



VANCOUVER ISLAND  
UNIVERSITY

## **First day of Class Information and Booklist Heavy Mechanical Trades Apprenticeship**

### **First day of class:**

- ✓ Bring steel toed boots and CLEAR safety glasses for the shop.
- ✓ Classroom: Bldg 165, Room 108      Shop: Bldg 110, Heavy Duty Shop
- ✓ Heavy Mechanical Trades Instructor's office is located in Bldg 110, Heavy Duty Shop

### **Classroom/shop hours:**

- ✓ Monday to Thursday; 8am to 2:45pm
- ✓ Coffee time; 10am to 10:15am
- ✓ Lunch; 12 to 12:45pm
- ✓ End of day; 2:45pm
- ✓ Friday – Homework, shop reports and study day

### **Instructor and Tool Room Contact #s:**

- ✓ Instructor(s): Jason Sutton (Chair of the Department) 250-740-6120,  
Joe Skipsey 250-740-6110, George Douglas 250-740-6267
- ✓ Heavy Mechanical Trades shop Tool Room: Neil Taberner 250-740-6124

### **Study Skills:**

- ✓ It is recommended that you take notes in class and review them each night. Any questions that you have should be brought to the attention of the instructor either in class or in the shop. When studying you must consider all areas of the topic. The following is a list of things to consider when you are reviewing or studying for exams:
  - Terminology, you must learn the names of all components.
  - Basics of operation.
  - Troubleshooting and test procedures.
  - Repair procedures.
- ✓ Remember it is in your best interest to learn as much as possible when you attend your technical training session. Extra help with study techniques may be available for apprentices, who feel that they are not able to get the most out of each technical session, ask your instructor.



### Marking:

- ✓ Each technical training session is divided in to two parts when marking:
  - Theory; counts for 80% of your final mark.
  - Practical; determined by the number of shop projects completed, speed and quality of work achieved. Other factors in the practical mark are attitude, initiative and attendance. Counts for 20% of your final mark.
  - Final; theory + practical = Final Mark. You must obtain 70% or greater to pass the technical training.

### First Aid – All emergencies must be reported to 6600 – **DO NOT CALL 911.**

- ✓ Dial 6600 from an internal phone, or dial 250-740-6600 from an outside phone.
- ✓ Be prepared to tell the operator your:
  - Name
  - Campus location (building and room)
  - Nature of emergency (first aid, ambulance, police, fire)
  - Extent of the emergency and the number of person involved
- ✓ The PFAA (Primary First Aid Attendant) will respond to the emergency.
- ✓ Facilities Services Employees will direct the Emergency Response Vehicle(s) to the appropriate location.

Please report all injuries to your instructor immediately or as soon as possible.

### College closures for snow

- ✓ Listen for announcements on local radio, FM: WAVE 102.3, Wolf 106.9, CHLY 101.7
- ✓ College Switchboard 250-753-3245 after 6am

### Food Services

- ✓ Lunch is available on campus at the Student Activity Building (Bldg 185), the Cafeteria (Bldg300) or at Subway (Bldg 165)

### Student Cautions

- ✓ VIU has a non-smoking regulation in all buildings.
- ✓ Pay parking and speed regulations on campus are enforced.
- ✓ Instructors must OK any work to be done on student properties (Vehicle, boat, trailer, etc.).
- ✓ All tools, props, equipment and vehicles must be treated with respect; they must be used many times by many apprentices.
- ✓ Instructors are here to help you learn, but you are also responsible for how much and how well you learn.



## Course Textbooks

<b>Level 1 Heavy Mechanical Trades</b>	
<b>Alberta Line Booklets</b>	See separate info sheet after 4 <sup>th</sup> year book list

<b>Level 2 Heavy Mechanical Trades</b>	
<b>Textbooks</b>	<ul style="list-style-type: none"><li>• Norman/ Diesel Technology 8<sup>th</sup> Edition ISBN-978-1-61960-832-0</li><li>• Deere / Electronic &amp; Electrical ISBN-0-86691-382-3</li><li>• Bennett / Medium/Heavy Duty Truck Engines, Fuel &amp; Computerized Management Systems ISBN-1-111-64569-8</li></ul>

<b>Level 3 Heavy Mechanical Trades</b>	
<b>Textbooks</b>	<ul style="list-style-type: none"><li>• Modern Diesel Technology Heavy Equipment Systems 2<sup>nd</sup> Ed , Huzij, Spano, Bennett Delmar ISBN-978-1-133-69336-9</li><li>• Heavy Duty Truck Systems 6<sup>th</sup> Ed Sean Bennett Cengage Learning ISBN-978-1-3050-7362-3</li></ul>

<b>Level 4 Heavy Mechanical Trades</b>	
<b>Textbooks</b>	<ul style="list-style-type: none"><li>• Hydraulic Systems for Mobile Equipment 1st Edition, Timothy W. Dell Goodheart-Willcox Publisher ISBN-978-1-63126-414-6</li><li>• Modern Diesel Technology Heavy Equipment Systems 2<sup>nd</sup> Edition, Robert Huzij, Angelo Spano, Sean Bennett Delmar Cengage Learning ISBN-978-1-133-69336-9</li></ul>



## **Level 1 Booklist**

### **Line A OCCUPATIONAL SKILLS**

#### **A1–A6**

79600003495 Common Occupational Skills - Book 1 HMT - BC

#### **A7-A13**

79600003496 Common Occupational Skills - Book 2 HMT - BC

#### **A14-A17**

79600003510 Common Occupational Skills - Book 3 HMT - BC

### **Line B BRAKES**

#### **B1**

#### **Service and Repair Hydraulic Brakes**

7850001375 Hydraulic Brake System Fundamentals(190103a) HET - Alberta

7850001376 Hydraulic Brake System (Drum and Disc) (190103b) HET - Alberta

7850001377 Hydraulic Brake System Diagnosis and Service (190103c) HET - Alberta

7850001379 Parking Brake System Fundamentals and Service (190103e) HET - Alberta

#### **B2**

#### **Service and Repair Hydraulic Power Brakes**

7850001378 Hydraulic Brake Booster System Fundamentals and Service (190103d) HET - Alberta

7850003325 Hydraulic Antilock Brake Systems (A190404c) HET - Alberta

#### **B3**

#### **Service and Repair Air Brakes**

7850001393 Air Brake System Fundamentals (190105a) HET - Alberta

7850001394 Air Brake System Mechanical Components (190105b) HET - Alberta

7850002381 Truck/Trailer Air Brake System Components - Part A (190105cA) HET - Alberta

7850002848 Truck/Trailer Air Brake System Components - Part B (190105cB) HET - Alberta

7850002382 Trailer Air Brake System Components (190105d) HET - Alberta

7850002383 Air Brake Testing and Service (190105e) HET - Alberta

Free Book Driving Commercial Vehicles ICBC - BC

### **Line C HYDRAULICS**

#### **C1–C2**

#### **Describe and Service Hydraulic Systems and Components**

7960003498 Hydraulics HMT - BC

### **Line D ELECTRICAL**

#### **D1**

#### **Describe Electricity**

7850001381 Electrical Theory (190104a) HET - Alberta

7850001382 Electrical Circuits (190104b) HET - Alberta

7850001383 Magnetism(190104c) HET - Alberta

7850002379 Basic Electronics (190104g) HET - Alberta

#### **D2**

#### **Use Electrical Testing Instruments**

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7850001384	Test Equipment (190104d)	HET - Alberta
<b>D3</b>	<b>Service and Diagnose Batteries</b>	
7850001385	Battery Fundamentals and Service (190104e)	HET - Alberta
<b>D4</b>	<b>Service Charging Systems</b>	
7850001438	Charging System and Control Circuit Fundamentals (190205a)	HET - Alberta
7850001439	Charging System Testing and Service (190205b)	HET - Alberta
<b>D6</b>	<b>Service Starting Systems</b>	
7850001440	Cranking System Fundamentals and Motor Drives (190205c)	HET - Alberta
7850001441	Second Period: Cranking System Control Circuits (190205d)	HET - Alberta
7850001442	Cranking System Testing and Service(190205e)	HET - Alberta
<b>D8</b>	<b>Service Electrical Circuits</b>	
7850001386	Electrical Wiring, Lighting Circuits and Circuit Protection (190104f)	HET - Alberta
7850002380	Electronic Control Systems (190104h)	HET - Alberta

### Line E FRAMES, STEERING, SUSPENSION & TRACKS

<b>E1</b>	<b>Service and Diagnose Tires, Wheels, and Hubs</b>	
7850002374	Wheels, Tires and Hubs(190102d)	HET - Alberta
<b>E2</b>	<b>Service Steering Systems</b>	
7850001474	Steering Fundamentals (190402a)	HET - Alberta
7850001475	Steering Service (190402b)	HET - Alberta
7850001447	Wheeled Equipment Steering Fundamentals and Service - Part A (190302aA)	HET - Alberta
7850002852	Wheeled Equipment Steering Fundamentals and Service - Part B (190302aB)	HET - Alberta
7850002459	Mechanical Steering Diagnosis and Adjustment (A190103e)	HET - Alberta
7850001457	Tracked Equipment Steering Fundamentals and Service - Part A (190303gA)	HET - Alberta
7850002854	Tracked Equipment Steering Fundamentals and Service - Part B (190303gB)	HET - Alberta
<b>E4</b>	<b>Service, Diagnose and Repair Suspension Systems</b>	
7850001374	Frame and Suspension Fundamentals (190102a)	HET - Alberta
7850002372	Frame and Suspension Service (190102b)	HET - Alberta
7850001448	Suspension System Fundamentals and Service (190302b)	HET - Alberta
<b>E5</b>	<b>Remove and Install Undercarriage</b>	
7850002416	Undercarriage Systems Fundamentals and Service - Part A (190303hA)	HET - Alberta
7850003316	Undercarriage Systems Fundamentals and Service - Part B (190303hB)	HET - Alberta
<b>E6</b>	<b>Diagnose and Repair Frames</b>	
Repeat book	Frame and Suspension Fundamentals (190102a)	HET - Alberta
Repeat book	Frame and Suspension Service (190102b)	HET - Alberta

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## Line F TRAILERS

<b>F1</b>	<b>Service Landing Gear and Trailer Accessories</b>	
7850002845	Landing Gear Fundamentals and Service (190102g)	HET - Alberta
<b>F2</b>	<b>Service and Repair Coupling Systems</b>	
7850002376	Coupling Units Fundamentals and Service (190102f)	HET - Alberta
<b>F3</b>	<b>Service, Diagnose and Repair Trailer Body components</b>	
7850002375	Trailer Systems and Components (190102e):	HET - Alberta
7850002377	Orientation to Trailer Inspection (190102h)	HET - Alberta
<b>F4</b>	<b>Service, Diagnose and Repair Trailer Heating &amp; Refrigeration Systems</b>	
See G1 & G2		HET - Alberta

## Line G HEATING, VENTILATION & AIR CONDITIONING

<b>G1</b>	<b>Describe Heating and Air Conditioning Fundamentals</b>	
7850001477	Air Conditioning Fundamentals (190403a)	HET - Alberta
7850001478	HVAC Control Systems (Heating, Ventilation and Air Conditioning) (190403b)	HET - Alberta
<b>G2</b>	<b>Service and Repair Coupling Systems</b>	
7850001479	Air Conditioning Testing and Service - Part A (190403cA)	HET - Alberta
7850002856	Air Conditioning Testing and Service - Part B (190403cB)	HET - Alberta

## Line H ENGINES & SUPPORT SYSTEMS

<b>H2</b>	<b>Service Engine Support Systems</b>	
7850001410	Engine Fundamentals (190201a)	HET - Alberta
7850001424	Cooling Systems (Liquid and Air) - Part A: (190202dA)	HET - Alberta
7850002850	Cooling Systems (Liquid & Air) - Part B: (190202dB)	HET - Alberta
7850001423	Lubrication Systems and Crankcase Ventilation (190202c)	HET - Alberta
7850001421	Air Induction and Exhaust Systems (190202a)	HET - Alberta
7850001422	Turbocharged Air Systems (190202b)	HET - Alberta
<b>H4</b>	<b>Service Diesel fuel Supply Systems</b>	
7850001425	Diesel Fuel and Storage Tanks (Machine and Bulk Storage) (190203a)	HET - Alberta
7850001426	Combustion Process and Starting Aids (190203b)	HET - Alberta
7850001427	Basic Mechanical Fuel Injection System (190203c)	HET - Alberta
7850001428	Fuel System Service (190203d):	HET - Alberta
<b>H6</b>	<b>Service Gasoline Fuel Systems</b>	

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7850002469	Gasoline Fuel System Fundamentals (A190403b)	HET - Alberta
<b>H9</b>	<b>Remove and Install Diesel Engines</b>	
<b>H16</b>	<b>Service, Diagnose and Repair Electronic Ignition Systems</b>	
7850002468	Ignition System Fundamentals (A190403a)	HET - Alberta
7850001102	Distributor Ignition Systems (A090303b)	AST - Alberta
7850001103	Electronic Ignition Systems (090302b)	AST - Alberta

## Line I POWERTRAINS

<b>I2</b>	<b>Service Clutches</b>	
7850001472	Clutch Fundamentals and Service (On-Road) (190401a)	HET - Alberta
<b>I4</b>	<b>Service Manual Transmission</b>	
7850001451	Gearing Principles (190303a)	HET - Alberta
7850002422	Transmission Fundamentals- Part A(190401dA)	HET - Alberta
<b>I7</b>	<b>Service Torque Converters &amp; Dividers</b>	
7850001452	Torque Converter Fundamentals and Service (190303b)	HET - Alberta
<b>I8</b>	<b>Service Powershift and Automatic Transmissions</b>	
7850001453	Powershift and Automatic Transmission Mechanical/Electronic Components (190303c)	HET - Alberta
7850001456	Powershift and Automatic Transmission Testing and Service (190303f)	HET - Alberta
<b>I11</b>	<b>Service Drivelines</b>	
7850001473	Driveline Fundamentals and Service (190401b)	HET - Alberta
<b>I13</b>	<b>Service Drive Axles</b>	
7850002426	Drive Axle Assembly Fundamentals (On-Road) (190401h)	HET - Alberta
7850002427	Drive Axle Assembly Service (On-Road) (190401i)	HET - Alberta
<b>I15</b>	<b>Service Final Drives</b>	
7850002417	Final Drive Fundamentals and Service (Off-Road) (190303i):	HET - Alberta
<b>I20</b>	<b>Remove and Install Transmissions</b>	
<b>I21</b>	<b>Remove and Install Drivelines and Differentials</b>	
<b>I22</b>	<b>Remove and Install Final Drives</b>	

## Line J STRUCTURAL COMPONENTS & ACCESSORIES

<b>J1</b>	<b>Identify Protective Structures</b>	
7850001449	Off-Road Equipment Accessories and Attachments - Part A (190302cA)	HET - Alberta
7850002853	Off-Road Equipment Accessories and Attachments - Part B (190302cB)	HET - Alberta
<b>J2</b>	<b>Service Cab Structures</b>	

## Line B-D-H-I ADDITIONAL

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7850001380	Electric Brake Fundamentals and Service (190103f)	HET - Alberta
7850001443	Non-Electric Cranking Systems (190205f)	HET - Alberta
7850002470	Alternate Fuels (A190403c)	HET - Alberta
7850002407	Engine Braking System Fundamentals and Service (190201l)	HET - Alberta
7850001454	Powershift and Automatic Transmission Control and Shifting (190303d)	HET - Alberta
7850001455	Hydraulic Retarder Fundamentals (190303e)	HET - Alberta

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