



**RV College of
Engineering®**

RV - TOYOTA CENTRE OF EXCELLENCE IN AUTOMOTIVE ENGINEERING

Since 2018, R V College of Engineering has established a dynamic partnership with Toyota, creating the RV-Toyota Centre of Excellence to foster excellence in Automotive Engineering education. Through comprehensive skill training and internships, the RV-Toyota CoE emphasizes hands-on learning, critical thinking, and problem-solving in the areas of automotive field. Tailored to contemporary passenger vehicle systems, students gain practical exposure to cutting-edge automotive technologies, ensuring a deep understanding of system intricacies. This strategic alliance reflects a joint commitment to prepare students for evolving automotive industry challenges, providing a holistic blend of theoretical knowledge and essential practical skills for success in the relevant field.

The aim of the training program at RV-Toyota Center of Excellence was to foster experiential learning while enhancing critical thinking and problem-solving skills. The skill training and internship curriculum at RV-Toyota CoE primarily emphasizes contemporary systems found in modern passenger vehicles.

The entire training is classified into the following modules: (i) Engine Module (ii) Power transmission and (iii) Body electrical.

Engine Module:

This module includes identifying tools and disassembling a Toyota engine, followed by studying various subsystems that support the functionality of an internal combustion engine:

Intake system, Turbocharger, Camshaft operation, Fuel injection, Ignition, Catalytic converter, Drive train, Lubrication and coolant system

Power Transmission Module:

This module involves identifying tools and disassembling a Toyota 5-speed transmission, followed by studying various subsystems that support the functionality of a transmission unit:

Clutch assembly for engaging/disengaging with the flywheel, Driver and driven gear, gear ratios for high torque/low speed and low torque/high speed , Torque vs. speed characteristics, Sleeve, synchromesh, synchronizer, and countershaft for smooth gear transitions

Body Electricals Module:

This module covers the skills needed for handling various electrical components of a passenger vehicle:

Assessing battery condition, Configuring the fuse box, Assessing faulty fuse condition, Inspecting relay switches, Checking cable harness continuity, Diagnosing and troubleshooting faults in systems like the horn, headlights, and wiper system



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Practical Training Modules (Facilities):

1. **Complete Drive Line of Innova:** Cut section of Innova diesel engine, Assembly and disassembly of engine and subsystems, Transmission system mounted on a 360o rotation stand
2. **Complete Cut Section of Innova Crysta:** Diesel engine with chassis and subsystems including: Engine, Clutch, Power transmission, Steering system, Vacuum pump, Compressor, Brake systems, Exhaust gas recirculation, Intercooling, Differential, Axles, Exhaust gas and catalytic converters, Body electrics
3. **Engine and Power Transmission:** Mounted on a rotation stand for disassembly and assembly activities
4. **Electronic Fuel Injection System:** Instruction board for the CRDI (Common Rail Direct Injection) diesel engine system
5. **Vehicle Electrical Systems:** Cut section model showing a mock layout of car wiring, Instruction board for reverse camera and parking assist system, Instruction board for infotainment and music system, Boards detailing important sensors with their functions and specifications

Outcomes:

1. Apply practical applications using tools widely adopted in the industry.
2. Demonstrate understanding of engine and transmission component functions.
3. Rationalize material properties, design, and manufacturing techniques in automotive part production.
4. Utilize mechatronics systems, encompassing sensors, actuators, control units, and wiring harnesses.
5. Assess the condition of batteries, fuses, and relays.
6. Hone problem-solving skills for real-time diagnosis of faults in passenger vehicles.

Faculty In-charge:

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