



**Front Range Community College-Larimer Campus (FRCC)  
In Partnership with Colorado Department of Transportation**



**Associate of Applied Science (AAS) in Highway Maintenance Management Program**

This program prepares Highway Maintenance employees to work among leaders in Highway Maintenance Management in federal, state, county, and municipal public works agencies and private sector industry partner organizations. Students develop a firm grasp of the key technical elements of Highway Maintenance while learning leadership and management strategies to increase employee effectiveness through developing skills in project management, planning, supervision, communication, and team building. Program objectives are:

- Increase level of professionalism among leaders in Highway Maintenance.
- Improve organizational succession planning by increasing competencies of employees.
- Recruit, develop, and retain productive employees.

**Program Curriculum: 60-61 credits**

General Education: 15-16 credits	Required Management: 18 credits	Required Highway Maintenance: 15 credits	Electives: 12 credits
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General Education Courses (15-16 credits; complete one course in each area)				
<b>Mathematics</b> (3-4 credits) - MAT 107: Career Mathematics (3 credits) or higher - MAT 121: College Algebra <sup>1</sup> (4 credits)	<b>English</b> (3 credits) - ENG 131: Technical Writing - ENG 121: English Composition I <sup>1</sup> - ENG 122: English Composition II <sup>1</sup>	<b>Communication</b> (3 credits) - COM 115: Public Speaking <sup>1</sup> - COM 125: Interpersonal Communication <sup>1</sup>	<b>Computer Technology</b> (3 credits) - CIS 118: Introduction to PC Applications - CIS 155: PC Spreadsheet Concepts: Excel	<b>Social &amp; Behavioral Science</b> (3 credits) - POS 125: American State and Local Governments - COM 220: Intercultural Communication
Notes: - Preference for courses transferable to 4-year degree <sup>1</sup> = Select if planning to continue to a 4-year degree				

Required/Core Courses (must complete all courses – 30 credits)	
Required Management Courses (18 credits)	Required Highway Maintenance and Operations Courses (15 credits)
- MAN 128: Human Relations in Organizations - MAN 226: Principles of Management - MAN 116: Principles of Supervision - MAN 224: Leadership - MAN 230: Corporate Ethics & Social Responsibility - MAN 241: Project Management in Organizations	- HWY 100: Highway Maintenance and Operations Safety (1 credit) - HWY 101: Introduction to Highway Maintenance and Operations (3 credits) - HWY 105: Traffic Control (2 credits) - HWY 110: Highway Asset Management (1 credit) - HWY 115: Highway Preventive Measures and Preservation Treatments (2 credits) - HWY 255: Highway Maintenance Leadership (4 credits) Complete one: - HWY 288: Highway Maintenance and Operations Field Practicum (2 credits) - HWY 289: Highway Maintenance and Operations Capstone (2 credits)
Future step: Completion of all required Management courses earns a Highway Maintenance Management Certificate	Future step: Completion of all required Highway Maintenance and Operations courses earns a Highway Maintenance and Operations Certificate

Notes:

1. Most required HWY course credits are earned through industry-provided training, certifications, or field experience
2. This accredited degree program can be completed entirely online - making it accessible throughout Colorado and nationally
3. Program launches August 2019

<b>Elective Courses (12 credits)</b>					
<p>Elective credits are used to develop a concentration in an area(s) of highway maintenance and operations. Most, if not all, elective credits are earned through Prior Learning Assessment (PLA). Documented successful employee work experience, industry training, and industry certifications will be evaluated for PLA credit. Elective (PLA) credits will be transcribed as "Internship" credits (maximum 4 credits per internship (e.g., HWY 180, 181, 182, 183, 184, 280, 281, 282, 283)) toward meeting degree requirements.</p>					
<p><b>Highway Engineering Technician (HWY 180/280)</b></p> <ul style="list-style-type: none"> <li>• Drainage</li> <li>• Estimating</li> <li>• Plan reading</li> <li>• Surveying</li> </ul>	<p><b>Highway Materials and Structures (HWY 181/281)</b></p> <ul style="list-style-type: none"> <li>• Asphalt</li> <li>• Bridge</li> <li>• Concrete</li> <li>• Gravel</li> </ul>	<p><b>Highway Equipment Operations and Management (HWY 182/282)</b></p> <ul style="list-style-type: none"> <li>• Fleet management</li> <li>• Heavy equipment operation</li> <li>• Welding</li> </ul>	<p><b>Environmental (HWY 183)</b></p> <ul style="list-style-type: none"> <li>• Erosion and sediment control</li> </ul>	<p><b>Incident Management, Emergency Management, and Weather Events (HWY 283)</b></p> <ul style="list-style-type: none"> <li>• National Incident Management System (Incident Command System)</li> <li>• Traffic incident management</li> <li>• Winter storm operations</li> </ul>	<p><b>Highway Maintenance Management (HWY 184)</b></p>
<ul style="list-style-type: none"> <li>• Possible industry training/certifications:               <ul style="list-style-type: none"> <li>○ Local Technical Assistance Program (LTAP)</li> <li>○ National Highway Institute (NHI)</li> <li>○ National Institute for Certification in Engineering Technologies (NICET)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Possible industry training/certifications:               <ul style="list-style-type: none"> <li>○ American Concrete Pavement Assoc. (ACPA)</li> <li>○ Colo. Asphalt Pavement Association (CAPA)</li> <li>○ Local Technical Assistance Program (LTAP)</li> <li>○ National Highway Institute (NHI)</li> <li>○ Western Alliance for Quality Transportation Construction (WAQTC)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Possible industry training/certifications:               <ul style="list-style-type: none"> <li>○ Colorado Commercial Driver's Licenses (CDL)</li> <li>○ Colorado Contractors Association (CCA)</li> <li>○ Local Technical Assistance Program (LTAP)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Possible industry training/certifications:               <ul style="list-style-type: none"> <li>○ National Highway Institute (NHI)</li> <li>○ Certified Inspector of Sediment and Erosion Control (CISEC)</li> <li>○ Envirocert International, Inc.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Possible industry training/certifications:               <ul style="list-style-type: none"> <li>○ Federal Emergency Management Agency (FEMA)</li> <li>○ American Association of State Highway and Transportation Officials (AASHTO) Winter Roadway Computer-Based Training</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Possible industry internship experience:               <ul style="list-style-type: none"> <li>○ To be determined between student and program director</li> </ul> </li> </ul>
<p>Other relevant elective courses:</p> <ul style="list-style-type: none"> <li style="width: 33%;">- ACC 101: Fundamentals of Accounting</li> <li style="width: 33%;">- BUS 217: Business Communication and Report Writing</li> <li style="width: 33%;">- HWY 210: Gravel Road Maintenance</li> <li style="width: 33%;">- MAR 216: Principles of Marketing</li> <li style="width: 33%;">- ACC 121: Accounting Principles</li> <li style="width: 33%;">- BUS 226: Business Statistics</li> <li style="width: 33%;">- MAN 225: Managerial Finance</li> </ul>					

**Notes:**

4. Front Range Community College's (FRCC) residency requirement requires students earning an AAS degree to earn at least 25% of the credits (15 credits) by completing FRCC classroom or online courses. The balance of the credits (i.e., General Education, required Management, required Maintenance and Operations, and electives) can be earned through **Prior Learning Assessment (PLA)**. PLA is the process for evaluating knowledge and skills to award college credit for learning from (1) work experience; (2) training courses and/or certifications; (3) on-the-job training; (4) military training and voluntary service; and (5) independent study. PLA credit can be earned by passing a knowledge examination, demonstrating a skill, and/or providing satisfactory documentation from a recognized industry partner and/or subject matter expert.
5. Time to complete the AAS degree depends upon the number of PLA credits the student earns. A student taking one course per academic term (3 courses per year) will take approximately 2-4 years to complete the program.
6. Cost to earn the AAS degree depends upon in-state or out-of-state tuition rates and the amount of financial assistance provided by the student's highway maintenance agency employer (e.g., tuition reimbursement, paid industry training/certifications). Approximate cost ranges from \$3,400 (\$5,000 out-of-state) for an experienced Highway Maintenance worker with employer financial assistance to \$21,800 (\$27,000 out-of-state) for an entry-level Highway Maintenance worker with no employer financial assistance. Check with FRCC for a student-specific cost estimate.

Internship Descriptions						
Highway Engineering Technician (HWY 180/280)	Highway Materials and Structures (HWY 181/281)	Highway Equipment Operations and Management (HWY 182/282)	Environmental (HWY 183)	Incident Management, Emergency Management, and Weather Events (HWY 283)	Highway Maintenance Management (HWY 184)	Internship To Be Determined (HWY 284)
Engineering technicians use math and science skills to assist engineers with creating products, improving methods, and maintaining systems. Civil engineering technicians assist engineers with designing, building, and maintaining roads and various structures, including bridges and drainage structures. They may also work alongside quality assurance inspectors. Environmental engineering technicians design methods and devices to prevent and control health hazards, such as air and water pollution.	Highway materials and structures specialists examine and inspect materials (e.g., asphalt, concrete, gravel) and parts to discover defects, wear, and tear on highways, bridges, drainage structures, and other roadway facilities. They ensure products or parts conform to work orders, specifications, blueprints, and templates.	Highway equipment operators operate a variety of equipment and trucks to construct, maintain, and repair highways, bridges, and other roadway facilities. Highway equipment managers plan, coordinate, and direct the operations of all equipment for effective maintenance and repair programs, equipment safety programs, and equipment use on highway construction sites. They act as a technical advisor on all equipment issues and assist the management team with equipment budgets and potential equipment purchases.	Environmental specialists perform routine inspections of highway construction sites to assure all projects comply with environmental laws (e.g., water, air). They are familiar with environmental regulations, accurately record compliance level of a particular site, and proper act to restore compliance at the site. They also examine various permits, licenses, and records to assure all work has been done correctly.	Traffic incident managers plan and coordinate multi-disciplinary processes to detect, respond to, and clear traffic incidents to restore traffic flow as safely and quickly as possible. They act to reduce the duration and impact of traffic incidents and improve the safety of motorists, crash victims, and emergency responders. Emergency managers plan for and coordinate multi-agency response to major incidents and emergencies impacting highways, such as natural and man-made disasters. Highway incident managers prepare for and coordinate agency response to major weather-related events impacting highways, such as winter storms, flooding, etc.	Field internship under a Highway Maintenance manager (approved by Program Director)	Future internship area to be based on emerging highway maintenance technology

More Information (prospective students, employers, organizations):

- Susan Baillargeon, Highway Maintenance Management Program Director, Front Range Community College, [Susan.Baillargeon@frontrange.edu](mailto:Susan.Baillargeon@frontrange.edu), 970.204.8175

Colorado Department of Transportation contacts:

- Kyle Lester, Colorado Department of Transportation, Director of Highway Maintenance, [Kyle.Lester@state.co.us](mailto:Kyle.Lester@state.co.us), 303.512.5218
- Dr. Paul K. Woods, Colorado Department of Transportation, Division of Highway Maintenance, [Paul.Woods@state.co.us](mailto:Paul.Woods@state.co.us), [2paulwoods@msn.com](mailto:2paulwoods@msn.com), 303.807.7477