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:
   X New Program ___ Pilot Program ___ Revised Program

2. **Program Title:** Architectural Design

3. Degree or Certificate to be awarded:
   ___ Degree: X AA ___ AS ___ AAS ___ Other
   ___ Certificate

4. Educational Pathway:

   __ Energy X Construction __ Hospitality __ Technology __ Health Care __ other

5. Total number of credit hours: 62

5. Suggested CIP (Classification of Instructional Program) code (6-digit):
   04.0902

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

8. Will any part of this program be provided by non-accredited vendor(s)?
   ___ YES (Provide details) X NO

   Will all or part of this program be available to students via online or other distance education technologies?

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

D. <u>Program description</u> as it will be included in college catalog:
(Type description here)

The Architectural Design Program provides students the critical inquiry of cultural, environment, form, and history that shapes the built environment. Students develop visual literacy by observing, analyzing, and thinking through the design process in studios, workshops, and courses by researching historical precedents, analyzing theoretical texts and the physical environment. Students will explore the discipline and practice of architecture by engaging in innovative multi–disciplinary practice and integrate design with social, aesthetic, and environmental processes. The program fosters a sense of stewardship for the local and global built environment by preparing the next generation of leaders to engage in the complex design challenges of the future.

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

   - Interpret the fundamentals of Architecture form, space, and order.
   - Evaluate materials of construction for specific situations.
   - Analyze ways to achieve emphasis and a focal point on a design.
   - Evaluate construction materials and elements in relation to current environments.
   - Examine architectural history and precedential influences of the various genres.
   -Analyze contemporary Architectural Principles, functionalism, monumentalism, and zeitgeist.
   - Demonstrate how social, cultural, and political forces shaped the growth and development of cities, towns, and suburbs.
   -Devise client project objectives and needs with respect to the role of client and third parties.

2. Program Layout by Semester

COLS 1000	Introduction to College Success: First-Year Seminar	3
ARCH 1005	Introduction to Design & Architecture	3
ENTK 1560	Freehand Sketching, Inking, and Rendering for Drafting	3
ENTK 1740	Architectural Building Information Modeling Design I	3
MATH 1400	College Algebra	3
	Semester Hours Total: 15	
ARCH 1010	Fundamentals of Design	3

ARCH 1015	Architectural Fundamentals of Design I	3
ENGL 1010	English I: Composition	3
MATH 1405	Pre-Calculus Trigonometry	3
	Choose from approved Culture Awareness courses	3
		Semester Hours Total: 15
ARCH 2005	Architectural Fundamentals of Design II	3
ARCH 2010	History of American Architecture	3
ENTK 1005	Engineering Problem Solving with Spreadsheets	1
ENTK 2610	Construction Materials & Methods	3
CO/M 2010	Public Speaking	3
	Choose from approved STEM courses	3
		Semester Hours Total: 16
ARCH 2015	Sustainable Architecture & Communities	3
ARCH 2020	Introduction to Building Systems	3
	Choose from approved Aesthetic Analysis courses	3
	Choose one 4 credit hour course from one of the following courses: PHYS 1110, CHEM 1000, or GEOG 1100	4
	Choose from approved WY Statutory Requirement courses	3
		Semester Hours Total: 16
	Total Program Semester Hours	62

E. <u>New course prefixes</u>:

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

   _____ No new prefixes

   <u>3</u> Suggested level of instruction

2. <u>New</u> Course prefixes, numbers and titles have been coordinated:
   with UW (transfer) <u>X</u> Yes ___ No ___ Not Applicable

   or WCCC (career technical) <u>X</u> Yes ___ No ___ Not Applicable

F. <u>New course descriptions:</u>

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

ARCH 1005 Introduction to Design & Architecture (3 Credit Hrs.)
Students learn to construct ideas, principles, and methods for solving architectural problems by investigating design concepts of space, form, function, and technology. Students learn architectural design and computation through rendering, computer modeling, and digital fabrication. Students also examine the history of key concepts like abstraction, representation, program, plan, material, and structure. Prerequisite: ENGL 0810 (or equivalent placement test score).

ARCH 1010 Fundamentals of Design (3 Credit Hrs.)
Students develop vocabulary for visual organization and literacy design. Students construct design skills by classifying the many forms of architecture and by learning to distinguish the factors that influence building design. Students will demonstrate the design process, principles, and elements through various graphic design projects to communicate effective artistic intent and vision. Prerequisite: ENGL 0810 (or equivalent placement test score).

ARCH 1015 Architectural Fundamental of Design I (3 Credit Hrs.)
Students learn about the influence of architecture on the environment and the architect's responsibility in shaping the built environment. Students will incorporate fundamental tools of special experience, contextual analysis, formal concepts, and social/cultural relationships in models, drawings, and other visual materials to communicate a concept or idea. Prerequisite: ENGL 0810 (or equivalent placement test score).

ARCH 2005 Architectural Fundamental of Design II (3 Credit Hrs.)
Students learn about architecture as both a representation and as a built form. Students gain experience in transitioning from theory (representation) to practice (action). Through the process of design and construction, students build a strong connection between drawing and constructing models, collages, renderings, and full-scale constructions. Prerequisite: ARCH 1015 or Instructor approval.

ARCH 2010 History of American Architecture (3 Credit Hrs.)
Students learn about the major developments that shaped the American-built environment from the late 17th century to the present, from the everyday vernacular to the high style of aspiration. Students investigate the impact of changes in conceptual imagery, style, building technology, landscape design, and town-planning theory throughout the nation's history. Students explore how social, cultural, and political forces shaped the growth and development of American towns, cities, and suburbs. Prerequisite: ENG 0810 (or equivalent placement test score).

ARCH 2015 Sustainable Architecture and Communities (3 Credit

Hrs.)
Students learn how to moderate material and energy usage through efficient consumption. Students are introduced to the principles of sustainable design and urbanism by exploring sustainable building designs for society. Students also explore how culture factors and personal values influence professional design concepts of sustainability in the quality of life and the overall design of neighborhoods and cities. Prerequisite: ENGL 0810 (or equivalent placement test score or Instructor approval).

ARCH 2020 Introduction to Building Systems (3 Credit Hrs.)
Students learn that buildings begin as a concept for desirable space that meets function, aesthetic, and technological requirements and how building technology systems achieve these functions. Students develop knowledge of systems that make up the building and influence the form, texture, and character of the built environment. Focus is on structural systems, environmental systems, and life safety systems. Prerequisite: ENGL 0810 (or equivalent placement test score or Instructor approval).

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

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 and if additional assistance is required to help deliver the curriculum many members of the Wyoming Chapter of the American Institute of Architects, who have taught at four year institutions in Engineering and Architectural Programs, have offered to assists as adjuncts for the program. In collaboration with the University of Colorado Denver, the Architectural and Urban Planning Program has made verbal commitments to assist with resources for instruction.

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

The Wyoming Chapter of the American Institute of Architects and the Engineering Technology department of Laramie County Community College has been in periodical discussions to begin an Architectural Design program of study. Wyoming American Institute of Architects along with professional construction management experts have

expressed a need to educate and train Wyoming residents and Wyoming High School graduates in architectural design since the University of Wyoming and all other Wyoming Community Colleges do not offer this program. Laramie County Community College's Engineering Technology program can assist in developing the Architectural Design program and competencies needed to begin work in the industry.

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

The current Laramie County Community College budget for the Engineering Technology program can support the addition of an Architectural Design Program. In addition many local architectural firms have volunteered to donate equipment, supplies, and guidance in the development of the Architectural Design Program.

J. <u>Projected demand in Wyoming and Nation</u> 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**		
Architectural Design Technician	107,400	126,000	+17%	4,410
Wyoming	**Employment**		**Percent Change**	**Job Openings**
	2010	**2020**		
Information Systems Analyst	150	160	+10%	20

Source:

- **National Data Source:** Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2010-11 Edition*, Fitness Workers, on the Internet at http://www.bls.gov/oco/ocos287.htm
  .
- **State Data Source:** <u>Wyoming Department of Employment Research & Planning</u> http://doe.state.wy.us/lmi/proj2005/long_occ2014.htm

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	$21.44	$26.97	$35.14	$44.72	$56.84
	Yearly	$44,600	$56,100	$73,100	$93,000	$118,200
Wyoming	Hourly	$20.74	$23.94	$29.64	$41.19	$51.19
	Yearly	$43,100	$49,800	$61,700	$85,700	$106,500

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey

- **National Data Source:** http://www.bls.gov/oes/2008/may/oes151051.htm
- **State Data Source:** http://www.bls.gov/oes/oes_dl.htm State Cross-Industry Estimates

Other wage information or comments that would assist the Commission:

The Architectural Design Program of study will offer Wyoming High School graduates an opportunity to use the Hathaway Scholarship to pursue an educational path toward earning an associate's degree and entering into the architectural industry or a career in an allied field.

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 knowledge in the architectural discipline and move into the design and development of communities and buildings.

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 Architectural Design. In addition, the Wyoming Chapter for American Institute of Architecture, the Engineering Technology Advisory Board, and many regional architectural and engineering 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 and market the program to Air Force members wanting to transition to civilian life.

L. **<u>Identification of similar programs at Wyoming Community Colleges</u>** and an overview of results **<u>of discussions with faculty and administrators</u>** 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**	**Wester Wyomin Commun College**
N/A	N/A	N/A	N/A	N/A	N/A	N/A

M. **<u>Note available program and course articulations</u>** 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 the University of Colorado, Denver, South Dakota State University, and Montana State University. Currently only discussions have taken place.

The University of Colorado as well as Montana State University have already accepted Laramie County Community College Engineering Technology Graduates into their Architectural Bachelor's Programs, but development of the Architectural Design Program must progress before discussions can continue with these four year institutions. It is noteworthy to indicate that the University of Colorado, Denver has given an open invitation to Laramie County Community College to come and visit their campus and program as well as discuss future articulations with the university. Currently the University of Wyoming does not offer a bachelor's degree in Architectural Design.

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

The American Institute of Architects along with regional architectural and construction management firms have greatly assisted Laramie County Community College with creating, developing, and implementing the current Architectural Design Program of study. The employees of TDSi Architecture and members of the Wyoming American Institute of Architects have been invaluable in assisting Laramie County Community College in coordinating efforts from allied fields in construction management, engineering, as well as the University of Colorado, Denver and South Dakota State University.

O. <u>Assessment of student learning and completer follow-up per performance indicators.</u> How will the assessment outcomes be used to assure student learning and improve the program?
Students will be able to:

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 Architectural Design Program. Example approaches for student assessment include employer surveys, graduate surveys, empty outlines, memory matrices, categorizing grid, and generated test questions for exams. The Architectural Design 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 Architectural Design curriculum.

P. <u>Other program information or comments</u> 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 <u>WCCC Statewide Strategic Plan.</u>

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 architectural industry for Wyoming. The Architectural Design 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 Architectural Design.

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 Architectural Design Technicians.

WORKFORCE DEVELOPMENT – The demand for architectural design technicians nationally will call for a 17% increase in the career field. The demand for architectural design technicians in Wyoming will increase by 10%. With more and more complicated architectural and engineering projects being designed and planned, the need for professional design technicians will continue to increase over the next decade. Emphasis on educated and qualified architectural design technicians' 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 architecture and utilize the Hathaway Scholarship opportunity. This option does not currently exist since no architectural design option is available in Wyoming.

EFFICIENT SYSTEMS – Laramie County Community College has the ability to offer an associate's degree in Architectural Design. The program will emphasize the overall management aspect of working and overseeing architectural and engineering projects. Support from the Wyoming Chapter of American Institute of Architects and many regional engineering and 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 Architectural Design Program. Example approaches for student assessment include employer surveys, graduate surveys, empty outlines, memory matrices, categorizing grid, and generated test questions for exams. The Architectural Design 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 Architectural Design curriculum.

OTHER CRITERIA-

- **Labor Needs** – As noted in the Workforce Development section, there is and will be a need for professionally educated and trained architectural technicians 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 design projects in the State.

- **Curriculum Development –** The currently proposed courses will satisfy the academic needs to earn an Associate's of Art degree in Architectural Design. Several current Engineering Technology courses have undergone modifications (title changes/credit hours) that fulfill the program requirements for an associate's degree in Architectural Design as a standalone degree. Curriculum review will be done twice a year with the Architectural 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 Architectural Design 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 Chapter of American Institute of Architects along with many local architectural, engineers, and construction management firms committing to help Laramie County Community College promote and market the Architectural Design 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 Architectural Design 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 Architectural Design 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.