



NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s): State Technical College of Missouri

Program Title: Utility Systems Technician

Degree/Certificate: Associate of Applied Science

Options: Not applicable

Delivery Site(s): Main Campus in Linn, Missouri

CIP Classification: 46.0000

*CIP code can be cross-referenced with programs offered in your region on MDHE's program inventory highered.mo.gov/ProgramInventory/search.jsp

Implementation Date: August 20, 2018

Cooperative Partners: None

*If this is a collaborative program, form CL must be included with this proposal

AUTHORIZATION:

Vicki Schwinke, Chief Academic Officer

Handwritten signature and date: Vicki Schwinke 3-31-17

Name/Title of Institutional Officer

Signature

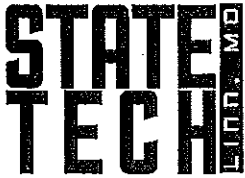
Date

Janet Brown Clanton

573-897-5150

Person to Contact for More Information

Telephone



State
Technical
College
of Missouri

One Technology Drive
Linn, MO 65051
1-800-743-8324
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Office of Academic & Student Affairs

March 31, 2017

Dr. Rusty Monhollon
Assistant Commissioner for Academic Affairs
Missouri Department of Higher Education
205 Jefferson Street
P.O. Box 1469
Jefferson City, Missouri 65102-1469

Dear Dr. Monhollon:

State Technical College of Missouri is pleased to submit a new program proposal for a Utility Systems Technician Associate of Applied Science (AAS) Degree. Contingent upon approval by the Coordinating Board for Higher Education, this program will be offered on the main campus in Linn, Missouri beginning in the fall 2018 semester.

Based on the State Tech mission, the college is pursuing this program for the following reasons:

- Students who earn a Utility Systems Technician AAS Degree will be qualified for high demand occupations according to the U.S. Department of Labor Bureau of Labor Statistics Occupational Outlook Handbook, the Missouri Economic Research and Information Center (MERIC), and the Power & Communication Contractors Association (PCCA), which State Tech confirmed via an employer survey.
- The program is cost effective and uses existing as well as new resources.
- Very few post-secondary programs are offered in Missouri that prepare graduates with necessary broad-based utility construction knowledge and skills for contractors and the utilities they serve.

If you need additional information or have questions, you may call me at (573) 897-5195 or Janet Clanton at (573) 897-5150.

Sincerely,

A handwritten signature in black ink that reads "Vicki Schwinke".

Vicki Schwinke
Chief Academic Officer
vicki.schwinke@statetechmo.edu

ENCLOSURES

VS:sl

cc: Angelette Prichett, MDHE Research Associate for Academic Affairs
Dr. Shawn Strong, State Tech President
Janet Clanton, State Tech Associate Dean of Instruction

*State Technical College of Missouri Mission:
To Prepare Students for Profitable Employment and a Life of Learning*

**Proposal for a New Utility Systems Technician
Associate of Applied Science Degree Program**

By

State Technical College of Missouri

1. New Program Proposal Form: Please refer to completed Form NP attached.
2. Documentation of Need:
 - a. Student Demand – Please refer to completed Form SE attached, which describes:
 - i. Estimated enrollment for the first five years.
 - ii. Enrollment capacity considerations.
 - b. Market Demand – National, state, and regional assessment of labor need for citizens with these skills are addressed on the completed Form SE attached.
 - c. Societal Need is addressed on the completed Form SE attached.
 - d. Methodology used to determine B and C above are described on the completed Form SE attached.
3. Duplication and Collaboration:
 - a. Duplication - MDHE's College and Degree Search includes the following programs with the 46.0000 CIP code:
 - i. Central Missouri – None.
 - ii. Statewide – Five programs, including:
 1. Crowder College – Energy Efficient Building Technology
 2. East Central College – Building Construction Technology
 3. Jefferson College – Apprenticeship Training in various skilled trades
 4. Ozarks Technical Community College – Construction Technology
 5. St. Louis Community College – Skilled Trades Industrial Occupations Technology
 - iii. There are several factors that lead State Tech to conclude that it is necessary for the college to start and offer the proposed Utility Systems Technician program.
 1. Employer requests to the college to start a program to prepare students for entry-level employment in the utility construction industry. Specifically, they seek to hire more entry-level employees with aerial and underground construction skills and

basic familiarity with the electrical, communications, oil and gas pipeline, water, and/or wastewater utilities.

2. The market demand information provided on Form SE.
 3. There are no CIP 46.0000 programs offered in Central Missouri.
 4. There are five CIP 46.0000 programs offered statewide.
- iv. The college believes that the proposed Utility Systems Technician program is distinct from the five 46.0000 CIP programs offered statewide because those five program titles indicate a predominant focus on construction of buildings rather than the construction and maintenance of utilities infrastructure.
- v. In conclusion, if utility infrastructures are to be updated and upgraded to improve their safety and functionality for citizens of Missouri and the U.S., then State Tech's proposed Utility Systems Technician program is necessary to help provide the employees needed to accomplish this work because very few post-secondary programs are offered in Missouri that prepare graduates with broad-based utility construction skills for contractors and the utilities they serve.

b. Collaboration:

State Tech has no formal written agreements with other educational institutions or organizations to collaborate on the proposed Utility Systems Technician program.

4. Program Structure: Please refer to completed Form PS attached.
5. Financial Projections: Please refer to completed Form FP attached.
6. Program Characteristics and Performance Goals: See completed Form PG attached.
7. Accreditation:

The college will seek The Association of Technology, Management, and Applied Engineering (ATMAE) accreditation for the Utility Systems Technician program.

8. Institutional Characteristics:

The proposed Utility Systems Technician program is consistent with the State Technical College of Missouri mission to prepare students for profitable employment and a life of learning.

State Tech has well-respected Electrical Distribution Systems, Networking Systems Technology Digital Communications Technician, Heavy Equipment Operations, Civil Engineering Technology, and Nuclear Technology programs that serve various utilities and the construction industry. The Utility Systems Technician program will draw upon the expertise of existing faculty members and utilize existing facilities and equipment. As enrollment grows, additional equipment will be purchased and facilities may have to be expanded.

The college has a proven track record of establishing and working with employer members of program advisory committees to develop and offer high-quality technical education programs.

Twenty-one (21) industry representatives from 20 organizations have participated in planning meetings and/or a Design a Curriculum (DACUM) process to establish the need for and develop the structure of the proposed Utility Systems Technician program. The participating organizations include:

- Contractors
- Various types of utilities
- Missouri One Call System
- Missouri Telecommunications Industry Association
- Power & Communications Contractors Association

These industry representatives will be invited to serve on the Utility Systems Technician Advisory Committee if the program is approved. Many of the employer representatives have indicated that they intend to do so as well as help recruit students for the program and hire program graduates.



STUDENT ENROLLMENT PROJECTIONS

Year	1	2	3	4	5
	<u>2018-19</u>	<u>2019-20</u>	<u>2020-21</u>	<u>2021-22</u>	<u>2022-23</u>
Full Time	15	30	35	40	45
Part Time	0	0	0	0	0
Total	15	30	35	40	45

Please provide a rationale regarding how student enrollment projections were calculated:

Student demand for the college's current related Electrical Distribution Systems and Heavy Equipment Operations programs is strong; each year there are significant numbers of students who apply for these two programs that we don't have the capacity to serve. And, State Technical College of Missouri plans to market the new Utility Systems Technician program during the 2017-18 academic year to recruit students to start the program in 2018-19. Therefore, we believe it is feasible to start the program in FALL 2018 with 15 first-year students and then steadily grow student enrollment: In FALL 2019, we conservatively estimate that we will start approximately 18 new first-year students and expect to retain approximately 12 returning second-year students based on approximately 80% retention. In FALL 2020, we estimate 20 new first-year students and retention of approximately 15 returning second-year students. In FALL 2021, we estimate 24 new first-year students and retention of approximately 16 returning second-year students. In FALL 2022, we estimate 25 new first-year students and retention of approximately 20 returning second-year students. The college's student population is predominately full-time students seeking to enter their chosen careers so we have projected 100% full-time enrollment in this program.

Once the capacity of 45 to 50 students is reached, consideration will be given to expanding the program to add another section of 25 first-year students each fall to grow the program to 100 total students. Both student demand and market demand will be considered when making future capacity decisions. Current facilities with the addition of an outdoor lab are sufficient to serve 100 students.

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Provide a rationale for proposing this program, including evidence of market demand and societal need supported by research:

Market Demand

According to the United States (U.S.) Department of Education Institute of Education Sciences National Center for Education Statistics, the proposed Utility Systems Technician Classification of Instructional Programs (CIP) code of 46.0000 Construction Trades, General cross-walks to the Standard Occupational Code (SOC) of 47-1011 First Line Supervisors of Construction Trades and Extraction Workers.

The U.S. Department of Labor Bureau of Labor Statistics Occupational Outlook Handbook states that, "Employment of construction and extraction occupations is projected to grow 10 percent from 2014 to 2024, faster than the average for all occupations, increasing from 6.5 million jobs to 7.2 million jobs. Overall growth in the economy and population will increase demand for new buildings, roads, and other structures, which will create new job openings for construction and extraction occupations. The median annual wage for all construction and extraction occupations was \$42,280 in May 2015, which was higher than the median annual wage for all occupations of \$36,200."

The Missouri Economic Research and Information Center (MERIC) occupational grade for SOC 47-1011 is B+ both statewide and in the central region for the years 2014-24. MERIC demand and wage information for this occupation is included below:

	Employment		Change		Annual Wages				2014-2024 Openings		
	2014	2024	2014-2024		2015						
	Est.	Projected	Net	Percent	Entry	Mean	Median	Exp.	Growth	Replace	Total
Statewide	7,188	7,748	560	7.79%	\$41,032	\$66,814	\$64,005	\$79,705	560	570	1,130
Central MO	792	841	49	6.19%	\$31,982	\$51,973	\$48,579	\$61,969	49	63	112

The wages for this occupation are in a range that will be attractive to prospective State Tech students.

The Power & Communication Contractors Association (PCCA) 2015 Labor & Economic Overview predicts an "unprecedented volume of work" in the electric utility, gas utility, pipeline, and telecommunications industry sectors. The PCCA 2015 Labor & Economic Overview goes on to state that, "Growth in spending on underground utility infrastructure between 2008 and 2014 has stretched resources in a way that makes continued expansion problematic for contractors and the utilities they serve." These are the very industries and employers that this program is designed to serve.



With the assistance of John Lansford, Executive Director of the Missouri One Call System and Heath Sellenriek, Vice President of Sellenriek Construction, Incorporated, State Tech conducted a survey of contractors and the utilities they serve to confirm occupational demand for graduates of this program.

The nine employers who reported that they currently employ 835 utility technicians in Missouri and an additional 797 in the Midwest region.

These same nine employers also reported demand for new utility technicians as follows:

	2016	2017	2018	2019
Missouri	162	256	271	70
Midwest Region	43	205	369	180

The nine employers also reported the following wage information without regard to location:

	Entry-Level	Three Years Experience
State Tech UST degree:	\$19.89 hourly / \$41,371 annual	\$25.44 hourly / \$52,915 annual
No degree:	\$16.39 hourly / \$34,091 annual	\$20.84 hourly / \$43,347 annual

This survey wage information indicates that graduates of the State Tech Utility Systems Technician program will earn a wage premium of 22% when beginning employment that continues through the first three years of employment. This information suggests that these nine employers perceive that State Tech's Utility Systems Technician program will add value to their workforce and organizations.

The survey wage information also suggests that the State Tech program to prepare graduates for this occupation will provide value and be attractive to prospective students.

The market demand and wage information above indicate to the college that the proposed Utility Systems Technician program is consistent with the State Tech mission to prepare students for profitable employment and a life of learning.

Societal Need

In conclusion, if utility infrastructures are to be updated and upgraded to improve their safety and functionality for citizens of Missouri and the U.S., then State Tech's proposed Utility Systems Technician program is needed to help provide employees with knowledge and skills necessary to accomplish this work because very few post-secondary programs are offered in Missouri that prepare graduates with broad-based utility construction skills for contractors and the utilities they serve.



PROGRAM STRUCTURE

A. Total credits required for graduation: 72

B. Residency requirements, if any: As stated in the 2016-2017 college catalog, "To graduate from State Technical College of Missouri with an A.A.S. degree, a student is required to have earned a minimum of 32 credit hours in technical education from State Technical College of Missouri. The 32 credit hours in technical education must meet the requirements of the degree being sought. The 32 credit hours in technical education may include approved articulated credit with State Technical College of Missouri."

C. General education: Total credits: 19

Courses (specific courses OR distribution area and credits):

- Written Communication – 3 credits
- Oral Communication – 3 credits
- Mathematics – 3 credits
- Science – 4 credits
- Social Science – 3 credits
- Technical Literacy – 3 credits

D. Major requirements: Total credits: 53

Course Number	Credits	Course Title
CORE CURRICULUM		
UST 100	1	Customer Service for Utility Professionals
UST 110	1	Electrical Distribution Systems I
UST 115	1	Electrical Distribution Systems II
UST 120	1	Safety and Accident Prevention I
UST 125	1	Safety and Accident Prevention II
UST 150	3	Equipment Operation I
UST 160	3	Climbing Skills
UST 170	6	Construction and Maintenance of Overhead Lines
UST 180	2	Construction and Maintenance of Overhead Broadband Lines
UST 200	4	Utility Internship
UST 205	2	Blueprint Reading
UST 210	2	Water and Wastewater Systems
UST 215	2	Oil and Gas Pipeline Systems
UST 220	3	Communications Systems
UST 240	3	Underground Utility Location
UST 250	3	Equipment Operation II
UST 275	6	Construction and Maintenance of Underground Utility Systems
UST 280	2	Job Site Management

PROGRAM REQUIREMENTS		
HEO 151	1	Basic Commercial Driver License
HEO 152	1	Basic Commercial Driver License Lab
IEL 117	4	Circuitry Fundamentals w/Lab
GRADUATION REQUIREMENT		
COM 125	1	Job Search Strategies

E. Free elective credits: 0
(Sum of C, D, and E should equal A.)

F. Requirements for thesis, internship or other capstone experience: N/A

G. Any unique features such as interdepartmental cooperation: N/A



PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name State Technical College of Missouri
Program Name Utility Systems Technician
Date March 31, 2017

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

1. Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.

Utility Systems Technician admission requirements will include: 1) Reading and writing skills at college level and prepared for introductory algebra as measured by Accuplacer; ACT, or State Tech internal placement exam(s). 2) A driving record that qualifies the applicant for a Class A Commercial Driver's License. 3) Secondary and/or prior post-secondary GPA(s) will be considered. 4) High school attendance will be considered. 5) Work experience will be considered. 6) Personal interview will be considered.

- Characteristics of a specific population to be served, if applicable.
Not applicable.

2. Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.

State Tech's Faculty Hiring Policy specifies that technical faculty requirements are a minimum of a bachelor's degree in an appropriate area and three years of appropriate business/industrial experience.

- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.
The college estimates that 75% to 95% of the credit hours in the Utility Systems Technician program will be taught by full-time faculty members.
- Expectations for professional activities, special student contact, teaching/learning innovation.

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Because they are required to earn and maintain DESE Career Educator Certification, State Tech major program instructors are required to complete at least 30 hours of professional development to keep current in their industries and develop their teaching skills. All State Tech faculty members are required to assist with student recruitment and academic advisement as well as participate in college service activities such as serving as student club advisors and on college committees.

3. Enrollment Projections

- Student FTE majoring in program by the end of five years. Forty five (45). Please refer to Form SE attached.
- Percent of full time and part time enrollment by the end of five years. 100% full-time. Please refer to Form SE attached.

4. Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation. Based on a 150% of normal time graduation rate of 70%, State Tech estimates that at three years after implementation the Utility Systems Technician program will produce 10 graduates and at five years after implementation the program will produce 18 graduates per annum.
- Special skills specific to the program. Industry certifications that Utility Systems Technician graduates will earn during the program include: Class A Commercial Driver's License, Occupational Health and Safety Administration (OSHA) 10-Hour, Flagger, Cardiopulmonary Resuscitation (CPR), and First Aid.
- Proportion of students who will achieve licensing, certification, or registration. 100% of graduates will earn the certifications listed above because they are graduation requirements of the Utility Systems Technician program.
- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used. The college-wide goal is that 85% or more of all program graduates pass a nationally-normed technical skill attainment (TSA) examination. An appropriate industry-specific TSA is selected for every technical program. The TSA for the Utility Systems

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Technician program has not yet been determined. The college-wide goal is that 85% or more of graduates pass the Collegiate Assessment of Academic Proficiency (CAAP) test. CAAP is a nationally-normed general education assessment.

- Placement rates in related fields, in other fields, unemployed.
State Tech's goal is that 80% or more of graduates are employed in a job related to the major program from which they graduated.
- Transfer rates, continuous study.
Due to the nature of the Utility Systems Technician program, the college anticipates that fewer than 10% of program graduates continuing their education at the time of graduation.

5. Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. **If there are no plans to seek specialized accreditation, please provide a rationale.**
The college will seek The Association of Technology, Management, and Applied Engineering (ATMAE) accreditation for the Utility Systems Technician program. The ATMAE website states that, "ATMAE is a specialized accreditor for technology, management, and applied engineering degrees. The primary purpose of ATMAE accreditation is to encourage and recognize the attainment of certain professional goals and standards for technology and to encourage continuous quality improvement through a voluntary and comprehensive evaluation process." State Tech currently has 17 Programs accredited by ATMAE.

6. Alumni and Employer Survey

- Expected satisfaction rates for alumni, *including timing and method of surveys*.
Alumni are surveyed every three years. The surveys are administered by mail. The college expects that 95% respondents will be satisfied with the Utility Systems Technician program.
- Expected satisfaction rates for employers, including timing and method of surveys.
Organizations who employ State Tech graduates are surveyed annually. The surveys are administered by mail. The college expects that 95% of respondents will be satisfied with the program.

7. Institutional Characteristics

- Characteristics demonstrating why your institution is particularly well-equipped to support the program.
The proposed Utility Systems Technician program is consistent with the State Technical College of Missouri mission to prepare students for profitable employment and a life of

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learning. State Tech has well-respected Electrical Distribution Systems, Networking Systems Technology Digital Communications Technician, Heavy Equipment Operations, Civil Engineering Technology, and Nuclear Technology programs that serve various utilities and the construction industry. The Utility Systems Technician program will draw upon the expertise of existing faculty members and utilize existing facilities and equipment. As enrollment grows, additional equipment will be purchased and facilities may have to be expanded. The college has a proven track record of establishing and working with employer members of program advisory committees to develop and offer high-quality technical education programs. Twenty-one (21) industry representatives from 20 organizations have participated in planning meetings and/or a Design a Curriculum (DACUM) process to establish the need for and develop the structure of the proposed Utility Systems Technician program. The participating organizations include contractors, various types of utilities, the Missouri One Call System, the Missouri Telecommunications Industry Association, and the Power & Communications Contractors Association. These industry representatives will be invited to serve on the Utility Systems Technician Advisory Committee if the program is approved. Many of the employer representatives have indicated that they intend to do so as well as help recruit students for the program and hire program graduates.