

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

COURSE OUTLINE

Course Title: HEAVY EQUIPMENT DIESEL - THEORY & SHOP
Code No.: MCH 105-9 & MCH 119-10
Program: HEAVY EQUIPMENT DIESEL
Semester: 2
Date: December, 1982
Author: Ivan Murphy

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 II

MCH 105-9 - SHOP

MCH 119-10 - THEORY

SEMESTER 2

HEAVY EQUIPMENT DIESEL II - SEMESTER TWO

MCH 105-9 Shop
MCH 119-10 Theory

TEXT: Diesel Fundamentals - Thiessen & Dales

REFERENCES: Design of High Speed Diesel Engines - Howarth
Diesel Engineering Handbook - 11th Edition - Diesel Publications, Inc.
Automotive Mechanics - Wm. Crouse
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
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 - Schultz
Diesel and 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
9		<u>Engines II</u>	
	10	Cylinder Head Reconditioning	
	2	Air Cleaners	
	6	Cooling Systems	
	4	Turbochargers	
	3	Smoke and Troubleshooting	
	2	Horsepower - Torque	
	1	High Torque Rise-Constant HP	
	3	Dyno Testing	
10		<u>Fuel Systems</u>	
	8	Combustion	
	3	Ignition Lag	
	2	Fuel & Storage	
	16	Cummins Fuel System	
	12	Multiple Plunger Pumps	
	6	Injectors	
	12	Caterpillar Fuel Systems	
	12	Detroit Diesel Fuel Systems	
	12	Roosa Master Fuel Systems	
	4	Alternate Manufacturers	
11		<u>Electricity</u>	
	4	Circuits & Wiring	
	3	Batteries	
	8	Ignition System	
	8	Charging Circuits DC	
	8	Charging Circuits AC	
	8	Starting Circuit	
	3	Switches	
	6	Electrical Testing	
12		<u>Brakes</u>	
	6	Hydraulic Brake Circuit	
	4	Vacuum Power Brakes	
	12	Air Brakes	
	4	Air over Hydraulic	
	2	Wedge Brakes	
	2	Maxi Brakes	
	2	Engine Retarders	
13		<u>Steering - Rubber Tired</u>	
	1	Types and Uses	
	2	Applications and Theories	
14		<u>Steering - Crawler</u>	
	6	Dry Steering Clutch and Brake	
	6	Wet Steering Clutch and Brake	
	2	Power Assist Steering	
	2	Adjustments	

NUMBER	PERIODS	TOPIC DESCRIPTION	REFERENCE
	4	Differential Steering	
	6	Planetary Steering	
	4	Independent Track and Control	
15		<u>Hydraulic II</u>	
	4	Special Circuits - Demand System	
	4	- Summation System	
	4	- Power Proportioning	
	2	Troubleshooting & Testing - Senses	
	2	- In-Line Test	
	2	- T-Test	
	12	Hydrostatic Drives	
16		<u>Powershift Transmissions</u>	
	1	Types	
	4	Countershaft Type - Rockford	
	4	Countershaft Type - Clark	
	1	Countershaft fluid flow	
	4	Planetary Type - Caterpillar	
	4	Planetary Type - Allison	
	1	Planetary Fluid Flow	
	4	Troubleshooting	
17		<u>Crawler Undercarriage</u>	
	1	Rigid Frame vs. Oscillating	
	8	Components	
	2	Alignment	
	1	Adjusters	
	4	Track and Pads	
	4	Sprockets	
	3	Measuring Wear	
18		<u>Final Drives</u>	
	1	Straight Axle	
	6	Pinion and Bullgear type	
	4	Planetary Type	
	1	Chain Type	
19		<u>Drive Shafts, Axles & Differentials</u>	
	1	Types of Drive shafts	
	2	Phasing Drive shafts	
	6	Conventional Differentials: single double Multi speed Tandem	
20		<u>Planetary Differentials</u>	
	4	No Spin	
	2	Controlled Traction	
	1	Torque Proportioning	
	2	Planetary Wheel Drives	
	4	Adjustments	
	2		