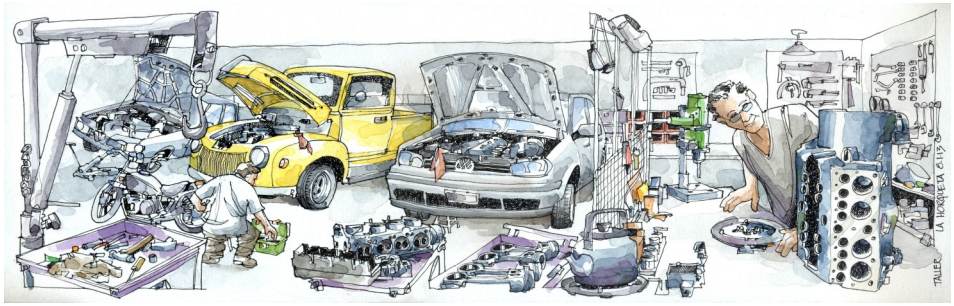
National Diploma in Motor Vehicle Engineering



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National Diploma in Motor Vehicle Engineering

TVET PROGRAMME

Purpose

The purpose of this award is to enable the learner to attain the standard required to achieve the Diploma through the knowledge, skill and attitudes essential in motor vehicle Engineering. It is aimed at learners who work or want to work in the automotive industry. Applicants with the required academic abilities will be able to learn and apply the principles of mechanical science in motor vehicle engineering. The theoretical knowledge will provide the learner to acquire the prerequisites to pursue further training whilst the practical component of the training will provide the learner with the necessary skills to participate in vehicle repairs and work at supervisory level in a garage.

National Diploma in Motor Vehicle Engineering

Introduction

The National Diploma in Motor Vehicle Engineering is a three-year (3600hours) training programme offered full-time to secondary five (S5) school leavers and learners from School of Advanced Level (SALs) as well as from another professional centre. This is equivalent to six (6) semesters. Two semesters represents one academic year. The same programme is also offered on part-time to learners already in employment over 8 semesters. Learners on the part-time come to SIT for training 1 .5 days per week.

A learner on full time may exit after year one and qualify for the Certificate after successfully completing all the units from semesters one and two and accumulated 120 credits. A second exit point exists after the learner completes the year two, i.e. semesters, 1,2,3 and 4. The learner will qualify for an Advanced certificate in Motor Vehicle Engineering if all the required units for year one and year two have been successfully completed.

Entry Criteria

Learners wishing to apply for the National Diploma in Motor vehicle Engineering must have attained a minimum grade of "**C**" from the **IGCSE examinations** in English, Mathematics and Design Technology or preferably Physics.

Applicants from another professional centre may be accepted exiting with an Advanced Certificate from that Institution.

Learners should be able to:

⇒ Demonstrate a basic understanding of the Automotive industry role of an auto mechanic in Seychelles

National Diploma in Motor Vehicle Engineering

Career Opportunities in the Motor Vehicle Engineering Industry

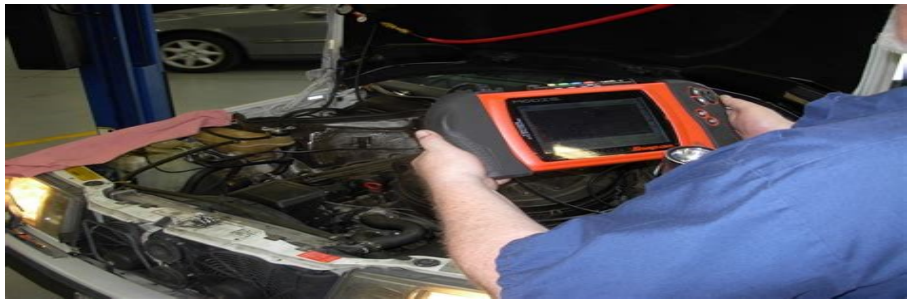
Career Opportunities in the Auto mobile Industry are on the increase. The number of cars and other automobiles have been on the increase in Seychelles. Different garages specialising in working with different makes and brand. Hybrid cars are in demand and specialise technicians are required to service ,diagnose and repair faults on those vehicles. Your training will provide you with these qualities and competences to apply the new techniques.

Job opportunities in the field of Motor Vehicle Engineering include working as Servicing Technicians with Car importers and dealers, Engine mechanics in garages around the islands, and in companies such as SPTC, IOT, Seybrew, etc . Auto electrician is also very much in demand.

Progression and Further Studies

Graduates on the National Diploma in Motor Vehicle Engineering-can go on to follow the Advanced Diploma in Motor Vehicle Engineering offered by City and Guilds.

Graduates with a National Diploma in Motor Vehicle Engineering can also be accepted in certain universities for a degree study in Motor Vehicle Engineering.



Assessment Technique (s) including weighting (s)

The National Diploma grade is based on a weighted average of all unit result grades. Assessment approach varies from one unit to another. During every unit of study there is a minimum number of continuous assessments which the learner must undertake. This could be in the form of small tests and assignments and research. For the final unit assessments, in most cases a learner will have to sit for both a theory paper which can be multiple choice, structured or a mixture and a practical for skills demonstration.

Work based experience (WBE) is a compulsory unit and is assessed by the supervisor in the work place for full-time learners and through compilation of a portfolio and assessed against the performance criteria for the different elements in the WBE unit for learner on part-time.

To attain the required standard, a minimum of a pass grade must be achieved in all assessments prescribed .

Pass mark for every unit on the programme is 55%.

As per SIT Assessment Policy, the final mark for a unit is made up of 40% of all continuous assessments plus 60% from the results of the final unit assessment (s) and the following grades and corresponding marks are used

Not yet Competent-NYC-0—54%
Pass - **P** -55%-69%
Credit or Merit - **M** or **C**- 70% - 84%
Distinction - **D** - 85%+

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National Diploma in Motor Vehicle Engineering

⇒ Demonstrate understanding of the basic mechanical science and mathematics principles applied to motor vehicle Engineering.
⇒ Familiarize with Hybrid and Electric Technology which will be the future prime movers of the Automobile
⇒ Demonstrate comprehensive range of light vehicle servicing ,maintenance and repairs skills using all commonly auto mechanic tools in compliance with all relevant health and safety and best practices.
⇒ Exercise appropriate judgement planning, diagnostics and delivering of all services , repair and maintenance process relating to auto mechanics.
⇒ Transfer and apply theoretical understanding and technical know-how to inspect, diagnose faults, maintain and repair electrical and mechanical malfunctions and bring back to light vehicles back to running.
⇒ Identify and work with component parts for light vehicle
⇒ Work safely and responsibly in a motor vehicle garage.
⇒ Develop a strong base for understanding future developments in the
⇒ automobile industry
⇒ Exercise substantial independence in the workplace, taking responsibility for auto mechanical duties performed by by self and with others and interacting with a variety of Individuals and groups to Include customers, colleagues and suppliers.

The programme aims at delivering detailed theoretical concepts of the related topics as well as actual practical exposure in the workshop and at related industries and garages.

National Diploma in Motor Vehicle Engineering

List of Statements of Competencies for the National Diploma in Motor Vehicle Engineering

Statement of competency	Unit Title	Semester(s) involved	Number of Credits
1.Apply health, safety and security procedures in the context of motor vehicle engineering.	Health and Safety in Motor Vehicle Engineering	1	3.0
2.Demonstrate the knowledge of brake systems/steering systems/ suspension systems/wheels and tyres system used on motor vehicles.	Basic Chassis System	1	9.0
3. Demonstrate the knowledge of types of engines/operation of engines/fuel systems/lubrication systems/cooling systems.	Basic Engine System	1	9.0
4.Demonstrate the knowledge about the identification of marking out tools/fitting tools/ measuring instruments/use of drills/reamers/taps/dies/ soldering/permanent joining of metals.	Basic Engineering	1	19.5
5.Demonstrate the knowledge of importance of technical drawing	Introduction to Technical Drawing	1	3.0
6.Demonstrate knowledge of Electrical principles	Electrical Fundamentals	1	6.0
7.Demonstrate the knowledge ,terms and calculation applied to principle of science used on motor vehicles.	Basic Engineering Science	1	4.5
8.Demonstrate the knowledge of numeracy in motor vehicle engineering	Basic Engineering Mathematics	1	3.0
9. Demonstrate the knowledge of Information and computer technology in motor vehicle engineering	ICT	1	3.0

National Diploma in Motor Vehicle Mechanics

Structure of the Programme f**or (8 semesters) for Part-time learners**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6	SEMESTER 7	SEMESTER 8
Basic Engine Systems (20/10)	Basic Engine Systems (40/20)	Intermediate Engine Systems1 (50/25)		Intermediate Engine Systems 2 (50/25)		Advance Engine Systems (60/30)	
Basic Chassis Systems (20/10)	Basic Chassis Systems (40/20)	Intermediate Chassis System 1 (50/25)		Intermediate Chassis Systems 2 (50/25)		Advance Chassis System (50/25)	
Health and Safety in Motor Vehicle Engineering (20/10)	Electronic Fundamentals (20/10)	Vehicle Electrical Systems (20/10)	Petrol/ Diesel Fuel Systems (20/10)	Communication (20/10)	Engine Auxiliary Systems (60/30)		Fault Diagnostic (20/10)
Basic Engineering (160/80)						Alternative Power Source (40/20)	Entrepreneurship (30/15)
Basic Engineering Mathematic (20/10)	Intermediate Engineering Mathematics 1 (40/20)		Advance Engineering Mathematics (20/10)	Spark ignition and Electrical/ Electronic Systems (30/15)	Air Supply and Exhaust System (20/10)	Engineering Drawing Fundamentals 2 (20/10)	Management Skills (30/15)
Basic Engineering Science (20/10)	Introduction to technical Drawing (20/10)	Intermediate Engineering Science 1 (40/20)		Workshop Process (20/10)	Advance Engineering Science (20/10)	Vehicle Electronic and Microprocessor (20/10)	
			Engineering Drawing Fundamentals 1 (20/10))				PROJECT (40/20)
		Intermediate Vehicle Systems Practical (70/35)		Advance Vehicle Systems Practical (50/25)			
Number of contact hours/ Non-contact hours per semester							
Per week **(8/4)**	Per week **(8/4)**	Per week **(8/4)**	Per week **(8/4)**	Per week **(8/4)**	Per week **(8/4)**	Per week **(8/4)**	Per week **(8/4)**
Semester one: Notional Hours **(170+85) = 255**	Semester two: Notional Hours **(170+85) = 255**	Semester three: Notional Hours **(170+85) = 255**	Semester four: Notional Hours **(170+85) = 255**	Semester five: Notional Hours **(170+85) = 255**	Semester six: Notional Hours **(170+85) = 255**	Semester seven: Notional Hours **(170+85) = 255**	Semester eight: Notional Hours **(170+85) = 255**
Portfolio Assignment 01 **(400)**		Portfolio Assignment 02 **(400)**		Portfolio Assignment 03 **(400)**		Portfolio Assignment 04 **(400)**	
Total hours for the year one of Programme: (500 + 400) = 900		**Total hours for the year two of programme: (500 + 400) = 900**		**Total hours for the year three of programme: (500 + 400) = 900**		**Total hours for the year four of Programme: (500 + 400) = 900**	

National Diploma in Motor Vehicle Engineering

Structure of the Programme f**or (6 semesters) for Full-time learners**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
Basic Engine System (60/30)	Intermediate Engine System 1 (50/25)	Intermediate Engine System 2 (50/25)	Advance Engine System 1 (30/60)	Advance Engine System 2 (30/60)	Management Skills (15/30)
Basic Chassis System (60/30)	Intermediate Chassis System 1 (50/25)	Intermediate Chassis System 2 (50/25)	Advance Chassis System 1 (30/60)	Advance Chassis System 2 (60/120)	Entrepreneurship (15/30)
Electrical Fundamentals (20/10)	Electronic Fundamentals (40/20)	Vehicle Electrical Systems (20/10)	Petrol/Diesel Fuel System (10/20)	Engine Auxiliary System (30/60)	Faults Diagnostic (10/20)
Basic Engineering (130/65)	Workshop Process (20/10)	Air Supply and Exhaust System (20/10))	Vehicle Electronic and Microprocessor (10/20)	Alternative Power Source (20/40)	PROJECT (20/40)
Basic Engineering Mathematics (20/10)	Intermediate Engineering Mathematics 1 (20/10)	Intermediate Engineering Mathematics 2 (20/10)	Advance Engineering Mathematics (10/20)	Spark Ignition Systems (30/60)	
Basic Engineering Science (30/15)	Intermediate Engineering Science 1 (20/10)	Intermediate Engineering Science 2 (20/10)	Advance Engineering Science (10/20)		
Introduction to Technical Drawing (20/10)	Engineering Drawing Fundamentals 1 (20/10)	Engineering Drawing Fundamentals 2 (20/10)			
Health and Safety in Motor Vehicle Engineering (20/10)					
I.C.T (20/10)					
Communication (20/10)	Intermediate Vehicle Systems Practicals 1 (40/20)	Intermediate Vehicle Systems Practicals 2 (60/30)	Advance Vehicle Systems Practicals 1 (30/60)	Advance Vehicle Systems Practicals 2 (30/60)	
	Work Based Experience (210)	**Work Based Experience (210)**	**Work Based Experience (210)**		**Work Based Experience (420)**
Number of contact / Non – contact hours per semester					
Semester 1 : 400/200 Notional Hours = 400 +200 600	**Semester 2 :** Notional Hours = 260 + 130 + 210 600	**Semester 3 :** Notional Hours = 260 + 130 + 210 600	**Semester 4 :** Notional Hours = 260 + 130 + 210 600	**Semester 5 :** Notional Hours = 260 + 130 + 210 600	**Semester 6 :** Notional Hours = 120 + 60 + 420 600
Total hours for Year One program : 1200		Total hours for Year Two program : 1200		Total hours for Year Three program : 1200	

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Statement of competency	Unit Title	Semester (s) involved	Number of Credits
10.Demonstrate the knowledge about safe working procedures, tools and equipment/ construction features and operating principles of petrol and diesel engines/routine maintenance, servicing and effects of incorrect adjustments with rectification procedures.	Intermediate Engine System	2,3	7.5
11. Demonstrate skills and Knowledge of different types of engine electrical systems.	Intermediate Chassis System	2,3	7.5
12. Demonstrate knowledge of Electronics principles	Electronics Fundamentals	2	6.0
13. Demonstrate the knowledge about the soldering/permanent joining of metals and apply the techniques .	Workshop Process	2	3.0
14.Demonstrate the knowledge about binary and denary numbers operations/Algebraic operations/ Graphical Operations/ Mensuration/ Logarithm and Indices/ Trigonometric Operation.	Intermediate Engineering Mathematics	2,3	6.0
15. Demonstrate the knowledge about Properties of Materials/ Gas Law and Engine Power/ Force/ Mass/ Acceleration/Expansion of solids and Liquids/Properties of Lubricant/ Hydraulics/ Hydrostatics/ Electricity	Intermediate Engineering Science	2,3	6.0
16. Demonstrate the knowledge and the ability to bisect angles/ about polygons/about circles/ tangents and curves/drawing standards.	Engineering Drawing Fundamentals	2,3	6.0

List of Statements of Competencies for the National Diploma in Motor Vehicle Engineering

Statement of competency	Unit Title	Semester(s) involved	Number of Credits
17. Demonstrate the knowledge about servicing and maintenance in braking systems/steering systems/suspension systems/ wheels and tyres.	Intermediate Vehicle Systems Practical	2,3	15.0
18. Demonstrate the knowledge of vehicle Electrical Systems	Vehicle Electrical Systems	3	3.0
19. Demonstrate the knowledge of Air Supply and Exhaust System	Air Supply and Exhaust System	3	3.0
20. Demonstrate the knowledge and skills about layout constructional feature/operating principles/servicing and maintenance of vehicle petrol and diesel engines.	Advanced Engine System	4,5	18.0
21. Demonstrate the knowledge and skills about layout constructional feature/operating principles/servicing and maintenance of vehicle braking systems/ steering systems/suspension systems.	Advanced Chassis System	4,5	27.0
22. Demonstrate the knowledge and skills about fuel systems layouts /Constructional features of main components/Operating Principles /Maintenance and adjustments/Effects of incorrect adjustments and testing procedure in for Spark Ignition and Compression Ignition engines.	Petrol/Diesel Fuel System	4	3.0
23. Demonstrate the knowledge of Vehicle and Microprocessor	Vehicle Electronic and Microprocessor	4	3.0

National Diploma in Motor Vehicle Engineering

Books and References for Study

A number of publications are available for study and training in the National Diploma in Motor Vehicle Engineering. They are books which are regularly updated with new editions. Learners are advised to identify the latest versions.

The following are available in the SIT Library and can be borrowed for study and reference:

Fundamentals of Motor Vehicle Technology-Book 1-Hillier
Vehicle and Engine Technology-Vol.1-Heinz Heisler
Advanced Engine Technology-Vehicle Maintenance and Repairs-Tom Denton
Automotive Electrical & Electronic Systems-Tom Denton
Principles of Light Vehicle Technology-Graham Stoakes
Basic Engineering Mathematics-John Bird.

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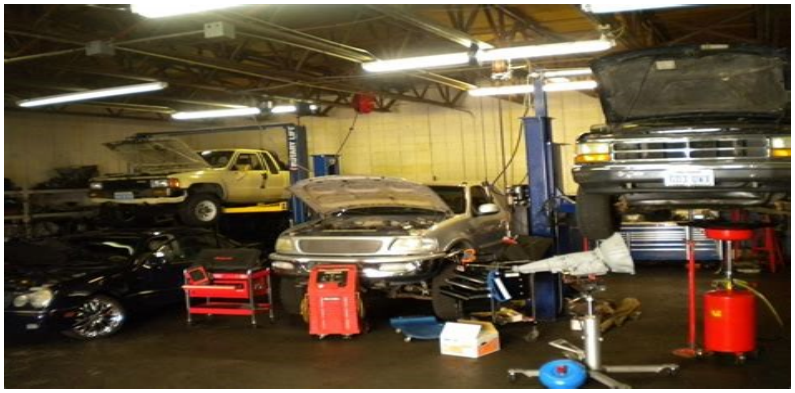
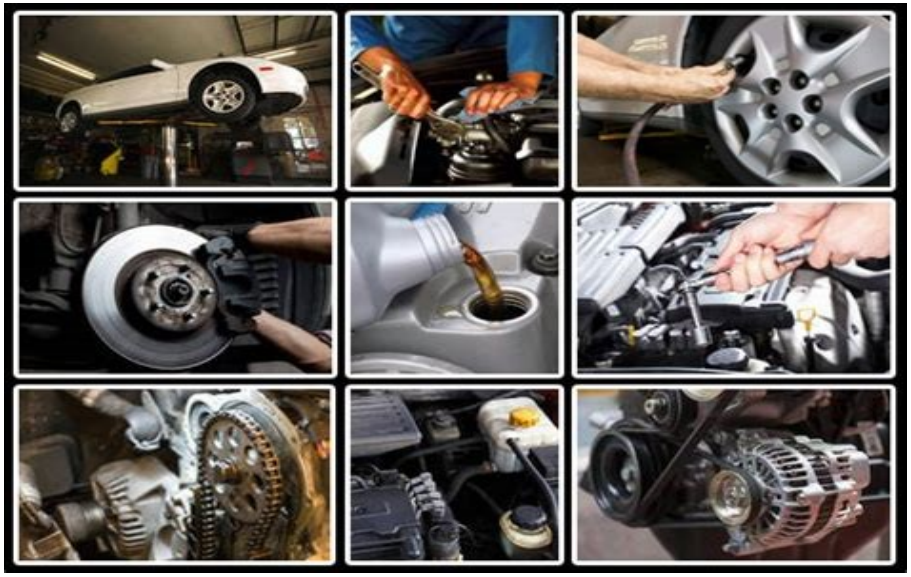
http://subs.sae.org/e-journal-06/
http://training.sae.org/eseminars/pd130702on/



Certification

To be awarded certificate in the National Diploma in Motor Vehicle Engineering the learner must have achieved the expected performance criteria set out in the different elements of each unit that make up the programme. The total credit requirement for this National Diploma is 360 Credits .

This qualification is a level 5 on the National Qualification Framework (NQF).



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Statement of competency	Unit Title	Semester (s) involved	Number of Credits
24. Demonstrate the knowledge in statistics	Advanced Engineering Mathematics	4	
25. Apply principle in engineering science	Advanced Engineering Science	4	3.0
26. Demonstrate the knowledge about maintenance and servicing of engine systems and fuel systems.	Advanced Vehicle Systems Practical	4,5	18.0
27. Demonstrate the knowledge and skills in engine auxiliary systems.	Engine Auxiliary System	5	6.0
28. Identify and demonstrate the knowledge in alternative power source.	Alternative Power Source	5	6.0
29.Demonstrate the knowledge and skills in Spark Ignition systems/electrical/electronic systems	Spark Ignition Systems	5	9.0
30. Demonstrate the knowledge in management.	Management Skills	6	4.5
31.Elaborate the principle of entrepreneurship	Entrepreneurship	6	4.5
32. Demonstrate the skills in fault diagnostic.	Faults Diagnostic	6	3.0
33. Prepare a project showing knowledge and skills.	Project	6	6.0
34. Demonstrate knowledge and practiceof collaborative skill work in motor vehicle mechanic on Work Based Experience	Work Base Experience (WBE)	1,2,3,4	91.0
TOTAL NUMBER OF CREDITS			**3600**

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