

# 2024 Annual Report of Program Data Architectural, Engineering & CAD Technologies (AEC Tech)



## 1. Program or Unit Mission

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This program prepares students for employment with architectural firms, contractors, engineers, surveyors, or government agencies. Job responsibilities range from making accurate working drawings of buildings to assisting a surveying crew.

## 2. Program Student Learning Outcomes or Unit/Service Outcomes

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1. Using computational and reasoning skills, demonstrates entry-level skills for accuracy in drawings, and identifies the relationship of features to demonstrate visualization proficiency.
2. Formulate, design, revise, and construct projects utilizing knowledge of proper construction materials and resources based on design criteria, and be able to defend, explain, and discuss.
3. Design and generate Architectural and Engineering documents using two-dimensional and three-dimensional CAD programs.
4. Demonstrate operational competence in using surveying hand tools and equipment.
5. Demonstrate communication, critical thinking, research, and problem-solving skills.
6. Illustrate within the design process an understanding of the balance between cultures, community, and the environment.

No assessments were done this past academic year due to the program's "Stop-out," which began in Fall 2022, while allowing the second-year students to complete their degree. No additional students were able to enroll in the 2023-2024 academic year. The AEC Tech program has been modified and is currently awaiting approval for the ATP forms that have been submitted for system approval. The one AEC faculty has been diligently working on the redesign of curriculum and courses within the AAS degree program and its four certificates.

Upon completion of "reimagining" the AEC Tech program, the program coordinator will have numerous meetings with the Assessment Coordinator to update all Program Learning Outcomes (PLO), Course Learning Outcomes (CLO), and the new five-year Assessment Plan to ensure students are gaining the knowledge required by industry to become successful contributors in our island workforce communities.

## 3. Analysis of the Program/Unit

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**Demand** – The ARPD data continues to be an injustice for the AEC Tech program. The CIP code (15.1303/17.3011) identifies "Architectural and Civil Drafters" as being the main goal of the

## **Architectural, Engineering & CAD Technologies (AEC Tech)**

program, however our program offers a variety of job opportunities for our students, not just within the State and County of Hawaii. More than half of the employees in the County Engineering Department are graduates from the AEC Tech program. Our students also have job opportunities at private companies such as HELCO, Engineering Partners, Home Depot, and HPM to name a few.

During the 2022-2023 academic year, second-year students were completing their degree. We did not offer any other courses during this time as the program was on stop-out, therefore showing only 7 majors. During AY 2023-2024, no program courses were offered and the one major was a returning student finishing up their electives to be able to graduate with their degree. With funding awarded through a National Science Foundation grant, AEC faculty (Co-PI on grant) was able to create a new Certificate of Competence titled Geospatial Remote Sensing Hawai'i (GRS Hi). These four courses were offered as experimental courses during this time showing an increase in total number of classes taught. While program was on stop-out, blueprint reading courses were also offered (2 in Fall, 3 in Spring) under the AEC Tech program which does not reflect the total numbers of classes taught within the year.

**Efficiency** – Although the Average Class Size has a slight increase in enrollment, AEC Tech has been on stop-out. These numbers represent the GRS Hi certificate that we were able to offer during the AY 2023-024. Upon approval to offer the certificate, we had very limited time to promote the certificate and depended on “word of mouth”. We were able to gain enough interest to run those courses while continuing to redesign the AEC Tech program.

The AEC Tech program has always been a two-faculty program. After the COVID pandemic, enrollment dropped significantly. One faculty member retired and the position was eliminated. The program was put on stop-out and HonCC attempted to deliver these skills online for the entire state. This did not serve our island community well and many of our island's industry partners and high school faculty expressed their concerns. This feedback was instrumental in the redesign of the AEC Tech program. The program name has since been changed to Engineering Technology and that change became official in the Fall 2024 semester.

**Effectiveness** – The only courses offered during the AY 2023-2024 were the experimental courses for the GRS Hi Certificate of Competence, which is a one-year certificate. Every student that enrolled finished this certificate, giving AEC Tech a 100% Fall to Spring Certificate. No other courses were offered due to the stop-out. We hope to have these numbers rise significantly once the new program and curriculum are fully approved.

**Distance** – During the COVID pandemic, AEC Tech delivered all classes online, both Asynchronous and Synchronous. This change was difficult not only for faculty but for majority of the students as well. After the pandemic, most of the classes resumed with face-to-face modality, however, two courses were kept synchronous and one was left hybrid. This was done to allow students flexibility within their personal schedules to ensure their completion of their degree. With the stop-out beginning, we were only able to offer AEC 112, AutoCAD, as an option for students to enroll into. One of these AEC 112 courses was an Early College course with only high school students enrolled, therefore no final AEC Tech degrees were awarded during this academic year. We did have a prior student transfer over to 4-yr degree.

**Perkins** – AEC faculty is unsure at this time how two of the Perkins indicators were met as we were on stop-out and did not offer courses for enrollment. It also states that we did not meet the

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Nontraditional Program Concentration during this time. We continued to be on stop-out, thus having no student data to contribute to this year's Perkins report.

AEC Tech has always opened its doors for all students. We are strongly committed to the success of each student. The program currently consists of one female faculty, two female lecturers and one male lecturer. Although this is a male-dominated field, times are drastically changing and we encourage all interested females to feel comfortable in and out of class with their choice of major. This includes all blueprint reading courses for the other trade programs as well, Carpentry, Electrical Installation and Maintenance Technology, and Machine, Welding & Industrial Mechanics Technologies. AEC Tech has a history of at least 40% - 50% of our students being native Hawaiian. Everyone of our students receives the personal attention that is needed to strive and be successful contributors of our island workforce.

**Performance** – During this academic year, no degrees were given due to the stop-out. With the changes under way, students will have the opportunity to enroll in a variety of certificates or complete the two-year AAS degree. Whichever path the student decides to travel on, they will earn the knowledge and skills to be success upon graduation.

<https://uhcc.hawaii.edu/varpd/index.php?y=2024&c=HAW&t=CTE&p=2993>

The AEC Tech program has undergone so many changes within the few past years including the loss of a faculty member and the stop-out. Also, the original proposal for curriculum changes submitted in AY21-22 needed to be redone by first submitting Approval To Plan (ATP) forms for each of the program degree and certificates. Using these difficult situations as learning experiences, the sole remaining faculty began reimagining the program, including using the new program name. Curriculum proposals were submitted into Kualii in the Spring 2024 in hopes of launching the revised program in the Fall 2024. This revised program consists of:

- Engineering Technology, Associate in Applied Science (2 years)
- Drafting and Design, Certificate of Achievement (can complete in 3 semesters)
- Geomatics and GIS, Certificate of Achievement (3 semesters)
- Geospatial Remote Sensing Hawai'i, Certificate of Competence (2 semesters)
- Geospatial Technologies, Certificate of Competence (3 semesters)

Engineering Technology provides three different, yet highly related, pathways. Original courses were streamlined, a few combined and a few deleted to obtain the ultimate learning material for each student in these related pathways to gain beneficial skills that would put them at the top of the list for employment above any other applicant. Two new courses were also created and two existing courses are now cross-listed with the Tropical Ecosystem & Agroforestry Management (TEAM) program. EngT 100 is a generalized course specifically related to all basic drafting and blueprint reading skills for all trades. This gives other trade students the opportunity to learn about different types of blueprints and not just specific to their trade. We hope to offer more than one section per semester to accommodate all students in the trades requiring blueprint reading for their degrees. This would eliminate all other blueprint reading courses.

With the reimagined AEC program, faculty plan to request a CIP-SOC codes to justify all changes made within the program to help acquire more accurate ARPD data that can better reflect the success of the newly revised program.

## 4. Action Plan

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Since the last program review for the 2023-2024 academic year, a few of the action items were not met while others were. These are described below:

- Articulate courses with Honolulu Community College – unable to come to a consensus:
  - There were many intense and detailed discussions, however, courses were not able to be articulated. HonCC were undergoing curriculum changes, and our curriculum were different as we serve two diverse groups of industry based on our island's demographics. We were unsuccessful after numerous attempts to meet this goal.
- Collaborate with Construction Academy (CA) and Early College programs – Met:
  - Faculty continues to collaborate with both programs by advising Construction Academy faculty, or traveling to their campuses for student tutoring. We have also offered AutoCAD as an Early College course for Keau High School students.
  - **GOAL #1.** During this upcoming year we plan to engage more high schools with Early College courses. Hilo High School has reached out and discussions will be taking place. We would also like to add the EngT 107, Unmanned Aerial Systems Flight course to the Early College path. We are also in the process of providing professional development to faculty, especially CA faculty, to be able to offer EngT 107 as part of the Construction Academy as well.
- Revise curriculum, degree, and certificates – Met:
  - The sole faculty of the reimagined Engineering Technology program has revised all curriculum and degrees and certificates to enhance the student education pathways. Numerous meetings were held between the CRC committee and faculty to discuss modifications to be sure of a smooth flow when courses begin to accept students. All Quali entries were completed and approved by the CRC and Academic Senate during the Spring 2024 semester.
  - **GOAL #2.** Upon final approval, faculty will work with the Assessment Coordinator to create a five-year assessment plan. Assessment will also be done beginning with the Fall 2024 courses to evaluate the modality of these new/revised, what worked and what needs improvement and the overall student success in each course.
- Strengthen online courses – not met due to program revision:
  - **GOAL #3.** Although part of the AutoCAD course was slightly revised, due to the modifications of the entire program and the transition between Laulima and Lamakū, it has not been completed. Now that our Engineering Technology program name has been approved, we are working to make it more diverse and stronger. We will also be looking into adding a 3-D section.
- Keep a log of all job opportunities and graduates – unable to complete due to no students/faculty:
  - This goal has been a challenge to complete due to the stop-out. There were no students in the Engineering Technology program. Although a few were enrolled into the GRS Hi certificate, numerous other duties to complete the program modification superseded this task.
  - **GOAL #4** - This task, although time-consuming, is important for data gathering. This would allow EngT faculty to keep track of student success and other data/demographics that would contribute to better program results and reporting.
- Create partnerships within the community - continuous

- **GOAL #5** - Now that the program is accepting students, the major goal is to get all of the Engineering Technology advisors back together. Faculty has kept in constant touch with each original advisor while modifying the program. Due to the program being on stop-out, it was best to not have them commit to a two-year term until it actually began. While also serving as Co-PI on numerous grants, other partnerships have been created with many industry members as well as other college campuses.
  - Part of this goal will be recruitment. This fall will be the first year back and little time was allotted for recruitment. Faculty will create flyers, posters and other material for career fairs and conferences. Also, the implementation of social media will be used to attract students to the Engineering Technology program.

## 5. Resource Implications

I am NOT requesting additional resources for my program/unit.

I AM requesting additional resource(s) for my program/unit.

Total number of items being requested: 1 (4 items max.)

✓ **Item Description:** Part-time APT worker to assist sole faculty with duties outside of teaching.

✓ **Justification:** This program has always been a two-faculty program. With the deletion of one faculty, the burden becomes overwhelming.

✓ **Alignment to the [Ka'ao Ka'ika'i Strategic Plan AY2023 - AY2029](#):**

This ask aligns with all five of the Ka'ao Ka'ika'i Strategic Plan. While necessary tasks are being maintained, other tasks such as creating recruitment materials, research, and data gathering to encourage more women, Native Hawaiians, and other diversities into the program, and keeping track of student data would make it easier to meet the Perkins requirements. This staff member could also contribute to scheduling meetings with industry partners and advisors and help create new partnerships. Having the help will strongly contribute to the well-being of faculty who will in turn be able to support and strengthen other members of the Kauhale.

<b>Ka'ika'i Kuleana</b>	Fulfill kuleana to Native Hawaiians and Hawai'i Island.
<b>Ka'ika'i Haumāna</b>	Develop successful students for a better future.
<b>Ka'ika'i Oihana</b>	Meet Hawai'i Island's workforce needs of today and tomorrow.
<b>Ka'ika'i Noi'i</b>	Diversify Hawai'i Island's economy through innovation and multi-sector partnerships.
<b>Ka'ika'i Kauhale</b>	Build and Maintain the Wellbeing of the College Kauhale.

**Architectural, Engineering & CAD Technologies (AEC Tech)**

<b>ALLOWED CATEGORIES</b>	<b>Category-Specific Information Needed</b>			
<b>Personnel Resource</b>	Estimated Date Needed ASAP	FTE; Position Type; Position Title Half-time APT	Estimated Salary \$35,000	Was an Existing Position Abolished? (Y/N); Position # Y, #84624

## HAWAI'I COMMUNITY COLLEGE, 2024-2025 ENGINEERING TECHNOLOGY (ET)

**Program Requirements:** AAS Degree [60 credits, at least 2.0 required in all courses]

CA [25 or 27 credits, cumulative GPA 2.0 or better required for all courses]

CO [13 or 16 credits, cumulative GPA 2.0 or better required for all courses]

Course	Course Name	Semester Year & Grade	CO Geospatial Tech.	CO Geospatial Remote Sensing Hawaii	CA Geomatics & GIS	CA Drafting & Design	AAS Associates In Applied Science
<b>FALL:</b>							
ENGT 100	Drafting Conventions & Blueprint Reading		--	--	--	4	4
ENGT 107	Unmanned Aerial Systems Flight		--	4	4	4	4
ENGT 112	Computer Aided Drafting		3	--	3	3	3
ENGT 270 or GEOG 270	Introduction to Geographic Information Systems (GIS)		4	4	4	--	4
	<b>Semester Total</b>		<b>7</b>	<b>8</b>	<b>11</b>	<b>11</b>	<b>15</b>
<b>SPRING:</b>							
ENGT 120	Residential Design & Construction Drawings		--	--	--	4	4
ENGT 291 or AG 291	Rural & Urban Remote Sensing		--	4	4	--	4
ENGT 129	Geomatics & Land Surveying I		3	--	3	--	3
ENGT 275	Spatial Data Management & Analysis		--	4	4	--	4
	<b>Semester Total</b>		<b>3</b>	<b>8</b>	<b>11</b>	<b>4</b>	<b>15</b>
<b>FALL:</b>							
ENGT 230	Residential Contract Drawings & Codes		--	--	--	6	6
ENGT 247	Geomatics & Land Surveying II		3	--	3	--	3
MATH 100 OR HIGHER	Survey of Mathematics		--	--	--	--	3
ELECTIVE	Cultural, Natural, & Social (see next page)		--	--	--	--	3
	<b>Semester Total</b>		<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>15</b>
<b>SPRING:</b>							
ENGLISH 100 OR HIGHER	Composition 1		--	--	--	--	3
ENGT 233*	Basic Architectural Studio Design		--	--	--	3	3
ENGT 234*	Architectural Design Software Systems		--	--	--	3	3
ELECTIVE	Cultural, Natural, & Social (see next page)		--	--	--	--	3
ELECTIVE	Cultural, Natural, & Social (see next page)		--	--	--	--	3
	<b>Semester Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>
	<b>TOTAL CREDITS</b>		<b>13</b>	<b>16</b>	<b>25</b>	<b>27</b>	<b>60</b>

\*NOTE: if student is only interested in drafting CA they can take 233 & 234 in second semester