



மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்

MANONMANIAM SUNDARANAR UNIVERSITY

**SYLLABUS FOR DIPLOMA IN TWO-WHEELER MECHANISM PROGRAM
OFFERED THROUGH DIRECTORATE OF VOCATIONAL EDUCATION (COMMUNITY
COLLEGES AND VOCATIONAL SKILL DEVELOPMENT CENTRES) FROM 2019 -
2020**



கல்விசார் நிலைக்குழுக் கூட்டம்

**MEETING OF THE STANDING COMMITTEE ON
ACADEMIC AFFAIRS HELD ON WEDNESDAY
THE 22nd JANUARY 2020**

DIPLOMA IN TWO-WHEELER MECHANISM

இரண்டு சக்கர இயந்திரவியல் பட்டயம்

SCHEME OF EXAMINATION

Subject Code	Title of the Course	Credit	Hours	Passing Minimum
Semester-I				
C19TW11/E19TW01	Fundamentals of Two wheeler	6	90	40/100
C19TW12/E19TW02	Fundamentals of Engine	6	90	40/100
C19TW13/E19TW03	Chassis and Transmission system	6	90	40/100
C19CE10/E19CE10	Communicative English	6	90	40/100
C19TWP1/E19TWP1	Practical I-Two wheeler Engines	4	120	40/100
Semester-II				
C19TW21/E19TW04	Two Wheeler Electrical System	6	90	40/100
C19TWP2/E19TWP2	Practical II-Two wheeler Transmission	4	120	40/100
C19LS23/E19LS05	Life Skill	6	90	40/100
C19TWP3/E19TWP3	Practical III-Two wheeler Electrical system	4	120	40/100
C19TWPW/E19TWPW	Project	12	150	40/100

Eligibility for admission: Pass in 10thstd examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

Examination: Passing Minimum for each Course is 40%. Classification will be done on the basis percentage marks of the total marks obtained in all the Courses and as given below:

40 % but less than 50 %	- Third class
50 % but less than 60 %	- Second class
60 % and above	- First class

Theory Paper

Internal Marks-25

External Marks-75

Syllabus**FIRST SEMESTER**

Course-I	: Fundamentals of Two wheeler
Course-II	: Fundamentals of Engine
Course-III	: Chassis and Transmission system
Course -IV	: Communicative English
Course-V	: Practical I- Two wheeler Engines

SECOND SEMESTER

Course-VI	: Two Wheeler Electrical System
Course-VII	: Practical II- Two wheeler Transmission
Course-VIII	: Life Skill
Course-IX	: Practical III- Two wheeler Electrical system
Course- X	: Project

***(Semester Pattern for Community College Only)**

Program Objectives

- To make qualified and skilled worker for the two wheeler service and maintenance sector.
- To create an opportunity for the students to have Technical education and increase the employment.

SEMESTER I

COURSE I

(C19TW11/E19TW01) FUNDAMENTALS OF TWO WHEELER

Objectives

- The course aim is to provide knowledge about the various types of two wheelers, mechanic Tools, Safety and maintenance of two wheeler.

UNIT-I TYPES OF TWO WHEELER

18 Hrs

Two wheeler- definition-types of two wheeler-moped-scooter-motor cycle-comparison- advantages and disadvantages-two wheeler manufacturers in India-history of two wheelers-specification and features of two wheelers- major components of two wheelers-function.

UNIT-II MECHANIC'S TOOLS

18 Hrs

Hand tools: Spanners –Wrenches-hammers-screw drivers- pliers-box spanners. Cutting Tools: Hacksaw-file-drill bit-tap- chisel. Measuring tools: Steel rule-divider-vernier caliper- micrometer. Special Tools: Impact wrench-torque wrench-bearing puller-stud remover-magneto puller-tyre remover.

UNIT-III SAFETY AND FIRST AID

18 Hrs

First aid-need-procedure-safety: need-precautions- auto shop safety-causes of accidents-step to prevent accident-electrical hazards in workshop-importance of earthing-electric shock-precautions against electric shock.

UNIT-IV TWO WHEELER MAINTENANCE AND SERVICE

18 Hrs

Periodical maintenance-preventive maintenance –break down maintenance-servicing procedure for Engine, fuel supply system, braking system, transmission system, electrical system.

UNIT- V

18 Hrs

TWO WHEELER MECHANISM

Electronic motor cycles & scooters history-Manufacturers of Electronic motor cycle-power source-Battery-Charging-Battery swapping-fuel cell- Construction and working comparison between Electronic vehicle and Gasoline vehicle.

REFERENCE BOOKS FOR TWO WHEELER MECHANISM

- AUTOMOBILE ENGINEERING VOL-I Dr. Kirpal singh- Standard publishers.
- AUTOMOBILE ENGINEERING VOL-II- Dr. Kirpal Singh- Standard publishers.
- Maintenance Manuals of Leading Two wheelers Manufactures in India.
- Irving P.E Motor Cycle Engineering. Temple Press Book London.
- The Cycle Motor manual Temple Press Ltd London
- Maintenance Manuals of Leading Two & Three Wheelers Manufacturers in India.
- G.B.S. Narang, 2003, "Automobile Engineering", 10th Reprint, Khanna Publishers, New Delhi.
- Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India, Chennai
- B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
- Ganesan, 2005, Internal Combustion Engines, Laxmi Publications [P] Limited, New Delhi
- Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada
- Tony Foale, 2001, Two Wheeler Motorcycle Handling and Chassis, Tonbridge, Spain

COURSE-II
(C19TW12/E19TW02) FUNDAMENTALS OF ENGINE

Objectives

- The course aim is to provide knowledge about automobile Engines and its various system.

UNIT-I ENGINES

18 Hrs

Engine: definition-types of engine-E.C engine-I.C engine-Arrangement of cylinder –components of engine :cylinder head-cylinder block –piston-connecting rod-crank shaft-cam shaft-inlet and exhaust valves-spark plug-fly wheel-Construction and working.

UNIT-II ENGINE ASSEMBLY

18 Hrs

Dismantling the engine-cleaning and inspecting the parts-checking engine box-piston rings-connecting rod-bearings-crank shaft-Assembling all the parts-Value Timing setting of Engine.

UNIT-III FUEL SUPPLY SYSTEM

18 Hrs

Fuel tank-fuel tap lock-fuel tank cap-fuel filter-types-construction and working-carburetor- function-types-construction and working-layout of fuel supply system- air-fuel mixer ratio-soak –need.

UNIT-IV COOLING SYSTEM

18 Hrs

Necessity of cooling system-Requirements of cooling system-Types of Cooling system-Working of cooling system-Merits and demerits of Air cooling system-Servicing and cleaning of cooling system-Comparison between Air cooling & water cooling system.

UNIT-V LUBRICATION SYSTEM

18 Hrs

Functions-types of lubrication system-oil mixed with petrol-pressure lubrication system-construction and working-oil pump-types-construction and working-places where grease would be used in two wheelers- oil specification – properties of good lubricating oil.

REFERENCE BOOKS FOR TWO WHEELER MECHANISM

- AUTOMOBILE ENGINEERING VOL-I Dr. Kirpal singh- Standard publishers.
- AUTOMOBILE ENGINEERING VOL-II- Dr. Kirpal Singh- Standard publishers.
- Maintenance Manuals of Leading Two wheelers Manufactures in India.
- Irving P.E Motor Cycle Engineering. Temple Press Book London.
- The Cycle Motor manual Temple Press Ltd London
- Maintenance Manuals of Leading Two & Three Wheelers Manufacturers in India.
- G.B.S. Narang, 2003, "Automobile Engineering", 10th Reprint, Khanna Publishers, New Delhi.
- Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India, Chennai
- B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
- Ganesan, 2005, Internal Combustion Engines, Laxmi Publications [P] Limited, New Delhi
- Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada
- Tony Foale, 2001, Two Wheeler Motorcycle Handling and Chassis, Tonbridge, Spain

COURSE-III

(C19TW13/E19TW03)CHASSIS AND TRANSMISSION SYSTEM

Objectives

- The course aim is to provide knowledge about chasis & various transmission system components.

UNIT-I CHARIS OF TWO WHEELER

18 Hrs

Definition for chasis-Need for chasis-Materials used for chasis -Types of chasis used in two wheelers-under bone Double cradle-components to be mounted on chasis.

UNIT-II FRAME, CLUTCH AND GEAR BOX

18 Hrs

Frame-functions-types-constructions-clutch-functions-types-dry clutch-wet clutch- centrifugal clutch-construction and working comparison advantages and disadvantages. Gear box- functions-needs- construction and working.

UNIT-III BRAKING SYSTEM

18 Hrs

Necessity of braking system-components of braking system-types of braking system –mechanical brake-disc brake system- construction and working comparison-advantages and disadvantages.

UNIT –IV SUSPENSION SYSTEM

18 Hrs

Necessity of suspension system-types of suspension system-open coil helical spring suspension system-pivot link suspension system-telescopic suspension system-mono suspension system- shock absorber- construction and working-comparison- advantages and disadvantages

UNIT- V WHEELS AND TYRES

18 Hrs

Wheels-functions-types of wheels-disc wheel-spokes wheel- alloy wheel-construction –comparison-advantages and disadvantages- tyre –purpose types-cross ply tyre –radial ply tyre- construction- comparison- advantages and disadvantages-tubeless tire- construction – advantages and disadvantages – tyre maintenance procedures.

REFERENCE BOOKS FOR TWO WHEELER MECHANISM

- AUTOMOBILE ENGINEERING VOL-I Dr. Kirpal singh- Standard publishers.
- AUTOMOBILE ENGINEERING VOL-II- Dr. Kirpal Singh- Standard publishers.
- Maintenance Manuals of Leading Two wheelers Manufactures in India.
- Irving P.E Motor Cycle Engineering. Temple Press Book London.
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- G.B.S. Narang, 2003, "Automobile Engineering", 10th Reprint, Khanna Publishers, New Delhi.
- Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India, Chennai
- B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
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- Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada
- Tony Foale, 2001, Two Wheeler Motorcycle Handling and Chassis, Tonbridge, Spain

Course IV
(C19CE10/E19CE10)COMMUNICATIVE ENGLISH

1. **Basic Grammar:**
 - a. Review of grammar
 - b. Remedial study of grammar
 - c. Simple sentence
 - d. Word passive voice etc.
2. **Bubbling Vocabulary:**
 - a. Synonyms
 - b. Antonyms
 - c. One – work Institution
3. **Reading and Understanding English**
 - a. Comprehension passage
 - b. Précis – writing
 - c. Developing a story from hints.
4. **Writing English**
 - a. Writing Business letters.
 - b. Paragraph writing
 - c. Essay writing
 - d. Dialogue writing
5. **Speaking English**
 - a. Expressions used under different circumstances
 - b. Phonetics

Reference :

1. V.H.Baskaran – “English Made Easy”
2. V.H.Baskaran – “English Composition Made Easy”
(Shakespeare Institute of English Studies, Chennai)
3. N.Krishnaswamy – “Teaching English Grammar”
(T.R.Publication, Chennai)
4. “Life Skill” – P.Ravi, S.Prabakar and T.Tamzil Chelvam,
M.S.University, Tirunelveli.

COURSE- V
PRACTICAL I
(C19TWP1/E19TWP1)TWO WHEELER ENGINES

Objectives

- To identify the various tools and their application used in Automobiles.
- Dismantle & Assemble of various two wheeler Engines.
- Overhauling of various Engine Components.

LIST OF EXERCISES:

- Dismantling, Identification of parts and Assembling of Four Stroke Petrol Engine.
- Dismantling, Identification of parts and Assembling of Two Stroke Petrol Engine.
- Servicing of Fuel tank, Fuel filter and Fuel tap.
- Overhauling of constant vacuum type Carburetor.(Yamaha Fz, Honda Unicorn, etc.,)
- Overhauling of variable vacuum type Carburetor.(Hero Splendor, TVS Star City, etc.,)
- Dismantling and Assembling of Kick Starter Mechanism.
- Engine oil Changing and Cleaning of Oil Filters.
- Adjusting of valve Clearance and valve lapping.

**SEMESTER II
COURSE-VI**

(C19TW21/E19TW04) TWO WHEELER ELECTRICAL SYSTEM

Objectives

- Study about the batteries used in automobiles.
- Study about the starting, charging and ignition system.
- To accure knowledge about two wheeler lighting system.

UNIT- I BASIC ELECTRICITY

18 Hrs

Definition-current-Electromotive force-voltage-potential difference Inductance and capacitance-Properties of conductors-insulators and semi conductors-importance of earthing on chasis in Automotive wiring-safety in Electrical system.

UNIT-II BATTERY

18 Hrs

Functions-lead acid battery-construction and working – testing of batteries hydrometer test- open circuit test- cadmium test- hydrometer- construction and working- charging of battery- charging methods- battery rating-battery maintenance.

UNIT-III STARTING AND CHAGING SYSTEM

18 Hrs

Starting motor- construction and working- dynamo- constriction and working-regulator and rectifiers- construction and working – charging circuit.

UNIT-IV IGNITION SYSTEM

18 Hrs

Function-components of ignition system- types battery coil ignition system-magneto coil ignition system- electronics ignition systems- construction working-comparison- advantages and disadvantages. Spark plug- function-construction and working- ignition coil- construction and working.

UNIT-V LIGHTING SYSTEM

18 Hrs

Head light – indicator light – tail lamb- brake light- panel light – purpose-construction and working- electric circuit- electric horn- construction and working – fuel level indicator- speedometer- odometer- brake light.

REFERENCE BOOKS FOR TWO WHEELER MECHANISM

- AUTOMOBILE ENGINEERING VOL-I Dr. Kirpal singh- Standard publishers.
- AUTOMOBILE ENGINEERING VOL-II- Dr. Kirpal Singh- Standard publishers.
- Maintenance Manuals of Leading Two wheelers Manufactures in India.
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- Ganesan, 2005, Internal Combustion Engines, Laxmi Publications [P] Limited, New Delhi
- Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada
- Tony Foale, 2001, Two Wheeler Motorcycle Handling and Chassis, Tonbridge, Spain

COURSE –VII
PRACTICAL II
(C19TWP2/E19TWP2)TWO WHEELER TRANSMISSION

Objectives

- To identify the various Tools used in Two wheeler workshop.
- Dismantling servicing and assembling of clutch and gear box.
- Ability to service Braking system.
- Ability to do Tube Valcanising.

LIST OF EXERCISES:

- Dismantling and Assembling of Centrifugal Clutch.
- Dismantling and Assembling of Multi plate wet Clutch.
- Dismantling and Assembling of Clutch Variator.
- Dismantling and Assembling of Two Wheeler Gear box.
- Servicing of Drum brake system.
- Servicing of Disc brake system.
- Adjustment of Clutch and Chain.
- Servicing of Two wheeler Fork.
- Tube vulcanizing.

Course VIII
(C19LS23/E19LS05) Life Skill

I Life Coping or adjustment

- (a) External and internal influence in one's life
- (b) Process of coping or adjustment
- (c) Coping with physical change and sexuality
- (d) Coping with stress, shyness, fear, anger far live and criticism.

II Attitude

- (a) Attitude
- (b) Self acceptance, self – esteem and self actualization
- (c) Positive thinking

III Problem Solving

- (a) Goal Setting
- (b) Decision Making
- (c) Time Management and stress Management.

IV Computers

- (a) Introduction to Computers
- (b) M.S.Office
- (c) Power Point

V Internet

- (a) Introduction to internet
- (b) E – mail
- (c) Browsing

References:

- 1) Life Skill Programme course I & II by Dr. Xavier Alphona MCRDCE Publications. R.K.Mutt Road, Chennai – 28
- 2) ஆளுமை பண்பு வளர்த்தல் மற்றும் தகவல் தொடர்பு by M.Selvaraj Community College,Palayamkottai
- 3) “Life Skill” –P.Ravi, S.Prabahar & T.Tamil Chelvam, M.S. University, Tirunelveli

COURSE-IX

PRACTICAL III

(C19TWP3/E19TWP3)TWO WHEELER ELECTRICAL SYSTEM

Objectives

- To identify the various Electrical tools and their uses in Automobiles.
- To make ability to service various Electrical components of two wheeler.
- Ability to replace various Electrical parts.

LIST OF EXERCISES:

- Removing, Testing and Charging of Two Wheeler Batteries.
- Servicing of Two Wheeler Starter Motor.
- Serving of Two Wheeler Ignition system and Spark Plug.
- Study of Two Wheeler Handle bar Controls.
- Replacing of Bulbs in Head lamp, Tail lamp and Side lamp.
- Servicing and Tune up of Electric Horn.
- Trace out the fault in two-wheeler Electrical System.
- Study of Regulator, Rectifier and Capacitor Discharge Ignition (CDI) unit.

COURSE X

(C19TWPW/E19TWPW)PROJECT
