

January 10, 2018

MEMORANDUM

TO: State Board of Regents  
FROM: David L. Buhler  
SUBJECT: Annual Career and Technical Education Report

Issue

Each year the Office of the Commissioner of Higher Education prepares a report on Career and Technical Education. Career and Technical Education (CTE) can be defined as organized educational programs offering sequences of courses directly related to preparing individuals for paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree. The CTE report for FY2017 is attached to this memo.

Background

Highlights of the 2017 report include:

- Institutions in the Utah System of Higher Education (USHE) provided the equivalent of approximately 11.2 million membership hours in CTE instruction.
- USHE institutions awarded 5,503 CTE certificates and two-year degrees and enrolled over 61,000 CTE participants.
- CTE graduates are expected to produce over \$931 million of added personal income and over \$131 million of added income to the state over someone with a high school diploma.
- Over 17,000 high school students took CTE courses in high school through concurrent enrollment.
- Among state-funded institutions, USHE institutions provided nearly 74% of the post-secondary CTE instruction in the state.
- Over the last few years USHE institutions have developed over 100 new CTE certificate programs, most of which stack to longer programs that provide opportunities for students to earn college-level credentials and also to advance to higher levels of preparation as time and circumstances permit.
- Based on information extracted from Utah's Department of Workforce Services, the job placement rate of USHE's CTE graduates was nearly 84%, not counting those in the military, self-employed, and those employed out-of-state.
- Total cost of instruction per CTE membership hour equivalent was \$10.89.

Policy Issues

There are no policy issues associated with the information.

Commissioner's Recommendation

This is an information item only; no action is required.

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David L. Buhler  
Commissioner of Higher Education

DLB/BKC  
Attachment

## 2017 REPORT ON TECHNICAL EDUCATION

Technical Education is a key ingredient to meet the needs of Utah's economy. Utah System of Higher Education (USHE) institutions offer technical education programs in all regions of the state, working closely with local business and industry leaders to develop and deliver programs specifically tailored to local workforce development needs.

**11,240,576**  
Membership hours taken in technical education courses in 2016-17 by students at USHE institutions.

During the 2016-2017 academic year, technical education comprised nearly 22 percent of the total undergraduate courses offered at USHE institutions, and it accounted for over 17% of undergraduate degrees and certificates awarded.

This report includes data on a diverse and broad array of technical education credit and non-credit offerings provided by USHE institutions that prepare people for employment in current or emerging occupations that require credentials other than a baccalaureate or advanced degree. It also provides data on statewide programs, Short Term Intensive Training (STIT) and Custom Fit, where industry-specific courses are provided by USHE institutions on contract for individual companies.

The information presented below uses the standard Career and Technical Education (CTE) definitions used by the federal Carl D. Perkins program (generally accepted measurement nationwide). This information uses both credit hours and membership hours in order to create a common comparison of CTE among Utah's public postsecondary institutions.

**5,503**  
CTE credentials awarded by USHE institutions in 2016-17.

### Partnering with industry, streamlining credit, and getting students to the workforce quickly

Each of Utah's eight regional CTE councils meet regularly to identify potential certificate programs that could be developed or strengthened within each region. Regional CTE leaders also consult closely with leaders in industry and workforce development to identify certificate programs to be developed and/or strengthened, focusing on the following:

- Determine availability of current technical education offerings in the region
- Develop regional coordination among three technical education stakeholder providers: Utah System of Higher Education, the Utah State Board of Education, and the Utah College of Applied Technology
- Identify certificates and other programs that could be offered in high-demand, high-wage occupations and that are important to the region
- Identify how certificates and other credentials can complementarily stack to additional certificates, associate's degrees, or other programs
- Identify ways these programs, or portions thereof, might be provided for delivery in high schools through concurrent enrollment

**100+**  
New CTE certificate programs developed by USHE institutions as a result of direct collaboration with business and industry throughout the state.

This partnership approach focuses on short-term certificates (16-29 credits) as a first step for students seeking a college credential or as a short-term option for older adults retooling for a career change or career advancement. It is expected that students will be more likely to complete a meaningful board-approved credential by the time of high school graduation or shortly thereafter. High school and college students who complete certificates offered through this initiative will:

- Have an earned post-secondary certificate in a relevant field.
- Be prepared for an entry-level position in a career that is in demand and pays high wages.
- Be on an efficient pathway to a one-year certificate and/or degree.

## Technical Education Credentials

The Utah System of Higher Education institutions offer three primary types of tech ed credentials:

- **Associate of Applied Science Degrees**—Designed to lead students directly to employment requiring two years of preparation. The Associate of Applied Science (AAS) degree includes a core set of general education preparing students in composition, computation, and human relations. In some cases AAS programs can serve a dual purpose to prepare students for the workforce while serving as a pathway to a bachelor's degree.
- **Certificates of Completion**—Awarded for completion of programs that are typically one-year in length and that prepare students for employment. Certificates of Completion also have a general education component.
- **Certificates of Proficiency**—Short-term programs less than one year in length that prepare students for specific employment skills.

## Tuition and Fees

CTE programs are offered at seven of the eight USHE institutions (University of Utah's mission does not include CTE; Salt Lake Community College fills this role in the service region shared by these two institutions). 2016-17 full-time tuition and fees for the seven institutions that provide a CTE role ranged from \$1,796 to \$3,433 per semester.

According to a recent report from the College Board, tuition at Utah's public universities is the third lowest in the nation with an average annual 2017-18 tuition of \$6,700. It typically takes full-time students one to four semesters to complete a tech ed credential, depending on whether a student is working on a certificate or an AAS degree. Many of the USHE tech ed programs seamlessly stack to four-year degrees, allowing students efficient and cost-effective means of earning additional college credentials once they complete a CTE program.

## Earnings and Job Placement for USHE Tech Ed Graduates

Students who earned a USHE credential in a technical area of study had median year annual wages that were higher than their peers who completed non-CTE credentials at the same level- a \$2,400 difference for certificates and a \$6,994 difference for associate degrees. The median fifth-year annual wages for CTE certificates of less than two years and associate degrees are \$39,807 and \$55,432, respectively. Median fifth-year annual wages for non-CTE certificates of less than two years and non-CTE associate degrees are \$37,396 and \$48,438, respectively. In other words, Additionally, the median fifth-year annual wages for CTE certificate and associate degree completers increased over time. Median annual wages for associate degree completers during 2010-11 increased from \$40,286 (first year wages) to \$55,432 (fifth year following completion). More detailed wage information is available in the table below and online at: <http://higheredutah.org/data/utah-wage-information>. It should be noted that although results showed wage gains for CTE completers, the data may be impacted by a variety of factors including type of program, individual student intent, timing of when students continue their education, immediate short-term industry demand, etc.

**\$55,432**

Median 5<sup>th</sup>-year wages for individuals with a USHE associate degree.

**84%**

The overall job placement rate for recent USHE CTE graduates.

## USHE Tech Ed 1<sup>st</sup> and 5<sup>th</sup> Year Wages

	Median 1 <sup>st</sup> Year Wages	Median 5 <sup>th</sup> Year Wages	Wage Growth
CTE PROGRAMS			
CERTIFICATES	\$28,532	\$39,807	\$11,275
ASSOCIATE DEGREES	\$40,286	\$55,432	\$15,146
NON-CTE PROGRAMS			
CERTIFICATES	\$25,296	\$37,396	\$12,100
ASSOCIATE DEGREES	\$26,776	\$48,438	\$21,662

## USHE Tech Ed Job Placement Rate by Area of Study

Classification of Instructional Program (CIP) Group	Placement Rate
AGRICULTURE, AGRICULTURE OPERATIONS, AND RELATED SCIENCES	77.8%
ARCHITECTURE AND RELATED SERVICES	93.3%
BUSINESS, MANAGEMENT, MARKETING, AND RELATED SUPPORT SERVICES	79.2%
COMMUNICATION, JOURNALISM, AND RELATED PROGRAMS	100.0%
COMMUNICATIONS TECHNOLOGIES/TECHNICIANS AND SUPPORT SERVICES	88.9%
COMPUTER AND INFORMATION SCIENCES AND SUPPORT SERVICES	81.7%
CONSTRUCTION TRADES	80.0%
EDUCATION	84.0%
ENGINEERING	90.2%
ENGINEERING TECHNOLOGIES AND ENGINEERING-RELATED FIELDS	83.3%
FAMILY AND CONSUMER SCIENCES/HUMAN SCIENCES	76.5%
FOREIGN LANGUAGES, LITERATURES, AND LINGUISTICS	100.0%
HEALTH PROFESSIONS AND RELATED PROGRAMS	90.6%
HOMELAND SECURITY, LAW ENFORCEMENT, FIREFIGHTING AND RELATED PROTECTIVE SERVICES	72.6%
LEGAL PROFESSIONS AND STUDIES	77.3%
MECHANIC AND REPAIR TECHNOLOGIES/TECHNICIANS	80.2%
PARKS, RECREATION, LEISURE, AND FITNESS STUDIES	66.7%
PERSONAL AND CULINARY SERVICES	64.7%
PRECISION PRODUCTION	83.2%
SCIENCE TECHNOLOGIES/TECHNICIANS	78.0%
SOCIAL SCIENCES	66.7%
TRANSPORTATION AND MATERIALS MOVING	50.0%
VISUAL AND PERFORMING ARTS	76.1%
<b>OVERALL PLACEMENT RATE</b>	<b>83.6%</b>

Information is derived from state workforce data and may not include employment of all USHE graduates. For example, state workforce data does not include out-of-state employment, self-employed individuals, federal and military employees, and non-employed students who continued their education.

## The ROI for USHE Technical Education Graduates

The table below provides an estimate of the wage impact of 2016-17 tech ed graduates from USHE institutions. Applying wage and workforce information from the US Census, it is estimated the 5,503 2016-17 CTE graduates will produce over \$931 million of added income over 30 years of employment than if they had not obtained their credentials. Using taxpayer rate estimates from the Utah Taxpayers Association, it is estimated these graduates will generate an additional \$131 million in state taxes and fees.

### 30 Year Projected Earnings and Tax Contributions of Tech Ed Graduates

	New Credentials Awarded	Est. Work Force Participation Rate	Credentials in Workforce	Amount Earned over High School Level Median Earnings	Total Added Annual Income to Utah's Economy	Est. Additional Tax Contribution to the State (14.14%)
Certificates	1,869	77.6%	1,450	\$6,064	\$8,792,800	\$1,243,302
Associate Degrees	3,634	77.6%	2,819	\$6,064	\$17,094,416	\$2,417,150
<b>Total</b>	<b>5,503</b>		<b>3,891</b>		<b>\$25,887,216</b>	<b>\$3,660,452</b>
30 years of Employment					\$776,616,480	\$109,813,570
Economic Multiplier (1.2)					\$155,323,296	\$21,962,714
<b>Value Added to Utah's Economy and Tax Base (30 Year Estimate)</b>					<b>\$931,939,776</b>	<b>\$131,776,284</b>

### Tech Ed in Concurrent Enrollment (high school students)

32,849 high school students enrolled in a college concurrent enrollment course during the 2016-17 academic year. In total, these students earned 233,626 college credits – saving students over \$41 million in total tuition.

53% of all concurrent enrollment students (17,512) enrolled in at least one CTE course. Secondary students earned 76,001 CTE credit hours, or 32.5% of the total concurrent enrollment credit hours earned. This represents the equivalent of 2,280,030

membership hours (76,001 X 30) accounting for 66% of postsecondary CTE enrollment in Utah's high schools and 54% of total postsecondary membership hours earned by high school students (the Utah System of Technical Colleges served 9,001 high school students with 1,909,106 membership hours as reported in USTC's 2017 annual report). The total contribution of Utah's postsecondary institutions to high school students during 2016-17 was significant, providing college-level career preparation opportunities to nearly 33,000 high school students while helping them fulfill requirements toward postsecondary credentials.

**54%**  
Proportion of CTE college-level membership hours earned by high school students via USHE institutions.

### Total Concurrent Enrollment (all courses vs. tech ed), Fiscal Year 2016-17

	Total	CTE
Total Students (Unduplicated Headcount)	32,849	17,512 (53.3%)
Earned Credit Hours	233,626	76,001 (32.5%)

## Headcount in Tech Ed Concurrent Enrollment by Institution, Fiscal Year 2016-17

Institution	CTE Concurrent Enrollment (Unduplicated Headcount by USHE institution)
Utah State University	1,066
Southern Utah University	318
Snow College	641
Dixie State University	751
Weber State University	7,077
Utah Valley University	4,219
Salt Lake Community College	4,043
<b>Total</b>	<b>18,115</b>

*Enrollment headcounts may total more than system-wide total because students can take courses from more than one institution.*

## Federal Funding

Institutions within USHE qualify for and participate in federal grant funding through the Carl D. Perkins Career and Technical Education Act of 2006. Funding is provided to the Utah State Office of Education and formulaically distributed to local school districts, the Utah System of Technical Colleges, and USHE institutions that provide eligible CTE programs. This funding is used by USHE institutions to enhance and improve CTE programs and services in ways that are not otherwise provided by state resources.

Perkins funding to institutions is allocated based on the number of students taking CTE courses from the following populations:

- Federal PELL grant recipients
- Students who receive assistance from the Bureau of Indian Affairs
- Students who receive assistance from the Utah Department of Workforce Services

In 2016-17, \$3,409,102 was awarded to USHE institutions through the Perkins Act. Since the program's origination, all USHE institutions receiving Perkins grants have maintained eligibility for continued Perkins funding as it is made available through federal processes. USHE institutions report performance in the following areas related to this program:

- Technical skill attainment
- Completers
- Retention
- Employment
- Non-traditional student participation
- Non-traditional student completion

## CTE Cost of Services

Data from Tab I, Table 7 of the 2015-16 USHE Cost Study show the appropriated direct costs per full-time equivalent (FTE) student (30 credit hours/year) for CTE to be \$5,209 (\$5.79 per membership hour). Factoring in indirect costs, the full cost of CTE instruction is \$9,801 per student FTE (\$10.89 per membership hour). Due to economies of scale, the USHE cost of CTE instruction is lower on a per membership hour basis compared to other state agencies that provide post-secondary CTE instruction.

**\$10.89**  
 Total cost per  
 membership hour.

## Program Duplication

A recent analysis of USHE and UCAT programs indicates there is little, if any, duplication of programs. Using data available from the Integrated Postsecondary Education Data System (IPEDS) for the academic years 2013-14, 2014-15, and 2015-16, only sixteen out of 535 areas of study (based on CIP codes) identified at the same level were within the same service region. Some programs within these sixteen areas of study are part of broader degree programs at USHE institutions and are offered for students who may have longer-term educational objectives than preparation for immediate employment as is most typical in CTE programs.

2%

of all technical education programs are found within the same service region.

## Enrollments and Completions

USHE institutions have seen a fairly consistent number of students taking CTE courses with a small increase in student headcount over 2015-16 (61,366 in 2016-17 vs. 58,993 in 2015-16). Similarly, student FTE in CTE courses increased from 12,063 in 2015-16 to 12,490 in 2016-17).

15,000+

Over 15,000 certificates and associate degrees in technical education have been earned by USHE students over the last three years.

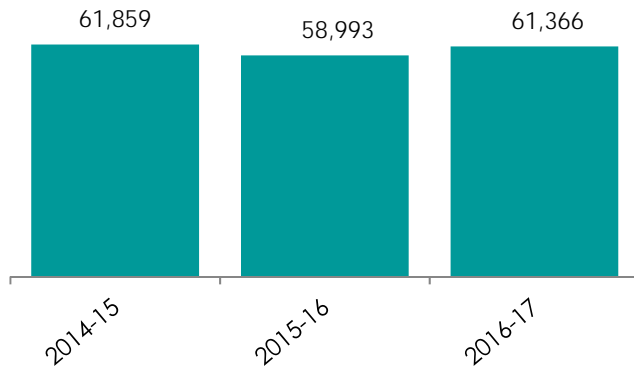
FTE is a measure, based on the total number of hours taught, of how many students could have been served if all students were full-time. One FTE is equal to 30 credit hours (for credit-based instruction) or 900 membership hours (for non-credit) in a given academic year. For membership and credit hour equivalents, one credit hour equals 30 membership hours.

Completions of CTE credentials increased each year for the last two years with 5,503 CTE certificates and associate degrees awarded in 2016-17 compared to 5,046 in 2015-16 and 4,536 in 2014-15. Overall, graduates from USHE CTE programs earned 15,085 CTE credentials over the last three years.

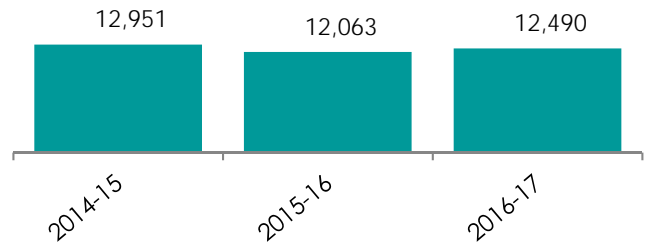


### USHE CTE Enrollment (2016-17)

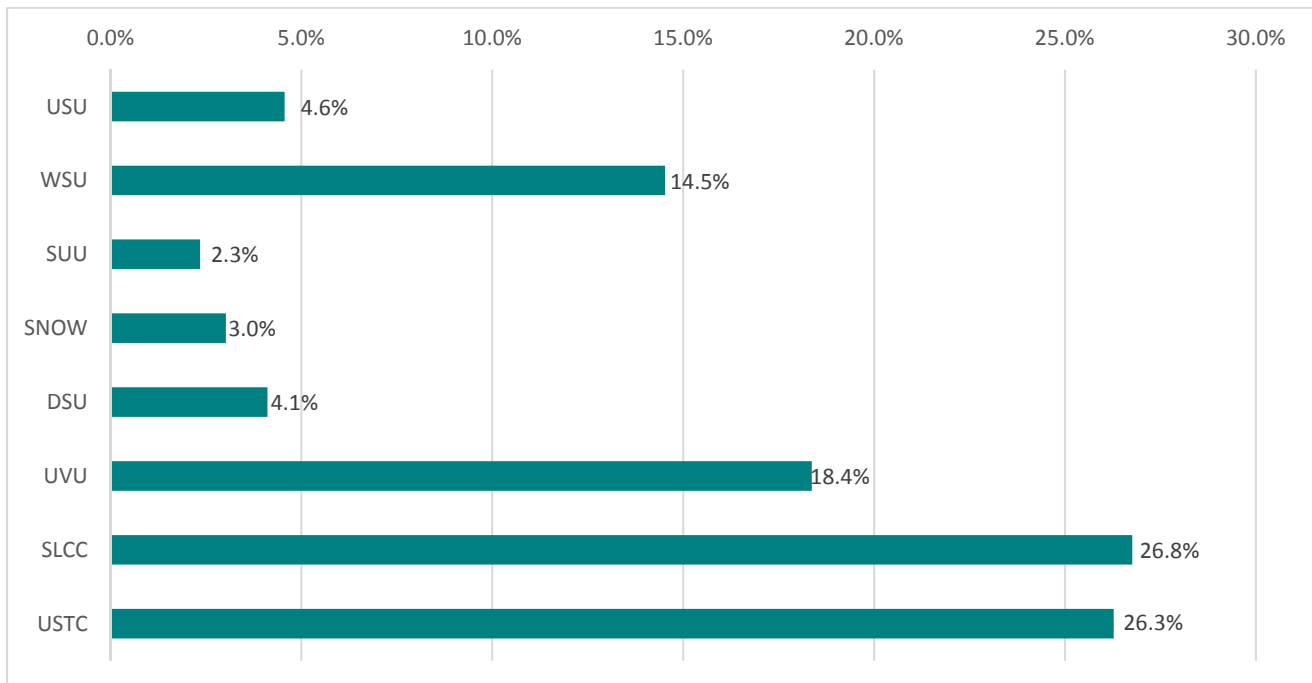
Headcount



Full Time Equivalent (FTE)



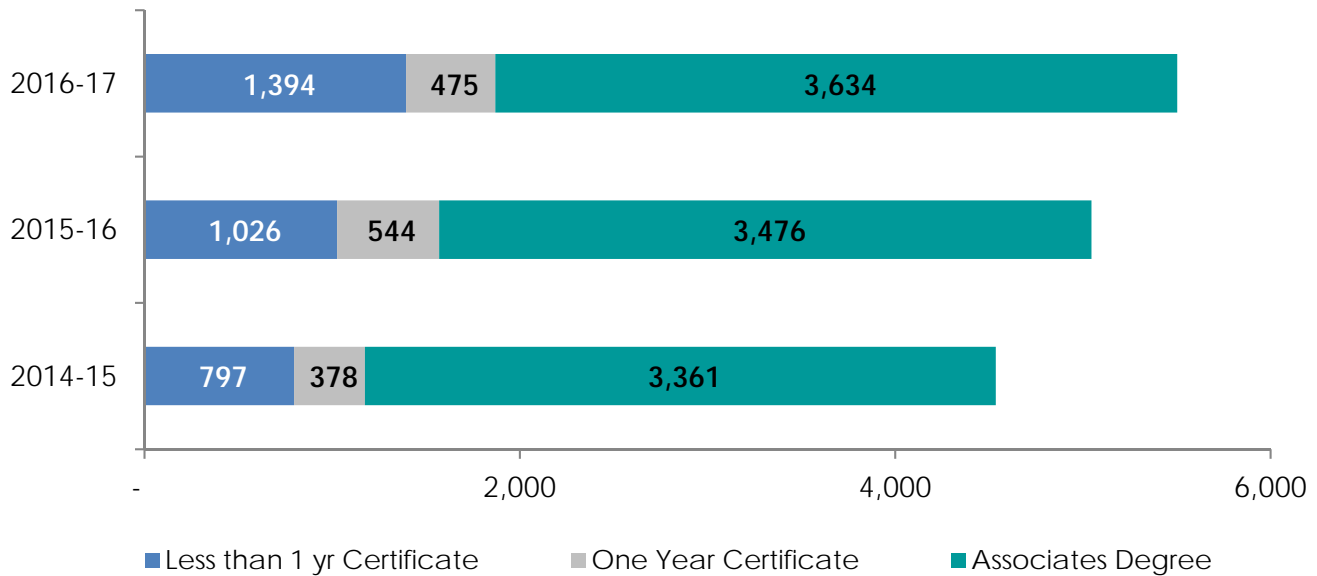
### Career and Technical Education (FTE) by Institution (2016-17)



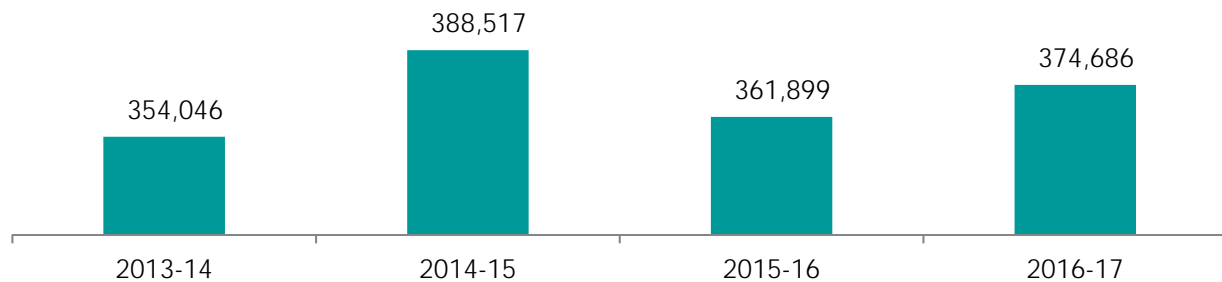
### Total USHE CTE Membership Hours and FTE Equivalent by Year

	2014-15	2015-16	2016-17
Non-Credit Membership Hours	411,324	260,272	262,772
Short-Term Intensive Training/Custom Fit Hours	51,468	59,453	65,664
+ Equivalent Credit Hours (1 credit=30 hrs.)	11,192,730	10,537,230	10,912,140
<b>Total Membership Hours</b>	<b>11,655,522</b>	<b>10,856,955</b>	<b>11,240,576</b>
<b>Full-time Equivalent-FTE (Total Membership Hours/900)</b>	<b>12,951</b>	<b>12,063</b>	<b>12,490</b>

### Total Certificates and Degrees Awarded



### 2016-17 USHE CTE Credit Hour Equivalent



### Top 5 Areas of Study, based on 2016-17 certificates/degrees awarded

Program Categories	Less than 1 yr Certificates	1-2 yr Certificates	Associates & 2+ yr Certificates	Total	Percentage Share
HEALTH PROFESSIONS AND RELATED PROGRAMS	384	144	1383	<b>1911</b>	38%
COMPUTER AND INFORMATION SCIENCES AND SUPPORT SERVICES	660	49	369	<b>1078</b>	15%
BUSINESS, MANAGEMENT, MARKETING, AND RELATED SUPPORT SERVICES	109	55	541	<b>705</b>	10%
HOMELAND SECURITY, LAW ENFORCEMENT, FIREFIGHTING, RELATED PROTECTIVE SERVICES	43	25	261	<b>329</b>	6%
ENGINEERING TECHNOLOGIES AND ENGINEERING-RELATED FIELDS	124	22	138	<b>284</b>	6%

Source: IPEDS Completions Survey

### Technical Education among all State Providers

		USHE	USTC*	Total	USHE % Total
Adults	Membership Hours	11,240,576	4,039,173	15,279,749	73.6%
	Student FTE	12,490	4,488	16,978	73.6%
	Student Headcount	61,366	23,812	85,178	72.0%
High School	Membership Hours	2,280,030	1,909,106	4,189,136	54.4%
	Student FTE	2,533	2,121	4,654	54.4%
	Student Headcount	17,512	9,001	26,513	66.1%
Credentials Awarded	Certificate of less than 1 year	1,394	5,066	6,460	21.6%
	Certificates of at least 1 but less than 2 years	475	1,784	2,259	21.0%
	Associate Degrees	3,634	0	3,634	100.0%

## Definitions and Formulas

**CTE (Career and Technical Education [Vocational])**—CTE programs involve training for what are generally considered technical, high skill jobs such as automotive maintenance, welding, construction, and entry-level healthcare positions.

**Credit Hours**—A unit used to measure the amount of schoolwork a student has enrolled in or completed as defined by regional accrediting bodies and the U.S. Department of Education.

**Membership Hours**—Also called 'Clock Hours', assumed to be the number of hours attended at an institution in a CTE or vocational program.

**FTE (Full Time Equivalent)**—The total number of hours taught at an institution divided by the number of hours considered to be full-time for a student. An FTE student is one undergraduate student enrolled for 15 credit hours per semester. A part-time student may account for only .5 FTE while a student with a heavy course load may account for 1.25 FTE during a given academic year.

- 30 credit Hours = 1 FTE for credit programs
- 900 membership Hours = 1 FTE for non-credit programs

**Unduplicated Headcount**—The total number of individual students enrolled at an institution, regardless of instruction time. Unduplicated Headcount is only counted once, even though the student may fall into several enrollment categories.

**Secondary/Postsecondary**—Secondary Education refers to high school (grades 9-12) education. Postsecondary education is any coursework beyond high school.

*\*Sources: Utah System of Technical Colleges 2017 Annual Report and IPEDS.*