Honolulu Community College
Program Review Report
for
Electrical Installation and Maintenance Technology

Assessment Period: 2006-2012

Honolulu Community College 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, and

Serve the Pacific Region as the primary technical training center in the areas such as transportation, information technology, education, communication, construction, and public and personal services.

Program Mission Statement

The Electrical Installation & Maintenance Technology (EIMT) program's mission is to serve the community as a learner-centered, open door program that provides technical training to meet the demands of the electrical industry and the needs of the individual. An open-exit option allows the students to identify their career objectives and participate in program exploration.

Program Description

The curriculum is designed to prepare the student to acquire entry-level knowledge and manipulative skills for employment in the electrical industry. The program combines theory with laboratory activities as an effective means of developing the skills essential to the electrical trade. The student begins with the fundamentals of electricity and wiring of simple circuits, and progresses to residential interior wiring, three phase alternating current power, and wiring of more complex circuits and equipment. Safety is stressed as an integral part of each shop task. Emphasis is placed on wiring in accordance with the provisions contained in the National Electrical Code.

Program History

The Electrical Installation and Maintenance Technology Program can trace its roots back to Honolulu Vocational School. On November 1, 1929 Honolulu Vocational School took 13 students into its new Electricity Program. Honolulu Vocational School later became Honolulu Technical School. The Electricity Program was one of the programs in operation at Honolulu Technical School when the school was incorporated into the University of Hawaii Community College System. After the Community College Act of 1964 the Industrial Electricity Program became one of the community college programs of study. The name of the program was changed to Electrical Installation and
Maintenance Technology in the late 1970s. In the 1980s the program instituted a program modification that incorporated a semester of basic electronics and the fundamentals of Programmable Logic Controllers (PLC) and PLC programming. This paralleled the addition of electronics curriculum in a fifth year of apprenticeship training instituted by the National Joint Apprenticeship and Training Committee of the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW).

Program Goals

Prepare students to acquire entry-level knowledge and manipulative skills for employment in the electrical construction/maintenance industry. Students completing the program and receiving a Certificate of Achievement or Associate in Applied Science Degree will meet the minimum qualifications to take the State of Hawaii maintenance electrician license exam.

Program SLOs

Upon completion of the EIMT Program students will be able to:

* Work independently and inter-dependently on a construction and/or maintenance project meeting industry standards.
* Comply with published electrical codes and safety standards.
* Select and order appropriate electrical parts (materials) based on blueprints and drawings.
* Calculate electrical circuit loads and design/draw the electrical circuits.
* Install electrical systems/equipment in new construction under supervision of a journeyman.
* Troubleshoot, repair, and conduct routine maintenance of electrical systems/equipment.

Admission requirements

Program Prerequisites:

ENG 19 and/or ENG 21, or “C” or higher in ESL 11 & 13 & 14 or Placement in ENG 22/60 or ESL23

Math 9, or Placement in Math 53

Credentials, licensures offered

Students completing the program and receiving a Certificate of Achievement or Associate in Applied Science Degree will meet the minimum qualifications to take the State of Hawaii maintenance electrician license exam.
Faculty and staff

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Resources

Facilities:
Current facilities are adequate, but not ideal for learning. The EIMT facilities are not large enough or equipped to accommodate all of the subject matter that is covered. Students in ELEC 42 are at times required to go outdoors to bend conduit because there is not enough space to bend the conduit without banging into one another. To do lab work for ELEC 52 the instructor has to move his class from bldg. 24 to bldg. 5, because the computers required for the lab are located in that building.

Ideally, it would be preferred that the students have enough room and the equipment to work on all projects within one building.

Equipment

The EIMT program is currently adequately equipped. Future upgrades in equipment and computers will be needed to keep ELEC 32, 42, 46, and 52 (PLC lab) current with new technology.

Sources of funding

The EIMT program is funded thorough general and special funds. The special funds are generated through teaching to industry. The general and special funds are currently sufficient to purchase new equipment required to maintain the program current with industry standards.

Articulation

At the present time the EIMT program at Honolulu Community College does not have any articulation agreements with any other college.

Community Connections

The HCC EIMT continues to maintain a good working relationship with the electrical industry. Damien Kim, a 1985 EIMT Program graduate, is the Business Manager for the International Brotherhood of Electrical Workers Local Union 1186. Damien or one of his colleagues always makes a presentation to students in the
last semester of the program. Rodney Capello, Business Manager for the Hawaii Electrical Workers union, also makes a presentation.

The Program maintains a good relationship with HECO and Hawaiian Telcom. In December 2011 Hawaiian Telcom Human Resources Department representatives talked to EIMT Program seniors about current job openings. In February 2012 Hawaiian Telcom asked that first year EIMT students submit resumes for consideration for six summer internship positions.

The Program continues to maintain a cooperative education relationship with NAVFAC. In the spring of 2012 NAVFAC again asked that EIMT Program students to submit resumes for consideration. NAVFAC is opening five electrical and two high voltage positions.

Analysis

The EIMT program’s mission statement is aligned with the College’s mission statement, which is to serve the community as a learner-centered, open door program that provides technical training to meet the demands of the Electrical industry and the needs of the individual.

A summary of the EIMT’s program review data for the years Fall 2006 – Spring 2011 indicate that the EIMT program is doing well. The number of majors enrolled in at least one program course during Fall classes for this five year period has an overall average of 88 %, with an average fill rate of 82%. The average class size during Spring classes for this five year period has an overall average of 76 % with an average fill rate of 76%. The probable cause for the drop in the fill rate as compared to the Fall percentage is due to students leaving the program for personal reasons (such as change in family situations or finding a job) or not meeting grade requirements (“C” or higher) to enter the next course. The average Fall to Spring persistence rate during this five year period is 88%, indicating a high retention rate. According to the five year data review, the EIMT program has a 69% of unduplicated degree and certificate completion. This data can be misleading due to the fact that a number of students do not graduate on time because they may need to complete their general education requirements to graduate or they are participating in the Naval Facilities (NAVFAC) Co-op program and need to postpone their graduation until they complete their required working hours for the program.

The goals and SLOs for the EIMT program are current, relevant, and appropriate to our community’s needs. The National Electrical Code (NEC) governs all electrical work done in the State of Hawai’i. The National Electrical Code is revised every three years. The curriculum for the EIMT program is based on the NEC and thus reviewed/revised every three years to stay current with the latest edition of the NEC. The latest curriculum revision was done in 2011 to meet the 2011 NEC standards. The EIMT curriculum also includes material that is relevant to the unique electrical needs of the electrical community on the island of Oahu. For example, in the 1980s the program instituted a
program modification that incorporated a semester of basic electronics and the fundamentals of Programmable Logic Controllers (PLC) and PLC programming. Currently, the program is integrating a module on Photovoltaic (PV) into its fourth semester.

The students enrolling into the EIMT program are generally young men in their early twenties who are planning on a career in the electrical field. These students look at the EIMT program as a way of learning the basic electrical skills needed to enter the electrical field. The curriculum is sufficient to meet the student’s needs. The curriculum covers all of the general electrical fields, which include residential wiring, commercial wiring, photovoltaic, motors and controls, and basic electronics/PLCs. The support services provided by the college are sufficient to meet the student’s needs.

The funding for the EIMT program has been sufficient. Funding for the program should increase on yearly bases to keep-up with the increases for lab supplies such as cable, conduit and computer program upgrades. For example, current copper prices has increased by approximately 14%, which means the cost of the copper cable used for lab projects will increase at least 14%. All funding for the EIMT program is used for material for lab projects, which enhance the students learning. Material such as electrical cables and fittings are used more than once.

The facilities for the program are sufficient. Future improvements should include more classrooms in the same building and increase and modernize lab facilities.

All safety issues are presently addressed; these include fire extinguishers, facility evacuation plan, and personal protection, and shop safety.

There have been no prior recommendations made by ACCJC. The EIMT program did institute a program modification that incorporated a semester of basic electronics, fundamentals of Programmable Logic Controllers (PLC), and PLC programming. The faculty is currently looking at the possibility of changing the math requirement for the EIMT program from Math 53 (Technical-Occupational Mathematics) to Math 25 (Elementary Algebra II). This change would make the EIMT math requirement more in line with the electrical union apprenticeship requirement. The EIMT faculty will have to investigate the impact this change would have on the potential EIMT major.

The strengths of the program are its faculty and the relevance of the curriculum to the student and community. Improvements can be in the form maintaining knowledgeable faculty and improving the facilities.

The challenges for the EIMT program will be to maintain knowledgeable and experience faculty with the impending retirement of its members within four years and to provide adequate funding of lab materials and future technology. Opportunities for the program in the future include more cooperative education programs with the Naval Facilities (NAVFAC). Currently (Fall 2012), we have EIMT students going through the selection
process for five student trainee positions, with NAVFAC. Hopefully this kind of relationship can become a regular part of their hiring process.

Planning

The department plan to strengthen the EIMT program is; 1) communicate with the EIMT advisory board annually; 2) incorporate student knowledge and satisfaction surveys; 3) update curriculum, equipment, and facilities to meet future technologies and needs; and continue to support the State of Hawaii Electrician Continued Competency Program.

There is a mechanism in place in which the EIMT curriculum is revised every three years. The National Electrical Code (NEC) governs all electrical work done in the State of Hawai’i. The National Electrical Code is revised every three years. The curriculum for the EIMT program is based on the NEC and thus reviewed/revised every three years to stay current with the latest edition of the NEC. The latest curriculum revision was done in 2011 to meet the 2011 NEC standards. The EIMT curriculum also revised as needed to include material that is relevant to the unique electrical needs of the electrical community on the island of Oahu based on field research and advisory committee recommendations.

The EIMT faculty is investigating the possibility of changing the math requirement for the program from Math 53 (tech-occupation) to Math 25 (algebra II). The International Brotherhood of Electrical Workers (IBEW), which is a member of the EIMT advisory committee, has mentioned that it might be better to have algebra as a program requirement instead of Math 53 to better match their entry-level requirements. The IBEW has accepted Math 53 as a replacement for their algebra requirement in the past, but it would make for a cleaner application if the student’s transcript read algebra instead of Math 53. The EIMT faculty would have to investigate the impact on potential EIMT students and this would include the counselors and the Math department.

In the short-term, HCC must address the replacement of both of its retiring EIMT faculty, before they retire in about four years. In the long-term HCC must address the growing need for funds needed to purchase expendable lab material.