



# 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?  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> Yes  <i>* For all departments in the instructional review process, new courses will be developed as part of that work.</i>	<input checked="" type="checkbox"/> No  What approximate year is your department scheduled to begin?	

## 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.

<b>Gaps/Needs</b>   <u>State the current issues and gaps for why this course is needed.</u> <i>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?</i>
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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.*

#### **MN CTE Frameworks:**

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**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.

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

FINAL APPROVAL PRIOR TO SCHOOL BOARD MEETING

John-Paul Jacobson

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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