Sri Ramakrishna Mission Vidyalaya College of Arts and Science Coimbatore – 641020

(An Autonomous College Re-Accredited with "A" grade by NAAC and Affiliated to Bharathiyar University, Coimbatore)

B.Voc. Degree course (Three years)

Automobiles

(An UGC sponsored DDU-KAUSHAL KENDRA Programme)

SYLLABUS

(ACADEMIC YEAR 2016-2017)

Sri Ramakrishna Mission Vidyalaya College of Arts and Science
(AUTONOMOUS)

For Students admitted from 2017-2018 & onwards

COURSE OF STUDY

- Syllabus is framed for B.VOC (Automobiles) according to UGC norms and National Vocational Education Quality Framework
- There are 2 components. They are General components of 24 credits and Skill components of 36 credits.
- One credit is equal to 15 hours for theory and 30 hours for practical. Practical could be either in the campus or in the working place of the Industry.

ELIGIBILITY:

- Candidates who have successfully completed their Higher Secondary (10+2) will be eligible for admission.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS), COIMBATORE – 641 020.

B.Voc., Automobiles

Under Choice Based Credit System (CBCS) 2017-2018 onwards

SCHEME OF EXAMINATIONS

SEMESTER I									
S.No	**Course code**	**Part**	**Title of the paper**	**Hrs/Subject**	**Credits**	**Exam hrs**	**Max marks**		
							Int	**Ext**	**Total**
1	17KUGE101	II	Basic English	60	4	2	50	50	100
2	17KUGE102	III	Allied I: Mathematics-I	60	4	2	50	50	100
3	17KUG1ENS	IV	Environmental studies	60	4	2	50	50	100
4	17KUAT101	III	Core I:Automobile Technology I	60	4	2	50	50	100
5	17KUAT102	III	Core II: Automobile Repair and Maintenance I	60	4	2	50	50	100
Total-I				**300**	**20**	**10**	**250**	**250**	**500**
SEMESTER II									
1	17KUGE203	III	Allied II: Office Automation	60	4	2	50	50	100
2	17KUGE204	II	Professional English	60	4	2	50	50	100
3	17KUG2VAL	IV	Value Education	60	4	2	50	50	100
4	17KUAT203	III	Core III: Automotive Electrical and Electronics I	60	4	2	50	50	100
5	17KUAT2P1	III	Practical I:Automotive Electrical and Electronics	60	2	3	50	50	100
6	17KUAT2P2	III	Practical II: Automobile Repair and Maintenance –I	60	2	3	50	50	100
7	17KUAT2I1	III	Internship Training-I	1400	20	3	100	300	400
TOTAL – II				**1760**	**40**	**17**	**400**	**600**	**1000**

SEMESTER III									
1	17KUGE305	II	Technical Communication	60	4	2	50	50	100
2	17KUGE306	III	Allied III: Mathematics-II	60	4	2	50	50	100
3	17KUGE307	III	Elective I : Principles of Management	60	4	2	50	50	100
4	17KUAT304	III	Core IV: Automobile Technology II	60	4	2	50	50	100
5	17KUAT305	III	Core V: Automobile Repair and Maintenance II	75	5	2	50	50	100
Total-III				**315**	**21**	**10**	**250**	**250**	**500**
SEMESTER IV									
1	17KUGE408	III	Allied IV: Technical Drawing	60	4	2	50	50	100
2	17KUGE409	III	Elective II: Professional Ethics and Human Values	60	4	2	50	50	100
3	17KUGE410	III	Elective III: Indian Values	60	4	2	50	50	100
4	17KUAT406	III	Core VI: Automotive Electrical and Electronics II	60	4	2	50	50	100
5	17KUAT4P3	III	Practical III: Work shop Technology I	90	3	3	50	50	100
6	17KUAT4I2	III	Internship Training-II	1400	20	3	100	300	400
TOTAL – IV				**1730**	**39**	**14**	**350**	**550**	**900**
SEMESTER V									
1	17KUGE511	I	Tamil I	60	4	2	50	50	100
2	17KUGE512	III	Allied V:Mathematics –III	60	4	2	50	50	100
3	17KUGE513	II	Elective IV: Total Quality Management	60	4	2	50	50	100
4	17KUAT507	III	Core VII: Work shop Supervising and Management	75	5	2	50	50	100
5	17KUAT5P4	III	Practical IV: Work shop Technology II	90	3	2	50	50	100
TOTAL –V				**345**	**20**	**10**	**250**	**250**	**500**

SEMESTER VI									
1	17KUGE614	I	Tamil II	60	4	2	50	50	100
2	17KUGE615	III	Elective V: Safety Engineering	60	4	2	50	50	100
3	17KUGE616	III	Elective VI: Entrepreneurship Development	60	4	2	50	50	100
4	17KUAT6PR	III	Project	240	8	3	50	50	100
5	17KUAT6I3	III	Internship Training-III	1400	20	3	100	300	400
TOTAL VI				**1820**	**40**	**12**	**300**	**500**	**800**
Grand Total				**6270**	**180**	**73**	**1800**	**2400**	**4200**

COURSE	CREDITS	MARKS
Language	**8**	**200**
English	**12**	**300**
Part III: Core & Elective ,Allied	**152**	**3500**
Environmental Studies	**4**	**100**
Value Education	**4**	**100**
Total	**180**	**4200**

Basic English

Subject code	17KUGE101	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

OBJECTIVES:

- To enable the student to understand the main aspects of English grammar.
- To make him speak and write correct English without any grammatical error.
- To make him acquire the language skills (Listening, Speaking, Reading and Writing) in English.

OUTCOMES:

- Student will be able to overcome his mother tongue influence gradually.
- The course will enable him to clear all the competitive exams successfully.

UNIT-I

Noun, Pronoun, Adjective, Verb, Adverb, Preposition, Conjunction, Interjection

UNIT-II

Verbs and classification: Main Verb, auxiliary verb, transitive verb, intransitive verb and phrasal verb. Tenses: simple present, present continuous, present perfect, present perfect continuous. Past: Simple past, past continuous, past perfect, past perfect continuous. Future: simple future, future continuous, future perfect, future perfect continuous. Voices: Active and Passive voice.

UNIT-III

Infinitives, Participles, Gerunds and Question Tags, WH questions.

UNIT-IV

Sentence construction, types of sentences: Declarative sentence, interrogative sentence, imperative sentence, exclamatory sentence, affirmative and Negative sentences.

UNIT-V

Linkers, Spotting Errors, Concord.

PRESCRIBED TEXT:

Effective English Communication for you- V. Syamala (Emerald Publishers)

SUGGESTED READING:

1) Modern English- N.Krishnasamy (Macmillan)Pillai,
2) Radhakrishna G.English Grammar and Composition. Chennai: Emerald Publishers,2005

Mathematics-I

Subject code	17KUGE102	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

OBJECTIVES:

The main objectives for framing the syllabus of Mathematics for the B.Voc degree is to enhance the fundamental knowledge of the students in basic Mathematics such as

- Set theory
- Sequence and series
- Algebraic equations
- Matrices
- Co-ordinate geometry
- To solve the problems arise in engineering.

UNIT - I

Set and Functions: Introduction – Properties of operations on sets – De Morgan's laws – verification examples – Venn diagrams – formula for n(AUBUC) – Functions.

UNIT – II

Sequences and series of real numbers: Introduction – Sequences – Arithmetic Progression (A.P) – Geometric Progression (G.P) – Series.

UNIT – III

Algebra: Solving Linear Equations – Polynomials – Synthetic division – Greatest Common Divisor (GCD) – Least Common Multiple (LCM) – Rational Expressions – Square root – Quadratic equations.

UNIT – IV

Matrices: Intoduction – Types of Matrices – Additional and subtraction – Multiplication – Matrix equation.

UNIT – V

Coordinate Geometry: Introduction – Distance between two points – Section formula, midpoint formula, Centroid formula – Area of triangle and quadrilateral – straight line.

Text Books:

1. Basic Mathematics, Science Series Rupa, Rupa Publications

Environmental studies

Subject code	17KUG1ENS	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

OBJECTIVES:

1. To create the awareness among students regarding Environment.
2. To understand the causes of pollution and prevention methods

UNIT-I

The Multidisciplinary nature of environmental studies-Definition, scope and importance. Need for public awareness-Natural Resources: Renewable and non-renewable resources:
Natural resources and associated problems.

a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effective on forests and tribal people.
b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts, over water, dams benefits and problems.

UNIT-II

Ecosystems-Concept of an ecosystem.-Structure and function of an ecosystem.-Producers, consumers and decomposers.-Energy flow in the ecosystem.-Ecological succession.-Food chains, food webs and ecological pyramids.

UNIT-III

Biodiversity and its conservation-Introduction – Definition: genetic, species and ecosystem diversity.-Biogeographical classification of India-Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.-Biodiversity at global, National and local levels-India as a mega-diversity nation-Hot-spots of biodiversity-Threats to biodiversity: habitat loss, poaching of wildlife, manwildlife conflicts.-Endangered and endemic species of India-Conversation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT-IV

Environment Pollution:Causes, effects and control measures of:Air pollution-Water pollution-Soil pollution-Marine pollution-Noise pollution-Thermal pollution-Nuclear hazards

Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.

UNIT-V

Social Issues and the environment.-From Unsustainable to Sustainable development-Urban problems related to energy-Water conservation, rain water harvesting watershed management.-Resettlement and rehabilitation of people; its problems and concerns

Case studies: Environment ethics: Issues and possible solutions.

TEXT BOOK:

1. Title: ENVIRONMENTAL STUDIES – **Publication:** Published by Bharathiar University.

Automobile Technology-I

Subject code	17KUAT101	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

UNIT – I

Types of four wheeled Automobiles - Vehicle Construction – Chassis – Frame and Body – Aerodynamics. Engine components – Functions and Materials - Cooling and Lubrication Systems in Engine.

UNIT – II

Carburetor –working principle. Construction, Operation of Lead Acid Battery – Electrical systems – generator – Starting Motor and Drives – Lighting and Ignition

UNIT – III

Clutch – Types and Construction – Gear Boxes, Manual and Automatic – Simple Floor Mounted Shift Mechanism – Over Drives – Transfer Box– Propeller shaft – Slip Joint – Universal Joints – Differential and Rear Axle – Hotchkiss Drive and Torque Tube Drive.

UNIT – IV

Wheels and Tyres – Wheel Alignment Parameters - Steering Geometry and Types of steering gear box– Power Steering – Types of Front Axle – Suspension systems – Braking Systems – Types and Construction

UNIT – V

Brake adjustment, Wheel bearing adjustments, Steering adjustment, clutch pedal adjustment, Wheel balancing, Tyre maintenance and preventive maintenance of some of the 4 wheelers.

Text Book:

1. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.

Automobile repair and maintenance I

Subject code	17KUAT102	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

UNIT – I

Engine: Types – Working principle of each – Major components – Petrol supply system and its components – Carburetor – Petrol pump and injectors of MPFI engine – Various sensors and its uses – Diagnosing troubles in petrol supply system.

UNIT – II

Diesel supply system and its components – Individual injection system – CRDI – Diesel pump – Injectors – Filters – Types of combustion chambers – Air supply system – Air cleaners – Exhaust and emission system – Silencers (Muffler) - Catalytic convertor –Diagnosing troubles in diesel supply system.

UNIT – III

Cooling system and its components – Coolants used – Antifreeze solution – Types of cooling systems – Lubrication system and its components – Types of lubrication systems – Types of lubricants – Properties and SAE grade of lubricating oils – Electronics ignition system – Types and its components- Diagnosis of troubles in cooling system, lubricating system and ignition system.

UNIT – IV

Clutch – Types – Function – Fluid flywheel – Torque convertor – Hydraulic assisted clutch – Clutch adjustments – Gear box – Types – Functions – Constant mesh gear box – Synchromesh gear box – Manual and automatic gear boxes – Planetary gears. Transfer box – Trans axle arrangement – Propeller shaft and universal joints – Rear axle and differential – Final drives – Diagnosing troubles in clutch, gear box and rear axles.

UNIT – V

Steering system – Types – Components – Rack and pinion, Warm and sector and re-circulating ball and nut steering gear boxes – Electronics control of steering system – Wheel alignments. Suspension systems – Conventional suspension – Independent suspension system for front and rear wheels – Types of springs and shock absorbers – Stability control – Air suspension with electronic control – Diagnosing troubles in steering system and suspension system.

UNIT – VI

Brakes – Function – Types – Hydraulic brake system – Master cylinder, Tandem master cylinder – Wheel cylinder – Vacuum assisted hydraulic brake – Air assisted hydraulic brake – Brake bleeding – Brake fluids – Disc brake – Types of calipers – Friction pads – Advantages over drum brake – Air brake system and its components – Advantages – ABS brake system – Modulator / Actuator, ECU / ECM & HCU – ABS with traction control. Wheels – Types – Tyres and its types – Construction – Wear pattern – Inflation pressure – Tyre mark – Vulcanizing – Air and hydrogen inflation in tyres– Diagnosing troubles in brakes and wheel.

Text Book:

1. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.

Office Automation

Subject code	17KUGE203	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

OBJECTIVES:

1. To develop the basic computer operating skill of the student
2. To enable the students to create and maintain their records in computer.
3. To create the knowledge for accessing Internet.

UNIT-I

BASIC COMPUTER SKILLS: Identifying Major Computer Components - How Computers Work - Turning on the Computer and Logging On - OPERATING SYSTEMS AND SOFTWARE – INTERNET.

UNIT-II

WORD: Introduction to Word Processing: Basic features – Full-Featured word processors – starting word – menus and toolbars – creating, editing and saving a word document – using word help – opening a document – moving multiple text selections simultaneously – link documents – creating table – working with graphics – mail merging – previewing and printing document.

UNIT-III

EXCEL: electronic spreadsheets – spreadsheet packages – starting excel – navigating in a workbook – create, name and save a new workbook – data entry-manual and automatic – correcting mistakes-spelling checker, undo and redo changes.

UNIT-IV

POWERPOINT: Presentation basics – presentation packages – starting PowerPoint – menus and toolbars – opening and saving an existing presentation – presentation using auto content wizard – presentation using design template – creating and saving a presentation using blank presentation.

UNIT-V

MS ACCESS: Use of MS Access – Controls – Customization – database design – filtering and sorting - conversation – database basics – import and export – forms – reports.

Text Book:

1. Alexis Leon, Mathews Leon, **Introduction to Computers with MS-Office,** Tata McGraw Hill Publication, 2003.

PROFESSIONAL ENGLISH

Course code	17KUGE204	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical	--	Sem	II

OBJECTIVES:

- Preparing the student to be competent in verbal and non-verbal communicative skills.
- To enable him to overcome his all linguistic barriers systematically.
- To acquire the desirable proficiency in English language.

OUTCOMES:

- Enhanced to achieve good communication skills.
- Enable to face interviews successfully.

UNIT- I

Formal and Informal Communication.

Language for debate and discussion, Students' classroom language. Teacher's classroom language.

Situational English: welcome and thankfulness, making an appointment, asking about educational qualifications, at the post office, a customer at a bank, other situational conversations, visiting a doctor, travelling in a bus, hiring a taxi, at the railway station, reservation for air tickets, meeting after long interval, shopping, outing, watching television, looking for a room in a hotel, and going to the theatre.

UNIT –II

Public speaking skills, extempore, group discussion, job interview, mock sessions and current affairs.

UNIT –III

Writing paragraph, writing stories, picture comprehension, note writing, and note making.

UNIT –IV

Drafting an e-mail, report writing, writing letters, application, and resume preparation.

UNIT –V

Life Skills:

a. Career planning
b. Motivation
c. Motivated goal setting
d. Team work skills
e. Time management skills.

Prescribed Texts :

1. T.M. Farhathullah: *English Practice Book for Undergraduates.* Emerald Publishers.
2. S. Raghavan : *A Textbook for Communication and Life Skills Practical.* Jey Publications.

விழுமியக் கல்வி (VALUE EDUCATION)

Course code	17KUG2VAL	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

அலகு- I

விழுமியம் - சொற்பொருள் விளக்கம் - தனிமனித விழுமியங்கள் - சமூக விழுமியங்கள் - பண்பாட்டு விழுமியங்கள் - ஆன்மீக விழுமியங்கள்.

அலகு- II

தனிமனித விழுமியங்கள் - சிந்தனைகள் தனிமனித ஒழுக்கம் - அன்பு - பொறுமை - நன்நெறி - கருணை - இரக்கம் - குற்றம் - சட்டம் - தண்டனை.

அலகு - III

பண்பாட்டு விழுமியங்கள் - தமிழர்களின் பண்பாட்டு - மொழி - வீரம் - நட்பு - விருந்தோம்பல் - ஈகை - கொடை - கற்புடமை - தமிழ் கூறும் நல்லுலகம்.

அலகு -IV

சமூக விழுமியங்கள் - காந்தீய விழுமியங்கள் - பாரதி காட்டும் சமூக விழுமியங்கள் - வ. உ. சிதம்பரம் வாழ்வியல் விழுமியம்.

அலகு – V

ஆன்மீக விழுமியங்கள் - குருதேவர் ஸ்ரீ ராமகிருஷ்ணர் வாழ்வும் வாக்கும் - சுவாமி விவேகானந்தரின் வாழ்வியல் நெறிகள் - புத்தர் காட்டும் ஆன்மீக விழுமியங்கள்.

குறிப்பு தயாரிக்கப்பட்ட பாடஉரை அளிக்கப்படும்

Automotive Electrical and Electronics-I

Subject code	17KUAT203	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

UNIT – I

Ohm's law, voltage, power, current (AC/DC) esistance, magnetism and electromagnetic induction, vehicle earthing – Electrical symbols – electrical safety procedures – Wiring and lighting circuits and their components – Battery: Construction. Operation, charging and testing methods – Voltage and oscilloscope patterns – Digital and fiber optics principles, logic families, radio frequency, discrete electronic components – Signaling, driven information and control devices.

UNIT - II

Charging system and its components – Starting system and its components – Types of starter motors and its drives – Electronic ignition system and its components – Spark plug, CD ignition, distributor less ignition – Diagnose troubles in starting system – Carry out various tests on starter motor – Servicing of starter motor – Diagnose troubles in charging system – Carry out various tests in charging system – Servicing of alternator.

UNIT – III

Electronic stability systems – Vehicle dynamic control – Closed loop electronic steering. Electric overhauling systems: Garbage comparators – Crane rams – Steering control – Accelerator bucket control – steering rudder control. Engine management systems: Fuel cell technology / hydrogen – online maintenance and remote diagnostics – CRDI injection – Drive by wire – Closed loop diesel engine management systems.

UNIT – IV

Electrical / Electronic control of: Torque convertors, automatic transmission – Mechatronic modules. Braking systems: ABS, Engine brake, Electric retarders, Electric trailer brakes, Brake by wires. Safety systems : Fire suppressing, work load detecting, tyre pressure control, speed load limiting, traction control, seat belt pre-tensioning, roll over protection, object detection, navigation aids, intelligent transport systems, adaptive cruise control, active and passive collision avoidance, infrared vision, lighting and windscreen wipers control.

UNIT – V

Monitoring / protecting systems: LCD, VFT, CRT, HUD, re-configurable systems, electronic analogue display, onboard diagnostics, remote / wireless monitoring systems. Convenience and entertainment systems – Audio and visual units, Compact discs, Analogue tapes, Radio, Speaker types, Amplifiers, Crossovers, Balancers, Ariels, etc.,

UNIT – VI

Anti-theft systems : Remote keyless entry (RKE) Immobilizer system design, Passive entry systems, Two way RKE, Finger print technologies, Rolling codes, Transmitter and receiver operations, Satellite systems. Electric and hybrid vehicle systems: Battery technology –Motor drive systems – Motor controllers – Air conditioning system – Electronic protection systems.

UNIT – VII

Climate control systems : Air conditioning, heating, blending systems. Electronic control units and sensors, actuators, Hydraulic and pneumatic system.

Text Book:

1. Judge. A.W., "Modern Electrical Equipment of Automobiles", Chapman & Hall, London, 1992

Practical I: Automotive Electrical and Electronics –I

Subject code	17KUAT2P1	Credits	02	Year	I
No. of Lecture Hours	--	No. of Practical Hours	60	Sem	II

1. Testing, charging and discharging of lead acid battery used in automobiles,
2. Testing and troubleshooting of starting system in automobiles
3. Starter motor component test
4. Testing and troubleshooting of charging system in automobiles
5. Alternator component test
6. Testing and troubleshooting of lighting system in automobiles
7. Testing of lighting conventional analog instrumentation, indicator light, warning devices
8. Testing of electrical accessories in automobiles
9. Study & testing of conventional ignition system

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Practical II: Automobile Repair and maintenance –I

Subject code	17KUAT2P2	Credits	02	Year	I
No. of Lecture Hours	--	No. of Practical Hours	60	Sem	II

1. Tools and instruments required for maintenance
2. Safety aspects with respect to man, machine and tools
3. General procedures for servicing and maintenance schedule
4. Minor and major tune up of gasoline and diesel engines
5. Dismantling, Studying and assembling the piston and connecting rod assembly.
6. Dismantling, Studying and assembling the given fuel injection pump.
7. Dismantling, Studying and Assembling the given Single plate clutch assembly and to practice to adjust clutch free play.
8. Dismantling, Studying and assembling the given type of gearbox.
9. Determine the gear ratio, final transmission ratio and overall ratio for a gear box.
10. Learning to overhaul adjust the brake shoe' and bleed the air' in the hydraulic brake system.
11. Dismantling, studying and assembling the given steering gearbox, and also knowing to adjust the backlash and end play.
12. Measure wheel base, wheel track, ground clearance, angle of approach, minimum turning circle radius for a vehicle, steering ratio, lock-to-lock angle.
13. Fault diagnosis and service of Electrical system like battery, starting system, charging System, lighting system etc
14. Practice the following:
    a) Adjustment of pedal play in clutch, brake, hand brake lever and steering wheel play.
    b) Air bleeding from hydraulic brakes, air bleeding of diesel fuel system.
    c) Wheel bearings tightening and adjustment.
    d) Adjustment of head lights beam.
    e) Removal and fitting of tire and tube.

Internship Training –I

Subject code	17KUAT2I1	Credits	02	Year	I
No. of Lecture Hours	--	No. of Practical Hours	1400	Sem	II

Objectives:

- To develop skills in the application of theory to practical work situations. To develop skills and techniques directly applicable to their careers. Internships will increase a student's sense of responsibility and good work habits. To expose students to real work environment experience gain knowledge in writing report in technical works/projects.
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- Internship programs will increase student earning potential upon graduation. To build the strength, teamwork spirit and self-confidence in students life. To enhance the ability to improve students creativity skills and sharing ideas.

- To build a good communication skill with group of workers and learn to learn proper behavior of corporate life in industrial sector. The student will be able instilled with good moral values such as responsibility, commitment and trustworthy during their training.

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TECHNICAL COMMUNICATION

Course code	17KUGE305	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

OBJECTIVES:

- To enable the student to understand the main aspects of English grammar.
- To make him speak and write correct English without any grammatical error.
- To make him acquire the language skills (Listening, Speaking, Reading and Writing) in English.

OUTCOMES:

- Student will be able to overcome his mother tongue influence gradually.
- The course will enable him to clear all the competitive exams successfully.

UNIT-I (LISTENING)

1) Types of Listening
2) Implications of effective Listening

UNIT-II (SPEAKING)

1) Speaker, speech planning process.
2) Speech making process and speech effectiveness
3) Group Communication

UNIT-III (READING)

1) Reading Comprehension.
2) Improving comprehension skills
3) Techniques for good comprehension.

UNIT-IV (WRITING)

1) Sentence Construction
2) Techniques for Paragraph Development
3) Story Writing, Precis Writing

UNIT-V

1) Curriculum Vitae
2) Agenda, Minutes, Notices
3) Memo

PRESCRIBED TEXT:

1. Technical Communication Principles and Practice- Sangeeth Sharma & Meenakshi Raman
2. The Challenge of Effective Speaking –Thomas Wadsworth 14th ed, 2008
3. Effective English Grammar and Composition- V.Syamala, Emerald Publication.

MATHEMATICS – II

Course code	17KUGE306	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

Objectives:
To gain the basic knowledge about the Interest rate, solution of linear equations, differential and integral calculus and Operational research

Unit I:
Simple and Compound Interest – Discounting of Bills – True Discount – Banker's Gain.

Unit II:
Matrix: Inverse of a matrix – Rank of a matrix – Solution of simultaneous linear equations

Unit III:
Variables, Constants and Functions - Limits of Algebraic functions – Simple Differentiation of Algebraic functions – Meaning of Derivative – Evaluation of first and second order derivatives

Unit IV:
Elementary Integral Calculus – Determining indefinite and definite integral of simple functions – Integration by parts

Unit V:
Linear programming problem – Formation – Solution by Graphical method

Text Book:
1. Business Mathematics and Statistics by PA. Navnitham, Jai Publishers, 2012.

PRINCIPLES OF MANAGEMENT

Course code	17KUGE307	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

OBJECTIVES:

To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization.

UNIT I: INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS

Definition of Management – Science or Art – Manager Vs Entrepreneur – types of managers – managerial roles and skills – Evolution of Management – Scientific, human relations , system and contingency approaches – Types of Business organization – Sole proprietorship, partnership, company-public and private sector enterprises – Organization culture and Environment – Current trends and issues in Management.

UNITII: PLANNING

Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making steps and process.

UNIT III: ORGANISING

Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority – centralization and decentralization – Job Design – Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management , Career planning and management.

UNIT IV: DIRECTING

Foundations of individual and group behavior – motivation – motivation theories – motivational techniques – job satisfaction – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication – communication and IT.

UNIT V: CONTROLLING

System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control – reporting.

TEXT BOOKS:

1. Stephen P. Robbins & Mary Coulter, " Management", Prentice Hall (India) Pvt. Ltd., 10th Edition, 2009.

2. JAF Stoner, Freeman R.E and Daniel R Gilbert "Management", Pearson Education, 6th Edition, 2004.

Automobile Technology II

Course code	17KUAT304	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

Unit – I

Introduction to Automotive Technology: Introduction, Light commercial vehicle, Medium & Heavy Commercial vehicle, Major parts of Automobiles, Body, Body Types , Chassis, classification of Chassis with respect to fitting of Engines, chassis repair.

Unit – II

Layout of an electric vehicle, advantage and limitations, specifications, system components, electronic control system, high energy and power density batteries, hybrid vehicle, fuel cell vehicles, solar powered vehicles.

Unit – III

Measuring systems and measuring tools, shop hand tools, special tools used for denting, safety standards for vehicles, accidental repair, Importance of maintenance. Scheduled and unscheduled maintenance. Preparation of check lists. Chassis lubrication. Cost effectiveness. Pre-trip. Inspection forms. Log books. Trip sheets. Other maintenance record forms.

Unit-IV

Emission norms – EURO, USA, JAPAN and INDIA. Controlling of pollutants from engine – catalytic converters – char coat canister control for evaporative emission – positive crank case ventilation system for un burnt hydro carbon emission reduction – Fumigation EGR

Unit–V

Air assisted Combustion, Homogeneous charge compression ignition engines – Alcohol, Hydrogen, Compressed Natural Gas, Liquefied Petroleum Gas and Bio Diesel - Properties, Suitability, Merits and Demerits - Engine Modifications.

Textbook:

1. Ramalingam. K.K., "Internal Combustion Engine Fundamentals", Scitech Publications, 2002.

Automobile repair and maintenance-II

Course code	17KUAT305	Credits	5	Year	II
No. of Lecture Hours	75	No. of Practical Hours	-	Sem	III

Unit–I

Maintenance – Need, importance, primary and secondary functions, policies – classification of maintenance work – vehicle insurance – basic problem diagnosis. Automotive service procedures – workshop operations – workshop manual – vehicle identification – Safety – Personnel, machines and equipment, vehicles, fire safety – First aid. Basic tools – special service tools – measuring instruments – condition checking of seals, gaskets and sealants. Scheduled maintenance services – service intervals – Towing and recovering.

Unit–II

Basic construction of chassis – Types of Chassis layout – with reference to Power Plant location and drive – various types of frames, Loads acting on vehicle frame – Types of Front Axles and Stub Axles – Front Wheel Geometry – Condition for True Rolling Motion – Driving Thrust and its effects, torque reactions and side thrust, Hotchkiss drive, torque tube drive, radius rods and stabilizers, Propeller Shaft, Universal Joints, Constant Velocity Universal Joints, Final drive, different types of final drive, Worm and Worm wheel, straight bevel gear, spiral bevel gear and hypoid gear final drive. Differential principle – Constructional details of differential unit, Differential housings and Non–Slip differential, differential locks.

Unit–III

Dismantling of engine components and cleaning – cleaning methods – visual and dimensional inspections – minor and major reconditioning of various components (like engines and fuel system, ignition systems, suspension system, Braking System, etc), reconditioning methods – engine assembly – engine tune up.– special tools used for maintenance and overhauling – Mechanical and automotive clutch and gear box servicing and maintenance and servicing of propeller shaft and differential system – Maintenance and servicing of suspension systems – Brake systems, types and servicing techniques. Steering systems – overhauling and maintenance – Wheel alignment – computerized alignment and wheel balancing.

Unit–IV

Servicing and maintenance of fuel system of different types of vehicles – calibration and tuning of engine for optimum fuel supply – Maintenance of cooling systems and its components – water pump, radiator, thermostat – anticorrosion and antifreeze additives. Lubrication maintenance – lubricating oil changing – greasing of parts - Vehicle body maintenance – minor and major repairs – Door locks and window glass actuating system. maintenance.

Unit–V

Batteries and power storage system, power–generating systems – electrical wire harness – lighting, ignition – electronic and air conditioning systems etc – energy recuperation systems – electronic active and passive safety – comfort and convenience supplementary restraint systems (SRS) – networking and other systems – electronic control unit – ECU / ECM and sensors – Diagnosing troubles in Electrical and Electronics equipments.

Text Books:

1. R.Sounddaraa Rajan, "Automobile Maintenance", R.P.Publication.

2. Tim Gills, "Automotive Service: Inspection, Maintenance, Repairing", Cengage Learning, 2004

TECHNICAL DRAWING

Course code	17KUGE408	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Objectives:
At the end of the semester the student must be able to draw
- 2D diagrams using Auto CAD
- Symbols widely used in Electrical and Electronics circuits

Unit I- Introduction to AutoCAD
History of AutoCAD-Applications- Advantages over manual drafting - hardware requirements – software requirements – window desktop – AutoCAD screen interface – menus – toolbars - How to start AutoCAD – command groups – How to execute command – types of coordinate systems – absolute-relative-polar.

Unit II -Text and Dimensioning
Auto CAD importance, Auto CAD Tools, Drafting and Unit settings, Auto CAD commands, Types of Lines and Layers -Simple Sketches (lines and curves) Single text and multi text- Basic dimensioning – editing dimensions – dimensions styles – dimensioning systems variables.

Unit III - Geometrical construction
-Triangle (Equilateral triangle, Right angle triangle, Isosceles triangle, Acute triangle) -Rectangle, Rhombus, Trapezium,-Circles (AutoCAD Relevant) -Regular Polygons (Square, Pentagon, Hexagon, Heptagon, Octagon)-Parabola (Tangent method, Offset method)-Ellipse (Parallelogram method, Four centre method, Concentric circles method)-Hyperbola-Cycloids -Involutes -Helix -Spiral curves.

Unit IV-Projections
Orthographic (first angle and third angle) (10 simple exercises each) - Isometric (5 simple exercises)- (Different types of machine parts- 2D and 3D wire frame models- Solid figures) - Oblique (2D and 3D wire frame models) (3 simple exercises) - Blue print reading (Missing views - Missing Lines - Missing dimensions)

Unit V -Electrical and Electronics Symbols
Draw symbols of – DC armatures – alternators – field winding shunt, series and compound – relays – contactors – fuses – main switch – electric bell – earth – aerial – DPST – DPDT – TPST – Network link – ammeters – voltmeters – wattmeter – energy meters – frequency meters – power factor meters – timers – buzzers – transformers – auto transformers Incandescent lamp, Fluorescent Lamp, Signal lamp, Push button, Fire alarm ,Siren, Water Heater, Ceiling Fan, Exhaust Fan.

Draw symbols of Resistors – inductors – capacitors - diodes – transistors – FET – SCR – UJT – DIAC – TRIAC – MOSFET'S - LOGIC GATES – AND – OR – NOT – NAND – NOR – EXOR

Text Books:

1. Gopalakrishnan K.R., "Engineering Drawing" (Vol I & II combined), Subhas stores, Bangalore -2007
2. Shah M.B., and Rana.B.C., " Engineering Drawing", Pearson, 2nd edition, 2009.

PROFESSIONAL ETHICS AND HUMAN VALUES

Course code	17KUGE409	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Objectives:

- Understand what morality is and how it connects to professional ethics
- Understand the features of moral reasoning, moral explanations and the role of moral theories
- Develop a case resolution model for resolving moral dilemmas faced by professionals

Unit I: Business Ethics

Conceptual approach – Emerging issues – Importance of Ethics – Understanding Ethics – Ethical decision making – Moral problem

Unit II: Managing Ethical Organization

Elements of ethical organization – Manager's role in influencing ethical climate - Codes of ethics – Codes of Contact – Ethical leadership – Ethical organization

Unit III: Business ethics in Profession

Ethical concern in Human Resource Management (HRM) – Ethical issue in marketing and advertising – Marketing ethics – Ethics in production management – work ethics

Unit IV: Corporate Governance and social responsibility:

Corporate Governance – Company management – Factors for success – Social responsibility towards stakeholders – Social responsibility of business

Unit V: Human Values

Wisdom Management – A person of character – Knowledge Management – Understanding success – Stress management

Text Book:

1. Business Ethics and Global Values by S.K Bhatia, Deep & Deep Publication Pvt. Ltd., New Delhi

INDIAN VALUES

Course code	17KUGE410	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Objective:

- To create an awareness of values promoted in the cultural and spiritual heritage of India and to impart means to inculcate these values for one's personal growth and national development.

UNIT I- Character formation through Positive personality

Truthfulness, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Cultivating will-power and character building - Swami Vivekananda's ideas on Personality Development – Strength - Faith in one's self – Self-confidence – Ego, overconfidence and inferiority complex .

UNIT II- Holy Mother Sarada Devi Life

Birth of holy mother- The holy life of Sarada Devi with Bahavan Sri Ramakrishna- Message of Sarada Devi to the world

UNIT III- Yoga's

Introduction to Yoga – Asanas, Pranayama & Meditation – Benefits of Yoga – Four types of Yoga (Karma yoga - Bakthi Yoga- Raja Yoga- Gnana Yoga)- Control of Mind through Yoga & Meditation.

UNIT IV- The inspirational life of Indian leaders

Rabindranath Thagore- Sri. Aurobindo- Balagangathara Thilak- Vinobabave- Nethaji Subash Chandra Bosh- Baghat singh, Rajaguru, Sukdev- Theeran Chinnamalai- Dr. A.P.J. Abdhul Kalam.

UNIT V- Importance days of India

Independence Day -Republic Day- Dandhi Salt March- Jallianwallah Bagh Massacre Day- Sepoy Mutiny- Battle of Plassey- Kargil Victory Day.

Reference books:

1. Personality development by Swami Vivekananda
2. Holy Mother by Swami Nikhilananda
3. My India, The India Eternal by Swami Vivekananda

Automobile electrical and Electronics II

Course code	17KUAT406	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Unit–I

Ohm's law, voltage, power, current (AC/DC), resistance, magnetism and electromagnetic induction, vehicle earthing – Electrical symbols – electrical safety procedures – Wiring and lighting circuits and their components – Different types of Batteries – principle, rating, testing and charging. Starter motors characteristics, capacity requirements. Drive mechanisms. Starter switches.

Unit–II

Lighting system: insulated and earth return system, details of head light and side light, LED lighting system, head light dazzling and preventive methods – Horn, wiper system and trafficator. DC Generators and Alternators their characteristics. Control unit – cut out, electronic regulators. Spark plugs. Advance mechanisms. Different types of ignition systems. Electronic fuel injection systems, mono and multi point fuel injection system – Basic sensor arrangements. Types of sensors – Fuel cell Technology and types.

Unit–III

Current trends in automotive electronic engine management system, electromagnetic interference suppression, electromagnetic compatibility, electronic dashboard instruments, onboard diagnostic system, security and warning system. Wind screen washers & wipers. Signalling circuits Electric horns, Engine cooling fan motors, Headlight wipers & washers. Electronic speed control.

Unit–IV

Antilock braking system, air bag restraint system, voice warning system, seat belt system, road navigation system, anti theft system, Smart Cars and Traffic system, Wi–Fi cars ,blue Tooth, Applications, Vision Enhancement, Microprocessor and microcomputer controlled devices in automobiles such voice warning system, travel information system, keyless entry system, automatic transmission system, electronic steering system.

Unit–V

Maintenance of batteries, starting system, charging system and body electrical –Fault diagnosis using Scan tools. Maintenance of air conditioning parts like compressor, condenser, expansion valve, evaporator – Replacement of hoses– Leak detection– AC Charging– Fault diagnosis Vehicle body repair like panel beating, tinkering, soldering, polishing, painting.

Text books:

1. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.
2. Automotive electrical equipments, P.L.Kohli, Tata McGraw hill publications

Practical III: Workshop Technology –I

Course code	17KUAT4P3	Credits	3	Year	II
No. of Lecture Hours	--	No. of Practical Hours	90	Sem	IV

1. Guidelines for human and machine safety in workshop
2. To study and prepare report on the constructional details, working principles and operation of the Automotive Clutches.
3. To study and prepare report on the constructional details, working principles and operation of the Automotive Transmission systems.
4. To study and prepare report on the constructional details, working principles and operation of the Automotive Drive Lines & Differentials.
5. To study and prepare report on the constructional details, working principles and operation of the Multi-cylinder: Diesel and Petrol Engines.
6. To study and prepare report on the constructional details, working principles and operation of the Automotive Engine Systems & Sub Systems.
7. To study and prepare report on the constructional details, working principles and operation of the Fuels supply systems.
8. To study and prepare report on the constructional details, working principles and operation of the Engine cooling & lubricating Systems.
9. To study and prepare report on the constructional details, working principles and operation of the Automotive Suspension Systems.
10. To study and prepare report on the constructional details, working principles and operation of the Automotive Steering Systems.
11. To study and prepare report on the constructional details, working principles and operation of the Automotive Brake systems
12. To study and prepare report on the constructional details, working principles and operation of the Automotive Tyres & wheels.

Internship Training -II

Course code	17KUAT4I2	Credits	20	Year	II
No. of Lecture Hours	--	No. of Practical Hours	1400	Sem	IV

Objectives:

- To develop skills in the application of theory to practical work situations. To develop skills and techniques directly applicable to their careers. Internships will increase a student's sense of responsibility and good work habits. To expose students to real work environment experience gain knowledge in writing report in technical works/projects.
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- Internship programs will increase student earning potential upon graduation. To build the strength, teamwork spirit and self-confidence in students life. To enhance the ability to improve students creativity skills and sharing ideas.

- To build a good communication skill with group of workers and learn to learn proper behavior of corporate life in industrial sector. The student will be able instilled with good moral values such as responsibility, commitment and trustworthy during their training.

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Tamil-I

Course code	17KUGE511	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	V

அலகு I மரபுக்கவிதை

1. பாரதியார் - கண்ணன் என் தாய்
2. கண்ணதாசன் - தத்துவப் பாடல்கள் - அவன் தான் இறைவன்
3. பட்டுக்கோட்டை கல்யாணசுந்தரம் - செய்யும் தொழிலே தெய்வம்

அலகு II புதுக்கவிதை - I

1. கவிஞர் வாலி - தூக்கத்தில் ஒரு துவந்த யுத்தம் - (நிஜகோவிந்தம்)
2. வைரமுத்து - அவன் கலைமகளுக்குப் பாடஞ் சொல்லுகிறான் (திருத்தி எழுதிய தீர்ப்புகள்)
3. சௌந்திரா கைலாசம் - தெய்வீகம் - வளம்பெற வரம் தருவாள் (சௌந்திரா கைலாசம் கவிதைகள்)

அலகு III

1. சேதுபதி - இந்திய மாணவர் - (கனவுப்பிரதேசங்களில்)
2. ந. பிச்சமூர்த்தி - அக்னி (பிச்சமூர்த்தி கவிதைகள்)

அலகு IV - பயன்பாட்டுத் தமிழ்

1. விண்ணப்பக் கடிதம் எழுதப் பயிற்சி
2. வல்லினம் மிகும் இடங்கள்
3. வல்லினம் மிகா இடங்கள்
4. பிழை நீக்கி எழுதுதல்

அலகு V இலக்கிய வரலாறு - I

1. சிறுகதையின் இலக்கியத் தோற்றமும் வளர்சியும்
2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்.

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Mathematics – III

Course code	17KUGE512	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	V

Unit - I

THE SOLUTION OF NUMERICAL, ALGEBRAIC AND TRANSCENDENTAL EQUATIONS: Introduction - The Bisection method -Iteration method - The Method of False Position- Newton's Iteration method.

Unit - II

INTERPOLATION: Introduction - Linear Interpolation - Gregory Newton Forward Interpolation Formula - Gregory Newton Backward Interpolation Formula - Equidistant terms with one or more missing values.

Unit - III

NUMERICAL DIFFERENTIATION: Newton's Forward Difference Formula to compute the Derivatives - Newton's Backward Difference Formula to compute the derivatives - Derivatives using Striling's formula

Unit - IV

TRIGONOMETRY: Expansions of Cos nθ, Sin nθ and tan nθ - Expansion of Sin θ and Cos θ in a series of ascending powers of θ -

Unit - V

TRIGONOMETRY: Hyperbolic functions - Relation between Hyperbolic functions - Inverse Hyperbolic functions - Real and Imaginary parts - Logarithm of complex numbers.

Text Book:

1. Numerical methods **by** P.Kandasamy, K.Thilakavathy, K.Gunavathy, 2003 Edition
2. Ancillary Mathematics (Volume I) by S. Narayanan, R. Hanumantha Rao, Manickavachagam Pillai and P. Kandaswamy, S.Viswanathan (Printers & Publishers) Pvt Ltd., 2007

Total Quality Management

Course code	17KUGE513	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	V

Unit - I INTRODUCTION

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Quality statements - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, and Customer retention - Costs of quality.

Unit - II TQM PRINCIPLES

Leadership -Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention - Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDSA cycle, 5s, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

Unit - III TQM TOOLS & TECHNIQUES I

The seven traditional tools of quality - New management tools - Six-sigma: Concepts, methodology, applications to manufacturing, service sector including IT

Unit - IV TQM TOOLS & TECHNIQUES II

Control Charts - Process Capability - Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

Unit - V QUALITY SYSTEMS

Need for ISO 9000 - ISO 9001:2015, ISO 29990:2010 Quality System - Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 - Concepts, Requirements and Benefits - TQM Implementation in manufacturing and service sectors.

Text Book

1. Dale H.Besterfiled, et at., "Total Quality Management", Pearson Education Asia, Third Edition, Indian Reprint (2006).
2. Janakiraman,B and Gopal, R.K, "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. L

Work shop Supervising and Management

Course code	17KUAT507	Credits	05	Year	III
No. of Lecture Hours	75	No. of Practical Hours	--	Sem	V

Unit-I Management Training and Operations

Basic principles of supervising - Organising time and people - Job instruction training, training for new devices and techniques - Evaluate and allotment of technician – Vehicle operation and types of process - Work scheduling, Overtime, Breakdown analysis, Cost estimation - Vehicle technical specifications of various OEM vehicular products – Relevant and up-to-date knowledge of vehicle design, manufacture, consumer, industry and trade practices - Importance of maintenance, types- preventive (scheduled) and breakdown (unscheduled) maintenance - Safety precautions in maintenance- Knowledge of free and paid service schedules, fault diagnosis, technician notes, job cards, warranty procedures, log sheets and other forms- Evaluate the information gathered from the customer report, customer satisfaction

Unit-II Engine Maintenance

Lubrication system - lubricating/ engine oil top up, oil changing, cleaning methods, visual and dimensional inspections, minor/major adjustments of various components maintenance of engine accessories- air filter, battery, cooling system, electrical wiring in engine compartment. Engine tune up, top overhauling, dismantling of engine - components, cleaning, visual and dimensional inspections, minor/major reconditioning of various components, reconditioning methods, engine assembly - special tools used for maintenance/ overhauling.

Unit-III Maintenance of other Assemblies lubrication system

lubricating/ gear oil top up, oil changing, cleaning methods - visual and dimensional inspections, minor/major adjustments of various components of transmission system Servicing and maintenance of clutch, gear box, propeller shaft, differential - Servicing and maintenance of suspension system, brake system, steering system, wheel alignment and wheel balancing.

Unit-IV Electrical System Maintenance

Checking of electrical components for functioning, checking of battery, electrolyte - top up, terminal cleaning & protection methods, checking of starter motor, checking of charging systems- fan belt tension checking and adjustment - Testing methods for checking of ignitions system, lighting system - fault diagnosis and maintenance of modern electronic controls - checking and servicing of dash board instruments.

UNIT-V Motor Vehicle Act and Pollution control and Standards

Motor Vehicle Act: Schedules and sections, Registration of motor vehicles, Licensing of drivers, Control of permit, Limits of speed, traffic signs - Constructional regulations Description of goods carrier, delivery van, tanker, tipper, Municipal - fire fighting and breakdown service vehicle.

Pollution: Pollutant formation in Engines, mechanism of HC and CO formation in four stroke and two stroke engines, NOx formation in engines - Engine Design modifications, fuel modification, evaporative emission control - EGR, air injection, thermal reactors, Water Injection, catalytic converters - Application of microprocessor in emission control- Pollution standards, driving cycles – Indian Pollution standards.

Text book:

1. Tim Gills, "Automotive Service: Inspection, Maintenance, Repairing", Cengage Learning, 2004
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997

Practical IV : Work shop Technology - II

Course code	17KUAT5P4	Credits	03	Year	III
No. of Lecture Hours	--	No. of Practical Hours	90	Sem	V

1. Study and layout of an automobile repair, service and maintenance shop.
2. Study and preparation of different statements/records required for the repair and maintenance works.
3. Minor and major tune up of gasoline and diesel engines.
4. Study and checking of wheel alignment - testing of camber, caster.
5. Testing kingpin inclination, toe-in and toe-out
6. Study and checking of wheel balancer
7. Study and checking of fault diagnose of MPFI Engine
8. Study, Check and change of tyre.
9. Brake adjustment and Brake bleeding.
10. Fault diagnosis and service of vehicle air conditioning system
11. Study ,check and clean to injector
12. Study and checking of air bag simulator
13. Study and layout of motor car electrical systems
14. Study, check and charge of battery

Tamil-II

Course code	17KUGE614	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	VI

அலகு I சைவ இலக்கியங்கள்

1. திருஞானசம்பந்தர் - திருநீற்றுப் பதிகம் - (“மந்திரமாவது நீறு …” எனத் தொடங்கும் பதிகம்)
2. திருநாவுக்கரசர் - திருஅங்கமாலை - (“ தலையே நீ வணங்காய்” எனத் தொடங்கும் பதிகம்)

அலகு II வைணவ இலக்கியங்கள்

1. ஆண்டாள் - நாச்சியார் திருமொழி - 6 ஆம் திருமொழி (வாரணமாயிரம் எனத் தொடங்கும் 10 பாடல்கள்)
2. நம்மாழ்வார் - திருவாய் மொழி - (“முனியே நான்முகனே” எனத் தொடங்கும் 10 பாடல்கள்)

அலகு III சிற்றிலக்கியங்கள் - பிற்கால இலக்கியம்

1. குமர குருபரர் - மதுரை மீனாட்சியம்மை பிள்ளைத் தமிழ்
   1. தாலப் பருவம் - (31)
      (“முதுசொற் புலவர் தெளித்த” எனத் தொடங்கும் பாடல்)
   2. அம்புலிப் பருவம் (72)
      (“ஏடகத்தெழுதாத” எனத் தொடங்கும் பாடல்)
2. தாயுமானவர் - எந்நாட்கண்ணி - (தெய்வ வணக்கம் - 11 கண்ணிகள்)

அலகு IV இலக்கிய வரலாறு - II

பன்னிரு திருமுறைகள்

அலகு V இலக்கிய வரலாறு – III

பன்னிரு ஆழ்வார்கள்

Safety Engineering

Course code	17KUGE615	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	VI

Unit-I Introduction

Evolution of modern safety concept- Safety policy - Safety Organization - line and staff functions for safety- Safety Committee- budgeting for safety - Risk assessment & management - Safety Education and training- Importance, various training methods – First Aid, Resuscitation, Bleeding, management of shock, Burns, scalds and accidents caused by electricity, Rescue and transport of casualty Role of management and role of Govt. in industrial safety, safety analysis.

Unit-II Safety prevention

Definitions and theories, Accident, Injury, unsafe condition, Dangerous occurrence- Cost of accidents- Accident prevention- Safety performance - Personal protective equipment- survey the plant for locations and hazards, part of body to be protected - Economic importance of accidents, Analysis of accident records, accident investigations.

Unit-III Safety in Material Handling

General safety rules, principles, maintenance, Inspections of turning machines, boring machines, milling machine, planning machine and grinding machines, CNC machines, electrical guards, work area, material handling, inspection - Heat treatment operations, paint shops, sand and shot blasting, safety in inspection and testing, pressure vessels, air leak test, steam testing, safety in radiography, personal monitoring devices, radiation hazards.

Unit-IV Shopfloor Safety

Automotive vehicle design, selection, operation and maintenance of motor vehicle - Basic automotive road Signals, Symbols, Rules and Regulation - safety on manual, mechanical handling equipment operations - Servicing and maintenance equipment grease rack operation wash rack operation - battery charging - gasoline handling - other safe practices - preventive maintenance - check lists - motor vehicle insurance and surveys.

Unit-V Electrical Safety

General principles of electric safety - Preventive maintenance - Electricity & Human body - Earthing / Grounding - Safety against over voltage, extra-low and residual voltages - Hazardous areas, Electrical insulation - Energy leakage - Electrical fires and Arc flash - Electrical causes of fire and explosion - National electrical Safety code - Safety in the use of portable tools.

Text Books:

1. C.Ray Asfahl , *Industrial Safety and Health management,* Pearson Prentice Hall,2003.

2. N.V Krishnan. *Safety Management in Industry* Jaico Publishing House, Bombay, 1997.

Entrepreneurship Development

Course code	17KUGE616	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	VI

Unit I: Entrepreneurship

Meaning, Definition, Characteristics and Functions-Role of Entrepreneur in economic development -Types-Qualities of an Entrepreneurs - Classification of Entrepreneurs-Factors Influencing Entrepreneurship – Entrepreneurship development programme – Self Employment schemes – Government policies on Entrepreneurial development.

Unit II: Institutional Finance to Entrepreneurs

State Level Financial Institutions: State Financial Corporation (SFCS) - State Industrial Development Corporation (SIDCS) – Tamilnadu Industrial Investment Corporation (TIIC) - Small Industries Promotion Corporation of Tamilnadu (SIPCOT).

All Indian Financial Institutions:

Industrial Development Bank of India (IDBI) – Industrial Finance Corporation of India (IFCI) – Industrial Credit Investment Corporation of India (ICICI) – Industrial Rural Development Bank of India (IRDBI).

Unit III: Institutional Setup to Entrepreneurs

District Industries Centre (DIC) – National Small Industries Corporation (NSIC) – Small Industries Development Corporation (SIDC) – Small Industries Service Institute (SISI) – Indian Investment Centre – Kadhi and Village Industries (KVIC).

Unit IV: Incentives and Subsidies of State and Central Government

Subsidy For Market – Capital Assistance - Subsidized Services – Taxations, Benefits to SSI – Transport Subsidy – Seed Capital Assistance – Special Facilities for imports.

Unit V: Sources of Ideas

Preliminary Evaluation and Testing of ideas – Demand based industries and Resource based industries - Project Formulation - Project Identification-Evaluation-Feasibility Analysis-Project Report.

Text Books:

1. Radha V, Entrepreneurship Development, Prasanna Publication House, 2008.
2. Khaka SS, Entrepreneurship Development, S. Chand & Co. Ltd. 2010.
3. Vasant Desai. The Dynamics of Entrepreneurship Development and Management.
4. Gupta C. B, Srinivasan N.P. Entrepreneurship Development, S. Chand & Co. Ltd. 2011.

1.

Project

Course code	17KUAT6PR	Credits	08	Year	III
No. of Lecture Hours	--	No. of Practical Hours	240	Sem	VI

Objectives

- The objective of the project work is to enable the students in convenient groups of not more than 5 members on a project involving theoretical and experimental studies related to the branch of study. Every project work shall have a guide who is the member of the faculty of the institution. The students to receive the directions from the guide, on library reading, laboratory work, computer analysis or field work as assigned by the guide and also to present in periodical seminars on the progress made in the project.

- Each student shall finally produce a comprehensive report covering background information, literature survey, problem statement, project work details and conclusion. This final report shall be typewritten form as specified in the guidelines.

- The continuous assessment shall be made as prescribed by college regulations

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Internship Training-III

Course code	17KUAT6I3	Credits	20	Year	III
No. of Lecture Hours	--	No. of Practical Hours	1400	Sem	VI

Objectives:

- To develop skills in the application of theory to practical work situations. To develop skills and techniques directly applicable to their careers. Internships will increase a student's sense of responsibility and good work habits. To expose students to real work environment experience gain knowledge in writing report in technical works/projects.
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- Internship programs will increase student earning potential upon graduation. To build the strength, teamwork spirit and self-confidence in students life. To enhance the ability to improve students creativity skills and sharing ideas.

- To build a good communication skill with group of workers and learn to learn proper behavior of corporate life in industrial sector. The student will be able instilled with good moral values such as responsibility, commitment and trustworthy during their training.

SCHEME OF EXAMINATION (for General Education Component)

General Rule of Examination:

Every student should earn a minimum attendance of 75% to become eligible to appear for Semester Examinations.

To pass in an examination, a student has to score a minimum of 40% marks in each theory & practical paper (Internal and External combined but with a minimum of 40% marks in internal and external).

Evaluation of student's performance for the theory and practical part includes two components.

Components	Internal Marks	External Marks	Total Marks
General Component (Theory)	50	50	100

Continuous Internal Assessment:

Two CIA tests conducted for each paper during each semester.

CIA for General and Skilled component:

S.No	Type	Units	Max. Marks
1.	CIA test – I	1 & 2	**20 Marks**
2.	CIA test – II	3, 4 & 5	**25 Marks**
Total			**45 Marks**

Internal Marks

Internal Marks- Break up (50 Marks)		
A	CIA – I & CIA – II test (45 marks converted to 30 Marks)	**30 Marks**
B	Percentage of Attendance 95% - and above - 10 Marks 90% - 94% - 8 Marks 85% - 89% - 6 Marks 81% - 84% - 4 Marks 75% - 80% - 2 Marks	**10 Marks**
C	Marks for Assignment / Seminar	**10 Marks**
Total		**50 Marks**

QUESTION PAPER PATTERN

1) The question paper pattern and coverage of syllabus for each CIA and External (semester) examinations for Basic English, Mathematics-I, Office Automation, Professional English and Value Education.

CIA TEST – I
(Unit 1 & 2 only)

Time: 1 Hour **Max. Marks: 20**

Part - A	**No choice** (Five questions from unit 1 & 2)	**5 x 2 = 10**
Part – B	**Two out of three** (Three questions from unit 1 & 2)	**2 x 5 = 10**

CIA TEST – II
(Unit 3, 4 & 5 only)

Time: 1½ Hour **Max. Marks: 25**

Part - A	**No choice** (Five questions from unit 3, 4 & 5)	**5 x 2 = 10**
Part – B	**Answer any Three questions out of Five** (Five questions from unit 3, 4 & 5)	**3 x 5 = 15**

SEMESTER EXAMINATION
(All Five Units)

Time: 2 Hours **Max. Marks: 50**

Part - A	**No Choice** (Ten questions from All five units)	**10 x 2 = 20**
Part – B	**Answer any Five questions out of Eight** (Eight questions from All five units)	**5 x 6 = 30**

2) The question paper pattern for Environmental Studies will be conducted through online exam for internal Assessment and Semester Examination.

SCHEME OF EXAMINATION (for Vocational Education Component)

The question paper pattern and coverage of syllabus for theory and practical will be conducted by **A**utomotive **S**kill **D**evelopment **C**ouncil **(ASDC)** of **N**ational **S**kill **D**evelopment **C**orporation **(NSDC)**.