

UNIVERSITY OF HAWAI‘I SYSTEM ANNUAL REPORT



REPORT TO THE 2017 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 a pilot program whereby the University of Hawai‘i’s Honolulu CC partnered with eight Department of Education high schools on O‘ahu—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 Honolulu CC to request its assistance in educating and training a greater number of qualified construction workers. In a true industry-education partnership, Honolulu CC, with its experience in the pilot Construction Academy as well as its long history in Apprenticeship Training, developed a comprehensive proposal that encompassed both high school education (Construction Academy) and post-high school career training (Apprenticeship).

In 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. The funding was also used to increase Apprenticeship training at Honolulu, Hawai‘i, Kaua‘i, and Maui Community Colleges.

THE CONSTRUCTION ACADEMY

Partnerships between the UH Community Colleges and local high schools remain strong and matriculation to local community college campuses is strong. Over half of the students in Hawai'i CC's first year carpentry students are Construction Academy participants. Of the 400 plus seniors participating in Honolulu CC's Construction Academy program, 237 (57.8%) were admitted to a University of Hawai'i campus after graduating high school. Of the 237 students, 35.9% were admitted to Honolulu CC.

Participating High Schools

Hawai'i Community College		Honolulu Community College		Kaua'i Community College
Kea'au	Konawaena	Aiea	McKinley	Kapa'a Kaua'i Waimea
Kohala	Pahoa	Campbell	Mililani	
	Waiakea	Farrington	Nānākuli	
		Kaimuki	Pearl City	
		Kalaheo	Radford	
		Kapolei	Roosevelt	
		Leilehua	Waipahu	
Enrollment: 291		Enrollment: 1,251		Enrollment: 208

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

Students participating in the Construction Academy Program will be 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 ensure that the program is part of the campus program review process. All participating campuses have 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 instructional component of apprenticeship training for most non-union and union construction industry apprenticeship programs. Apprenticeship training is undeniably an expensive endeavor that can strain campus budgets and tax both 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 have provided funding for support staff, lectureship costs and supplies and equipment.

Due to the recent resurgence in the construction industry, enrollments have increased and student count in the 2016-2017 academic year at Honolulu Community College is expected to surpass 6,000 apprentices. This projection reflects a 20% increase over the past academic year. At this point in Fall 2016, enrollment is at 3,385 and since several training programs register their members in short-term classes through mid-December, the student count will continue to rise over the next few weeks. Early Spring 2017 enrollment numbers from continuing/returning apprentice registration are already over 2,500 and registrations for new apprentices will begin soon and student counts are expected to increase significantly. There are also other factors that will likely contribute to a spike in enrollment. Several trade programs recently conducted recruitments and there is a distinct possibility that new apprenticeship programs may be launched in the very near future. The need for effective apprenticeship programs that provide essential skill and safety training for the State's construction workforce has certainly not diminished.

At Honolulu CC, funds earmarked for lectureship costs helped the College retain a staff of approximately 190 instructors. During the past academic year, approximately 29,595 instructor hours (over 800 apprenticeship classes) were paid for in part, with these funds. The other campuses did not receive allocations for lectureship and payroll was funded from other sources.

Due to the steady stream of apprentices that came to the campuses, shop equipment suffered considerable wear and tear and materials and supplies expenditures were significant. The colleges continued to use their allocations to replace old equipment and replenish shop supplies and materials. The annual funding also helped the colleges replace some of their outdated and/or unsafe equipment and purchase different kinds of equipment to expand the scope of training and maintain currency with industry standards.

The University of Hawai'i Community Colleges Apprenticeship programs are meeting the training needs of the trade programs. Honolulu Community College has improved the accuracy and integrity of apprenticeship records and is improving data gathering and dissemination procedures. Funding for lectureship costs enabled Honolulu Community College to provide its students with the necessary schedules of classes for student success. Allocations for supplies and materials enabled the colleges to partially restock shop consumables that constitute substantial and growing expenses. Departments also purchased equipment and tools that are necessary for proper job training.

APPENDIX

Hawai'i Community College

Construction Academy classes on the island of Hawai'i are offered at five high schools, and the overall enrollment for the 2016-17 academic year is 291 students. Graduates of the Construction Academy articulate to the Community Colleges system and apprenticeship programs, fulfilling the vision of the program. Construction Academy alumni are enrolled in a variety of programs at the college. At present it is a challenge to determine overall matriculation to the College, however, for the 2016-17 academic year, 5 of the 15 students enrolled in Hawai'i Community College's first year carpentry program are graduates of the Construction Academy.

C.A. Course Enrollment—Number of students serviced by course in individual high schools

School and Instructor	Building and Construction 1	Building and Construction 2	Design Tech 1	Design Tech 2	Total
Kea'au High	25	11	14	5	55
Kohala High	21	7	17	2	47
Konawaena High	36	7	12	7	62
Pahoa High	61	6	20	0	87
Waiakea High	32	4	4	0	40
Total Enrollment	175	35	67	14	291

The Construction Academy program has been well-received by Hawai'i Island high schools since its inception. There is a strong desire at many of the high schools to increase the number of CTE programs offered. Strong enrollment in the Construction Academy is a good indicator that CTE programs are still sought after in the high schools. 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 choices. The Construction Academy has home-based instructors in the five high schools with five FTE instructors in non-tenure track positions.

Overall Enrollment trends at Participating High Schools

School Year	13-14	14-15	15-16	16-17
Participating High Schools	9	9	5	5
Building & Construction 1	146	160	133	175
Building & Construction 2	61	28	68	35
Design Technology 1	61	69	86	67
Design Technology 2	14	8	34	14
Total	282	265	321	291

The chart above shows higher enrollment data in the past two years with five schools participating as opposed to enrollment numbers when there were nine schools from 2013-2015.

Enrollment figures for 2015-16 reflected a remarkable increase in enrollment over the previous two academic years. The 2016-17 enrollment has decreased by 9% compared to the previous year, yet is 3% higher than 2013-14 and 8% higher than 2014-15 academic years respectively. A slight downturn in overall enrollment during the 2016-17 academic year is not a cause for concern as the program had experienced a large boom in enrollment during the 2015-16 academic year. Slight fluctuations in student enrollment are accepted. Due to the nature of Construction Academy courses being offered as CTE elective courses at various DOE high schools, there are scheduling conflicts for prospective Construction Academy students and core classes take precedent over electives. Hawai‘i Community College understands this dynamic situation and remains committed to fostering the relationships that have been established with the Department of Education high schools that are participating in the Construction Academy program on Hawai`i Island.

Safety, math, and construction terminology/concepts 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. Our Construction Academy faculty are highly 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 at the College and high schools when appropriate. They make the schools they serve better institutions of learning and change lives for the better.

Honolulu Community College

For the 2015–2016 school year, the Honolulu CC Construction Academy (CNAC) offered three Department of Education courses at fourteen O‘ahu high schools—Aiea, Campbell, Farrington, Kaimuki, Kalaheo, Kapolei, Leilehua, McKinley, Mililani, Nānākuli, Pearl City, Radford, Roosevelt, and Waipahu.

Of the 1,251 students that were serviced, 733 (58.6%) of the students were enrolled in *Building & Construction Technology 1*; 274 (21.9%) in *Building & Construction Technology 2*; and 244 (19.5%) in *Design Technology 1* (Table 1).

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

Course Name	Student Count	%
Building & Construction Technology 1	733	58.6%
Building & Construction Technology 2	274	21.9%
Design Technology 1	244	19.5%
TOTAL	1251	100.0%

The program had a gender demographic of 147 (11.8%) females and 1,104 (88.3%) males (*Table 2*).

Table 2. Student Demographics—Gender

Gender	Student Count	%
Female	147	11.8%
Male	1,104	88.3%
TOTAL	1,251	100.1%

Matriculation of Students into the UH System

Three quarters (75.7%) of the students serviced were juniors and seniors (*Table 3*).

Table 3. Student Demographics—Grade Level

Grade Level	Student Count	%
9	57	4.6%
10	248	19.8%
11	536	42.9%
12	410	32.8%
TOTAL	1251	100.1%

Of the 410 seniors serviced by the Academy, 237 (57.8%) were admitted to a University of Hawai'i (UH) System campus after graduating high school; 85 (35.9%) of those students were admitted to Honolulu CC (*Table 4*).

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

UH Campus	Student Count	%
Hawai'i CC	2	0.8%
Honolulu CC	85	35.9%
Kapi'olani CC	45	19.0%
Leeward CC	63	26.6%
UH Hilo	1	0.4%
UH Mānoa	32	13.5%
UH West O'ahu	6	2.5%
Windward CC	3	1.3%
TOTAL	237	100.0%

*Students who matriculated into the UH System were defined as seniors who were admitted to a UH Campus after graduating from high school (Summer 2016, Fall 2016, or Spring 2017).

Two hundred thirty-four students identified a field of study (three students are *unclassified* or *undeclared*) among 49 majors (Table 5). Of these 234 students, 59 (25.2%) chose to major in a construction-related field.

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

Student Majors	Student Count	%
Administration of Justice	3	1.3%
Aeronautics Maintenance Technology	9	3.8%
Architectural, Engineering and CAD Technologies	5	2.1%
Auto Body Repair & Painting	2	0.8%
Automotive Technology/Automotive Mechanics Technology	34	14.4%
Business Administration	2	0.8%
Business Technology	1	0.4%
Carpentry Technology	16	6.8%
Civil Engineering	2	0.8%
Computer Engineering	1	0.4%
Computer Science	3	1.3%
Computing, Electronics, & Networking Technology	6	2.5%
Cosmetology	1	0.4%
Culinary Arts	10	4.2%
Digital Media Production	7	3.0%
Early Childhood Education	2	0.8%
Economics	1	0.4%
Electrical Engineering	1	0.4%
Electrical Installation & Maintenance Technology	8	3.4%
Environmental Design	3	1.3%
Exploratory	2	0.8%
Exploratory Business	3	1.3%
Fire & Environmental Emergency Response	1	0.4%
Fire Science	1	0.4%
General Business	1	0.4%
Hawaiian Studies	2	0.8%
Health Information Technology	1	0.4%
Hospitality and Tourism---Travel & Tourism Operations Management	2	0.8%
Information & Computer Sciences	3	1.3%
Information Technology	1	0.4%
KRS, Health, & Exercise Science	1	0.4%
Liberal Arts	61	25.7%
Management---Sales & Marketing	1	0.4%
Marine Biology	1	0.4%
Marketing	1	0.4%
Mechanical Engineering	5	2.1%
Natural Science	1	0.4%
Natural Science---Biological Science	1	0.4%
Natural Science---Computer Science	3	1.3%
Natural Science---Engineering	8	3.4%
Natural Science---Physical Science	2	0.8%
Pacific Islands Studies	1	0.4%
Pre-Engineering	6	2.5%
Public Administration---Justice Administration	1	0.4%
Refrigeration & Air Conditioning Technology	1	0.4%
Sheet Metal & Plastics Technology	2	0.8%
Social Science---Anthropology	1	0.4%
Travel Industry Management	1	0.4%
Unclassified/Undeclared	3	1.3%
Welding Technology	2	0.8%
TOTAL	237	99.40%

*Students who matriculated into the UH System were defined as seniors who were admitted to a UH Campus after graduating from high school (Summer 2016, Fall 2016, or Spring 2017).

Construction-Related Majors

Table 6 lists the degrees and certificates sought by the students who matriculated into the UH System. Of 237 students, 6.3% are pursuing *certificates*, 76.4% *associate degrees*, and 16.4% *bachelor 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	62	26.0%
Associate in Applied Science	64	26.9%
Associate in Science	56	23.5%
Bachelor of Arts	14	5.9%
Bachelor of Business Administration	1	0.4%
Bachelor of Environmental Design	3	1.3%
Bachelor of Science	21	8.8%
Certificate of Achievement	12	5.0%
Certificate of Completion	3	1.3%
Non-Degree	1	0.8%
TOTAL	237	99.9%

*Students who matriculated into the UH System were defined as seniors who were admitted to a UH Campus after graduating from high school (Summer 2016, Fall 2016, or Spring 2017).

Summer Program 2016

The Honolulu CC Construction Academy held its 2016 Summer Program from June 6, 2016 through July 7, 2016. The Summer Program engages high school students, who will be entering grades 10–12 and recent 2016 graduates, in hands-on activities that will give them insight into 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 four industry specialties (auto body repair and painting; carpentry; sheet metal; and welding). Students spent one week learning about each trade where they learned about tool and shop safety; tool, 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.

This summer, 55 students (83.3%) were enrolled in *Exploring the Trades*; and 11 (16.7%) in *Advanced Carpentry*.

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 interested 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 2016 high school graduates also met individually with the Construction Academy Transition Coordinator who helped them take the next step in making their post-high school 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 2016 Summer Program afforded 66 high school students from various public high schools on O‘ahu the opportunity to learn about the construction industry. Of these students, 33 (50.0%) were 2016 high school graduates; 15 students (22.7%) were female; and 13 students (19.7%) were of Native Hawaiian ancestry.

Twenty-four (72.7%) program participants who recently graduated high school were admitted into the University of Hawai‘i System during the Fall 2016 semester; of the students who matriculated into the University of Hawai‘i System, 18 students (75.0%) were admitted to Honolulu CC.

Kaua'i Community College

The forecasted student enrollment for the high schools on Kaua'i totals 208 students from three local high schools. In Building and Construction courses, the total number of students is 127 with 62 students seeking college credit. In the AutoCAD and the Technical Drawing courses, the total number of students is 81 with 35 students seeking college credit. In addition, out of the number of students indicating their plans for college, 22 have stated their choice to be Kaua'i Community College. There are a total of 13 females in the program; 4 at Waimea High School, 7 at Kaua'i High School, and 2 at Kapa'a High School.

HIGH SCHOOL ENROLLMENT	
HIGH SCHOOL	STUDENTS
KAPA'A HIGH SCHOOL	77
KAUA'I HIGH SCHOOL	96
WAIMEA HIGH SCHOOL	35
TOTAL STUDENTS	208

Kapa'a High School enrollment in the Construction Academy has experienced a slight decline. The students are completing their course assignments in one semester and are attending each class every day for 143 minutes. There is a Building and Construction -1 course and next semester there will be a Design Tech -1 course, a Design Tech -2 course and a Building and Construction -2 course.

KAPA'A HIGH SCHOOL	
COURSE	STUDENTS
BUILDING & CONSTRUCTION -1	27
BUILDING & CONSTRUCTION -2	20
DESIGN TECH - 1 & 2	30
TOTAL	77

Kaua'i High School is fully participating in the Construction Program and enrollment has more than doubled. Kaua'i CC is working with the teachers, assisting them with understanding the curriculum and providing both guidance and materials for their classes in Building and Construction 1 & 2. There are three sections of Building and Construction 1 with a total of 53 students and one section of Building and Construction – 2 with a total of 8 students. There is one class in Design Tech -1 with a total of 35 students.

KAUA'I HIGH SCHOOL	
COURSE	STUDENTS
BUILDING & CONSTRUCTION - 1	53
BUILDING & CONSTRUCTION - 2	8
DESIGN TECH 1	35
TOTAL STUDENTS	96

Waimea High School enrollment experienced a modest increase this year and the school remains supportive as they contend with budget issues. Kaua'i CC is offering two courses that provide a path to dual credit, with a Building and Construction – 1 course, a Building and Construction - 2 course, and a Drafting Tech -1 course.

WAIMEA HIGH SCHOOL	
COURSE	STUDENTS
BUILDING & CONSTRUCTION - 1	11
BUILDING & CONSTRUCTION - 2	8
DESIGN TECH 1	16
TOTAL STUDENTS	35

Equipment:

New equipment items have been distributed to the schools. The equipment maintenance program embedded into the construction academy has worked satisfactorily as tools and equipment were inspected and refurbished/replaced in order to maintain standards of safety and performance. Additional equipment items were purchased to maintain currency with industry standards and to allow the program to broaden the scope of its curriculum. Maintaining a safe work environment is still an ongoing challenge as a substantial portion of the annual budget is spent on safety equipment for the students.

Special Projects:

This year the students in the Building and Construction classes at Kapa‘a High School are pouring four concrete pad sites for future classes in order to construct picnic tables and pavilions. The Kapa‘a High School Alumni Association is funding this project, supplying the concrete, rebar, and wire mesh for the pads. The students are preparing and levelling the pad site, mixing the concrete and pouring and finishing the cement. They are learning how to work with the materials and tools needed for a successful project.

Last year Waimea and Kaua‘i High Schools completed constructing the set props for the Kaua‘i CC play “Carnival”. This year, Kaua‘i High School is building a play house to be donated to one of the preschools. Waimea High School is also doing on-campus projects that include shelving units for two 40 foot Matson containers as well as a storage room in their gymnasium. All materials for the projects are being supplied by the high school.

The Construction Academy program continues to provide mentoring to the students at the high schools to meet student community service obligations involving their Senior Projects. In addition, work is done with the Boy Scouts providing mentoring and guidance as the Scouts attain a variety of badges in building and construction-related areas. The program is also participating in the OCET Summer Kid’s College program, a one week woodshop class that includes instruction on basic safety and the proper use of tools.

The program continues its strong relationship with the local Carpenters Union. The Union has been a tremendous supporter of the program, providing school visits and offering walk-throughs to critique student work. These visits provide the students an opportunity to talk, interact and experience actual job site processes with the carpenters working in the industry. This year the program has once again received requests from the union for recommendations on students that can enter the apprenticeship program. The program is receiving excellent comments on the students that have already been recommended.

The program is also collaborating with the Contractors Association of Kaua‘i, local unions, DOE, and County to put on a trades fair at Kaua‘i CC. It will have a similar theme to the Hawai‘i Construction Career Day fairs on the Big Island, Maui, and Honolulu. The goal is to spark the interest of middle schoolers with an affinity for the trades before they enter high school pathways. The program also educates the community on the many opportunities available in the trades.