

Sri Ramakrishna Mission Vidyalaya College of Arts and Science

(AUTONOMOUS)

B.VOC (Automobiles)

For Students admitted from 2018-2019 & 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.

PROGRAMME OUTCOMES:

The Department of Automobiles provides the practical learning environment for the students which aim to meet out the industrial requirements in the field of Automobiles by providing more practical exposures and on job trainings.

The program Educational Objectives are as follows:

PO1. Provide graduates with the fundamental knowledge in science and mathematics required to understand the principles of Engineering.

PO2. Develop creative and innovative thinking ability of the students which are required for industry.

PO3. Create a technically skilled employee by imparting theoretical, practical and on job training to students.

PO4. Imparting the leadership qualities required for team work, production planning, decision making and industrial safety, so that they are work ready at exit point of the programme.

PO5. Create well disciplined and responsible citizens for the overall welfare of our nation.

PROGRAMME SPECIFIC OUTCOMES:

PSO1. Ability to apply knowledge of vehicle science and automobile fundamentals in the field of competitive automotive field.

PSO2. Understand the applications of electrical, electronics and hydraulic devices in the field of Automobile.

PSO3. Diagnose the automotive system failures and repair / replace the components / systems so as to bring the vehicle in original condition.

PSO4. Ability to work in an industry as a team member as well as an individual with professional qualities and evolve oneself for lifelong learning.

PSO5. Ability to lead professionally in an industrial environment by applying managerial and technical skills related to Research and development, production and service activities.

SCHEME OF EXAMINATION

SEMESTER - I

Course Code	Part	Name of the Subject	Lecture / Practical Hrs		Exam in Hours	Marks		Total Marks	Credits
			Lecture	Practical / Field Work		Int	Ext		
GENERAL EDUCATION COMPONENT									
18KUG1TA1	I	Tamil I	60	-	2	50	50	100	4
18KUG1EN1	II	Basic English	60	-	2	50	50	100	4
18KUG1AL1	III	Allied I: Mathematics- I	60	-	2	50	50	100	4
Sub Total (A)			180	-	06	150	150	300	12
VOCATIONAL EDUCATION COMPONENT									
18KUA1C01	III	Core I: Automobile Technology I	60	-	2	50	50	100	4
18KUA1C02	III	Core II: Automobile Repair and Maintenance I	60	-	2	50	50	100	4
Sub Total (B)			120	-	04	100	100	200	08
Total (A +B)			300	-	10	250	250	500	20

SEMESTER - II

Course code	Part	Name of the Subject	Lecture / Practical Hrs		Duration of Exam in Hours	Marks		Total Marks	Credits
			Lecture	Practical / Field Work		Internal	External		
GENERAL EDUCATION COMPONENT									
18KUG2TA2	I	Tamil II	60	-	2	50	50	100	4
18KUG2EN2	II	Professional English	60	-	2	50	50	100	4
18KUG2AL2	III	Allied II: Office Automation	60	-	2	50	50	100	4
Sub Total(A)			180	-	06	150	150	300	12
VOCATIONAL EDUCATION COMPONENT									
18KUA2C03	III	Core III: Automotive Electrical and Electronics I	60	-	2	50	50	100	4
18KUAT2P1	III	Practical I: Automotive Electrical and Electronics -I	-	60	3	50	50	100	2
18KUAT2P2	III	Practical II: Automobile Repair and Maintenance -I	-	60	3	50	50	100	2
18KUAT2I1	III	Internship Training-I	-	1400	3	100	300	400	20
Sub Total(B)			60	1520	11	250	450	700	28
Total(A+B)			240	1520	17	400	600	1000	40

SEMESTER - III

Course Code	part	Name of the Subject	Lecture / Practical Hrs		Exam in Hours	Marks		Total Marks	Credits
			Lecture	Practical / Field Work		Internal	External		
GENERAL EDUCATION COMPONENT									
18KUG3EN3	II	Technical Communication	60	-	2	50	50	100	4
18KUG3AL3	III	Allied III: Mathematics-II	60	-	2	50	50	100	4
18KUG3ENS	IV	Environmental studies	60	-	2	50	50	100	4
Sub Total(A)			180	-	06	150	150	300	12
VOCATIONAL EDUCATION COMPONENT									
18KUA3C04	III	Core IV: Automobile Technology II	60	-	2	50	50	100	4
18KUA3C05	III	Core V: Automobile Repair and Maintenance II	60	-	2	50	50	100	4
Sub Total (B)			120	-	04	100	100	200	08
Total (A +B)			300	-	10	250	250	500	20

SEMESTER - IV

Course Code	Part	Name of the Subject	Lecture / Practical Hrs		Exam in Hours	Marks		Total Marks	Credits
			Lecture	Practical / Field Work		Internal	External		
GENERAL EDUCATION COMPONENT									
18KUG4AL4	III	Allied IV: Technical Drawing	60	-	2	50	50	100	4
18KUG4EL1	III	Elective I: Principles of Management	60	-	2	50	50	100	4
18KUG4VAD	IV	Value Education	60	-	2	50	50	100	4
Sub Total(A)			180	-	06	150	150	300	12
VOCATIONAL EDUCATION COMPONENT									
18KUA4C06	III	Core VI: Automotive Electrical and Electronics II	60	-	2	50	50	100	4
18KUAT4P3	III	Practical III: Workshop Technology Lab - I	-	120	3	50	50	100	4
18KUAT4I2	III	Internship Training-II	-	1400	3	100	300	400	20
Sub Total(B)			60	1520	08	200	400	600	28
Total (A +B)			240	1520	14	350	550	900	40

SEMESTER - V

Course Code	Part	Name of the Subject	Lecture / Practical Hrs		Exam in Hours	Marks		Total Marks	Credits
			Lecture	Practical / Field Work		Internal	External		
GENERAL EDUCATION COMPONENT									
18KUG5EL2	III	Elective II: Total Quality Management	60	-	2	50	50	100	4
18KUG5AL5	III	Allied V: Mathematics -III	60	-	2	50	50	100	4
18KUG5EL3	III	Elective III: Indian Values	60	-	2	50	50	100	4
Sub Total(A)			180	-	06	150	150	300	12
VOCATIONAL EDUCATION COMPONENT									
18KUA5C07	III	Core VII: Work shop Supervising and Management	75	-	2	50	50	100	5
18KUAT5P4	III	Practical IV: Work shop Practice Lab	-	90	2	50	50	100	3
Sub Total(B)			75	90	04	100	100	200	08
Total (A +B)			155	90	10	250	250	500	20

SEMESTER - VI

Course Code	Part	Name of the Subject	Lecture / Practical Hrs		Exam in Hours	Marks		Total Marks	Credits
			Lecture	Practical / Field Work		Internal / Theory	External / Practical		
GENERAL EDUCATION COMPONENT									
18KUG6EL4	III	Elective IV: Professional Ethics and Human Values	60	-	2	50	50	100	4
18KUG6EL5	III	Elective V: Safety Engineering	60	-	2	50	50	100	4
18KUG6EL6	III	Elective VI: Entrepreneurship Development	60	-	2	50	50	100	4
Sub Total			180	-	06	150	150	300	12
(A)									
VOCATIONAL EDUCATION COMPONENT									
18KUAT6PR	III	Project	-	240	3	50	50	100	8
18KUAT6I3	III	Internship Training-III	-	1400	3	100	300	400	20
Sub Total			-	1640	06	200	400	600	28
(B)									
Total (A +B)			-	1640	12	350	550	900	40

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

Tamil-I

Subject code	18KUG1TA1	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

Course Outcomes (CO)

CO1	பிழையின்றி சுயமாக பேசவும், எழுதவும் பயிற்சி பெறல்	S
CO2	அரசுத் துறைசார்ந்தபணிகளுக்கு (போட்டித் தேர்வு) தயார்படுத்திக்கொள்ளுதல்	K & U
CO3	மரபு,புதுக்கவிதைகளை அறிந்துகொள்ளல்	U
CO4	மாணவர்கள் தங்களின் படைப்பாற்றலை வெளிப்படுத்திக்கொள்ளும் வாய்ப்பினை பெறுதல்.	S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	L	L	L	M	L		L	L	L	M	S
CO2	L	L	L	M	L		L	L	L	M	S
CO3	L	L	L	M	L		L	L	L	M	S
CO4	L	L	L	M	L		L	L	L	M	S

S - Strong; M - Medium; L - Low

BASIC ENGLISH

Subject code	18KUG1EN1	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

Course Outcomes (CO)

CO1	Overcome his mother tongue influence gradually.	S
CO2	Develop confidence to face the competitive exams and interviews.	K,U& S

K- Knowledge, U - Understand, S- Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	L	L	S	L		M	M	L	M	M
CO2	M	M	L	S	M		M	M	S	S	M

S - Strong; M - Medium; L - Low

MATHEMATICS - I

Subject code	18KUG1AL1	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

Course Outcomes (CO)

CO1	Analyze Mathematical techniques and applications.	K
CO2	Solve the problems arise in engineering.	K,U&S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	L	M		S	M	M	L	L
CO2	S	S	S	M	M		S	M	M	L	L

S - Strong; M - Medium; L - Low

Automobile Technology-I

Course code	18KUA1C01	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

Course Outcomes (CO)

CO1	The main objective of this course is to impart knowledge in automotive vehicle.	K
CO2	The students will understand the constructional, working principle of various sub system of an automotive vehicle.	U & S

K-Knowledge U- Understand S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	L	M		S	M	S	L	L
CO2	S	S	M	L	L		S	M	S	M	L

S - Strong; M - Medium; L - Low

Automobile repair and maintenance I

Course code	18KUA1C02	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

Course Outcomes (CO)

CO1	The student will be able to understand the construction, function and working of individual component and the system in which it functions.	K & U
CO2	The student will also be able to understand the need of maintenance service to prevent or remove the defects that may come up.	K,U &S

K-Knowledge U- Understand S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	L	M		S	S	S	L	L
CO2	S	S	S	L	S		S	S	S	M	M

S - Strong; M - Medium; L - Low

Tamil-II

Subject code	18KUG2TA2	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

Course Outcomes (CO)

CO1	பக்தி இலக்கியகாலத்தின் சமயம்,பண்பாடு,பக்திநெறிஅறிதல்	K
CO2	அரசுப் போட்டித் தேர்வுகளுக்குத் தயார்படுத்திக் கொள்ளுதல்	K &U
CO3	பக்தி இலக்கியங்களின் வழி சைவ, வைணவம் தமிழுக்கு செய்த தொண்டினை அறிதல்	K

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	L	L	L	M	L		L	L	L	M	S
CO2	L	L	L	M	L		L	L	L	M	S
CO3	L	L	L	M	L		L	L	L	M	S

S - Strong; M - Medium; L - Low

PROFESSIONAL ENGLISH

Subject code	18KUG2EN2	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical	--	Sem	II

Course Outcomes (CO)

CO1	Enable to achieve good communication skills.	S
CO2	Enable to face interviews successfully.	K,U& S

K- Knowledge, U - Understand, S- Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	L	L	S	L		M	M	L	M	M
CO2	M	M	L	S	M		M	M	S	S	M

S - Strong; M - Medium;L - Low

OFFICE AUTOMATION

Subject code	18KUG2AL2	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

Course Outcomes (CO)

CO1	Create basic knowledge for using computer in all fields.	K
CO2	Develop their presentation skills through accessing internet.	U & S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	M	M	L	M		M	S	S	L	L
CO2	M	M	M	L	M		M	S	S	L	L

S - Strong; M - Medium; L - Low

Automotive Electrical and Electronics-I

Course code	18KUA2C03	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

Course Outcomes (CO)

CO1	Gaining information's on modern safety system in vehicle braking.	K
CO2	The students will be able to understand the working of the system components, possible causes of defects and their repairs.	U&S

K-Knowledge

U- Understand

S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	L	M		S	M	S	M	M
CO2	S	S	S	L	S		S	S	M	L	L

S - Strong; M - Medium; L - Low

Automotive Electrical and Electronics -I

Course code	18KUAT2P1	Credits	02	Year	I
No. of Lecture Hours	--	No. of Practical Hours	60	Sem	II

Course Outcomes (CO)

CO1	Ability to rectify and faults in electrical and electronics systems and maintain the same.	K,U&S
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K-Knowledge U- Understand S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M		S	S	S	S	M

S - Strong; M - Medium; L - Low

Automobile Repair and maintenance -I

Course code	18KUAT2P2	Credits	02	Year	I
No. of Lecture Hours	--	No. of Practical Hours	60	Sem	II

Course Outcomes (CO)

CO1	Ability to identify the faults and knowledge on maintenance	K&U
CO2	Diagnosis of the operational faults to identify the root cause of the trouble and take necessary action to repair the vehicle	U&S

K-Knowledge

U- Understand

S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M		S	S	S	S	M
CO2	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Internship Training -I

Course code	18KUAT2I1	Credits	20	Year	I
No. of Lecture Hours	--	No. of Practical Hours	1400	Sem	II

Course Outcomes (CO)

CO1	Maintaining and troubleshooting technology.	K
CO2	Writing requirements documentation	U&S
CO3	Performing effective and informative user testing. Improving problem-solving and critical thinking skills.	U&S
CO4	Monitoring and correcting performance, Exercising leadership Behaving professionally and Listening effectively.	K&S
CO5	Allocating time effectively, Teaching others and Developing individual responsibility.	U&S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S		S	S	S	S	S
CO2	S	S	S	S	S		S	S	S	S	S
CO3	S	S	S	S	S		S	S	S	S	S
CO4	S	S	S	S	S		S	S	S	S	S
CO5	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

TECHNICAL COMMUNICATION

Subject code	18KUG3EN3	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

Course Outcomes (CO)

CO1	Overcome inhibition in speaking in a forum.	S
CO2	Enable to face the day to day life and official requirements.	K,U&S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	L	L	S	L		M	M	L	M	M
CO2	M	M	L	S	M		M	M	S	S	M

S - Strong; M - Medium; L - Low

MATHEMATICS - II

Subject code	18KUG3AL3	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

Course Outcomes (CO)

CO1	Apply the basic Mathematical calculations in business problems.	K& S
CO2	Understand the concepts of Linear equation, Differential and integral calculus.	U

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	L	L	S	L		S	M	M	L	L
CO2	M	M	L	S	M		S	M	S	L	L

S - Strong; M - Medium; L - Low

ENVIRONMENTAL STUDIES

Subject code	18KUG3ENS	Credits	04	Year	II
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	III

Course Outcomes (CO)

CO1	Got awareness about the environment.	K
CO2	Understand the need to protect our environment from pollution and develop the unpolluted society.	U

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	M	L	M	L		L	M	M	M	S
CO2	M	M	L	M	L		L	M	M	M	S

S - Strong; M - Medium; L - Low

Automobile Technology II

Course code	18KUA3C04	Credits	04	Year	II
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	III

Course Outcomes (CO)

CO1	This knowledge will be helpful to the student in co-relating various systems with each other and understanding the individual system in a better manner.	K&U
CO2	The students will understand the constructional, working principle of various sub system of an automobile.	U&S

K-Knowledge U- Understand S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	L	M	S	M	S	L	L
CO2	S	S	M	L	L	S	M	S	M	L

S - Strong; M - Medium; L - Low

Automobile repair and maintenance-II

Course code	18KUA3C05	Credits	05	Year	II
No. of Lecture Hours	75	No. of Practical Hours	--	Sem	III

Course Outcomes (CO)

CO1	The student can able to understand the importance of maintenance and also the step by step procedure for maintain the various automotive sub systems.	U&S
CO2	This knowledge will be helpful to the student in understanding maintenance schedules, maintaining records, maintenance of engine, other mechanical and electrical systems beside co-relating various systems with each other and understanding the individual system in a better manner.	K,U&S

K-Knowledge

U- Understand

S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	L		S	M	S	M	M
CO2	S	S	S	S	M		S	S	S	M	M

S - Strong; M - Medium; L - Low

TECHNICAL DRAWING

Subject code	18KUG4AL4	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Course Outcomes (CO)

CO1	Apply the Skill in the Geometric construction.	K & S
CO2	Understand and Develop the Orthographic and Isometric projections.	U & S
CO3	Remember the symbols widely used in Electrical and Electronics circuits.	K & U

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	L	M		M	S	M	L	L
CO2	M	S	M	L	M		M	S	M	L	L
CO3	S	S	M	L	S		M	S	M	L	L

S - Strong; M - Medium; L - Low

PRINCIPLES OF MANAGEMENT

Subject code	18KUG4EL1	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Course Outcomes (CO)

CO1	Understand the basic managerial functions of an organization	U
CO2	Develop the leadership qualities and planning attitude	K & U

K- Knowledge, U - Understand, S- Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	L	L	L	S	M		L	M	M	S	S
CO2	M	M	M	S	M		L	S	S	S	S

S - Strong; M - Medium; L - Low

Automobile electrical and Electronics II

Course code	18KUA4C06	Credits	04	Year	II
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	IV

Course Outcomes (CO)

CO1	The students will be able to understand the working of the automotive electrical and electronics system components, possible causes of defects and their repairs.	K &U
CO2	Understand the operation of vehicle sensors, actuators and display units	K&U
CO3	Be able to carry out systematic fault diagnosis and repairs on vehicle electronic systems.	U&S

K-Knowledge

U- Understand

S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	L	M		S	M	S	M	M
CO2	S	S	S	L	S		S	S	M	L	L
CO3	S	S	M	M	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Work shop Technology Lab -I

Course code	18KUAT4P3	Credits	03	Year	II
No. of Lecture Hours	--	No. of Practical Hours	90	Sem	IV

Course Outcomes (CO)

CO1	Diagnose and repair all major vehicle systems.	U&S
CO2	Document repairs of vehicles accurately and descriptive of concern, cause, and correction.	K,U & S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S		S	S	S	S	S
CO2	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Internship Training-II

Course code	18KUAT4I2	Credits	20	Year	II
No. of Lecture Hours	--	No. of Practical Hours	1400	Sem	IV

Course Outcomes (CO)

CO1	Maintaining and troubleshooting technology.	K
CO2	Writing requirements documentation	U&S
CO3	Performing effective and informative user testing. Improving problem-solving and critical thinking skills.	U&S
CO4	Monitoring and correcting performance, Exercising leadership Behaving professionally and Listening effectively.	K&S
CO5	Allocating time effectively, Teaching others and Developing individual responsibility.	U&S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S		S	S	S	S	S
CO2	S	S	S	S	S		S	S	S	S	S
CO3	S	S	S	S	S		S	S	S	S	S
CO4	S	S	S	S	S		S	S	S	S	S
CO5	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Total Quality Management

Subject code	18KUG5EL2	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	V

Course Outcomes (CO)

CO1	Gain the knowledge of Quality management principles and Techniques.	K
CO2	Understand the importance of the Quality and apply in industry.	U & S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	L	M	L	S	S		L	M	M	S	S
CO2	L	M	L	S	S		L	M	M	S	S

S - Strong; M - Medium; L - Low

Mathematics – III

Subject code	18KUG5AL5	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	V

Course Outcomes (CO)

CO1	Solve numerical algebraic equation and transcendental equations.	K & U
CO2	Able to solve the real world problems.	K,U& S
CO3	Understand Mathematical techniques and applications.	U & S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	M	L	L	L	L	S	M	M	L	L
CO2	M	M	L	L	M	S	M	M	L	L
CO3	M	M	S	L	M	S	M	M	L	L

S - Strong; M - Medium; L - Low

INDIAN VALUES

Subject code	18KUG5EL3	Credits	4	Year	III
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	V

Course Outcomes (CO)

CO1	Understand the importance of our cultural and spiritual heritage	K & U
CO2	Know the life history of national leaders of our Country.	U & S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	L	L	L	S	M		L	L	L	S	S
CO2	L	L	L	S	M		L	L	L	S	S

S - Strong; M - Medium; L - Low

Work shop Supervising and Management

Course code	18KUA5C07	Credits	05	Year	III
No. of Lecture Hours	75	No. of Practical Hours	--	Sem	V

Course Outcomes (CO)

CO1	Identifying, understanding and working with professional standards.	K&U
CO2	Manage quality issues in the work done by the technicians and components/ aggregate specialists to reduce rework or repeat complaints	K,U&S

K-Knowledge U- Understand S-Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S		S	S	S	S	S
CO2	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Work shop Practice Lab

Course code	18KUAT5P4	Credits	03	Year	III
No. of Lecture Hours	--	No. of Practical Hours	90	Sem	V

Course Outcomes (CO)

CO1	Differentiate the various forms and records of work shop.	K&U
CO2	Use the Electrical equipments and trouble shooting	U & S
CO3	Identify the faults and knowledge on maintenance	K,U & S
CO4	Understand the Four wheeler vehicle trouble shooting and Maintenance	U&S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	L		S	S	S	M	M
CO2	S	S	S	S	S		S	S	S	S	M
CO3	S	S	S	S	S		S	S	S	S	S
CO4	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

PROFESSIONAL ETHICS AND HUMAN VALUES

Subject code	18KUG6EL4	Credits	4	Year	III
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	VI

Course Outcomes (CO)

CO1	Create awareness of Ethics and moral values.	K & U
CO2	Understand the importance of Ethics and code of conduct in business.	K & U
CO3	Understand social responsibility in business and importance of human values	U & S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	L	L	L	S	M		L	L	L	S	S
CO2	L	L	L	S	M		L	L	L	S	S
CO3	L	L	L	S	M		L	L	L	S	S

S - Strong; M - Medium; L - Low

Safety Engineering

Subject code	18KUG6EL5	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	VI

Course Outcomes (CO)

CO1	Understand the importance of safety.	U
CO2	Able to handle the materials and tools safely.	K,U& S
CO3	Follow the road and electrical safety.	U & S

K- Knowledge, U - Understand, S- Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	M	M	S	M		M	M	M	S	S
CO2	S	S	S	S	S		S	S	S	S	S
CO3	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Entrepreneurship Development

Subject code	18KUG6EL6	Credits	04	Year	III
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	VI

Course Outcomes (CO)

CO1	Understand concept of finance institutions, project report, incentives and subsidies.	U
CO2	Develop the qualities to become an entrepreneur	K,U& S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	M	M	L	S	M		L	M	M	S	S
CO2	M	M	M	S	M		L	M	M	S	S

S - Strong; M - Medium; L - Low

Project

Course code	18KUAT6PR	Credits	08	Year	III
No. of Lecture Hours	--	No. of Practical Hours	240	Sem	VI

Course Outcomes (CO)

CO1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology .	K,U & S
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K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Internship Training-III

Course code	18KUAT6I3	Credits	20	Year	III
No. of Lecture Hours	--	No. of Practical Hours	1400	Sem	VI

Course Outcomes (CO)

CO1	Maintaining and troubleshooting technology.	K
CO2	Writing requirements documentation	U&S
CO3	Performing effective and informative user testing. Improving problem-solving and critical thinking skills.	U&S
CO4	Monitoring and correcting performance, Exercising leadership Behaving professionally and Listening effectively.	K&S
CO5	Allocating time effectively, Teaching others and Developing individual responsibility.	U&S

K- Knowledge, U - Understand, S - Skill

	PSO1	PSO2	PSO3	PSO4	PSO5		PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S		S	S	S	S	S
CO2	S	S	S	S	S		S	S	S	S	S
CO3	S	S	S	S	S		S	S	S	S	S
CO4	S	S	S	S	S		S	S	S	S	S
CO5	S	S	S	S	S		S	S	S	S	S

S - Strong; M - Medium; L - Low

Tamil-I

Course code	18KUG1TA1	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

அலகு I மரபுக்கவிதை

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

அலகு II புதுக்கவிதை - I

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

அலகு III

1. சேதுபதி - இந்திய மாணவர் - (கனவுப்பிரதேசங்களில்)
2. ந. பிச்சமுர்த்தி - அக்னி (பிச்சமுர்த்தி 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 வளர்ச்சியும்
2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்.

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BASIC ENGLISH

Course code	18KUG1EN1	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

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)
- 2) Pillai, Radhakrishna G.English Grammar and Composition. Chennai: Emerald Publishers,2005

MATHEMATICS - I

Course code	18KUG1AL1	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	I

UNIT - I

Set and Functions: Introduction - Properties of operations on sets - De Morgan's laws - verification examples - Venn diagrams - formula for $n(A \cup B \cup C)$ - 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: Introduction - Types of Matrices - Addition 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:

Basic Mathematics, Science Series Rupa, Rupa Publications

Automobile Technology-I

Course code	18KUA1C01	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 (Battery, Magneto Coil and Electronic Type)-Regulators-cut outs.

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

Automobile repair and maintenance I

Course code	18KUA1C02	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 (Mufflers) - 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, Worm and sector and recirculating 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.**

Text Book:

1. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.
2. R. K. Rajput, "A Text Book of Automobile Engineering". Publisher, Firewall Media, 2007.

Tamil-II

Course code	18KUG2TA2	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

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

PROFESSIONAL ENGLISH

Course code	18KUG2EN2	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical	--	Sem	II

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.

OFFICE AUTOMATION

Course code	18KUG2AL2	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

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.

Automotive Electrical and Electronics-I

Course code	18KUA2C03	Credits	04	Year	I
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	II

UNIT - I

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 - II

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 - III

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 - IV

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 - V

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.

Text Book:

1. Judge. A.W., "Modern Electrical Equipment of Automobiles", Chapman & Hall, London, 1992.
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.

Automotive Electrical and Electronics -I

Course code	18KUAT2P1	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

Automobile Repair and maintenance -I

Course code	18KUAT2P2	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.

Internship Training -I

Course code	18KUAT2I1	Credits	20	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.
- 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.

Outcomes:

- Maintaining and troubleshooting technology.
- Writing requirements documentation.
- Performing effective and informative user testing.
- **Improving problem-solving and critical thinking skills.**
- Monitoring and correcting performance.
- **Exercising leadership**
- Behaving professionally.
- Listening effectively.
- Allocating time effectively.
- Teaching others.
- **Developing individual responsibility.**

TECHNICAL COMMUNICATION

Course code	18KUG3EN3	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

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	18KUG3AL3	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	III

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:

Business Mathematics and Statistics by PA. Navnitham, Jai Publishers, 2012.

ENVIRONMENTAL STUDIES

Course code	18KUG3ENS	Credits	04	Year	II
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	III

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-Conservation 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 II

Course code	18KUA3C04	Credits	04	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 - charcoal canister control for evaporative emission - positive crank case ventilation system for unburnt hydrocarbon emission reduction - Fumigation EGR (Exhaust gas recirculation) - Air injection - silencer design on sound reduction in automobiles. - Exhaust gas analyser - Smoke meter. Chemistry of engine combustion - HC and CO formation in engines - NO formation in engines - Smoke emissions from SI engines - Effect of operating variables on emission formation

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.
2. R. K. Rajput, "A Text Book of Automobile Engineering". Publisher, Firewall Media, 2007.

Automobile repair and maintenance-II

Course code	18KUA3C05	Credits	05	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.SounddaraaRajan, "Automobile Maintenance", R.P.Publication.
2. Tim Gills, "Automotive Service: Inspection, Maintenance, Repairing", Cengage Learning, 2004

TECHNICAL DRAWING

Course code	18KUG4AL4	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

Unit I - Geometrical construction

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

Unit II-Projections

Orthographic (first angle and third angle) (10 simple exercises each) - Isometric (5 simple exercises) - Oblique (2D and 3D wire frame models) (3 simple exercises) - Blue print reading (Missing views - Missing Lines - Missing dimensions)

Unit III- Sectional View

Types of sectional view (Full section, Half section, Aligned section, Offset Section, Revolved Section, Removed section) - Detailing view.

Unit IV -Electrical and Electronics Symbols

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

Unit V- 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- Simple sketches (lines and curves)

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.

PRINCIPLES OF MANAGEMENT

Course code	18KUG4EL1	Credits	4	Year	II
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	IV

UNIT I: INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS

Definition of Management - Science or Art - Manager - 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 -Current trends and issues in Management.

UNITII: PLANNING

Nature and purpose of planning - planning process - types of planning - objectives - setting objectives - policies - Planning Tools and Techniques - **Decision making steps and process.**

UNIT III: ORGANISING

Formal and informal organization - organization chart - organization structure - types - Line and staff authority - departmentalization - delegation of authority - centralization and decentralization - Human Resource Management - **HR Planning, Recruitment, selection, Training and Development**, Performance Management.

UNIT IV: DIRECTING

Meaning, Principles and Functions- 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** - 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.

விழுமியக் கல்வி (VALUE EDUCATION)

Course code	18KUG4VAD	Credits	04	Year	II
No. of Lecture Hours	60	No. of Practical Hours	--	Sem	IV

அலகு - I

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

அலகு - II

தனிமனித விழுமியங்கள் - சிந்தனைகள் தனிமனித ஒழுக்கம் - அன்பு - பொறுமை - நன்னெறி - 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

Automobile electrical and Electronics II

Course code	18KUA4C06	Credits	04	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, electro magnetic interference suppression, electromagnetic compatibility, electronic dashboard instruments, onboard diagnostic system, security and warning system. Wind screen washers & wipers. Signaling 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. Automotive electrical equipments, P.L.Kohli, Tata McGraw hill publications.
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.

Work shop Technology Lab -I

Course code	18KUAT4P3	Credits	03	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	18KUAT4I2	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.
- 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.

Outcomes:

- Maintaining and troubleshooting technology.
- Writing requirements documentation.
- Performing effective and informative user testing.
- **Improving problem-solving and critical thinking skills.**
- Monitoring and correcting performance.
- **Exercising leadership**
- Behaving professionally.
- Listening effectively.
- Allocating time effectively.
- Teaching others.
- **Developing individual responsibility.**

TOTAL QUALITY MANAGEMENT

Course code	18KUG5EL2	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- 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 - 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.Besterfield, et al., "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

MATHEMATICS – III

Course code	18KUG5AL5	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 Stirling's formula

Unit - IV

TRIGONOMETRY: Expansions of $\cos n\theta$, $\sin n\theta$ and $\tan n\theta$ - Expansion of $\sin \theta$ and $\cos \theta$ 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

INDIAN VALUES

Course code	18KUG5EL3	Credits	4	Year	III
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	V

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

Work shop Supervising and Management

Course code	18KUA5C07	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 break down service vehicle.

Pollution: Pollutant formation in Engines, mechanism of HC and CO formation in four stroke and two stroke engines, NO_x 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.

Work shop Practice Lab

Course code	18KUAT5P4	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

PROFESSIONAL ETHICS AND HUMAN VALUES

Course code	18KUG6EL4	Credits	4	Year	III
No. of Lecture Hours	60	No. of Practical Hours	-	Sem	VI

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:

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

SAFETY ENGINEERING

Course code	18KUG6EL5	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 Shop floor 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	18KUG6EL6	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.

Project

Course code	18KUAT6PR	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

OUTCOMES:

- On Completion of the project work students will be in a position to take up any **challenging practical problems and find solution** by **formulating proper methodology.**

Internship Training-III

Course code	18KUAT6I3	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.
- 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.

Outcomes:

- Maintaining and troubleshooting technology.
- Writing requirements documentation.
- Performing effective and informative user testing.
- **Improving problem-solving and critical thinking skills.**
- Monitoring and correcting performance.
- **Exercising leadership**
- Behaving professionally.
- Listening effectively.
- Allocating time effectively.
- Teaching others.
- **Developing individual responsibility.**

SCHEME OF EXAMINATION

(For General Education and Vocational 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, practical and Internship Training part includes two components.

Components	Internal Marks	External Marks	Total Marks
General and Vocational Component (Theory)	50	50	100
Vocational Component (Practical)	50	50	100
Vocational Component (Internship Training)	100	300	400

Continuous Internal Assessment:

Two CIA tests conducted for each paper during each semester.

CIA for General and Vocational component (Theory):

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 (Theory):

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

Internal Marks (Practical):

Internal Marks- Break up (100 Marks)		
A	Model practical Examination	50 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	Record Note	20 Marks
D	Overall performance in the class	20 Marks
Total		100 Marks

Total 100 marks will be converted to 50 marks and the same will be awarded as an internal mark for practical.

QUESTION PAPER PATTERN

- 1) The question paper pattern and coverage of syllabus for each CIA and External (semester) examinations for all General and vocational component subjects except Environmental Studies.

CIA TEST - I

(Unit 1 & 2 only)

Time: 1Hour

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) Both internal Assessment and Semester Examination **for Environmental Studies (III semester- General Component)** will be conducted through online exam.