FLEMING

Course Outline

Course Title:	Heavy Equipment Basic Systems Maintenance		
Course Number:	MECH429	**Approval Date:**	2025/11/27
Course Hours:	48 hours	**Academic Year:**	2025
Academic School:	School of Trades & Technology		
Program Co-ordinator or Equivalent:	Jordan Dysart - Jordan.Dysart@flemingcollege.ca		
Dean (or Chair):	Lisa Fenn - Lisa.Fenn@flemingcollege.ca		

Course Description

This course will look at the basics of operation of various systems that are used within heavy equipment . The student will look briefly at the function and basic operating principles of those systems as well as focusing on the responsibility of the machine operator with regards to the inspection and maintenance of those systems.

Prerequisites: None.

Corequisites: None.

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Use the Operations and Maintenance Manual to determine best maintenance and inspection procedures according to Original Equipment Manufacturers recommendations
2. Select proper lubricants and fluids as outlined in the Operation and Maintenance Manual
3. Describe and demonstrate proper, thorough and safe inspection procedures as outlined in the equipment Operation and Maintenance Manual and OHSA guidelines

Learning Resources

Operations and Maintenance Manuals

Costs for learning resources can be found on the Campus Store website, using the links below, or by visiting the Campus Store location at your campus.

- Sutherland: https://www.bkstr.com/sfleming-sutherlandstore/home

- Frost: https://www.bkstr.com/sfleming-froststore/home

Assessment Summary

Assessment Task	Percentage
In-class activities	44%
Labs	30%
Tests	26%

Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to college Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- Academic Integrity (2-201A) (https://department.flemingcollege.ca/hr/attachment/7750/download)
- Accessibility for Persons with Disabilities (3-341) (https://department.flemingcollege.ca/hr/attachment/5619/download)
- Grading and Academic Standing (2-201C) (https://department.flemingcollege.ca/hr/attachment/7752/download)
- Guidelines for Professional Practice: Students and Faculty (https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf)
- Student Rights and Responsibilities (5-506) (https://department.flemingcollege.ca/hr/attachment/269/download)

If you will need academic accommodations (for example if you have a learning disability, mental health condition such as anxiety or depression or if you had an IEP in high school), please contact the Accessible Education Services (AES) department (https://department.flemingcollege.ca/aes/) to meet with a counsellor.

Alternate accessible formats of learning resources and materials will be provided, on request.

Program Standards

The **Ministry of Colleges and Universities** oversees the development and the review of standards for programs of instruction. The **Ministry of Labour Training and Skills Development** oversees the development and the review of standards for programs of instruction for Apprenticeship training in the province of Ontario. Each college is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the Ministry of Colleges and Universities (MCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- **Vocational standards** (the vocationally specific learning outcomes which apply to the program of instruction in question);
- **Essential employability skills** (the essential employability skills learning outcomes which apply to all programs of instruction); and
- **General education requirement** (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).

Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to graduate from the program. For further information on the standards for your program, follow the MCU link (www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/).

Detail Plan

Term: 2025 Fall

Program Co-ordinator or Equivalent: Jordan Dysart - Jordan.Dysart@flemingcollege.ca

Dean (or Chair): Lisa Fenn - Lisa.Fenn@flemingcollege.ca

Learning Plan

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Lesson 1	Grease and Greasing	1-2	Students will demonstrate that they can properly use a grease gun, identify types of grease, use the right resources to find and lubricate of grease points on assigned machine and apply the proper amount of grease.
Lesson 2	Maintenance Manuals and Service Schedules	1-3	Learn to complete a thorough and timely daily inspection on a machine assigned to them using an OMM and HEO daily inspection sheet.
Lesson 3	Engine Compartment Checks	1-3	Complete lab sheet using OMM for basic engine compartment daily checks, perform circle check on entire assigned machine. Identify various engine compartment systems of their assigned machine.

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Lesson 4	Powertrains	1-3	Complete lab sheet using OMM and identify what type of powertrain system their assigned machine uses, how to check fluid levels in specific powertrain system. Perform circle check on entire assigned machine.
Lesson 5	Hydraulic Systems	1-3	Complete lab sheet using OMM and identify what hydraulic components are utilized in their assigned machine and how to check the fluid level of the hydraulic system. Perform circle check on entire assigned machine.
Lesson 6	Electrical Systems	1,3	Complete lab sheet using OMM and identify a list of electrical components on their assigned machine as well as properly locate said components. Perform circle check on entire assigned machine.
Lesson 7	Battery Safety and Boosting	1,3	Complete lab sheet using OMM and identify battery locations and voltages on assigned machine. Learn how to properly boost on different voltage systems, discuss batteries and how to properly boost assigned machine. Perform circle check on entire assigned machine.
Lesson 8	Tires	1,3	Complete lab sheet using OMM to identify any machine specific tire specs. Look at construction of tire with a cutaway model. Perform circle check on entire assigned machine and tires if applicable.
Lesson 9	Tracks	1,3	Complete lab sheet using OMM from multiple machines to identify inspection points, wear points and how to properly adjust track tension. Perform circle check on entire assigned machine and tracks if applicable.
Lesson 10	Ground Engaging Tools	1,3	Complete lab sheet using OMM to identify what type of GET your assigned machine has, the interval of when and how to properly change that GET. Perform circle check on entire assigned machine.
Lesson 11	Small Engines	1	Complete lab sheet while checking small gas powered engine for spark and performing basic carburetor adjustments. Perform circle check on entire assigned machine.
Week 12	Final Practical Test	1-3	Perform an entire circle check on an assigned machine one on one with the instructor while verbally telling the instructor what part of the machine they are looking at and what deficiencies they are looking for. Using knowledge learned in class and the OMM.

Assessment Requirements

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
Daily Practical Assessment	Weeks 1-11	1,3	44%
Daily Lab Sheets	Weeks 2-11	1-3	30%
1 on 1 Practical Final Assessment performing circle check	Week 12	1-3	26%

Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms. PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into a college credit, may initiate the process by applying through the Registrar's office. For more information please click on the following link: http://flemingcollege.ca/admissions/prior-learning-assessment-and-recognition

Course Specific Policies and Procedures

It is the responsibility of the student to retain this course outline for future reference. Course outlines may be required to support applications for advanced standing and credit transfer to other educational institutions, portfolio development, PLAR and accreditation with professional associations.

Synchronous sessions may be recorded. As a result, your image, voice, name, personal views and opinions, and course work may be collected under legal authority of section 2 of the Ontario Colleges of Applied Arts and Technology Act, 2002. This information will be used for the purpose of supporting student learning. Any questions about this collection can be directed to the Privacy and Policy Officer at freedomofinformation@flemingcollege.ca or by mail to 599 Brealey Drive, Peterborough, ON K9J 7B1.

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1. It is VITALLY important for your success to submit ALL assignments and projects at the specified date, time, and location. The faculty member will provide all the relevant details. It should be noted that the School of Environmental and Natural Resources Science Office, Student Services, the Library and Admissions & Records will NOT accept any assignments or projects on your behalf. It is YOUR responsibility to submit the assignment or project on time.

2. Final grades in this course are assigned based on the level of academic achievement which corresponds to the assessment components as cited in this course outline. It is also important to note that faculty member(s) will NOT offer any additional evaluation activities beyond those cited in this course outline.

3.What ever the reason, missed evaluations and due dates for assignments, including those missed due to illness, will be dealt with on an "INDIVIDUAL BASIS", by the faculty member(s).We cannot evaluate what we can't see. If you are absent for a medical reason, we need a doctor's note to for evaluation purposes. If the student chooses to "skip" classes, they will be recieving a mark of zero.

4. Cell phones and or ANY personal communication devices (e.g. I pods, I phones) are an unsafe distraction. Their use is NOT ALLOWED as a phone, messaging system or entertainment device within the equipment facility, shop, working field or compound. Their use is only allowed in the designated area (smoking area). ANY FACULTY MEMBER observing a student using them, without prior permission from a faculty member, will be given a mark of "0" and dismissed from class for the rest of the day.

5. ALL EQUIPMENT CABS MUST BE CLEANED OF GARBAGE, AND WISKED OUT AT THE END OF THEIR OPERATIONAL SHIFT. ALL BUCKETS, BOTH FRONT AND BACK, MUST BE CLEANED OUT AT THE END OF YOUR SHIFT ALSO. Anyone found NOT participating in the above cited, will be given a mark of "0" for the day, an infraction card will be issued, and you will also be deducted (-5%)

6. Leaving class early for ANY reason without prior permission from the instructor(s), will result in a mark of "0" for the day.

7. Health and Safety Issues are paramount in the Heavy Equipment Industry. Therefore, constant vigilance in these areas are a MUST, and strictly enforced. Safety equipment must be used at ALL times where required.

8. It is HIGHLY RECOMMENDED that you review all the chapters and answer the chapter review questions in the Operating Techniques Book. Site works Is the planning and execution of job sites. Taking from paper to the field with everyday use MECH427 will prepare you for any construction jobs from planning to finishing .

ATTENDANCE REQUIREMENTS:

Regular attendance in ALL aspects of this 12 WEEK ENTRY LEVEL MASTERY TRAINING PROGRAM, in Heavy Equipment Operation, is essential for student success. This is vitally important. As skill development, and safety requirement training, builds progressively on a DAILY basis. Missed time on equipment, due to attendance issues will NOT be made up. If you feel you will miss class we request a courtesy emai to let us know you will be absent.