November 9, 2020

To: Erika Lacro  
Vice President for the University of Hawai‘i Community Colleges

From: ET/ECET/ENGT Cross-Campus Discussion Group  
    Elisabeth Dubuit, UHMauC  
    Harold Fujii, HawCC  
    Bernard Michels, HawCC  
    Jung Park, UHMauC  
    Georgeanne Purvinis, KauCC  
    Dave Krupp, WinCC (facilitator)  
    Laura Nagle, UHMauC (facilitator)

Subject: Cross-Campus Recommendation on UHCC ET/ECET/ENGT Programs

Description of Cross-Campus Group’s Process.

Three UHCC campuses, HawCC, KauCC and UHMauC, were identified as offering relevant classes, certificates and degrees in the following areas: Electronics Technology (ET), Engineering Technology (ENGT), and Electronic & Computer Engineering Technology (ECET). Faculty stakeholders from these campuses were asked to provide feedback: Bernard Michels (HawCC), Harold Fujii (HawCC), Georgeanne Purvinis (KauCC), Elisabeth Dubuit (UHMauC), and Jung Park (UHMauC). A discussion template with links to background information and relevant data was provided to guide the first discussion which took place on Friday October 30. Both Laura Nagle (UHMauC) and Dave Krupp (WinCC) facilitated this discussion. The faculty contributions to the discussion were recorded in the Agenda and Minutes for the meeting. The stakeholders were also invited to continue editing the document after the discussion. Based upon this input, Laura and Dave worked together to draft a memo which was shared with the group for review, discussion and revision on Friday October 6. This memo is the result of this process.

Program Descriptions

UHMauC offers three pathway options for its students: a CA in ECET, an AS in ECET, and a BAS in ENGT. Of these, the AS and BAS have been identified as "small programs" based upon the latest three-year graduation average. Recently, UHMauC has moved to offering its ENGT as alternating cohorts. A new cohort is initiated every other year instead of every year. In addition, some students achieving degrees/certificates in ET at HawCC and KauCC complete the BAS at UHMauC. UHMauC is in the third phase of a $2.6 million scholarship grant that benefits UHMauC and HawCC students on an engineering pathway (ET, ECET, ENGT, and NSCI/engineering ). UHMauC has recently been awarded $1 million grant ($600,000 in scholarships) for ECET, ENGT, and NSCI students that should attract and retain students in the ECET and ENGT programs.
HawCC offers an AAS and a CA in ET that articulates with the UHMauC BAS in ENGT, allowing HawCC students to ultimately complete the UHMauC BAS online. However, both the CA and AAS have also been identified as "small programs" based upon the latest three-year graduation average.

KauCC offers an AS and a CA in ET. These have also been identified as "small programs" based upon the latest three-year graduation average. KauCC’s programs also informally articulate with the UHMauC BAS in ENGT. Because of the loss of one instructor, half of KauCC’s ETRO classes have been offered at other campuses. The heavy lab classes are being taught locally.

While all three campuses have programs characterized by relatively low enrollments and graduations, they also state that employment demands by local industry exceed what their programs can provide; and the jobs available are actually high-paying jobs. For example, at UHMauC, 90% of BAS ENGT students find a high paying job after graduation (87% of these on Maui). While most of the demand seems to be for students with bachelor’s degrees, students with an associate’s degree may get hired as well. They also argue that students are frequently pulled out of school for employment before these students complete their degree/certificate requirements. But both the KauCC and HawCC programs can feed into UHMauC’s BAS. There is also an expectation of industry growth and increased job opportunities with the expansion of 5G. The employment opportunities are more numerous and diverse than what may be indicated by the ARPD website based upon the the CIP assigned. More details on employment opportunities are presented below.

It should also be pointed out that all of these programs share some ETRO classes in their curricula. Unfortunately, many of these classes are low-enrolled (enrollment < 10; link requires UH login).

One common challenge for all three campuses is that many of their ETRO classes at the 100 and 200 level are lab/lect-lab classes in which hands-training for some skills is required. Consequently, 100% online delivery is problematic.

**Employment History and Outlook**

90% (87% on Maui) of UHMauC ENGT BAS students (from 2012 to 2020) have found high-paying jobs after graduation. As indicated below (Table I), companies have been consistently hiring BAS ENGT graduates since 2012 (the year corresponds to the graduation year).
Table I
Companies Providing Employment to UHMauC BAS ENGT Graduates Since 2012

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PDS, Maui</td>
<td>WZ Engineering, Maui</td>
<td>PDS, Maui</td>
<td>UCLA, grad school</td>
<td>Akimeka, Maui</td>
</tr>
<tr>
<td></td>
<td>PDS, Maui</td>
<td>Ardent, Maui</td>
<td>PDC, Maui</td>
<td>Monsanto</td>
<td>PDS, Maui</td>
</tr>
<tr>
<td></td>
<td>Boeing, Maui</td>
<td>General Assembly, SF</td>
<td>Sheraton, Maui</td>
<td>CSRA Inc., Maui</td>
<td>Boeing, Maui</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Enterprise, Maui</td>
<td>PDS, Maui</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hnu Photonics</td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td>Hnu Photonics</td>
<td>Hawaiian Dredging Construction</td>
<td>PDS, Maui</td>
<td>IT UHMC</td>
</tr>
<tr>
<td></td>
<td>Boeing, Maui</td>
<td>Unknown</td>
<td>Boeing, Maui</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Castaway Construction &amp; Restoration</td>
<td>Unknown</td>
<td>Hnu-Photonics</td>
<td>PDC, Maui</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hnu Photonics, Maui</td>
<td></td>
<td></td>
<td></td>
<td>PDC, Maui</td>
</tr>
</tbody>
</table>

We feel confident that the local companies will continue hiring ENGT majors from Maui and, as soon as the DE BAS ENGT is launched, ENGT graduates from Hawai‘i and Kaua‘i. For instance, the Pacific Missile Range on Kaua‘i has shown interest in, and has a need for, graduates with a bachelor’s degree.

Employers that have hired HawCC students include the following: FAA, HELCO, HawaiianTel, Subaru Observatory, Gemini observatory, SciTel, Pacific Wireless Communications, Hawai‘i Police Department, Department of Water Supply, State of Hawai‘i, County of Hawai‘i, locally and many are working on the mainland U.S.

100% of AS students on Kaua‘i found high paying jobs after graduation or transferred to a 4-yr degree program (with one exception due to medical reasons). In 2020 alone, Kaua‘i has received more than 20 electronic technician or engineering job (70% technicians) opportunity notifications from mostly Navy subcontractors but also solar installers, Hawai‘i Telecom, Spectrum, Pacific Communications, ASCM (Advanced Silicon Carbide Materials) and Xerox.

The CIP code for ENGT (15.999) does not reflect the variety of jobs that ENGT graduates can apply for, nor does the CIP code reflect these additional jobs that require a bachelor’s degree. Student graduates have been hired as electro-optical technologists, electronics design engineers, software developers, junior engineers,
system administrators, and project engineers. The majority of high tech companies on Maui require graduates with a baccalaureate degree at a minimum. On Kaua‘i, student graduates are mainly hired as electronic technicians at PMRF, but recent graduates have also found employment with PacCom and Xerox. UH Annual Report of Program Data (ARPD) support the claim that there is a state-wide demand for BAS ENGT graduates (Table II). But the county prorated data do not reflect the actual situation. It is clear that there are more jobs offerings on Maui than indicated in the ARPD.

### Table II
Demand Indicators from UHMauC BAS ENGT ARPD 2020

<table>
<thead>
<tr>
<th>Demand Indicators</th>
<th>2017 - 18</th>
<th>2018 - 19</th>
<th>2019 - 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>New &amp; Replacement Positions (State)</td>
<td>72</td>
<td>61</td>
<td>62</td>
</tr>
<tr>
<td>New &amp; Replacement Positions (County Prorated)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The launch of the ENGT program was triggered after a 2008-2009 survey sent to the Maui community and local industries indicated that these high technology companies and organizations have frequently been frustrated when hiring employees from the mainland who often move away in less than two years. This situation created a revolving door, which is costly and detrimental to the viability of local companies and organizations. The ENGT program addressed this concern by growing a locally-trained and highly skilled workforce. Although there is no survey for Hawai‘i and Kaua‘i, local companies have expressed an interest in and a need for, graduates with a baccalaureate degree.

Accompanying this memo are numerous support letters and emails from industry and community supporters.

**General Recommendations that Emerged from the Discussion.**

- None of the campuses supported the idea of eliminating their respective programs, the main rationale being that they are addressing the engineering technology workforce needs of their respective islands. Additional rationales are that their students get employed in high-paying jobs that are likely to increase and diversify in the near future.

- To the extent possible, campuses could share some ETRO courses across campuses through online delivery. This recommendation would be most easily achieved for lecture-only classes, although emerging distance-delivery technologies may permit some classes with lab components to be delivered online.
For those lab or lect-lab classes that include hands-on components that must be completed in face-to-face settings, campuses could split these classes into separate lecture and lab classes. The lecture classes would then be offered online by one campus (possibly rotated among the campuses), while the lab classes offered by each campus.

Following the new WinCC Veterinary Technology hybrid model for neighbor island delivery, in which online delivery is provided, but the students also travel to O‘ahu to complete hands-on lab components in intense short-term (e.g., three days) sessions offered on the WinCC campus.

Develop more effective marketing strategies to attract more high school students to their campuses.

Secure extramural funding to secure additional support for these programs.

Restructure cost of the education to the students (i.e., consider lab fees and investigate how tuition is charged for lab classes versus lecture classes.)

Recommendations and Action Items that Emerged from the Discussion Specific to the Maui ENGT BAS Degree Program

Provide an alternative pathway for four year students in other engineering fields (e.g., electrical, civil, mechanics, and computer) who do not complete mainland or other UH programs. For example, another UH BS Engineering program has a 40% attrition rate. UHMauC’s ENGT BAS program could provide a 1-2 week summer bridge program to catch up on labs in electronics that could be missing and provide a pathway to completion.

HawCC and UHMC signed an MOA in Spring 2019 that will allow HawC AAS ET graduates to enroll in the ENGT program DE modality starting in Fall 2021. A survey done in October 2020 showed that 12 students could enroll in the ENGT program as juniors from UHMauC (8), HawCC (2) and KauCC (2) AS and AAS students (Table III; next page).

Partner: One course GEOG 480 at UH Hilo will replace ETRO 455, Remote Sensing starting in Spring 2021. The online synchronous course is scheduled to avoid scheduling conflicts.

Distance expansion: ENGT courses will be offered online synchronously to off-island students, on the same day and time the in-person course is offered on Maui.
Table III
Enrollment Projections with Every Other Year Acceptance for the UHMauC BAS ENGT

<table>
<thead>
<tr>
<th></th>
<th>Number of New Students</th>
<th>Number of Students at Start of Year in ENGT Program</th>
<th>Number of Students by End of Year (includes 20% attrition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2021</td>
<td>12</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Fall 2022</td>
<td>0</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Fall 2023</td>
<td>12</td>
<td>16*</td>
<td>13</td>
</tr>
</tbody>
</table>

*This estimate is based on an average of 42% of ENGT majors graduating with the BAS in two years.

- **Strategies for lowering lecturer costs**: the program has already identified full-time faculty on campus that are able to contribute TEs to the program. Therefore, the Maui College ENGT BAS program has no need for lecturers starting Fall 2020.

- Increased recruitment for ENGT BAS students through active statewide marketing of scholarship opportunities to high schools and current students.

- UHMC has been awarded a $1 million scholarship grant ($600,000 in scholarships) for ECET, ENGT, and NSCI majors on Maui. These scholarships should attract and retain students in the ECET and ENGT programs. The scholarship follows the awardees up to 4 years.

- Increased recruitment for ENGT students: active statewide and out-of state (with the expansion of the DE BAS ENGT) marketing of 2-4 year scholarship opportunities: UHMauC is in the third phase of a $2.6 million scholarship grant that will benefit UHMauC and HawCC majors on an engineering pathway (ET, ECET, ENGT, and NSCI/engineering), as well as support the ENGT DE program.
Ms. Kathy L. Kaohu, County Clerk  
Office of the County Clerk  
County of Maui  
Wailuku, Hawaii 96793

Dear Ms. Kaohu:


Sincerely,

[Signature]

ALICE L. LEE  
Council Chair

paf:wal:20-279a

Enclosure

WHEREAS, the COVID-19 pandemic continues to affect the State and economy, and the University of Hawai‘i (“UH”) anticipates major budget deficits in the future; and

WHEREAS, according to a report by the University of Hawai‘i Community Colleges (“UHCC”) on organizational and resource planning dated October 12, 2020, UH estimates an imminent reduction of more than $100 million in its Fiscal Year 2021 operating budget that began on July 1, 2020; and

WHEREAS, based on current economic projections, UH plans to respond to anticipated further budgetary challenges by having each unit within the UH system evaluate and discuss ideas for reorganization and reallocation of resources; and

WHEREAS, the UHCC Office of the Vice President held campus meetings with all community colleges and administrative offices in September 2020 that focused on current fiscal year reductions and future fiscal planning, and will continue to discuss the plan at the Board of Regents December 2020 meeting; and

WHEREAS, each campus chancellor led their budget and planning governance groups in discussions regarding possible cost savings, program and department consolidations, alignment of curriculum, operational centralization, and program eliminations; and

WHEREAS, the UHCC’s organizational and resource plan contains discussions and considerations regarding the elimination of academic programs with low enrollment or little workforce benefit; and
WHEREAS, the UHCC's plan identifies the Engineering Technology program at the University of Hawai'i Maui College ("UHMC") as an academic program for possible modifications, citing factors such as the program's small number of majors and graduates; small workforce need in the state; and current alignment with jobs that require an associate degree; and

WHEREAS, the Engineering Technology program offers a Bachelor of Applied Science ("BAS") degree, as well as a two-year Associate in Science degree (which is a pathway towards earning a BAS in 4 years); and

WHEREAS, the Engineering Technology program prepares students to work in industries like high performance computing centers for scientific and engineering applications; solar and wind energy production and distribution; system administration and operations across a variety of sectors; and

WHEREAS, according to a 2019 report by the American Society for Engineering Education ("ASEE"), the technology industry is one of the fastest growing industries in the world and requires highly skilled and trained individuals to meet the demands of the global workforce; and

WHEREAS, according to ASEE over the next decade, the number of jobs is predicted to increase by 5 percent within engineering occupations, by 2 percent within engineering technology occupations, and by 13 percent in the computing occupations; and

WHEREAS, the U.S. Bureau of Labor Statistics estimates employment in computer and information technology occupations to grow 11 percent and to add about 531,200 new jobs by 2029; and

WHEREAS, based on the continued growth of the technology industry, the reduction or elimination of the Engineering Technology program at UHMC runs contrary to current trends and demands within the State and globally; and

WHEREAS, the COVID-19 pandemic has driven many businesses around the world to enable remote workforces, with many of these changes becoming permanent and continuing to influence technology needs; and
Resolution No. ________

WHEREAS, the remote work revolution would not be possible without modern engineering and communications technology, and many decision-makers increasingly view technology investments as essential for maintaining productivity levels and business continuity even when cutting back in other areas; and

WHEREAS, a July 2020 Hawaii Business Magazine article reported that growing number of technology entrepreneurs, engineers, project managers, and marketers are working remotely outside of technology hubs on the mainland and indefinitely normalizing the remote workforce in the industry; and

WHEREAS, with the high cost of living and infrastructure and fierce competition for employees, the technology industry is primed to continue developing a remote workforce and creating local networks of talented and trained workers; and

WHEREAS, an expanded UHMC Engineering Technology program will provide graduates with the skills and knowledge to pursue local and remote work opportunities and remain in Maui County and the State of Hawaii; and

WHEREAS, by retaining and expanding the Engineering Technology program and other related programs at UHMC, Maui County can boost its economy by attracting companies offering high-wage and high-skilled jobs to our local workforce; now, therefore,

BE IT RESOLVED by the Council of the County of Maui:

1. That it urges the State of Hawai‘i, University of Hawai‘i Board of Regents, and University of Hawai‘i Community Colleges to support the retention and expansion of the Engineering Technology program at the University of Hawai‘i Maui College;

2. That it urges the State of Hawai‘i, University of Hawai‘i Board of Regents, and University of Hawai‘i Community Colleges to consider expanding UHMC’s Engineering Technology program and other related programs in high-growth engineering and computer technology, industries; and
Resolution No. ________

3. That certified copies of this Resolution be transmitted to the Honorable David Y. Ige, Governor, State of Hawaii; Dr. David Lassner, President, University of Hawai‘i; Dr. Lui Hokoana, Chancellor, University of Hawai‘i Maui College; University of Hawai‘i Board of Regents; the Honorable Scott Saiki, Speaker, Hawaii State House of Representatives; the Honorable Ron Kouchi, President, Hawaii State Senate; Maui County’s delegation to the State Legislature; and the Honorable Michael P. Victorino, Mayor, County of Maui.
November 6, 2020

Dr. Lui Hokoana  
Chancellor, University of Hawaii Maui College  
310 W Kaahumanu Avenue  
Kahului, HI 96732

Dear Chancellor Hokoana,

This correspondence serves as Pacific Disaster Center’s strong support of the University of Hawaii Maui College’s (UHMC) Bachelor of Applied Science (BAS) in Engineering Technology (ENGT) program.

Working hand-in-hand with our partners in more than twenty countries, Pacific Disaster Center (PDC), managed by the University of Hawaii, is developing solutions based in the latest science, technology, and data/information to help reduce disaster risk, loss, and suffering around the world.

As one of the global leaders in high-tech and applied research, science, and technology for Disaster Risk Reduction, PDC remains supportive of UHMC and its efforts to educate future leaders, helping to meet our steady demand for a Science, Technology, Engineering, and Mathematics (STEM) educated workforce. As such, PDC has been a regular participant in various community- and college-based workforce development initiatives over the past 20 years and has provided entry-level high-tech employment to two graduates from this particular program over the last 4 years. In all, we currently employ 3 recent graduates from UHMC, one graduated from ENGT, and two others from another technology-focused program at the college. This represents about 5% of our entire workforce, and close to 10% of our Maui-based workforce, from only the recent graduate pool.

On average, about 20% of our core technical workforce has studied at UHMC and has joined our center after completing internships.

Considering the above, PDC supports UHMC’s commitment to provide new talent for Maui’s high technology workforce, and its ongoing efforts to enhance and sustain current programs. Through the establishment of the BAS ENGT program, UHMC clearly demonstrates its continued commitment to understanding Hawaii’s current workforce needs and anticipating future industry needs. This curriculum has and will continue to prepare local students for the emerging positions within Hawaii’s growing science and technology sector.

We look forward to our continued partnership with UHMC and working with emerging graduates from the BAS ENGT program in the years to come.

Sincerely,

Ray Shirkhodai  
Executive Director
To Whom it May Concern,

The UHMC ENGT program is the ONLY educational program that is capable of delivering the skills required to provide our nation’s space situational awareness/space domain awareness (SSA/SDA) fields with engineers capable of keeping systems critical to our safety running. Without this program, our ability to design, implement and maintain systems responsible for our safety throughout the world would be unsustainable. As unrealistic as this may seem, it is true. The Maui industry has been responsible for developing many of our Nation’s SDA assets, and within the last decade, many of which have been fielded very successfully by an elite team of SSA/SDA system engineers that were graduates from UHMC’s ENGT program. No other degree comes close to providing graduates capable of working at this level without years of training.

Please know that decisions affecting this program directly affect our nation’s defense, the peace and the safety that we are thankfully able to enjoy on a daily basis.

Please also consider the support this program brings to our community. Without this program, many local families would have needed to leave the islands. Is hotel service/supporting trades and limited agriculture really the only future for Maui’s community?

Mahalo,

Dylan Schwarzmeier
(808)-344-9495
dylan.schwarzmeier@centauricorp.com
UHMC ENGT Graduate
Senior Systems Engineer
Lead Deployment Engineer
Pacific Defense Solutions - Centauri
The information presented in this questionnaire is strictly confidential

**QUESTIONNAIRE FOR EMPLOYERS**

<table>
<thead>
<tr>
<th>Name of the company</th>
<th>Pacific Defense Solutions/Centauri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent’s name</td>
<td>Dylan Schwarzmeier</td>
</tr>
<tr>
<td>Respondent’s position</td>
<td>Senior Software Engineer – Lead Deployment Engineer</td>
</tr>
<tr>
<td>Phone/email</td>
<td>808-344-9495/Dylan.schwarzmeier@centauricorp.com</td>
</tr>
<tr>
<td>Type of institution</td>
<td>Private □ Public □ Other:.........................</td>
</tr>
<tr>
<td>Type of activity</td>
<td>Defense Contractor for US Government</td>
</tr>
</tbody>
</table>

1. For which professions do you expect to create new entry-level jobs in the next 12 months?

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number of jobs</th>
<th>Skills and knowledge requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior Engineer</td>
<td>2</td>
<td>Electronics, Optics, Programming, System Design</td>
</tr>
</tbody>
</table>

2. For which professions do you expect to create new entry-level jobs in the next 5 years?

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number of jobs</th>
<th>Skills and knowledge requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior Engineer</td>
<td>20</td>
<td>Electronics, Optics, Programming, System Design</td>
</tr>
</tbody>
</table>

3. Did you hire BAS ENGT graduate students from UHMC in the past?
   x yes
   □ no   -> skip to Q.5

4. On a scale from 1 to 5, how do you rate BAS ENGT graduates from UHMC you hired?
   □ 1 (not satisfied at all) □ 2 □ 3 □ 4 x 5 (very satisfied) □ Don’t Know

5. What were the reasons why you hired/would hire BAS ENGT candidates? [tick all that apply]
   x skills set from ENGT program matches jobs requirements
   x candidate was recommended by a trusted person (through ENGT program coordinator or faculty, ENGT advisory board, other ENGT graduate, etc)
   x had the opportunity to meet candidates face-to-face (interview, job fair)
   x proximity/retention rates of local hires (UHMC graduates are more likely to stay in their position after they are hired)
   x difficulty to provide necessary salary for mainland candidates
   ☐ lack of qualified candidates from mainland
   x other reasons (please specify): Ability to provide good paying jobs to the local community!

6. What were the reasons why you hired/would hire UHMC BAS ENGT candidates over candidates from other universities?

All of the above. This is one of the only degrees that can provide workers with the skillset required for space situational awareness system design, repair, implementation, and operation.

Thank you for your help!
The information presented in this questionnaire is strictly confidential

QUESTIONNAIRE FOR EMPLOYERS

<table>
<thead>
<tr>
<th>Name of the company</th>
<th>Pacific Disaster Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent’s name</td>
<td>Ray Shirkhodai</td>
</tr>
<tr>
<td>Respondent’s position</td>
<td>Executive Director</td>
</tr>
<tr>
<td>Phone/email</td>
<td>808-891-7918; <a href="mailto:rays@pdc.org">rays@pdc.org</a></td>
</tr>
<tr>
<td>Type of institution</td>
<td>public</td>
</tr>
<tr>
<td>Type of activity</td>
<td>Technologies (used for disaster reduction)</td>
</tr>
</tbody>
</table>

1. For which professions do you expect to create new entry-level jobs in the next 12 months?

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number of jobs</th>
<th>Skills and knowledge requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers (skilled in software)</td>
<td>1-2</td>
<td>Programming; data scientist; AI; testing &amp; QA.</td>
</tr>
</tbody>
</table>

2. For which professions do you expect to create new entry-level jobs in the next 5 years?

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number of jobs</th>
<th>Skills and knowledge requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester &amp; QA</td>
<td>1-2</td>
<td>Software testing and quality assurance</td>
</tr>
<tr>
<td>Software Eng</td>
<td>2-3</td>
<td>Software programming; database; data sciences</td>
</tr>
</tbody>
</table>

3. Did you hire BAS ENGT graduate students from UHMC in the past?
   √ yes 2 from BAS ENGT (last five years)
   □ no  -> skip to Q.5

4. On a scale from 1 to 5, how do you rate BAS ENGT graduates from UHMC you hired?
   □ 1 (not satisfied at all)  □ 2  □ 3  □ 4  √ 5 (very satisfied)  □ Don’t Know

5. What were the reasons why you hired/would hire BAS ENGT candidates? [tick all that apply]
   √ skills set from ENGT program matches jobs requirements
   √ candidate was recommended by a trusted person (through ENGT program coordinator or faculty, ENGT advisory board, other ENGT graduate, etc)
   □ had the opportunity to meet candidates face-to-face (interview, job fair)
   √ proximity/retention rates of local hires (UHMC graduates are more likely to stay in their position after they are hired)
   □ difficulty to provide necessary salary for mainland candidates
   □ lack of qualified candidates from mainland
   □ other reasons (please specify): ..................................................................................................................

6. What were the reasons why you hired/would hire UHMC BAS ENGT candidates over candidates from other universities?

       Close proximity and retention of local hires helps stability on our operation & for candidates, provides high-tech high-pay opportunities to remain with family and on island.
       ..................................................................................................................................................................
Subject: UHMC Engineering Tech program and its importance to MAUI’s evolution and people

Aloha University of Hawaii Community Colleges Board,

It is with deep regret that we have come to understand that there is consideration to negatively restructure or eliminate the UHMC Engineering Tech program.

We do not support this proposed action and hope that this will be reconsidered. Please carefully consider our specific points and the important program below.

We fully support Maui Council person Lee’s Resolution 20-453. Here is a link.

Need: We strongly feel that the UHMC Tech education on Maui is an area that should be significantly enhanced and grown. It is an almost universally accepted notion that tech jobs are some of the most needed, best paying, and most sought-after opportunities for students to pursue for their career and make a good living. Curtailing or eliminating this program seems out of step to the changes we are all experiencing.

Background: Maui is a classic situation of an outer island with stagnant levels of growth, incomes, and housing. It has become highly dependent on tourism and its associated service jobs. The Maui County MEDB has invested significant energy and money helping to get a “green shoot” of tech going on Maui. MEDB has supported the local high School STEM programs. UHMC Tech opportunities has been an important part of that program. MEDB, the Maui Council, and the Mayor have long promoted expanding Maui’s self-sufficiency and diversification of businesses including adding more high-tech jobs and business opportunities.

Maui Families: Many families in Maui cannot afford full College / University costs but still have students graduating from high school with aspiration to do more than “work” in a hotel or restaurant. Even the hoped for expanding agricultural opportunities are going to rely on more “tech”. Having local families being able to provide the opportunity of their children to get
enhanced tech education at UHMC is a critically important component to the evolution of Maui businesses and culture.

Our organization: Maui Robotic Vehicle Association (MRVA) is a recent entrant to helping facilitate the growth of tech education and tech jobs on Maui. The UHMC Engineering Tech program is one of several initiatives we are supporting including one at a local high school. We ask you to check out our program at https://www.mauiroboticvehicles.com/home.

The UHMC AVT team: The UHMC is currently engaged in two Internationally recognized Autonomous vehicle competitions. In the largest of these competitions the UH-Autonomous Vehicle Technology Team is currently ranked in the Top 10 against 40 International Universities and Colleges. Here is a short Press release that recently ran in the Maui Now. https://mauinow.com/2020/09/23/uh-maui-students-successfully-compete-in-hack-a-thon-autonomous-vehicle-tech-race/ ...

Recently the UHMC AVT team has been joined by UH-Manoa students and faculty to expand the effort and expand intra-campus collaborations. It is now the UH AVT team. Here is the UH AVT Team site https://www.hawaiiavttech.com/home. The team has many industry and local sponsors and supporters. Please see the website for more.

Expanding opportunities: This coming summer MRVA expects to have several UHMC Engineering Tech interns to help these young people get hands-on experience in engineering, building, and maintaining robotic / autonomous vehicles. We are hoping to do this in conjunction with UHMC and MEDB.

--------------- -------------- ---------------

Adversely affecting or ending the UHMC Tech programs will likely end the MVRA effort and UH’s ability to participate in these unbelievably valuable competitions and learning opportunities.

We ask that the UHMC Tech program be expanded and recognized as a critical investment opportunity to help Maui expand, evolve, and be a more substantial contributor to the technology growth and diversification jobs and businesses of Hawaii.

Mahalo,

Gary Passon, Founder MRVA

Copies to: UHCC, and others in the UH system.

Maui County Council / Mayor / MEDB / Maui Legislative Representatives
The information presented in this questionnaire is strictly confidential.

QUESTIONNAIRE FOR EMPLOYERS

Name of the company: H Nu Photonics LLC
Respondent’s name: Dan O’Connell
Respondent’s position: CEO, Owner
Phone/email: (808)214-4699 / doconnell@hnuphotonics.com
Type of institution: √ private □ public □ other: 
Type of activity: Electro-Optics / Bio-Photonics / Computers / Engineering / Manufacturing / Prototyping / Design

1. For which professions do you expect to create new entry-level jobs in the next 12 months?

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number of jobs</th>
<th>Skills and knowledge requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photonics</td>
<td>2</td>
<td>Bachelor or Associates Degree</td>
</tr>
<tr>
<td>Bio-Tech</td>
<td>2</td>
<td>Bachelor or Associates Degree</td>
</tr>
<tr>
<td>Electronics</td>
<td>2</td>
<td>Bachelor or Associates Degree</td>
</tr>
</tbody>
</table>

2. For which professions do you expect to create new entry-level jobs in the next 5 years?

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Photonics</td>
<td>5</td>
<td>Bachelor or Associates Degree</td>
</tr>
<tr>
<td>Electronics</td>
<td>8</td>
<td>Bachelor or Associates Degree</td>
</tr>
<tr>
<td>Computers</td>
<td>8</td>
<td>Bachelor or Associates Degree</td>
</tr>
</tbody>
</table>

3. Did you hire BAS ENGT graduate students from UHMC in the past?

√ yes □ no -> skip to Q.5

4. On a scale from 1 to 5, how do you rate BAS ENGT graduates from UHMC you hired?

□ 1 (not satisfied at all) □ 2 □ 3 □ 4 √ 5 (very satisfied) □ Don’t Know

5. What were the reasons why you hired/would hire BAS ENGT candidates? [tick all that apply]

√ skills set from ENGT program matches jobs requirements
√ candidate was recommended by a trusted person (through ENGT program coordinator or faculty, ENGT advisory board, other ENGT graduate, etc)
√ had the opportunity to meet candidates face-to-face (interview, job fair)
√ proximity/retention rates of local hires (UHMC graduates are more likely to stay in their position after they are hired)
□ difficulty to provide necessary salary for mainland candidates
□ lack of qualified candidates from mainland
□ other reasons (please specify): ........................................................................................................................................

6. What were the reasons why you hired/would hire UHMC BAS ENGT candidates over candidates from other universities?

Students and graduates from UHMC are resident to Maui, familiar with Maui, with local ties and family. UHMC candidates are more likely interested in long term employment and a career path on Maui than a short term Maui Experience.
The information presented in this questionnaire is strictly confidential

QUESTIONNAIRE FOR EMPLOYERS

<table>
<thead>
<tr>
<th>Name of the company</th>
<th>eWorld Enterprise Solutions, inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent’s name</td>
<td>Steven Sakata</td>
</tr>
<tr>
<td>Respondent’s position</td>
<td>Vice President</td>
</tr>
<tr>
<td>Phone/email</td>
<td>808-489-5806 <a href="mailto:stevesakata@eworldes.com">stevesakata@eworldes.com</a></td>
</tr>
</tbody>
</table>
| Type of institution   | ☑ private ☐ public ☐ other:..........................
| Type of activity      | Technology solutions              |

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<td>3</td>
<td>Java, Javascript, SQL, Cloud, database</td>
</tr>
<tr>
<td>Help desk</td>
<td>10</td>
<td>Interpersonal, phone, writing, data entry</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>3</td>
<td>Business degree, writing, analysis</td>
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3. Did you hire BAS ENGT graduate students from UHMC in the past?
   ☑ yes
   ☐ no → skip to Q.5

4. On a scale from 1 to 5, how do you rate BAS ENGT graduates from UHMC you hired?
   ☑ 1 (not satisfied at all) ☐ 2 ☐ 3 ☐ 4 ☐ 5 (very satisfied) ☐ Don’t Know

5. What were the reasons why you hired/would hire BAS ENGT candidates? [tick all that apply]
   ☑ skills set from ENGT program matches jobs requirements
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   ☑ difficulty to provide necessary salary for mainland candidates
   ☑ lack of qualified candidates from mainland
   ☑ other reasons (please specify): .............................................................

6. What were the reasons why you hired/would hire UHMC BAS ENGT candidates over candidates from other universities?
   *Local to Hawaii, looking for staff with roots in Hawaii. Looking to establish cluster of staff on all major neighbour islands.*

Thank you for your help!
Letter of Support for the Hawai‘i Community College Electronics Technology Program

To whom it may concern:

Aloha, my name is Rodrigo Romo, I am the Program Director for the Pacific International Space Center for Exploration Systems (PISCES). We are a state agency attached to the Department of Business, Economic Development & Tourism (DBEDT) and are located in Hilo, HI.

As the COVID-19 pandemic has shown us, Hawaii’s high dependency on the tourism industry as an economic driver can have dire consequences. It will be critical for the reboot of the State’s economy to diversify our economic portfolio to include other industries that will create higher paying jobs and that will not depend so heavily on tourists.

If we as a State are going to diversify the economy so it is not so dependent on tourism, we are going to have to create technology driven industries, industries in which the skills of technicians are going to be vital. We are currently working on a couple of aerospace related projects that could create a local demand for electronics technicians and that could well lead into the creation of new programs within HCC. The astronomy industry also utilizes these skills.

The work that Chip has done with the Electronics Technology Program is exactly the type of program that the State currently needs to invest in these difficult times to create a workforce that will be well equipped with a set of skills that will allow them to enter the labor force as the economy recovers. To cut this program at this point would be narrow sighted. I have had the opportunity to work with Chip. Two of my best summer interns I’ve had working on our robotics program were students from that program, I can testify to the high quality of their skills.

I strongly support this program and hope that consideration is given to retain it and invest in it in order to help the State’s economic recovery.

Mahalo,

Rodrigo Romo
Project Director
PISCES
Date: 11/09/2020

Support to HCC Electronics Technology Program

Aloha. I am Dean Cevallos, Principal at Kea'au High School. This letter is to support our program at HCC in Electronics. Career Technology Education (CTE) at our school is partnered with HCC and UH in carpentry and we are realigning our pathways that will include Electronics. One third of my students assimilate to our HCC campus and need educators like this that work to excel our students into professionals that can contribute to our community. Let’s make sure we continue to support these types of educators.

Sincerely,

Dean Cevallos, Principal
Kea'au High School
Dear Bernard,

As a convener of the Vibrant Hawaii “Workforce development” conversation, I have developed an appreciation for the importance of hands-on technology programs as part of one’s learning journey. In fact, our hui has identified the following priority:

**We value and prioritize workforce and professional development and we demonstrate this by:** “Revitalizing career technical programs, previously known as vocational or trade/professional, at high schools and community colleges so students can access diverse career pathways”.

As such, I believe that our HCC “Electronics Technology Program” must absolutely be preserved, supported, and promoted. It needs to flourish as it is one of the way our economy can ultimately be diversified to include Technology and Innovation as an industry on our island.

I encourage you to persist, lead, and teach.

Mahalo,

Caroline Landry

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Board Member,
Workforce Development convener

---

Bernard "Chip" Michels
Hawaii Community College
Electronics Instructor/Assistant Professor
brm3@hawaii.edu
(808) 987-5800

"When a problem comes along... You must whip it"
— Devo
------ Forwarded message ------
From: Noel Morin <noelgmorin@gmail.com>
Date: Sat, Nov 7, 2020 at 12:55 PM
Subject: Support for the HCC Electronics Technology Program
To: <brm3@hawaii.edu>

Aloha Mr. Michels,

I live in Hilo and an advocate for technical skills development. I'm involved in The Success Factory, an organization dedicated to expanding STEM opportunities for Hawaii's youth. I'm writing to let you know that I'm in full support of your program at the Community College. More than ever, we need to empower our local youth and workforce with the skills necessary for future careers, something this program is contributing to. I support its growth and expansion so that we can be there for the development of our youth and the transition of our workforce to jobs and careers in the technology space.

Sincerely,
Noel Morin

Noel Morin
(808) 987-7428
noelgmorin@gmail.com

Looking for ways to help solve the climate crisis?

- Learn about our climate crisis and how to solve it at the Climate Reality Project.
- Create the political will to support effective, bipartisan solutions! Join the Citizens' Climate Lobby.
- Kick Gas! Drive Electric.

--
Bernard "Chip" Michels
Hawaii Community College
Electronics Instructor/Assistant Professor
brm3@hawaii.edu
(808) 987-5800

"When a problem comes along...You must whip it"
Devo
Aloha,

I am writing in support of the Electronics Technology program at HCC.

I have a deep history in electronics and technology - both my father and step-father were PhDs in Electrical Engineering, and I graduated with a Bachelors Degree with First Class Honors in Electrical and Electronic Engineering from the University of Canterbury (Christchurch, New Zealand). I worked for 20 years in Silicon Valley in engineering and engineering management positions at Palm, HP, Facebook, and Intel, and I was the Vice President of Software Engineering at the smartwatch company Pebble. I consult today to technology companies, from startups to multinational corporations, on how to build and operate effective engineering organizations. I have around 100 issued US patents, and many more international patents to my name.

As someone who became fascinated by electronics at an early age, I have benefitted immensely from instruction and mentorship in engineering throughout my life. Like many future engineers, I disassembled many household electronics and built my own circuits starting around the age of 8. I attended a community college evening course in electronics at age 12, and was propelled into my career after studying engineering at university, including significant and crucial hands-on instruction. Building these skills allowed me, despite coming from a remote island in the pacific, to launch my career in Silicon Valley. Throughout my career I have both benefitted by the teachings of others in the field, as well as experienced the value in seeing others thrive and innovate when I taught and mentored them.

Having worked in high-tech for a long time, I have seen a clear transition through the years towards the democratization of hardware engineering. Even despite the challenges of COVID-19, the global supply chain and distribution mechanisms for electronic (and other related hardware) components means that it is now possible to be an effective, innovative, successful engineer from anywhere in the world, including from right here on the Big Island. The skills to conceptualize, design, build, analyze, debug, and fix electronics are only becoming increasingly valuable in today’s world. And whether it is building new innovative products or solutions for fledgling industries or new companies on the Big Island, or supporting existing critical components of the island’s economy, electrical and electronic engineering is the type of high-skilled, high-paying, economic diversification change-engine skillset that should continue to be invested in on Hawai’i island.

Mahalo,
Kean Wong
kean@hikiwi.consulting