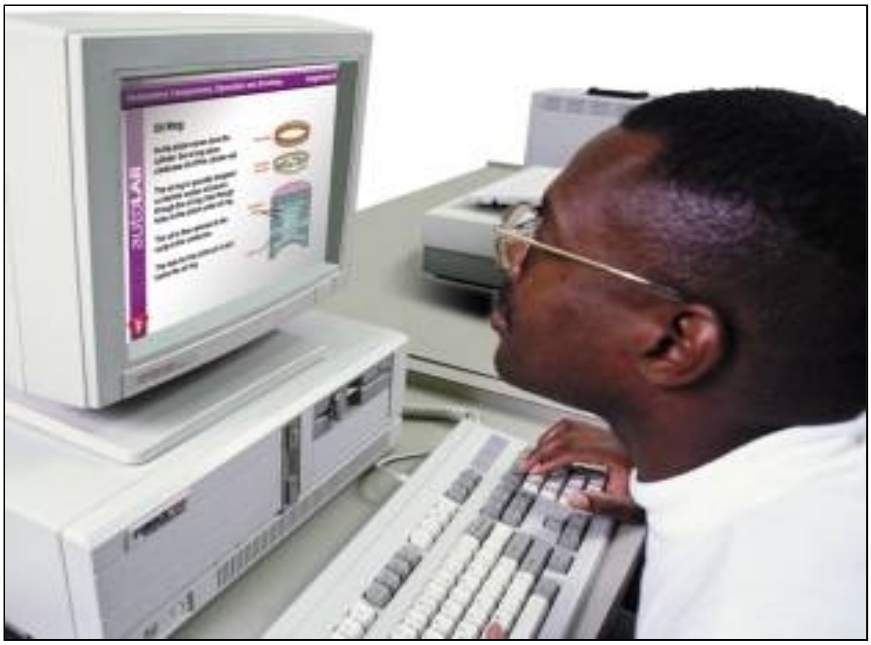
# COS1 Automotive Components, Operation and Servicing



This is an integrated instructional module designed specifically to operate within an "Instructional Pod" environment. It provides a 15-assignment study program that has been designed for use within the AutoLAB program for core learning. The module package includes hardware, software, and curriculum materials sufficient to complete the learning activities.

The curriculum incorporates continuous assessment through questions. When used in conjunction with a ClassAct networked management system, this provides instant feedback of student performance

Each assignment is split into at least two tasks and they start with a series of questions designed to track inventory, and ensure that any missing pieces can be located. The tasks are designed to teach Automotive Components, Operation and Servicing, with the research activities based upon on screen material.

Assessment questions are incorporated into each task and a series of job sheets that are printed out by the student are used to guide them through the related shop activities on real vehicle systems.

This module consists of a comprehensive series of computer aided instruction assignments that enable students to learn the advanced principles and applications of automotive components. The dynamic computer aided instruction provides interactive animations and high-resolution graphics that help the student understand the topics being delivered.

In addition to providing the underpinning knowledge on automotive components, the module also provides a series of practical tasks. These are presented to the student as a series of job sheets, which will require access to a vehicle in a fully equipped automotive workshop

**Typical topic areas include:**

- Two- and four-stroke engine operation.
- Engine component identification.
- Perform engine size and performance calculations.
- Lubrication system components and operation.
- Cooling system components and operation.
- Identify workshop safety techniques.
- Workshop hand and power tool identification and use.
- Restoration of engine cylinders, crankshafts and camshafts.
- Typical service checks.
- Engine servicing techniques.
- Engine removal and disassembly.

The module guides the student through task-oriented instruction. The tasks include hands-on practical activities. Each task has a theoretical summary that explains the concepts and automotive applications involved.

The computer presented training material is compatible with the ClassAct classroom management system that can track student progress during these tasks and will report back immediately to instructional staff if a student falls below a predetermined standard or takes too long to perform a task.

Each assignment is designed around a list of performance objectives. These lists include academic, technical, and occupational objectives. The assignments are written in such a way as to enable a student to attain the performance objectives, with the assessment questions linked to these in order to provide a measure of true competency.

The performance objectives are used by the ClassAct management system to generate a comprehensive portfolio of student competency reports. The module includes a default competence report addressing the latest NATEF standards.

**Typical activities include:**

- Investigate the operation of engines.
- Identify the major constructional components of an engine.
- Identify the construction of pistons and crankshafts.
- Identify the construction and types of valve train assemblies.
- Measure engine size and make performance calculations.
- Identify the components and operation of lubrication systems.
- Identify the components and operation of cooling systems.
- Inspect engine for fuel, oil, coolant and other leaks.
- Inspect and replace pans, covers, gaskets, and seals.
- Inspect and adjust belts, tensioners, and pulleys.
- Perform oil and filter change.
- Inspect internal and external threads; restore as necessary.
- Inspect engine block for visible cracks, passage condition, core and gallery plug condition, and surface warpage.
- Deglaze and clean cylinder walls.
- Remove cylinder head; visually inspect for cracks, gasket surface for warpage and leakage, check passage condition.

# COS1 Automotive Components, Operation and Servicing

**The items supplied with this instructional module include:**

- COS1 Instructor's Guide
- COS1 On-Screen Multimedia Manual CD-ROM
- COS1 Video Materials CD-ROM
- COS1 Voice-Overs CD-ROM
- NATEF Instructor's Resources CD-ROM
- Book - Automotive Technology-A Systems Approach by Jack Erjavec
- Health and Safety Sheet

**Additional items required:**

- Computer
- Access to Printer
- Air Conditioning Recovery / Recharging Equipment (if A/C is fitted to vehicle)
- Antifreeze Tester / Hydrometer
- Brake Bleeding Equipment (if required)
- Cleaning Equipment
- Cleaning Fluid
- Coolant / Oil Containers
- Cutting Compound
- De-Burring Tools
- Drill Bit Set Imperial
- Engine Stand
- Engineers Data Book
- Engineers Square
- Engineers Straight Edge
- Gasket Sealant
- Gasket / Gasket Material
- Inspection Lamp
- Multimeter
- Parts Washer Fluid
- Pillar Drill
- Portable Crane – ½ Ton
- Personal protective equipment (PPE)
- Suitable Replacement Fluids
- Tap Wrench
- Thread Repair Insert Kit
- Torque Wrench
- Vehicle Cooling System Pressure Tester
- Various Hand Tools

**NATEF task list areas addressed:**

- I-A1 P-1
- I-A2 P-1
- I-A4 P-1
- I-A5 P-2
- I-A6 P-2
- I-A11 P-1
- I-A12 P-3
- I-B1 P-2
- I-B2 P-1
- I-B5 P-3
- I-B6 P-3
- I-B7 P-3
- I-B8 P-3
- I-B11 P-1
- I-B13 P-1
- I-C1 P-2
- I-C2 P-2
- I-C3 P-2
- I-C4 P-2
- I-C5 P-2
- I-C7 P-2
- I-C9 P-3
- I-C10 P-2
- I-C11 P-3
- I-C12 P-1
- I-C15 P-2
- I-D1 P-1
- I-D13 P-2
- VIII-A4 P-2
- VIII-A5 P-2
- VIII-A13 P-1
- VIII-F1 P-1
- VIII-F2 P-1

## Module Facts

COS1
Automotive Components, Operation and Servicing

| | No. | Average time |
|---|---|---|
| Assignments | 15 | 90 minutes |
| Extension Activities | 9 | 60 minutes |
| | **Total** | 31 hours |

**LJ Technical Systems**
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