

Applied Learning (Senior Secondary Level)

2016-18 Cohort

Learning and Teaching

Subject Title : **Automotive Technology**
Area of Studies : **Engineering and Production**
Course Provider : **Caritas Institute of Community Education**

In the Automotive Technology, student-centred learning and teaching activities are designed to enable students to understand fundamental theories and concepts, develop their generic skills, and address their career aspirations in automotive technology.

Different modes of activities are employed to provide students with a systematic understanding about the context (e.g. lectures on the overview of the local automotive industry and the fundamentals of vehicle systems) and eye-opening opportunities to experience the complexity of the context (e.g. visits to automotive services companies and automotive maintenance facilities).

Students acquire an understanding of the requirements, fundamental knowledge and skills essential for further learning within the area through learning-by-practising opportunities in an authentic or near-authentic environment (e.g. performing service procedures on a motor vehicle and engaging in role play activities in a simulated vehicle dealership).

Students are also encouraged to develop and apply conceptual, practical and reflective skills to demonstrate innovation and entrepreneurship (e.g. carrying out a case study on the latest range of vehicle products and accessories to assess the strengths and weaknesses of various manufacturers, and hence to devise appropriate strategies to improve and market the products). Students are given opportunities to integrate the knowledge and skills acquired and consolidate their learning (e.g. a 30-hour automotive practicum provides students with the opportunities to apply safety techniques and operating principles of major systems of a vehicle in preliminary fault-diagnosis, to appreciate positive work ethics in the workplace, such as reliability, honesty and team spirit, and also to develop self-understanding for further studies and career development).

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Curriculum Pillars of Applied Learning in Context – Automotive Technology

Upon completion of the subject, students should be able to:

- describe safe work practices and procedures and outline the requirement for a healthy work environment;
- apply the operating principles of the major systems of a vehicle to complete basic fault-diagnosis;
- access, identify and apply technical information to perform accurate measurements, calculations and tests on various components of a vehicle;
- demonstrate the capability of problem-solving, decision-making and communication in tackling technological issues;
- explain and analyse the inter-relationship between automotive technology and society;
- demonstrate an understanding of current issues and trends in the automotive industry, and the latest technologies used by the automotive industry to meet current emissions, fuel economy, and safety regulations;
- demonstrate professional ethics, honesty, and respect when dealing with customers, co-workers, and supervisors; and
- develop self-understanding for further studies and career development in the related field.

Through the specific contexts related to the subject, students have different learning opportunities, for example:

1. Career-related Competencies

- understand the knowledge of safe work practices and procedures;
- apply skills in using tools and equipment;
- perform minor vehicle repairs/replacement;
- become familiar with the latest sources of information on automotive technology; and
- develop appropriate attitudes and work ethics.

2. Foundation Skills

- develop communication skills in oral, written and graphic forms through group discussion, case study and presentations on project work;
- strengthen numeracy skills by collecting and analysing technical data of various systems of a vehicle; and
- demonstrate the ability to use information technology for research, problem solving, and communication, e.g. to store, retrieve and analyse technical data of major vehicle systems by using appropriate computerised equipment.

3. Thinking Skills

- identify potential sources and employ appropriate techniques to collect information;
- interpret, analyse and use technical information or data obtained to complete practical tasks and project work;
- formulate an alternative solution to a problem by employing various problem-solving models through logical reasoning and systematic analysis, e.g. applying trouble-shooting strategies to diagnose system failure, implement strategies for improvement, and evaluate their effectiveness;
- carry out environmental analysis to identify threats and opportunities, e.g. by investigating the impact of automotive development on the environment; and
- develop skills in forming regional/global perspectives on social, economic and technological changes in automotive industry, e.g. economic growth, consumer behaviours and markets, government incentives, alternative energy supplies and regulatory policies.

4. People Skills

- apply time and project management by reviewing the progress and adjusting priorities to meet deadlines of assignments; and
- develop Interpersonal, collaborative and team building skills through group discussion, group projects and practicum in workplace.

5. Values & Attitudes

- understand the Occupational Safety and Health Administration (OSHA) regulations related to the automotive workshop environment;
- apply ethical principles, such as equity and uprightness, and avoid conflicts of interest in team work; and
- understand the fundamental ethical issues and the related responsibilities, e.g. positive work habits, attitudes and behaviours related to automotive industry.