UH MAUI COLLEGE

SUSTAINABLE CONSTRUCTION TECHNOLOGY

2010 COMPREHENSIVE PROGRAM REVIEW

By Carlton Atay

November 05, 2010

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I. OVERVIEW OF THE PROGRAM

A. Mission and Vision of the College

1. The College Mission:

   UH Maui College is a learning-centered institution that provides affordable, high quality credit and non-credit educational opportunities to a diverse community of lifelong learners.

2. The College Vision:

   We envision a world-class college that meets current and emerging Maui County education and training needs through innovative, high quality programs offered in stimulating learning environments. The College mission, goals, and actions will be guided by the Native Hawaiian reverence for the ahupua`a, a practice of sustaining and sharing diverse but finite resources for the benefit of all.

B. Mission and Vision of the Program

1. Sustainable Construction Technology Mission

   The Sustainable Construction Technology (SCT) program prepares students in general building construction and maintenance of large and small structures, whether commercial, industrial, or residential. It also allows students to explore different trades prior to selecting a specialization.

   The program mission statement reflects the college's mission statement in the following areas:

   - Students are trained in the latest technology and services that meet the changing educational and training needs of the community.
   - Courses allow students to develop the occupational skills, academic competencies, and increased awareness they will need to become positive and confident contributing members of their community.

2. Sustainable Construction Technology Vision

The Program Vision is to provide competent workers and technicians to meet the employment needs for the County of Maui. Students will work towards LEED (Leadership in Energy and Environmental Design) and NAHB National Association Home Builders) certification.

Upon completion of the roofs to the Carpentry,Voc-Tech, and Welding buildings. The instructors are in the process of clearing out older machines and accumulated old materials from the building. This is to reflect the changes for more efficient technologies in construction.

3. Program Goals

- To prepare and place competent students in the construction, building maintenance, and sustainable technology related occupations.
- To provide employees already in the construction, building maintenance, and sustainable technology professions with additional skills and knowledge for technical upgrading.
- To prepare students who want to continue or transfer to a 4-year university.
- To provide support courses for other UHMC programs.
- To provide individuals with basic skills to enhance their own personal knowledge.

C. Relation to UHMC Strategic Plan

1. The Sustainable Construction Technology (SCT) is using the UHMC Strategic Plan Action Strategies and the five goals as a guide to making changes to the program. The program is strongest in the first and second goals in the UHMC Strategic Plan:

   a. Goal 1. Educational Effectiveness and Student Success

      - Maintain all aspects of the College as a learning-centered institution.
      - Provide instructional methods, technologies, materials, facilities, and academic support services that accommodate students of varied learning styles, backgrounds, interests, and abilities.
      - Provide students with access to a seamless UH system with full articulation between all campuses.

- Engage students in active learning.

  Use technology to enhance student learning and the quality and efficiency of student service functions

b. Goal 2. A Learning, Applied Research, and Service Network.

   Engage in intellectual and educational activities that enable the county of Maui and the state of Hawai`i to flourish.

   Objective 1:

   Support the county and state economy, workforce development, and improved access to lifetime education for all by building partnerships within the UH University system and with other public and private educational, governmental, and business institutions.

c. The SCT Program mission and vision statements reflect these goals. The program realizes its importance to the overall mission of the college and the community.

Program outcomes describe specific skills, attitudes, and abilities to be mastered by learners completing the program. They can be used to communicate performance expectations to potential students, new faculty, and industry partners. Program outcome assessment provides a method for continuous improvement of the program. Outcomes must be measured by collection of specific performance data on an annual basis. The analysis of the data gathered is then used to suggest program improvements.

Part 1. Quantitative Indicators for Program Review
Reporting period for indicators was modified to an annual basis effective Fall 2008.

Demand

1. Annual and new replacement positions in the state of Hawaii.
   There is a demand for qualified construction workers or related fields in the industry.
   Estimates of employment in construction and construction related jobs in 2005 and 2006 were approximately 42,600 and projected to grow 10% annually.
   In addition to filling approximately 480 jobs per year due to the growth of the sector. The state needed to fill 400 jobs per year as replacement for existing workers who are expected to leave their current positions.

Well in Spring of 2007, there was a change in the economy, commercial construction projects were coming to an end, and housing market were slowing down. In 2008 and 2009 the construction industry and related jobs came to a screeching halt. The state is looking to fill 396 jobs for this period.

This down turn in the construction industry led to the growth of enrollment of students, preparing them with skills and knowledge in the construction industry, for the next expansion growth in the horizon.

2. Annual and new replacement positions in the county of Maui.
In 2007 county of Maui had 5000 construction workers. The projection for 2008- 2012 will see a bleak outlook. A forecast of 56 additional jobs will be needed during this period.

The table below shows the numbers of SCT graduates for the past five years. The number of forecasted new and placement positions in Maui exceed the number of students graduating from UHMC with an AAS degree in Sustainable Construction Technology. Employment opportunities should be available for our graduates. The number of inquiries from the construction unions supports the demand for our graduates.

Current Positions	Current Positions	2007- 12 additions	2007- 12 additions
State	Maui	State jobs	Maui jobs
38,960	5,000	396	56

Year	S 2006	S 2007	S 2008	S 2009	S 2010
Number of AAS SCT degree Graduates	0	0	2	2	3

3. Numbers of majors
The number or SCT majors have ranged from 22 to 52 students in the last five years. This represents a 42% increase in the number of majors during this same period, and a 50 % increase in the past year.

The table below shows the number of SCT majors as a percent of the student semester hours (SSH) for all students in all SCT classes. Sustainable Construction Technology program began the Fall of 2008, part of the data was taken under the old Sustainable Tech program.

Year	F 2005	F 2006	2007-08	2008- 09	2009- 2010
Number of	NA	NA	76	58	102

Majors					
Numbers of SSH	NA	NA	406	435	1,134
% Majors/SSH	NA	NA	18.7%	13.3%	9%

4. Student semester hours for all program classes.
The decrease in student hours in 2008- 09 was due to the retirement of a full time faculty member. Where the program filled classes that was offered with lectures.
In Fall of 2009 a new full time faculty instructor was hired. Increase in classes was offered using lectures to meet the influx of students enrolling for the year. A 50% enrollment was due to the economy being stagnant in hiring workers.

5. FTE program enrollment
The FTE (full-time equivalent) measures the same demand as the student semester hour since FTE is calculated by dividing SSH by 15. Since there are more students semester hours, there are more full-time equivalent students. The increase in enrollment in the number of credit hours from 2009 to 2010 is attributed to the slowdown in the economy that begin in mid-2008. During periods of economic downturn, college enrollments tend to ride.

Year	2005	2006	2007	2008	2009- 10
Number of SSH	NA	NA	406	435	1,134
Number FTE	NA	NA	39	30	57

6. Number of classes Taught
There are 22 courses in the Sustainable Construction Technology (SCT). Sixteen of these courses are the Curriculum Mapping to an AAS degree; the other six courses are electives. Upon demand of enrollment, classes are double up for the semester or courses are added to meet graduation requirement. Some students are still in the old Sustainable Tech program.

Year	F 2006	F 2007	F 2008	F 2009	F 2010
No. of classes taught	8	14	14	14	16

7. Determination of program's health based on demand: **Unhealthy**

Efficiency

8. Average Class Size
The average class size will differ for the hands on classes (16) students and lecture classes are 35 students.

Year	2006	2007	2008	2009	2010
Avg. class size	5	11	17.5	14.9	19.5

9. Fill Rate
The drop in 2009 was due to the retirement of the full time faculty instructor and the transition of the new faculty member.

Year	2006	2007	2008	2009	2010
Fill rate	31%	69%	71%	85%	1005

10. **Program Faculty**
The Sustainable Construction Technology faculty includes two full time instructors and six part time lecturers for 2009-2010. In order to keep the focus of the program on teaching the latest sustainable skills, individuals with a wide range of up-to-date technical skills and experience are needed.

FULLTIME FACULTY

1. **Carlton Atay**
Sustainable Construction Technology Instructor
Title: Instructor.
Length of Service – 2 years
Courses Taught: CARP 20, CARP 41, CARP 43, MAIN 20, MAIN30, MAIN 40, MAIN 50, BLPR 22, ENRG 193V.

2. **Andy Carson**
Sustainable Construction Technology Instructor
Title – Instructor
Length of Service – 1 year
Courses Taught: MAIN 30, MAIN 60, ELEC 20, ELEC 23,
ENRG 101, ENRG 102, ENRG 103, ENRG 104.

PART TIME FACULTY

1. **Mark Morimoto**
Title: Lecturer
Length of Service: 10+ years
Course taught: Welding 19B, 19C, and 19D
Branch Manager of Airgas Gaspro

2. Patricia Inman
Title: Lecturer
Number of semesters taught: 2
Course taught: AEC 80, AEC 110
Rhode Island School of Design
Bachelor of Architecture

3. **Norm Ham**
Title: Lecturer
Length of Service: 5 years
Course taught: Main 65 Air Condition/refrig
Owner: Norm's Appliance and Repair

4. Construction Academy Instructors
David Techau: BLPR 22
Clifford Rutherford: ENRG 103, 193V summer course
Phil Johnson: ENRG 101 summer course

11. Student/Faculty ratio 19.5

12. Numbers of majors per FTE faculty: 31.9

13. Program budget allocation: n/a

14. Cost per student per hour: n/a

15. Number of classes enroll less than 10 students: 3

16. Determination of program's health base on efficiency: **Healthy**

Effectiveness

17. Persistence of majors fall to spring
Persistence measures the number of SCT majors who continue from the fall semester to the spring. The persistence rate for the SCT Program increased to 65.00 for academic year 2009-10.

Year	F2005	F2006	F2007	F2008	2009-10
Persistence of majors	n/a	n/a	72%	57%	65%

18. Number of degrees and certificates earned (annual)

Year	S2006	S2007	S2008	S2009	2009- 10
Certificates and degrees earned	5	32	36	48	51

19. Number of students transferred to a four-year institution

Year	2006	2007	2008	2009	2010
Number transferring to UHM, UHH, UHWO	N/A	N/A	4	N/A	1

21-27 Distance Education: 2008- 09 one (1) class was taught with 21 students on-line.

Perkins Core Indicators

28. 1P1 Technical Skills Attainment: 80% the goal is 90%
This performance measures the number SCT majors who successfully completed their academic skills and vocational courses with a C or better.

Year	2005- 06	2006- 07	2007- 08	2008- 09	2009- 10
1P1	N/A	N/A	N/A	100.00	80.00

29. Completion rate (2P1): 46.67%
The standard is 44.00%. The SCT Program continues to address the performance in the areas of 1P1 and 2P1, while continuing to address the students' need in the area of academic and remedial challenges. A high number of students enrolled in the program are not completing the general education credits, making these students unsuccessful in meeting their graduating requirements. The program changes have grown out of a desire to reflect the change in construction throughout the nation, as students in SCT are facing academic and remedial challenges.

30. Student Retention or Transfer (3P1): 63.64%

31. Student Placement (4P1): 87.50%

32. Nontraditional Participation (5P1): 15.66%

33. Nontraditional Completion (5P2): 27.27%

Determination of program's health base on effectiveness: **Cautionary**

II. Assessment of Student Learning

Program Learning Outcomes

A. Use appropriate materials, tools equipment and procedures to carry out tasks performed on construction projects according to safety and industry standards.

B. Use math skills to solve problems related to construction plans and processes.

C. Introducing the requirements of the Green Building certification program. To include, waste stream management, locally developed energy sources, renewable sustainable materials and resources.

D. Gain knowledge of how to implement the sustainable living practices of the host Hawaiian culture.

Map of Program Learning Outcomes by Course

	PLO 1	PLO2	PLO3	PLO4
AEC 80	X	X	X	X
BLPR 22	X	X	X	X
CARP 20	X	X	X	X
CARP 41	X	X	X	X
CARP 42	X	X	X	X
CARP 43	X	X	X	X
CARP 44	X	X	X	X
ELEC 20	X	X	X	X
ELEC 23	X	X	X	X
ENRG 101	X	X	X	X
ENRG 102	X	X	X	X
ENRG 103	X	X	X	X
ENRG 193V	X	X	X	X
IEDB 20	X	X	X	X
MAIN 20	X	X	X	X
MAIN 30	X	X	X	X
MAIN 40	X	X	X	X
MAIN 50	X	X	X	X
MAIN 60	X	X	X	X

MAIN 65	X	X	X	X
MAIN 70	X	X	X	X

Assessment Plan

To be assessed each year of the program review cycle. Identify the learning outcomes by number.

Timetable

	F2010	**S2011**	**F2011**	**S2012**	**F2012**	**S2013**	**F2013**	**S2014**
PLO 1				CARP 20				ELEC 23
PLO 2	MAIN 20				MAIN 50			
PLO 3		ELEC 20				ENRG 103		
PLO 4			ENRG 101				CARP 43	

III. Evidence

Program Assessment Rubric for CARP 20 Spring 2010

PLO 1: Use appropriate materials, tools equipment and procedures to carry out tasks performed on construction projects according to safety and industry standards.

	Exceeds	**Meets**	**Needs Improvement**	**No Proficiency**
Student Learning Outcome				
Identify work hazards and materials, and using safe practices.	94%			6%
Describe and select the safe use of hand and power tools.	94%			6%
Describe, select and install the proper anchors, fasteners, and adhesives.	82%	6%	6%	6%
Perform estimating and take-off quantities for simple projects.	82%	6%	6%	6%
Follow and apply all national and local building codes.		X		
To be able to orally communicate, to customer, management, and other technicians.		X		
Average SLO Score for the Course	90%	2%	2%	9%

3. Analysis of data:

- 1 student did not complete the course
- 1 student did very minimal work and did not meet expectations

Students needed to pass the general safety test with a 100% score to move into the hands-on portion. Those that did not pass were allowed to take the test again until they pass with a 100% score.
The hands-on skills portion the students need to identify hand and power tools and demonstrate how to use the tools safely.

Course improvement based on analysis:

The greatest challenge for students who attended class to have benefited from the curriculum was working as respectful members of a team. Those that advance faster than others were able to demonstrate the willingness to help their fellow student.

4. <u>Planned Changes</u>

Overall the Sustainable Construction Technology (SCT) hovers at being unhealthy. During the past year the economy had a downturn in job opportunity. The challenge is to increase persistence that will result an increase in the number of graduates. This will put the students in a better position when the economy starts to return to recovery. Another growing problem the SCT face was switching the old program Sustainable Tech to Sustainable Construction Technology program.

Nontraditional participation and completion remain below the standards but may well be related to potential students needs to place employment over college to stabilize family finances. The program changes have grown out of a desire to reflect the change in construction throughout the nation, as students in SCT are facing academic and remedial challenges.

In the area of completion, instructors and counselors have aggressively worked with students to move them through the “paper process” of applying for their degrees and certificates. The instructors and counselors help students complete their graduation requirements by doing continued monitoring and tracking of students for classes.

The Sustainable Construction Technology has been actively involved with student recruitment. To provide the pathway from high school to employment, the UHMC faculty and the Construction Academy instructors, have participated in job and career fairs at the high schools and on the UHMC campus to market our program and the profession.

Since the change of faculty and lecture members in the Sustainable Construction Technology, we lack the cohesiveness as a unit. The focus has been put on meeting the demand of classes for the students to meet the requirements toward their degree.
Updated PLO's have been developed, and were reviewed and approved by the Advisory Committee members. So the individual courses, assessment tools (rubrics and scoring guides) have been developed to properly assess student's achievements of the student learning outcomes at both the course and program level for the Fall 2010 semester. We're looking forward for better results of this assessment process; our teaching pedagogy should improve to focus on student learning outcomes and the assessment of those outcomes. Student achievement, retention, and completion will be improved.

IV. Action Plan

To address the challenges and opportunities as well as building on the strengths of the program, the SCT faculty will

- Focus on retention and persistence without sacrificing rigor by
- Actively participating in program student advising
- Using program and course assessments to focus on student learning
- Using assessment to better assist the student in learning and then adjust our teaching and assessment methods to improve learning outcomes

Meet industry and students needs by

- Continuing to evaluate curriculum and revise the program as necessary to meet industry standards. Such as National American Home Builders certification, and LEED certification
- Continuing to articulate with other UHCC and DOE schools throughout Hawaii to facilitate transfer for sustainable construction technology and construction academy students
- Fall 2010 begin the process of system-wide PLO's and SLO's
- Continuing to improve student's job skills to meet community needs
- Continuing to research, examine and include new software, and general safety videos
- Continuing to research the latest tools and materials in the industry
- Continuing to offer classes in the evening to meet the needs of the employed community
- Offer more long distance learning courses to Hana, Molokai' and Lanai'

Resource Implications

Upon completion of changing the roofs of all Vo-Tech buildings, instructors are in the process of clearing old equipment and materials that has been stored from the previous faculty instructors.

- The carpentry building currently is adding a mezzanine, which is being built by CARP 43 students. This will give more storage and enclose the tool room for added security, also from bird droppings. The materials cost is$2300.
- Carpentry shop needs an industrialize planer (20 inch) preferably ($4,000), this will help to open the carpentry shop to Vi-Tech classes and Hawaiian history surfboard making.
- Demonstration kiosk display for plumbing, carpentry, and electrical.
- Maintenance building needs new flooring (wood) in the display area of the PV monitors. The CARP students will install the material to gain better skills. Estimate around $1,000 for the materials.
- Other equipment needs will be reviewed on a regular basis and purchase as needed.

Appendices

- Program Health Indicators (PHI) and Perkins Indicators
- PLO's and SLO's
- Program Map
- Sustainable Advisory Committee
- Construction Academy Report

Overall Program Health: Cautionary

Majors Included: BLMP,CARP,ENGY

	Demand Indicators	Academic Year 08-09	Academic Year 09-10	Demand Health Call
1	New & Replacement Positions (State)	396	19	
2	New & Replacement Positions (County Prorated)	56	3	
3	Number of Majors	58	102	
4	SSH Program Majors in Program Classes	435	1,134	**Unhealthy**
5	SSH Non-Majors in Program Classes	468	590	
6	SSH in All Program Classes	903	1,724	
7	FTE Enrollment in Program Classes	30	57	
8	Total Number of Classes Taught	28	37	

	Efficiency Indicators	Academic Year 08-09	Academic Year 09-10	Efficiency Health Call
9	Average Class Size	14.9	19.5	
10	Fill Rate	85%	100%	
11	FTE BOR Appointed Faculty	6	9	
12	Majors to FTE BOR Appointed Faculty	9.7	11.3	
13	Majors to Analytic FTE Faculty	26.1	31.9	
13a	Analytic FTE Faculty	2.2	3.2	
14	Overall Program Budget Allocation	Not Yet Reported	Not Yet Reported	**Healthy**
14a	General Funded Budget Allocation	Not Yet Reported	Not Yet Reported	
14b	Special/Federal Budget Allocation	Not Yet Reported	Not Yet Reported	
15	Cost per SSH	Not Yet Reported	Not Yet Reported	
16	Number of Low-Enrolled (<10) Classes	5	3	

	Effectiveness Indicators	Academic Year 08-09	Academic Year 09-10	Effectiveness Health Call
17	Successful Completion (Equivalent C or Higher)	73%	75%	**Cautionary**
18	Withdrawals (Grade = W)	35	29	
19	Persistence (Fall to Spring)	57%	65%	
20	Unduplicated Degrees/Certificates Awarded	42	48	

20a	Degrees Awarded	2	3
20b	Certificates of Achievement Awarded	4	0
20c	Academic Subject Certificates Awarded	0	0
20d	Other Certificates Awarded	78	70
21	Transfers to UH 4-yr	0	1
21a	Transfers with credential from program	0	0
21b	Transfers without credential from program	0	1

	Distance Education: Completely On-line Classes	**Academic Year 08-09**	**09-10**
22	Number of Distance Education Classes Taught	1	0
23	Enrollment Distance Education Classes	21	0
24	Fill Rate	100%	0%
25	Successful Completion (Equivalent C or Higher)	76%	0%
26	Withdrawals (Grade = W)	2	0
27	Persistence (Fall to Spring Not Limited to Distance Education)	0%	0%

	Perkins IV Core Indicators 2008-2009	**Goal**	**Actual**	**Met**
28	1P1 Technical Skills Attainment	90.00	80.00	Not Met
29	2P1 Completion	44.00	46.67	Met
30	3P1 Student Retention or Transfer	55.00	63.64	Met
31	4P1 Student Placement	50.00	87.50	Met
32	5P1 Nontraditional Participation	16.00	15.66	Not Met
33	5P2 Nontraditional Completion	15.25	27.27	Met

Program Learning Outcomes

A. Use appropriate materials, tools equipment and procedures to carry out tasks performed on construction projects according to safety and industry standards.

B. Use math skills to solve problems related to construction plans and processes.

C. Introducing the requirements of the Green Building certification program. To include, waste stream management, locally developed energy sources, renewable sustainable materials and resources.

D. Gain knowledge of how to implement the sustainable living practices of the host Hawaiian culture.

Student Learning Outcomes of the program

a. Upon completion of the Sustainable Construction Technology Program, (A.A.S.) students will be able to:

- Identify personal strategies for connecting with the people being served.
- Identify work hazards and materials and use safe practices.
- Describe and select the safe way to use hand and power tools.
- Describe, select, and install the proper anchors, fasteners, and adhesives necessary for a specific project.
- Describe the difference between AC and DC currents.
- Describe and understand operation and functions of emergency circuits.
- Calculate electrical load by using Ohm's law.
- Describe and construct framing components.
- Perform interior and exterior carpentry.
- Perform estimating and take-off quantities for simple projects.
- Identify and select proper paint finishes.
- Apply paint using brush and roller.
- Identify and select proper type of piping for plumbing.
- Identify and select proper type of fitting for plumbing.
- Install and repair plumbing fixtures and connections to job specifications.
- Assemble and fabricate plumbing pipes and fittings to job specifications.
- Identify renewable energies (solar water, photovoltaic, wind, wave, …etc.).
- Identify green building materials.

Program/Certificate/Degree Standards, Student Learning Outcomes (SLOs)

1. See http://mauicc.hawaii.edu/http://mauicc.hawaii.edu/catalog/

Requirements for Certificate of Competence (Cert.Co.):

- Basic Carpentry Skills: 6 credits**:** CARP 20 (3), BLPR 22 (3)
- Rough and Finish Carpentry: 8 credits: CARP41 (3), 43 (3), 193V (2)
- Basic Drafting Skills: 6 credits: BLPR 22 (3), AEC 80 (3),
- ENRG PRODUCTION: 6 credits: ENRG 101 (3), 103 (3)
- Safety: 2 credits: OSH 20 (1), HLTH 31 (1)
- Electrical Maintenance: 5 credits: ELEC 20 (3), 23 (2)
- Maintenance Painting: 4 credits: MAIN 20 (2), 40 (20
- Small Equipment Repair: 6 credits: ELEC 23 (2), MAIN 20 (2), 60 (2)
- Maintenance Plumbing: 4 credits: MAIN 20 (2), 50 (2)
- Welding for Trades: 3 credits: WELD 19B, 19D

1. Certificate of Completion in Introductory Sustainable Construction Technology :

16 credits

CARP 20 (3), MAIN 20 (2), ENRG 101 (3), ELEC 20 (3), OSH 20 (1), HLTH (1), MATH 50 (3)

3. **Certificate of Achievement in Sustainable Construction Technology:**

33 credits

Includes all coursework in the first and second semesters listed below.

4. **Requirements for Associate in Applied Science (A.A.S.) Degree: 64-67 credits**

CARP 20 (3), 41 (3), 43 (3)
ELEC 20 (3), 23 (2)
MATH 50T (2), 50Y (1)
AEC 80 (3)
COM 130/BUS 130 (3), COM 145, or Speech 151 (3)
HLTH 31 (1)
COOP 193V (2)
Technical Electives: MAIN 65 (2), IEBD 20 (3)
CARP 42 (3), or other courses within the program:
ELEC, ENRG, MAIN, CARP, BLPR, AEC

MAIN 20 (2), 30 (2), 40 (2), 50 (2), 60 (2), 70 (2)
ENRG 101 (3), 103 (3)
WELD 19B(1), 19D (1)
BLPR 22 (3)

OSH 20 (1)
Elective Natural Science (3)
Elective Social Science (3)
Elective Humanities (3)
ENG 55 (3) or ENG 22 (3)

Advisory Committee:

The Sustainable Construction Technology (SCT) Advisory Committee includes two union representatives, a Maui CC staff member, two architects, two green energy consultants, and various owners and workers in the construction industry. The purpose of this committee is to advise the SCT program on the sustainable construction industry needs in the community and to guide the program towards fulfilling those needs.

The following are SCT program advisory committee members:

Bruce UU	Carpenters Union
Ray Shimabukuro	Electrical Union
Marvin Tengan	Maui CC Apprenticeship
Gerald Hiyakumoto	Hiyakumoto Architects Inc.
Earl Kono	Riecke Sunnland Kono Architects
Leo Caires	Maui Energy Co
Jennifer Stites	Dowling Co/ Green Development
Hilton Unemori	ECM Inc.
Ken Ota	Irrigation Systems Inc.
Ryan Ouye	Service Rentals & Supplies
Jim Riley	Developer
Juno Comilang	Miyake Concrete Accessories Inc

Maui College

The Maui College Construction Academy (CA) program, now in its fifth year, serves students in the seven high schools located on Maui, Molokai, and Lanai. Enrollment in the program has grown, from 382 in school year 2009-10 to 389 in 2011. Even with the challenges of the Department of Education (DOE) furloughs, reductions, and restructuring of classes, the Construction Academy continues to thrive on three islands of Maui County. The following are some of the accomplishments of the past year, made possible by continued legislative funding of the program:

- Students in all seven Maui County high schools completed projects in their classes according to professional guidelines and Construction Academy curriculum requirements. The projects included renovation of outer island faculty/staff housing in conjunction with the Department of Accounting and General Services (DAGS); professionally detailed playhouses that were donated to childcare centers; sturdy benches for county parks; a covered pergola for student use; shelters for a local animal rescue organization; and a number of other structures completed for various worthwhile purposes. In the summer of 2010 many Construction Academy students participated in summer building and construction projects, funded through government stimulus programs. As they carried out the projects, students gained hands-on practice in professional construction skills as well as in reading, writing, mathematics, communication, and teamwork.
- Sixteen 2010 high school seniors who had taken part in the Construction Academy Program enrolled at Maui College in fall 2010. In reformatting tracking information, it was realized that not all students take Construction Academy aligned classes in their senior year. Updated information indicates that thirty students, enrolled in DOE/ Maui College Construction Academy classes from the 2006-2007 through 2009-2010 school years, attended New Student Orientation at Maui College in the fall of 2010. Through verbal communication with Construction Academy students, the staff has learned that many of the students are pursuing post secondary and four year degrees throughout The University of Hawaii System, as well as Architectural and Engineering degrees abroad. Improved tracking of these students is being implemented.

- Renewable and sustainable energy practices, e.g., solar thermal hot water, photovoltaic energy, and wind power, were incorporated in all aspects of the educational programs.
- Instructors introduce aspects of green building to the students, focusing on the requirements contained in the National Association of Home Builders (NAHB) "*National Green Building Standards*" as well as the requirements of the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) certifications, related to green building.
- Informational and planning meetings were held with Maui County DOE teachers, principals, and CTE coordinators.
- Maui College Construction Academy faculty worked with high school teachers to consistently implement the articulated curriculum.
- CA faculty members received training, received certifications and conducted workshops on safety, green design, and sustainability in the construction industry.
- Construction Academy faculty were guest speakers at events such as the 2010 Hawaii Science, Technology, Engineering and Math (STEM) Conference, facilitating the introduction and guidance of students to the CA program, as well as the possibilities of post secondary education and training in the construction, engineering and alternative energy trades.
- The Construction Academy counselor has regularly visited all seven high schools, making presentations in individual CA classes, assisting students with academic planning and goal setting, and answering questions about such things as financial aid, skills testing, and student housing.
- Portfolios were printed, assembled, and distributed to participating high school students for use as part of the assessment practices for the program's student learning outcomes.
- Construction Academy students participated in shadowing programs at Maui College during DOE breaks, improving the students' awareness and understanding of post secondary programs at Maui College.
- All Maui College Construction Academy positions funded by the State Legislature in 2006 remain filled by qualified personnel:

	FTE Position Allocated	FTE Position Filled
Home-based Instructors	4	4
Traveling teacher	1	1
Clerical	1	1
Counselor	1	1

Although three of the high schools are located far from the main Maui College's Kahului campus and must be reached by plane (Moloka'i), boat (Lana'i), or a long automobile trip over a winding road (Hana), their programs are thriving. Construction Academy instructors' present classes that are designed to meet the needs of the individual communities, and all classes are taught according to the professional standards in the articulation agreement.

The close, cooperative relationship between Construction Academy instructors and Sustainable Construction Technologies instructors at Maui College continues to benefit both of the programs and the students, maintaining articulation and promoting post secondary education.

Maui County High School 2010-11 Registration in Construction Academy programs:

	TIU5800 (B&C 1)	TIN5814 (B&C 2)	TIL5100BC (B&C3)	TIK5930BC (B&C4)	TIU5310 (Draft1)	TIN5320 (Draft2)	TIL5100DT (Draft3)	TIK5930DT (Draft4)	Female (B&C)	Female (Drafting)	Spec Educa
Baldwin	70	28			24				8	7	8
Hana	6	1							1		4
King Kekaulike	18	10			11				7	3	5
Lahainaluna	24	3	2	1	29	33	1	4	4	19	8
Lana'i	20	10				1			2		1
Maui High	49	20							3		1
Moloka'i	10	2			3				1		2
Total	197	74	2	1	67	43	1	4			
Total CA Students	389										