

SYLLABUS

DATE OF LAST REVIEW: 4/23/20
CIP CODE: 47.0613
SEMESTER: Departmental Syllabus
COURSE TITLE: Diesel Engine I
COURSE NUMBER: DEVT 0110
CREDIT HOURS: 5
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
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KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: None

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, <http://www.kckccbookstore.com> for the required text for your particular class.

COURSE DESCRIPTION: Diesel Engines I introduces the theory of operation and the use of the engine's mechanical components; disassembling, inspecting, measuring, reassembling and performing maintenance procedures on diesel engines. (KBOR aligned)

Experience in disassembling, reassembling, cleaning and inspection techniques are covered in a instructor-led teardown, inspections, ad reassembly of a running 2 cylinder Kubota diesel engine. Measurement and inspection techniques as well as the principles, importance and performance of routine and preventative maintenance is emphasized.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:

I. Diesel Engines

- A. Research vehicle service information.
 - B. Inspect level and condition of fuel, oil, diesel exhaust fluid and coolant.
 - C. Inspect engine assembly for fuel, oil, coolant, air, and other leaks.
- II. Cylinder Head and Valve Train
- A. Inspect valve train components.
 - B. Inspect, measure and replace/reinstall camshaft, end play and backlash.
 - C. Disassemble cylinder head and inspect related components.
 - D. Measure valve head height relative to deck and face-to-seat contact.
 - E. Reassemble cylinder head.
- III. Engine Block
- A. Remove, inspect, service, and install engine block components.
 - B. Disassemble, inspect, measure and clean engine block and related components.
 - C. Clean, inspect, and measure cylinder walls or liners for wear and damage.
 - D. Inspect camshaft bearings for wear and damage.
 - E. Clean and inspect crankshaft and related components for surface cracks and journal damage.
 - F. Inspect and/or replace main bearings for wear patterns and damage.
 - G. Inspect, install, and time gear train and measure gear backlash.
 - H. Inspect connecting rod and bearings for wear patterns.
 - I. Determine piston-to-cylinder wall clearance and install rings on pistons.
 - J. Assemble pistons and connecting rods.
- IV. Lubrication Systems
- A. Inspect and measure oil pump and related components.
- V. Cooling System
- A. Check engine coolant type, level, and condition.
 - B. Inspect and reinstall/replace pulleys, tensioners, and drive belts.
 - C. Inspect water pump, hoses, and clamps.
 - D. Inspect thermostat(s), by-passes, housing(s), and seals.
- VI. Air Induction and Exhaust Systems
- A. Inspect intake manifold, gaskets, and connections.

EXPECTED LEARNER OUTCOMES:

- A. The student will be able to demonstrate knowledge of diesel engines.
- B. The student will be able to demonstrate knowledge of cylinder heads and valve trains.
- C. The student will be able to install engine blocks and its components.
- D. The student will be able to inspect lubrication systems.
- E. The student will be able to inspect cooling systems and its components.
- F. The student will be able to demonstrate knowledge of air induction and exhaust systems.

COURSE COMPETENCIES:

Upon successful completion of this course:

- The student will be able to demonstrate knowledge of diesel engines.*
- 1. The student will be able to inspect and repair diesel engines and related components.
- 2. The student will be able to identify internal engine components.

3. The student will be able to reassemble internal engine components.

The student will be able to demonstrate knowledge of cylinder heads and valve trains.

4. The student will be able to identify a cylinder head, camshaft & valve train.
5. The student will be able to operate a cylinder head, camshaft & valve train.

The student will be able to install engine blocks and its components.

6. The student will be able to identify cylinder block.
7. The student will be able to reassemble cylinder block.
8. The student will be able to identify timing procedures.
9. The student will be able to demonstrate timing procedures.

The student will be able to inspect lubrication systems.

10. The student will be able to identify lubrication system.
11. The student will be able to reassemble lubrication system.

The student will be able to inspect cooling systems and its components.

12. The student will be able to identify a cooling system.
13. The student will be able to reassemble a cooling system.
14. The student will be able to identify proper use of sealing mediums.
15. The student will be able to install proper use of sealing mediums.
16. The student will be able to demonstrate proper use of sealing mediums.

The student will be able to demonstrate knowledge of air induction and exhaust systems.

17. The student will be able to identify various exhaust and intake systems.
18. The student will be able to install various exhaust and intake systems.

ASSESSMENT OF LEARNER OUTCOMES: Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

SPECIAL NOTES:

This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

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