

MINING PROGRAMS

UA GRADUATES



The University of Alaska has identified 40 programs whose graduates are important to the mining industry in Alaska. Detailed below are their employment and wage outcomes, plus other information that can be used to assess UA programs and their usefulness to one of the state's key industries.

Graduates from Key UA Programs

Working in Alaska within One Year of Graduating

(Rate | Actual)

MINING OPERATOR

89.8% | 97

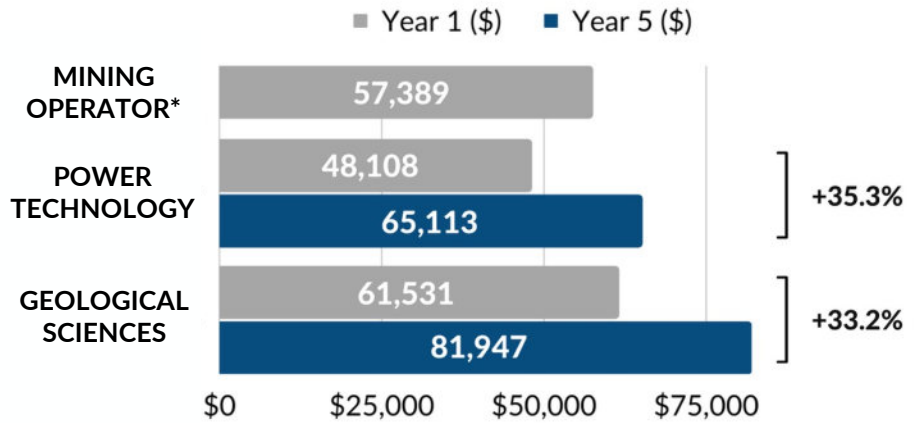
POWER TECHNOLOGY

89.4% | 379

GEOLOGICAL SCIENCES

65.5% | 91

Wage Growth

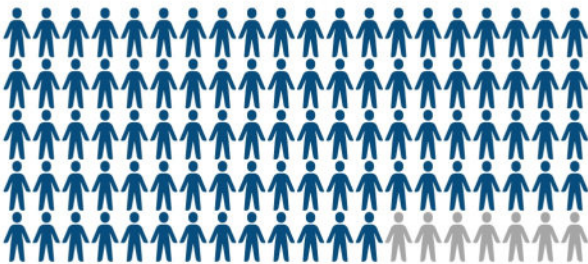


*Year 5 wage growth unavailable. See page 5 for more information.
Note: Data reflects the actual employment and wage data of all graduates, and is not limited to those employed in mining.

UA Programs Boost Alaska's Hire Rate

93.1%

Of Working Graduates are Alaska Residents

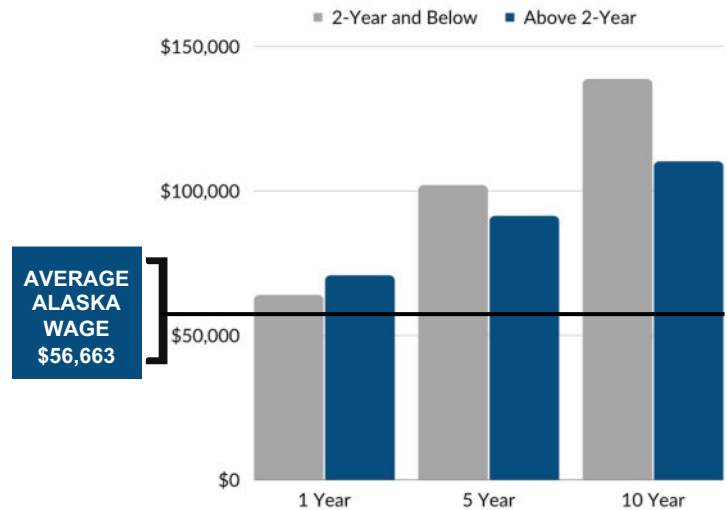


For comparison, residency is...

79.8% for all Alaska Workers

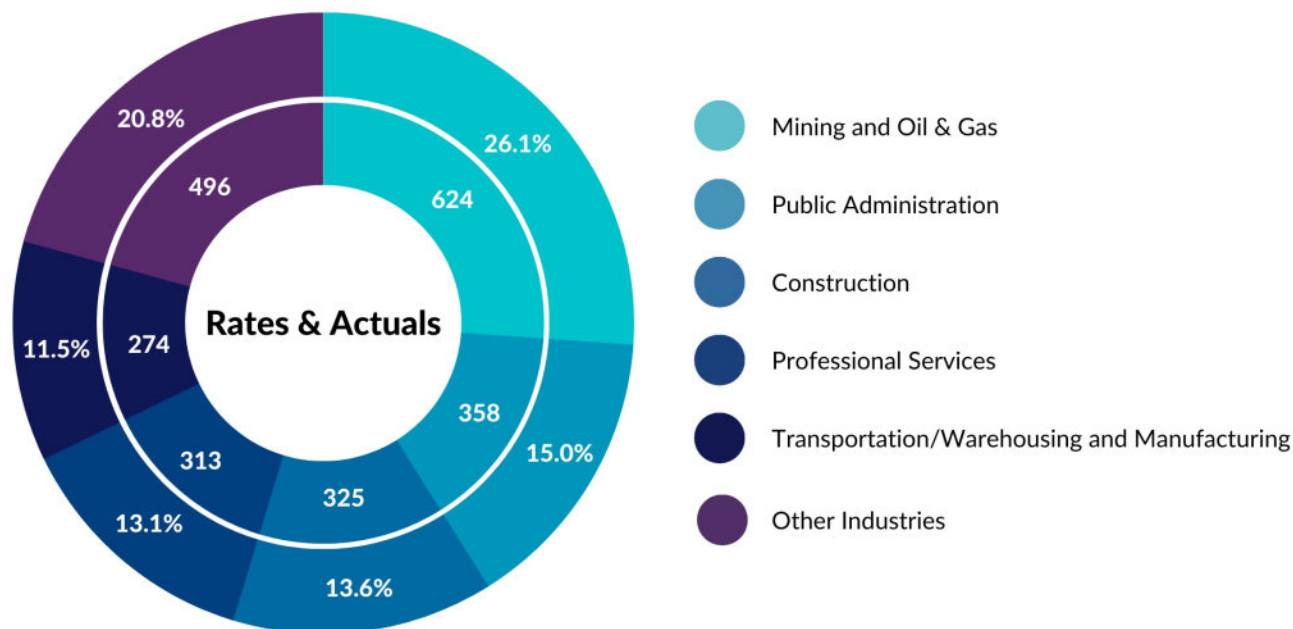
61.8% for all Mining Workers

Program Graduates' Average Wage





Industries Where First-Year Graduates Work



Over the last three years, the mining industry hired...



406

Mining and Geological Engineers
(Including Mining Safety Engineers)



168

Geoscientists
(Except Hydrologists and Geographers)



81

Geological Technicians
(Except Hydraulic Technicians)



61

Heavy and Tractor-Trailer Truck Drivers

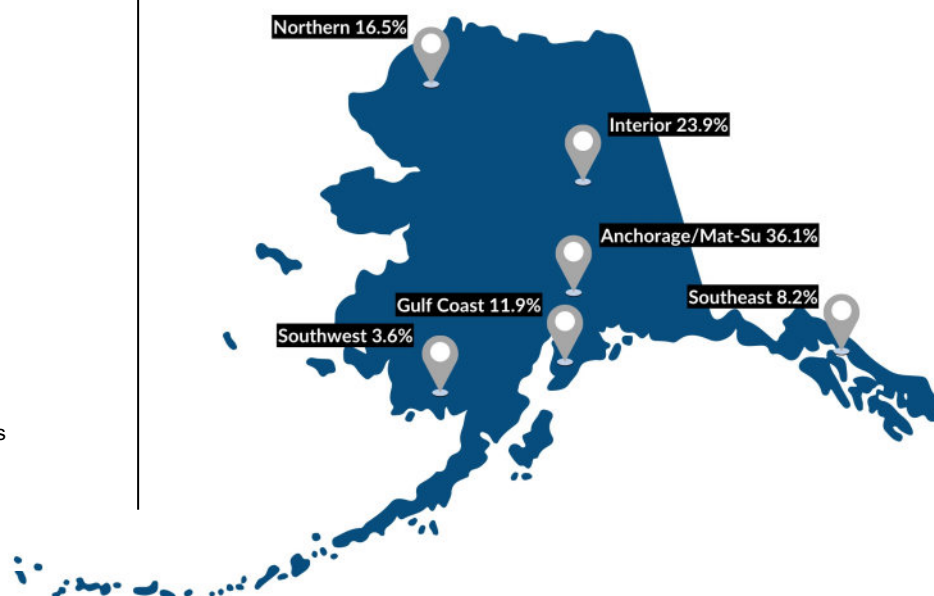


30

Chemical Technicians

Note: These occupations require postsecondary education and include all hires, not just UA grads, to identify greatest demand.

Regions where UA mining program graduates work





Programs and the Industry Connection

Education pays — people working jobs in Alaska that require a high school degree earn an average of \$44,679 annually, which jumps to \$63,883 for jobs that require associate degrees, \$86,140 for those that require bachelor degrees, and \$102,511 for jobs in Alaska that require graduate or professional degrees.

Alaska's six large mines currently in production are already an important part of the state's economy, and the demand for the minerals and metals mined in Alaska is expected to grow. Factors include 1) the ongoing transition to more electric vehicles, and 2) concerns about international supply chains highly dependent currently on production from China. Some of UA's programs are specifically targeted to the mining industry's needs — mining operator training, for example — and many others provide training and education critical to mining and other industries as well.

The number of job openings in Alaska has jumped by 40 percent from 2019 to 2022, and spending from the 2021 Infrastructure Act— nearly \$3 billion has already been announced so far for Alaska — will make filling high-wage jobs, most of which require postsecondary training or education, even more difficult. The state's ten consecutive years of negative net migration (more people moving out of the state than moving in) creates an additional challenge for Alaska employers looking to fill open positions. These challenges, however, create unprecedented opportunities for Alaska workers, especially those with sought-after education and training credentials.

Attempts to precisely match the supply of graduates with the demand for certain workers by industry would be misguided, but the data shown here are appropriate for general conclusions about the benefits of certain UA programs. More importantly, this information can help facilitate conversations with key industries about how programs could be expanded, changed, or developed to provide them with more and better-trained workers.

Since 2011, 2,939 people have graduated from programs relevant to the state's mining industry, producing the following outcomes:

Degree Type*	Graduates	% Employed in Alaska within 1 Year	Average First-Year Wage (\$)	Average Fifth-Year Wage (\$)	Average Tenth-Year Wage (\$)
Certificate	825	85.7%	\$48,271	\$63,474	\$77,611
Associate	1,220	86.7%	\$73,703	\$116,926	\$148,799
Bachelor and Above	894	70.0%	\$70,722	\$91,283	\$110,167

*Certificates (1-2 yrs); Associate Degrees (2 yrs); Bachelor Degrees and Above (4-4+ yrs).



Questions and Answers

Where do the employment numbers come from?

The University of Alaska and the Alaska Department of Labor and Workforce Development's Research and Analysis Section work together each year to identify where university graduates are working in the state and what their wages are.

The detailed employment and wage information comes from quarterly reports that nearly all Alaska employers are required to file under state unemployment insurance law. Those records do not include federal workers or the self-employed, so university program graduates in those categories are not shown here.

Wages numbers have been annualized and have been inflation adjusted to 2022 wages to make them comparable across the ten-year window of this report. Annualizing wages is a method used to calculate what the wages would be if all workers worked all four quarters in the year.

Why in some cases do the data show that associate degree graduates earn more than bachelor degree and above graduates?

This is a good example of the importance of the more detailed data on page 5, which show that a large number and percentage of the associate degree graduates completed a Process Technology program. Those graduates had higher-than-average first year wages and *much* higher than average fifth year wages. That program has proven remarkably successful at placing graduates with Alaska employers partly because it was designed for Alaska employers, and a high percentage of those graduates are hired right away.

The detailed data on page 5 also show the graduates from the two bachelors degree engineering programs and the two masters degree engineering programs are employed at a lower percentage in Alaska within a year, due perhaps to the fact that some are finding jobs outside of Alaska. Another important detail from page 5 is that the first year and fifth year earnings for the engineering graduates are below those for the process technology graduates, who tend to work in the especially high-paying Alaska oil and gas and mining industries. Though engineering graduates also work in those industries, they are also valuable to federal, state, and local governments, and likely to a wider variety of other industries.

Can this information be used for program evaluation?

It can inform those types of decisions, as well as decisions about which programs to expand, but there is far more to consider than which programs have the highest earnings or best employment outcomes. Other data such as short-term and long-term industry and occupational projections, enrollment numbers, and tuition and program costs are important, and so are less formal insights and information gathered from industry and other key stakeholders. When making key decisions about university programs, it is also important to consider the most recent developments in the economy that cannot yet be measured.

How were programs & target occupations selected?

The University of Alaska analyzed labor market information to determine the largest and fastest-growing occupations in the mining industry, then linked programs based on occupations' titles and characteristics. While other UA programs also provide some preparation for mining jobs, this report excludes general administrative training programs that are useful for all sectors, such as accountants and human resource professionals.

How long does it take to earn a certificate, associate degree, or bachelor degree?

If a student is attending classes full-time, certificate programs take less than 2 years (often 1 year or less); associate degrees are generally 2 years; bachelor degrees are four years; and advanced degrees are more than 4 years.

Why do graduates from some of the geoscience and geophysics programs have lower percentages finding work in Alaska?

One probable reason is that grads from those programs are more likely than grads from other programs to find work outside Alaska. For now at least, employment and wages outside of Alaska can't be comprehensively tracked.

Do graduates work only in the mining industry?

No, they work in a variety of industries. Graduates being hired and paid well by employers in any industry indicate successful outcomes for both the program graduates and the Alaska economy.



40 Programs Linked to Mining

Target Occupations	University	Major	Degree	Graduates	% Employed in AK within a year	1st-year average wage	5th-year average wage
Mining Machinery Operators, Operating Engineers, Extraction Workers, Mine Cutting Machine Operators, Continuous Mining Machine Operators, Excavating and Loading Machine Operators, Setters, Service Unit and Plant Operators (47-5049, 47-2073, 47-5099, 47-5042, 47-5041, 53-7032, 51-9012, 47-5013, 51-8099)	UAF	Surface Mine Training	Non-credit Certification	19	94.7%	22,246	*
	UAF	Underground Mine Training	Non-credit Certification	67	92.5%	67,491	*
	UAF	Mining Mill Operations	Occupational Endorsement Cert	28	82.1%	45,705	*
Maintenance/Repair Workers, and Industrial Machinery Mechanics & Mobile Heavy Equipment /Diesel Mechanics (49-9071, 49-9041, 49-9043, 49-3042, 49-3031)	UAF	CTT: Facilities Maintenance	Occupational Endorsement Cert	101	90.1%	35,864	40,104
	UAS	Power Technology	Occupational Endorsement Cert	69	81.2%	51,111	62,979
	UAF	Diesel/Heavy Equipment	Certificate	156	91.0%	50,239	74,624
	UAA	Diesel Power Technology	Certificate	13	92.3%	47,412	*
	UAA	Diesel Power Technology	Associate of Applied Science	31	90.3%	49,340	*
	UAA	Heavy Duty Trans & Equip	Associate of Applied Science	46	87.0%	55,951	71,701
First Line Supervisors of Construction Trades, Extraction, Mechanics, Installers, Repairers, Production Workers (47-1011, 49-1011, 51-1011)	UAA	Construction Management	Associate of Applied Science	31	80.6%	67,327	94,307
	UAF	Construction Management	Associate of Applied Science	56	85.7%	67,253	75,563
	UAA	Construction Management	Bachelor of Science	196	82.1%	75,753	94,654
Welders, Cutters, Solderers, Brazers (51-4121)	UAA	Advanced Welding	Occupational Endorsement Cert	34	76.5%	42,561	67,256
	UAA	Nondestructive Testing Technology	Occupational Endorsement Cert	155	87.7%	50,975	76,181
	UAA	Welding	Occupational Endorsement Cert	69	82.6%	44,773	69,097
	UAF	Entry Level Welder	Occupational Endorsement Cert	95	82.1%	38,289	72,245
	UAS	Welding	Occupational Endorsement Cert	125	81.6%	31,553	43,956
	UAA	Welding Technology	Certificate	32	81.3%	43,425	46,468
Geoscientists, Except Hydrologists/Geographers (19-2042)	UAA	Geological Science	Bachelor of Science	134	76.9%	43,282	60,390
	UAF	Geoscience	Bachelor of Science	84	77.4%	42,002	67,309
	UAA	Applied Geological Sciences	Master of Science	9	55.6%	110,481	*
	UAF	Geoscience	Master of Science	51	58.8%	64,449	104,712
	UAF	Geophysics	Master of Science	28	46.4%	39,070	67,999
	UAF	Geophysics	Doctor of Philosophy	38	39.5%	52,307	*
	UAF	Geoscience	Doctor of Philosophy	19	36.8%	57,375	*
Geological & Petroleum and Chemical Technicians (19-4041, 19-4031)	UAA	Petroleum Technology	Certificate	60	88.3%	73,222	120,609
	UAF	Instrumentation Technology	Certificate	70	88.6%	72,633	87,797
	UAA	Industrial Process Instrumentation	Associate of Applied Science	71	84.5%	75,931	131,551
	UAA	Process Technology	Associate of Applied Science	546	89.4%	81,345	138,951
	UAF	Process Technology	Associate of Applied Science	223	84.3%	71,774	117,578
Millwrights (49-9044)	UAA	Millwright	Occupational Endorsement Cert	37	75.7%	74,987	*
Mining and Geological Engineers, Including Mining Safety (17-2151)	UAF	Geological Engineering	Bachelor of Science	73	75.3%	56,348	80,354
	UAF	Mining Engineering	Bachelor of Science	45	66.7%	70,828	78,979
	UAF	Geological Engineering	Master of Science	15	66.7%	59,054	84,537

*Data unavailable. Program has been offered for a limited period of time, or wages are suppressed when fewer than 5 graduates are employed in Alaska. Note: Graduate numbers are from 2011 through 2021.

This report is a collaboration among UA Workforce Development, UA Data Strategy and Institutional Research, and the Alaska Department of Labor and Workforce Development's Research and Analysis Section. For more information, visit alaska.edu/research/wd/.