College Mission Statement
Honolulu Community College’s mission is to:

- Serve the community as an affordable, flexible, learning centered, open-door comprehensive Community College that meets the post-secondary educational needs of individuals, businesses, and the community.
- Serve the Pacific Rim as the primary technical training center in areas such as transportation, information technology, education, communications, construction, and public and personal services.

Program Mission Statement
The Computing, Electronics, and Networking Technology program’s mission is to serve the community as a learning-centered, open door program that provides technical training to meet the demands of the information technology industry and the needs of the individual. The program is designed to provide the student with a mixture of knowledge and hands-on training with an emphasis on preparing students for entry level employment in the information technology industry.

PART I: EXECUTIVE SUMMARY OF PROGRAM STATUS
The Computing, Electronics and Networking Technologies (CENT) program is the former Electronics Technology Program at HCC. About 10 years ago in response to changes in technology, the Electronics Program underwent a program change to place a stronger emphasis on computer hardware, computer networking and computing systems. In 2003 the CENT program added a third year Advanced Professional Certificate (APC) to address the needs of advanced training in areas such as information systems security, system administration and network administration.

In 2007 we have extensively modified the CENT AS and APC programs to reflect changes in technology and current industry needs. These changes also aligned our programs and courses for articulation with a Bachelors of Applied Science degree program in CENT to be offered at the University of Hawaii at West Oahu (UHWO).

We also have an articulation with Hawaii Pacific University (HPU) that allows students in the CENT program to complete a Bachelor of Arts in System Administration at HPU.

The CENT program, in partnership with the Pacific Center for Advanced Technical Training (PCATT), is a Cisco Networking Academy and a Microsoft IT Academy. The CENT program is also Novell Training Services Authorized Partner and a CompTIA A+ Training Provider.
PART II: PROGRAM OVERVIEW

Program Description
The Computing, Electronics, and Networking Technology program’s mission is to serve the community as a learning-centered, open door program that provides technical training to meet the demands of the information technology industry and the needs of the individual. The program is designed to provide the student with a mixture of knowledge and hands-on training with an emphasis on preparing students for entry-level employment in the information technology industry.

Program History
The Computing, Electronics and Networking Technologies (CENT) program is the former Electronics Technology Program at HCC. About 10 years ago in response to changes in technology, the Electronics Program underwent a program change to place a stronger emphasis on computer hardware, computer networking and computing systems. The name of the program was changed to Computing, Electronics, and Networking Technology to emphasize the change. In 2003 the CENT program added a third year Advanced Professional Certificate (APC) to address the needs of advanced training in areas such as information systems security, system administration and network administration.

In 2007 we extensively modified the CENT AS and APC programs to reflect changes in technology and current industry needs. These changes also aligned our programs and courses for articulation with a Bachelors of Applied Science degree program in CENT to be offered at the University of Hawaii at West Oahu (UHWO).

The CENT program, in partnership with the Pacific Center for Advanced Technical Training (PCATT), is a Cisco Networking Academy and a Microsoft IT Academy. The CENT program is also Novell Training Services Authorized Partner and a CompTIA Training Provider.

Program SLOs
Upon successful completion of the CENT program, students will be able to:

- Apply current industry standards, protocols, and techniques; and keep up with evolving technology to maintain professional proficiency.
- Identify, analyze and improvise solutions to resolve problems using a systematic method.
- Use appropriate industry tools and testing equipment to analyze, troubleshoot, and install systems.
- Install, configure, operate, and maintain systems.
- Apply current standards for safety and security.
- Communicate clearly and effectively through written reports and oral presentations.
- Work effectively, independently, and interdependently, in diverse situations involving stress, teams, co-workers, customers, vendors, organizational partners and supervisors.
- Demonstrate professionalism and integrity in supporting the mission of the organization.
**Admission Requirements**

The current program prerequisites for admission into the CENT program include:

- Completion of ENG 22 or 60 OR placement in ENG 100.
- Completion of Math 25 with a C or higher, or placement in MATH 103 or 107
- Completion of ICS 100.

Effective Fall 2008, the prerequisites for admission into the CENT program will be:

- Completion of ENG 22 or 60 OR placement in ENG 100.
- Completion of Math 25 with a C or higher, or placement in MATH 103 or MATH 115 or MATH 135 or higher.
- Completion of ICS 100 or ICS 101.

**Credentials / Licensures Offered**

- There are no city, state, or national level licenses or credentials offered or required in any of the fields for which the CENT program provides training.
- There are many different vendor-specific and vendor-neutral certifications available in different areas related to our program. Our courses support some of the more recognized certifications such as CompTIA A+ and Cisco Certified Networking Associate (CCNA). Since none of these certifications is required to work in any of the related fields in which we offer training and there are so many certifications available, we do not emphasize acquiring certifications as part of our academic program.

**Faculty and Staff**

CENT program faculty and staff include:

- **Bill Becker, M.S.** University of Hawaii. Bill is a full-time ITS staff/faculty and teaches TCP/IP networking and network management courses in the CENT program as part of his full-time load.
- **Michael Castell, M.S., Information Systems, Hawaii Pacific University.** Mike's current areas of responsibility in the CENT program include data communications and networking. He will also assume responsibility for the computer hardware and hardware repair courses when Paul Jacoby leaves at the end of Spring 2008 semester. Mike is A+ certified, CCNA certified and a Cisco Certified Academy Instructor (CCAI/CCNA).
- **Gerald Chen, M.S., Information Systems, Hawaii Pacific University.** Gerald provides full-time academic support to the CENT program. Gerald is CCNA certified, a Cisco Academy instructor, and a Microsoft Certified Systems Engineer (MCSE).
- **Sally Dunan, M.S., Information and Computing Sciences, University of Hawaii.** Sally's current areas of responsibility in the CENT program include networking, information systems security, and Linux system administration. Sally is CCNA certified and a Cisco Certified Academy Instructor (CCAI/CCNA).
- **Paul Jacoby, A.S., Electronics, Honolulu Community College.** Paul's current areas of responsibility in the CENT program include electronics, computer hardware and hardware repair. Paul's certifications include FCC (GROL), A+, Network+, i-Net+, Server+, HTI+, and Wireless#.
- **Ken Johnson, DR.P.H., University of Hawaii.** Ken is full-time HCC faculty in the Cooperative Education Program and coordinates the CENT Internship and Coop courses each semester.
- David Pai, PhD, Communication and Information Sciences, University of Hawaii. Dave's current areas of responsibility in the CENT program include microcomputer operating systems, database systems, internet applications/web applications, and project management.

- Vern Takebayashi, M.S., University of Hawaii. Vern is full-time faculty for the ICS program and teaches Introduction to Information Systems for the CENT program as part of his full-time teaching load.

- Aaron Tanaka, M.S., Electrical Engineering, University of Hawaii. Aaron is the CENT program liaison and his current areas of responsibility in the CENT program include network operating systems and network security. Aaron is a Microsoft IT Academy instructor and has the following certifications: Certified Information Systems Security Professional (CISSP), MCT, MCSE Server 2003, Cisco Certified Academy Instructor (Network Security), CompTIA A+.

**Resources**

- The CENT program presently occupies Building 13 and Building 20 at the HCC campus, which are small buildings that provide computer lab classrooms and lab space suitable for the courses we teach. We also have an additional computer lab classroom in Building 2 which provides additional classroom space, and is convenient for use by those faculty who have offices in Building 2.

- We have four up-to-date computer lab classrooms used for teaching a variety of courses including networking, operating systems, system administration, and information systems security.

- One of our computer lab classrooms is configured to be used as a networking lab and also includes a variety of networking devices including Cisco routers, switches, and wide area networking simulators used as part of the Cisco networking curriculum.

- In addition to the above computer lab classrooms, we also have a telecommunications lab/classroom which provides equipment required for teaching our data communications course. This includes specialized equipment such as the AX4000 network card, telecommunications test equipment, and older computers which reasonably meet the needs for this course.

- We also maintain two labs with a variety of computers and printers used to support two computer hardware courses. This equipment allows students the opportunity to work with a range of equipment including older computers and some newer computers.

- We also have a variety of electronics test equipment, such as oscilloscopes, which are used in our fundamental electronics course. This is all older equipment, but still satisfactory for use in our classes.

**Articulation Agreements**

- We have an existing articulation with Hawaii Pacific University that allows graduates of our A.S. and A.P.C. programs to complete a Bachelor of Arts in System Administration at HPU.

- We are in the process of establishing an articulation with UH West Oahu that will allow graduates of our A.S. and A.P.C. programs to complete a Bachelor of Applied Science specializing in Computing, Electronics, and Networking Technology at UHWO.
Community Connections / Advisory Committees / Internships / Coops / DOE

- Our advisory committee is not currently up-to-date and it has been several years since we have met with an advisory committee. The technology in our program changes so quickly and the scope of our program has become so broad that we have found that no single advisory committee is able to provide consistent input regarding program directions and goals. For future purposes, we feel that employer surveys or special advisory committees, targeted to explore particular program objectives, will be more productive for our needs than a single, comprehensive advisory committee.

- For recent program development planning, we have used employer surveys to gather information about employer needs from a wider group of participants than a single advisory committee would be able to provide.

- We have also recently found up-to-date, relevant and useful research related to our program objectives available from other sources, such as employment projections from the Hawaii Workforce Informer (http://hiwi.org/) and research related to 4 year programs for information technology at the National Workforce Center for Emerging Technologies (NWCET) located at Bellevue Community College, Bellevue, Washington (http://www.nwcet.org/).

- We enroll approximately 30 students per year in Coop(Cent 293V) and Internship (Cent 290V). Employers include Hon CC, Kap CC, UHM, UH Research Corp, Blackbird, Camber Corporation, Computer Doctor, DMBGI Consultants, Ke Ola Mamo, Lawrence Livermore National Laboratory, Net Enterprise, Oceanic Time Warner, Tahiti Imports, and WKF, Inc.

- We work cooperatively with local high schools to identify courses within our program for which students can receive credit if they took a recognized, related course in high school. We connect with high school programs through the Pacific Center for Advanced Technology Training (PCATT), which provides extensive support for high school and community college technology programs.

Distance Delivered / Off Campus Program

- We do not currently offer any courses off campus or through distance education.
Part III. Quantitative Indicators for Program Review

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Part IV: Assessment Results for Program SLOs

- As students progress through our programs we observe visible growth in their level of technical knowledge, proficiency, and confidence.
- We formally assess and collect evidence of student achievement of program learning outcomes using a variety of methods including hands-on student laboratories, work habits evaluation, student written projects, student oral reports, student group projects, written exams, and hands-on (skills) exams.

Part V: Curriculum Revisions

- We submitted updated course outlines including course student learning outcomes in Fall 2004 for all courses actively being taught at that time. These up-to-date course outlines have not yet been filed in the centralized curriculum files in Bldg 6. As of last year, the updated course outlines for all programs were determined to be located in a folder in each respective Dean’s office. There appears to be no established requirement or process for submitting updated course outlines for inclusion in the curriculum files.
• The student learning outcomes for most of our courses have been posted on the HCC web site. However, there is one course (CENT 227 Network with TCP/IP) for which student learning outcomes were provided that have not been added to the HCC web site. There does not appear to be a clearly stated process for getting student learning outcomes added to, or updated on, the HCC web site.

• There are three CENT courses that have not been offered for several years and are no longer part of our credit programs for which we have not yet submitted updated course outlines including program and student learning outcomes. These three courses are CENT 113 Digital Electronics, CENT 262 Wireless Communication Systems, and CENT 263 FCC Exam Preparation. The course outlines for these courses are currently being updated to include program and student learning outcomes.

• All other inactive CENT courses have now been deleted by formal curriculum actions.

• In addition to the student learning outcomes posted on the HCC web site, there is also a separate document for Technical Standards. Pursuant to our recent curriculum modifications affecting both of our programs and most of our courses, these technical standards should also be updated. However, it’s not clear how we should go about doing this task either.

• This year (2007/2008), we have made significant modifications to the A.S. degree and Advanced Professional Certificate programs, including at least minor updates to most of the courses in these programs. These changes will become effective during the Fall 2008 semester. These modifications were made to streamline and update our programs, and to bring them into alignment with the proposed Bachelor of Applied Science in CENT at UH West Oahu. The B.A.S. is also expected to become active during the Fall 2008 semester.

• All of our faculty include the course student learning outcomes in their course syllabi. We ensure that all faculty are reminded of the requirement to do this through regular department meetings.

• As our instructors developed the original course student learning outcomes, they have their own copies of the course outlines that include student learning outcomes. For new instructors, we provide a copy of current course outlines from our own files that include the student learning outcomes, so they know the expected content for the course and the established student learning outcomes for the course. Instructors may add additional outcomes to their syllabi, if they wish to augment the student learning outcomes stated for the course.

Part VI: Survey Results

• We do not currently use surveys to collect information about student performance, student satisfaction, or student performance. We do not plan to implement such surveys within the next year.

Part VII: Analysis of Data

• The strengths of this program include well-qualified faculty, our own full-time academic support staff member, four up-to-date computer lab classrooms, the availability of required technical training through the Pacific Center for Advanced Technology Training (PCATT), a well-designed program, and strong connections with academic institutions such as Hawaii Pacific University and UH West Oahu that provide our students with pathways to completing baccalaureate degrees in programs developed to complement our A.S. and A.P.C. programs.
• The weaknesses of this program are that we have not yet been able to expand the program to include a broader range of related technologies, such as web and database administration. However, with the establishment of the Bachelor of Applied Science in CENT at UH West Oahu, we are currently in the process of expanding our program to include basic instruction in these areas. We intend to add more courses in these areas as the B.A.S. program becomes established.

• Our opportunities include the anticipated articulation with U.H. West Oahu to establish the B.A.S. in CENT, which will provide a baccalaureate program for our students within the University of Hawaii System. We are also working toward the establishment of an IT Academy program in cooperation with the ICS department, to provide a stronger link between high schools and the community colleges for post-secondary training in information technology related fields. We anticipate that the IT Academy program and the CENT program will jointly provide students with solid training opportunities for information technology with both two and four year exit points.

• The challenges facing our program include keeping our program up-to-date with changing technology with limited budgets for updating equipment and limited time allowed for us to acquire training and technology updates. Because the technology we support changes so quickly, we need to update our programs and courses on a regular basis in order to ensure that we are teaching the courses that best reflect current technologies and industry requirements. This means we must also take related courses and update our knowledge and skills on an ongoing basis to ensure that our program remains current. In order to achieve this, we need to establish and maintain regular schedules for equipment updates and for personal training to be performed every year. As our full-time teaching loads do not include allowed time on a regular basis for training and technology updates, these are tasks that our faculty routinely perform outside the contract year --- the approved annual teaching assignment reductions only permit us to take a one course reduction every other year because our normal full-time teaching load is based on weekly contact hours instead of credit hours of instruction.

• We feel the methods currently used to assess achievement of program and course student learning outcomes provide sufficient information for evaluation of student learning. However, we might need to refine the way we document assessment results, in order to more clearly delineate the processes used and to more clearly state the results of the assessments performed.

• We currently have sufficient personnel and facilities to promote student learning in our program. However, because this program focuses in areas of rapidly changing technology, we continually need to update our program equipment including our computer labs, networking and data communications equipment to ensure that our program remains up-to-date with frequent changes in technology. While we generally have adequate equipment to teach the program basics, we rely on end-of-year funds allocations and grant opportunities when available to obtain the funds needed to update and improve the equipment required to support our programs.

• We have not received any results from the most recent safety inspection, so we do not know whether there are any outstanding safety issues.

• We currently have a problem with subterranean termites in Building 20, which the Vice Chancellor for Administrative Services is aware of.

Part VIII: Action Plan

• We have completed the review of the CENT A.S. and A.P.C. programs and submitted our program and course curriculum changes as of Fall 2007. These changes have been approved and will take effect as of the Fall 2008 semester.
Our planned tasks and goals for the upcoming year (Fall 2008/Spring 2009) include:

- Introduction of the new CENT 280 Database Systems I course. David Pai is responsible for developing, teaching, and maintaining this course. This course is scheduled to be taught as an experimental course (CENT 297E) in Spring 2008 and as CENT 280 in Fall 2008.

- Introduction of the new CENT 285 Introduction to Internet Applications/Web Applications course. David Pai is responsible for developing, teaching, and maintaining this course. This course is tentatively expected to be offered in Spring 2009.

- Introduction of the new BAS 410 Project Management course as part of the B.A.S. in CENT program at UH West Oahu. David Pai is responsible for developing, teaching and maintaining this course. This course is tentatively expected to be offered for the first time in Fall 2008 or Spring 2009.

- Realign teaching assignments for CENT 131 Hardware I and CENT 232 PC Desktop and Printer Support pursuant to departure of Paul Jacoby. Michael Castell will assume responsibility for developing, teaching, and maintaining these courses starting Fall 2008. He is currently preparing to teach these courses this year.

- Update/realign content of CENT 140 Networking I to match updated Cisco networking curriculum content for the new Exploration 1 and 2 courses. Sally Dunan will start this process in Spring 2008 and continue the process of updating and realigning the course content during Fall 2008 and Spring 2009 semesters.

- Prepare to teach the CENT 245 course, based on the Cisco CCNP 3 Multilayer Switching course, within the A.P.C. program curriculum. Sally Dunan will use Perkins mini-grant funds to procure the switches required to support the curriculum, then self-study the CCNP 3 during the Spring/Summer 2008 to prepare to teach the course. She will participate in the CCNP 3 Instructor training course offered by PCATT during Summer 2008, or when it is next offered.

- Update/realign content of CENT 240 Networking II to match updated Cisco networking curiculum content for the Exploration 3 and 4 courses. Mike Castell will be responsible for updating the second networking course during the 2008/2009 academic year.

- The CENT program is currently evaluating the Advanced Professional Certificate program for compliance and certification with the Committee on National Security Systems (CNSS) standards for the Government Information Assurance Occupations listed below. Aaron Tanaka has been reviewing the prescribed standards and will work with Bill Becker and Sally Dunan to develop the application during the upcoming year (Spring 2008 – Spring 2009).
  - NSTISSI-4011, National Training Standard for Information Systems Security (INFOSEC) Professionals*
  - NSTISSI-4013, National Information Assurance Training Standard For System Administrators (SA)*

- Other projected goals include developing curriculum proposals for the following new courses:
  - CENT 360 Network Security II. Aaron Tanaka (Fall 2008/Spring 2009).
  - CENT 351 UNIX/Linux System Administration II. Sally Dunan (Fall 2008/Spring 2009).
  - CENT 235 IP Communications. Michael Castell (Fall 2008/Spring 2009).
Part IX: Resource Implications (physical, human, financial)

- There are no expected budgetary impacts for carrying out this action plan. UH West Oahu will reimburse HCC for David Pai's assignment to teach the BAS 410 course in support of the B.A.S. in CENT program at UH West Oahu, which would allow us to hire a lecturer to teach a course within the CENT program if required.

Part X: Strategic Planning Items

- There were previously two CENT funding items on the HCC strategic plan.
  - The first item for funding the establishment of a four year program in CENT was partially funded and the establishment of the B.A.S. at UH West Oahu will complete that objective.
  - The second item related to funding an evening program in CENT has not been funded and is currently inactive. This item may have already been removed from the current Strategic Plan.
- CENT is also affected by the Strategic Plan item for construction of a new Science and Technology building.