

W Y O M I N G

CAREERS[®]



rchitecture &
Construction

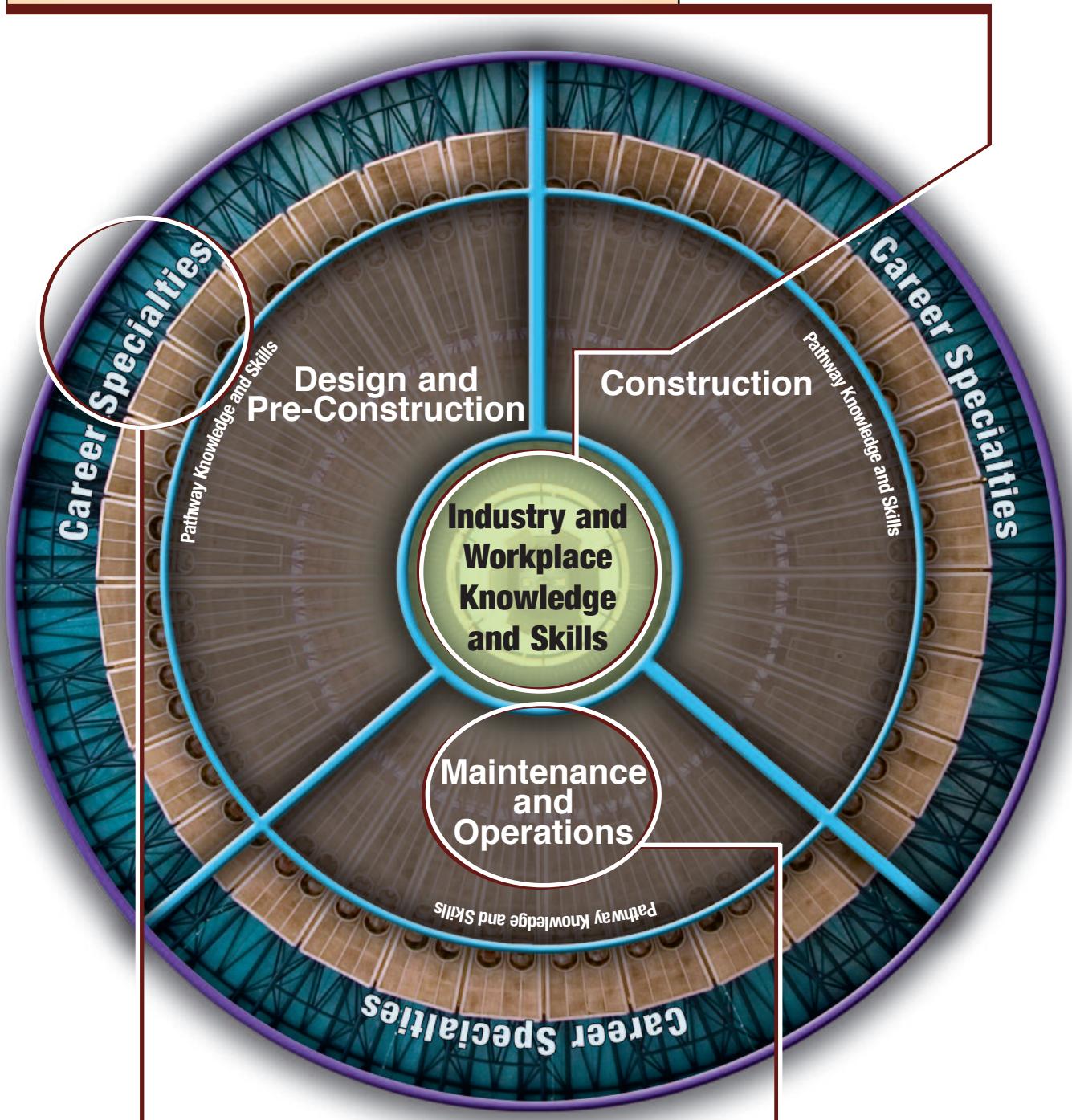
Careers in designing, planning, managing, building and
maintaining the built environment.

Career Cluster Guide

2009-2010

CAREER CLUSTER MODEL

Industry and workplace knowledge and skills are taught and reinforced in all pathways and at all levels.



Highly specific career specialty skills are taught at the postsecondary level by colleges, trade schools, apprenticeships or other training options.

High schools offer some or all pathways to students and teach pathway-specific knowledge and skills.

PATHWAY

SPECIFIC OCCUPATIONS

Design and Pre-Construction

- Architects
- Architectural and Civil Drafters
- Drafters
- Regional and Urban Planners/Designers
- Industrial Engineers
- Materials Engineers
- Mechanical Drafters
- Environmental Designers
- Civil Engineers (structural, geotechnical, transportation, etc.)
- Programmers
- Landscape Architects
- Mechanical Engineers (HVAC, plumbing, fire protection, etc.)
- Electrical Engineers (electronics, security, telecommunications)
- Preservationists
- Environmental Engineers (hydro engineering, acoustical, etc.)
- Surveyors
- Fire Prevention and Protection Engineers
- Cost Estimators
- Electrical and Electronic Engineering Technicians
- Civil Engineering Technicians
- Environmental Engineering Technicians
- Surveying and Mapping Technicians
- Interior Designers
- Landscape Designers
- Specifications Writers
- Building Code Officials
- Computer-Aided Drafters (CAD)
- Renderers (traditional and computer)
- Modelers (traditional and computer)

Construction

- General Contractors/Builders
- Specialty Contractors
- Construction Engineers
- Construction Managers
- Superintendents
- Project Managers
- Construction Foreman
- Estimators
- Project Inspectors
- Manufacturer's Representatives
- Sales and Marketing Managers
- Equipment and Material Managers
- Schedulers
- Education and Training Directors/Coordinators
- Safety Directors
- Construction Inspectors
- Subcontractors
- Preservationists
- Service Contractors
- Field Supervisors
- Specialty Trades Subcontractors
- Masons
- Construction Craft Laborers
- Iron/Metalworkers (structural and reinforcing)
- Carpenters
- System Installers
- Electrician
- Boilermakers
- Electronic Systems Technicians
- Sheet Metal Workers
- Security and Fire Alarm Systems Installers
- Concrete Finishers
- Glaziers
- Tile and Marble Setters
- Landscapers/Groundskeepers
- Elevator Installers
- Roofers
- Painters
- Explosives Workers
- Plasterers/Drywall Installers
- Paperhangers
- Insulation Workers
- Plumbers
- Pipe Fitters
- Millwrights
- Heating, Ventilation, Air Conditioning and Refrigeration Mechanics
- Carpet Installers
- Steamfitters
- Terrazzo Workers and Finishers

Maintenance and Operations

- General Maintenance Contractors
- Specialty Contractors
- Construction Engineers
- Construction Managers
- Superintendents
- Project Managers
- Construction Foremen
- Estimators
- Facilities Engineers
- Reliability Engineers
- Environmental Engineers
- Demolition Engineers
- Project Inspectors
- Operating Engineers
- Manufacturer's Representatives
- Sales and Marketing Managers
- Equipment and Material Managers
- Schedulers
- Maintenance Planners/Schedulers
- Maintenance Estimators
- Security Controls Managers
- Preservationists
- Remodelers
- Safety Directors
- Construction Inspectors
- Subcontractors
- Service Contractor Subcontractors
- Field Supervisors
- Specialty Trades
- Masons
- Iron/Metalworkers (structural and reinforcing)
- Carpenters
- System Installers
- Electricians
- Boilermakers
- Cost Estimators
- Sheet Metal Workers
- Security and Fire Alarm System Installers
- Concrete Finishers
- Glaziers
- Tile and Marble Setters
- Hazardous Materials Removers
- Landscapers/Groundskeepers
- Elevator Installers
- Paperhangers
- Insulation Workers
- Drywall Installers
- Insulation Workers
- Plumbers
- Pipe Fitters
- Millwrights
- Heating, Ventilation, Air Conditioning and Refrigeration Mechanics
- Carpet Installers
- Steamfitters
- Refractory Technicians
- Hydro Testing Technicians
- Thermal Control Technicians
- Restoration Technicians
- Wastewater Maintenance Technicians
- Highway Maintenance Workers

Wyoming's Highest-Paying, Fastest-Growing Jobs

Title	Basic Description O*NET/SOC Description (may be truncated)	Anticipated Total 2014 Employment
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1
Architects, except landscape and naval	Plan and design structures, such as private residences, office buildings, theaters, factories, and other structural property.	174
Brickmasons and blockmasons	Lay and bind building materials, such as brick, structural tile, concrete block, cinder block, glass block, and terra-cotta block, with mortar and other substances to construct or repair walls, partitions, arches, sewers, and other structures.	324
Cabinetmakers and bench carpenters	Cut, shape, and assemble wooden articles or set up and operate a variety of woodworking machines, such as power saws, jointers, and mortisers, to surface, cut, or shape lumber or to fabricate parts for wood products.	229
Carpenters	Construct, erect, install, or repair structures and fixtures made of wood, such as concrete forms; building frameworks, including partitions, joists, studding, and rafters; wood stairways; window and door frames; and hardwood floors.	4,119
Cement masons and concrete finishers	Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, roads, or curbs, using a variety of hand and power tools.	851
Construction and building inspectors	Inspect structures using engineering skills to determine structural soundness and compliance with specifications, building codes, and other regulations.	157
Construction laborers	Perform tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites.	3,961
Construction managers	Plan, direct, coordinate, or budget, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems.	1,451
Electricians	Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes.	3,030
Glaziers	Install glass in windows, skylights, store fronts, and display cases, or on surfaces, such as building fronts, interior walls, ceilings, and tabletops.	118



1. Source: doe.state.wy.us/lmi
2. Source: www.careerinfonet.org
3. Bachelor of Architecture, BA/BS degree, Master of Architecture, MA/MS degree, doctorate

Architecture & Construction

Wyoming Number of New Jobs, Projected 2004-2014	Wyoming Estimated Hourly Average Wage	Wyoming Estimated Yearly Wage	Most Common Education/ Training	Suggested Programs of Study	Is at least one of these programs available in Wyoming?
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	Source: See footnote #2	Source: See footnote #2	
40	\$30.13	\$62,675	Bachelor's degree	<ul style="list-style-type: none"> Architectural History and Criticism Architecture³ Architecture Environmental Design/Architecture 	Yes
90	\$19.36	\$40,280	Long-term on-the-job training	<ul style="list-style-type: none"> Masonry Apprenticeship Programs 	Yes
54	\$14.59	\$30,347	Long-term on-the-job training	<ul style="list-style-type: none"> Cabinetmaking and Millwork/Millwright Apprenticeship Programs 	Yes
1,221	\$18.48	\$38,432	Long-term on-the-job training	<ul style="list-style-type: none"> Carpentry Apprenticeship Programs 	Yes
266	\$15.78	\$32,829	Moderate-term on-the-job training	<ul style="list-style-type: none"> Concrete Finishing Apprenticeship Programs 	Yes
42	\$20.60	\$42,849	Work experience in related occupation	<ul style="list-style-type: none"> Building/Home/Construction Inspection 	Yes
990	\$13.54	\$28,162	Moderate-term on-the-job training	<ul style="list-style-type: none"> Construction Trades Apprenticeship Programs 	Yes
412	\$30.94	\$64,360	Bachelor's degree	<ul style="list-style-type: none"> Business Administration and Management Business/Commerce Construction Engineering Technology 	Yes
848	\$22.83	\$47,483	Long-term on-the-job training	<ul style="list-style-type: none"> Electrical Apprentice Program 	Yes
34	\$16.05	\$33,381	Long-term on-the-job training	<ul style="list-style-type: none"> Glazier 	Yes



For additional information and resources go to:
http://wyomingworkforce.org/resources/links_career.aspx

Wyoming's Highest-Paying, Fastest-Growing Jobs

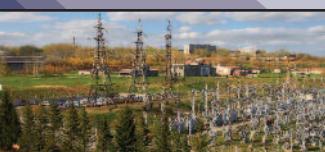
Title	Basic Description O*NET/SOC Description (may be truncated)	Anticipated Total 2014 Employment
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1
Highway maintenance workers	Maintain highways, municipal and rural roads, airport runways, and rights-of-way.	257
Insulation workers, floor, ceiling, and wall	Line and cover structures with insulating materials. May work with batt, roll, or blown insulation materials.	138
Operating engineers and other construction equipment operators	Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders, to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement.	3,543
Painters, construction and maintenance	Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns.	1,348
Paving, surfacing, and tamping equipment operators	Operate equipment used for applying concrete, asphalt, or other materials to roadbeds, parking lots, or airport runways and taxiways, or equipment used for tamping gravel, dirt, or other materials.	352
Pipelayers	Lay pipe for storm or sanitation sewers, drains, and water mains. Perform any combination of the following tasks: grade trenches or culverts, position pipe, or seal joints.	205
Plumbers, pipefitters, and steamfitters	Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems.	1,695
Roofers	Cover roofs of structures with shingles, slate, asphalt, aluminum, wood, and related materials.	545
Sheet metal workers	Fabricate, assemble, install, and repair sheet metal products and equipment, such as ducts, control boxes, drainpipes, and furnace casings.	427
Structural iron and steel workers	Raise, place, and unite iron or steel girders, columns, and other structural members to form completed structures or structural frameworks.	324
Surveying and mapping technicians	Perform surveying and mapping duties, usually under the direction of a surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes.	244
Surveyors	Make exact measurements and determine property boundaries. Provide data relevant to the shape, contour, gravitation, location, elevation, or dimension of land or land features on or near the earth's surface for engineering, mapmaking, mining, land evaluation, or other purposes.	288
Tile and marble setters	Apply hard tile, marble, and wood tile to walls, floors, ceilings, and roof decks.	163

1. Source: doe.state.wy.us/lmi
 2. Source: www.careerinfonet.org

Architecture & Construction

Wyoming Number of New Jobs, Projected 2004-2014	Wyoming Estimated Hourly Average Wage	Wyoming Estimated Yearly Wage	Most Common Education/ Training	Suggested Programs of Study	Is at least one of these programs available in Wyoming?
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	Source: See footnote #2	Source: See footnote #2	
54	\$17.72	\$36,870	Moderate-term on-the-job training	<ul style="list-style-type: none"> Construction Technology Construction/Heavy Equipment/Earthmoving Equipment Operation 	Yes
33	\$12.92	\$26,876	Moderate-term on-the-job training	<ul style="list-style-type: none"> Construction Trades 	Yes
1,042	\$20.81	\$43,275	Moderate-term on-the-job training	<ul style="list-style-type: none"> Construction/Heavy Equipment/Earthmoving Equipment Operation Mobile Crane Operation 	Yes
377	\$16.52	\$34,365	Moderate-term on-the-job training	<ul style="list-style-type: none"> Painting Apprenticeship Programs 	Yes
112	\$15.52	\$32,291	Moderate-term on-the-job training	<ul style="list-style-type: none"> Construction/Heavy Equipment/Earthmoving Equipment Operation 	Yes
55	\$14.02	\$29,161	Moderate-term on-the-job training	<ul style="list-style-type: none"> Plumbing Technology Apprenticeship Programs 	Yes
533	\$20.00	\$41,600	Short-term on-the-job training	<ul style="list-style-type: none"> Plumbing Technology Apprenticeship Programs 	Yes
175	\$16.09	\$33,468	Moderate-term on-the-job training	<ul style="list-style-type: none"> Apprenticeship Programs Construction Technology 	Yes
129	\$18.14	\$37,741	Long-term on-the-job training	<ul style="list-style-type: none"> Sheet Metal Technology Apprenticeship Programs 	Yes
105	\$18.23	\$37,910	Long-term on-the-job training	<ul style="list-style-type: none"> Construction Trades Metal Building Assembly 	Yes
34	\$15.97	\$33,214	Moderate-term on-the-job training	<ul style="list-style-type: none"> Cartography Surveying Technology 	Yes
55	\$24.15	\$50,227	Bachelor's degree	<ul style="list-style-type: none"> Surveying Technology 	Yes
57	\$21.14	\$43,970	Long-term on-the-job training	<ul style="list-style-type: none"> Masonry Apprenticeship Programs 	Yes

WYOMING LICENSED OCCUPATIONS

Occupation Title	Licensing Agency
	<p>Appraisers, General</p> <p>Wyoming Certified Real Estate Appraiser Board 2020 Carey Avenue, Suite 100 Cheyenne, Wyoming 82002</p>
	<p>Architects</p> <p>State Board of Architects and Landscape Architects 2020 Carey Avenue, Suite 201 Cheyenne, Wyoming 82002</p>
	<p>Civil Engineers</p> <p>State Board of Registration for Professional Engineers and Professional Land Surveyors 2424 Pioneer Avenue, Suite 400 Cheyenne, Wyoming 82002</p>
	<p>Claims Adjusters</p> <p>Wyoming Insurance Department Herschler Building, Third Floor East 122 West 25th Street Cheyenne, Wyoming 82002</p>
	<p>Engineers, Electrical</p> <p>State Board of Registration for Professional Engineers and Professional Land Surveyors 2424 Pioneer Avenue, Suite 400 Cheyenne, Wyoming 82002</p>
	<p>Electricians</p> <p>Department of Fire Prevention & Electrical Safety Herschler Building, 1 West Cheyenne, Wyoming 82002</p>
	<p>Industrial Engineers</p> <p>State Board of Registration for Professional Engineers and Professional Land Surveyors 2424 Pioneer Avenue, Suite 400 Cheyenne, Wyoming 82002</p>
	<p>Real Estate Brokers</p> <p>Wyoming Real Estate Commission 2020 Carey Avenue, Suite 100 Cheyenne, Wyoming 82002-0180</p>
	<p>Real Estate Salespersons</p> <p>Wyoming Real Estate Commission 2020 Carey Avenue, Suite 100 Cheyenne, Wyoming 82002-0180</p>
	<p>Surveyors, Professional</p> <p>State Board of Registration for Professional Engineers and Professional Land Surveyors 2424 Pioneer Avenue, Suite 400 Cheyenne, Wyoming 82002</p>
	<p>Truck Drivers</p> <p>Driver Services, Customer Service P.O. Box 1708 5300 Bishop Blvd. Cheyenne, Wyoming 82003-1708</p>

PROGRAMS OF STUDY

WYOMING COMMUNITY COLLEGES

ARCHITECTURE & CONSTRUCTION

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County
Community College

Northwest College

Northern Wyoming
Community College District

Western Wyoming
Community College

MAJORS

AS - Associate of Sciences
AA - Associate of Arts
AAS - Associate of Applied Sciences
C - Certificate

Carpentry Apprenticeship						C	
Construction		AAS, C					
Construction Management	AS						
Construction Technology	AAS, C		AAS, C			AAS, C	
Diesel Technology with Commercial Driver's License							C
Drafting					AAS, C	AAS, C	
Drafting and Design Technology	AAS						
Electric Power Technology	AAS, C						
Electrical and Instrumentation Technology							AAS, C
Electrical Apprenticeship					C		
Electrical Mine Maintenance							C
Electricity							C
Engineering Technology						AAS	
Engineering Technology – Drafting and Design, General				AAS, C			
Environmental Science	AS						AS
Industrial Arts	AS						
Industrial Electricity/Electronics						AAS	
Industrial Electronics	C						
Industrial Maintenance Technician							AAS
Machine Tool Technology	AAS, C					AAS, C	
Maintenance Mechanic for Industry							C
Manufacturing Specialist		C					

PROGRAMS OF STUDY

WYOMING COMMUNITY COLLEGES

ARCHITECTURE & CONSTRUCTION

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County
Community College

Northwest College

Northern Wyoming
Community College District

Western Wyoming
Community College

MAJORS

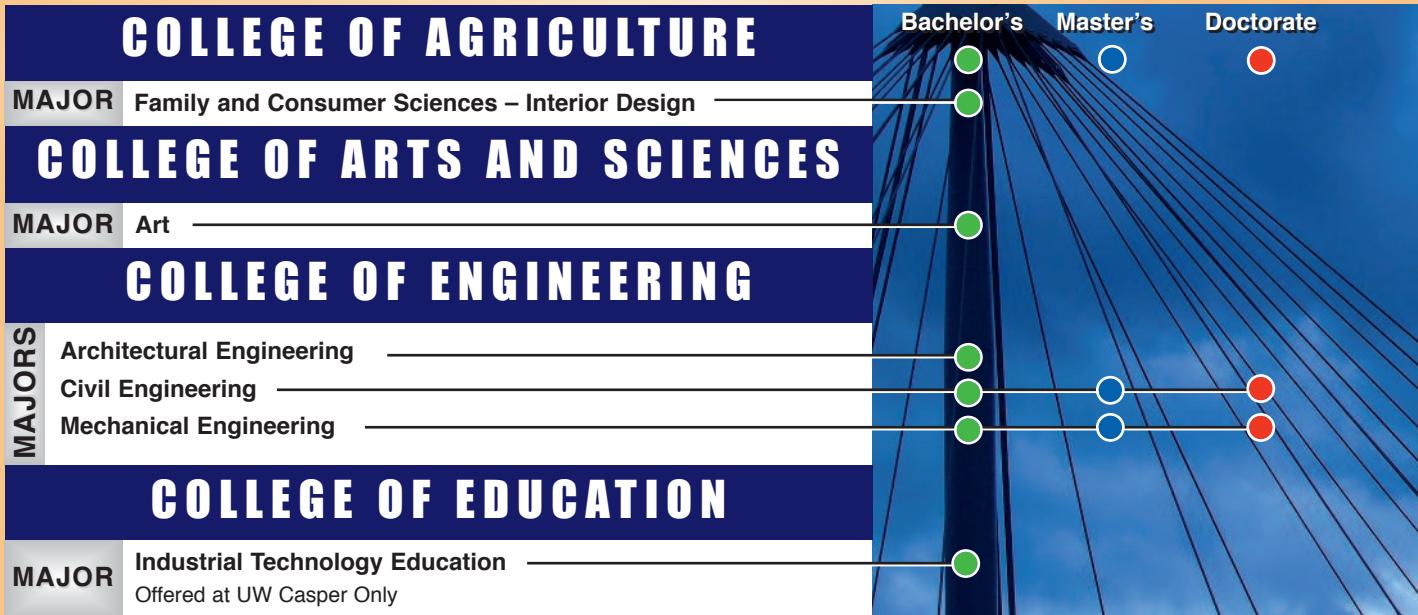
Offset Duplicator
Power Plant Maintenance Mechanics
Pre-Engineering
Sheet Metal Apprentice
Surface Maintenance Mechanics
Technical Studies
Underground Maintenance Mechanics
Website Development
Welding
Welding and Joining Technology
Welding Technology – Industrial Plant Option
Welding Technology – Mine Maintenance Option

AS - Associate of Sciences
AA - Associate of Arts
AAS - Associate of Applied Sciences
C - Certificate

				C		
						C
	AS					
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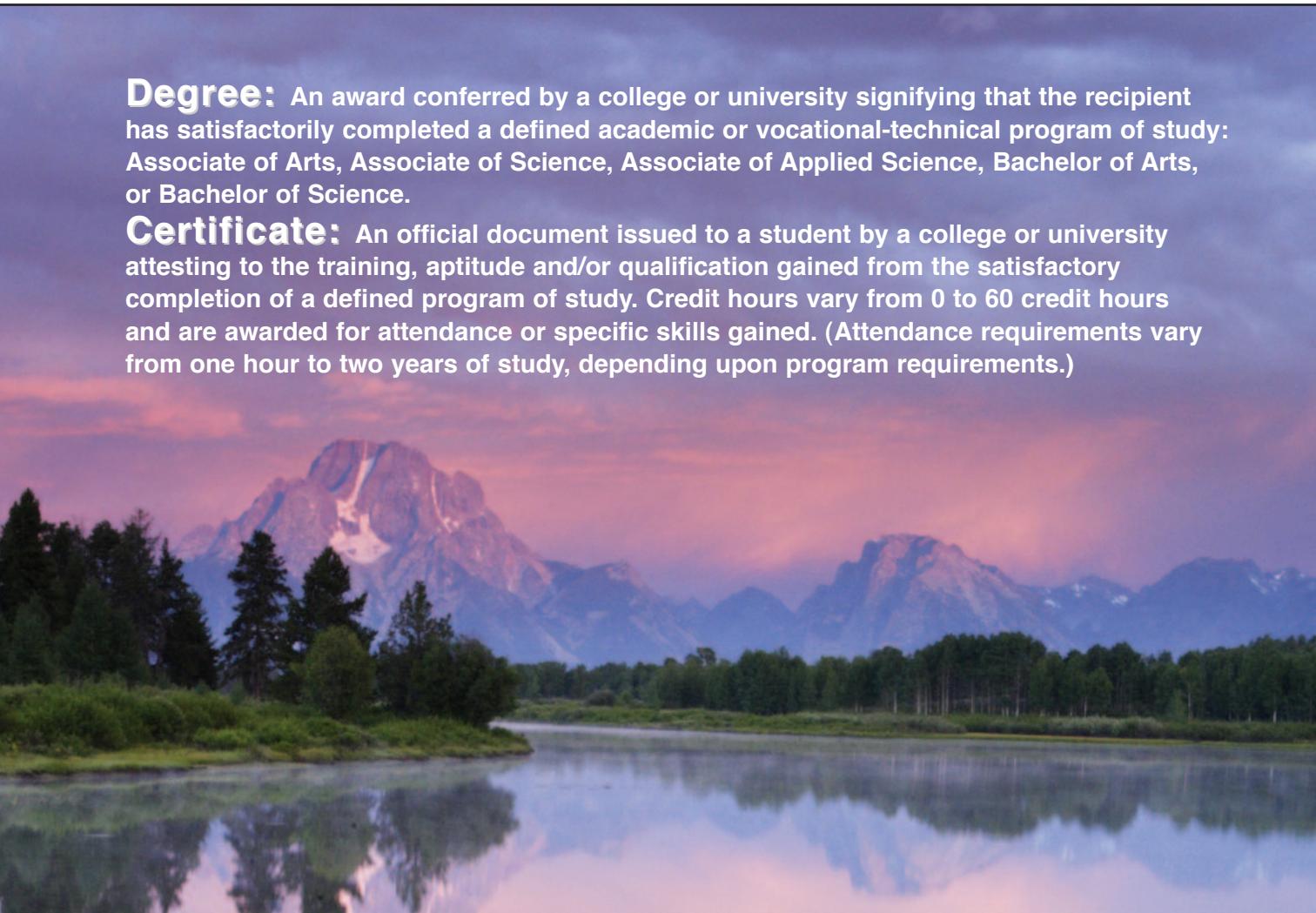


UNIVERSITY OF WYOMING

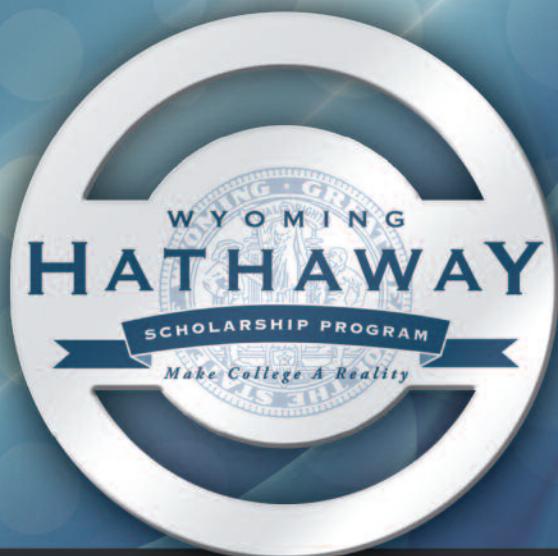
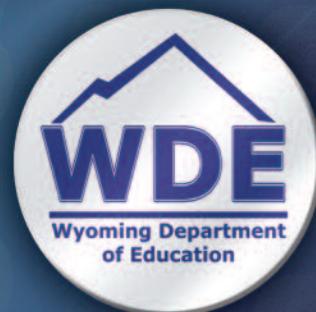
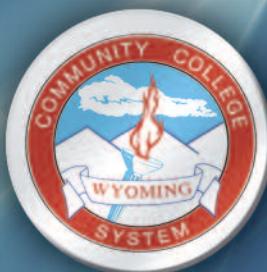


Degree: An award conferred by a college or university signifying that the recipient has satisfactorily completed a defined academic or vocational-technical program of study: Associate of Arts, Associate of Science, Associate of Applied Science, Bachelor of Arts, or Bachelor of Science.

Certificate: An official document issued to a student by a college or university attesting to the training, aptitude and/or qualification gained from the satisfactory completion of a defined program of study. Credit hours vary from 0 to 60 credit hours and are awarded for attendance or specific skills gained. (Attendance requirements vary from one hour to two years of study, depending upon program requirements.)



This information is presented as the result of a collaborative effort among the following agencies:



Notice

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Future versions of the Wyoming Career Cluster Guides and accompanying Planning Guide may be modified in terms of content and format based upon user input. Please direct all suggestions and inquiries in writing to:

Career Cluster Coordinator
Wyoming Department of Education
2300 Capitol Avenue
Hathaway Building, 2nd Floor
Cheyenne, WY 82002-0050



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States' Career Clusters Initiative 2006
www.careerclusters.org