

**NATIONAL VOCATIONAL CERTIFICATE**

**IN**

**AUTOMOTIVE MECHATRONICS**

**CURRICULUM AND COURSE SPECIFICATIONS**

**2019**

**NATIONAL BOARD FOR TECHNICAL EDUCATION**

**PLOT 'B' BIDA ROAD, P.M.B. 2239, KADUNA**

## **Aim**

The National Vocational Certificate in Automotive Mechatronics is aimed at providing solutions to the service maintenance problems of high technology motor vehicles through the production of competent craftsmen and women who will be enterprising and self-reliant.

## **Objectives**

On completion of this programme, the Trainees should be able to:

- i. Function as technicians in automotive and related establishments
- ii. Carryout necessary general tests procedures, standard diagnosis and faults rectification in modern vehicles
- iii. Demonstrate the use of different sophisticated diagnostic equipment for fault detection and rectification in various modern vehicles brands
- iv. Observe relevant safety in Automotive Mechatronics Engineering practice
- v. Interpret wiring diagrams, fault codes, as well as technical reference materials.

## **Entry Qualification**

The minimum entry qualification into the National Vocational Certificate in Automotive Mechatronics programme is Post Basic Education Certificate (Post Junior Secondary School Certificate).

### Structure of the programme

The National Vocational Certificate (NVC) in Automotive Mechatronics Programme is in flexible modular form, and is structured to have three parts (i.e. NVC Part I, NVC Part II, and NVC Final each taken in a span of one year. Each part shall have a cogent and flexible structure and content that would allow the trainee a practical working skill unit and the possibility to exit at that level. Each part incorporates six months intensive training in the school and three months of supervised industrial work experience (SIWES). In a 14 weeks term, 12 weeks will be for academic activities while 2 weeks will be for registration and evaluation. For a 40hrs week, 6hrs will be for core theory courses; 2hrs General education courses and 32 hrs will be for practical.

## **Evaluation Scheme**

The National Vocation Certificate Examination must be externally moderated. In grading the awards; theory shall constitute- 20%, practicals – 50% and SIWES - 30%. If there are group practical/projects, trainees must be assessed periodically on individual basis and records kept. Note that trainees are to be assessed on completion of every module.

The grading shall be Distinction (70 and above), credit (55 – 69), Pass (40 – 54), Fail (0 -39) kept.

## Curriculum Table

### NVC Part I

TERM I					TERM II					TERM III
CODE	TITLE	T	P	CU	CODE	TITLE	T	P	CU	Industrial Training (Three months)
CSK 102	Speaking Skills in English	1	-	1	VMT 011	Number and Numeration	1	-	1	
VCS 111	Introduction to Computers	1	2	3	VCS 217	Fundamental of Internet Technology	1	2	3	
VAM 101	Technical Drawing	1	2	3	EDP 101	Element of Entrepreneurship I	1	2	3	
VAM 103	Basic Mechanics	1	2	3	VAM 102	Vehicle Routine Maintenance	1	2	3	
VAM 105	Workshop Safety Measures and Ethics	1	2	3	VAM 104	Conventional Coil Ignition System Maintenance	1	2	3	
VAM 107	Automotive Electricity /Electronics	1	2	3	VAM 106	Engine Maintenance	1	2	3	
VAM 109	Battery Maintenance	1	2	3	VAM 108	Auto-Electrical System Maintenance	1	2	3	
	Total	7	12	19		Total	7	12	19	

### NVC Part II

TERM I					TERM II					TERM III
CODE	TITLE	T	P	CU	CODE	TITLE	T	P	CU	Industrial Training (Three months)
VCS 221	Introduction to Computer Aided Design and Drafting	1	2	3	EDP 102	Element of Entrepreneurship II	1	-	1	
VAM 201	Basic Engineering Materials	1	-	1	VAM 202	Introduction to Engineering Measurement	1	2	3	
VAM 203	Automotive Sensor Technology	1	2	3	VAM 204	Alternator and Starter Motor Maintenance	1	2	3	
VAM 205	Automotive Lighting System	1	2	3	VAM 206	Electric Power-assisted Steering System	1	2	3	
VAM 207	Transistorised Ignition Sys. Maintenance	1	2	3	VAM 208	Fuel Injection System Maintenance (petrol)	1	2	3	
VAM 209	Modern Brake System	1	2	3	VAM 210	Diesel Engine Fuel System Maintenance	1	2	3	
	Total	6	10	16		Total	6	10	16	

### NVC Final

TERM I					TERM II					TERM III
CODE	TITLE	T	P	CU	CODE	TITLE	T	P	CU	Industrial Training (Three months)
VAM 301	Workshop Management and Organization	1	1	2	EDP 103	Element of Entrepreneurship III	1	-	1	
VAM 303	Safety and Comfort systems	1	2	3	VAM 302	Vehicle Communication System	1	2	3	
VAM 305	Automatic Gear Box Maintenance	1	2	3	VAM 304	Electronic Wheel Alignment	1	2	3	

VAM 307	Electronic Ignition System	1	2	3	VAM 306	Electronic Diesel Engine Maintenance	1	2	3	
VAM 309	Electronic Vehicle Diagnosis	1	2	3	VAM 308	Project	1	5	6	
	Total	5	8	14		Total	5	11	16	

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