 | 951 | 351 |
| 99/00 | 2848 | 3036 | 2801 | 3205 | | 12480 | 6,449 | 2,512 | 902 | 383 |

Unit offering Computer Science Program(s)—give total enrollment even if not all students are in the program for which accreditation is requested.

Table 24 – Enrollments in Computer Science Program

| AY | Enrollment | | | | | Total UG | Total Grad | Degree | | |
|-------|------------|-----|-----|-----|-----|----------|------------|--------|------|--------|
| | 1st | 2nd | 3rd | 4th | 5th | | | B.S. | M.S. | Ph. D. |
| 04/05 | 31 | 65 | 75 | 276 | | 447 | 260 | | | |
| 03/04 | 46 | 79 | 93 | 296 | | 514 | 290 | 193 | 110 | 10 |
| 02/03 | 79 | 113 | 109 | 372 | | 673 | 291 | 210 | 94 | 10 |
| 01/02 | 123 | 104 | 158 | 325 | | 710 | 243 | 171 | 72 | 7 |
| 00/01 | 132 | 135 | 172 | 274 | | 713 | 191 | 132 | 57 | 7 |
| 99/01 | 124 | 101 | 141 | 181 | | 547 | 171 | 111 | 75 | 2 |
| 98/99 | 87 | 103 | 89 | 148 | | 427 | 151 | 93 | 71 | 4 |

If the unit offering the computer science program(s) offers more than one degree, please complete an additional table for each program for which accreditation is requested:

Table 25 – Enrollments in Information Systems Program

| AY | Enrollment | | | | | Total UG | Total Grad | Degree | | |
|-------|------------|-----|-----|-----|-----|----------|------------|--------|----|-----|
| | 1st | 2nd | 3rd | 4th | 5th | | | BS | MS | PhD |
| 04/05 | 2 | 9 | 29 | 60 | | 100 | | | | |
| 03/04 | 8 | 14 | 28 | 98 | | 148 | 68 | | | |
| 02/03 | 12 | 21 | 37 | 146 | | 216 | 95 | | | |
| 01/02 | 22 | 16 | 72 | 152 | | 262 | 86 | | | |
| 0/01 | 16 | 21 | 68 | 120 | | 225 | 71 | | | |
| 99/01 | 11 | 27 | 59 | 141 | | 238 | 79 | | | |
| 98/99 | 17 | 16 | 48 | 89 | | 170 | 41 | | | |

Appendix VI. Admission Requirements

A. Admission of students

1. Describe the criteria and procedures used for admitting students to the computer science program(s).

Students may be admitted to the computer science major in one of two ways:

- *Qualified freshmen and transfer applicants may be accepted directly into the computer science major upon admission to the university.*
- *Undergraduate applications are evaluated by the university's admissions office. The main guidelines for direct admission of freshmen to the computer science major are:*
- *unweighted high school average of 88 or higher;*
- *total SAT score of 1050 or higher, or a high score in math;*
- *regents curriculum including math, chemistry, and physics; and*
- *regents grades of 88 or higher.*

The strength of the high school curriculum and recommendations from teachers, particularly in mathematics and the sciences, are also taken into account.

Transfer students are usually not admitted to the computer science major. The exceptions are students in a joint admissions program (Suffolk County Community College, Nassau County Community College, and SUNY Farmingdale) or similar program (Ajou University, Korea).

Currently enrolled students may apply for acceptance to the computer science major after completing the following courses with a grade point average of 2.8 or higher and no grade in any of them lower than a C.

- *CSE 113 Foundations of Computer Science I*
- *CSE 114 Computer Science I*

If a student has received transfer or advanced placement credit for one of these courses, the next course in the sequence will be substituted, e.g. CSE 213 for 113, CSE 214 for 114 (or CSE 219 for 214), etc.

The criteria for admission to the major are included in the Undergraduate Bulletin and also explained on the departmental web site.

Prior to Fall 2003, students were required to submit application forms and supporting documents for admission to the major to the Computer Science Undergraduate Office. In Fall 2003 the department began to accept electronic submission of applications via its web-site.

The web-based application form guides students through the application process, provides a preliminary evaluation, and conveys information about supporting documents needed (e.g. transcripts and/or transfer course evaluations). Students who meet the stated requirements are accepted, in which case notifications are sent both to the CEAS Undergraduate Office (who update the official academic records) and the applicant. A faculty advisor is assigned to each admitted student at this point, and the name of the advisor is included in the letter to the student.

2. Describe procedures, including the evaluation of transfer credits, for students admitted to the program as transfer students

- a. from within the institution
- b. from another institution

Students who transfer from accredited colleges or universities receive transfer credit according to Stony Brook's transfer credit policies. The number of transfer credits, and their applicability towards general university (e.g. diversified education) requirements is determined by an academic advisor, usually at orientation time.

In addition, students may apply for transfer equivalencies towards computer science major requirements. Transfer equivalency for a course is determined by the department offering the course at Stony Brook. The relevant courses for computer science majors are in computer science, mathematics, and natural sciences.

Transfer evaluation of the following core lower-division courses is done via so-called proficiency exams: CSE 113, 114, 213, and 214. A student must take and pass the corresponding proficiency exams in order to receive transfer equivalency for these courses. The proficiency exams are offered at the beginning of each fall and spring semester. Detailed information about the exams is available on the departmental website.

Transfer evaluation of other CSE courses is done by the Undergraduate Director in consultation with the course coordinator. Students submit a Transfer Course Evaluation Form along with supporting documentation (course description, syllabus, etc). The department retains a copy of the completed evaluation form, and forwards other copies to the student and the Transfer Office, respectively. Some pre-approved course equivalences have been established for courses offered at certain local area schools.

3. Explain the policy of the institution in admitting students with conditions and state how the conditions must be made up.

There is no conditional admission to the computer science major.

4. Describe the general policy and methods of the unit offering computer science program(s) in regard to admission with advanced standing.

Acceptance into the computer science major is the same for all students, regardless of class standing, and is based on performance in certain lower-division courses. Since class standing is determined by the number of credits a student has accumulated, it is possible for a transfer student to be classified as, say, a junior, at the time of acceptance into the major.

5. Describe any special admission requirements for entry into the "upper-division" in the computer science program(s).

Qualified freshman applicants may be admitted directly to the computer science major. Other students may apply for admission to the major after having completed the relevant 100-level courses. The latter students typically apply for acceptance into the major in their sophomore year. There are no special admission requirements for entry into the "upper division" in computer science.