FOREST LAKE AREA SCHOOLS
FOREST LAKE, MN 55025

December 4, 2025

AGENDA ITEM: 9.10 – 9.13

TOPIC: Recommendation to Approve Heavy Equipment Operator Courses

BACKGROUND:
In an effort to expand opportunities for students to experience coursework that prepares them for career and college as well as fill identified gaps in our career pathway wheel at Forest Lake Area High School, teachers and administrators explored four new course offerings for consideration. In partnership with the Local 49 Operating Engineers, the district has identified new course offerings in the area of heavy equipment operation. These courses provide opportunities for students to gain entry-level skills in operating heavy equipment and the possibility of earning dual credit through the district and North Hennepin Community College.

PROCESS:
Our Career and Technical Education (CTE) Coordinator collaborated with the Local 49 Operating Engineers to identify coursework that will allow us to continue to add career exploration options in another construction-related field. The district was approached for this opportunity due to the well-developed CTE program that we already have in place in Forest Lake. This aligns with our district's aim to provide students with courses that prepare them for additional career or college options after graduation.

RECOMMENDATION: Recommendation to approve Basic Construction Fundamentals, Basic Construction Math, Basic Maintenance of Mobile Equipment, and Construction Explorations.

**To be offered beginning in 26-27 pending Board Approval*

REQUEST TO ADD/REVISE A COURSE

Forest Lake Area Schools

Primary Contact: Mike Miron	Department: CTE
Career Pathway: Transportation Careers/Heavy Equipment	Subject: Trades & Industry
Grade Level(s)/Building(s): 11-12/FLAHS	Proposed Course Start Date: Fall 2026
Department Members involved in the development of the course proposal: Industrial Technology, Molly Bonnett, Trade & Industry Advisory Board	

Is your department currently in Instructional Review?		Requesting FastTrack due to an urgent department need or concern?
☐ Yes ** For all departments in the instructional review process, new courses will be developed as part of that work.*	☑ ~~No~~ What approximate year is your department scheduled to begin?	☐ Yes ☑ ~~No~~

PART I (complete with department colleagues)

COURSE PROPOSAL NARRATIVE

A. Course Information

Proposed Course Title: Basic Construction Fundamentals	Length of Course: Semester

Course Description as it will appear in the registration guide:

In the construction industry, the proper use of heavy equipment is necessary to ensure quality work and a safe work environment. In addition, being able to recognize and determine the use of specific heavy equipment will create a more efficient work team. Heavy equipment is used in almost any construction project, from building a house to excavating for a new road. In this course, you will be introduced to core equipment used by operating engineers, as well as their maintenance needs. Communication processes used by operating engineers, rigging and signaling practices, safety awareness, and mathematical concepts related to the construction industry are also covered.

B. Background: Describe the process that led to this request.

Gaps/Needs | State the current issues and gaps for why this course is needed.
Key considerations: What standards are currently not being met? What skills are not currently being taught? What data support these conclusions? What other relevant needs would this course address? Can an existing course be modified to address the same concerns? Why or why not?

No courses such as this are currently offered in our system. FLAS was presented with this partnership opportunity by the Local 49 because of our robust CTE programming. They believe that we have the infrastructure in place to provide this learning opportunity to students. Students have the opportunity to earn college credit and time toward the union apprenticeship program.

Standards | Indicate the state, national, or professional standards to which this course could be aligned.

Courses align with Local 49 Union Standards for apprenticeship.

MN CTE Frameworks:

HS.01.01 Take actions to ensure the safety of self and others, in accordance with established personal and jobsite safety practices
HS.01.02 Anticipate and prevent work-related injuries and illnesses
HS.01.03 Comply with federal, state, and local regulations, and school health and safety policies
HS.01.04 Recognize common hazards and unsafe conditions that can occur on worksite, their risks, and appropriate controls to address them
HS.01.07 Properly handle and dispose of hazardous materials
HS.02.01 Understand the legal rights of workers regarding workplace safety and protection from hazards
HS.02.02 Contribute to culture of safety in the workplace, making suggestions, and reporting injuries, incidents, and hazards as appropriate
HS.02.03 Know effects of and how to deal with temperature extremes and weather conditions
HS.02.04 Know how to safely work in confined spaces or at heights
HS.02.05 Engage in safety training
HS.02.06 Select, inspect, and use personal protective equipment (PPE)
DMO.01.01 Identify and utilize vehicle service information
DMO.02.01 Perform preliminary engine inspection
DMO.02.06 Inspect air induction and exhaust systems
DMO.03.01 Assess engine systems for service
DMO.03.02 Investigate fuel systems for service
DMO.03.03 Assess air induction and exhaust systems for service
DMO.03.04 Investigate cooling systems for service
DMO.03.05 Analyze lubrication systems for service
DMO.03.06 Investigate cab and hood instruments and controls for serviceability
DMO.03.08 Investigate cab and hood hardware/accessories for service
DMO.03.09 Examine heating, ventilation and air conditioning (HVAC) systems for service
DMO.03.10 Assess battery and starting systems
DMO.03.11 Assess charging systems
DMO.03.12 Investigate lighting system for service
DMO.03.13 Examine air brakes for service
DMO.03.14 Investigate hydraulic brakes for service
DMO.03.15 Analyze drive train for service
DMO.03.16 Investigate suspension and steering systems for service
DMO.03.17 Assess tires and wheels for service
DMO.04.01 Investigate general system operation
DMO.04.04 Examine hoses, fittings, and connections
DMO.04.05 Evaluate actuators for service

Rationale | How does this course support the needs outlined above?

Key Considerations: Describe how this course supports the district strategic plan and/or the Middle School Course of Study redesign and learning statements. Describe the Pathways/Design opportunities this new course would create for your students & department. Include any relevant advances in your content area that support the need for this new course.

- The International Union of Operating Engineers Local 49 has partnered with Minnesota Virtual Academy and Stride Career Prep to offer the Operating Engineers Pathway.
- Students can take four, one-semester classes to explore careers in equipment operation.
- Each year, there are multiple opportunities for students to participate in hands-on training opportunities, including visits to contractors.
- Students will receive credit toward Local 49's Apprenticeship Program based on the number of courses completed and events attended.
- Participants have access to career counseling and guidance into the operating engineer field for apprenticeships.
- Students may enroll in one or more courses. They don't need to commit to all courses and can be enrolled based on skill and educational level. These courses have flexible schedules to allow students to remain enrolled at their brick-and-mortar schools.
- Classes are eligible for high school credit, college credit with North Hennepin Community College and apprenticeship credit with the International Union of Operating Engineers' apprenticeship program.

ADDITIONAL FACTORS TO CONSIDER

	Consider & Describe Impact
Similar programs in other departments/grade levels	Automotive
Credit and prerequisite considerations	
Anticipated major expenditures (specialized equipment, software, textbooks)	Sponsored
Space Considerations (classroom/lab needs, storage, furniture, etc.)	Potential off-site venue
Schedule Considerations (time of year, block vs. skinny, etc.)	Potentially paired with another course to create a "block" at the end of the day.
Technology Considerations (access to current software & equipment, etc.)	TBD
Other	

PART II (Complete with T&L following building administrative approval)

C. Goals and Learning Outcomes

Long Term Goals for the Course | Identify desired results - what will students be able to do independently?

Students will be able to make progress toward becoming a heavy equipment operator.

Standards | Indicate the state,national or professional standards to which this course is aligned.
(Copy and Paste standard and benchmarks)

Courses align with Local 49 Union Standards for apprenticeship.

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HS.01.01 Take actions to ensure the safety of self and others, in accordance with established personal and jobsite safety practices
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HS.02.06 Select, inspect, and use personal protective equipment (PPE)
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DMO.03.14 Investigate hydraulic brakes for service
DMO.03.15 Analyze drive train for service
DMO.03.16 Investigate suspension and steering systems for service
DMO.03.17 Assess tires and wheels for service
DMO.04.01 Investigate general system operation
DMO.04.04 Examine hoses, fittings, and connections
DMO.04.05 Evaluate actuators for service

Essential Learning & Skills | Describe the essential learning and skills addressed in this course. Students will know and be skilled at:
Attached.

D. Course Content

Course Outline | Add units and any key experiences or projects that students will engage in.

Attached.

E. Budget Considerations

Materials, Equipment, Supplies | List any new resources not already available necessary for this course. This might include subscriptions, technology, or other various resources needed for the course.

___ *Textbooks* Title(s): Approximate total cost:	___ *Digital Curriculum Resources* Title(s): Approximate total cost: One-time cost or annual renewal?
___ *Other Curriculum Materials (consumables, supplies, ancillaries, etc.)* Materials: Consumable/non-consumable? Approximate total cost:	___ *Technology Devices/Equipment/Hardware* Devices/equipment needed: Approximate cost:
___ *Staff Development* Staff Development description: Approximate cost: Frequency (one time? yearly?):	____ Follow Up Plan Additional Staff Development Check in Meetings

FINAL APPROVAL PRIOR TO SCHOOL BOARD MEETING

John-Paul Jacobson

_____

Director of Teaching and Learning Signature

November 6, 2025

Proposed School Board Meeting Date:

MFG201E2 Construction Equipment Fundamentals INTL

Day	Lesson Name	Assignment Given (if applicable)	Assignment Due (if applicable)
1	1: DCA Introduction 1.01 DCA Introduction 1.01 Discussion: DCA Introduction	1.01 Discussion: DCA Introduction	
2	2: General Safety 2.01 Caught-in/Between Hazards 2.01 Quiz: Caught-in/Between Hazards	2.01 Quiz: Caught-in/Between Hazards	2.01 Quiz: Caught-in/Between Hazards
3	2: General Safety 2.02 Fall Hazards 2.02 Quiz: Fall Hazards	2.02 Quiz: Fall Hazards	2.02 Quiz: Fall Hazards
4	2: General Safety 2.03 Electrical Hazards 2.03 Quiz: Electrical Hazards	2.03 Quiz: Electrical Hazards	2.03 Quiz: Electrical Hazards
5	2: General Safety 2.04 Struck-by Hazards 2.04 Quiz: Struck-by Hazards	2.04 Quiz: Struck-by Hazards	2.04 Quiz: Struck-by Hazards
6	3: Basic Trades Math 3.01 Engineer's Measurement		1.01 Discussion: DCA Introduction
7	3: Basic Trades Math 3.01 Engineer's Measurement		
8	3: Basic Trades Math 3.01 Quiz: Engineer's Measurement	3.01 Quiz: Engineer's Measurement	3.01 Quiz: Engineer's Measurement
9	4: Earth Moving Equipment 4.01 Earth Moving Equipment 4.01 Earth Moving Equipment History Reading		
10	4: Earth Moving Equipment 4.02 Excavator Nomenclature Reading 4.02 Revolving Equipment		
11	4: Earth Moving Equipment 4.03 Front End Loader Nomenclature Reading 4.03 Rubber Tired Equipment		
12	4: Earth Moving Equipment 4.04 Grader Nomenclature Reading 4.04 Grading and Ditching Equipment 4.04 Scraper Nomenclature Reading		
13	4: Earth Moving Equipment 4.05 Roller-Compactor Nomenclature Reading 4.05 Compaction Equipment		

14	4: Earth Moving Equipment 4.06 Tracked Tractor Nomenclature Reading 4.06 Crawler Mounted Equipment		
15	4: Earth Moving Equipment 4.06 Tracked Tractor Nomenclature Reading 4.06 Crawler Mounted Equipment		
16	4: Earth Moving Equipment 4.07 Effective Communications in Construction 4.07 Quiz: Effective Communications in Construction	4.07 Quiz: Effective Communications in Construction	4.07 Quiz: Effective Communications in Construction
17	4: Earth Moving Equipment 4.08 Earth Moving Signals		
18	4: Earth Moving Equipment 4.09 Quiz: Earth Moving Equipment	4.09 Quiz: Earth Moving Equipment	4.09 Quiz: Earth Moving Equipment
19	4: Earth Moving Equipment 4.10 Preventative Maintenance - General Information Reading		
20	4: Earth Moving Equipment 4.10 Preventative Maintenance - General Information Reading		
21	4: Earth Moving Equipment 4.10 Preventative Maintenance - Daily Inspection Reports Reading		
22	4: Earth Moving Equipment 4.10 Graded Assignment: Preventative Maintenance - Vehicle Inspection	4.10 Graded Assignment: Preventative Maintenance - Vehicle Inspection	
23	4: Earth Moving Equipment 4.10 Graded Assignment: Preventative Maintenance - Vehicle Inspection		4.10 Graded Assignment: Preventative Maintenance - Vehicle Inspection
24	4: Earth Moving Equipment 4.11 What is Grade? 4.11 Quiz: What is Grade?	4.11 Quiz: What is Grade?	4.11 Quiz: What is Grade?
25	5: Crane Equipment 5.01 Crane Equipment 5.01 Quiz: Crane Operations and Functions 5.01 Crane Equipment History Reading	5.01 Quiz: Crane Operations and Functions	5.01 Quiz: Crane Operations and Functions
26	5: Crane Equipment 5.02 Crane Nomenclature Reading 5.02 Revolving Equipment		
27	5: Crane Equipment 5.03 Quiz: Crane Terminology	5.03 Quiz: Crane Terminology	5.03 Quiz: Crane Terminology

28	5: Crane Equipment 5.04 Communication Reading 5.04 Graded Assignment: Signal Practice 5.05 Graded Assignment: Equipment Scavenger Hunt	5.04 Graded Assignment: Signal Practice 5.05 Graded Assignment: Equipment Scavenger Hunt	5.04 Graded Assignment: Signal Practice 5.05 Graded Assignment: Equipment Scavenger Hunt
29	5: Crane Equipment 5.06 Graded Assignment: Equipment Report	5.06 Graded Assignment: Equipment Report	
30	5: Crane Equipment 5.06 Graded Assignment: Equipment Report		5.06 Graded Assignment: Equipment Report
31	5: Crane Equipment 5.07 Safety Around Hydraulics Reading 5.07 Quiz: Safety Around Hydraulics 5.08 Crane Safety Basics	5.07 Quiz: Safety Around Hydraulics	5.07 Quiz: Safety Around Hydraulics
32	6: Distribution Equipment 6.01 Distribution Equipment 6.01 Distribution Nomenclature Reading		
33	6: Distribution Equipment 6.02 Graded Assignment: Equipment Scavenger Hunt	6.02 Graded Assignment: Equipment Scavenger Hunt	
34	6: Distribution Equipment 6.02 Graded Assignment: Equipment Scavenger Hunt		6.02 Graded Assignment: Equipment Scavenger Hunt
35	6: Distribution Equipment 6.03 Quiz: Utility Math - Story Problems	6.03 Quiz: Utility Math - Story Problems	6.03 Quiz: Utility Math - Story Problems
36	6: Distribution Equipment 6.04 Horizontal Directional Drilling Safety 6.04 Quiz: Horizontal Directional Drilling Safety	6.04 Quiz: Horizontal Directional Drilling Safety	6.04 Quiz: Horizontal Directional Drilling Safety
37	6: Distribution Equipment 6.05 Utility Safety Reading		
38	6: Distribution Equipment 6.05 Quiz: Utility Operations and Functions	6.05 Quiz: Utility Operations and Functions	6.05 Quiz: Utility Operations and Functions
39	7: Paving Equipment 7.01 Asphalt Paving Nomenclature Reading		
40	7: Paving Equipment 7.01 Asphalt Paving Nomenclature Reading		
41	7: Paving Equipment 7.01 Compaction Equipment		

42	7: Paving Equipment 7.01 Compaction Equipment 7.01 Quiz: Asphalt Paving Nomenclature	7.01 Quiz: Asphalt Paving Nomenclature	7.01 Quiz: Asphalt Paving Nomenclature
43	7: Paving Equipment 7.02 Concrete Paving Nomenclature Reading		
44	7: Paving Equipment 7.02 Concrete Paving Nomenclature Reading		
45	7: Paving Equipment 7.02 Concrete Paving Nomenclature Reading		
46	7: Paving Equipment 7.02 Quiz: Concrete Paving Nomenclature 7.03 Quiz: Paving Math - Story Problems	7.02 Quiz: Concrete Paving Nomenclature 7.03 Quiz: Paving Math - Story Problems	7.02 Quiz: Concrete Paving Nomenclature 7.03 Quiz: Paving Math - Story Problems
47	7: Paving Equipment 7.04 Graded Assignment: Google Earth Activity	7.04 Graded Assignment: Google Earth Activity	
48	7: Paving Equipment 7.04 Graded Assignment: Google Earth Activity		7.04 Graded Assignment: Google Earth Activity
49	8: Pit & Quarry Equipment 8.01 Pit & Quarry Equipment Reading		
50	8: Pit & Quarry Equipment 8.01 Pit & Quarry Equipment Reading		
51	8: Pit & Quarry Equipment 8.01 Pit & Quarry Nomenclature Reading		
52	8: Pit & Quarry Equipment 8.01 Pit & Quarry Nomenclature Reading		
53	8: Pit & Quarry Equipment 8.01 Quiz: Pit & Quarry Nomenclature 8.01 Quiz: Pit & Quarry - Math Problems	8.01 Quiz: Pit & Quarry - Math Problems 8.01 Quiz: Pit & Quarry Nomenclature	8.01 Quiz: Pit & Quarry - Math Problems 8.01 Quiz: Pit & Quarry Nomenclature
54	8: Pit & Quarry Equipment 8.02 Mine Safety and Health Responsibilities Reading		
55	8: Pit & Quarry Equipment 8.03 Graded Assignment: Google Earth Activity	8.03 Graded Assignment: Google Earth Activity	8.03 Graded Assignment: Google Earth Activity

56	8: Pit & Quarry Equipment 8.04 Graded Assignment: Equipment Report	8.04 Graded Assignment: Equipment Report	
57	8: Pit & Quarry Equipment 8.04 Graded Assignment: Equipment Report		8.04 Graded Assignment: Equipment Report
58	9: Demolition Equipment 9.01 Demolition Equipment		
59	9: Demolition Equipment 9.01 Demolition Reading		
60	9: Demolition Equipment 9.01 Demolition Reading		
61	9: Demolition Equipment 9.01 Demolition Reading		
62	9: Demolition Equipment 9.01 Demolition & Pulverization Nomenclature Reading		
63	9: Demolition Equipment 9.01 Demolition & Pulverization Nomenclature Reading		
64	9: Demolition Equipment 9.01 Quiz: Demolition Equipment 9.01 Quiz: Demolition Math Problems	9.01 Quiz: Demolition Equipment 9.01 Quiz: Demolition Math Problems	9.01 Quiz: Demolition Equipment 9.01 Quiz: Demolition Math Problems
65	9: Demolition Equipment 9.02 Graded Assignment: Rumble Strips	9.02 Graded Assignment: Rumble Strips	
66	9: Demolition Equipment 9.02 Graded Assignment: Rumble Strips		9.02 Graded Assignment: Rumble Strips
67	9: Demolition Equipment 9.03 Maintenance: Grease Gun Nomenclature Reading		
68	9: Demolition Equipment 9.03 Maintenance: Grease Gun Nomenclature Reading		
69	9: Demolition Equipment 9.03 Maintenance: Grease Cartridge Exchange Sequence Reading 9.03 Maintenance: Grease Gun Cartridge Exchange 9.04 Quick Coupler Hazards Reading		

70	9: Demolition Equipment 9.03 Maintenance: Grease Cartridge Exchange Sequence Reading 9.03 Maintenance: Grease Gun Cartridge Exchange 9.04 Quick Coupler Hazards Reading		
71	10: Pipeline Equipment 10.01 Pipeline Equipment Reading		
72	10: Pipeline Equipment 10.01 Pipeline Equipment Reading 10.01 Quiz: Pipeline Equipment	10.01 Quiz: Pipeline Equipment	10.01 Quiz: Pipeline Equipment
73	10: Pipeline Equipment 10.02 Pipeline Construction Reading 10.02 Pipeline Construction Terminology Reading		
74	10: Pipeline Equipment 10.03 Pipeline Equipment Explore More Video 10.04 Graded Assignment: Technology in Construction	10.04 Graded Assignment: Technology in Construction	
75	10: Pipeline Equipment 10.03 Pipeline Equipment Explore More Video 10.04 Graded Assignment: Technology in Construction		
76	10: Pipeline Equipment 10.03 Pipeline Equipment Explore More Video 10.04 Graded Assignment: Technology in Construction		10.04 Graded Assignment: Technology in Construction
77	11: Telehandler 11.01 Forklift Training Reading		
78	11: Telehandler 11.01 Forklift Training Reading		
79	11: Telehandler 11.01 Forklift Training Reading		
80	11: Telehandler 11.01 Forklift Training Reading		
81	11: Telehandler 11.01 Forklift Training Reading		
82	11: Telehandler 11.02 Telehandler Video 11.02 Telehandler Load Charts Reading		
83	11: Telehandler 11.02 Telehandler Video 11.02 Telehandler Load Charts Reading		

84	11: Telehandler 11.02 Telehandler Video 11.02 Telehandler Load Charts Reading 11.02 Quiz: Telehandler	11.02 Quiz: Telehandler	11.02 Quiz: Telehandler
85	11: Telehandler 11.03 Distracted Driving Reading		
86	11: Telehandler 11.03 Distracted Driving Reading		
87	11: Telehandler 11.04 OSHA Factsheet: Work Zone Traffic Safety Reading		
88	11: Telehandler 11.04 OSHA Factsheet: Work Zone Traffic Safety Reading		
89	12: Final Exam 12.01 Final Exam		
90	12: Final Exam 12.01 Final Exam	12.01 Final Exam	12.01 Final Exam

REQUEST TO ADD/REVISE A COURSE

Forest Lake Area Schools

Primary Contact: Mike Miron	Department: CTE
Career Pathway: Transportation Careers/Heavy Equipment	Subject: Trades & Industry
Grade Level(s)/Building(s): 11-12/FLAHS	Proposed Course Start Date: Fall 2026
Department Members involved in the development of the course proposal: Industrial Technology, Molly Bonnett, Trade & Industry Advisory Board	

Is your department currently in Instructional Review?		Requesting FastTrack due to an urgent department need or concern?
☐ Yes ** For all departments in the instructional review process, new courses will be developed as part of that work.*	☑ ~~No~~ What approximate year is your department scheduled to begin?	☐ Yes ☑ ~~No~~

PART I (complete with department colleagues)

COURSE PROPOSAL NARRATIVE

A. Course Information

Proposed Course Title: Basic Grade & Construction Math	Length of Course: Semester
Course Description as it will appear in the registration guide: In the construction industry, grading is the work of ensuring a level base, or a grade with a specific slope. Grade construction work is needed in almost any building project, from laying a building foundation to landscaping to roadwork. In this course, you will be introduced to core equipment used in the staking process, as well as personal protective equipment (PPE) used in the construction industry. Communication processes used in the construction industry for interpreting and setting grade are also an important part of this course. Finally, you will learn mathematical concepts related to the construction industry for grade staking.	

B. Background: Describe the process that led to this request.

Gaps/Needs | State the current issues and gaps for why this course is needed.
Key considerations: What standards are currently not being met? What skills are not currently being taught? What data support these conclusions? What other relevant needs would this course address? Can an existing course be modified to address the same concerns? Why or why not?

No courses such as this are currently offered in our system. FLAS was presented with this partnership opportunity by the Local 49 because of our robust CTE programming. They believe that we have the infrastructure in place to provide this learning opportunity to students. Students have the opportunity to earn college credit and time toward the union apprenticeship program.

Standards | Indicate the state, national, or professional standards to which this course could be aligned.

Courses align with Local 49 Union Standards for apprenticeship.

MN CTE Frameworks:
TB.02.01 Demonstrate mathematics knowledge and skills required to pursue the full range of post-secondary education and career opportunities
TB.02.03 Apply measurement systems and the mathematical functions necessary to perform required repair, maintenance, fabrication, and operation procedures

***There are likely also math standards that are met as a result of this content.*

Rationale | How does this course support the needs outlined above?
Key Considerations: Describe how this course supports the district strategic plan and/or the Middle School Course of Study redesign and learning statements. Describe the Pathways/Design opportunities this new course would create for your students & department. Include any relevant advances in your content area that support the need for this new course.

- The International Union of Operating Engineers Local 49 has partnered with Minnesota Virtual Academy and Stride Career Prep to offer the Operating Engineers Pathway.
- Students can take four, one-semester classes to explore careers in equipment operation.
- Each year there are multiple opportunities for students to participate in hands-on training opportunities, including visits to contractors.
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- Participants have access to career counseling and guidance into the operating engineer field for apprenticeships.
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- Classes are eligible for high school credit, college credit with North Hennepin Community College and apprenticeship credit with the International Union of Operating Engineers' apprenticeship program.

ADDITIONAL FACTORS TO CONSIDER

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Similar programs in other departments/grade levels	Automotive
Credit and prerequisite considerations	

Anticipated major expenditures (specialized equipment, software, textbooks)	Sponsored
Space Considerations (classroom/lab needs, storage, furniture, etc.)	Potential off-site venue
Schedule Considerations (time of year, block vs. skinny, etc.)	Potentially paired with another course to create a "block" at the end of the day.
Technology Considerations (access to current software & equipment, etc.)	TBD
Other	

PART II (Complete with T&L following building administrative approval)

C. Goals and Learning Outcomes

Long Term Goals for the Course | Identify desired results - what will students be able to do independently?

Students will be able to make progress toward becoming a heavy equipment operator.

Standards | Indicate the state,national or professional standards to which this course is aligned.
(Copy and Paste standard and benchmarks)

Courses align with Local 49 Union Standards for apprenticeship.

TB.02.01 Demonstrate mathematics knowledge and skills required to pursue the full range of post-secondary education and career opportunities
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***There are likely also math standards that are met as a result of this content.*

Essential Learning & Skills | Describe the essential learning and skills addressed in this course. Students will know and be skilled at:

Attached.

D. Course Content

Course Outline | Add units and any key experiences or projects that students will engage in.

Attached.

E. Budget Considerations

Materials, Equipment, Supplies | List any new resources not already available necessary for this course. This might include subscriptions, technology, or other various resources needed for the course.	
___ *Textbooks* Title(s): Approximate total cost:	___ *Digital Curriculum Resources* Title(s): Approximate total cost: One-time cost or annual renewal?
___ *Other Curriculum Materials (consumables, supplies, ancillaries, etc.)* Materials: Consumable/non-consumable? Approximate total cost:	___ *Technology Devices/Equipment/Hardware* Devices/equipment needed: Approximate cost:
___ *Staff Development* Staff Development description: Approximate cost: Frequency (one time? yearly?):	____ Follow Up Plan Additional Staff Development Check in Meetings

FINAL APPROVAL PRIOR TO SCHOOL BOARD MEETING

John-Paul Jacobson _____ Director of Teaching and Learning Signature November 6, 2025
Proposed School Board Meeting Date:

MFG010E2 Basic Grade and Construction Math INTL

Day	Lesson Name	Assignment Given (if applicable)	Assignment Due (if applicable)
1	DCA Introduction		
2	Unit 1: Measurement 1.01 Perimeter	1.01 Quiz: Perimeter	1.01 Quiz: Perimeter
3	Unit 1: Measurement 1.02 Rectangle and Triangle Areas		
4	Unit 1: Measurement 1.02 Rectangle and Triangle Areas	1.02 Quiz: Rectangle and Triangle Areas	1.02 Quiz: Rectangle and Triangle Areas
5	Unit 1: Measurement 1.03 Volume of a Prism		
6	Unit 1: Measurement 1.03 Volume of a Prism	1.03 Quiz: Volume of a Prism	1.03 Quiz: Volume of a Prism
7	Unit 1: Measurement 1.04 Engineer's Scale		
8	Unit 1: Measurement 1.04 Engineer's Scale		
9	Unit 1: Measurement 1.05 Engineer's Measurement		
10	Unit 1: Measurement 1.05 Engineer's Measurement		
11	Unit 1: Measurement 1.06 Basic Grades Formulas		
12	Unit 1: Measurement 1.06 Basic Grades Formulas		
13	Unit 1: Measurement 1.07 Basic Quantities: Area and Volume		

14	Unit 1: Measurement 1.07 Basic Quantities: Area and Volume		
15	Unit 1: Measurement 1.08 Graded Assignment: Area and Volume	1.08 Graded Assignment: Area and Volume	1.08 Graded Assignment: Area and Volume
16	Unit 1: Measurement 1.09 Video: Stockpile 1		
17	Unit 1: Measurement 1.10 Video: Stockpile 2		
18	Unit 1: Measurement 1.11 Basic Quantities: Stone and Material Stockpiles		
19	Unit 1: Measurement 1.12 Graded Assignment: Stone and Material Stockpiles	1.12 Graded Assignment: Stone and Material Stockpiles	1.12 Graded Assignment: Stone and Material Stockpiles
20	Unit 1: Measurement 1.13 Quiz: Measurement	1.13 Quiz: Measurement	1.13 Quiz: Measurement
21	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.01 Soil Compaction Activity 1		
22	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.01 Soil Compaction Activity 1		
23	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.02 Soil Compaction Activity 2		
24	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.02 Soil Compaction Activity 2		
25	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.03 Soil Compaction Activity 3		
26	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.03 Soil Compaction Activity 3		

27	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.04 Quiz: Soil Compaction	2.04 Quiz: Soil Compaction	2.04 Quiz: Soil Compaction
28	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.05 Engineer's Scale		
29	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.05 Engineer's Scale		
30	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.06 Graded Assignment: Engineer's Scale	2.06 Graded Assignment: Engineer's Scale	2.06 Graded Assignment: Engineer's Scale
31	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.07 Elevations: Guided Notes		
32	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.08 Elevations		
33	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.08 Elevations		
34	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.09 Stationing: Guided Notes		
35	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.10 Stationing		
36	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.10 Stationing		
37	Unit 2: Soil Compaction, Engineer's Scale, Elevation, and Stationing 2.11 Quiz: Soil Compaction, Engineer's Scale, Elevation, and Stationing	2.11 Quiz: Soil Compaction Engineer's Scale Elevation and Stationing	2.11 Quiz: Soil Compaction Engineer's Scale Elevation and Stationing
38	Unit 3: Slopes and Cross Sections 3.01 Slope as a Rate		
39	Unit 3: Slopes and Cross Sections 3.01 Slope as a Rate	3.01 Quiz: Slope as a Rate	3.01 Quiz: Slope as a Rate
40	Unit 3: Slopes and Cross Sections 3.02 Decimals and Percents	3.02 Discussion: Planning with Proportions	

41	Unit 3: Slopes and Cross Sections 3.02 Decimals and Percents	3.02 Quiz: Decimals and Percents	3.02 Quiz: Decimals and Percents
42	Unit 3: Slopes and Cross Sections 3.03 Fractions and Percents		
43	Unit 3: Slopes and Cross Sections 3.03 Fractions and Percents	3.03 Quiz: Fractions and Percents	3.02 Discussion: Planning with Proportions 3.03 Quiz: Fractions and Percents
44	Unit 3: Slopes and Cross Sections 3.04 Similarity and Scale		
45	Unit 3: Slopes and Cross Sections 3.04 Similarity and Scale	3.04 Quiz: Similarity and Scale	3.04 Quiz: Similarity and Scale
46	Unit 3: Slopes and Cross Sections 3.05 Slopes		
47	Unit 3: Slopes and Cross Sections 3.05 Slopes		
48	Unit 3: Slopes and Cross Sections 3.06 Slopes Handout		
49	Unit 3: Slopes and Cross Sections 3.07 Cross Sections		
50	Unit 3: Slopes and Cross Sections 3.07 Cross Sections		
51	Unit 3: Slopes and Cross Sections 3.08 Quiz: Slopes and Cross Sections	3.08 Quiz: Slopes and Cross Sections	3.08 Quiz: Slopes and Cross Sections
52	Unit 4: Measuring Elevations 4.01 Integers on a Number Line	4.01 Discussion: Integers on a Number Line	
53	Unit 4: Measuring Elevations 4.01 Integers on a Number Line	4.01 Quiz: Integers on a Number Line	4.01 Quiz: Integers on a Number Line
54	Unit 4: Measuring Elevations 4.02 Adding Integers		

55	Unit 4: Measuring Elevations 4.02 Adding Integers	4.02 Quiz: Adding Integers	4.02 Quiz: Adding Integers
56	Unit 4: Measuring Elevations 4.03 Subtracting Integers		4.01 Discussion: Integers on a Number Line
57	Unit 4: Measuring Elevations 4.03 Subtracting Integers	4.03 Quiz: Subtracting Integers	4.03 Quiz: Subtracting Integers
58	Unit 4: Measuring Elevations 4.04 Decimals on a Number Line		
59	Unit 4: Measuring Elevations 4.04 Decimals on a Number Line	4.04 Quiz: Decimals on a Number Line	4.04 Quiz: Decimals on a Number Line
60	Unit 4: Measuring Elevations 4.05 Adding Decimals	4.05 Discussion: Adding Decimals	
61	Unit 4: Measuring Elevations 4.05 Adding Decimals	4.05 Quiz: Adding Decimals	4.05 Quiz: Adding Decimals
62	Unit 4: Measuring Elevations 4.06 Subtracting Decimals		
63	Unit 4: Measuring Elevations 4.06 Subtracting Decimals	4.06 Quiz: Subtracting Decimals	4.06 Quiz: Subtracting Decimals
64	Unit 4: Measuring Elevations 4.07 Elevations Measurement Activity 1		4.05 Discussion: Adding Decimals
65	Unit 4: Measuring Elevations 4.08 Elevations Measurement Activity 2		
66	Unit 4: Measuring Elevations 4.09 Quiz: Elevations Measurement	4.09 Quiz: Elevations Measurement	4.09 Quiz: Elevations Measurement
67	Unit 4: Measuring Elevations 4.10 PPE and Safety		
68	Unit 4: Measuring Elevations 4.10 PPE and Safety		

69	Unit 4: Measuring Elevations 4.11 Use of a Direct Elevation Rod with Rotating Laser Part 1: Set-Up		
70	Unit 4: Measuring Elevations 4.12 Use of a Direct Elevation Rod with Rotating Laser Part 2: Using a Direct Elevation Rod		
71	Unit 4: Measuring Elevations 4.13 Use of a Direct Elevation Rod with Rotating Laser Part 3: Application		
72	Unit 4: Measuring Elevations 4.14: Areas of Circles 1	4.14 Quiz: Areas of Circles 1	4.14 Quiz: Areas of Circles 1
73	Unit 4: Measuring Elevations 4.15 Areas of Circles 2	4.15 Quiz: Areas of Circles 2	4.15 Quiz: Areas of Circles 2
74	Unit 4: Measuring Elevations 4.16 Radius		
75	Unit 4: Measuring Elevations 4.16 Radius		
76	Unit 4: Measuring Elevations 4.17 Quiz: Measuring Elevations	4.17 Quiz: Measuring Elevations	4.17 Quiz: Measuring Elevations
77	Unit 5: Plans 5.01 Roadway Plans		
78	Unit 5: Plans 5.01 Roadway Plans		
79	Unit 5: Plans 5.02 Plan Views		
80	Unit 5: Plans 5.02 Plan Views		
81	Unit 5: Plans 5.03 D.O.T. Roadway Plan Reference		
82	Unit 5: Plans 5.04 Quiz: Roadway Plan	5.04 Quiz: Roadway Plan	5.04 Quiz: Roadway Plan

83	Unit 5: Plans 5.05 Site Plans		
84	Unit 5: Plans 5.06 Site Plans Reference		
85	Unit 5: Plans 5.07 Quiz: Site Plans	5.07 Quiz: Site Plans	5.07 Quiz: Site Plans
86	Unit 5: Plans 5.08 Plan Abbreviations		
87	Unit 5: Plans 5.09 Construction Site Inspection Report		
88	Unit 5: Plans 5.10 Beginning GNSS		
89	Unit 5: Plans 5.10 Beginning GNSS		
90	Final Exam	Final Exam	Final Exam

REQUEST TO ADD/REVISE A COURSE

Forest Lake Area Schools

Primary Contact: Mike Miron	Department: CTE
Career Pathway: Transportation Careers/Heavy Equipment	Subject: Trades & Industry
Grade Level(s)/Building(s): 11-12/FLAHS	Proposed Course Start Date: Fall 2026
Department Members involved in the development of the course proposal: Industrial Technology, Molly Bonnett, Trade & Industry Advisory Board	

Is your department currently in Instructional Review?		Requesting FastTrack due to an urgent department need or concern?
☐ Yes ** For all departments in the instructional review process, new courses will be developed as part of that work.*	☑ ~~No~~ What approximate year is your department scheduled to begin?	☐ Yes ☑ ~~No~~

PART I (complete with department colleagues)

COURSE PROPOSAL NARRATIVE

A. Course Information

Proposed Course Title: Basic Maintenance of Mobile Equipment	Length of Course: Semester
Course Description as it will appear in the registration guide: This course focuses directly on the maintenance of mobile equipment through a series of engaging tutorials. A major focus of the course is on maintenance safety, including such topics as Lockout/Tagout (LOTO). Other topics include tools and fasteners, preventative maintenance principles, engines, intake and exhaust, fuel systems, coolant systems, filters and filtration, lubrication systems, hydraulics, electrical systems, tires, and tracks and undercarriages.	

B. Background: Describe the process that led to this request.

Gaps/Needs | State the current issues and gaps for why this course is needed.
Key considerations: What standards are currently not being met? What skills are not currently being taught? What data support these conclusions? What other relevant needs would this course address? Can an existing course be modified to address the same concerns? Why or why not?

No courses such as this are currently offered in our system. FLAS was presented with this partnership opportunity by the Local 49 because of our robust CTE programming. They believe that we have the infrastructure in place to provide

this learning opportunity to students. Students have the opportunity to earn college credit and time toward the union apprenticeship program.

Standards | Indicate the state, national, or professional standards to which this course could be aligned.

Courses align with Local 49 Union Standards for apprenticeship.

MN CTE Frameworks:
DMO.02.04 Perform lubrication systems service and repair
DMO.02.05 Perform cooling systems service and repair
DMO.02.07 Perform fuel supply systems service
DMO.03.13 Examine air brakes for service
DMO.03.14 Investigate hydraulic brakes for service
DMO.03.15 Analyze drive train for service
DMO.04.03 Perform filtration/reservoirs (tanks) service
DMO.05.07 Diagnose air and hydraulic anti-lock braking systems (ABS) and automatic traction control (ATC) systems
DMO.05.08 Perform wheel bearing service and repair
DMO.06.01 Assess steering systems - column
DMO.06.05 Perform wheel alignment diagnosis, adjustment, and repair
DMO.07.01 Perform general electrical systems service
DMO.07.02 Perform battery service
DMO.07.03 Perform starting systems service
DMO.07.04 Perform charging system service diagnosis and repair
DMO.07.05 Perform lighting system service diagnosis and repair

Rationale | How does this course support the needs outlined above?
Key Considerations: Describe how this course supports the district strategic plan and/or the Middle School Course of Study redesign and learning statements. Describe the Pathways/Design opportunities this new course would create for your students & department. Include any relevant advances in your content area that support the need for this new course.

- The International Union of Operating Engineers Local 49 has partnered with Minnesota Virtual Academy and Stride Career Prep to offer the Operating Engineers Pathway.
- Students can take four, one-semester classes to explore careers in equipment operation.
- Each year there are multiple opportunities for students to participate in hands-on training opportunities, including visits to contractors.
- Students will receive credit toward Local 49's Apprenticeship Program based on the number of courses completed and events attended.
- Participants have access to career counseling and guidance into the operating engineer field for apprenticeships.
- Students may enroll in one or more courses. They don't need to commit to all courses and can be enrolled based on skill and educational level. These courses have flexible schedules to allow students to remain enrolled at their brick-and-mortar schools.
- Classes are eligible for high school credit, college credit with North Hennepin Community College and apprenticeship credit with the International Union of Operating Engineers' apprenticeship program.

ADDITIONAL FACTORS TO CONSIDER

	Consider & Describe Impact
Similar programs in other departments/grade levels	Automotive

Credit and prerequisite considerations	
Anticipated major expenditures (specialized equipment, software, textbooks)	Sponsored
Space Considerations (classroom/lab needs, storage, furniture, etc.)	Potential off-site venue
Schedule Considerations (time of year, block vs. skinny, etc.)	Potentially paired with another course to create a "block" at the end of the day.
Technology Considerations (access to current software & equipment, etc.)	TBD
Other	

PART II (Complete with T&L following building administrative approval)

C. Goals and Learning Outcomes

Long Term Goals for the Course | Identify desired results - what will students be able to do independently?

Students will be able to make progress toward becoming a heavy equipment operator.

Standards | Indicate the state,national or professional standards to which this course is aligned.
(Copy and Paste standard and benchmarks)

Courses align with Local 49 Union Standards for apprenticeship.

MN CTE Frameworks:
DMO.02.04 Perform lubrication systems service and repair
DMO.02.05 Perform cooling systems service and repair
DMO.02.07 Perform fuel supply systems service
DMO.03.13 Examine air brakes for service
DMO.03.14 Investigate hydraulic brakes for service
DMO.03.15 Analyze drive train for service
DMO.04.03 Perform filtration/reservoirs (tanks) service
DMO.05.07 Diagnose air and hydraulic anti-lock braking systems (ABS) and automatic traction control (ATC) systems
DMO.05.08 Perform wheel bearing service and repair
DMO.06.01 Assess steering systems - column
DMO.06.05 Perform wheel alignment diagnosis, adjustment, and repair
DMO.07.01 Perform general electrical systems service
DMO.07.02 Perform battery service
DMO.07.03 Perform starting systems service
DMO.07.04 Perform charging system service diagnosis and repair
DMO.07.05 Perform lighting system service diagnosis and repair

Essential Learning & Skills | Describe the essential learning and skills addressed in this course. Students will know and be skilled at:
Attached.

D. Course Content

Course Outline | Add units and any key experiences or projects that students will engage in.

Attached.

E. Budget Considerations

Materials, Equipment, Supplies | List any new resources not already available necessary for this course. This might include subscriptions, technology, or other various resources needed for the course.	
___ *Textbooks* Title(s): Approximate total cost:	___ *Digital Curriculum Resources* Title(s): Approximate total cost: One-time cost or annual renewal?
___ *Other Curriculum Materials (consumables, supplies, ancillaries, etc.)* Materials: Consumable/non-consumable? Approximate total cost:	___ *Technology Devices/Equipment/Hardware* Devices/equipment needed: Approximate cost:
___ *Staff Development* Staff Development description: Approximate cost: Frequency (one time? yearly?):	____ Follow Up Plan Additional Staff Development Check in Meetings

FINAL APPROVAL PRIOR TO SCHOOL BOARD MEETING

John-Paul Jacobson _____ Director of Teaching and Learning Signature November 6, 2025
Proposed School Board Meeting Date:

MFG202E2 Mobile Equipment Maintenance INTL

Day	Lesson Name	Assignment Given (if applicable)	Assignment Due (if applicable)
1	DCA Introduction Unit 1: Maintenance Safety 1.01 Maintenance Safety 1.02 Video: Shake Hands with Danger - Caterpillar Safety 1.03 Video: The Roll of Drums - Caterpillar Safety		
2	Unit 1: Maintenance Safety 1.04 Video: Safety Basics - Slips and Falls 1.05 Video: Safety Basics - Blocking and Cribbing 1.06 Video: Hydraulic Safety - A Lethal Strike		
3	Unit 1: Maintenance Safety 1.07 Lockout/Tagout (LOTO) 1.08 Control of Hazardous Energy 1.09 Workplace Solutions		
4	Unit 1: Maintenance Safety 1.10 OSHA Fact Sheet 1.11 Video: Safety Program Preview - Lockout/Tagout		
5	Unit 1: Maintenance Safety 1.12 Video: Lockout/Tagout	1.13 Quiz: Lockout/Tagout	1.13 Quiz: Lockout/Tagout
6	Unit 1: Maintenance Safety	1.14 Discussion: Video Reflection	1.14 Discussion: Video Reflection
7	Unit 1: Maintenance Safety 1.15 Pre-Operative Inspection Safety Considerations		
8	Unit 2: Tools and Fasteners 2.01 Video: Hand and Power Tool Safety 2.02 Screwdrivers 2.03 Hammers		
9	Unit 2: Tools and Fasteners 2.04 Pliers 2.05 Wrenches		
10	Unit 2: Tools and Fasteners 2.06 Miscellaneous Hand Tools		
11	Unit 2: Tools and Fasteners	2.07 Quiz: Tools	2.07 Quiz: Tools
12	Unit 2: Tools and Fasteners 2.08 Fasteners		

13	Unit 2: Tools and Fasteners	2.09 Quiz: Fasteners	2.09 Quiz: Fasteners
14	Unit 3: Preventative Maintenance Principles 3.01 Pre-Operative Equipment Inspection		
15	Unit 3: Preventative Maintenance Principles 3.02 Operator's Manual		
16	Unit 3: Preventative Maintenance Principles	3.03 Quiz: Operator's Manual	3.03 Quiz: Operator's Manual
17	Unit 3: Preventative Maintenance Principles 3.04 Video: Track-Type Tractor: Daily Work Around Inspection 3.05 Video: Hydraulic Excavator: Daily Walk Around Inspection		
18	Unit 3: Preventative Maintenance Principles 3.06 Video: Excavator Pre-Start Walk Around		
19	Unit 3: Preventative Maintenance Principles 3.07 Video: Skid Steer and Compact Track Loader Pre-Start Inspection		
20	Unit 3: Preventative Maintenance Principles 3.08 When and Where Specific Machine Preventative Maintenance is Performed		
21	Unit 4: Engines 4.01 Engine Nomenclature		
22	Unit 4: Engines	4.02 Graded Assignment: Engine Components	4.02 Graded Assignment: Engine Components
23	Unit 4: Engines 4.03 Engines		
24	Unit 4: Engines 4.04 Engine Lubrication System		
25	Unit 4: Engines 4.04 Engine Lubrication System		
26	Unit 4: Engines	4.05 Quiz: Engines	4.05 Quiz: Engines

27	Unit 5: Intake and Exhaust 5.01 Engine Intake and Exhaust System		
28	Unit 5: Intake and Exhaust 5.01 Engine Intake and Exhaust System		
29	Unit 5: Intake and Exhaust 5.01 Engine Intake and Exhaust System		
30	Unit 5: Intake and Exhaust 5.02 Engines - The Air Intake and Exhaust System		
31	Unit 5: Intake and Exhaust 5.02 Engines - The Air Intake and Exhaust System		
32	Unit 5: Intake and Exhaust 5.02 Engines - The Air Intake and Exhaust System		
33	Unit 6: Fuel Systems 6.01 Engine Fuel System		
34	Unit 6: Fuel Systems 6.01 Engine Fuel System		
35	Unit 6: Fuel Systems 6.01 Engine Fuel System		
36	Unit 6: Fuel Systems 6.02 Fuel Systems		
37	Unit 6: Fuel Systems 6.02 Fuel Systems		
38	Unit 6: Fuel Systems	6.03 Quiz: Fuel Systems	6.03 Quiz: Fuel Systems
39	Unit 7: Coolant Systems 7.01 Engine Coolant System		
40	Unit 7: Coolant Systems 7.01 Engine Coolant System		

41	Unit 7: Coolant Systems 7.01 Engine Coolant System		
42	Unit 7: Coolant Systems 7.02 Introduction to Cooling Systems		
43	Unit 7: Coolant Systems 7.02 Introduction to Cooling Systems		
44	Unit 7: Coolant Systems 7.02 Introduction to Cooling Systems		
45	Unit 8: Filters and Filtration 8.01 Filters and Filtration		
46	Unit 8: Filters and Filtration 8.01 Filters and Filtration		
47	Unit 8: Filters and Filtration 8.01 Filters and Filtration		
48	Unit 8: Filters and Filtration 8.01 Filters and Filtration		
49	Unit 8: Filters and Filtration 8.01 Filters and Filtration		
50	Unit 8: Filters and Filtration 8.02 Video: Filter Simulation		
51	Unit 9: Lubrication Systems 9.01 Grease Points		
52	Unit 9: Lubrication Systems 9.01 Grease Points		
53	Unit 9: Lubrication Systems 9.01 Grease Points		
54	Unit 9: Lubrication Systems 9.02 Lubrication Systems		

55	Unit 9: Lubrication Systems 9.02 Lubrication Systems		
56	Unit 9: Lubrication Systems 9.02 Lubrication Systems		
57	Unit 9: Lubrication Systems	9.03 Quiz: Lubrication Systems	9.03 Quiz: Lubrication Systems
58	Unit 10: Hydraulics 10.01 Hydraulic Systems		
59	Unit 10: Hydraulics 10.01 Hydraulic Systems		
60	Unit 10: Hydraulics 10.01 Hydraulic Systems		
61	Unit 10: Hydraulics 10.01 Hydraulic Systems		
62	Unit 10: Hydraulics 10.01 Hydraulic Systems		
63	Unit 10: Hydraulics	10.02 Quiz: Hydraulics	10.02 Quiz: Hydraulics
64	Unit 11: Electrical Systems 11.01 Engine Electrical System		
65	Unit 11: Electrical Systems 11.02 Video: Electrical		
66	Unit 11: Electrical Systems 11.03 Electrical Systems		
67	Unit 11: Electrical Systems	11.04 Quiz: Electricity	11.04 Quiz Electricity
68	Unit 11: Electrical Systems 11.05 Video: Battery		

69	Unit 11: Electrical Systems	11.06 Graded Assignment: Battery	11.06 Graded Assignment: Battery
70	Unit 11: Electrical Systems	11.07 Quiz: Battery	11.07 Quiz: Battery
71	Unit 12: Tires 12.01 Video: Tires and Rims		
72	Unit 12: Tires 12.01 Video: Tires and Rims		
73	Unit 12: Tires 12.02 Tires		
74	Unit 12: Tires 12.02 Tires		
75	Unit 12: Tires 12.02 Tires		
76	Unit 12: Tires	12.03 Quiz: Tires	12.03 Quiz: Tires
77	Unit 13: Tracks and Undercarriages 13.01 Video: Tracks and Undercarriages		
78	Unit 13: Tracks and Undercarriages 13.01 Video: Tracks and Undercarriages		
79	Unit 13: Tracks and Undercarriages 13.02 Tracks and Undercarriages		
80	Unit 13: Tracks and Undercarriages 13.02 Tracks and Undercarriages		
81	Unit 13: Tracks and Undercarriages 13.02 Tracks and Undercarriages		
82	Unit 13: Tracks and Undercarriages 13.02 Tracks and Undercarriages		

83	Unit 13: Tracks and Undercarriages	13.03 Quiz: Tracks and Undercarriages	13.03 Quiz: Tracks and Undercarriages
84	Unit 14: Miscellaneous and Ground Engaging 14.01 Other Components		
85	Unit 14: Miscellaneous and Ground Engaging 14.01 Other Components		
86	Unit 14: Miscellaneous and Ground Engaging 14.01 Other Components		
87	Unit 14: Miscellaneous and Ground Engaging 14.02 Miscellaneous and Ground Engaging		
88	Unit 14: Miscellaneous and Ground Engaging 14.02 Miscellaneous and Ground Engaging		
89	Unit 14: Miscellaneous and Ground Engaging 14.02 Miscellaneous and Ground Engaging		
90	Final Exam	Final Exam	Final Exam

REQUEST TO ADD/REVISE A COURSE

Forest Lake Area Schools

Primary Contact: Mike Miron	Department: CTE
Career Pathway: Transportation Careers/Heavy Equipment	Subject: Trades & Industry
Grade Level(s)/Building(s): 11-12/FLAHS	Proposed Course Start Date: Fall 2026
Department Members involved in the development of the course proposal: Industrial Technology, Molly Bonnett, Trade & Industry Advisory Board	

Is your department currently in Instructional Review?		Requesting FastTrack due to an urgent department need or concern?
☐ Yes ** For all departments in the instructional review process, new courses will be developed as part of that work.*	☑ ~~No~~ What approximate year is your department scheduled to begin?	☐ Yes ☑ ~~No~~

PART I (complete with department colleagues)

COURSE PROPOSAL NARRATIVE

A. Course Information

Proposed Course Title: Construction Explorations	Length of Course: Semester
Course Description as it will appear in the registration guide: This course provides students with an introduction to the basic equipment used in the construction industry. Students learn about basic equipment operations and job responsibilities. This course prepares students to use concepts pertaining to safety, maintenance, mathematics, and communication that operating engineers may experience.	

B. Background: Describe the process that led to this request.

Gaps/Needs | State the current issues and gaps for why this course is needed.
Key considerations: What standards are currently not being met? What skills are not currently being taught? What data support these conclusions? What other relevant needs would this course address? Can an existing course be modified to address the same concerns? Why or why not?

No courses such as this are currently offered in our system. FLAS was presented with this partnership opportunity by the Local 49 because of our robust CTE programming. They believe that we have the infrastructure in place to provide

this learning opportunity to students. Students have the opportunity to earn college credit and time toward the union apprenticeship program.

Standards | Indicate the state, national, or professional standards to which this course could be aligned.

Courses align with Local 49 Union Standards for apprenticeship.

MN CTE Frameworks:
CE.01.04 Research the scope of career opportunities available and the requirements for education, training, certification, and licensure
CE.01.05 Integrate changing employment trends, societal needs, and economic conditions into career planning
CE.01.06 Recognize the role and function of professional organizations, industry associations, and organized labor in a productive society
CE.01.09 Develop a career plan that reflects career interests, pathways, and postsecondary options
TB.01.02 Understand that regulations influence transportation design and execution
TB.01.03 Communicate ideas using appropriate industry terminology

Rationale | How does this course support the needs outlined above?
Key Considerations: Describe how this course supports the district strategic plan and/or the Middle School Course of Study redesign and learning statements. Describe the Pathways/Design opportunities this new course would create for your students & department. Include any relevant advances in your content area that support the need for this new course.

- The International Union of Operating Engineers Local 49 has partnered with Minnesota Virtual Academy and Stride Career Prep to offer the Operating Engineers Pathway.
- Students can take four, one-semester classes to explore careers in equipment operation.
- Each year there are multiple opportunities for students to participate in hands-on training opportunities, including visits to contractors.
- Students will receive credit toward Local 49's Apprenticeship Program based on the number of courses completed and events attended.
- Participants have access to career counseling and guidance into the operating engineer field for apprenticeships.
- Students may enroll in one or more courses. They don't need to commit to all courses and can be enrolled based on skill and educational level. These courses have flexible schedules to allow students to remain enrolled at their brick-and-mortar schools.
- Classes are eligible for high school credit, college credit with North Hennepin Community College and apprenticeship credit with the International Union of Operating Engineers' apprenticeship program.

ADDITIONAL FACTORS TO CONSIDER

	Consider & Describe Impact
Similar programs in other departments/grade levels	Automotive
Credit and prerequisite considerations	

Anticipated major expenditures (specialized equipment, software, textbooks)	Sponsored
Space Considerations (classroom/lab needs, storage, furniture, etc.)	Potential off-site venue
Schedule Considerations (time of year, block vs. skinny, etc.)	Potentially paired with another course to create a "block" at the end of the day.
Technology Considerations (access to current software & equipment, etc.)	TBD
Other	

PART II (Complete with T&L following building administrative approval)

C. Goals and Learning Outcomes

Long Term Goals for the Course | Identify desired results - what will students be able to do independently?

Students will be able to make progress toward becoming a heavy equipment operator.

Standards | Indicate the state,national or professional standards to which this course is aligned.
(Copy and Paste standard and benchmarks)

Courses align with Local 49 Union Standards for apprenticeship.

MN CTE Frameworks:
CE.01.04 Research the scope of career opportunities available and the requirements for education, training, certification, and licensure
CE.01.05 Integrate changing employment trends, societal needs, and economic conditions into career planning
CE.01.06 Recognize the role and function of professional organizations, industry associations, and organized labor in a productive society
CE.01.09 Develop a career plan that reflects career interests, pathways, and postsecondary options
TB.01.02 Understand that regulations influence transportation design and execution
TB.01.03 Communicate ideas using appropriate industry terminology

Essential Learning & Skills | Describe the essential learning and skills addressed in this course. Students will know and be skilled at:

Attached.

D. Course Content

Course Outline | Add units and any key experiences or projects that students will engage in.

Attached.

E. Budget Considerations

Materials, Equipment, Supplies | List any new resources not already available necessary for this course. This might include subscriptions, technology, or other various resources needed for the course.

___ *Textbooks* Title(s): Approximate total cost:	___ *Digital Curriculum Resources* Title(s): Approximate total cost: One-time cost or annual renewal?
___ *Other Curriculum Materials (consumables, supplies, ancillaries, etc.)* Materials: Consumable/non-consumable? Approximate total cost:	___ *Technology Devices/Equipment/Hardware* Devices/equipment needed: Approximate cost:
___ *Staff Development* Staff Development description: Approximate cost: Frequency (one time? yearly?):	____ Follow Up Plan Additional Staff Development Check in Meetings

FINAL APPROVAL PRIOR TO SCHOOL BOARD MEETING

John-Paul Jacobson

_____

Director of Teaching and Learning Signature

November 6, 2025

Proposed School Board Meeting Date:

CAR022E2-ALV Construction Exploration INTL

Day	Lesson Name	Assignment Given (if applicable)	Assignment Due (if applicable)
1	Unit 1: DCA Introduction 1.01 DCA Introduction	1.01 DCA Discussion: Introduction	1.01 DCA Discussion: Introduction
2	Unit 2: Exploring Heavy Equipment 2.01 Nomenclature Lesson: Crawler Mounted Equipment (Part 1) 2.02 Nomenclature Lesson: Crawler Mounted Equipment (Part 2)		
3	Unit 2: Exploring Heavy Equipment 2.03 Nomenclature Lesson: Rubber Tired Equipment (Part 1) 2.04 Nomenclature Lesson: Rubber Tired Equipment (Part 2)		
4	Unit 2: Exploring Heavy Equipment 2.05 Nomenclature Lesson: Rubber Tired Equipment (Part 3) 2.06 Nomenclature Lesson: Compaction Equipment		
5	Unit 2: Exploring Heavy Equipment 2.07 Nomenclature Lesson: Grading and Ditching Equipment (Part 1) 2.08 Nomenclature Lesson: Grading and Ditching Equipment (Part 2)		
6	Unit 2: Exploring Heavy Equipment 2.09 Nomenclature Lesson: Revolving Equipment (Part 1) 2.10 Nomenclature Lesson: Revolving Equipment (Part 2)		
7	Unit 2: Exploring Heavy Equipment 2.11 Nomenclature Lesson: Revolving Equipment (Part 3)		
8	Unit 2: Exploring Heavy Equipment 2.12 Quiz: Equipment "Families"	2.12 Quiz Equipment "Families"	2.12 Quiz: Equipment "Families"
9	Unit 3: Effective Communications in Construction 3.01 Effective Communications in Construction Presentation		
10	Unit 3: Effective Communications in Construction 3.02 Backhoe Hand Signals Video		
11	Unit 3: Effective Communications in Construction 3.03 Earth Moving Signals Video Activity		
12	Unit 3: Effective Communications in Construction 3.04 DCA Crane Signals		
13	Unit 3: Effective Communications in Construction 3.05 DCA Audible Alarms		

14	Unit 3: Effective Communications in Construction 3.06 Colors and Signs		
15	Unit 3: Effective Communications in Construction 3.06 Colors and Signs		
16	Unit 3: Effective Communications in Construction 3.07 Quiz: Effective Communications	3.07 Quiz: Effective Communications	3.07 Quiz: Effective Communications
17	Unit 4: Career Pathways and Quality of Life 4.01 History of American Construction		
18	Unit 4: Career Pathways and Quality of Life 4.02 Discussion: Then & Now - Quality of Life	4.02 Discussion: Then & Now - Quality of Life	
19	Unit 4: Career Pathways and Quality of Life 4.03 DCA Quality of Life		4.02 Discussion: Then & Now - Quality of Life
20	Unit 4: Career Pathways and Quality of Life 4.04 Graded Assignment: Explore More: Wages and Employment Outlook	4.04 Graded Assignment: Explore More: Wages and Employment Outlook	
21	Unit 4: Career Pathways and Quality of Life 4.04 Graded Assignment: Explore More: Wages and Employment Outlook (cont.)		4.04 Graded Assignment: Explore More: Wages and Employment Outlook
22	Unit 4: Career Pathways and Quality of Life 4.05 DCA Industry Choices		
23	Unit 4: Career Pathways and Quality of Life 4.06 Graded Assignment: Career Pathways Pros and Cons Reflection	4.06 Graded Assignment: Career Pathways Pros and Cons Reflection	
24	Unit 4: Career Pathways and Quality of Life 4.06 Graded Assignment: Career Pathways Pros and Cons Reflection (cont.)		4.06 Graded Assignment: Career Pathways Pros and Cons Reflection
25	Unit 5: Program Requirements 5.01 DCA Program Requirements		
26	Unit 5: Program Requirements 5.02 Quiz: Requirements & Jobsite Characteristics Quiz	5.02 Quiz: Requirements & Jobsite Characteristics	5.02 Quiz: Requirements & Jobsite Characteristics
27	Unit 5: Program Requirements 5.03 DCA Federal Requirements Matching Activity		
28	Unit 5: Program Requirements 5.03 DCA Federal Requirements Matching Activity (cont.)		
29	Unit 5: Program Requirements 5.04 Graded Assignment: Program Requirements Pros and Cons Reflection	5.04 Graded Assignment: Program Requirements Pros and Cons Reflection	

30	Unit 5: Program Requirements 5.04 Graded Assignment: Program Requirements Pros and Cons Reflection (cont.)		5.04 Graded Assignment: Program Requirements Pros and Cons Reflection
31	Unit 6: Safety and Risk 6.01 DCA Safety and Risks		
32	Unit 6: Safety and Risk 6.02 Graded Assignment: Explore More: Safety and Risk Statistics	6.02 Graded Assignment: Explore More: Safety and Risk Statistics	
33	Unit 6: Safety and Risk 6.02 Graded Assignment: Explore More: Safety and Risk Statistics (cont.)		6.02 Graded Assignment: Explore More: Safety and Risk Statistics
34	Unit 6: Safety and Risk 6.03 Discussion: Then & Now – Safety	6.03 Discussion: Then & Now – Safety	
35	Unit 6: Safety and Risk 6.03 Discussion: Then & Now- Safety 6.04 Technology		6.03 Discussion: Then & Now – Safety
36	Unit 6: Safety and Risk 6.05 Grove GMK6400 Crane Operations		
37	Unit 6: Safety and Risk 6.06 Graded Assignment: Safety and Risk Pros and Cons Reflection	6.06 Graded Assignment: Safety and Risk Pros and Cons Reflection	
38	Unit 6: Safety and Risk 6.06 Graded Assignment: Safety and Risk Pros and Cons Reflection (cont.)		6.06 Graded Assignment: Safety and Risk Pros and Cons Reflection
39	Unit 7: Conclusion 7.01 Graded Assignment: Capstone	7.01 Graded Assignment: Capstone	
40	Unit 7: Conclusion 7.01 Graded Assignment: Capstone (cont.)		
41	Unit 7: Conclusion 7.01 Graded Assignment: Capstone (cont.)		
42	Unit 7: Conclusion 7.01 Graded Assignment: Capstone (cont.)		7.01 Graded Assignment: Capstone
43	Unit 8: Construction Career Exploration Project 8.01: Graded Assignment: Construction Career Exploration Project	8.01: Graded Assignment: Construction Career Exploration Project	
44	Unit 8: Construction Career Exploration Project 8.01: Graded Assignment: Construction Career Exploration Project (cont.)		
45	Unit 8: Construction Career Exploration Project 8.01: Graded Assignment: Construction Career Exploration Project (cont.)		8.01: Graded Assignment: Construction Career Exploration Project