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ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY, INC.
Engineering Accreditation Commission
Technology Accreditation Commission Daniel B. Hodge, Ph.D., P.E.
Computing Accreditation Commission Accreditation Director
Applied Science Accreditation Commission

August 15, 2002

Arturo I Concepcion
Professor & Chair
Computer Science California State University, San Bernardino
5500 University Parkway San Bernardino CA 92407

Dear Dr. Concepcion:

The Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology (ABET) recently held its 2002 Summer Meeting to act on the program evaluations conducted during 2001-2002. Each evaluation was summarized in a report to the Commission and was considered by the full Commission before a vote was taken on the accreditation action. The results of the evaluation for California State University, San Bernardino are included in the enclosed Summery of Accreditation Actions. The Final Statement to your institution that discusses the findings on which the action was based is enclosed.

The policy of ABET is to grant accreditation for a limited number of years, not to exceed six, in all cases. The period of accreditation is not an indication of program quality. Any restriction of the period of accreditation is based upon conditions indicating that compliance with the applicable accreditation criteria must be strengthened. Continuation of accreditation beyond the time specified requires a reevaluation of the program at the request of the institution as noted in the accreditation action. ABET policy prohibits public disclosure of the period for which a program is accredited. For further guidance, please refer to Section ILL. of the enclosed 2002-2003 *Accreditation Policy* and *Procedure Manual*.

A list of accredited programs is published annually by ABET. Information about ABET accredited programs at your institution will also be listed in the forthcoming ABET Accreditation Yearbook and on the ABET web site (www.abet.org).

It is the obligation of the officer responsible for ABET accredited programs at your institution to notify ABET of any significant changes in program title, personnel, curriculum, or other factors which could affect the accreditation status of a program during the period of accreditation.

Please note that appeals are allowed only in the case of *not to accredit actions.* Also, appeals maybe based only on the conditions stated in Section II.G.7.a. of the *2002-2003 Accreditation Policy and Procedure Manual.*

Sincerely,

Ben M. Huey, Chair
Computing Accreditation Commission

Enclosures: Summary of Accreditation Actions
Final Statement
2002-2003 *Accreditation Policy and Procedure Manual*

cc: Albert K. Karnig, President
Gordon E. Stokes, Visit Team Chair

ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY, INC.

ABET
Computing Accreditation Commission
Summary of Accreditation Actions
for the
2001-02 Accreditation Cycle

California State University, San Bernardino
San Bernardino, CA

Computer Science (BS)

Accredit to September 30, 2008. A request to ABET by January 31, 2007 will be required to initiate a re-accreditation evaluation visit. In preparation for the visit, a Self-Study Report must be submitted to ABET by July 1, 2007. The re-accreditation evaluation will be a comprehensive general review.

ABET
Computing Accreditation Commission

FINAL STATEMENT

To

CALIFORNIA STATE UNIVERSITY SAN BERNARDINO
San Bernardino, CA

Dates of Visit: Nov. 11-13, 2001

Team Chairperson:

Gordon E. Stokes
Utah Valley State College
Orem UT

Program Evaluators:

Robert France
Colorado State University
Fort Collins, CO

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Rain City Technology Group
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CALIFORNIA STATE UNIVERSITY SAN BERNARDINO

FINAL STATEMENT
2001-02 EVALUATION

This is a confidential statement from the Computing Accreditation Commission to California State University San Bernardino. It is intended for internal use only and is not for release except as allowed by policies of the Accreditation Board for Engineering and Technology.

I. INTRODUCTION

California State University, San Bernardino (CSUSB) is the sole public, comprehensive, regional university serving the Riverside-San Bernardino counties of Southern California. Founded in 1965, the campus offers more than 50 traditional baccalaureate and master's degree programs along with a wide variety of education credential and certificate programs to a student body of 15,000. Because of recent growth, new facilities (10 new buildings in 10 years) have been established, providing students, faculty and staff with an excellent learning and working environment equipped with superior technological capabilities.

Located equidistant between Los Angeles and Palm Springs, the university serves a vast area, extending from the Arizona border in the East to the Los Angeles county line in the West. Encompassing 29,000-square miles, the service area is greater in size than many states. The two counties served by CSUSB continue to have a population that is among the fastest growing in the nation.

The Computer Science Department at CSUSB is housed in the College of Natural Sciences along with Biology, Chemistry, Geology, Mathematics, Physics, Health Sciences, Kinesiology, and Nursing. The Computer Science Department currently has approximately 320 undergraduate majors and 100 graduate students in their program. The Computer Science department has good name recognition at the university and is well differentiated in the University literature from the information and Decision Science department in the College of Business.

The computer science program at California State University San Bernardino was evaluated by Computer Science Accreditation Commission (CSAC) of the Computing Sciences Accreditation Board (CSAB) in the 1995-96 cycle and was accredited at that time. The Final Statement from the 1995-96 CSAC visit documented the following continuing concerns:

1. The effectiveness of the measures instituted to provide formal student advising.
2. The ability of the Department to provide adequate library resources for the program.

The Computing Accreditation Commission (CAC) of ABET evaluated the B.S. degree in Computer Science of the California State University during the 2001-02 cycle for possible

accreditation under the CAC/ABET "Criteria for Accrediting Computing Programs", dated November 2000 (Criteria).

II. REPORT OF FINDINGS FROM THE CAC EVALUATION VISIT

The Criteria are divided into seven major Categories. Each Category contains a statement of Intent that provides the underlying principles associated with the Category. To be accreditable, a program must meet the Intent of each Category. Each Category also contains Standards that provide a detailed description of how a computer science program can meet the statement of Intent. A program can meet an Intent by satisfying all the associated Standards or by demonstrating that an alternate implementation fully meets the Intent.

This section contains the report of the visiting team's findings at the time of the evaluation site visit. CAC considers the following comments to relate directly to its accreditation actions. The section is structured as follows. For each Category a summary statement as to whether the program meets the Intent of the Category follows the statement of Intent. All concerns related to the Category are also summarized. Detailed findings are then presented. For better understanding, the reader should have a copy of the Criteria for reference alongside this report.

A. Objectives and Assessments

Criteria 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 mode the program's objectives.

Summary:

The program meets the Intent of the Objectives and Assessment Category by satisfying all the associated Standards. However, there is a concern with regard to Standard I-3, which states, "Data relative to the objectives must be routinely collected and documented, and used in the program assessments." The current data gathering uses mostly information from current students. T he concern is that this source of feedback is too limited.

Discussion of findings:

Standard I-1 The Department has established a concise, useable, and measurable set of objectives.

Standard I-2 The expected outcomes for graduates of the program are well specified.

Standard I-3 Data is gathered from the students and there is evidence that the data is used, but the data gathering from additional sources, e.g., program graduates, is sketchy and not uniformly carried out. There is a concern that valuable data about the program outcomes is being missed.

Standard 1-4, I-S, 1-6 Internal objective assessment of the students in the courses takes place annually. The content of the courses is also measured against the program objectives. The data gathered is used in an annual meeting of the faculty to plan changes needed in the curriculum. The minutes of these meetings are available to review the actions taken.

B. Student Support

Criteria 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.

Summary:

The program meets the Intent of the Student Support Category by satisfying all the associated *Standards*. Additionally, all *Standards* are fully satisfied with no concerns.

Discussion of findings: . ..

Standard II-1 Most 200 and 300 level classes are offered more than once a year. All of the courses are offered at least once each year.

Standard II-2 Large lower division classes have sufficient teaching assistant support. Some upper division classes have more than 30 students but those classes have graders and lab assistants. The students reported excellent communications between the students and the faculty.

Standards II-3, II4 The students are provided good descriptions of the program requirements. There is an annual review of a student's progress that they are required to attend. The students report that the faculty were available for advice and counseling whenever the students have needed it.

Standard II- 5 The completion of graduation requirements is checked at the department, the college and the university level.

C. Faculty

Criteria 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.

Summary:

The program meets the *Intent* of the Faculty Category by satisfying all the associated *Standards.* However, there is a concern whether *Standard III-1*, "There must, be enough full-time faculty

members with primary commitment to the program to provide continuity and stability," will continue to be satisfied. It is not clear that the department has a sufficient number of faculty to meet the rapidly growing undergraduate program demands and the graduate program needs. The current faculty complement barely meets those needs as shown by the necessity to offer courses that carry both undergraduate credit and graduate credit in the same section of the course.

Discussion:

Standard III-1 The current faculty are feeling very pressed by the demands of the undergraduate and graduate offerings of the department and have resorted to having classes that offer both graduate and undergraduate credit.

Standards III-2, III-3 Full time faculty do oversee and set the course content for all of the departments courses and well over 70% of the courses are taught by full time faculty.

Standards III-4, III-S, III-6, III-7 All of the full time faculty have PhDs. Those whose degrees are not in Computer Science have had extensive experience in the computer science area and are professionally active in the computer science field.

Standard III-8 There is institutional encouragement and support for conference attendance and presentations. The faculty are generating scholarly activity.

Standard III-9 Advising students counts as fulfilling a portion of the state mandated teaching load for faculty.

D. Curriculum

Criteria 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.

Summary:

The program meets the *Intent* of the Curriculum Category by satisfying all the associated *Standards*. Additionally, all *Standards* are fully satisfied with no concerns.

General

The Computer Science Department is well organized with a qualified and caring faculty. They are serious about providing a quality education for their students. They have established an attainable set of objectives to guide the curriculum development in the department and they regularly review and utilize the data from their reviews to improve their educational offerings.

Computer Science

Standards IV-J, IV-4, IV 5, IV-6, IV-7, IV 8, IV-9 The department requires 70 hours of computer science courses, going beyond the 60 hours of the *Standard*. The' course content- is consistent with the objectives that have been established for the department. The texts and course outlines are up to date with the current developments in the computer science field. The core courses cover the areas of algorithms, data structures, software design, concepts of programming languages, and computer organization and architecture. The theoretical foundations of the field are covered and problem analysis and solution design are stressed in the work assigned in the courses. The core courses consist of over half of the curriculum material and the advanced courses provide 30 quarter hours of coursework (exceeding the 24 quarter hour Standard in that area).

Mathematics and Science

Standards IV-2, IV-10, IV-11, IV-12, IV -13, IV-14 The curriculum requires 24 quarter hour of mathematics and 25 quarter hours of science. This satisfies the individual area Standards for the number of hours in science and mathematics and it also exceeds the 45 quarter hour Standard for the combined hours in science and mathematics. The coursework in the mathematics and science areas cover the topic areas specified in the curriculum standards.

Additional Areas of Study

Standards IV-3, IV-15, IV-16, IV-17 The general education requirements of the curriculum involve the students in well over the 45 quarter hours of education in the humanities, arts, and other areas, which exceeds the Standard. Oral reports are required in two or three of the computer science courses. The students are required to take a technical writing course, and there are several of the courses that require term papers. Social and ethical implications are covered in two of the required senior level courses.

E. Laboratories and Computing Facilities

Criteria 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.

Summary:

The program meets the *Intent* of the Laboratories and Computing Facilities Category by satisfying all the associated *Standards*. Additionally, all *Standards* are fully satisfied with no concerns.

Discussion:

Standards V-1, V-2, V-3 The department has excellent laboratory space and very good quality, up-to-date hardware and software in the laboratories. A combination of open and closed hours for student access to the laboratories provides adequate time for the students to be able to use the laboratories to complete their assignments. The faculty have computers in their offices that are connected into the department network as well as the university network and the internet.

Standards V-4, V-5 A combination of full time support personnel and part time student help provide adequate assistance to keep the laboratories running and to provide instructional assistance to the students.

F. Institutional Support and Financial Resources

Criteria 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 the program will retain its strength throughout the period of accreditation.

Summary:

The program meets the *Intent* of the Institutional Support and Financial Resources Category by satisfying all the associated *Standards*. However, there is a concern that Standard VI-7 "Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program" might be compromised in the future. The University is moving to a centralized information technology administration. As IT budget is allocated, there is a concern about whether the Computer Science Department's needs for special laboratories will be recognized. The computer hardware and software needed by the department is central to the instruction in the discipline.

Discussion:

Standards VI-1, VI-2, VI-3, V1=4, VI-5 The department has funding to pay faculty travel if a faculty member presents a paper, and there is some funding provided for travel to selected meetings without having to present a paper. Scholarly activities are recognized and are part of the advancement criteria. The office support is adequate and very capable, but they are almost to the limit of what they can do with the help that they have. The administration of the department is funded and a very capable department chair is in place. The funding for new positions is adequate, and the department has been able to attract highly qualified new hires in the last two years.

Standards VI-6, VI-7, VI-8, VI-9 The administration has been excellent in providing funding for equipment and personnel in the Computer Science Department. The Associate Provosts for academic programs and for personnel were complimentary about the department's achievements and expressed full support of the department's activities. The visiting team was concerned that

an institutional move to standardized laboratory facilities might not make sufficient facilities available to meet the special needs of the computer science laboratories in both hardware and software (*Standard VI-7*). Since the computer environment is central to the study of computer science there are special laboratory components needed to enable that study. The resources for the library support of information retrieval facilities seemed to be adequate. The institution has provided excellent support for the computer science program.

G. Institutional Facilities

Criteria 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.

Summary:

The program meets the *Intent* of the Institutional Facilities Category by satisfying all the associated *Standards*. Additionally, all *Standards* are fully satisfied with no concerns.

Discussion:

Standards VII-1, VII-2, VII-3 The library is well staffed and serves the computer science program well. The library is an institutional member of the ACM, the IEEE, and SIAM. These memberships provide access to the major journals in the computer science area. The faculty are able to access the library collection via the network from their offices.

Standards VII-4, VII-5 The classrooms all have network connections in the classroom. There are facilities to utilize computer projectors in the classrooms. The classrooms are spacious and well lighted with very good student desks in the classroom. The faculty offices are adequate and well equipped.

III. ACTIONS SINCE THE VISIT

There have been no actions taken that change the concerns stated in the preliminary statement.

IV. CONCLUSIONS

The Computer Science program at California State University San Bernardino is a quality program with well-qualified faculty housed in excellent facilities, and well supported by the administration. The program is growing rapidly and will present a challenge to the administration to find funding to keep up with the growth. The curriculum offered by the department is well designed and their outcome assessment activity should keep the curriculum current.

FINAL STATEMENT **CALIFORNIA STATE UNIV. SAN BERNADINO**

The following is a summary of the current status of the program relative to the continuing concerns from the 1995-96 visit:

1. The effectiveness of the measures instituted to provide formal student advising.
Status: No longer a concern

2. The ability of the Department to provide adequate library resources for the program.
Status: No longer a concern.

The program meets the *Intent* statements for all *Categories* in the *Criteria* by satisfying the associated *Standards.* However, the following concerns associated with some of the *Standards* were identified.

1. *Standard I-3* - Data gathering with regard to achievement of program objectives is limited to current students. Other valuable sources of information may be missed.

2. *Standard III-1* - There is a concern about whether the department has a sufficient number of faculty to meet the growing undergraduate program demands and the graduate program needs. The current faculty complement barely meets those needs as shown by the necessity to offer courses that carry both graduate and undergraduate credit in the same section.

3. *Standard VI-7*-The University is moving to a centralized information technology administration. As IT budget is allocated, there is a concern about whether the Computer Science Department's needs for specialized laboratory facilities will be recognized. The computer hardware and software needed by the department is central to the instruction in the discipline.

These concerns may affect the stability, overall quality, or future accreditability of the program and will be of special interest to the next evaluation team.