



**Colorado Department of Transportation & Front Range Community College (FRCC)
Draft Curriculum for Associate of Applied Science (AAS) in Highway Maintenance Management Degree
Pending FRCC Approval**



1. Purpose: To create an Associate of Applied Science (AAS) in Highway Maintenance Management degree to advance the development of highway maintenance leaders.
2. Key Program Objectives:
 - Increase level of professionalism among leaders in Highway Maintenance.
 - Improve organizational succession planning by increasing competencies of employees.
 - Recruit, develop, and retain productive employees.
3. Credit distribution (60+ credits) *to be finalized*:
 - General Education: 16 credits
 - Required/Core Business Support: 9-12 credits
 - Required/Core Maintenance & Operations: 16 credits
 - Most proposed HWY courses are satisfied through completion of industry-delivered training and certifications. Limited number of proposed HWY courses will be developed by FRCC.
 - Elective: 16-19 credits
 - Credits earned through completion of individual courses and/or a set of courses leading to one or more certificates.
 - Certificates earned through completion of college courses, industry-delivered training, and credit for prior learning.

General Education Courses (16 credits; complete one course in each area)				
Mathematics (4 credits) - Technical Mathematics (MAT 108) - College Algebra (MAT 121) ¹	Communication (3 credits) - Technical Writing (ENG 131) - English Composition (ENG 121) ¹	Natural & Physical Sciences (3 credits) - <i>Course(s) pending FRCC approval</i> - Soil Mechanics (AEC 212) (?) - Civil Construction Systems (AEC 223) (?) - Intro to Water Quality (WQM 100) (?) - Geography Information Systems Fundamentals (GIS 100) - Introduction to Geography Information Systems (GIS 101)	Social & Behavioral Sciences (3 credits) - American State and Local Governments (POS 125) - Interpersonal Communications (COM 125)	Art & Humanities (3 credits) - <i>To be determined (or add an additional general education course in another area)</i> - Business Ethics (PHI 205)(?)
Notes: - 1 credit = 15 contact hours (in-class or online) - Preference for courses transferable to 4-year degree		- Courses may have prerequisites ¹ = Select if planning to continue to a 4-year degree		

Required/Core Courses (must complete all courses – 25-28 credits)		
Required Management Courses (9-12 credits)	Required Maintenance and Operations Courses (16 credits)	
- Human Relations in Organizations (MAN 128) - Principles of Management (MAN 226) - Project Management in Organizations (MAN 241) - Business Ethics (PHI 205) <i>(or General Education course)</i>	- Introduction to Highway Maintenance and Operations (HWY 100) - Traffic Control (HWY 105) - Highway Asset Management (HWY 110)	- Highway Preventive Measures and Preservation Treatments (HWY 115) - National Highway Institute Maintenance Leadership Academy (or substitute) (HWY 255)

Elective Courses and Certificates (16-19 credits)		
<p>Certificate: Highway Engineering Technician (minimum 9 credits)</p> <ul style="list-style-type: none"> - Blueprint Reading (CON 130) - Estimating I: Quantity Survey (AEC 131) - Surveying (AEC 220) - Soil Mechanics (AEC 212) <i>(possible General Ed. course)</i> - Heavy Equipment Grading and Staking (HEQ 200) - Civil Construction Systems (AEC 223) <i>(possible General Education course)</i> - Concrete and Asphalt Technology (CON 244) - Highway Drainage (HWY 205) - Unimproved/Gravel Roads (HWY 210) <p>Certificate: Highway Materials Testing Technician (minimum 9 credits)</p> <ul style="list-style-type: none"> - Asphalt Pavement Technician/Inspector Certification (Colorado Asphalt Pavement Association) (HWY 220) - Concrete Pavement Inspector Certification (American Concrete Pavement Association; American Concrete Institute) (HWY 223) - Transportation Technician Certification – Embankment and Base (Western Alliance for Quality Transportation Construction) (HWY 226) <p>Certificate: Emergency Management Specialist (minimum 9 credits)</p> <ul style="list-style-type: none"> - Principles of Emergency Management (EMP 101) - Emergency Planning (EMP 105) - Incident Command System (EMP 109) - Effective Communication (EMP 242) 	<p>Certificate: Highway Equipment Operations and Management Specialist (minimum 9 credits)</p> <ul style="list-style-type: none"> - Colorado Commercial Driver’s License (CDL) Class B (HWY 230) - Commercial Driver’s License (CDL) Class A (HWY 233) - Trucks and Trailering (DRV 132) - Trucking Laws and Regulations (DRV 134) - Vehicle Inspection and Maintenance (DRV 136) - Oxyfuel and Plasma Cutting (WEL 113) - Motor Grader I (HEQ 220) - Backhoe I (HEQ 225) - Hydraulic Excavator (HEQ 230) - Basic Bulldozer I (HEQ 240) - Front End Loader (HEQ 246) - On-Road Dump Trucks (HEQ 250) <p>Certificate: Environment Specialist (minimum 9 credits)</p> <ul style="list-style-type: none"> - Intro. to Environmental Science with Lab (ENV 101) - Introduction to Water Quality (WQM 100) <i>(possible general education course)</i> - Erosion, Sediment, and Storm Water Certification (HWY 240) <p>Certificate: Business Management Specialist (minimum 9 credits)</p> <ul style="list-style-type: none"> - Accounting Principles (ACC 121) - Business Logistics Optimization (BUS 201) - Business Communication and Report Writing (BUS 217) - Introduction to PC Applications (CIS 118) - PC Spreadsheet Concepts: Excel (CIS 155) - Project Management Tools and Techniques (MAN 242) 	<p>Certificate: Highway Maintenance Leadership Specialist (minimum 9 credits)</p> <ul style="list-style-type: none"> - Principles of Supervision (MAN 116) - Problem Solving and Decision Making in a Business Environment (MAN 156) - Leadership (MAN 224) - Public Speaking (COM 115) - Group Communication (COM 217) - Organizational Communication (COM 225) <p>Other Elective Courses</p> <ul style="list-style-type: none"> - Bridge Maintenance (HWY 243) - Winter Storm Operations (HWY 246) - Highway Maintenance and Operations Field Practicum (HWY 250) - Geography Information Systems Fundamentals (GIS 100) <i>(possible General Education course)</i> - Introduction to Geography Information Systems (GIS 101) <i>(possible General Education course)</i> <p>Notes:</p> <ul style="list-style-type: none"> - Certificate = 9-16 credits (135-300 contact hours) - Elective courses may be selected individually or combined to earn one or more certificates to meet credit requirements - Credit for prior learning and work experience may account for up to all required core Maintenance and Operations and elective credits
Industry Partner Training and Certification Providers		
<ul style="list-style-type: none"> - American Concrete Institute (ACI) - American Concrete Pavement Association (ACPA) - American Public Works Association (APWA) - American Traffic Safety Services Association (ATSSA) - Clear Roads Consortium 	<ul style="list-style-type: none"> - Colorado Asphalt Pavement Association (CAPA) - Colorado Contractors Association (CCA) - Colorado Local Technical Assistance Program (LTAP) - Federal Highway Administration (FHWA) – National Highway Institute (NHI) 	<ul style="list-style-type: none"> - U.S. Department of Homeland Security, Federal Emergency Management Agency, National Incident Management System (NIMS)

4. National Highway Institute Maintenance Leadership Academy (HWY 255) or approved substitute (e.g., industry partner professional development certificate, completion of a series of specified courses) is required.
5. Credit for Prior Learning may be earned by providing evidence of acquired knowledge and skills from relevant work-related training and work experience. Evidence may include passing a knowledge examination, skill demonstration, or documentation from a subject matter expert. Fifteen (15) credits must be earned by completing FRCC courses with the remainder (up to 45 credits) earned through course completion and credit for prior learning.