Wyoming Community College Commission
Request for New or Modified Degree or Certificate Programs

A. College Laramie County Community College

B. Date submitted to WCCC staff: December 19, 2018

C. Program

1. Request for:
   ☒ New Program ☐ Modified Existing Program
2. **Program Title:** Industrial Systems Technology
3. Degree or Certificate to be awarded:
   ☐ AA ☐ AS ☐ AAS ☐ Other ☒ Certificate
4. Total number of credit hours: 18 Credits
5. CIP code (6-digit): 15.0699
6. Complete this section only if a certificate approval is requested (not required for modification request):
   a. Choose one:
      ☐ transfer preparation
      ☒ short-term workforce placement
      ☐ one-year workforce placement
      ☐ special need
   b. Certificate description – Which of these descriptors apply to this certificate request. More than one may apply:

☐ **Yes**	☒ **No**	local or state employer or industry specific
☒ **Yes**	☐ **No**	nationally recognized
☐ **Yes**	☒ **No**	examination or licensure preparation
☐ **Yes**	☒ **No**	apprenticeship
☒ **Yes**	☐ **No**	stackable

   c. Is completion of this certificate requested to count as a certificate of completion for WCCC degree and certificate completion metrics?
      ☒ **Yes** ☐ **No**

d. Is this certificate designed to be Title IV financial aid eligible?
☒ **Yes** ☐ **No**

e. Planned semester/year new program will begin: Fall of 2019

f. Will any part of this program be provided by non-accredited vendor(s)?
☐ **Yes** (provide details below) ☒ **No**

Click or tap here to enter text.

D. Rationale for this request

List state priorities addressed by program; pertinent partnerships; coordination with citizens; business; industry; non-profit organizations; or K-12 education; if applicable:

Southeastern Wyoming has formed a Next Generation Sector Partnership (NEXTGEN) with a focus on Construction to meet the needs of Wyoming as identified in the recently released ENDOW report. NEXTGEN states that "Secondary and post-secondary educational institutions are being called to engage with industry and align their curriculum and programming in new innovative ways." In order to meet the needs of Wyoming, NEXTGEN and the ENDOW initiative, LCCC has created this program to help build a skilled workforce to support the growing infrastructure. The IST Certificate allows students multiple levels of flexibility: the high school student can earn college credit; the undecided student can start down a path toward six different degrees without losing any credits once he/she has decided on a major; and students can enter the workforce after one semester in entry level positions as maintenance assistance.

E. Program curriculum

1. Program description of a new or modified program:

The Industrial Systems Technology (IST) program is intended to provide the opportunity for students to explore a career in industrial systems technology at the professional level. The certificate program teaches skills in Industrial Systems Technology providing background skills in several areas of industrial maintenance including electronics, safety and mechanical maintenance fundamentals. The IST certificate program is designed for the student who wishes to prepare for a career as a Wind Energy technician, HVAC technician, industrial electrician, maintenance technician or electrical controls technician. Completion of the Industrial Systems Technology certificate is required for enrollment in Electrical Technology, HVAC/R, Industrial Maintenance, Plumbing Technology and Wind Energy program courses.

2. Previous program description (for modification request only):

Click or tap here to enter text.

F. New curriculum

Does this program include new curriculum? ☒ **Yes** (provide details below) ☐ **No**

Click or tap here to enter text.

1. List alphabetically the courses that are included in the program (include prefix, course number, course name, credit hours):

EXAMPLE:

DRON	*1010*	*Introduction to Drones*	*3 credits*
DRON	*1012*	*Drone Flying Techniques*	*2 credits*
DRON	*1020*	*Unmanned Aircraft Systems Maintenance*	*5 credits*
ENGL	*1010*	*English I: Composition*	*3 credits*
MATH	*1400*	*College Algebra*	*3 credits*
TOTAL			*16 credits*

Industrial Systems Certificate

HMDV	1510 Success in Workplace: Soft Skills	3 Credits
IST	1520 Introduction to Industrial Safety	3 Credits
IST	1560 Trade Skill's Fundamentals	3 Credits
IST	1660 Mechanical Drives	2 Credits
IST	1661 Mechanical Drive Assemblies	1 Credits
IST	1710 DC Electricity	2 Credits
IST	1711 DC Electrical Circuits	1 Credits
IST	1712 AC Electricity	2 Credits
TOTAL		17 Credits

2. Previous program curriculum (for program modification request only).
   List alphabetically the courses that are included in the program (include prefix, course number, course name, credit hours):

Click or tap here to enter text.

G. New course prefixes, numbers, and descriptions

1. This program request includes courses new to Wyoming Community Colleges?
   ☐ **Yes** (if yes, complete items 1-4) ☒ **No**

2. This program would introduce a new course number new to Wyoming.
   ☐ **Yes** ☒ **No**

3. This program would introduce a course prefix new to Wyoming.
   ☐ **Yes** ☒ **No**

4. New course numbering, prefixes, course names, credit hours and LOIs have been coordinated with UW and WCCC staff:
   ☒ **Yes** ☐ **No** (coordination is required)

5. List courses new to Wyoming public higher education institutions that are included in the program (include prefix, course number, course name, credit hours, requested level of instruction (LOI of 1, 2, or 3) and course description):

EXAMPLE:

Course Prefix & Number	Course Title	Semester Credit Hour	Level of Instruction
DRON 1010	*Introduction to Drones*	*3*	*2*

Description: This course is designed to provide an introduction to the vast field of unmanned aircraft systems (drones) that are used across many industries including agriculture, civil engineering, construction, industrial, etc. This is a dynamic, emerging technology that is used for inspection, observation, security, surveillance, and progress updates in those many fields. The course provides both classroom instruction in the history of drones and how the technology is used in business and industry applications, along with lab and field experience in the basic operation of piloting drones safely and legally.

H. Additional resources

Are additional resources needed through college or other external funds?
☐ **Yes** (provide details below) ☒ **No**

No additional resources required.

I. Projected demand in Wyoming and Nation

1. List current state and national data and estimated data for ten years from proposal date (not required for modification request).

United States	Employment		Percent Change	Job Openings
	Year: 2016	+10 years		
	1,432,600	1,545,100	8%	112,500
Wyoming	**Employment**		**Percent Change**	**Job Openings**
	Year: 2016	**+10 years**		
	3,650	4,000	+10%	350

List data sources:

http://www.onetonline.org/link/summary/47-2152.02

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2. State and National Wages

Location	Pay Period	Year: 2018				
		10%	25%	Median	75%	90%
United States	Hourly	$10.97	$13.91	$18.11	$23.75	$29.67
	Yearly	$22,820	$28,930	$37,670	$49,410	$61,720
Wyoming	Hourly	$10.39	$13.69	$18.42	$24.71	$37.05
	Yearly	$21,610	$28,470	$38,310	$51,390	$77,070

List data sources:

https://www.onetonline.org/link/summary/49-9071.00

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3. Primary student audience identified for this program (not required for modification request).

We anticipate targeting several different groups within the community, including: local high school students, recent high school graduates, incumbent workers who are currently in the industrial maintenance field and want to or are required to expand their knowledge; those that are seeking advancement opportunities; displaced workers desiring retraining; poverty-to-self-sufficiency training programs; and high school graduates who are interested in technical fields.

4. Three-year anticipated unduplicated headcount (not required for modification request).

   Year One: 30
   Year Two: 40
   Year Three: 40

   Basis for estimate:

Based on discussions with local industry, there is a shortage of skilled workers available to meet the need across many of our trades industries. The objectives covered in this certificate will allow for a student to leave the program and enter the workforce as a helper or return to LCCC to continue their course of study in their chosen career.

J. Identification of similar programs

1. List similar programs at other Wyoming community Colleges (not required for modification request).

Community College	Degree/Certificate	Number of Semester Credit Hours
CC	N/A	N/A
CWC	N/A	N/A
EWC	N/A	N/A
LCCC	Current Industrial Maintenance Credit Diploma	25
NWCCD	N/A	N/A

NWC	N/A	N/A
WWCC	N/A	N/A

2. Summary of discussions with other Wyoming community college(s) faculty and administrators (not required for modification request).

1. Casper College
• Although there is a Technical Education A.S. related to Construction Management and Construction Technology, there is no program similar to the Industrial Systems Technology Credit Diploma for immediate entry into the workforce or continuation of degree pathways such as developed by LCCC.

2. Central Wyoming College (CWC) Riverton, Lander, Jackson, Dubois
• Although Central Wyoming Community College offers a Technical Studies Degree, which could be paired with Electrical Apprenticeship Certificate 1, it does not offer any similar program to the Industrial Systems Technology Credit Diploma for immediate entry into the workforce or continuation of degree pathways such as developed by LCCC.

3. Northern Wyoming Community College District (NWCCD) Sheridan, Gillette
• Although NWCCD offers a Construction Technology A.A.S. and Certificate; and a Carpentry Apprenticeship Certificate, there is no program similar to the Industrial Systems Technology Credit Diploma for immediate entry into the workforce or continuation of degree pathways such as developed by LCCC.

4. Western Wyoming Community College (WWCC) Rock Springs
• WWCC also offers a Mining Maintenance A.A.S., Industrial Maintenance Technology A.A.S. and many concentration area certificates such as Industrial Maintenance Technology Mechanics Hydraulics Option Certificate, Industrial Maintenance Technology Mechanics Welding Option Certificate, Maintenance Mechanic Certificate for Industry, Power Plant Maintenance Mechanics Certificate, Surface Maintenance Mechanics Certificate, and Underground Maintenance Mechanic Certificate. These Industrial Maintenance A.A.S. and certificate programs are highly specialized and differ from the Industrial Systems Technology (IST) Credit Diploma in that the courses offered in the IST Credit Diploma are designed for the novice in mind, possibly just out of high school who have never been exposed to any trades related skills, tools or crafts.

K. Other program information (optional)

Additional information to assist the Commission to better understand this program

request may be provided if not previously included. (Additional information related to the WCCC Statewide Strategic Plan could assist the Commission.)

Through this accelerated program students may earn an Industrial Systems Technology Certificate, thus increasing the number of post-secondary education certificates in Wyoming. In addition, the program supports high demand and high pay occupations, which improves the quality of life for our students and the clients who will be served by their skills.
This program helps build the technical knowledge required to support the skills for industrial maintenance technicians. Many of the fundamental skills developed through the electrical, mechanical and safety courses are relevant across industry. We developed the Industrial Systems Technology curriculum from recognized industry standards and input from local businesses. We selected courses that respond to current and emerging technologies in the industry.
Career pathways coordinators will be working closely with the Integrated Systems instructors to align the skill sets of secondary school students with our program. The alignment will provide a seamless pathway for students from secondary to post-secondary education and on into the maintenance industry of the students choosing.

Wyoming Regional Interests
Comments
Assessment data and evaluations will be compiled by instructors; evaluated the advisory committee. The College will use the Institutional Research Office to develop and deliver a post-job placement survey to both employers and students to identify gaps for inclusion in the program. This information will ensure the program is up to date and meeting industry needs. Via NCCER accreditation, audits will occur every three years to ensure that we are meeting accreditation standards.
Certification Description
As part of the LCCC Pathways 2.0 Project, members of the Technical Studies faculty created a common first semester from parts of the existing LCCC Industrial Maintenance C. This “common semester” will allow a student to complete 18 credit hours of training that will allow them to enter one of five LCCC Technical Studies career pathways.

Apprenticeships
There are two pathways required for an apprentice to travel before being considered for advancement to journey worker (journeyman). The first is a requirement to complete classroom related technical instruction (this is LCCC’s part) of at least 144 hours per year is required for each occupation. The second requirement is for the apprentice to complete on the job training. In the past, an apprentice was required to complete between 2,000 and 8,000 hours of job training before being given the opportunity for advancement. There has been a shift towards competency-based apprenticeships. Competency-based means

linking success to mastery of established skill sets, rather than to completing courses that require a rigid set of hours.

According to the Department of Labor's Office of Apprenticeship Representative for Wyoming, wage progression is a requirement of the Federal Register 29 CFR 29.5 (b) (5): "A progressively increasing schedule of wages to be paid to the apprentice consistent with the skill acquired. The entry wage must not be less that the minimum wage prescribed by the Fair Labor Standards Act, where applicable, unless a higher wage is required by other applicable Federal law, State law, respective regulations, or by collective bargaining agreement."

As graduates of our programs enter the workforce as apprentices, they must be employed by a sponsor according to 29 CFR 29.5(b) (1). This standard states that developing a wage progression allows "sponsors (business or industry partners) to determine their apprenticeship wage schedule, appropriate to their budget, based on the "journey wage" to reflect the value of the apprentice as they progress and master the skill sets required by the occupation, sponsor, Registered Apprenticeship regulations, and licensing. The wage progression also deters "sponsors" from employing apprentices as "cheap labor."

The training received at LCCC will be evaluated by each company or organization on an individual basis. By utilizing curriculum from the National Center for Construction Education and Research (NCCER), LCCC instructors as well as sponsor representatives will be able to review records of students/technicians through the use of a national database to quickly review completed training. The information gathered during the record review can be used as a tool to better identify the level of apprenticeship placement.

Recruitment & Marketing:
LCCC will utilize industry contacts from many different companies and industries to identify and recruit students currently in the workforce who need to update their skills. Industry partners are very supportive and have committed to referring students to the college. We plan to market to Department of Workforce Services, high school counselors and students, veterans and transitioning military personnel, poverty to self-sufficiency programs and other displaced workers. Also, a full marketing campaign if needed, will be designed for this program that would include: LCCC Website, Facebook, and other social media venues, college marketing opportunities such as television stations, press releases, radio interviews and other areas as identified by the respective public relations departments.

Program Outcomes

Program Outcome
Describe the importance of safety, the causes of workplace incidents and the process of hazard recognition and control.

IST 1520 - Introduction to Industrial Safety
Explain the role of OSHA.
Discuss proper Personal Protective Equipment usage.
Describe hazards associated with materials handling.
Describe the safe work requirements for elevated work.
IST 1660 - Mechanical Drives
Predict if it is safe to use mechanical equipment
IST 1710 - DC Electricity
Identify if it is safe to work on an electrical component.
IST 1712 - AC Electricity
Identify if it is safe to work on an electrical component

Program Outcome
Describe the safe work requirements for elevated work.

IST 1520 - Introduction to Industrial Safety
Explain the role of OSHA.
Discuss proper Personal Protective Equipment usage.

Program Outcome
Convert units of length, weight, volume, and temperature between the imperial and metric systems of measurement.

IST 1560 - Trade Skills Fundamentals
Demonstrate how to work with whole numbers.
Demonstrate how to work with fractions
Demonstrate how to work with decimals.
Identify tools used to measure length.

Program Outcome
Decide where and how to connect basic electrical components.

IST 1710 - DC Electricity
Identify where and how to connect basic electrical components
Explain what type of meter to use to measure electrical component characteristics
Identify if it is safe to work on an electrical component.
IST 1712 - AC Electricity
Identify where and how to connect test equipment in an electrical circuit to measure specific types of characteristics
Explain where and how to connect reactive components to create specific types of electrical circuits
Identify if it is safe to work on an electrical component

Program Outcome

Decide if it is safe to use mechanical equipment.

IST 1520 - Introduction to Industrial Safety
Discuss proper Personal Protective Equipment usage.
Describe hazards associated with materials handling.
IST 1660 - Mechanical Drives
Predict if it is safe to use mechanical equipment

Program Outcome
Define and identify personal skills, strengths, and attributes.

HMDV 1510 - Success in Soft Skills
Describe and apply networking strategies to achieve personal career goals
Develop and practice professional behaviors such as appropriate work attire, work ethic, attitude, communication etiquette, teamwork, prioritization, and, cultural competencies
Distinguish conflict management styles, analyze personal conflict management style, and create strategies for improving personal conflict management techniques when interacting with both internal and external situations within a work setting
Identify and demonstrate problem solving techniques as they relate to workplace conflict resolution, group dynamics, and group process.
Define leadership styles and identify personal style as it relates to creating positive change in a work environment

SIGNATURE PAGE

By signing below the Vice President for Academic Affairs verifies that institutional curriculum approval processes have been completed and that the Community College Board of Trustees has approved this program request as per institutional policy.

Submitted by the Vice President for Academic Affairs:

Clark Harris	01/18/2019
Signature	Date
Clark Harris	Vice President of Academic Affairs
Printed Name	Title

Approved by the WCCC Academic Affairs Council:

Signature	Date
Joseph E. McCann	Programs Team Leader
Printed Name	Title

Approved by the Program Review Committee:

Signature	Date
Joseph E. McCann	Programs Team Leader
Printed Name	Title