

Wyoming Community College Commission
Request for
New, Pilot or Revised Degree or Certificate

A. College: Laramie County Community College

B. Date submitted to WCCC: _____

C. Program

1. Request for:

New Program Pilot Program Revised Program

2. Program Title: Construction Management

3. Degree or Certificate to be awarded:

Degree: AA AS AAS Other
 Certificate

4. Educational Pathway:

Energy Construction Hospitality Technology Health Care
 other

5. Total number of credit hours: 61

5. Suggested CIP (Classification of Instructional Program) code (6-digit):

52.2001

6. Planned semester/year new program will begin: Fall 2015

7. Will any part of this program be provided by non-accredited vendor(s)?

YES (Provide details) NO

D. Program description as it will be included in college catalog:

The Construction Management Program provides students the technical, managerial, and business knowledge required to perform construction operations and processes that are efficient, cost effective, and ensure the safety and accurate progress on a given project. Students explore building codes, costs, construction methods, as well as managerial techniques employed with allied fields associated with construction. Students are prepared to integrate and manage the technical, material, financial, human resources, and establish timetables that support construction operations and lead project teams toward common objectives.

1. Expected Student learning outcomes from completion of the program:
Students will be able to:

- Explain the basic aspects of estimating, scheduling, contracts, subcontractor management, cost control and project administration with respect to Construction Management.
- Analyze the roles and responsibilities of the owner, architect, general contractor, and other participants in the construction management process.
- Explain the management of project information during the various phases of the project.
- Identify information about each part of a building presented in a set of working blueprints.
- Identify safety conditions of a construction site and operations of industry equipment.
- Identify when and where to employ OSHA's Construction Standards and Related Safety Practices.

2. Program Layout by Semester

Course Number	Course Title	Credit Hours
COLS 1000	Introduction to College Success: First Year Seminar	3
ENTK 1515	Technical Drafting	3
CMGT 1505	Introduction to Construction Management	1
ENTK 1005	Engineering Problem Solving with Spreadsheets	1
ENGL 1010	English I: Composition	3
MATH 1400	College Algebra	3
Semester hours total:		14

CMGT 1520	Introduction to Blueprint Reading and Building Codes	3
	Choose from approved WY Statutory courses	3
MATH 1405	Pre-Calculus Trigonometry	3
	Choose from approved Verbal Communication courses	3
ENTK 1740	Architectural Building Information Modeling Design I	3
Semester hours total:		15
ACCT 2010	Principles of Accounting I	3
ECON 1010	Principles of Macroeconomics	3
ENTK 2610	Construction Materials & Methods	3
	Program Elective: Choose one 4 credit hour course from one of the following courses: PHYS 1110, CHEM 1000, or GEOG 1100	4
CMAP 1700	Word Processing I	1
ENTK 2070	Engineering Survey	3
Semester hours total:		17
CMGT 2560	Construction & Industry Safety	3
ENTK 2660	Fundamentals of Construction Cost Estimation	3
ACCT 2020	Principles of Accounting II	3
ECON 1020	Principles of Microeconomics	3
	Program Elective: Choose one 3 credit hour course from one of the following programs: ARCH, ENTK, GEOG or HVAC	3
Semester hours total:		15
Total		61

3. Will all or part of this program be available to students via online or other distance education technologies? No

X At the start of the program? ___ Within three years of the start of the program?

E. New course prefixes:

1. Recommended Level of Instruction if the community college is using a new course prefix:

_____ No new prefixes

3 Suggested level of instruction

2. New Course prefixes, numbers and titles have been coordinated:

with UW (transfer) Yes No Not Applicable

or WCCC (career technical) Yes No Not Applicable

F. New course descriptions:

The following are course descriptions for each new course in the program (include prefix, course number, title, credit hours and description):

ENTK 1005 Engineering Problem Solving with Spreadsheets (1 Credit Hr.)

Students learn how to solve engineering problems through the use of computer spreadsheets. Topics include functions, referencing, conditional statements, graphs, trend lines and iterative solvers. Prerequisite: ENG 0810 (or equivalent placement test score or Instructor approval).

CMGT 1505 Introduction to Construction Management (1 Credit Hr.)

Students learn about the construction management profession and the role of the construction manager in various fields of construction. Students acquire knowledge about the variety of allied careers in the construction industry and ethics required of individuals working in the construction industry. Prerequisite: ENG 0810 (or equivalent placement test score).

CMGT 1520 Introduction to Blueprint Reading & Building Codes (3 Credit Hrs.)

Students acquire knowledge about the complexities of modern construction and related technologies. Students learn to read, understand, and interpret construction drawings for both commercial and residential construction. Students examine how a building's design parameters and construction methods relate to building codes. Prerequisite: ENGL 0810 (or equivalent placement test scores or Instructor approval).

CMGT 2560 Construction & Industry Safety (3 Credit Hrs.)

Students learn safety policies and procedures of a construction site. Students acquire knowledge in safe handling of industrial power tools, personal protective equipment, and electrical safety. In addition, students learn about the implementation of practical safety standards and the consequences of violating those standards in the work place. Students will receive a valid 30-hour OSHA Card upon successful completion of the course. Prerequisite: ENGL 0810 (or equivalent placement test scores or Instructor approval).

G. Can this program be delivered by current faculty? If not, what are the plans, budget and timeline for bringing on needed instructors?

The program can be delivered by current faculty.

H. Summary of input from and coordination with citizens, business and industry or k-12 education:

The Engineering Technology department of Laramie County Community College has been in periodical discussions with Construction Industry Representatives from the region about incorporating a Construction Management Program of study. Professional Construction Management experts expressed a need to educate and train Wyoming residents and Wyoming High School graduates in construction management skills in the south east region of the state and there are currently no other institutions, including the University of Wyoming, that offer this curriculum in the south east region of the state. The current Laramie County Community College Engineering Technology Program can help fulfill and develop Construction Management competencies needed to begin work or transfer to a four year university offering Construction Management degrees (South Dakota State University) following graduation from Laramie County Community College. Please refer to Appendix A for the Program to Program Articulation Agreement between Laramie County Community College and South Dakota State University.

I. Resources required to start and sustain the program and the current plan to meet those resource needs through college or other external funds:

Laramie County Community College Engineering Technology Program of Study follow the Accreditation Board for Engineering and Technology (ABET) guidelines for curriculum development and delivery. The current Laramie County Community College budget for the Engineering Technology program can support the addition of a Construction Management Program.

J. Projected demand in Wyoming and Nation for five years from the proposed implementation date (career technical programs):

1. State and National Trends

United States	Employment		Percent Change	Job Openings
	2012	2022		
Construction Manager	485,500	563,200	+16%	15,460
Wyoming	Employment		Percent Change	Job Openings
	2010	2020		
Construction Manager	380	400	+5%	40

Source:

Source: Occupational Information Network (O*NET OnLine), <http://online.onetcenter.org>

Other trend information that would assist the Commission:

2. State and National Wages

Location	Pay Period	2013				
		10%	25%	Median	75%	90%
United States	Hourly	\$23.89	\$30.67	\$39.80	\$52.69	\$69.48
	Yearly	\$49,700	\$63,800	\$82,800	\$109,600	\$144,500
Wyoming	Hourly	\$24.02	\$30.45	\$38.25	\$44.97	\$58.35
	Yearly	\$50,000	\$63,300	\$79,600	\$93,500	\$121,400

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey

Source: Occupational Information Network (O*NET OnLine), <http://online.onetcenter.org>

Other wage information or comments that would assist the Commission:

The Construction Management Program of study will offer south east Wyoming High School graduates an opportunity to use the Hathaway Scholarship to pursue an educational path toward earning an associate's degree to enter into the construction management industry or a career in an allied field as a technician, or transfer to a four year university to pursue a bachelor's degree in Construction Management.

3. Primary student audience identified for this program:

The primary student audience would be Wyoming High School graduates and non-tradition students who want to advance their skills and education to move into the construction management Industry.

4. Anticipated enrollment in the three academic years after WCCC approval (unduplicated headcount) with the basis for the estimate:

12 Year One 12 Year Two 15 Year Three

K. Student recruitment and program marketing strategies to attract the broadest range of individuals for this particular program:

Laramie County Community College will use its advising component/recruiters to actively pursue interested students (traditional/non-traditional) who want to earn an associate's degree in Construction Management. In addition, the Wyoming Construction Coalition, the Engineering Technology Advisory Board, and many regional construction firms will assist in recruiting efforts as well. Laramie County Community College will take full advantage of its outreach program at F.E. Warren AFB to advertise/market the program to Air Force members wanting to transition to civilian life.

L. Identification of similar programs at Wyoming Community Colleges and an overview of results **of discussions with faculty and**

administrators at the relevant colleges regarding curriculum and possible joint projects:

Wyoming Community College Programs (Identify title, degree/certificate and number of credit hours)						
Casper College	Central Wyoming College	Eastern Wyoming College	Laramie County Community College	Northwest College	Northern Wyoming Community College District	Western Wyoming Community College
N/A	N/A	N/A	N/A	N/A	N/A	N/A

M. Note available program and course articulations with other likely transfer institutions in the region, particularly for transfer AA and AS programs. (Note regional Bachelor of Applied Science transfer options in addition to UW.)

Laramie County Community College anticipates transfer of associate’s degree students to four year universities like South Dakota State University (SDSU). Please refer to Appendix A for the Program to Program Articulation Agreement between Laramie County Community College and South Dakota State University. South Dakota State University has already accepted Laramie County Community College Engineering Technology Graduates into their Construction Management Bachelor’s Program of study. Currently the University of Wyoming does not offer a bachelor’s degree in Construction Management.

N. When appropriate, note partnerships with business, industry, associations or agencies that have contributed to the design of the proposed program and/or who will contribute to the delivery of the program.

Construction Management experts from regional engineering firms, construction management firms, and the Wyoming Construction Coalition have greatly assisted Laramie County Community College with creating, developing, and implementing the Construction Management Program of study. The Construction Management employees of AP Wyoming have been invaluable in assisting Laramie County Community College in coordinating efforts from allied fields in Construction Management as well as South Dakota State University.

O. Assessment of student learning and completer follow-up per performance indicators. How will the assessment outcomes be used to assure student learning and improve the program?

Laramie County Community College will use traditional return on investment approaches to assess and evaluate student skills and aptitude obtained during their education in the Construction Management Program. Example approaches for student assessment include employer surveys, graduate surveys, empty outlines, memory matrices, categorizing grid, and generated test questions for exams. The Construction Management Program will also use return on investment strategies to improve the program by assessing course-related learning strategies, learner reactions to teachers and teaching behaviors, and learner reactions to class activities, assignments, and materials to develop and improve the Construction Management curriculum.

P. Other program information or comments that would assist the commission in making a decision using the Guidelines for Use of this Evaluation Tool found in Appendix A of the 2010 WCCC Statewide Strategic Plan.

This program addresses Wyoming and regional interests in the following ways:

EDUCATED CITIZENTRY – Through this program, students may earn an associate’s degree increasing the number of qualified candidates in the construction management industry for south east Wyoming. The Construction Management Program will enable students to pursue a career in an entry level position or continue their education in pursuant of a bachelor’s degree in Construction Management.

DIVERSIFIED ECONOMY – This program will build skill sets required to support architectural and engineering firms located in Wyoming. It will further enhance the professional management of architectural and engineering projects throughout the State of Wyoming with a professional core of Construction Managers.

WORKFORCE DEVELOPMENT – The demand for construction managers nationally will call for a 16% increase in the career field. In Wyoming the demand for construction management will call for a 5% increase in the career field and this does not include allied fields and careers. With more and more complicated architectural and engineering projects being designed and planned, the need for professional construction managers will continue to increase over the next decade. Emphasis on educated and qualified construction managers’ needed

and antidotal evidence is high that Wyoming High School graduates with an interest in architectural and engineering studies want options to stay in Wyoming to pursue a degree in construction management and utilize the Hathaway Scholarship opportunity. This option does not currently exist since no construction management option is available in south east Wyoming.

EFFICIENT SYSTEMS – Laramie County Community College has the ability to offer an associate’s degree in Construction Management. The program will emphasize the overall management aspect of working and overseeing architectural and engineering projects and will have no association with the construction trades discipline or occupation. Support from the Wyoming Construction Coalition and many regional Construction Management firms is indicative of the assistance Laramie County Community College will receive to ensure quality education is meeting the needs of Wyoming architectural and engineering firms throughout the State.

ACCOUNTABILITY and IMPROVEMENT – As presented in the Assessment of Student Learning Section, Laramie County Community College will use traditional return on investment approaches to assess and evaluate student skills and aptitude obtained during their education in the Construction Management Program. Example approaches for student assessment include empty outlines, memory matrices, categorizing grid, and generated test questions for exams. The Construction Management Program will also use return on investment strategies to improve the program by assessing course-related learning strategies, learner reactions to teachers and teaching behaviors, and learner reactions to class activities, assignments, and materials to develop and improve the Construction Management curriculum.

OTHER CRITERIA-

- **Labor Needs** – As noted in the Workforce Development section, there is and will be a need for professionally educated and trained construction managers in Wyoming. In addition, there are national opportunities to support architectural and engineering projects in allied fields as well. Currently, no post-secondary program of study exists that truly offers the skills and means to lead/manage construction projects in the south east region of the State.
- **Curriculum Development** – The currently proposed courses will satisfy the academic needs to earn an Associate’s of Applied Science degree in Construction Management. Several

current Engineering Technology courses have undergone modifications (title changes/credit hours) that fulfill the program requirements for an associate's degree in Construction Management as a standalone degree. Curriculum review will be done twice a year with the Construction Management Advisory Board and a five year program review will be conducted as well to ensure program relevancy and utility.

- **Pathways** – Laramie County Community College's Engineering Technology Program of Study already supports technical needs for government agencies, architectural firms (CAD drafting, etc.), and engineering firms (software training) in the local area. A well outlined academic pathway exists on Laramie County Community College's website showing high school and post-secondary students how they can prepare themselves academically to achieve success. In addition, the current Engineering Technology Program has worked closely with Wyoming's Department of Transportation, local manufacturing firms, and Laramie County School District #1 in providing educational and training opportunities for their employees and students. This all ensures awareness of program goals and objectives are established in Laramie County Community College's servicing area.
- **Faculty Support** – Laramie County Community College is very fortunate to employ a very fine instructor in Engineering Technology. He has the academic background and interest to ensure a successful integration of the Construction Management Program of Study. In addition, should the need arise to provide subject matter experts in specific classes, local area architects, engineers, and professional construction managers have offered their services to teach and/or assist with course presentations and instruction.
- **Recruitment Strategies** – As noted previously, Laramie County Community College will use its advising component and recruiters to market and attract students to this program. In addition, the Engineering Technology Advisory board will aid in recruiting and marketing the program as well. Finally, the Wyoming Construction Coalition and many local area architectural, engineers, and construction management firms have committed to helping Laramie County Community College promote and market the Construction Management Program.
- **Resource Needs** – The Engineering Technology already had dedicated space at Laramie County Community College to

conduct its program of study. At this time, no additional space will be needed to accommodate the Construction Management Program. If the program should expand beyond what we expect for student enrollment, then additional space will be sought. When the Laramie County Community College Flex-Tech Building becomes available, then any additional space needed by the Engineering Technology and Construction Management Program will be met.

SIGNATURE PAGE

Submitted by V. P. for
Academic Affairs*

Signature

Date

Printed Name

Title

Approved by the WCC Academic
Affairs Council

Signature

Date

Printed Name

Title

Approved by Program
Review Committee

Signature

Date

Printed Name

Title

*Signature by the Community College 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.