ANNA UNIVERSITY OF TECHNOLOGY
COIMBATORE

DIRECTORATE OF ONLINE AND DISTANCE EDUCATION

DIPLOMA
(Calendar Year: 2008)

SYLLABUS
WITH CURRICULAM & REGULATIONS
1. PRELIMINARY DEFINITIONS AND NOMENCLATURE
   In this Regulation, unless the context otherwise requires:
   
i) “Programme” means Diploma programme.
   
ii) “Branch” means specialization or discipline of Diploma programme.
   
iii) “Course” means a theory or practical subject that is normally studied.
   
iv) “University” means ANNA UNIVERSITY OF TECHNOLOGY COIMBATORE.

2. PROGRAMMES OFFERED
   1. AC and Refrigerator Technician
   2. Animation and Graphics
   3. Auto Electrician
   4. Auto Mechanic
   5. Home Appliances Servicing
   6. Knitwear Technician
   7. Mobile Phone Servicing
   8. Printing Technician
   9. Share Market Operator

3. ADMISSION
   1. Candidates seeking admission to the Diploma Programme should have passed the Higher Secondary Examination of (10+2) curriculum (Academic stream) prescribed by the Government of Tamil Nadu or equivalent.
   2. The eligibility criteria shall be prescribed by the Syndicate of the University from time to time.
4. STRUCTURE OF PROGRAMME
1. Every Programme shall have a curriculum comprising of theory and practical courses, and a project work with well defined syllabi.
2. The medium of instruction, examinations and project report shall be in English.

5. DURATION AND PATTERN
A student is normally expected to complete the Diploma Programme in one year but in any case not more than 3 years from the admission.

6. INTERACTIVE LEARNING PROGRAMME
1. Interactive Learning Programmes are arranged on Saturdays and Sundays or on Public Holidays. University will arrange Tele Conference / Case Studies in different centres after due notification.
2. Students need to effectively use the ILPs where they can interact with the faculty. The schedule of ILP will be notified in the website. However attending the ILP classes are not mandatory for Diploma programmes.

7. SYSTEM OF EXAMINATION
1. Each course (theory and practical) and project work shall be evaluated for a maximum of 100 marks.
2. The University examinations of 3 hours duration shall ordinarily be conducted between December & January and between May & June.

8. REQUIREMENTS FOR APPEARING FOR UNIVERSITY EXAMINATION
A candidate shall normally be permitted to appear for the University examination of the current year if he/she satisfied the following condition requirement:

- Student is expected to attend all ILP classes and secure 100% attendance. However, in order to allow for certain unavoidable reasons, the student is expected to attend at least 50% of the ILP classes (Three pair of Saturday and Sunday). For Diploma programmes the attendance in ILP classes is not mandatory.
- Registration is mandatory for current semester / year examinations as well as arrears examinations. Student is expected to register for examination for all courses of that semester / year.
9. PASSING REQUIREMENTS

1. A candidate, who secures not less than 40% of total marks prescribed for all the courses, shall be declared to have passed the Examination. If a candidate fails to secure a pass/absent in a particular course, it is mandatory that he/she register and reappear for the examination in that course during the next examination is conducted in that course; he/she should continue the same till he/she secures a pass.

2. A candidate who opts for project work shall be declared to have passed in the Project work and Viva–voce examination, if he/she secures an overall minimum of 40% marks. If a candidate fails to secure a pass/absent in the Project work and Viva-voce examination may be permitted to resubmit a project and appear for the viva – voce for the second time if so recommended by the examiners. No candidate shall be permitted to submit the project work and appear for the Viva – Voce on more than two occasions.

Note: If a student indulges in malpractice in any of the University examinations, he/she shall be liable for punitive action as prescribed by the University from time to time.

10. ELIGIBILITY FOR THE AWARD OF DEGREE

A student shall be declared to the eligible for the award of the Diploma Degree provided the student has

• Successfully completed the course requirements and passed all the prescribed examinations within a maximum period 3 years reckoned from the commencement of the course to which the candidates was admitted.

• The award of Degree must have been approved by the Syndicate of the University.

11. CLASSIFICATION OF THE DEGREE AWARDED

1. A candidate who qualifies for the award of the Degree having passed the examination in all the courses in his/her first appearance within a maximum period of 1 year (1 year from the admission) and securing an aggregate of not less than 75% of total marks shall be declared to have passed the examination in Distinction.

2. A candidate who qualifies for the award of the Degree having passed the examination in all the courses within a maximum period of 1 year reckoned from the commencement of study and securing an aggregate of not less than 60% of total marks shall be declared to have passed the examination in First Class.
3. A candidate who qualifies for the award of the Degree having passed the examination in all the courses not within a maximum period of 1 year reckoned from the commencement of study and / or securing an aggregate of less than 60% of total marks shall be declared to have passed the examination in Second Class.

4. All other candidates shall be declared as failed candidates.

12. GRADING SYSTEM

<table>
<thead>
<tr>
<th>Marks</th>
<th>Grade</th>
<th>Grade Legend</th>
<th>Grade Points</th>
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<tbody>
<tr>
<td>95% - 100%</td>
<td>O</td>
<td>Outstanding</td>
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<tr>
<td>90% - 94%</td>
<td>E</td>
<td>Excellent</td>
<td>9.5</td>
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<tr>
<td>86% - 89%</td>
<td>A</td>
<td>Very Good</td>
<td>9.0</td>
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<tr>
<td>76% - 85%</td>
<td>B</td>
<td>Good</td>
<td>8.0</td>
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<tr>
<td>66% - 75%</td>
<td>C</td>
<td>Above Average</td>
<td>7.0</td>
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<tr>
<td>56% - 65%</td>
<td>D</td>
<td>Average</td>
<td>6.0</td>
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<tr>
<td>40% - 55%</td>
<td>S</td>
<td>Satisfactory</td>
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<td>Below 40%</td>
<td>RA</td>
<td>Reappearance</td>
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<td></td>
<td>W</td>
<td>Withheld</td>
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<tr>
<td></td>
<td>AB</td>
<td>Absent</td>
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# Diploma Curriculum

## Diploma in A/C and Refrigerator Technician

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Marks</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>150101</td>
<td>PRINCIPLES OF REFRIGERATION</td>
<td>100</td>
<td>3</td>
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<tr>
<td>150102</td>
<td>PRINCIPLES OF AIR-CONDITIONING AND COLD STORAGE</td>
<td>100</td>
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<tr>
<td>150103</td>
<td>REFRIGERATOR HARDWARE</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>150104</td>
<td>HVAC DESIGN</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>150105</td>
<td>ELECTRICAL TECHNOLOGY</td>
<td>100</td>
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<tr>
<td>150106</td>
<td>PROJECT WORK</td>
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**Total Credits**: 18

## Diploma in Animation and Graphics

<table>
<thead>
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<th>Course</th>
<th>Marks</th>
<th>Credits</th>
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<tbody>
<tr>
<td>150201</td>
<td>BASICS OF COMPUTER GRAPHICS</td>
<td>100</td>
<td>3</td>
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<tr>
<td>150202</td>
<td>2D AND 3D GRAPHICS</td>
<td>100</td>
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<tr>
<td>150203</td>
<td>MULTIMEDIA AND WEB DESIGNING TOOLS</td>
<td>100</td>
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<td>150204</td>
<td>ANIMATION TOOLS</td>
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<td>150205</td>
<td>MAYA</td>
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<tr>
<td>150206</td>
<td>PROJECT WORK</td>
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**Total Credits**: 18

## Diploma in Auto Mechanic

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<td>150301</td>
<td>AUTOMOBILE ENGINES</td>
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<tr>
<td>150302</td>
<td>AUTOMOTIVE FUELS AND COMBUSTION</td>
<td>100</td>
<td>3</td>
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<tr>
<td>150303</td>
<td>CHASSIS, SUSPENSION AND TRANSMISSION</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>150304</td>
<td>AUTOMOBILE BRAKING AND ELECTRICAL SYSTEM</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>150305</td>
<td>AUTOMOBILE MAINTENANCE AND TROUBLESHOOTING</td>
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**Total Credits**: 15
### DIPLOMA IN MOBILE PHONE SERVICING

**Branch Code - 504**

<table>
<thead>
<tr>
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<th>Course</th>
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<td>WIRELESS COMMUNICATIONS</td>
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<tr>
<td>150402</td>
<td>INTRODUCTION TO MOBILE COMMUNICATION SYSTEMS</td>
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<td>150403</td>
<td>TECHNOLOGIES IN MOBILE DEVICES</td>
<td>100</td>
<td>3</td>
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<tr>
<td>150404</td>
<td>FUNDAMENTALS OF PCB TECHNOLOGY</td>
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<tr>
<td>150405</td>
<td>PCB DESIGN</td>
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Total Credits: 15

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### DIPLOMA IN KNITWEAR TECHNICIAN

**Branch Code - 505**

<table>
<thead>
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<tr>
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<td>FUNDAMENTALS OF TEXTILE MATERIALS</td>
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<tr>
<td>150502</td>
<td>PROCESSING OF KNIT FABRIC</td>
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<td>150503</td>
<td>KNITTING TECHNOLOGY</td>
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<td>150504</td>
<td>TEXTILE TESTING</td>
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<tr>
<td>150505</td>
<td>FASHION AND APPAREL DESIGN</td>
<td>100</td>
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Total Credits: 15

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### DIPLOMA IN SHARE MARKET OPERATOR

**Branch Code - 506**

<table>
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<tbody>
<tr>
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<td>FINANCIAL DERIVATIVES</td>
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<td>150602</td>
<td>INDIAN STOCK MARKET</td>
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<tr>
<td>150603</td>
<td>SECURITY ANALYSIS</td>
<td>100</td>
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<tr>
<td>150604</td>
<td>PORTFOLIO MANAGEMENT</td>
<td>100</td>
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<tr>
<td>150605</td>
<td>MUTUAL FUND</td>
<td>100</td>
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Total Credits: 15

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### DIPLOMA IN PRINTING TECHNICIAN

**Branch Code - 507**

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<td>150702</td>
<td>PRINTING PROCESS</td>
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<td>150703</td>
<td>IMAGE REPRODUCTION SYSTEMS</td>
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<td>3</td>
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<tr>
<td>150704</td>
<td>PRINCIPLES OF BOOK PUBLISHING</td>
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<td>150705</td>
<td>DESK TOP PUBLISHING</td>
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Total Credits: 15
### DIPLOMA IN HOME APPLIANCES SERVICING

**Branch Code - 508**

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<td>150102</td>
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<td>REFRIGERATOR HARDWARE</td>
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<td>150801</td>
<td>COLOUR TV INSTALLATION AND SERVICING</td>
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<td>150802</td>
<td>PRINCIPLES OF AIR CONDITIONING AND COLD STORAGE</td>
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<tr>
<td>150803</td>
<td>AUDIO AND VIDEO SYSTEMS</td>
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**Total Credits** 15

### DIPLOMA IN AUTO ELECTRICIAN

**Branch Code - 509**

<table>
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<td>150301</td>
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<td>150303</td>
<td>CHASSIS, SUSPENSION AND TRANSMISSION</td>
<td>100</td>
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<tr>
<td>150304</td>
<td>AUTOMOBILE BRAKING AND ELECTRICAL SYSTEM</td>
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<tr>
<td>150305</td>
<td>AUTOMOBILE MAINTENANCE AND TROUBLESHOOTING</td>
<td>100</td>
<td>3</td>
</tr>
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</table>

**Total Credits** 15
OBJECTIVE: To provide a comprehensive view on essential theories and practical aspects of refrigeration systems.

MODULE 1:

MODULE 2:
Introduction to Air Refrigerator Systems – Methods of Air Refrigeration Systems – Simple Air Cooling System – Simple Air Evaporative Cooling System – Boot Strap Air Cooling System – Boot Strap Air Evaporative Cooling System – Reduced Ambient Air Cooling System – Regenerative Air Cooling System – Comparison of Various Air Cooling System used for Aircraft

MODULE 3:

MODULE 4:

MODULE 5:

Text Books:

References:
OBJECTIVE: To impart the fundamental concepts and design aspects of air-conditioning systems.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
MODULE 6:
Applications of Air Conditioning – Room Air Conditioners – Water Coolers – Capacity of
Water Coolers – Applications of Air Conditioning in Industry – Refrigerated Trucks – Marine Air
Conditioning – Ice Manufacture – Cooling of Milk – Cold Storages – Quick Freezing – Cooling and
Heating of Foods – Freeze Drying – Heat and Mass Transfer through the Dried Material

Text Books:

References:
OBJECTIVE: To highlights the features and characteristics of various refrigerator hardware including compressors, condensers and evaporators.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
150104 - HVAC DESIGN

OBJECTIVE: To provide a comprehensive view on essential theories and practical aspects of heating and ventilation systems.

MODULE 1:
Overview of Indoor Air Quality – Discomforts and Diseases Associated with Poor IAQ – Pollutants and their Sources – Instruments for Monitoring Air Pollution – Pollutant Control – IAQ Considerations in Air Conditioning System Design – Overview of Ventilation – Natural Ventilation – Infiltration – Air Filtration – Causes of Indoor Air Pollution and Need for Proper Air Cleaning – Methods of Removing Dust – Types of Air Cleaning Devices – Filter Performance

MODULE 2:

MODULE 3:

MODULE 4:
Humidification and Dehumidification – Methods of obtaining Humidification and Dehumidification – Sensible Heat Factor – Cooling and Dehumidification – Cooling with Adiabatic Humidification – Cooling and Humidification by Water Injection (Evaporative Cooling) – Heating and Humidification – Heating and Humidification by Steam Injection – Heating and Dehumidification-Adiabatic Chemical Dehumidification – Adiabatic Mixing of Two Air System.

MODULE 5:
**MODULE 6:**


**Text Books:**


**References:**

150105 - ELECTRICAL TECHNOLOGY

OBJECTIVE: To expose the students to the basic concepts of electrical circuits and machines.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
V.K. Mehta, Rohit Mehta, “Principles of Electrical Engineering” - S.Chand Publication
150201 - BASICS OF COMPUTER GRAPHICS

OBJECTIVE: To impart the fundamental concepts of Computer Graphics.

MODULE 1:

MODULE 2:

MODULE 3:
Attributes of Output Primitives – Line Attributes – Curve Attributes – Color and Grayscale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions – Antialiasing – Filtering Techniques – Pixel Phasing – Antialiasing

MODULE 4:

MODULE 5:

MODULE 6:
Computer Animation – Design of Animation Sequences – General Computer Animation Functions – Raster Animations – Computer Animation Languages – Key Frame Systems – Motion Specifications

Text Books:
OBJECTIVE: To provide the various aspects of 2D and 3D graphics and their mathematical representations.

MODULE 1:

MODULE 2:
2D Viewing – The Viewing Pipeline – Viewing Coordinate Reference Frame – Window to Viewport Coordinate Transformation – 2D Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To provide all-round exposure on various multimedia and web development tools

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
Introduction to Dreamweaver MX – Working with Tables, Anchors and Frameset – Layers and Style sheets – Forms and Media Elements

MODULE 6:

Text Books:
OBJECTIVE: To provide all the aspects of various animation tools

MODULE 1:

MODULE 2:

MODULE 3:
Animation in Flash – Working with Timeline Effects – Using the Transform Timeline Effect – Using the Explode Timeline Effect – Using the Frame-by-Frame Animation Technique – Using Motion Tweening to Create Animations – Using Shape Tweening to Create Animations – Animating Filters – Applying the Bevel Filter – Applying the Glow Filter – Animating the Filter using the Motion Tween.

MODULE 4:

MODULE 5:

MODULE 6:
Lights – Standard and Photometric Lights – Key Light, Fill Light and Back Light – Default Lightning – Creating Standard Light Objects – Modifying Parameters of Light Object – Animation in 3dsMax – Understanding Frames, Key Frames and Keys – 3dsMax Animation Tools – Changing the number of Frames – Animating Objects in Auto Key and Set Key Mode – Working with the Motion Panel – Assigning a Path Constraint

OBJECTIVE: To provide clear knowledge about the use, design and implementation of animation software development using Maya 2008

MODULE 1:

MODULE 2:
Polygon Modeling in Maya 2008 – Exploring the Components of a Polygon Mesh – Creating a Polygon Mesh – Modifying a Polygon Mesh

MODULE 3:
NURBS Modeling – NURBS Curves – Creating a NURBS Curve – Editing a NURBS Curve – Creating NURBS Surface – Editing a NURBS Surface

MODULE 4:
Animating Objects in Maya 2008 – Basics – Types of Animation – Using the Animation Controls – Animating an Object Using Key Frame Animation – Adding Sound to an Animation – Previewing an Animation

MODULE 5:
Shading, Texturing and Lighting – Shader Types – Shader Attributes – Hyper shade – Using Hyper shade – Maya Lights – Adding Shadows – Mental Ray Lighting – Lighting Effects

MODULE 6:

Text Books:
150301 - AUTOMOBILE ENGINES

MODULE 1:
Introduction to automobile- Brief history- Classification- parts of an automobile- Description- performance- rolling wind and gradient resistance. Heat engines- internal and external combustion engines- development and classification- Application of IC Engines- Engine cycle- energy balance

MODULE 2:
Parts of IC engines- cylinder, head, piston, Rings, connecting rod, Crankshaft-Flywheel and Governor –Types of Governors- Value operating mechanisms- Valve -Petrol engine parts- Sparkplug- Operating range- Firing voltage -Carburetor –Fuel pump- Diesel engine parts- Fuel atomizer- IC Engines bore, stroke, BDC, TDC, Swept volume compression ratio.

MODULE 3:
Working cycles- Otto cycle, Diesel cycle, Dual combustion cycle- four stoke Ottocycle engines- four stoke diesel cycle engine- Valve timing diagrams- Two stroke petrol engine- Compression ignition engines- Comparison of four stoke and Two stroke engines- SI and CI engines.

MODULE 4:
Testing and performance of IC engines-power and mechanical efficiency-basic measurement-speed ,fuel consumption, air consumption ,smoke density, measurement of indicated power-engine friction-measurement of fractional power- engine performance curves- SFC –Fuel consumption load output and exhaust composition-Governing of IC engines-Noise abatement-Heat balance sheet-Morse test

MODULE 5:

MODULE 6:
Construction and working of Two stoke engines- Port timing diagram- disadvantage of Two stoke SI engines and CI engines- Scavenging efficiency- scavenging systems- Loop scavenging- Cross scavenging- Crankcase scavenging-Scavenging pumps blowers.

Text Books:
150302 - AUTOMOTIVE FUELS AND COMBUSTION

MODULE 1:

MODULE 2:
Advantages of high octane fuel-properties of SI engine fuels-Diesel fuel- Cetane number- diesel index- alternative fuels for IC engines- -advantages and disadvantages-alcohol as fuels- methane as a fuel –ethanol as fuel-properties of ethanol and methanol –fuel blends-hydrogen as fuel advantages and disadvantages-Natural gas fuel advantages and disadvantages-Biogas.

MODULE 3:
Purpose of supercharging-object-supercharging of SI engines-boost pressure and pressure ratio- supercharging power-supercharging of CI engines –Superchargers-supercharging arrangements- turbochargers- altitude compensation-methods of turbo charging-Problems

MODULE 4:

MODULE 5:
Performance chamber –Combustion chamber design- Induction Swirl- Squish and table-Quench area- Turbulence- Surface to volume ration- Compression ration- Types of combustion chambers – Divided combustion chamber- Combustion in CI engines- Three phases of CI engine combustion- factors affecting combustion- combustion in diesel engines- Delay period in CI engines –Diesel knock- CI engine combustion chambers- Types- Cold starting aids.

MODULE 6:
Cooling air and water requirements. Cooling systems- Role of anti-freeze solution- Phenonmosyphon cooling- Forces cool systems- Prescribed water cooling- Evaporation cooling- Components of water cooling systems. Water jacket ,water pump fan, thermostat, connecting hoses, radiators- Specification -the cooling system cooling system data of some Indian vehicles.

Text Books:
150303 - CHASSIS, SUSPENSION AND TRANSMISSION

MODULE 1:
Chassis- Classification - Fitting of engine - Engine fitted ingrown but crosswise - Frame - Functions - types of frames - defects in chassis frame - body - vehicle dimensions - Introduction to suspension system - Functions and requirements - Elements of a supervision system

MODULE 2:
Springs - Types of springs - Dampers - telescopic, rocking lever - Suspension systems - Independent suspension - Four wheel independent front suspension - Stabilizer - Rigid suspension - Independent rear suspension - Interconnected suspension systems - Hydroelectric, hydra gas - Suspension systems of Indian automobiles

MODULE 3:
Wheels and tyros - Wire wheel - Light alloy cast rip wheels - Tyres - Functions - Types of tyres - Tubeless tyre - Tyre construction - Radial ply construction - Tyre material - Tyre shape - tread pattern - Tyre markups - type inflation pressure - causes of tyre wear - Factors affecting tyre life - Tyre maintenance - Enhancing tyre life - Wheel balancing systems

MODULE 4:
Requirements of transmission system - Types - clutch - gearbox - and line axle transmission - Circles' of transmission system - clutch - Function and requirements - Principal of operation - Friction materials - Friction and cone clutch - Single plate clutch - Multiplate clutch - Plate clutch parts - Centrifugal clutch - automatic clutch adjustment - Gearbox - Ratios - Types of gear boxes - sliding mesh gear box - Constant mesh gear box -

MODULE 5:
Synchromesh - Progressive type gear boxes - Maruthi800 Gearbox - Gear shifting - Transfer case - Troubleshooting of gearbox - Gear boxes used in India automobiles - Automatic transmission - Overdrive - Four-wheel unit - Propeller shaft - Hotchkiss type propeller shaft - Crowrushing universal joints - Construction and working - Type of universal joints - Final drive and differical - Bevel and hypoid - Bevel gear - Differential - rear axles - Half floating rear axle - Causes of axle failures - Real axle noises

MODULE 6:
Purpose of steering system - Function - Requirements of a good steering system - General arrangement - Working of steering mechanism - Description of steering parts - Steering gears - Worm and roller sleeping gear - rack and pinion sleeping gear - sleeping ration - Reversibiling - Sleeping geometry - Wheel alignment - King pin inclination caster - Toe - Out - Checking of wheel alignment - Steering Mechanisms - Steering gear mechanisms - Under steering and over treeing - steering linkages - steering wheel and column - Steering arm - Draglink - Power steering - Fundamentals - Types of power steering systems - Electronic power steering - steering geometry - steering troubleshooting - Front axle - Construction - Type of front axles - Stub axles - Braking system.

Text book:
150304 - AUTOMOBILE BRAKING AND ELECTRICAL SYSTEM

MODULE 1:
Introduction- necessity of a braking system-functions of brakes-requirements of a good braking system-classification of brakes mechanical brakes- hand brakes –disc brakes- hydraulic brakes-advantages- bleeding of brakes-hill holder-power brakes-air brakes- main parts-engine exhaust brake-vacuum brakes-electric brakes-factors controlling the stop of an automobile-break shoes and linkages brake testers-break service

MODULE 2:
Introduction to electrical system-typical automotive electrical system-battery system-types of batteries-chemistry of a lead acid battery-Zinc air battery-Capacity of a battery-Efficiency, primary, secondary cells-battery rating-battery maintenance-battery charging-battery data of automobiles-factors affecting battery life-battery faults and troubles-dry charged batteries-battery testing-specific gravity test, high rate discharge test-starting motor-description field coil windings – drive unit-Overrunning clutch-Magnetic switch or relay.

MODULE 3:

MODULE 4:

MODULE 5:
Lighting and accessories-Main circuits of the automobile electrical system-Car wiring diagram-Symbols used-Lighting system-Wiring circuit –Fuses-Head lights-Pre focus bulb-Head lamp-Head lamp double filament-Light switch-Dimmer and stop light switch-Indicating lights

MODULE 6:
Trouble shooting of lighting system-Essential accessories-Types of horn-Windscreen wiper-Water temperature gauge-Speedometer and odometer assembly-Ventilating system-Heating system- Air conditioning system-Components

Text Books:
150305 - AUTOMOBILE MAINTENANCE AND TROUBLE SHOOTING

MODULE 1:
Lubrication –Chart-Properties of engine oils-Automobile lubricating methods- Preventive maintenance schedule- Engine maintenance- Connecting rod assembly –Piston and rings-Crankshaft assembly- Valve mechanism- Cam shaft- Cylinder head cylinder block.

MODULE 2:

MODULE 3:
Automobile body and safety consideration-Car driving-Basic requirements- Preliminary requirements-Police signals-Traffic signs-Driving practice of four wheeler-Fuel saving-Type of garages-Garage tools-Application of tools-Flaring, swaging, tubecutter, tube blender, Pinch off tools, Wrenches and dies-Safety precautions-Garages service station equipment.

MODULE 4:
Zero emissions-SI engine emission and control-three way catalytic converter-electronic catalytic converter- exhaust emission control by fuel variation-diesel engine emissions-exhaust smoke- causes of smoke- measurement of smoke-control of smoke-gasoline and diesel emissions-effects of emissions on human health

MODULE 5:

MODULE 6:
Troubleshooting of cooling system- Trouble shooting of ignition system-. trouble shooting chart of break shoes and drums- trouble shooting chart of hydraulic break system-air breaks-Troubleshooting of heating system-Trouble shooting of air conditioning system.

Text book:
150401 – WIRELESS COMMUNICATIONS

OBJECTIVE: To impart the fundamental concepts of wireless data communications technologies

MODULE 1:

MODULE 2:

MODULE 3:
Low Rate Wireless Personal Area Networks – Definition – Infrared WPAN – RF WPAN – Low Rate WPAN Security – High Rate Wireless Personal Area Networks – Standards – 802.15.3 High Rate WPAN – Ultra Wide Band – WPAN Challenges

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
150402 – INTRODUCTION TO MOBILE COMMUNICATION SYSTEMS

OBJECTIVE: To make the students to understand the basic aspects of mobile communications.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:
Mobile Transport Layer – Conventional TCP/IP Protocols – Indirect TCP – Snooping TCP – Mobile TCP – Other Methods of TCP for Mobile Networks – TCP Over 2.5G / 3G Mobile Networks

Text Books:
OBJECTIVE: To provide an in-depth knowledge of technologies and technical concepts in mobile devices.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To explore the basics of PCB technology.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To provide an in-depth understanding of how to design various kinds of highly reliable, professional quality PCBs with low investment costs.

MODULE 1:

MODULE 2:
Design Rules for Digital PCBs – Reflections – Crosstalk – Ground and Supply Line Noise – Electromagnetic Inference from Pulse Type EM Fields

MODULE 3:

MODULE 4:
Design Rules for Analog Circuit PCBs – Design rules for PCBs in Power Electronics Applications – Design Rules for PCBs in Microwave Applications – Basic Definitions – Strip and Microstrip Line – Applications – Materials for Microwave PCBs – Fabrication of PCBs – Uses

MODULE 5:
Artwork – Basic Concepts – Basic Approaches – Artwork Taping Guidelines – General Artwork Rules – Artwork Check and Inspection

MODULE 6:

Text Books:
150501 – FUNDAMENTALS OF TEXTILE MATERIALS

OBJECTIVE: To provide in-depth knowledge of the origins, properties and manufacture of fabric.

MODULE 1:

MODULE 2:
Animal Fibres – Wool – Silk – Casein – Fibre – Soyabean Protein Fibre – Peanut Fibre – Corn Fire

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To make the students to understand the basics of processing the knitted fabric.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To make the students to understand the basics of Knitting Technology.

MODULE 1:
Weft Knitting Machines and Industry – Knitting Terms and Functional Elements – Selection Criteria in Weft Knitting – Principal Stitches in Weft Knitting – Basic Structures and Notations in Weft Knitting – Basic Machines and Fabrics

MODULE 2:
Double Knit Structures – Patterning in Weft Knitting – Needle Selection Techniques in Circular Knitting Machines – Weft Knit Fabric Geometry

MODULE 3:
Knitting Dynamics – Quality Control in Circular Weft Knitting – Circular Knitting Developments – Calculations in Weft Knitting

MODULE 4:
Finishing of Knitted Fabrics – Wrap Knitting – Functional Elements of Wrap Knitting – Patterning in Wrap Knitting – Tricot and Raschel Machines – Principal Stitches of Wrap Knitting

MODULE 5:
Structures of Wrap Knitting – Yarn Preparation, Yarn Feed and Fabric Take-up – Wrap Knit Fabric Geometry and Calculations

MODULE 6:
Specialty Wrap Knits – Warp Knitted Technical Textiles – Flat Bed Knitting – Hosiery Socks Knitting

Text Books:
150504 - TEXTILE TESTING

OBJECTIVE: To impart the fundamental aspects of textile testing in different stages like fibre, yarn, and in fabric.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
MODULE 6:

Text Books:
150505 – FASHION AND APPAREL DESIGN

OBJECTIVE: To provide a fundamental concepts and principles of fashion and apparel designing.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
Prints – Definition and Importance – Types of Prints – Necklines – Definition and Importance – Types of Necklines – Sleeve Styles – Cuffs

MODULE 6:

Text Books:
150601 - FINANCIAL DERIVATIVES

OBJECTIVE: The objective of this subject is familiarizing students with the basic techniques of risk management and derivatives.

MODULE 1:

MODULE 2:

MODULE 3:
Exotic Options – Packages – Non-standard American Options – Forward Start Options – Compound Options – Chooser Options – Barrier Options – Binary Options – Look-Back Options – Shouts and Ladders – Asian Options

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To familiarize the students with the functions of Stock Market.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To familiarize the students on the fundamentals of Security Analysis.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To enlighten the students on the basics and fundamentals of Portfolio Management Process.

MODULE 1:

MODULE 2:
Portfolio Construction – Approaches in Portfolio Construction – Determination of Objectives – Selection of Portfolio.

MODULE 3:
Portfolio – Markowitz Model – Simple Diversification – Risk and Return with Different Correlation – Markowitz efficient frontier.

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To provide an insight into the principles, operational policies and practices of Mutual Funds in India.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To make the students to understand the physical and chemical nature of the printing materials, and their role and applications in the various processes of the graphic art industry.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
150702 – PRINTING PROCESSES

**OBJECTIVE:** To enlighten the students on the basics and principles of different printing processes.

**MODULE 1:**
- Introduction to Contact Printing
- Printing Methods
- Printing System
- Preparatory Sections
- Printing
- Binding and Finishing
- Inks for Letterpress and Lithography
- Specialty Panting
- Noncontact Printing
- Impactless Variable Printing Methods
- Coated and Commercial Papers
- Coating Methods
- Coating Materials
- Adhesives
- Coated Paper Properties and Use.

**MODULE 2:**
- Offset Lithography
- Printing Processes
- History of Lithography
- Job Planning
- Evolution of Offset Printing
- Offset Machine Construction
- Pre-Make Ready and Make Ready
- Setting the Machine for Operation
- Small Offset
- Running Problems
- Colour
- Rollers
- Tests for Offset Printing
- Principle of Planographic Printing
- Direct and Offset Printing Process
- Working Process
- Advantages and Disadvantages.

**MODULE 3:**
- Sheet-fed Offset Machines
- Mechanical Features
- Sheet Feeding Mechanism
- Sheet Board
- Sheet Lifting and Forwarding
- Sheet Controls
- Sheet Register
- Sheet Insertion and Transfer
- Inking System
- Distribution System
- Multiroll System
- Wash-up Device
- Adjustment of Rollers
- Different Dampening Systems
- Cleaning of Dampeners
- Construction of the Machine
- Working on the Cleaning Machine.

**MODULE 4:**
- Plate Cylinder
- Blanket Cylinder
- Impression Cylinder
- Adjustment of Cylinders
- Advantages
- Delivery Mechanism
- Anti-Setoff Spray
- Miscellaneous Operations
- Web Offset Machines
- Driving Mechanism
- Printing Units
- Main Parts of Printing Unit
- Inking System
- Delivery Unit
- Folding Unit
- Ancillary Operations by Delivery Units.

**MODULE 5:**
- Screen Printing
- Basics
- Merits and Demerits of Screen Printing
- Selection of Correct Screen Printing Fabric
- Antistatic Stencil Mesh
- Screen Printing Frames
- Stretching Equipments
- Correct Stretching
- Adhesive
- Diapositive
- Manufacture of Diapositives
- Making of Stencils and their Sources of Errors.

**MODULE 6:**
- Screen Printing Accessories
- Stencils
- Types of Stencils
- Chemicals used
- Common Faults in Screen Printing
- Printing Unit
- Automatic Screen Printing Machine
- Screen Printing on Different Surfaces
- Inks for Screen Printing
- Flexography
- Flexographic Platemaking
- Photo Chemical Change
- Rotary Principle
- Rubber Plates
- Flexo Substrates
- Overview of Rotogravure Printing

**Text Book:**
OBJECTIVE: To familiarize the students on the fundamentals image reproduction system.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:
Film Processing - Types of Films, Film Structure, Film Sensitivity, Film Contrast, and Film Speed - Processing Chemicals and Trays - Manual and Automatic Film Processing - Automatic Film Processor - Plate Processing - Type of Plates – Wipe-on, Pre-sensitized Plates - Plate Processing Steps - Automatic Plate Processor - CtP Plate Processing.

Text Book:
OBJECTIVE: To provide an insight into the various publishing processes in book publishing.

MODULE 1:

MODULE 2:
Acquisition Editor – Overview of Acquiring Manuscripts – Process of Acquisition – Role of Acquisitions Editor – Organizing Reviews.

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To prepare students having skills to work in the field of content designs or desk top publishing.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
MODULE 6:

Text Book:
OBJECTIVE: To provide a complete knowledge about various colour television systems with their maintenance and servicing techniques.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:
Samsung Colour TV Receiver: Specifications, Salient Features, Video Amplifiers and Video Detectors, Sound Section, Chroma Section, CRT Drive, Sweep Section, Output Section, Power Supply Section – Trouble-shooting Samsung Receiver – Installation and Service Adjustments – General Alignment Instructions.

MODULE 5:

MODULE 6:

Text Book:
150802 – AUDIO AND VIDEO SYSTEMS

OBJECTIVE: To make the students to understand the theory, applications and maintenance of various audio and video systems.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:
OBJECTIVE: To familiarize the students on the fundamentals and maintenance of telecommunication systems and electronic home appliances.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
MODULE 6:

Text Book:
OBJECTIVE: To impart the fundamental concepts and design aspects of air-conditioning systems.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:
MODULE 6:

Text Books:

References:
OBJECTIVE: To highlights the features and characteristics of various refrigerator hardware including compressors, condensers and evaporators.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
OBJECTIVE: To expose the students to the basic concepts of electrical circuits and machines.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
V.K. Mehta, Rohit Mehta, “Principles of Electrical Engineering” - S.Chand Publication
150301 - AUTOMOBILE ENGINES

MODULE 1:

MODULE 2:
Parts of IC engines- cylinder, head, piston, Rings, connecting rod, Crankshaft-Flywheel and Governor –Types of Governors- Value operating mechanisms- Valve -Petrol engine parts- Sparkplug- Operating range- Firing voltage -Carburetor –Fuel pump- Diesel engine parts- Fuel atomizer- IC Engines bore, stroke, BDC, TDC, Swept volume compression ratio.

MODULE 3:
Working cycles- Otto cycle, Diesel cycle, Dual combustion cycle- four stoke Ottocycle engines- four stoke diesel cycle engine- Valve timing diagrams- Two stroke petrol engine- Compression ignition engines- Comparison of four stoke and Two stroke engines- SI and CI engines.

MODULE 4:

MODULE 5:

MODULE 6:
Construction and working of Two stoke engines- Port timing diagram- disadvantage of Two stoke SI engines and CI engines- Scavenging efficiency- scavenging systems- Loop scavenging- Cross scavenging- Crankcase scavenging-Scavenging pumps blowers.

Text Books:
MODULE 1:
Chassis- Classification- Fitting of engine- Engine fitted ingrown but crosswise- Frame-
Functions- types of frames- defects in chassis frame- body – vehicle dimensions- Introduction to
suspension system- Functions and requirements- Elements of a supervision system

MODULE 2:
Springs- Types of springs- Dampers- telescopic, rocking lever- Suspension systems-
Independent suspension- Four wheel independent front suspension- Stabilizer- Rigid suspension-
Independent rear suspension-Interconnected suspension systems- Hydroelectric, hydra gas-
Suspension systems of Indian automobiles

MODULE 3:
Wheels and tyros – Wire wheel- Light alloy cast rip wheels –Tyres- Functions- Types of
tyres- Tubeless tyre- Tyre construction – Radial ply construction - Tyre material- Tyre shape-
tread pattern- Tyre markups- type inflation pressure- causes of tyre wear- Factors affecting tyre
life- Tyre maintenance- Enhancing tyre life- Wheel balancing systems

MODULE 4:
Requirements of transmission system- Types- clutch- gearbox- and line axle transmission-
Circles’ of transmission system- clutch- Function and requirements – Principal of operation-
Friction materials- Friction and cone clutch –Single plate clutch- Multiplate clutch- Plate clutch
parts- Centrifugal clutch- automatic clutch adjustment- Gearbox- Ratios- Types of gear boxes-
sliding mesh gear box- Constant mesh gear box-

MODULE 5:
Synchromesh- Progressive type gear boxes- Maruthi800 Gearbox- Gear shifting-
Transfercase- Troubleshooting of gearbox- Gear boxes used in India automobiles – Automatic
transmission- Overdrive- Four-wheel unit – Propeller shaft- Hotchkiss type propeller shaft-
Crowrushing universal joints- Construction and working- Type of universal joints- Final drive and
differcital- Bevel and hypoid- Bevel gear- Differential-rear axles- Half floating rear axle- Causes of
axle failures- Real axle noises-

MODULE 6:
Purpose of steering system- Function- Requirements of a good steering system- General
arrangement- Working of steering mechanism—Description of steering parts-Steering gears-
Worm and roller sleeping gear- rack and pinion sleeping gear- sleeping ration- Reversibiling-
Sleeping geometry- Wheel alignment- King pin inclination caster- Toe –Out- Checking of wheel
alignment – Steering Mechanisms –Steering gear mechanisms- Under steering and over treeing-
steering linkages- steering wheel and column – Steering arm- Draglink –Power steering-
Fundamentals- Types of power steering systems- Electronic power steering- steering geometry-
steering troubleshooting- Front axle- Construction- Type of front axles- Stub axles- Braking
system.

Text book:
150304 - AUTOMOBILE BRAKING AND ELECTRICAL SYSTEM

MODULE 1:
Introduction- necessity of a braking system-functions of brakes-requirements of a good braking system-classification of brakes mechanical brakes-hand brakes-disc brakes-hydraulic brakes-advantages-bleeding of brakes-hill holder-power brakes-air brakes-main parts-engine exhaust brake-vacuum brakes-electric brakes-factors controlling the stop of an automobile-break shoes and linkages brake testers-break service

MODULE 2:
Introduction to electrical system-typical automotive electrical system-battery system-types of batteries-chemistry of a lead acid battery-Zinc air battery-Capacity of a battery-Efficiency, primary, secondary cells-battery rating-battery maintenance-battery charging-battery data of automobiles-factors affecting battery life-battery faults and troubles-dry charged batteries-battery testing-specific gravity test, high rate discharge test-starting motor-description field coil windings –drive unit-Overrunning clutch-Magnetic switch or relay.

MODULE 3:

MODULE 4:

MODULE 5:
Lighting and accessories-Main circuits of the automobile electrical system-Car wiring diagram-Symbols used-Lighting system-Wiring circuit –Fuses-Head lights-Pre focus bulb-Head lamp-Head lamp double filament-Light switch-Dimmer and stop light switch-Indicating lights

MODULE 6:
Trouble shooting of lighting system-Essential accessories-Types of horn-Windscreen wiper-Water temperature gauge-Speedometer and odometer assembly-Ventilating system-Heating system-Air conditioning system-Components

Text Books:
150305 - AUTOMOBILE MAINTENANCE AND TROUBLE SHOOTING

MODULE 1:
Lubrication –Chart-Properties of engine oils-Automobile lubricating methods- Preventive maintenance schedule- Engine maintenance- Connecting rod assembly –Piston and rings-Crankshaft assembly- Valve mechanism- Cam shaft- Cylinder head cylinder block.

MODULE 2:

MODULE 3:
Automobile body and safety consideration-Car driving-Basic requirements- Preliminary requirements-Police signals-Traffic signs-Driving practice of four wheeler-Fuel saving-Type of garages-Garage tools-Application of tools-Flaring, swaging, tubecutter, tube blender, Pinch off tools, Wrenches and dies-Safety precautions-Garages service station equipment.

MODULE 4:
Zero emissions-SI engine emission and control-three way catalytic converter-electronic catalytic converter- exhaust emission control by fuel variation-diesel engine emissions-exhaust smoke- causes of smoke- measurement of smoke-control of smoke-gasoline and diesel emissions-effects of emissions on human health

MODULE 5:

MODULE 6:
Troubleshooting of cooling system- Trouble shooting of ignition system-. trouble shooting chart of break shoes and drums- trouble shooting chart of hydraulic break system-air breaks-Troubleshooting of heating system-Trouble shooting of air conditioning system.

Text book: