HAWAI`I COMMUNITY COLLEGE
ANNUAL INSTRUCTIONAL
PROGRAM REVIEW

Architectural, Engineering & CAD Technologies

APRIL 2, 2007

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I. Narrative and Analysis of Data

a. Statement on the mission or purpose of the program, including the target student population;

The Architectural, Engineering & CAD Technologies (AEC) program prepares students for employment with architectural firms, contractors, engineers, and surveyors, or county, state and federal agencies. Students develop skills that enable them to complete job responsibilities that could include making schematic sketches, construction working drawings of buildings, shop drawings, construction material sales type tasks, blueprint interpretation and other field related duties, to assisting a surveying crew.

Entry requirements for the program include placement into Math 22 and placement into Eng 20R or ESL 9 or prior completion of both. The program also provides blueprint reading courses required by students majoring in the following programs: carpentry, electrical installation & maintenance technology, and machine welding & industrial mechanics technologies.

The program in collaboration with the construction academy has articulated its specialized blueprint courses (BLPR 30F - Blueprint Reading for Carpenters; BLPR 22 - Blueprint Reading and Drafting; AEC 80 - Basic Drafting; BLPR 30D - Blueprint Reading for Machine Trades) with the DOE course TIN 5310—Drafting Technology.

b. Information on external factors affecting the program; None.

c. Attach PHI Report (CTE Programs only) See attached.

d. Required external measures, if applicable (e.g.) Nursing Cert. None.

e. Data analysis

The program is healthy. Data elements are reasonable compared to other programs in the same department and division.

Number of Majors: The number of FTE student majors of 34.17 as a percentage (49%) of the 70 unduplicated majors for the academic year is low compared to the average for the division (55%). This is probably because of the limit on the number of majors (16) who may start the program each year. There appears to be a significant wait list for the program which may be comprised of some qualified students but is most likely comprised of students who are working on upgrading their skills to meet the program's entry requirements.

Average Class Fit & Student- Faculty Ratio: Class caps for the program are set at 16. The program's average class size is 13.15 and the average class fit for the year is 82.2%. The program offered no classes with less than 10 students during the academic year. The student faculty ratio is 5.38. This number is uncharacteristically low compared to the average class size.

FTE Faculty: The number of faculty assigned to the program is adequate. The FTE of BOR appointed program faculty is 2 and the number of FTE faculty based on contact hours is 2.14. One faculty member receives release time to serve as division chair.

GPA and Number of Graduates: The program paid course (PPC) average GPA is 3.35, the highest for the division and the non-PPC average GPA is 2.45 which is slightly below the division average. The AEC program graduated 11 students; which is above the 9.33 average number of graduates for the ATE Division.

II. Update or Create Your Action Plan including Budget Request with Justification, if needed.

1. Develop student learning outcomes for all program courses.
2. Continue involvement with the college's Construction Academy.
3. Continue partnering with Forest TEAM to use surveying equipment (versus purchasing separate equipment) such as the Nikon total station with data collector that costs $25,000
4. Begin work on documenting assessments of student learning outcomes.
5. Continue using SketchUp for instructional purposes (annual license for 15 workstations) $3,000
6. Determine if current computers can handle AutoCAD Revit Architecture Suite and request equipment upgrades as necessary. Autodesk® Revit® Building is the only architectural software specifically designed for building information modeling. It is the most efficient digital approach to building design, delivery, and management ever. It allows students to holistically, in terms of the entire building rather than individual sections and floor plans. This new approach speeds the design process and allows architecture students to focus on architectural design and expressive form, learn about materials and technology, master design visualization, and develop skills for the technical documentation of building projects.
7. Purchase instructor copies of Revit Architecture Suite and begin instructor training $7,000
8. Purchase large format copier for classroom use $20,000
9. Purchase an Elmo and projector, laptop for second classroom (the program only has one projector and laptop; this causes problems when instructors have classes running concurrently that need to use the projector) $6,000

Total budget request (in addition to normal operating budget) $36,000

Data Chart

QUANTITATIVE TREND DATA CHART(as of 10-19-06)

Program Name: AEC

	Fall 2005	Spring 2006	AY
#1 Number of Unduplicated Majors	59	55	70
#2 Total Student Semester Hours	542	483	1025
#3 FTE Student Majors	36.13	32.20	34.17
#4 Number of Graduates			11
#5 Number of classes	11	9	20
#6 Avg Class size	14.55	11.44	13.15
#7 Avg Class fit	90.9%	71.5%	82.2%
#8 FTE of BOR Appointed Program Faculty			2
#9 Number of FTE Faculty based on contact hours (FTE = 21)			2.14
#10 Student semester hours for all PPC class enrollments	293	226	519
#11 Student-Faculty Ratio			5.38
#12 PPC Credits Earned Ratio	.82	.92	.87
#13 Non-PPC Credits Earned Ratio	.65	.61	.63
#14 PPC Avg GPA	3.18	3.51	3.35
#15 Non-PPC Avg GPA	2.70	2.21	2.45
#16 Budget			$7,039.29
#17 College Cost per SSH			$86.31

The Program Health Indicators Review provides a comprehensive, empirically based review of academic programs. Major sections of the report provide descriptive information about the development and history of a program, goals, faculty and advisory committees, admission and degree requirements, and graphic representation of the program's standing. The major clusters of program health indicators are program demand, program efficiency and program outcomes. Hawai'i Community College uses five data elements to develop these clusters: number of applicants and majors (program demand), class fit and average class size (program efficiencies) and graduates (program outcomes).

Chancellor : Rockne Freitas
Vice Chancellor for Academic Affairs: Doug Dykstra
Department Chair: Clyde Kojiro

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PROGRAM DESCRIPTION

The Architectural, Engineering & CAD Technologies program is placed in the Applied Technical Education Division's Construction Technology Department of Hawai'i Community College. Other programs within this department include: Agriculture, Carpentry, and Electrical Installation & Maintenance Technology.

This program prepares students for employment with architectural firms, contractors, engineers, and surveyors, or county, state and federal agencies. Job responsibilities may range from making schematic sketches, construction working drawings of buildings, shop drawings, construction material sales type tasks, blueprint interpretation and other field related duties, to assisting a surveying crew.

The program offers the Associate in Applied Science degree requiring 64 credit hours of work.

PROGRAM GOALS

The program's mission is to provide the maximum learning opportunity for students to build proficiency in CAD technology, construction methodology, field and manual dexterity, design and code comprehension, and sound work ethics; in alignment the UHCC's and HawCC's mission to serve all segments of our Hawai`i Island community.

The primary objective of the program is to provide students with curriculum and activities that enable them to develop knowledge, skills and attitudes in preparation for entry into the fields of architectural drafting and engineering aide and related occupations.

A secondary objective is to provide entry-level coursework that would prepare students who may be interested in transferring to a baccalaureate (or higher) architectural design program.

A third objective includes providing in-service training and job upgrading opportunities for professionals in the fields of architectural drafting, civil or surveying and to provide service to non-majors seeking additional skills, or for exploratory purposes.

A broad general education objective is to educate students in the knowledge and skills that will enable them to understand and appreciate their heritage and to be aware of the contributions of different cultures to exercise good judgement as citizens and to instill a desire for lifelong learning that will enable them to respond to changing technologies.

PROGRAM HEALTH INDICATORS

INDICES	MINIMUM LEVEL	ACTUAL LEVEL	SATISFACTORY LEVEL
PROGRAM DEMAND/CENTRALITY: Fall 2006			
Number of Applicants	30	39	45
Number of Majors	40	51	60
Student Semester Hours (BLPRT,AEC)	240	482	360
Class Credit Hours	24	30	24
Number of Classes Taught	6	13	6
PROGRAM EFFICIENCY: Fall 2006			
Average Class Size	10	15	15
Student Semester Hours per FTE Faculty	120	193	180
Equiv. Class Credit Hours per FTE Faculty	12	12	12
Percentage of Small Classes (< 10 students)	50%	0%	0%
PROGRAM OUTCOMES: (See Perkins III Core Indicators on Page 5)			
Credits Earned Ratio – General Education		00%	
Credits Earned Ratio – Vocational Education		00%	
Degrees and Certificates Awarded – AY 2001-2002		00%	
Placement into Further Education, Employ, or Military		00%	
Program Retention – Fall to Spring		00%	
Retention in Employment		00%	
Non-Traditional Program Participation – Females		00%	
Non-Traditional Program Completion – AY2001-2002		00%	

2005-2006 PERKINS III CORE INDICATORS

Core Indicators	# in Denominator	# in Numerator	Adjusted Level	Actual Level
Academic Achievement	17	15	81.92%	88.24%
Vocational Skills	18	16	90.00%	88.89%
Degrees & Certificates	18	10	37.33%	55.56%
Placement/Employment	6	3	71.72%	50.00%
Retention/Employment	3	3	92.00%	100.00%
Nontraditional Participation	46	19	14.60%	41.30%
Nontraditional Completion	11	5	12.73%	45.45%

OCCUPATIONAL DEMAND
Hawai'i County - 1998-2008

Occupational Title	State 2005	Hawaii County 2005	Hawaii New 2005-2011	State Replacement 2005-2011	Hawaii County Replacement 2005-2011
Drafters	1143	144	-1	184	23
Construction & extraction	309	53	7	27	4
Maintenance & repair work general	8123	880	135	908	98
	9575	1077	141	1119	125
Total demand 2005-2011 = 266					

NOTE: There was no category for surveying, mapping technicians, engineering technicians and other related technicians. This category is where a large percentage of our graduates are employed.

Source: EMSI Table for Hawaii County

ANALYSIS OF THE PROGRAM

PROGRAM DEMAND/CENTRALITY

The program is above the minimum level in all categories. It exceeds the satisfactory level for student semester hour, class credit hours, and number of classes taught. Considering the program can only accept 16 students per year, the 39 applicants and 51 majors represent a 3-year waiting list.

PROGRAM EFFICIENCY

All indices are at or above the satisfactory level. There were zero low enrolled (< 10) classes.

PROGRAM OUTCOMES

Core indicators in the areas of academic achievement, degrees/certificates, retention, nontraditional participation and nontraditional completion are above the adjusted level.

The vocational skill indicator is reported as 88.89% which is only slightly below the 90.00% adjusted level. The high number of majors compared to the number of students accepted into the program annually results in a number of students taking classes other than those in their program major which could account for the indicator being lower than desired.

The placement/employment indicator is 50% compared to the desired level of 71.72%. It is not uncommon for graduates of the program to be hired as contractors, to become self employed, or to be paid "cash" which would keep them from being tracked as employed.

Response to Plan of Action for 2005-2006

The program upgraded its annual license for 15 workstations of SketchUp, a three-D architectural drawing software, for Level II students. The program completed a comprehensive review November 2006. It also developed program level student learning outcomes and a program map and is continuing work on course student learning outcomes. Discussions with Manoa's College of Engineering program were curtailed because the majority of the program's students are not receptive to taking the higher level English and math courses required. The program articulated its introductory blueprint reading courses with the DOE Construction Academy classes.

Plan of Action for 2006-2007

10. Develop student learning outcomes for all program courses.
11. Continue using SketchUp for instructional purposes (annual license for 15 workstations)
12. Begin work on documenting assessments of student learning outcomes.
13. Investigate if current computers can handle Revit Building, a modeling software for producing construction drawings. Revit Building and AutoCAD are manufactured by the same company with Revit Building being the future direction for the industry.
14. Begin instructor training on Revit Building.
15. Continue involvement with the college's Construction Academy.

Appendix A: History and Admission Requirements

Program History

The Drafting Program was initiated in 1949 on a limited basis. It was called the "Drafting for Building Trades" program and offered a Certificate of Achievement upon completion of 2,600 hours of course work. Twenty Years later, in 1969, Hawai'i Technical School became part of the University of Hawai'i Community College System and began to offer the Associate Degree.

Program requirements did not change drastically upon restructuring the program to meet the Associate of Science degree requirements. The major change was a reduction in the total hours spent in the specific trade area by approximately 1,000 hours. The new emphasis was on the "well rounded student" with substantial time spent in the area of general education. The program was also structured to accept only students who majored in the Drafting & Engineering Aide Program, and who upon successful completion of the program requirements earned the A.S. degree. In 1996 the AS degree for the trade programs changed to the AAS - Associate of Applied Science.

In 2001, the program began major curriculum revisions which included a program name change to "Architectural, Engineering and CAD Technologies". The purpose of this movement was to align with Honolulu Community Colleges' Architectural Drafting Technology program, who also at this time adopted the new program name. Courses across both campuses were refined to carry the same alpha, course numbers, course titles, content and credit hours. During this period, the original credit hours per course were split into smaller modules; more engineering courses were added, along with the addition of three new architecture courses.

Input from the community and our trade Advisory Committee has helped to broaden the program's content to include the skills required for both drafting and engineering aide. The completely new curriculum articulates with other Community College programs and expansion of course content improves the employment opportunities for graduates.

One of the regular program instructors is currently the Department Chair of the Construction Technology Department. The current second year instructor now divides her teaching load between the first and second year classes, and a lecturer is used as needed.

Program Admission Requirements

The Architectural/Engineering & CAD Technologies Program has initiated a desirable program entrance requirement in Math and English. Students whose placement test scores place them in English 21, 22, 51, ESL 15, or higher or completion with a "C" or better in English 20R and placement in MATH 24X or completion with a "C" or better in Math 22 are deemed qualified for the program. Those who do not meet these minimum requirements are advised to take courses to upgrade their skills.

Appendix B: Degree Requirements

			AAS
First Semester			
	AEC 80	Basic Drafting	3
	AEC 110B	Basic AutoCAD	3
	AEC 115	Intro. To Architecture	2
	AEC 117	Intro. To Surveying	1
	AEC 118	Construction Materials	3
**	Math 66	Trig. And Algebraic Topics	4
		TOTAL	**16**
Second Semester			
	AEC 110C	Basic AutoCAD II	1
	AEC 120	Intro. To Construction Drawings	3
	AEC 123	Residential Planning and Design	3
	AEC 127	Civil Engineering Drawings	3
	AEC 135	Intro. To the Built Environment	3
	Elective	Social, Natural, & Cultural Env. (SpCom 51 or higher rec.)	3
	Elective	Social, Natural, & Cultural Env. (ICS 100,101 rec.)	3
		TOTAL	**19**
Third Semester			
	AEC 130	Residential Working Drawings	3
	AEC 131	Construction Codes	2
	AEC 133	Basic Architectural Studio A	4
	AEC 134	CAD Options I	1
	AEC 138	Structural Drawings	1
	AEC 137	Surveying II	1
**	Eng	21, 51, or higher	3
	Elective	Social, Natural, & Cultural Env.	3
		TOTAL	**18**
Fourth Semester			
	AEC 140	Commercial Working Drawings	3
	AEC 141B	Building Services	1
	AEC 142	Basic Architectural Studio B	4
	AEC 144	CAD Options II	1
	AEC 147	Surveying III	2
		TOTAL	**11**
		TOTAL	**64**

Appendix C: Faculty

Regular Faculty

Name	Tenure Status and date	Degrees Held	Rank
Clyde Kojiro	Tenured, 1988	Cert.	C-5
Gayle Cho	Tenured, 1992	A.S.	C-5

Part-time Faculty

Name	Tenure Status and date	Degrees Held	Rank
Donna DeLuz-Marcelino (Lecturer)		A.S. HawCC	A

Appendix D: Advisory Committee

James M. McKeague, Architect, James M. McKeague Architect & Associates

Alan Inaba, Licensed Land Surveyor, Inaba Engineering Inc.

Rodney Chinnen, Owner/Manger, Hubs Hawai`i, Inc.

Hans Santiago, Real Property Drafting Technician III, Planning Department, County of Hawai`i

Talena Adams, GIS/GPS Instructor Assistant, Forest Team, HawCC

Appendix E: Definitions of Data Elements (All data includes West Hawai‘i)

A. Program Demand/Centrality:

1. Number of Applications: Total number of applications received complete and incomplete.

2. Number of Majors: Major declared/on file during the semester.

3. Student Semester Hours: Total number of semester hours based upon class credits and student enrollment. Sum of all class credits multiplied by the enrollment for each class. Includes practicums and other classes where 5 students = 1 semester (credit) hour. Excludes cancelled, 99V, 199V, 299V, and all CVE classes.

4. Class Credit Hours: Sum of credits of all classes offered within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes cancelled, 99V, 199V, 299V, and all CVE classes.

5. Number of Classes Taught: Total number of classes conducted/run within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 1 99V, 299V, and all CVE classes.

B. Program Efficiency:

1. Average Class Size: Average class size of all classes conducted/run within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses. Total enrollment in each class excludes students with "DR" and/or "W" grades.

2. Student Semester Hours per FTE Faculty: Total student semester hours from A.3. divided by analytical FTE Faculty.

    a. Analytical FTE Faculty: Teaching based upon a full load (15 or 12 credits depending upon the contact hours.) Division Chairpersons are assigned an analytical FTE Faculty equivalent of 0.70 FTE.

    b. Each full-time faculty within a program is considered to be 1 FTE. FTE based upon lecturers are calculated by the number of credits each are assigned to teach.

    c. Assigned time is to be extracted from FTE calculations… similar to calculating the FTE for a Division Chair. For example, if a Full-time faculty received 3

credits assigned time (out of a regular 15-credit load) it would be considered a .8 FTE rather than 1.

3. Equivalent Class Credit Hours per FTE Faculty: Total class credit hours from A.4. divided by total analytical FTE Faculty.

4. Percentage of Small Classes: Percent of classes within the program/with the program/major code/alpha that had less than 10 students. Includes practica and other classes where 5 students = 1 semester (credit) hour; however, these classes are considered to be Low-enrolled only if there are less than 5 students or between 6 and 9 students. Excludes 99V, 199V, 299V, and all CVE classes.

C. Program Outcomes:

1. Credits Earned Ratio (Remedial/Developmental): Percentage of program majors enrolled in ESL 9, ESL 13, ENG 20R, ENG 20W, ENG 51, LSK 51, MATH 22, and MATH 50 who passed with a grade of A, B, C, D or CR.

2. Credits Earned Ratio (General Education): Percentage of program majors enrolled in all LBART courses (excluding those in C.1.) who passed with a grade of A, B, C, D or CR. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses.

3. Credits Earned Ratio (Vocational Education): Percentage of students enrolled in vocational courses who passed with a grade of A, B, C, D or CR. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses.

4. Credits Earned Ratio (Overall): Combination of C.1., C.2., and C.3. from above.

5. Graduate Placement Rate: Students who graduated with a certificate/degree in the PAST academic year and found work in that field.

6. Degrees Awarded: The number of certificates and degrees awarded during the PAST academic year.

7. Retention Rate: New students within a program/major continuing or retained in that program/major from the past two or more terms. (ex: Students registered in Fall 2000 who started in Spring 2000 or Fall 1999. Students registered in Fall 2001 who started in Spring 2001 or Fall 2000.)