# ILM Publishing Report 2022: Heavy Equipment Technician

## Quality Assurance (QA) Maintenance Summary

The ILM office held a total of 23 QA Meetings in the 2021/22 academic year, which included over 90 attendees from 8 different institutions across Alberta. With support and feedback from these individuals, we were able to address and resolve over 700 maintenance comments across all ILM trades! We want to acknowledge each of the Programs and instructors that dedicated their time and effort to supporting this important maintenance work and express our gratitude for your support in our continuous improvement of ILM content for students and learners.

For Heavy Equipment Technician, there were 26 modules updated due to maintenance, and 36 individual maintenance comments were addressed. As part of this year’s ILM maintenance process, there were also a number of images and graphics within the ILMs reverted to a previous version. After significant consultation/feedback with Programs and stakeholders, the quality and accuracy of images and graphics from previous ILM versions was identified as being important for student learning and success. The *Maintenance Updates* column in the Module List section below indicates modules where this has occurred.

For more information on the ILM Comments and Maintenance process, please visit our website:

* ILM Maintenance: <https://ilm.nait.ca/ilm-maintenance>
* Comments: <https://ilm.nait.ca/comments>

QA Maintenance meeting dates for the 2022/23 academic year will be finalized and shared in September 2022.

Program Updates

Following the HET QA meeting in November, a series of additional meetings were held from November through February to perform a more detailed and comprehensive review of over 100 images and graphics within 24 modules throughout Periods 1-4. Over the course of several months, approximately 20 different instructors from multiple Alberta institutions provided their time and input to assist with image and graphics improvements, enhancements, and corrections. The ILM team wanted to extend a special note of thanks to this group for their support with this work.

## Brand Refresh

The 2022 ILM publication includes a brand refresh for all (English) ILM files. This brand refresh only impacts the style/format of ILM products. It does not impact the content within the ILMs. Changes for each ILM product type include updates to the front and back covers of ILM files, ILM Graphics PowerPoint template, and both student and instructor Digital ILM templates.

## Module List

\*Maintenance updates include image/graphic updates, addressing of website comments, and changes identified at annual Quality Assurance meetings.

### First Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version[[1]](#footnote-2)** | **Maintenance Updates\*** | **Rebrand Updates**  |
| 190101a | Safety Legislation Regulations and Industry Policy in the Trades | 24.0 | ✓ | ✓ |
| 190101b | Climbing Lifting Rigging and Hoisting | 24.0 | ✓ | ✓ |
| 190101c | Hazardous Materials and Fire Protection | 24.0 |  | ✓ |
| 190101d | Communications and Trade Specific Safety | 24.0 | ✓ | ✓ |
| 190101e | Materials and Fastening Devices | 24.0 | ✓ | ✓ |
| 190101f | Hand Shop and Power Tools | 24.0 | ✓ | ✓ |
| 190101g | Measuring Tools | 24.0 | ✓ | ✓ |
| 190101h | Oxyacetylene Equipment Heating and Cutting | 24.0 | ✓ | ✓ |
| 190102a | Frame and Suspension Fundamentals | 24.0 | ✓ | ✓ |
| 190102b | Frame and Suspension Service | 24.0 | ✓ | ✓ |
| 190102c | Bearings and Seals | 24.0 |  | ✓ |
| 190102d | Wheels, Tires and Hubs | 24.0 | ✓ | ✓ |
| 190102e | Trailer Systems and Components | 24.0 | ✓ | ✓ |
| 190102f | Coupling Units Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190102g | Landing Gear Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190102h | Orientation to Trailer Inspection | 24.0 | ✓ | ✓ |
| 190102i | Preventive Maintenance | 24.0 | ✓ | ✓ |
| 190103a | Hydraulic Brake System Fundamentals | 24.0 | ✓ | ✓ |
| 190103b | Hydraulic Brake System (Drum and Disc) | 24.0 |  | ✓ |
| 190103c | Hydraulic Brake System Diagnosis and Service | 24.0 | ✓ | ✓ |
| 190103d | Hydraulic Brake Booster System Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190103e | Parking Brake System Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190103f | Electric Brake Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190103g | Hydraulic Fundamentals | 24.0 | ✓ | ✓ |
| 190103h | Hydraulic System Components: Reservoir Filters Hoses and Coolers | 24.0 | ✓ | ✓ |
| 190103i | Hydraulic System Components: Pumps, Valves and Cylinders | 24.0 | ✓ | ✓ |
| 190104a | Electrical Theory | 24.0 | ✓ | ✓ |
| 190104b | Electrical Circuits | 24.0 |  | ✓ |
| 190104c | Magnetism | 24.0 | ✓ | ✓ |
| 190104d | Test Equipment | 24.0 | ✓ | ✓ |
| 190104e | Battery Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190104f | Electrical Wiring Lighting Circuits and Circuit Protection | 24.0 | ✓ | ✓ |
| 190104g | Basic Electronics | 24.0 | ✓ | ✓ |
| 190104h | Electronic Control Systems | 24.0 | ✓ | ✓ |
| 190105a | Air Brake System Fundamentals | 24.0 | ✓ | ✓ |
| 190105b | Air Brake System Mechanical Components | 24.0 | ✓ | ✓ |
| 190105cA | Truck/Tractor Air Brake System Components - Part A | 24.0 | ✓ | ✓ |
| 190105cB | Truck/Tractor Air Brake System Components - Part B | 24.0 | ✓ | ✓ |
| 190105d | Trailer Air Brake System Components | 24.0 | ✓ | ✓ |
| 190105e | Air Brake System Testing and Service | 24.0 | ✓ | ✓ |
| 190105f | Air Antilock Brake System Fundamentals | 24.0 | ✓ | ✓ |

### Second Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| 190201a | Engine Fundamentals | 24.0 | ✓ | ✓ |
| 190201b | Engine Block and Cylinder Liner Fundamentals | 24.0 | ✓ | ✓ |
| 190201c | Engine Block and Cylinder Liner Service | 24.0 | ✓ | ✓ |
| 190201d | Piston, Piston Rings and Connecting Rod Fundamentals | 24.0 | ✓ | ✓ |
| 190201e | Piston, Piston Rings and Connecting Rod Service | 24.0 |  | ✓ |
| 190201f | Crankshaft Bearings and Related Component Fundamentals | 24.0 | ✓ | ✓ |
| 190201g | Crankshaft Bearings and Related Component Service | 24.0 | ✓ | ✓ |
| 190201h | Camshaft and Follower Fundamentals | 24.0 | ✓ | ✓ |
| 190201i | Camshaft and Follower Service | 24.0 | ✓ | ✓ |
| 190201j | Cylinder Head Fundamentals | 24.0 | ✓ | ✓ |
| 190201kA | Cylinder Head Service - Part A | 24.0 | ✓ | ✓ |
| 190201kB | Cylinder Head Service - Part B | 24.0 | ✓ | ✓ |
| 190201l | Engine Braking System Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190202a | Air Induction and Exhaust Systems | 24.0 | ✓ | ✓ |
| 190202b | Turbocharged Air Systems | 24.0 | ✓ | ✓ |
| 190202c | Lubrication Systems and Crankcase Ventilation | 24.0 | ✓ | ✓ |
| 190202dA | Cooling Systems (Liquid and Air) - Part A | 24.0 |  | ✓ |
| 190202dB | Cooling Systems (Liquid and Air) - Part B | 24.0 | ✓ | ✓ |
| 190203a | Diesel Fuel and Storage Tanks (Machine and Bulk Storage) | 24.0 | ✓ | ✓ |
| 190203b | Combustion Process and Starting Aids | 24.0 | ✓ | ✓ |
| 190203c | Basic Mechanical Fuel Injection System | 24.0 | ✓ | ✓ |
| 190203d | Fuel System Service | 24.0 | ✓ | ✓ |
| 190203e | Advanced Mechanical Fuel Injection Systems | 24.0 |  | ✓ |
| 190203f | Basic Diesel Engine and Fuel system Testing and Adjusting | 24.0 | ✓ | ✓ |
| 190203g | Emergency Shutdown Systems | 24.0 | ✓ | ✓ |
| 190204a | Electronic Fuel System Fundamentals | 24.0 | ✓ | ✓ |
| 190204b | Electronically Controlled Fuel Injection Systems | 24.0 |  | ✓ |
| 190204c | Electronic Fuel System Diagnosis | 24.0 | ✓ | ✓ |
| 190204d | Emission Control/After Treatment Systems | 24.0 | ✓ | ✓ |
| 190205a | Charging System and Control Circuit Fundamentals | 24.0 | ✓ | ✓ |
| 190205b | Charging System Testing and Service | 24.0 | ✓ | ✓ |
| 190205c | Cranking System Fundamentals and Motor Drives | 24.0 | ✓ | ✓ |
| 190205d | Cranking System Control Circuits | 24.0 | ✓ | ✓ |
| 190205e | Cranking System Testing and Service | 24.0 | ✓ | ✓ |
| 190205f | Non-Electric Cranking Systems | 24.0 | ✓ | ✓ |

### Third Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| 190301a | Hydraulic Principles | 24.0 | ✓ | ✓ |
| 190301b | Hydraulic Pump Fundamentals | 24.0 | ✓ | ✓ |
| 190301c | Hydraulic Pump Service | 24.0 | ✓ | ✓ |
| 190301d | Hydraulic Actuator Fundamentals | 24.0 | ✓ | ✓ |
| 190301e | Hydraulic Actuator Service | 24.0 | ✓ | ✓ |
| 190301fA | Hydraulic Valve II - Part A | 24.0 | ✓ | ✓ |
| 190301fB | Hydraulic Valve II - Part B | 24.0 | ✓ | ✓ |
| 190301g | Hydraulic Systems Types | 24.0 | ✓ | ✓ |
| 190301h | Hydraulic System Testing and Service | 24.0 | ✓ | ✓ |
| 190301i | Electrohydraulics | 24.0 | ✓ | ✓ |
| 190302aA | Wheeled Equipment Steering Fundamentals and Service - Part A | 24.0 | ✓ | ✓ |
| 190302aB | Wheeled Equipment Steering Fundamentals and Service - Part B | 24.0 | ✓ | ✓ |
| 190302b | Suspension System Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190302cA | Off-Road Equipment Accessories and Attachments - Part A | 24.0 | ✓ | ✓ |
| 190302cB | Off-Road Equipment Accessories and Attachments - Part B | 24.0 | ✓ | ✓ |
| 190302dA | Off-Road Electrical Circuit Fundamentals - Part A | 24.0 | ✓ | ✓ |
| 190302dB | Off-Road Electrical Circuit Fundamentals - Part B | 24.0 | + | ✓ |
| 190302e | Off-Road Electrical Circuit Service | 24.0 | ✓ | ✓ |
| 190302f | Workplace Coaching Skills | 24.0 | ✓ | ✓ |
| 190302g | Alberta’s Industry Network | 24.0 | ✓ | ✓ |
| 190302h | Interprovincial Standards Red Seal Program | 24.0 | ✓ | ✓ |
| 190303a | Gearing Principles | 24.0 | ✓ | ✓ |
| 190303b | Torque Converter Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190303c | Powershift and Automatic Transmission Mechanical/Electronic Components | 24.0 | ✓ | ✓ |
| 190303d | Powershift and Automatic Transmission Control and Shifting | 24.0 | ✓ | ✓ |
| 190303e | Hydraulic Retarder Fundamentals | 24.0 | ✓ | ✓ |
| 190303f | Powershift and Automatic Transmission Testing and Service | 24.0 | ✓ | ✓ |
| 190303gA | Tracked Equipment Steering Fundamentals and Service - Part A | 24.0 | ✓ | ✓ |
| 190303gB | Tracked Equipment Steering Fundamentals and Service - Part B | 24.0 | ✓ | ✓ |
| 190303hA | Undercarriage Systems Fundamentals and Service - Part A | 24.0 | ✓ | ✓ |
| 190303hB | Undercarriage Systems Fundamentals and Service - Part B | 24.0 | ✓ | ✓ |
| 190303i | Final Drive Fundamentals and Service (Off-Road) | 24.0 | ✓ | ✓ |
| 190303jA | Drive Axle and Carrier Fundamentals and Service (Off-Road) - Part A | 24.0 | ✓ | ✓ |
| 190303jB | Drive Axle and Carrier Fundamentals and Service (Off-Road) - Part B | 24.0 | ✓ | ✓ |
| 190303k | Clutch Fundamentals and Service (Off-Road) | 24.0 | ✓ | ✓ |

### Fourth Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| 190401a | Clutch Fundamentals and Service (On-Road) | 24.0 | ✓ | ✓ |
| 190401b | Driveline Fundamentals and Service | 24.0 | ✓ | ✓ |
| 190401c | Gearing Principles | 24.0 | ✓ | ✓ |
| 190401dA | Transmission Fundamentals - Part A | 24.0 | ✓ | ✓ |
| 190401dB | Transmission Fundamentals - Part B | 24.0 | ✓ | ✓ |
| 190401e | Transmission Shifting | 24.0 | ✓ | ✓ |
| 190401fA | Transmission Service - Part A | 24.0 | ✓ | ✓ |
| 190401fB | Transmission Service - Part B | 24.0 | ✓ | ✓ |
| 190401g | Transfer Case and Auxiliary Drives | 24.0 | ✓ | ✓ |
| 190401h | Drive Axle Assembly Fundamentals (On-Road) | 24.0 |  | ✓ |
| 190401i | Drive Axle Assembly Service (On-Road) | 24.0 | ✓ | ✓ |
| 190402a | Steering Fundamentals | 24.0 | ✓ | ✓ |
| 190402b | Steering Service | 24.0 |  | ✓ |
| 190402c | Steering Angles and Alignment | 24.0 | ✓ | ✓ |
| 190402d | Air Antilock Brake Systems | 24.0 | ✓ | ✓ |
| 190402e | Air Antilock Brake System Diagnosis | 24.0 | ✓ | ✓ |
| 190402f | Hydraulic Antilock Brake Systems | 24.0 | ✓ | ✓ |
| 190403a | Air Conditioning Fundamentals | 24.0 | ✓ | ✓ |
| 190403b | Heating, Ventilation and Air Conditioning (HVAC) Control Systems | 24.0 | ✓ | ✓ |
| 190403cA | Air Conditioning Testing and Service - Part A | 24.0 | ✓ | ✓ |
| 190403cB | Air Conditioning Testing and Service - Part B | 24.0 | ✓ | ✓ |
| 190404aA | Truck Electrical Circuit Fundamentals - Part A | 24.0 |  | ✓ |
| 190404aB | Truck Electrical Circuit Fundamentals - Part B | 24.0 | ✓ | ✓ |
| 190404b | Truck Electrical Circuit Service | 24.0 | ✓ | ✓ |
| 190404c | Failure and Fluid Analysis | 24.0 | ✓ | ✓ |
| 190404d | Orientation to Vehicle Inspection | 24.0 |  | ✓ |
| 190404e | Workplace Coaching Skills | 24.0 | ✓ | ✓ |
| 190404f | Alberta’s Industry Network | 24.0 | ✓ | ✓ |
| 190404g | Interprovincial Standards Red Seal Program | 24.0 | ✓ | ✓ |

### Additional Modules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| A190103d | Hydraulic Brake Booster System Fundamentals and Service | 24.0 | ✓ | ✓ |
| A190103e | Mechanical Steering Diagnosis and Adjustment | 24.0 | ✓ | ✓ |
| A190107c | Hydraulic System Components: Pumps and Motors | 24.0 | ✓ | ✓ |
| A190107d | Hydraulic System Components: Valves, Cylinders and Accumulators | 24.0 | ✓ | ✓ |
| A190107e | Hydraulic System Types | 24.0 | ✓ | ✓ |
| A190202b | Supercharged Air Systems | 24.0 | ✓ | ✓ |
| A190203g | Diesel Fuel Injector Fundamentals and Service | 24.0 | ✓ | ✓ |
| A190301j | Hydraulics II Coloured Graphics Package | 24.0 | ✓ | ✓ |
| A190303b | Hydraulic Pump Service | 24.0 | ✓ | ✓ |
| A190303e | Advanced Hydraulic Systems (Open Centre, Closed Centre Hydrostatic Drives) | 24.0 | ✓ | ✓ |
| A190308a | Preventive Maintenance | 24.0 | ✓ | ✓ |
| A190402a | Steering Fundamentals | 24.0 | ✓ | ✓ |
| A190402b | Steering Service | 24.0 | ✓ | ✓ |
| A190402c | Steering Angles and Alignment | 24.0 | ✓ | ✓ |
| A190403a | Ignition System Fundamentals | 24.0 | ✓ | ✓ |
| A190403b | Gasoline Fuel System Fundamentals | 24.0 | ✓ | ✓ |
| A190403c | Alternate Fuels | 24.0 | ✓ | ✓ |
| A190404a | Air Antilock Brake Systems | 24.0 | ✓ | ✓ |
| A190404b | Air Antilock Brake System Diagnosis | 24.0 | ✓ | ✓ |
| A190404c | Hydraulic Antilock Brake Systems | 24.0 | ✓ | ✓ |
| A190409a | Preventive Maintenance | 24.0 | ✓ | ✓ |

1. ILMs are updated on a module-by-module basis; not all modules in a Period are updated within the same cycle, and a combination of different version numbers within a Period is normal. **However, every module has received a new edition number for the 2022 publishing cycle to reflect their rebranding.** The most current, published version of each module will always be the version that is posted on the [Order Modules](https://ilm.nait.ca/order-modules) page of the ILM website. [↑](#footnote-ref-2)