

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: HEAVY EQUIPMENT DIESEL - ~~THEORY & SHOP~~ *IM*

Code No.: ~~MCH 115-10~~ & MCH 102-9

Program: HEAVY EQUIPMENT DIESEL

Semester: 1

Date: December, 1982

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New: _____ Revision: X

APPROVED:

Ivan Murphy
Chairperson

April 15/83
Date

Sault College
of Applied Arts and Technology
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Course Outline

HEAVY EQUIPMENT DIESEL I

MCH 102-9 - SHOP

~~MCH 115-10 - THEORY~~

SEMESTER 1

HEAVY EQUIPMENT DIESEL I - FIRST SEMESTER

MCH 102-9 Shop
MCH 115-10 Theory

TEXT: DIESEL FUNDAMENTALS - Thiessen & Dales

REFERENCES: Design of High Speed Diesel Engines - Howarth
Diesel Engineering Handbook - 11th Edition
Diesel Publications, Inc.
The Auto Book - 2nd Edition - Crouse & Anglin
Diesel Engine Manual - 4th Edition - E. Molloy
Power Mechanics - Davies & Atteberry
Simplified Hydraulics - McNickle
Dictionary of Technical Terms- Grispin
Maintenance of High Speed Diesel Engines - Judge
Diesel Engine & Operation Maintenance - Maleer
American Bosch Fuel Injection Manual
Fuel Injection and Controls - Burman & Deluca
Vickers Hydraulic Manual 935100
Moving the Earth - Nichols; 2nd Edition
How to Operate Excavation Equipment - Nichols
Mobile Hydraulic Manual - Vickers
Mobile Hydraulic Testing - Glenn & Blinn
Heavy Vehicle Technology - Leeming & Hartley
Diesel Fundamentals - Tobolt
Fundamentals of Service - John Deere
Diesel Mechanics - Schulz
Diesel & Mobile Plant - Tempest
Heavy Equipment Repair - Nichols 2nd Edition
Diesel Engine Repair - Wiley
Diesel Equipment II - Schultz
Diesel Equipment III - Schultz

NUMBER	PERIODS	TOPIC DESCRIPTION	REFERENCE
1		<u>General Shop Procedures</u>	
	1	Course of Study	
	1	Marking Scheme	
	1	Certification	
	5	Parts & Vehicle Cleaning Methods	
	2	Fire Extinguishers	
	4	Rubber & Crawler Operating Maintenance	
	4	Rubber & Crawler Operating Techniques	
2	2	Seals & Bearings	
		<u>Tools & Measuring</u>	
	4	Hand Tools	
	2	Taps & Dies	
	1	Drills	
	2	Tool sharpening	
	2	Fasteners	
	2	Grading capscrews, nuts and washers	
	2	Hydraulic Hose Sizing & fitting	
	3	Measuring Instruments - micrometers, dial indicators and Verniers	
	1	Metrication - Measuring & fasteners	
	2	Oils and Greases	
	3	Lube systems	
	3		<u>Engines #1 (Diesel Oriented)</u>
2		Technical Description and History	
2		Four Stroke Cycle principles	
2		Two Stroke Cycle principles	
1		Terms	
6		Starting Aids	
2		Diesel-Gas Comparisons and Advantages	
3		Engine Construction and Classification	
12		Crankshafts	
8		Set Engine Valves	
5		Balancers	
12		Bearings (crankshaft)	
16		Liners and Cylinders	
14		Pistons	
12	Rings		
4		<u>Fuel</u>	
	3	Check and Test Injectors	
	2	Detroit Diesel Injector and Valve Settings	
	2	Cummins Injector and Valve Settings	
5		<u>Clutches</u>	
	2	Jaw Type	
	2	Cone Type	
	2	Shoe	
	6	Spring Loaded	
	12	Overcentre	
	6	Wet Clutch	
3	Troubleshooting Clutches		

NUMBER	PERIODS	TOPIC DESCRIPTION	REFERENCE
6		<u>Manual Transmissions</u>	
	2	Gear - Types, Applications & Ratios	
	6	Sliding Gear Transmissions	
	6	Constant Mesh Transmissions	
	2	Synchromeshes	
	2	Shift Controls	
	2	Shifter Locking	
7		<u>Fluid Drives</u>	
	2	Types	
	3	Fluid Couplings	
	1	Torque Converters Terms	
	8	Single Stage Converters	
	8	Torque Dividers	
	8	Twin Turbine Converters	
	8	Variable Capacity Converters	
	3	Three Stage Converters	
	3	Retarders	
	3	Lock Up Options	
3	Stall Testing & Troubleshooting		
8		<u>Hydraulics I</u>	
	2	Principles	
	2	Uses and Advantages	
	10	Circuits: Simple to Complex	
	1	Types of Pumps	
	6	Gear Pumps	
	6	Vane Pumps	
	10	Piston Pumps	
	1	Types of Valves	
	4	Relief Valves	
	6	Directional Valves	
	6	Flow Control Valves and Dividers	
	1	Types of Motors	
	5	Low Speed High Torque	
	5	Gear	
	5	Vane	
5	Piston		
14	Hydraulic Cylinders		
2	Hydraulic Fluids		
2	Hydraulic Tanks and Filters		