

Course: DIES107 Engine Principles

Department: Diesel

Course Description:

This course introduces the student to a number of specialized areas that a diesel technician will encounter. Through classroom lecture and lab application. This course is designed to familiarize the students with the fundamental physical principles and relationships which apply to reciprocating internal combustion engines. Topics include the operational theory of internal combustion engines, combustion and heat, fuel consumption and power, scavenging, and supercharging. The hands-on servicing of complete engines involves disassembly, precision measuring, and reassembly of an engine in the laboratory.

Lecture: 2 hours. Laboratory: 2 hours.

COURSE OUTCOMES	SAMPLE OUTCOMES ACTIVITIES	SAMPLE ASSESSMENT TOOLS
Upon successful completion of this course students should:	To achieve these outcomes students may engage in the following activities:	Student learning may be assessed by:
1. Identify various components that make up a Diesel engine; (WC, IL and CCT)	<ul style="list-style-type: none">• Textbook readings• On-line demonstration• Video presentations• Classroom discussions	<ul style="list-style-type: none">• Tests, quizzes• Mechanical drawings• Homework assignments• Laboratory work
2. Learn operating principles, chemical and physical properties of the combustion process as it applies to Diesel engines and emissions; (CCT)	<ul style="list-style-type: none">• Textbook and on-line readings• Video presentations• Classroom discussions• Laboratory demonstrations	<ul style="list-style-type: none">• Tests & Quizzes• In-class conversations• Laboratory evaluations
3. Learn the fundamentals and safety of working on crankshafts, camshafts, gear trains, valve trains,	<ul style="list-style-type: none">• Textbook and on-line readings• Video presentations	<ul style="list-style-type: none">• Tests, quizzes• Classroom discussion

lash adjustments and timing, along with aftermarket and emissions control systems; (WC, CCT, and IL)	<ul style="list-style-type: none"> • Classroom demonstrations 	<ul style="list-style-type: none"> • Laboratory work
4. Be proficient in using the appropriate tooling for testing, adjusting and diagnosing the systems previously mentioned; (WC and IL)	<ul style="list-style-type: none"> • Textbook readings • Video presentations • Classroom collaborative learning • Classroom discussions 	<ul style="list-style-type: none"> • Test quizzes • Homework assignments • Laboratory work

This course includes the following core competencies: Critical and Creative Thinking (CCT), Information Literacy (IL), and Written Communication (WC).