MEMORANDUM

TO: Howard H. Karr
Chairperson, Board of Regents

VIA: M.R.C. Greenwood
President

VIA: Virginia S. Hinshaw, Chancellor
University of Hawai‘i at Mānoa

FROM: Reed Dasenbrock
Vice Chancellor for Academic Affairs
University of Hawai‘i at Mānoa

SUBJECT: Establishment of a Bachelor of Science in Computer Engineering, College of Engineering, University of Hawai‘i at Mānoa

SPECIFIC ACTION REQUESTED:
It is requested that the Board of Regents approve the Bachelor of Science degree in Computer Engineering to be administered by the College of Engineering at the University of Hawai‘i at Mānoa.

RECOMMENDED EFFECTIVE DATE:
Effective Spring 2009, upon Board of Regents approval.

ADDITIONAL COST:
No additional funds required. The proposed program will utilize existing courses and faculty in the College of Engineering and the College of Natural Sciences’ Department of Information and Computer Sciences. Existing faculty and facilities are sufficient to run the program, and tuition associated with the program will cover program costs.

PURPOSE:
The Bachelor of Science in Computer Engineering will train a workforce that can design, analyze, and integrate hardware and software of computers. Hardware includes digital circuits, very large-scale integrated circuits, computer aided design of circuits, micro-processors, micro-controllers, high performance circuit design, and embedded systems; while software includes programming, data structures, algorithms, and elements of software engineering. The Computer Engineering program will focus on hardware and thus will differ from the broader bachelor’s degrees in Information and Computer Sciences. Once established, the College of Engineering will seek professional accreditation for the program through the Accreditation Board for Engineering and Technology (ABET).
The proposed Bachelor of Science degree in Computer Engineering will replace the Computer Track of the Bachelor of Science degree in Electrical Engineering currently offered at the University of Hawai‘i at Mānoa. While the College of Engineering’s Department of Electrical Engineering, and the College of Natural Sciences’ Department of Information and Computer Sciences will jointly offer the program, the program will be administered by the College of Engineering. The sole purpose of collaboration between the Colleges is to facilitate coordination of prerequisite courses for the upper division technical electives.

BACKGROUND:
Pursuant to Board of Regents Policy 5-1, the Board of Regents has the authority to approve new degree programs upon the recommendation of the President.

The proposed BS in Computer Engineering requires a minimum of 124 credits, which includes the College of Engineering requirements that satisfy the University of Hawai‘i at Mānoa’s General Education Core requirements. All courses required for the program are existing courses. The attached program proposal contains details regarding admission, articulation with the UH Community Colleges, program requirements and student learning outcomes.

The proposed Bachelor of Science degree in Computer Engineering supports the University of Hawai‘i System’s strategic plan by increasing the educational capital in the state, developing a globally competitive workforce, and diversifying the economy. The proposed program also supports the goals in the Mānoa Strategic Plan to “enhance human capital and knowledge infrastructure, technology, and the integration of Hawai‘i into the global economy,” and to “promote environmentally and culturally sensitive economic development in services, high technology, diversified agriculture, tourism, and emerging sectors.”

Finally, the program in computer engineering is relevant to the College of Engineering’s mission to train a highly skilled, flexible, world-class labor force of computer engineers for Hawai‘i’s high technology companies. The program would meet the goal of assisting the community in attracting students to higher educational opportunities in Science, Technology, Engineering and Mathematics (STEM) from high schools and community colleges, especially from Hawai‘i. The Bachelor of Science in Computer Engineering will be the first in the state, thereby providing an affordable computer engineering education to students who wish to remain in Hawai‘i.

Graduates of the Computer Engineering program will be in demand in the state and globally. There are Hawai‘i and mainland information technology companies and government agencies such as Lockheed-Martin, Camber Corporation, Concentris Systems, Northrop-Grumman, and Boeing that are interested in computer graduates. Letters of support from the industry are included in the attached program proposal.

The proposed degree program has the support of the faculty and the dean of the College of Engineering, as well as the dean and faculty of the College of Natural Sciences, has been reviewed and recommended for approval by the Mānoa Faculty Senate, and has the support of the Systemwide Council of Chief Academic Officers.
Board of Regents Policy 5-1(a) provides that all new academic programs, once approved, shall have provisional status until a review is conducted. As a baccalaureate degree program, the required review would be scheduled to take place during the 2015-2016 academic year.

ACTION RECOMMENDED:
It is recommended that the Board of Regents establish the Bachelor of Science degree in Computer Engineering at the University of Hawai‘i at Mānoa’s College of Engineering, to be effective Spring 2009.

Attachment: Proposal for Bachelor of Science in Computer Engineering

c: Vice Chancellor Dasenbrock
   Dean Crouch