UNIVERSITY OF HAWAI'I SYSTEM ANNUAL REPORT



REPORT TO THE 2015 LEGISLATURE

Annual Report on The Construction Academy Curriculum

HRS 304A-1144

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THE CONSTRUCTION INITIATIVE BACKGROUND

The Construction Academy began in 2004 with a \$1.4 million grant from the U.S. Department of Labor. This grant started as a pilot program whereby the University of Hawai'i's Honolulu Community College (HCC) partnered with eight Department of Education high schools on Oʻahu—Kahuku, Kailua, McKinley, Mililani, Pearl City, Radford, Waipahu, and Waialua—to prepare high school students with the technical, academic, and employability skills necessary to pursue a career in the construction industry. The initial results of this federally-funded academy model displayed such great potential that in late 2005 many associated with education and construction felt it warranted expansion.

By late 2005, the construction and building industry found itself in a dire situation. Construction projects and developments could move no faster unless there were more qualified workers for the job sites. In late 2005, the industry approached HCC to request its assistance in educating and training a greater number of qualified construction workers. In a true industry-education partnership, HCC, with its experience in the pilot Construction Academy as well as its long history in Apprenticeship Training, developed a comprehensive proposal (the "Construction Initiative") that encompassed both high school education (Construction Academy) and post-high school career training (Apprenticeship).

In session 2006, the Hawai'i State Legislature passed Senate Bill 2980 SD2, HD1, CD1, which appropriated \$5.4 million to expand the Construction Academy to other public high schools on O'ahu as well as on the islands of Kaua'i, Maui, and Hawai'i, and to increase Apprenticeship Training at Honolulu, Hawai'i, Kaua'i, and Maui Community Colleges.

THE CONSTRUCTION ACADEMY

From servicing over 200 students at 8 pilot schools during the 2005–2006 academic year, the Construction Academy had grown to a capacity of over 2000 students in 35 high schools statewide, in academic year 2010-11. However, due to very low matriculation of students to Maui College and budgetary factors, Maui College decided to discontinue the Construction Academy program beginning in the 2012 academic year. With the reduced participation of 9 Maui High Schools, 2013 academic year total student participation was 1,534 at 26 high schools statewide, a 4.9% reduction in overall state enrollment. Partnerships between the remaining College campuses and the local high schools remain strong. Matriculation to local Community Colleges is strong. Over half of the students in Hawai'i Community College's first year carpentry students are Construction Academy participants. Of the 500 seniors serviced by the Honolulu Community College's Construction Academy program, 207 (57.6%) were admitted to a University of Hawai'i (UH) System campus after graduating high school. Of the 207 students, 43.8% were admitted to Honolulu Community College.

Participating High Schools

Hawai'i Community College		Honolulu Community College		Kaua'i Community College
Honoka`a	Konawaena	Campbell	McKinley	Kapa`a
Ka`ū	Laupahoehoe	Farrington	Nānākuli	Kaua`i
Kea`au	Pahoa	Kaimuki	Pearl City	Waimea
Kealakehe	Waiakea	Kahuku	Radford	
Kohala		Kapolei	Roosevelt	
		Leilehua	Wai`anae	
		Mililani	Waipahu	
Enrollment:	278	Enrollment:	1,233	Enrollment: 103

The statewide implementation of the Construction Academy model continues to build and strengthen their relationships with the high schools and the community. Remaining flexible to the individual needs of each high school and its surrounding communities remains an essential element of implementation.

Students participating in the Construction Academy Program are able to:

- Make informed career choices regarding potential employment in the construction industry.
- Exhibit an understanding of employment expectations in the construction Industry.

Each campus works with their respective administration to assure that the program is part of the campus program review process to inform the campus on its progress. All participating campuses agreed to continue with the current articulation agreements until a new agreement is drafted and approved. A brief description of the progress being made by each community college campus is provided in the appendices of this report.

APPRENTICESHIP

The second component of the Construction Initiative is focused on improving and expanding apprenticeship training. The University of Hawai'i Community Colleges currently administers the Related Instruction component of apprenticeship training for most of the non-union and union construction industry apprenticeship programs. Apprenticeship training is undeniably an expensive endeavor that can strain campuses' budgets and tax facilities and equipment. To meet the building industry's on-going need for high quality training, the Colleges' apprenticeship programs must have access to adequate resources and services. The general fund appropriations received included allocations for support staff, lectureship costs and supplies and equipment.

Position:

	FTE Position Allocated	FTE Position Filled
Administrative Profession Technical	1	1

The Assistant Registrar who was hired in Fall 2008 and whose primary responsibility is recordkeeping for the apprenticeship program continued to provide much needed assistance with attendance records, grades and in generating reports such as cumulative earned hours that are used by apprenticeship coordinators to track their students. She also helped with registration and the resolution of problems that arose in this process. For example, she addressed problems that were encountered by apprentices who paid their tuition online via the MyUH Portal (which the College encourages) alerting the Business Office of the need to redirect payments which were made in the wrong term and providing apprentices with instruction on navigating within the Portal site. Additionally, she took on the responsibility of directly servicing our many apprenticeship training affiliates in matters related to registration, student records and special requests for data. Finally, she continued to fine-tune the process and schedule for purging apprentices for non-payment of tuition and the result has been more accurate class rosters and the elimination of unnecessary charges or financial obligations for students. As reported earlier, the other campuses have much fewer apprentices so their appropriations did not include funds for additional positions. The Apprenticeship Offices at these colleges have had to obtain support from other departments on their campuses.

The funds earmarked for lectureship costs helped the College employ a staff of approximately 170 instructors. During the past academic year, wages for approximately 20,534 instructor hours (532 apprenticeship classes) were paid with these funds. Maui College also received an allotment for lectureship with which they paid wages for approximately 3328 instructor hours (43 apprenticeship classes). The other campuses did not receive allocations for lectureship so instructors' payroll had to be funded from other sources.

Despite the downward trend in the last few years, as compared to a decade ago, apprenticeship enrollments remained elevated at the College this past year and are expected to increase in the current academic year. At this point in the Fall 2014 semester, with several weeks still remaining in the term, enrollment is already beyond 1,400. Some programs register students in short-term classes through mid-December so the student count will increase over the next few weeks. In Spring 2015, the College should also experience an increase in apprenticeship enrollments because there have been solid indications of a resurgence in the building industry after the start of the new year (as reported by different training programs and the media), several trade apprenticeship programs recently conducted recruitments and the College and Workforce Development Office are reviewing requests from several sponsors for approval to create their own programs.

Shop equipment realized considerable wear and tear and materials and supplies were a large expense. The Colleges continued to use their allocations to replace old equipment and tools, purchase new types of equipment to keep pace with technology and replenish shop supplies and materials. This annual funding enabled the Colleges to replace some of their outdated and/or unsafe equipment and purchase different kinds of equipment that programs utilized to expand the scope of their training.

In summary, with the continued funding, the University of Hawai'i Community College
Apprenticeship Offices were able to satisfactorily meet the training needs of their trade programs.
The Assistant Registrar at Honolulu Community College continued to work to ensure the accuracy and integrity of apprenticeship records and to improve data gathering and dissemination procedures.
The funding for lectureship costs helped the College fund our very full schedules of classes.
Allocations for supplies and materials enabled the Colleges to at least partially restock shop consumables that constitute substantial and growing expenses as the costs of materials continue to

increase dramatically. Departments were also able purchase equipment and tools to replace old, outdated and/or unsafe models and different types of equipment that were earlier not available for training.	

APPENDIX

HAWAI'I COMMUNITY COLLEGE (HawCC)

Enrollment at Participating High Schools

(Honoka'a, Ka'ū, Kea'au, Kealakehe, Kohala, Konawaena, Laupahoehoe, Pahoa, and Waiakea High Schools)

School Year	11-12	12-13	13-14
Participating High Schools	9	9	9
Building & Construction 1	246	144	146
Building & Construction 2	89	87	61
Mechanical Drawing	0	0	0
Drafting Technology 1	47	63	61
Drafting Technology 2		1	14
Total	382	293	278

Construction Academy classes on the island of Hawai'i are offered at nine high schools. Enrollment seems to be stabilizing from 2012-13 to 2013-14. While decreases occurred in most areas taught by the program, there was an overall decrease of only 5%. Graduates of the Construction Academy marticulate to the UHCC Community College system and apprenticeship programs, fulfilling the vision of the program. Construction Academy alumni are enrolled in a variety of programs at the college. In fact, for the 2013-2014 academic year, 9 of the 15 students enrolled in Hawai'i Community College's first year carpentry program are graduates of the Construction Academy.

Safety, math, and construction terminology continue to be priorities of the program and are consummated with hands-on learning. Construction Academy faculty have articulated student learning outcomes and assessments with the Carpentry program at Hawai'i Community College.

The Construction Academy has home-based instructors in nine high schools. The Academy has 7.5 FTE instructors in non-tenure track positions and .5 (Honoka'a) casual hire. We have hired a FTE instructor for Kohala High starting Fall 2013.

The Construction Academy program has been well-received by Hawai'i Island high schools since its inception. Hawai'i Community College continues to foster these relationships and build new ones. Construction Academy personnel continue to recruit students and expand offerings, promoting the idea that the skills learned through the Academy will benefit students throughout their life, regardless of their career choice. Our Construction Academy faculty are valued members of the high schools where they teach. As instructors they provide high quality educational experiences, promoting skill development in both technical and academic areas. As community college faculty, they introduce post-secondary education to individuals who might otherwise never consider going to college. They provide school and community service, are engaged in college activities, and seek out professional development opportunities. They share their construction expertise, assisting with special projects when appropriate. They make the schools they serve a better place. They change lives for the better.

Scope of Service for the 2013–2014 School Year

For the 2013–2014 school year, the Honolulu CC Construction Academy offered three Department of Education courses at 16 O'ahu high schools—Aiea, Campbell, Farrington, Kahuku, Kaimuki, Kalaheo, Kapolei, Leilehua, McKinley, Mililani, Nānākuli, Pearl City, Radford, Roosevelt, Wai'anae, and Waipahu.

Of the 1,233 students that were serviced, 776 (62.9%) of the students were enrolled in Building & Construction Technology 1; 271 (22.0%) in Building & Construction Technology 2; and 186 (15.1%) in Design Technology 1 (Table 1).

Table 1. Course Enrollment—Number of Students Serviced by Course

Course Name	Student Count	%
Building & Construction Technology 1	776	62.9%
Building & Construction Technology 2	271	22.0%
Design Technology 1	186	15.1%
TOTAL	1233	100.0%

The program had a gender demographic of 148 (12.0%) females and 1,085 (88.0%) male (Table 2).

Table 2. Student Demographics—Gender

Gender	Student Count	0/0
Female	148	12.0%
Male	1,085	88.0%
TOTAL	1,233	100.0%

Matriculation of Students into the UH System

Over three quarters (75.6%) of the students serviced were juniors and seniors (*Table 3*).

Table 3. Student Demographics—Gender

Grade Level	Student Count	0/0
9	79	6.4%
10	222	18.0%
11	432	35.0%
12	500	40.6%
TOTAL	1233	100.0%

Of the 500 seniors serviced by the Academy, 288 (57.6%) were admitted to a University of Hawai'i (UH) System campus after graduating high school; 126 (43.8%) of those students were admitted to Honolulu CC (*Table 4*).

<u>Table 4. Matriculation of CNAC Students into the UH System</u>
Number of Students Who Matriculated into the UH System by Campus*

UH Campus	Student Count	0/0
Hawai'i CC	2	0.7%
Honolulu CC	126	43.8%
Kapiʻolani CC	31	10.8%
Leeward CC	94	32.6%
UH Mānoa	19	6.6%
UH West Oʻahu	8	2.8%
Windward CC	8	2.8%
TOTAL	288	100.1%

*Students who matriculated into the UH System were defined as seniors who were admitted to a UH Campus after graduating from high school (Summer 2014, Fall 2014, or Spring 2015).

Two hundred eighty students identified a field of study (eight students are *unclassified* or *undeclared*) among 37 majors (*Table 5*). Of these 280 students, 64 (22.4%) chose to major in a construction-related field.

<u>Table 5. Matriculation of CNAC Students into the UH System</u> Number of Students Who Matriculated into the UH System by Major*

Student Majors	Student Count	0/0
Administration of Justice	3	1.0%
Aeronautics Maintenance Technology	8	2.8%
Architectural, Engineering, and CAD Technologies	9	3.1%
Auto Body Repair and Painting	10	3.5%
Automotive Technology	46	16.0%
Business Technology	2	0.7%
Carpentry Technology	12	4.2%
Computing, Electronics, and Networking Technology	7	2.4%
Computer Engineering	1	0.3%
Computer Science	1	0.3%
Construction Management	1	0.3%
Cosmetology	1	0.3%
Culinary Arts	9	3.1%
Diesel Mechanics	1	0.3%
Early Childhood Education	1	0.3%
Electrical Engineering	5	1.7%
Electrical Installation & Maintenance Technology	11	3.8%
Fire & Environmental Emergency Response	11	3.8%
General Arts & Sciences	4	1.4%
General-Undeclared	6	2.1%
Hawaiian Studies	1	0.3%
Hospitality and Tourism	2	0.7%
Information & Computer Sciences	4	1.4%
Liberal Arts	92	31.9%
Management	2	0.7%
Mechanical Engineering	1	0.3%
Music & Entertainment Learning Experience	1	0.3%
Natural ScienceLife Science	4	1.4%
Natural SciencePhysical Science	1	0.3%
Natural SciencePre-Engineering	6	2.1%
Nursing	1	0.3%
Political Science	1	0.3%
Pre-Engineering	6	2.1%
Public Administration	1	0.3%
Refrigeration & Air Conditioning Technology	6	2.1%
Sheet Metal and Plastics Technology	5	1.7%
Social Science	1	0.3%
Unclassified	2	0.7%
Welding Technology	2	0.7%
TOTAL	288	99.30%

*Students who matriculated into the UH System were defined as seniors who were admitted to a UH Campus after graduating from high school (Summer 2014, Fall 2014, or Spring 2015).

Construction-Related Majors

Table 6 lists the degrees and certificates sought by the students who matriculated into the UH System. Of 288 students, 8.3% are pursuing *certificates*, 81.6% *associate* degrees, and 7.3% *bachelor's* degrees.

Table 6. Matriculation of CNAC Students into the UH System Number of Students Who Matriculated into the UH System by Degree & Certificate Sought*

Degree/Certificate	Student Count	%
Associate of Arts	93	32.3%
Associate in Applied Science	92	31.9%
Associate in Science	50	17.4%
Bachelor of Arts	7	2.4%
Bachelor of Science	14	4.9%
Certificate of Achievement	21	7.3%
Certificate of Completion	3	1.0%
Non-Degree	2	0.7%
Undeclared	6	2.1%
TOTAL	288	100.0%

Summer Program 2014

The Honolulu CC Construction Academy held its 2014 Summer Program from June 9, 2014 through July 9, 2014. The Summer Program engages high school students, who will be entering grades 10–12 and recent 2014 graduates, in hands-on activities that will give them insight to the careers, educational pathways, and opportunities available in various facets of the construction industry.

First-time Summer Program students participated in *Exploring the Trades* which exposed them to five industry specialties (architectural, engineering, and CAD technologies; carpentry; sheet metal; small vessel fabrication and repair; and welding). For five weeks, *Exploring the Trades* students spent four days learning about each trade where they learned about tools and shop safety; tools, equipment, and material identification; and trade-specific techniques that are used in the industry.

Returning Summer Program students enhanced the construction skills they acquired last year through more in-depth and advanced instruction in carpentry, drywall, and welding.

This summer, 72 students (84.7%) were enrolled in Exploring the Trades; and 13 (15.3%) in Advanced Carpentry, Drywall, and Welding.

Content area instruction was facilitated by Honolulu CC faculty who specialize in each trade. Where available, Honolulu CC faculty who regularly teach on campus were utilized as the content area instructors. This proved to be advantageous for both the program faculty and the students because: 1) they were able to develop instructor-student relationships; 2) students learned about the program from the actual (Honolulu CC) program instructor; and 3) the program faculty were able to personally promote their programs and trades to a captured audience.

To help students develop an identity with fellow students and faculty, students were grouped into cohorts and assigned to a Honolulu CC instructor who served as their "mentor" throughout the course of the program.

The Honolulu CC Job Placement Coordinator also engaged Construction Academy Summer Program students in workshops focused on appropriate business etiquette while highlighting employability skills that are typically valued by employers. They also learned about on- and off-campus employment resources available to Honolulu CC students.

Each of the 2014 high school graduates also met individually with an *Outreach/Admissions Specialist* who helped them take the next step in making their post-high career or educational goals a reality.

The objectives of the Honolulu CC Construction Academy Summer Program are to:

- 1. **Engage Student Learning:** Offer students a learning opportunity where they can experience applied instruction in various construction-related fields.
- 2. **Build Relationships:** Develop relationships with participants to aid in the matriculation of students into the UH System, particularly Honolulu CC.
- 3. Offer Professional Development Opportunities: Due to the distribution of instructors at various high schools on O'ahu and the variance in school schedules, it is difficult to offer professional development opportunities during the school year to Honolulu CC Construction Academy instructors. Through this summer program, "mentor" instructors rotate through each trade along with their assigned cohort. This allows them to refresh their knowledge about each trade, learn about the program offerings at Honolulu CC, and observe various instructional styles or ways of presenting curriculum all while servicing the summer program participants.

The 2014 Summer Program afforded 85 high school students from various public and private high schools on O'ahu the opportunity to learn about the construction industry. Of these students, 30 (35.3%) were 2014 high school graduates; 10 students (11.8%) were female; and 35 students (41.2%) were of Native Hawaiian descent.

Twenty-two (73.3%) program participants who recently graduated high school were admitted into the University of Hawai'i System during the Fall 2014 semester; of the students who matriculated into the University of Hawai'i System, 18 students (81.8%) were admitted to Honolulu CC.

KAUA'I COMMUNITY COLLEGE

2014 Construction Academy Report

Participation:

The forecast student enrollment for the high schools on Kaua'i totals 178 students from our three high schools. In the Building and Construction courses the total number of students is 122 and 66 students are seeking the college credit offered as they have indicated that they will be seeking college enrollment. In the AutoCAD and the Technical Drawing courses we have 56 students and 37 have stated that they will be seeking the college credit offered as they have indicated that they will be seeking college enrollment. In addition, out of the number of students indicating their plans for college, 36 have stated their choice to be Kaua'i Community College. There are a total of 26 females in our programs; 3 at Waimea High School, 5 at Kaua'i High School, and 18 at Kapa'a High School.

Kapa'a High School enrollment in Construction Academy classes is part of a new pilot program where the students are completing their course assignments in one semester, they are attending each class every day for 143 minutes. There are two classes of Building and Construction -1, and one class of Building and Construction -2, next semester we will have a Design Tech -1 course and another Building and Construction -1 course.

KAPA'A HIGH SCHOOL		
COURSE	STUDENTS	
BUILDING & CONSTRUCTION - 1	60	
BUILDING & CONSTRUCTION - 2	21	
DESIGN TECH 1	22	
TOTAL STUDENTS	103	

Kaua'i High School is growing in the Construction Program. We are working with the teacher, assisting him with understanding our curriculum, and providing both guidance and materials for his class in Building and Construction - 1, a class of 25 students, and a class in Design Tech -1, a class of 25. In addition, we are working with 3 students in the BC-2 course.

KAUA'I HIGH SCHOOL		
COURSE	STUDENTS	
BUILDING & CONSTRUCTION - 1	25	
BUILDING & CONSTRUCTION - 2	3	
DESIGN TECH 1	25	
TOTAL STUDENTS	53	

Waimea High School enrollment has some decrease this year, however the school remains supportive as they struggle with budget restrictions. We are offering two different courses now that provide a path to KCC dual credit, and a BC-1 course, that hopefully will lead to a larger BC-2 class in the future.

WAIMEA HIGH SCHOOL	
COURSE	STUDENTS
BUILDING & CONSTRUCTION - 1	9
BUILDING & CONSTRUCTION - 2	4
DESIGN TECH 1	9
TOTAL STUDENTS	22

Equipment:

The equipment to the schools has been distributed and has been completed along with an evaluation of the condition of the equipment after completing our sixth year. The equipment maintenance program that we have imbedded in the construction academy program is working satisfactory; we have had to replace some hand tools as well as a small amount of power tools to maintain our standards in regards to safety and performance. The acquisition of some additional equipment to minimize risk in working with the students has allowed us to broaden the scope of our curriculum. Maintaining a safe work environment is still an ongoing challenge. In the Building and Construction

classes we have been challenged with the class sizes of the high schools, the high schools are now understanding and cooperative in our maintaining a safe ratio of students to instructors. Materials and equipment are being ordered and staged at KCC, and we are distributing them as needed to each school. Our training for the DOE Industrial Arts teachers from the schools at KCC along with conducting general coordination and informational meetings is ongoing, providing a path of communication between all of us, although due to budget issues, challenges in this area are ongoing. The AutoCAD program, along with the portable computer lab, has allowed us to enhance all of our classes, and we have introduced both scale modeling and 3D modeling at the high schools in the Drafting Tech -1 course. This introduction is providing an additional resource and tool for the students to work with. We are currently offering classes of Design Tech-1 at all the High Schools. The 3D printers are being introduced to the students in the Design Tech -1 courses, the students are introduced to 3D modeling software and the file conversion to the printer required file structure. Printer maintenance and care instructions are covered along with the safe operation of the equipment, awareness to the extremely high temperatures that are present during the printer operation.

Special Projects:

Over the past year in cooperation with the Division of Wildlife we have an ongoing project involving all three schools. The project is constructing Kiosks to be used at various locations on the island as information stations for visitors. Last year the students were involved with the construction, site preparation, and setting of the Kiosks at their locations. The students were able to experience the complete building process along with the interaction of responding to the "customer's questions" during the various phases of the project. This year, along with additional Kiosks, we are building 10 picnic tables for the county, generating a CAD design from our meeting with the Division of Land and Natural Resources, and after their approval we are under fabrication of the tables at all of the schools.

In the BC-1 classes we are introducing renewable energy into the curriculum, we have small photovoltaic modules, charge controllers, batteries, and some small equipment to operate on the power generated by the system. The students are introduced to some basic electrical theory, and are given instruction on reading sun charts, and energy production based on available solar resources. Energy efficiency and energy conservation measures are introduced to the students

The Construction Academy program continues to provide assistance to the students at the high schools as mentors, to meet their community service obligations involving their Senior Projects. In addition we work with the Boy Scouts providing mentoring and guidance as the Scouts attain a variety of badges in building and construction related areas.

We are continuing a strong relationship with the local Carpenters Union. They have been a tremendous supporter of our program, providing school visits to offer a walk-through of the students' work, and constructive criticism to the students. The students are required to maintain and record their work and progress in a portfolio. The representatives have let the students know the value of this and guided the students to hold on to that, as it is a resume of their ability. These visits provide the students an opportunity to talk, interact and experience actual job site processes with the carpenters working in the industry. Our tools and equipment are shared with the apprenticeship program on the weekends; this affords us an opportunity to maintain our strong relationship. This year again we received additional requests from the local carpenters union for a recommendation for some of our students to enter into the apprenticeship program, to date we have four of our former students involved with the Carpenters Apprenticeship program, we are receiving excellent comments back on their performance.