

SAULT COLLEGE OF APPLIED ARTS A TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

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Course Title: HEAVY EQUIPMENT DIESEL - THEORY A-mnp

Code No.: MCH 115-10 & MCH 102 ^

Program: HEAVY EQUIPMENT DIESEL

Semester: i

Date: December, 1982

Author: Ivan Murphy

New:

Revision:

APPROVED:

[Signature]
Chairperson

April 15/83
Date

Sault College of Applied Arts and Technology sault ste. marie

Course Outline

HEAVY EQUIPMENT DIESEL I

MCH-402-9-^~5HOP

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	Seals & Bearings		
	2		<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	
		<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
		<u>Manual Transmissions</u>	
	2	Gear - Types, Applications A Ratios	
	6	Sliding Gear Transmissions	
	6	Constant Mesh Transmissions	
	2	Synchromeshes	
	2	Shift Controls	
	2	Shifter Locking	
		<u>Fluid Drives</u>	
	2	Types	
	3	Fluid Couplings	
	1	Torque Converters Terms	
	8	Single Stage Converters	
	8	Torque Dividers	
	8	Twin Turbine Converters	
	6	Variable Capacity Converters	
	6	Three Stage Converters	
	6	Retarders	
	2	Lock Up Options	
	6	Stall Testing & Troubleshooting	
		<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	