

2024 Annual Report of Program Data Machine, Welding, and Industrial Mechanics Technologies



1. Program or Unit Mission

This program prepares the student for employment in the metalworking and mechanical/maintenance trades. Employment may be in construction, food processing, manufacturing, utilities, astronomical observatories, or related industries. The job requires good physical health, above average eye/hand coordination, mechanical reasoning, and good form perception and spatial relationship. Job responsibilities may include fabricating, repairing, or maintaining metal products on equipment, buildings, and systems.

Over the past years, we have been reaching out to K-12 students and building our relationships with high school programs to increase enrollment of students interested in the metalworking and mechanical/maintenance industries.

2. Program Student Learning Outcomes or Unit/Service Outcomes

PLO 1: Demonstrate the attributes of a good employee including good safety practices; good communication skills; positive work ethics; working collaboratively or independently under supervision; being a life-long learner; demonstrating an awareness of hazardous materials; and taking responsibility for the orderliness and cleanliness of the workplace.

PLO 2: Demonstrate and be able to apply the proper set-up and use of basic machine tools and equipment; metalworking equipment; common welding and cutting processes; industrial mechanics equipment; material handling equipment and related machinery; and entry-level ability to interpret blueprints.

PLO 3: Demonstrate and be able to apply mechanical reasoning, form perception and spatial relations, and numerical reasoning skills as a part of the basic entry-level skills and knowledge necessary to gain employment in the Machining, Welding, Industrial Mechanics, or related fields.

3. Analysis of the Program/Unit

ARPD 2024: <https://uhcc.hawaii.edu/varpd/index.php?y=2024&c=HAW&t=CTE&p=3009>

The following analysis summarizes the data for the Machine, Welding, and Industrial Mechanics Technologies Program at Hawaii Community College over the past three years. This review

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provides insights into the program's performance, efficiency, effectiveness, and specific quantitative indicators. The demand indicators of New and replacement jobs are insufficient in 2020-21 through 2023-24. Therefore, whether there are significant changes cannot be determined. Any implications on demand cannot be reported due to the CIP codes that weren't reported by the City and County of Hawai'i.

The number of majors in the program has fluctuated over the years, yet it's promising in a slow increase. In 2019-20 there were 30 majors, which increased to 26 in 2022-23 and then again to 28 in 2023-24. There has been a significant increase in fall full-time enrollment from 87% in 2019-20 to 96% in 2023-24. This is a positive sign, as full-time students often perform better academically. The program should continue to encourage full-time enrollment by offering flexible scheduling options. The number of SSH program majors in program classes has seen fluctuations, with a decrease from 764 in 2019-20 to 532 in 2021-22, and an increase of 608 in 2022-23 followed by another increase of 696 in 2023-24.

The efficiency indicators showed the average class size increased from 12 in 2022-23 to 13 in 2023-24. While a larger class size can help reduce costs, it can also affect the quality of education. The program should maintain an optimal class size to ensure effective learning and individualized attention for students.

The fill rate has improved from 64.6% in 2022-23 to 81.1% in 2023-24. While this is a positive trend, the program should continue to work on optimizing resources by increasing the fill rate further. This is a result of offering flexibility for working adult students. Also, since the COVID-19 pandemic restrictions were lifted, we were able to attend face-to-face K-12 career fairs to promote the MWIM program. After a decrease to 9 in 2021-22, the effectiveness indicator numbers rebounded to 12 in 2022-23 and further increased to 13 in 2023-24. The years from 2019 to 2024 exhibit fluctuations in the awarding of degrees and certificates. While the years 2020-2023 experienced several declines, the data from 2023-24 shows promising growth across most metrics, particularly in unduplicated degrees and certificates, suggesting improved student performance and engagement. The recovery in 2023-24 indicates a positive trend moving forward. The program has seen an increase in the number of Pell recipients, from 8 in 2020-2021 to 10 in 2023-2024.

Overall, the performance indicator metrics demonstrate strong performance in postsecondary placement and credential attainment, both exceeding established targets. Specifically, the postsecondary placement achieved 89 placements against a target of 35 and earned recognized credentials reached 85, also surpassing the target of 35. However, the shortfall in nontraditional program concentration, with only 8 enrollments compared to the target of 12, highlights an area for further development. Addressing this gap will be essential for broadening access and promoting equity in educational opportunities. Currently, the UH System is helping in this effort to feature Women in Trades. These media campaigns include PCATT marketing to help attract females to the program.

The program has requested an additional faculty member who is a subject matter expert in machining. Without a dedicated faculty member with expertise in machining, the quality of instruction in this area may be compromised. Machining is a specialized field that requires specific

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knowledge and skills to provide students with a comprehensive education. Relying solely on a lecturer who may not have the same level of expertise can result in suboptimal learning experiences for students. Developing and maintaining a comprehensive curriculum for machining is a demanding task. It requires continuous updates to align with industry standards and technological advancements. Without a dedicated subject matter expert, it may be challenging to keep the curriculum current and relevant. If the college has no resources to adequately support both machining and welding, then the program would be forced to discontinue machining courses. If machining courses are not attracting students, then they should gradually be phased out.

There were increases in local outreach in high schools at the career fairs. Before the pandemic restrictions, we were particularly focused on establishing a pathway with Hilo High School and securing a faculty position to provide a dual credit pathway. We continued to push throughout the pandemic with minimal support, but we will begin again to establish dual credit initiatives. Such initiatives are essential for several reasons. High school outreach programs create opportunities for high school students to gain early exposure to higher education. Offering dual credit pathways allows students to earn college credits while still in high school, making higher education more accessible and affordable. These dual credit pathways provide a smooth transition from high school to college. Students who participate in these programs can acclimate to the college environment, expectations, and academic rigor before fully enrolling, increasing their chances of success. By collaborating with local high schools, we can align their programs with the needs of the local job market. This ensures that students are prepared for careers in our community, enhancing the local workforce.

The Program prepares students for entry-level employment in welding-related occupations, such as Welders, Cutters, Solderers, and Brazers, and Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders. The Workforce Analysis shows a projected employment outlook for the program, both for the State of Hawaii and the National Average. The projected job growth appears to be positive: Employment Outlook (2020 to 2028): Projected job growth is at +10%. Furthermore, the employment rates show that Certificate graduates have a higher employment rate. This may indicate that students receiving a certificate are employable, and could be sufficient to enter the various fields. The average salary for completers (both Associate and Certificate) is \$35,217, which is about 1.86% higher than the \$34,572 earned by non-completers.

These findings underscore the financial advantages of completing a program, demonstrating that both Associate and Certificate completers tend to earn more than their non-completer counterparts. The data highlights the importance of program completion in enhancing earning potential and career opportunities in the workforce.

Finally, the data projects that there will be zero new machining jobs and 859 replacement jobs by 2028. However, the zero new jobs specifically reflect machining roles and do not account for other welding jobs, as machining is directly embedded into multiple trades. The workforce analytics report captures the employment status of both graduates and non-graduates over the first three years after leaving the program. While specific data for Year 1 and Year 2 of the graduates is missing, we can note that:

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- **Year 3:** Among the 13 graduates, 6 were found working, indicating a 46% employment rate.
- **Non-Graduates:** A consistent number of non-graduates found work, with 8 in Year 1, 6 in Year 2, and 6 in Year 3.

The employment outcomes analysis indicates that the Machine, Welding & Industrial Mechanical Technology program is effective in preparing students for employment, particularly for those who graduate. Specifically, in Year 3, 6 out of 13 graduates with an associate (46.15%) were found working, indicating strong job placement success. In contrast, 8 out of 22 non-associate graduates (36.36%) found work in Year 1, but this rate dropped to 6 out of 22 (27.27%) in both Years 2 and 3. For completers with other certificates, 6 out of 19 (31.58%) were employed in Year 1, which increased to 8 out of 19 (42.11%) by Year 3. However, there is a clear need to provide additional support for non-graduates to improve their employment prospects. The earnings data indicates a positive trend in salaries for both Associate graduates and Certificate completers. Associate graduates achieved a Year 3 salary of \$32,295, while Associate leavers experienced significant fluctuations but showed growth potential, especially in Year 2 with \$35,570. Certificate completers demonstrated a strong recovery in Year 3, with earnings reaching \$38,139. Overall, these figures suggest that both pathways provide valuable opportunities for students, with substantial earning potential as they advance in their careers. Further tracking of these salary trends could provide insights into long-term career progression and economic outcomes for program participants.

4. Action Plan

Below are the ways our current action plans align with the College's Strategic Plan.

- **Imperative 2: Ka'ika'i Haumāna**
 - Develop successful students for a better future. Educate more students, empowering them to achieve their goals and contribute to a civil society.
- **Imperative 3: Ka'ika'i Oihana**
 - Meet Hawai'i Island's workforce needs of today and tomorrow. Minimize workforce shortages on Hawai'i Island while preparing students for a global future.
- **Imperative 4 Ka'ika'i Noi'i**
 - Diversify Hawai'i Island's economy through innovation and multi-sector partnerships

This strategic action report outlines the critical need for establishing a machining faculty and APTB personnel to enhance career exploration opportunities, facilitate internships, and improve college and workforce readiness for our students. Integrating the curriculum with CAD during the 2021-2022 AY and Computer Numerical Control (CNC) into the curriculum and leveraging existing faculty resources, we aim to address both the educational and holistic needs of our students while fostering partnerships with industry stakeholders.

Our strategic goals include increasing career exploration and internships by developing summer programs and establishing industry collaborations. Through the AEC collaboration, we continued to integrate key technical skills into the existing CNC curriculum, enhancing the program with real-world applications. Strengthening student

support systems is essential, and utilizing APTB personnel will help address educational and basic needs, promoting holistic health and wellness. Innovative learning experiences, using multiple modalities including accelerated summer exploration courses connecting to learning platforms of UH systems outlook for future micro-credentialing access and flex scheduling to adapt to non-traditional student preferences.

Furthermore, we will enhance industry partnerships by collaborating with DOE schools and advisory boards to create dual pathways and increase micro-credentialing opportunities. This will involve fostering communication efforts with industry stakeholders to align our program delivery with workforce needs. The APT B personnel could help to facilitate pathways for career advancement, we will streamline the transition between non-credit and credit programs and support upskilling and reskilling initiatives.

This initiative aligns with our strategic imperatives: increasing participation and completion rates in credit from non-credit programs, strengthening collaborations with industry partners, and preparing professionals for essential occupations. The plan consists of outreach, procurement, curriculum diversity, a focus on summer career exploration, and internships, while continuous evaluation and improvement will occur based on feedback from students and industry partners.

In conclusion, establishing a machining faculty and APTB personnel is essential for advancing our strategic goals. By prioritizing career readiness, student support, and industry collaboration, we can create a robust educational framework that prepares students for success in an evolving workforce. Immediate action is recommended to initiate recruitment and innovative efforts, ensuring we remain aligned with our mission and community responsibilities. This position will also be shared with other ATE programs.

5. Resource Implications

Special Resource Requests not included in your operating “B” budget

*Detail any special resource requests not funded by your regular operating budget, including reallocation of existing resources (physical, human, financial) to support action or Perkins plans. *Note that CTE programs seeking future funding via UHCC System Perkins proposals must reference their ARPD Section 4. Action Plan and this ARPD Section 5. Resource Implications to be eligible for funding.*

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: 2 (4 items max.)

✓ **Item Description:**

Faculty position to teach the machine welding classes necessary for the program completion for students.

APTB position to help in coordinating with the students, reports, connecting collaboration for students and internships, purchasing procurement items, coordinating advisory board meetings, maintaining and organizing curriculum records for faculty, connect with DOE and

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community partners in outreach or industry speaking events. This would be for both the MWIM and DIMC programs.

✓ **Justification:**

We absolutely need to fill our two empty positions, one faculty and one APTB to move forward with the action plans and we already share administrative reports as well as the struggle to increase the 3P1 outreach methods for non-traditional students.

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

Each resource request must align with one or more of our Strategic Plan Core Commitments:

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

ALLOWED CATEGORIES	Category-Specific Information Needed			
Personnel Resource	Estimated Date Needed ASAP	FTE; Position Type; Position Title FTE: Faculty Machinist Instructor	Estimated Salary 63,288 Faculty Starting Salary	Was an Existing Position Abolished? (Y/N); Position # Y 82527
Personnel Resource	Estimated Date Needed AY25-26	FTE; Position Type; Position Title FTE: APTB: Educational Support Specialist	63,000 BU8 Starting Salary	Was an Existing Position Abolished? (Y/N); Position # N