

Education to Workforce Report

Hawai'i P-20 Partnerships for Education

Science, Technology, Engineering, Mathematics

STEM CAREER PATHWAYS

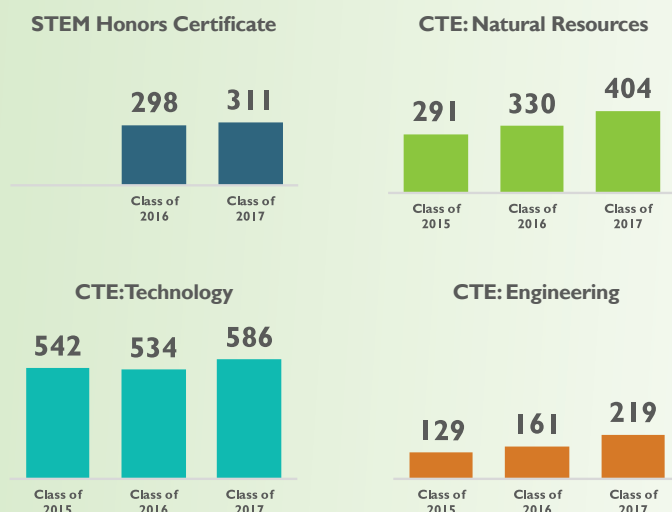
This report explores education pathways in Hawai'i that prepare students for STEM careers, starting with the Hawai'i State Department of Education (HIDOE), continuing to the University of Hawai'i (UH), and leading to the workforce.

Hawai'i's [Comprehensive Economic Development Strategy](#) for 2016-2020 identified the need to focus on STEM education as a strategy to strengthen our local economy. To support this statewide priority, HIDOE recently adopted new computer science standards and the Next Generation Science Standards to better prepare students for challenges and opportunities in the 21st century global economy. Of the five strategic directions adopted by UH, two include a focus on STEM. The [Hawai'i Graduation Initiative](#) (HGI), which aims to increase the educational capital of the state, includes a strategy to align programs with community and workforce needs. The number of STEM degrees awarded is one of HGI's measures of success. The [Hawai'i Innovation Initiative](#) focuses on diversifying Hawai'i's economy by partnering with the business community to link scientific discovery with applied research and economic development.

How Many Public School Graduates Complete STEM-Related Programs?

HIDOE students may pursue academic or career-related STEM pathways. Students earn STEM honors certificates by completing higher level math and science courses, including a STEM capstone project. HIDOE offers over 60 Career Technical Education (CTE) programs of study within six career pathways. CTE concentrators complete a sequence of courses that align academics with technical knowledge and skills that prepare students for further education or careers. For this report, CTE programs of study that align with STEM careers include programs that focus on natural resources, technology, or engineering.

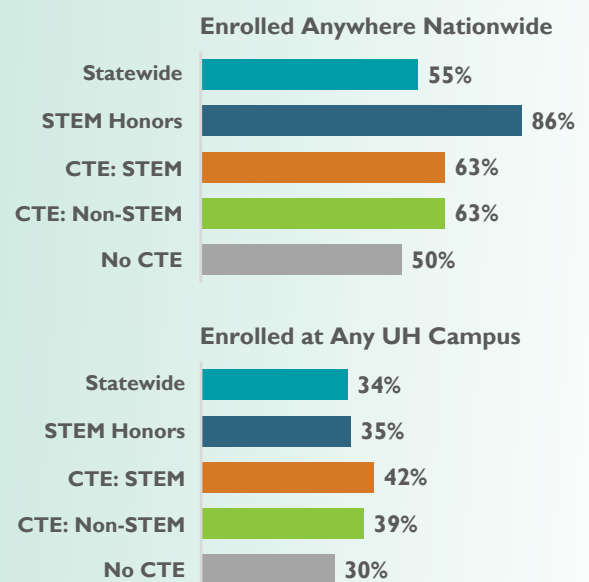
- Since 2015, the number of HIDOE graduates who have earned a STEM honors certificate or completed STEM-related CTE programs of study has increased. STEM honors certificates were first introduced in 2016.



Are Public School STEM and CTE Graduates More Likely to Enroll in College?

Most STEM occupations require postsecondary education or training. Immediate college enrollment rates after high school graduation are an indicator of how many HIDOE graduates are taking the next step in their academic journey.

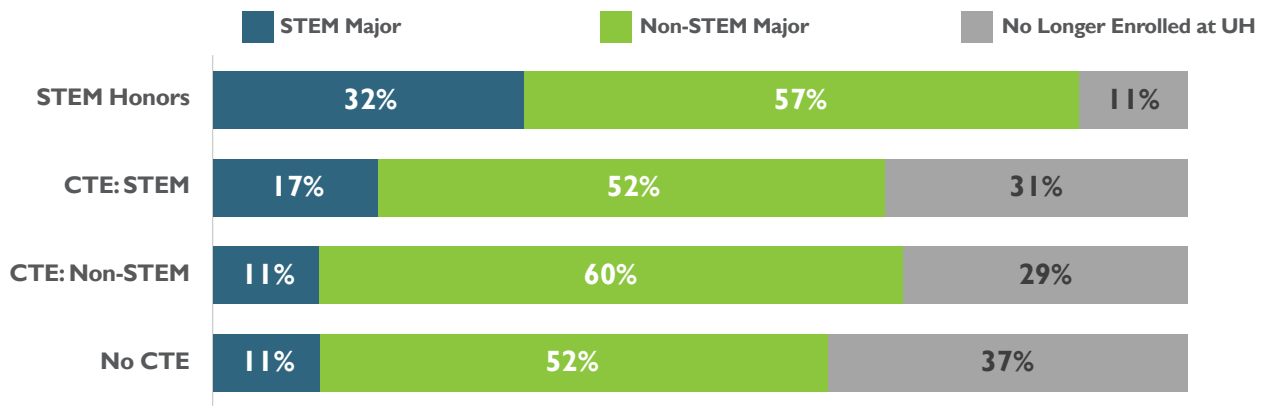
- Graduates who earned a STEM honors certificate or completed a CTE program of study had higher college enrollment rates compared to the statewide average. Nationwide college enrollment includes enrollment at UH.



HIDOE Class of 2017 graduates postsecondary enrollment in the fall after high school. Nationwide enrollment based on National Student Clearinghouse and UH enrollment.

Are STEM and CTE Graduates More Likely to Pursue STEM Majors at UH?

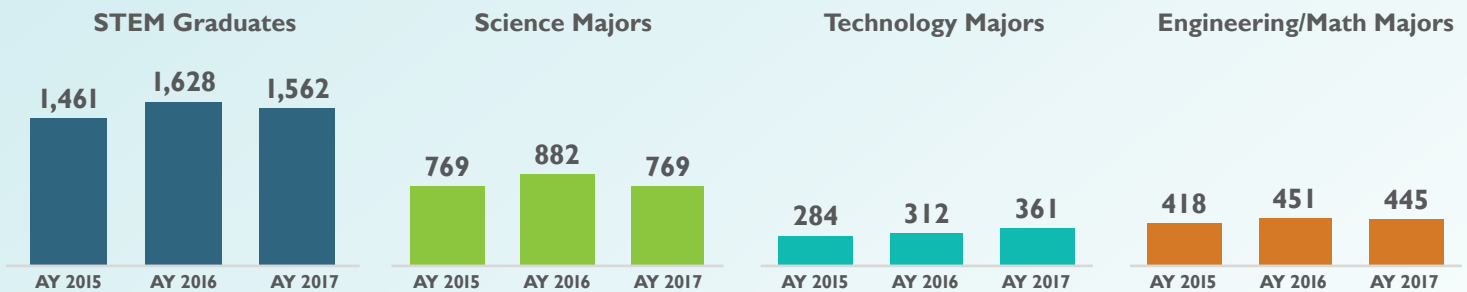
- STEM pathway opportunities in high school appear to influence students' decisions to pursue STEM in college.
- HIDOE graduates who earned a STEM honors certificate were most likely to declare a STEM major at UH by the second spring after graduation.
- STEM honors graduates were also most likely to still be enrolled at UH at the end of the second year after high school.



HIDOE Class of 2014-2016 graduates enrolled at UH in the fall after high school.

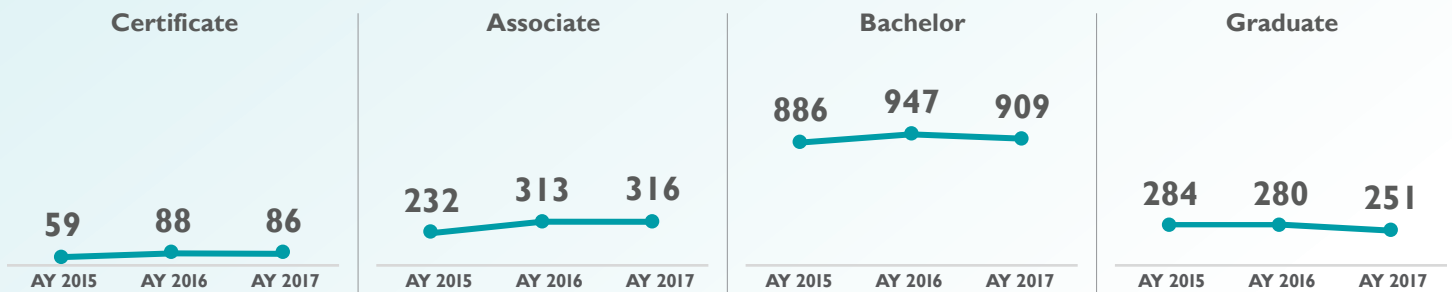
How Many UH Graduates Earn STEM Degrees and Certificates?

- The number of UH graduates earning a STEM degree or certificate has increased over recent Academic Years (AY).
- Although most STEM graduates earned awards in the sciences, the number of technology graduates has increased by 27% over the last three AY.



For these STEM graduates, the highest level of STEM award earned may provide insight to how the student's education and training align to the educational attainment required for STEM-related occupations.

- The majority of STEM graduates earned bachelor's degrees, but the number of graduates earning associate's degrees has increased by 36%.



UH certificates of less than one year are not included.

Do STEM Graduates Remain in Hawai'i's Workforce?

- In the five years after graduation from UH, science graduates were least likely to be found working, technology graduates were most likely to be found working, and this varied significantly by major.

FOUND WORKING IN HAWAI'I

	TOP 5 MAJORS	GRADUATES	YEAR 1	YEAR 3	YEAR 5
SCIENCE 	Biology	539	68%	54%	45%
	Chemistry	115	62%	50%	45%
	Marine Science	106	50%	49%	47%
	Zoology	104	59%	34%	28%
	Microbiology	100	71%	58%	53%

	TOP 5 MAJORS	GRADUATES	YEAR 1	YEAR 3	YEAR 5
TECHNOLOGY 	Computer Science	162	67%	56%	54%
	Creative Media	159	72%	59%	53%
	Educational Technology	116	89%	84%	79%
	Information Technology	102	60%	60%	54%
	CENT*	84	65%	74%	71%

*Computing, Electronics & Networking Technologies

	TOP 5 MAJORS	GRADUATES	YEAR 1	YEAR 3	YEAR 5
ENGINEERING & MATH 	Civil Engineering	317	79%	73%	66%
	Electrical Engineering	236	63%	53%	45%
	Mechanical Engineering	214	61%	46%	40%
	AEC Technologies**	117	71%	72%	68%
	Mathematics	113	64%	55%	56%

**Architectural, Engineering & CAD Technologies

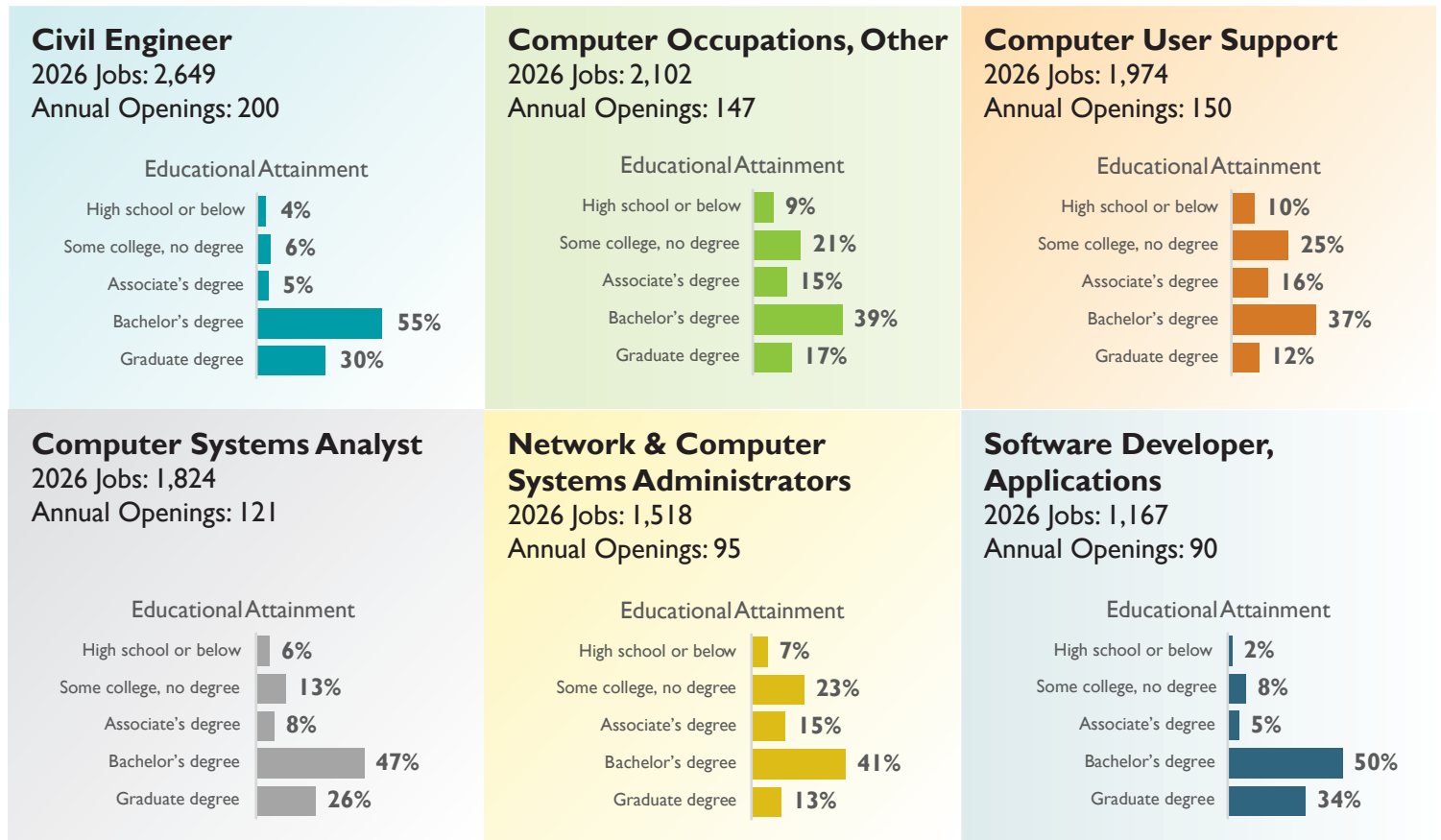
	TOP 5 MAJORS	GRADUATES	YEAR 1	YEAR 3	YEAR 5
NON-STEM 	Liberal Arts	5,236	65%	63%	61%
	Nursing	1,555	87%	81%	77%
	Business Administration	1,007	55%	49%	45%
	Psychology	1,000	67%	59%	51%
	Accounting	874	74%	70%	63%

Note: The data do not account for people who are self-employed, federal employees, work in a "cash economy", work out of state, or enroll in college out of state.

UH graduates from academic years 2009-10 to 2012-13 found in Hawai'i's unemployment insurance wage data in years 1, 3, and 5 after graduation.

What are the STEM Workforce Projections for Hawai'i?

Between 2016 and 2026, STEM occupations in the state are projected to grow 3.7% to 31,965 jobs. This is expected to result in an estimated 2,485 annual job openings in STEM occupations. Educational attainment for the STEM occupations projected to have the highest annual job openings are listed below.



Source: EMSI, October 2018. Retrieved from <http://uhcc.hawaii.edu/workforce/index.php>

The UH Office of the Vice President for Community Colleges developed a website that provides a holistic snapshot of Hawai'i's industry sectors, current and future labor market trends, and how UH programs align with workforce. <http://uhcc.hawaii.edu/workforce/index.php> Data about Hawai'i's students, workers, and industries strengthen partnerships between education, workforce development, economic development, business, and community organizations by allowing partners to make informed decisions to collectively build a stronger economy for the state.



Hawai'i P-20 improves college and career readiness for students by measuring progress from early education to the workforce and developing programs that impact education policy and activate change. Hawai'i P-20 is the managing partner of the Hawai'i DXP.



Hawai'i DXP links education and workforce data so educators, policymakers, and other stakeholders can better prepare Hawai'i's students for the workforce, as well as create a diversified economy that employs graduates right here at home.

WHAT QUESTIONS CAN HAWAII DXP HELP ANSWER FOR YOU?

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