

HAWAI`I COMMUNITY COLLEGE
ANNUAL
PROGRAM REVIEW REPORT

**Architectural, Engineering and CAD
Technologies (AEC)**

December 3, 2009

(Assessment Period: 2008-2009)

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**UHCC December 2009 Coversheet –
Annual Report Program Data**

College: *Hawai'i Community College*

Program: *Architectural, Engineering & CAD Technologies*

Check All Credentials Offered	AA	AS	ATS	AAS	CA	CC	COM	ASC	APC
				X					

Introduction: Brief description of the program and program mission.

The Architectural, Engineering & CAD Technologies (AEC) program prepares students for employment with architectural firms, contractors, engineers, surveyors, county, state, federal agencies, and entrepreneurial endeavors. Students develop skills that enable them to complete job responsibilities including 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 ESL9 or prior completion of both. The program also provides Blueprint Reading courses required by students majoring in the following programs: Carpentry, Electrical Installation and Maintenance Program, and Machine, Welding, and Industrial Mechanics Technologies.

The AEC 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.

The AEC program level student learning outcomes are as follows:

1. Demonstrates entry-level skills for accuracy in drawing geometric shapes, axonometric pictorials, orthographic projections, and identifying the relationship of features to demonstrate visualization proficiency.
2. Identify or describe the characteristics and uses of construction materials, building products and systems, and research these materials for use based on a prescribed design project requirement.
3. Use with reasonable competence our two-dimensional and three-dimensional CAD programs to create architectural and engineering drawing documents for use in the Construction Technology Capstone DHHL Model Home Project and other projects that are assigned.
4. Use with reasonable competence our surveying hand tools/equipment, Theodolite, total station, and GPS Garmins safely on campus and at the DHHL Model Home Project site.

5. Formulate, design, revise, and construct projects of knowledge and comprehension based on design criteria requiring recall of past courses/experiences and be able to defend, explain, and discuss designs.
6. Demonstrate computation, communication, critical thinking, research and problem solving skill as well as and appreciation for the diversity of cultures, community, and the environment.
7. Take pride in the quality of projects and performance, possess responsible work ethics and standards, and model attitudes of professionalism and appearance.

Part I.

Quantitative Indicators (Reported on 2009 Summary Report Program Data excel sheet --includes health calls based on system scoring rubric).

**Annual Report of Program Data for Architectural Eng & CAD Tech
Hawaii Community College Program Major(s): AEC**

Overall Program Health					Cautionary	
Demand Indicators						
		Academic Year				
		Fall 06	Fall 07	08-09		
1	New & Replacement Positions (State)	30	19	65		
2	New & Replacement Positions (County Prorated)	4	1	2		
3	Number of Majors	51	62	62	Demand Health	
4	SSH Program Majors in Program Classes	358	421	613	Unhealthy	
5	SSH Non-Majors in Program Classes	136	177	318		
6	SSH in All Program Classes	494	598	931		
7	FTE Enrollment in Program Classes	33	40	31		
8	Total Number of Classes Taught	13	14	27		
Efficiency Indicators						
		Academic Year				
		Fall 06	Fall 07	08-09		
9	Average Class Size	15.7	18.2	13.8		
10	Fill Rate	94%	108%	84%		
11	FTE BOR Appointed Faculty	2.0	2.0	2.0		
12	Majors to FTE BOR Appointed Faculty	25.5	31.0	31.0	Efficiency Health	
13	Majors to Analytic FTE Faculty	25.5	28.2	25.4	Healthy	
13a	Analytic FTE Faculty	2.0	2.2	2.4		

13b	Majors to Analytic FTE Faculty @12cr.	n/a	n/a	20.3
13c	Analytic FTE Faculty @12cr.	n/a	n/a	3.1
14	Overall Program Budget Allocation @12cr. 0809	\$101,188	\$114,311	\$159,833
14a	General Funded Budget Allocation	n/a	n/a	\$159,833
14b	Special/Federal Budget Allocation	n/a	n/a	\$0
15	Cost per SSH @12cr. 0809	\$204.83	\$191.16	\$171.73
16	Number of Low-Enrolled (<10) Classes	0	0	0

Effectiveness Indicators		Academic Year			
		2006	2007	08-09	
17	Successful Completion (Equivalent C or Higher)	n/a	n/a	89%	Effectiveness Health Cautionary
18	Withdrawals (Grade = W)	n/a	n/a	15	
19	Persistence (Fall to Spring)	86%	74%	75%	
20	Unduplicated Degrees/Certificates Awarded	n/a	n/a	10	
20a	Number of Degrees Awarded	11	7	10	
20b	Certificates of Achievement Awarded	0	0	0	
20c	Academic Subject Certificates Awarded	n/a	n/a	0	
20d	Other Certificates Awarded	n/a	n/a	0	
21	Transfers to UH 4-yr	2	2	0	
21a	Transfers with degree from program	n/a	n/a	0	
21b	Transfers without degree from program	n/a	n/a	0	

C/P denotes that the measure is provided by the college, if necessary.

Data current as of: 8/19/2009 - 3:30:PM

Distance Education Completely On-line Classes		Academic Year			
		Fall 06	Fall 07	08-09	
22	Number of Distance Education Classes Taught	n/a	n/a	0	Perkins IV Core Indicators
23	Enrollment Distance Education Classes	n/a	n/a	0	
24	Fill Rate	n/a	n/a	0%	
25	Successful Completion (Equivalent C or Higher)	n/a	n/a	0	
26	Withdrawals (Grade = W)	n/a	n/a	0	
27	Persistence (Fall to Spring Not Limited to Distance Education)	n/a	n/a	0%	
Perkins IV Core Indicators					
Perkins IV Measures 2007-2008		Goal	Actual	Met	
28	1P1 Technical Skills Attainment	90.00	95.24	Met	
29	2P1 Completion	44.00	42.86	Did Not	
30	3P1 Student Retention or Transfer	55.00	60	Met	

31	4P1 Student Placement	50.00	50	Met
32	5P1 Nontraditional Participation	25.00	32.65	Met
33	5P2 Nontraditional Completion	25.00	33.33	Met

Part II.

Analysis of the Program (strengths and weaknesses in terms of demand, efficiency, and effectiveness based on an analysis of the data).

Overall Program Health: Cautionary

Demand Indicators: Unhealthy

It has always been the trend for Technical Programs to increase enrollment when the unemployment rate is high. The AEC Program is somewhat dependent on the construction economy. Construction is at an all time low and therefore job placement in this county has been weak.

The AEC Program will struggle with this rating should the economy remain the same. We accept only 16 students every Fall and the graduates have indicated a willingness to pursue further training in related fields such as Carpentry, Electrical, higher four-year degrees, or start their own business as drafters. We are aware there were no transfers to the four-year at the last review but we anticipate more transfers because of the weak construction market.

Efficiency Indicators: Healthy

The AEC's program of study is intensive and requires dedication. Because there are 16 full stations in the first year of study, we accept that many students. We have had no problems filling the program and anticipate the trend to continue. The fill rate of 84% is considered Healthy. The Majors to FTE BOR Appointed Faculty of 31.0 is Cautionary. Although there are 62 declared majors, only a maximum of 32 students can be enrolled in the AEC program at one time. Using 32 would give the program a ratio of 16 which is Healthy.

Effectiveness Indicators: Cautionary

The AEC Program is a time consuming program of study. It is the nature of the job. Family, financial, and personal issues are the major factors in a student's withdrawal and not the instructor/professor or curriculum. Some students do not finish because of related courses not being completed. In spite of these "barriers" the Persistence rate (fall to spring) of 75% is considered Healthy. What is Unhealthy is the ratio of Unduplicated Degrees/Certificates Awarded to New and Replacement Jobs in the County. As mentioned earlier, construction is at an all time low and therefore job placement in this county has been weak. Basically the data shows 5 graduates for every 1 job opening. This may not present an accurate picture because many

graduates prefer being an independent contractor. The ratio of Unduplicated Degrees/Certificates Awarded to Majors is 16%, a Cautionary rate. Each year there is only a maximum of 16 students who are potential graduates; 10 out of 16 is 63% completion rate. We are cautiously optimistic the number of graduates will increase as those completing related studies finally graduate.

- Note: 1) Career Technical Education (CTE) programs must include in analysis any Perkins IV Core indicator for which the program did not meet the goal.**
2) If using alternative “program capacity” method to determine program efficiency, include in analysis.

The AEC Program has met 6 of the 7 Perkins IV Core Indicators. 2P1 Completion was not met. This is a result of students not completing their related studies. The program worked closely with our capable and effective counseling unit and we will hopefully see an increase on the next review.

Significant Program Actions (new certificates, stop-out; gain/loss of positions, results of prior year’s action plan).

Action Plan Items 2008-2009	Status
Continue involvement with the Construction Academy endeavors.	Ongoing.
Continue to request the use of Forest Team’s Nikon Total Station with data collector until AEC obtains own equipment.	Ongoing. Acquired a Nikon Total Station with data collector and accessories. However, we are continuing to borrow Forest Team’s Nikon Total Station with data collector as an additional set for a second team of students for training and working on assignments simultaneously.
Continue documenting assessment strategies of student learning outcomes	Ongoing. Assessment Plans have been developed for F08 and S09 assessing two student learning outcomes.
Pursue Civil3D or other civil program software, to include faculty training	Ongoing. Researched potential Civil3D and other civil program software, to include faculty training.
Pursue intermediate faculty training on Revit.	Ongoing. Continue seeking intermediate faculty training on Revit. Acquired Revit via US CAD, Yoshi Honda, PCATT paid for introduction training.
Continue utilizing freeware SketchUp software with upgrades.	Maintained utilization of freeware SketchUp software with upgrades.

Comment [J01]: Can you add what was accomplished 2008-2009, if any.

Comment [J02]: What was the result of your research?

Comment [J03]: Results?

Comment [J04]: Is this ongoing or completed?

Continue to reassess current curriculum: adjustment of credits, course prerequisites, etc.	Ongoing. Reassessed current curriculum: adjustment of credits, course prerequisites, incorporated sustainable/green building theories into the existing courses and lessons, etc.
Assess the potential use and acquisition of a 3D printer.	Acquired and installed a 3D printer.
Begin internship program with County of Hawai'i.	On going, no progress.

Comment [J05]: Did anything happen with this?

In addition to the above, the following were also significant program actions:

1. Upgraded window unit air-conditioners to a split-system air-conditioning system.
2. Obtained faculty training and CGP certification. (Certified Green Professional)

Part III. Action Plan

1. Continue involvement in the Construction Academy endeavors.
2. Continue utilizing Forest Team's Nikon Total Station with data collector as an additional set. Pursue obtaining a second permanent set of equipment.
3. Continue documenting assessment strategies of student learning outcomes, with rubrics.
4. Research optional Civil3D or other civil program software, to include faculty training.
5. Continue pursuing faculty training in Revit at the intermediate level.
6. Continue utilizing freeware SketchUp software with upgrades for student project assignments.
7. Convert 3D printer's current powder to the more sustainable salt-water infiltration system.
8. Feasibility development for 3d-service providership, incorporating and enhancing student skills in 3d model design and 3d model printing to generate income in moving towards self-sustainability in the program.
9. Continue collaboration efforts with Digital Media Arts program for printing of their student projects.
10. Continue to reassess current curriculum: adjustment of credits, course prerequisites, incorporating sustainable green building theories and practices, etc.
11. Pursue acquisition of a presentation station for the 1st year classroom consisting of an HDTV screen, dvd player, Elmo projector and computer control system.
12. Explore potential curriculum modifications incorporating sustainable building technologies.
13. Pursue extensive faculty training in LEED through U.S. Green Building Council. (Leadership in Energy and Environmental Design).
14. Develop future feasibility studies of a sustainable facility for 32-FTE AEC majors and 20-FTE Blueprint construction trade majors.

15. Explore CTE student collaboration and involvement working towards net zero efficiency and maximizing other green design measures for LEED Silver building certification, **minimum**.
16. Begin internship program with County of Hawai'i.

Comment [J06]: What about the action plan about County?

Comment [J07]: Did anything happen with this?

Part IV. Resource Implications (physical, human, financial).

CHART 1: PHYSICAL FACILITIES ASSIGNED TO PROGRAM

List Bldng/Rm/Lab/Shop	Describe Renovation/Repair Needed	Estimated Cost
Building 380/30 Level I CAD Lab	-increase square footage to provide efficient working space for student workstations -increase square footage to provide lecture area -replace outdated light fixtures -update electrical outlets and wiring -improve internet cable layout -install fixed projection system -repair exhaust fan in printing room -upgrade lighting in printing room -provide student project display space	\$ 504,000
Building 380/31 Faculty Office	-divide into 2 separate offices -install 2 separate phone lines -replace outdated light fixtures -upgrade electrical outlets and wiring -improve internet cable layout	\$ 88,000
Building 380/32 Level II Lecture Room	-install window coverings -fixed-installation of current projection system -provide additional internet lines -provide student project display space	\$54,000
Building 380/33 Level II CAD Lab	-increase square footage for more efficient student workstations -improve electrical outlets and wiring -improve internet cable layout	\$ 296,000
	TOTAL	\$942,000

BUDGET REQUESTS

Describe Item	COST
Plotter replacement Lev. I CAD Lab	\$15,500.00
Nikon Total Station w/ Data Collector	\$25,000.00
Computer Hdwr & Dwg Software upgrade & training	\$142,600.00
Trimble GPS Surveying Equipment & GIS Software	\$40,000.00
32-CAD workstation Furnishings	\$20,000.00
Trimble F-3 Robotic Total Station, pkg. & training	\$30,000.00
Revit Training for 2 faculty	\$4000.00
Presentation Station Level 1 classroom	\$4,600.00
1/2 personnel: 3d service	\$14,400.00
Faculty Training: LEED Technologies	\$8000.00
LEED-Silver facility	\$950,400.00

Annual Report Program Data and analysis located on college website at:

[AY 2009 Completed Annual Program-Unit Reviews](#)