ACADEMIC CURRICULA

UNDERGRADUATE/ INTEGRATED POST GRADUATE DEGREE PROGRAMMES

(With exit option of Diploma)

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 1

(Revised on July 2024)

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act, 1956)

Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

4. B.Tech. in Automobile Engineering

4. (a) Mission of the Department

Mission Stmt – 1	*To impart students with quality education centered on altering global requirements and add values to their career desires*
Mission Stmt – 2	*To enhance the knowledge and skill of students in collaboration with public and private sectors*
Mission Stmt – 3	*To identify and acknowledge economic, social and environmental issues that influences the quality of life in the vicinity and the globe*
Mission Stmt – 4	*To inculcate leadership qualities needed for automotive industries through robust curriculum with international outlook for sustainable future*
Mission Stmt – 5	*To build trust and co-operation at the workplace through effective inter-personal and communication skills*

4. (b) Program Educational Objectives (PEO)

PEO – 1	*Pursue advanced education, research and development, and other creative and innovative efforts in Automobile engineering*
PEO – 2	*Successfully apply analytical techniques, problem-solving skills necessary to adapt to technological changes and for a career in the field of automobile and mechanical engineering*
PEO – 3	*Implement their engineering knowledge acquired from projects, laboratory experimentation, classroom lectures and demonstrations to acknowledge the full range of technical and associated environmental issues*
PEO – 4	*Efficaciously use their communication skills in oral, written, visual and graphic modes within interpersonal, team, and group environments*
PEO – 5	*Retain the intellectual curiosity that motivates lifelong learning making them versatile to the rapidly evolving industrial challenges*

4. (c) Mission of the Department to Program Educational Objectives (PEO) Mapping

	Mission Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 3	Mission Stmt. - 4	Mission Stmt. - 5
PEO - 1	3	2	2	1	1
PEO - 2	3	2	2	3	1
PEO - 3	3	3	2	2	3
PEO - 4	2	3	3	2	3
PEO - 5	3	2	3	3	2

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

4. (d) Mapping Program Educational Objectives (PEO) to Program Outcomes (PO)

	Program Outcomes (PO)												Program Specific Outcomes (PSO)		
	1	2	3	4	5	6	7	8	9	10	11	12			
	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
PEO - 1	3	1	2	2	3	1	1	2	2	3	1	3	3	2	3
PEO - 2	3	3	2	3	2	1	1	1	3	2	2	3	2	2	3
PEO - 3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	3
PEO - 4	1	2	1	1	2	1	2	3	3	3	2	2	2	2	1
PEO - 5	2	2	2	2	2	3	2	3	3	2	2	2	2	2	2

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to implement the knowledge of the design, manufacture, and maintenance of major subsystems and technologies associated with automobiles for sustainable professional career*
PSO - 2	*Ability to comprehend and communicate effectively within a multidisciplinary working environment in the context of the emerging technologies.*
PSO - 3	*Ability to acquire technical and managerial skill that makes them an employable graduate.*

4.(e). Program Structure: B.Tech. in Automobile Engineering

Humanities & Social Sciences including Management Courses (H)

Course Code	Course Title	Hours / Week L	T	P	C
21LEH101T	Communicative English	2	1	0	3
21LEH102T	Chinese	2	1	0	3
21LEH103T	French				
21LEH104T	German				
21LEH105T	Japanese				
21LEH106T	Korean				
21LEH107T	Spanish				
21LEH108T	Russian				
21GNH101J	Philosophy of Engineering	1	0	2	2
21PDH209T [1]	Social Engineering	2	0	0	2
21GNH401T	Behavioral Psychology	2	1	0	3
				Total Credits	13

Engineering Science Courses (S)

Course Code	Course Title	Hours / Week L	T	P	C
21MES101L [1]	Basic civil and Mechanical Workshop	0	0	4	2
21MES102L [1]	Engineering Graphics and Design	0	0	4	2
21EES101T	Electrical and Electronics Engineering	3	1	0	4
21CSS101J	Programming for Problem Solving	3	0	2	4
21AUS101L [1]	Artifact Dissection Lab	0	0	2	1
21DCS201P [1]	Design Thinking and Methodology	1	2	0	3
21MES101T	Engineering Mechanics	3	1	0	4
21CSS303T	Data Science	2	0	0	2
				Total Credits	22

Project Work, Seminar, Internship in Industry / Higher Technical Institutions (P)

Course Code	Course Title	Hours / Week L	T	P	C
21GNP301L [1]	Community Connect	0	0	2	1
21AUP302L [1]	Project	0	0	6	3
21AUP303T [1]	MOOC	3	0	0	
21AUP401L	Major Project	0	0	30	15
21AUP402L	Major Project	0	0	20	10
21AUP403L	Internship#	0	0	10	5
				Total Credits	19

Open Elective Courses (O)
(Any 3 Courses)

Course Code	Course Title	Hours / Week L	T	P	C
21AUO101T	Hybrid and Electric Vehicles	3	0	0	3
21AUO102T	Renewable Sources of Energy	3	0	0	3
21AUO103T	Special Type of Vehicles	3	0	0	3
21AUO104T	Fuel Cells and Applications	3	0	0	3
21AUO105T	Transport Management	3	0	0	3
21AUO106T	Composite Materials for Automotive Applications	3	0	0	3
21AUO107T	Non-Destructive Testing and Evaluation	3	0	0	3
21AUO108T	Advanced Engine Technology	3	0	0	3
21AUO109T	New Product Development	3	0	0	3
21AUO110T	Automotive Standards and Regulations	3	0	0	3
21AUO111T	Automotive Sciences	3	0	0	3
21AUO112T	Intelligent Vehicle Technology	3	0	0	3
	Total Credits				09

Basic Science Courses (B)

Course Code	Course Title	Hours / Week L	T	P	C
21PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5
21CYB101J	Chemistry	3	1	2	5
21MAB101T	Calculus and Linear Algebra	3	1	0	4
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4
21MAB202T	Numerical Methods	3	1	0	4
21BTB103T	Biology	2	0	0	2
21MAB301T	Probability and Statistics	3	1	0	4
				Total Credits	32

Professional Core Courses (C)

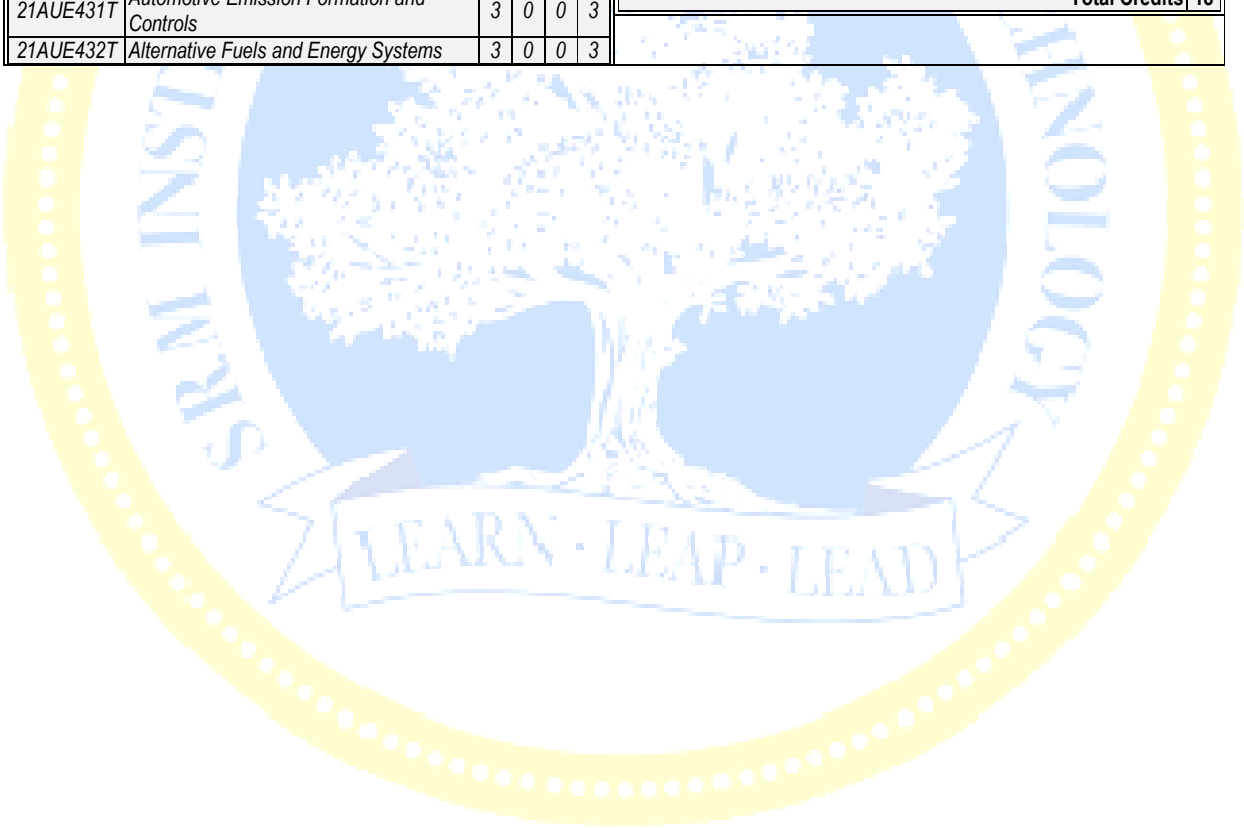
Course Code	Course Title	Hours / Week L	T	P	C
21CSC206T	Artificial Intelligence	2	1	0	3
21AUC201T [2]	Applied Thermal Engineering	3	0	0	3
21AUC202J	Automotive Engines	2	0	2	3
21AUC203J	Manufacturing Technology for Automotive Engineers	2	0	2	3
21MEC202T [2]	Mechanics of Solids	3	1	0	4
21MEC203T	Engineering Materials and Metallurgy	3	0	0	3
21MEC202L [1]	Material testing Laboratory	0	0	2	1
21MEC204L [1]	Fluid Dynamics Laboratory	0	0	2	1
21MEC205T [2]	Fluid Mechanics and Machinery	3	0	0	3
21MEC206T	Kinematics and Dynamics of Machines	3	0	0	3
21AUC301T [2]	CAD Analysis for Automotive Engineers	3	0	0	3
21AUC302J	Vehicular Structures and Driveline Systems	2	0	2	3
21AUC301L [1]	Design of Automotive Systems Laboratory	0	0	2	1
21AUC303J	Automotive Electrical and Electronic Systems	2	0	2	3
21AUC304J	Finite Element Analysis	3	0	2	4
21AUC401J	Vehicle Dynamics	2	0	2	3
21AUC402J	Vehicle Maintenance	2	0	2	3
				Total Credits	47

Non Credit Courses (M)

Course Code	Course Title	Hours / Week L	T	P	C
21PDM101L [1]	Professional Skills and Practices	0	0	2	0
21PDM102L [1]	General Aptitude	0	0	2	
21PDM201L [1]	Verbal Reasoning	0	0	2	
21PDM202L [1]	Critical and Creative Thinking Skills	0	0	2	
21PDM301L [1]	Analytical and Logical Thinking Skills	0	0	2	
21PDM302L [1]	Employability Skills and Practices	0	0	2	
21CYM101T [1]	Environmental Science	1	0	0	0
21LEM101T [1]	Constitution of India	1	0	0	0
21LEM102T [1]	Universal Human Values – Introduction	1	0	0	0
21LEM201T [1]	Professional Ethics	1	0	0	0
21LEM202T [1]	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3
21LEM301T [1]	Indian Art Form	1	0	0	0
21LEM302T [1]	Indian Traditional Knowledge	1	0	0	0
21GNM101L [1]	Physical and Mental Health using Yoga	0	0	2	0
21GNM102L [1]	National Service Scheme				
21GNM103L [1]	National Cadet Corps				
21GNM104L [1]	National Sports Organization				
				Total Credits	03

Professional Elective Courses (E) *(Any 6 Courses)*					
Course Code	Course Title	Hours / Week			
		L	T	P	C
Sub-stream: Manufacturing					
21AUE221T	*Automotive Components Manufacturing*	*3*	*0*	*0*	*3*
21AUE222T	*Welding and Joining Techniques*	*3*	*0*	*0*	*3*
21AUE321T	*Automotive Surface Engineering*	*3*	*0*	*0*	*3*
21AUE322T	*Agile Manufacturing*	*3*	*0*	*0*	*3*
21AUE323T	*Manufacturing Systems and Simulation*	*3*	*0*	*0*	*3*
21AUE324T	*Advanced Manufacturing Process*	*3*	*0*	*0*	*3*
21AUE325T	*Computer Integrated Manufacturing*	*3*	*0*	*0*	*3*
21AUE326T	*Process Planning and Cost Estimation*	*3*	*0*	*0*	*3*
21AUE421T	*Automotive Quality Systems*	*3*	*0*	*0*	*3*
21AUE422T	*Industrial Engineering and Operational Research*	*3*	*0*	*0*	*3*
Sub-stream: Engine					
21AUE231T	*Heat Ventilation and Air Conditioning*	*3*	*0*	*0*	*3*
21AUE232T	*Engine Testing and Validation*	*3*	*0*	*0*	*3*
21AUE331T	*Fuel Testing and Standards*	*3*	*0*	*0*	*3*
21AUE332T	*Automotive Exhaust System Development*	*3*	*0*	*0*	*3*
21AUE333T	*Engine Auxiliary Systems*	*3*	*0*	*0*	*3*
21AUE334T	*Design of Automotive Thermal System*	*3*	*0*	*0*	*3*
21AUE335T	*Simulation of Internal Combustion Engines*	*3*	*0*	*0*	*3*
21AUE431T	*Automotive Emission Formation and Controls*	*3*	*0*	*0*	*3*
21AUE432T	*Alternative Fuels and Energy Systems*	*3*	*0*	*0*	*3*

Professional Elective Courses (E)					
Course Code	Course Title	Hours / Week			
		L	T	P	C
Sub-stream: Design					
21AUE241T	*Automotive Driveline Design*	*3*	*0*	*0*	*3*
21AUE242T	*Automotive Chassis Component Design*	*3*	*0*	*0*	*3*
21AUE341T	*Vehicle Design Data Characteristics*	*3*	*0*	*0*	*3*
21AUE342T	*Concepts of Engineering Design*	*3*	*0*	*0*	*3*
21AUE343T	*Rapid Prototyping and Tooling*	*3*	*0*	*0*	*3*
21AUE344T	*Modeling and Control of Vibration in Mechanical Systems*	*3*	*0*	*0*	*3*
21AUE441T	*Design for Manufacture*	*3*	*0*	*0*	*3*
21AUE442T	*Geometrical Dimensioning and Tolerance*	*3*	*0*	*0*	*3*
Sub-stream : Vehicular Technologies					
21AUE251T	*Auxiliary Vehicle Systems*	*3*	*0*	*0*	*3*
21AUE252T	*Two and Three Wheeler Technology*	*3*	*0*	*0*	*3*
21AUE351T	*Vehicle Performance and Testing*	*3*	*0*	*0*	*3*
21AUE352T	*Tyre Technology*	*3*	*0*	*0*	*3*
21AUE353T	*Motorsport Technology*	*3*	*0*	*0*	*3*
21AUE354T	*Automotive NVH*	*3*	*0*	*0*	*3*
21AUE355T	*Advanced Vehicle Technology*	*3*	*0*	*0*	*3*
21AUE451T	*Automotive Safety and Ergonomics*	*3*	*0*	*0*	*3*
21AUE452T	*Vehicle Body Engineering and Aerodynamics*	*3*	*0*	*0*	*3*
				Total Credits	**18**



4. (f) Programme Articulation: B.Tech. in Automobile Engineering

Course Code	Course Name	Program Outcomes (PO)												PSO		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
21AUS101L	Artifact Dissection Lab	3	3										3	2	1	1
21AUC201T	Applied Thermal Engineering	1.2	1.6	0.6				0.4						1.6	1.2	0.6
21AUC202J	Manufacturing Technology for Automotive Engineers	3	3					0.8						3	3	
21AUC203J	Automotive Engines	1.6	0.6	0.2	0.8	0.6		0.8						1.6	0.6	0.2
21AUC301T	CAD Analysis for Automotive Engineers	3	1	2	1	1.8								3	0.6	
21AUC301L	Design of Automotive Systems Laboratory	2.6	1.8	2.6	2.4	1.8								2.6	1.8	2.6
21AUC302J	Vehicular Structures and Driveline Systems	3		0.8	0.6			0.4						3		
21AUC303J	Automotive Electrical and Electronic Systems	3	3	1	1	1.8				1	1		1	3	3	1
21AUC304J	Finite Element Analysis	3	3	0.4	2									3	2	
21AUC401J	Vehicle Dynamics	3	3			3								3	2	
21AUC402J	Vehicle Maintenance	0.2		0.4	1.6	2.4										
21AUE221T	Automotive Components Manufacturing	3	2											3		
21AUE222T	Welding and Joining Techniques	1.6	0.2	0.4	1.2	0.8						0.6		3		
21AUE321T	Automotive Surface Engineering	1.6	1.6	1.8	1									3	1.2	
21AUE322T	Agile Manufacturing	3	2		2.2									2.6		
21AUE323T	Manufacturing Systems and Simulation	2.4	0.4	0.8	1.6	0.8								3		
21AUE324T	Advanced Manufacturing Process	2.4	0.2	1.2	1.2	0.8								3	0.8	
21AUE325T	Computer Integrated Manufacturing	3	2			1								3		
21AUE326T	Process Planning and Cost Estimation	1.6	1.8	1.6	1									2.4		
21AUE421T	Automotive Quality Systems	1.6	1.6	1.8	1									2		
21AUE422T	Industrial Engineering and Operational Research	3	2.4		2									1.8	2.2	
21AUE231T	Heat ventilation and air conditioning	2.6	0.4	0.6				0.4						3	0.8	
21AUE232T	Engine testing and validation	2.6	0.2	1.4	1.2					0.2		0.6		3	1.6	
21AUE331T	Fuel testing and standards	3	2	1	3	1		3	3	2				3		
21AUE332T	Automotive exhaust system development	3	2.8	1	2			2.4						3		
21AUE333T	Engine auxiliary systems	3	0.6	0.6	1.8									3		
21AUE334T	Design of automotive thermal system	0.4		0.6	0.6	0.4								2.2	0.6	
21AUE335T	Simulation of Internal Combustion Engines	3	2		2.8	3		1						0.6	2.4	
21AUE431T	Automotive emission formation and controls	1.6		0.4	2.2			1.8						3	1.6	
21AUE432T	Alternative fuels and energy systems	2	1					3						2.6		
21AUE241T	Automotive Driveline Design	1.6	1.8	2.6										3		
21AUE242T	Automotive Chassis Component Design	2.2	1.8	2										3		
21AUE341T	Vehicle Design Data Characteristics	2.8	3	2.8										3		
21AUE342T	Concepts of Engineering Design	2.4	0.4	2.2	1	0.4								3		
21AUE343T	Rapid prototyping and tooling	2.6	1	1.8	1.6									2.4	1	0.5
21AUE344T	Modeling and Control of Vibration in Mechanical Systems	1.2	2.4	1.2	1.2									3		
21AUE441T	Design for Manufacture	2.2		2.2	3									3		
21AUE442T	Geometrical Dimensioning and Tolerance	2	2.5	1.5										1.5	2.25	
21AUE251T	Auxiliary vehicle systems	3	3				3							3	2	
21AUE252T	Two and three wheeler technology	3	0.6	1.8				1.2						3		
21AUE351T	Vehicle performance and testing	0.2		0.4	1	0.6								3		
21AUE352T	Tyre technology	3	1.8	1.2	2.4	0.6								3		
21AUE353T	Motorsport technology	3	1.8	0.6	0.8									3		
21AUE354T	Automotive NVH	3	2.4											3	0.6	1
21AUE355T	Advanced vehicle technology	3	3	0.6	0.4									3		
21AUE451T	Automotive Safety and Ergonomics	3		0.8	0.6			0.4						3		
21AUE452T	Vehicle body Engineering and Aerodynamics	3		0.8	0.6			0.4								
21AUP303T	MOOC	3	2	2							2		2			
21AUP302L	Project	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3
21AUP401L	Major Project	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
21AUP402L	Major Project	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
21AUP403L	Internship	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Program Average	2.4	1.6	1.1	1.1	0.6	0.2	0.5	0.2	0.2	0.2	0.2	0.3	2.6	0.8	0.3

4. (g) Implementation Plan: B.Tech. in Automobile Engineering

Semester – I

Course Code	Course Title	Hours / Week L	T	P	C
21LEH101T	Communicative English	2	1	0	3
21MAB101T	Calculus and Linear Algebra	3	1	0	4
21PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5
21MES102L [1]	Engineering Graphics and Design	0	0	4	2
21EES101T	Electrical and Electronics Engineering	3	1	0	4
21AUS101L [1]	Artifact Dissection Lab	0	0	2	1
21CYM101T [1]	Environmental Science	1	0	0	0
21PDM101L [1]	Professional Skills and Practices	0	0	2	0
21LEM101T [1]	Constitution of India	1	0	0	0
				Total Credits	19

Semester – II

Course Code	Course Title	Hours / Week L	T	P	C
21LEH102T	Chinese	2	1	0	3
21LEH103T	French				
21LEH104T	German				
21LEH105T	Japanese				
21LEH106T	Korean				
21LEH107T	Spanish				
21LEH108T	Russian				
21GNH101J	Philosophy of Engineering	1	0	2	2
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
21CYB101J	Chemistry	3	1	2	5
21BTB103T	Biology	2	0	0	2
21CSS101J	Programming for Problem Solving	3	0	2	4
21MES101T	Engineering Mechanics	3	1	0	4
21MES101L [1]	Basic Civil and Mechanical Workshop	0	0	4	2
21PDM102L [1]	General Aptitude*	0	0	2	0
21GNM101L [1]	Physical and Mental Health using Yoga	0	0	2	0
21GNM102L [1]	National Service Scheme				
21GNM103L [1]	National Cadet Corps				
21GNM104L [1]	National Sports Organization				
				Total Credits	26

Semester – III

Course Code	Course Title	Hours / Week L	T	P	C
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4
21MEC202T [2]	Mechanics of Solids	3	1	0	4
21MEC203T	Engineering Materials and Metallurgy	3	0	0	3
21AUC201T [2]	Applied Thermal Engineering	3	0	0	3
21AUC203J	Manufacturing Technology for Automotive Engineers	2	0	2	3
21PDH209T [1]	Social Engineering	2	0	0	2
21LEM201T [1]	Professional Ethics	1	0	0	0
21PDM201L [1]	Verbal Reasoning	0	0	2	0
21LEM202T [1]	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3
21MEC202L [1]	Material Testing Laboratory	0	0	2	1
				Total Credits	23

Semester – IV

Course Code	Course Title	Hours / Week L	T	P	C
21MAB202T	Numerical Methods	3	1	0	4
21CSC206T	Artificial Intelligence	2	1	0	3
21MEC205T [2]	Fluid Mechanics and Machinery	3	0	0	3
21AUC202J	Automotive Engines	2	0	2	3
E	Professional Elective – I				3
21DCS201P [1]	Design Thinking and Methodology	1	2	0	3
21PDM202L [1]	Critical and Creative Thinking Skills	0	0	2	0
21MEC204L [1]	Fluid Dynamics Laboratory	0	0	2	1
				Total Credits	20

Semester – V

Course Code	Course Title	Hours / Week L	T	P	C
21MAB301T	Probability and Statistics	3	1	0	4
21MEC206T	Kinematics and Dynamics of Machines	3	0	0	3
21AUC301T [2]	CAD Analysis for Automotive Engineers	3	0	0	3
21AUC302J	Vehicular Structures and Driveline Systems	2	0	2	3
E	Professional Elective – II				3
O	Open Elective – I				3
21PDM301L [1]	Analytical and Logical Thinking Skills*	0	0	2	0
21LEM301T [1]	Indian Art Form	1	0	0	0
21AUC301L [1]	Design of Automotive Systems Laboratory	0	0	2	1
21GNP301L [1]	Community Connect	0	0	2	1
				Total Credits	21

Semester – VI

Course Code	Course Title	Hours/ Week L	T	P	C
21CSS303T	Data Science	2	0	0	2
21AUC303J	Automotive Electrical and Electronic Systems	2	0	2	3
21AUC304J	Finite Element Analysis	3	0	2	4
E	Professional Elective – III				3
E	Professional Elective – IV				3
21AUP302L [1]	Project	0	0	6	3
21AUP303T [1]	MOOC	3	0	0	
O	Open Elective – II				3
21PDM302L [1]	Employability Skills and Practices	0	0	2	0
21LEM302T [1]	Indian Traditional Knowledge	1	0	0	0
				Total Credits	21

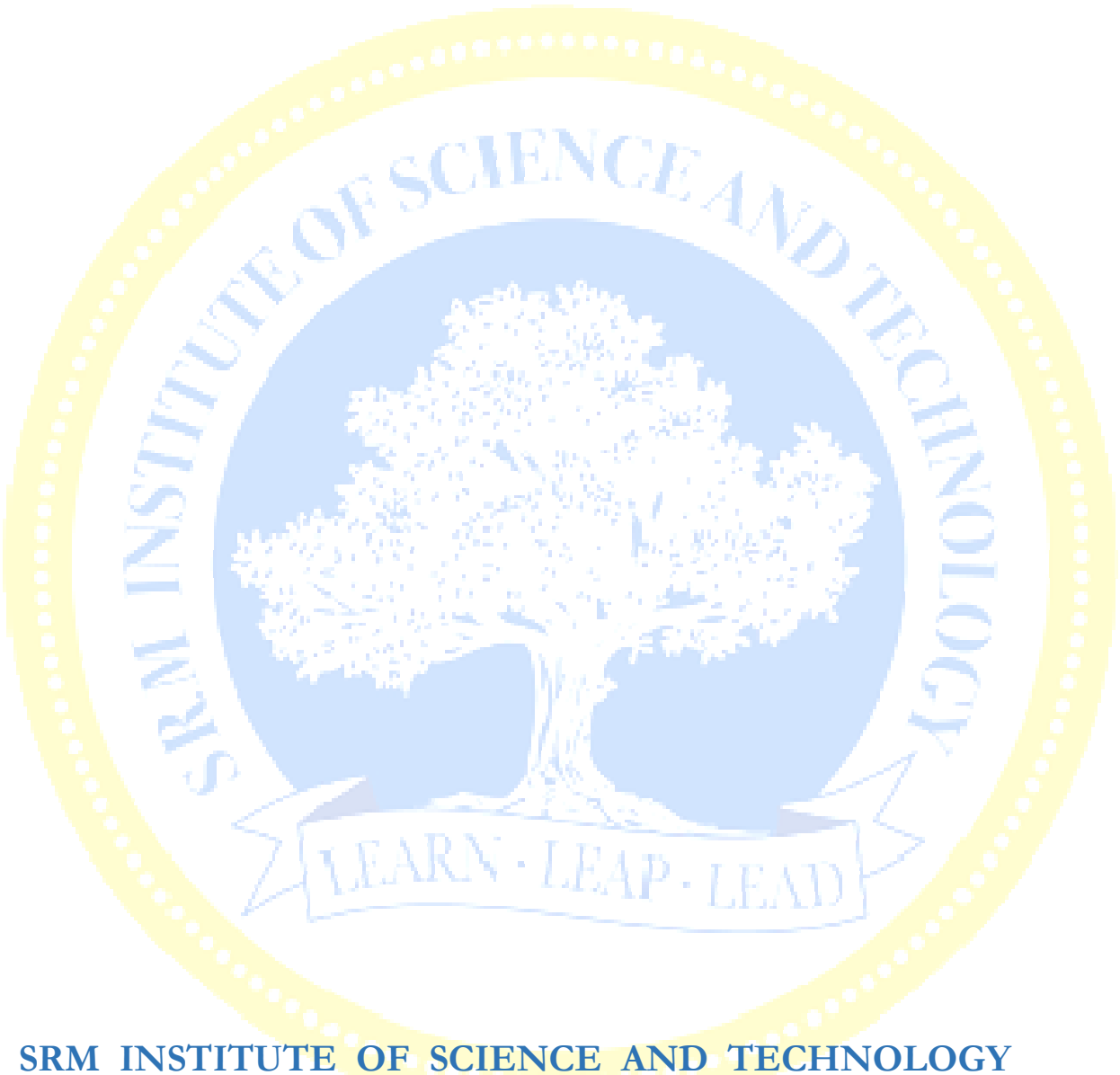
Semester – VII

Course Code	Course Title	Hours / Week L	T	P	C
21GNH401T	Behavioral Psychology	2	1	0	3
21AUC401J	Vehicle Dynamics	2	0	2	3
21AUC402J	Vehicle Maintenance	2	0	2	3
E	Professional Elective – V				3
E	Professional Elective – VI				3
O	Open Elective – III				3
				Total Credits	18

Semester - VIII

Course Code	Course Title	Hours / Week L	T	P	C
21AUP401L	Major Project	0	0	30	15
21AUP402L	Major Project	0	0	20	10
21AUP403L	Internship#	0	0	10	5
				Total Credits	15

#Students have to register either 21AUP401L or 21AUP402L and 21AUP403L both in eighth semester



SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act, 1956)

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