

CALIFORNIA STATE UNIVERSITY, HAYWARD

DESIGNATION CODE: 00-01 CAPR 1
DATE SUBMITTED: November 16, 2000

TO: The Academic Senate
FROM: The Committee on Academic Planning and Resources
SUBJECT: Five-year Program Review for the Department of Mathematics and Computer Science

ACTION

REQUESTED: Approval of the Program Review of the Department of Mathematics and Computer Science Without Modification

BACKGROUND INFORMATION: On October 19, 2000, CAPR met with Ed Keller, Chair of the Department of Math/CS, Julie Glass and Edna Reiter, to discuss the department's five-year program review. The following documents were submitted to CAPR for review: a Five-year review of programs and department plan for Mathematics and Computer Science (2000-2005), a report from two outside reviewers (Review of the Computer Science Program by Dr. Zane Motteler, Lawrence Livermore Laboratories, and Review of the Mathematics Program by Dr. Tom Sallee, University of California, Davis), and the Department's response to Dr. Motteler's and Dr. Sallee's comments.

The Department of Mathematics and Computer Science offers B.S. and M.S. degree programs, as well as minors, in both Mathematics and Computer Science. The department offers courses that support other degree programs, the University General Education program and teacher preparation programs. The curriculum is designed to meet the needs of students with many different career objectives.

PROGRAM REVIEW:

The department's Five Year Review (1995-99) gives the mission statement and provides detailed information in the following areas for Computer Science and for Mathematics: Curriculum, Faculty, Students, Special Projects and Activities, Equipment and Facilities.

The Computer Science program has undergone significant change since the last five year review. Two new options have been added to the undergraduate major, a number of new courses have been added, and there is a joint M.S. degree program in Telecommunication Systems with the Department of Accounting and Computer Information Systems. The new changes in the Computer Science program reflect the explosive rise in this area of the private sector and the need to keep pace with newly emerging technologies. Because of the explosive growth of the computer industry and employment opportunities in the private sector, the most significant problem faced by the department is the ability to attract qualified personnel to academic positions

within Computer Science. The number of undergraduate majors has increased by about 60% and the number of master's degree students has doubled over the past five years, with total FTES increasing from 214 (1995) to 460 (1999). A continuing challenge for the department is finding qualified faculty to keep pace with student course demands. Despite this, the department has been successful in hiring, and keeping, new tenure-track faculty in Computer Science.

The Department has an impressive record of accomplishments in both Computer Science and in Mathematics. Some of the highlights include involvement with the Microscopic and Graphic Imaging Center (MAGIC), Pre-Collegiate Academic Development (PAD) Math, Mathematical Explorations for Girls Achievement (MEGA) Camp, Collaborative Academic Preparation Initiative (CAPI) and the CSUH Math Challenge. The department is also a leader at CSUH in the development of video/televised mathematics courses.

The department also has an impressive record of publications and grants, conference proceedings and oral presentations/colloquium talks by members of the department. Overall, the department is clearly active and involved in a wide variety of professional and educational endeavors at CSUH and outside the university.

STRATEGIC PLAN (2000-2005):

The department lists and describes 8 major goals that it has identified as important to its continued success and development as a department. The goals adopted by the department address issues of curriculum, professional activities, faculty resources, teacher preparation, equipment and facilities, relationships with alumni and the computer industry and student needs. The Strategic Plan also contains a well-outlined Departmental Assessment Plan that directly addresses the department's goals for the next five years.

COMMENTS BY THE OUTSIDE REVIEWERS AND THE DEPARTMENTAL RESPONSES:

Dr. Zane Motteler, Senior Computer Scientist at Lawrence Livermore National Laboratory, commented on many areas of the Computer Science program. Dr. Motteler was requested to comment specifically on the issue of accreditation by the Computer Science Accreditation Board (CSAB). Dr. Motteler is an officer of the Executive Committee of the Computer Science Accreditation Commission (CSAC), and is therefore well-qualified to comment on this aspect of the department. Dr. Motteler was 'very favorably impressed' by the department in general and commented that the department appeared to be 'strong and healthy' with high-quality faculty, staff and students. Dr. Motteler noted that teaching loads were on the 'heavy side' and are 'marginal with respect to generally accepted professional standards', thus making professional development difficult within the field of computer science. Dr. Motteler questioned the wisdom of adding several tenure-track positions owing to the 'boom or bust' nature of the computer science industry and suggested alternative means (eg. hiring adjunct faculty from Bay Area computer companies) of mitigating the over-enrollment problems of many computer science courses. With regard to accreditation, Dr. Motteler provided a detailed critique of what the department would need to qualify for CSAB accreditation and added that the final decision should rest with the faculty of the department. The department has had reservations about accreditation largely because it would require an increase in the size of the major and an increase in non-computer science courses.

Dr. Thomas Sallee, Professor of Mathematics at the University of California, Davis, commented on the talent and dedication of the mathematics faculty at CSUH and praised the department for its ability to enhance each other's strengths and interests rather than creating divisions within the department. Dr. Sallee was initially concerned with the coordination of Computer Science and Mathematics in one department, but his concerns were allayed after his visit with the department. A second concern of Dr. Sallee's was in the area of K-12 math education. He was very impressed with the department's activity in this area and recommended that another faculty member be hired to make additional contributions to K-12 math education.

Dr. Sallee noted three strengths of the Mathematics program: 1) the overall quality of the faculty in terms of mathematical and teaching abilities; 2) the collegiality of the faculty to support one another; 3) the variety and rigor of the mathematics course offerings. Dr. Sallee also noted some areas of concern including remediation, the 'physical separation' of faculty within the department and course scheduling. Dr. Sallee was also concerned that the capstone experience within the department's assessment plan would not work unless the number of students was limited. However, his overall impression of the assessment plan was that it was positive, possible and will improve the overall mission of the department. The department addressed Dr. Sallee's minor concerns in a detailed fashion. The department currently has a capstone experience required for majors in the teaching option and are aware that for the capstone experience to be effective, class size must be small.

RECOMMENDATION:

CAPR recommends approval of the five-year program review for the Department of Mathematics and Computer Science and continuation of the program without modification.