

13. Courses of Study and Scheme of Assessment

BE AUTOMOBILE ENGINEERING

(2015 Regulations)
(Minimum credits to be earned: 181)

Code No.	Course	Hours / week		Maximum marks					
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER I									
15A101	Calculus and its Applications	3	2	0	4	50	50	100	BS
15A102	Physics	3	0	0	3	50	50	100	BS
15A103	Chemistry	3	0	0	3	50	50	100	BS
15A104	Problem Solving and C Programming	2	2	0	3	50	50	100	BS
15A105	Engineering Materials	3	0	0	3	50	50	100	ES
15C104	English Language Proficiency	2	2	0	3	50	50	100	HS
15A110	Engineering Graphics I	0	0	4	2	100	-	100	ES
15A111	Physics Laboratory I	0	0	2	1	100	-	100	BS
15A112	Chemistry Laboratory I	0	0	2	1	100	-	100	BS
15A113	Automobile Basics	0	0	2	1	100	-	100	PC
15A214	Personality and Character Development	0	0	**	Grade	-	-	-	MC
Total 32 hrs		16	6	10	24	700	300	1000	
SEMESTER II									
15A201	Complex Variables and Transforms	3	2	0	4	50	50	100	BS
15A202	Materials Science	3	0	0	3	50	50	100	BS
15A203	Chemistry of Engineering Materials	3	0	0	3	50	50	100	BS
15A204	Engineering Thermodynamics	2	2	0	3	50	50	100	ES
15A205	Engineering Mechanics	3	2	0	4	50	50	100	ES
15C__	Language Elective	3	0	0	3	50	50	100	HS
15A210	Engineering Graphics II	0	0	4	2	100	-	100	ES
15A211	Physics Laboratory II	0	0	2	1	100	-	100	ES
15A212	Chemistry Laboratory II	0	0	2	1	100	-	100	BS
15A213	Engineering Practice Laboratory	0	0	2	1	100	-	100	BS
15A214	Personality and Character Development	0	0	**	Grade	-	-	-	MC
Total 33 hrs		17	6	10	25	700	300	1000	

** - Total 40 hrs in I & II semesters put together.

Grade : Completed / Not Completed

CAT-Category; BS – Basic Science; HS – Humanities & Social Sciences; ES – Engineering Sciences; PC – Professional Core; PE – Professional Elective; OE – Open Elective; EEC – Employability Enhancement Course; MC – Mandatory Course.

BE AUTOMOBILE ENGINEERING

(2015 Regulations)

Code No.	Course	Hours / week				Maximum mark			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER II – Summer Term[€]									
15A215	Professional Skills	6	0	9	2	100	-	100 [€]	EEC
15A216	Inplant Training and Technical Seminar	6	0	9	2	100	-	100 [€]	EEC
Total 30 hrs		12	0	18	4	200	-	200	

CA - Continuous Assessment

FE - Final Examination

€ - These courses will be conducted prior to the commencement of the third semester for a period of 4 weeks during summer term.

CAT-Category; BS – Basic Science; HS – Humanities & Social Sciences; ES – Engineering Sciences; PC – Professional Core; PE – Professional Elective; OE – Open Elective; EEC – Employability Enhancement Course; MC – Mandatory Course.

BE AUTOMOBILE ENGINEERING

(2015 Regulations)

Code No.	Course	Hours / week				Maximum marks				
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT	
SEMESTER III										
15A301	Numerical Methods	2	2	0	3	50	50	100	BS	
15A302	Strength of Materials	3	2	0	4	50	50	100	ES	
15A303	Kinematics of Machinery	2	2	0	3	50	50	100	PC	
15A304	Fluid Mechanics and Machinery	2	2	0	3	50	50	100	ES	
15A305	Automotive Engines	3	0	0	3	50	50	100	PC	
15C070	Economics for Engineers	3	0	0	3	50	50	100	HS	
15A310	Materials engineering Laboratory	0	0	2	1	100	-	100	ES	
15A311	Thermal Engineering and Fluid Mechanics Laboratory	0	0	2	1	100	-	100	ES	
15A312	Machine Drawing	1	0	4	3	100	-	100	ES	
Total 32 hrs		16	8	8	24	600	300	900		
SEMESTER IV										
15A401	Probability and Statistics	2	2	0	3	50	50	100	BS	
15A402	Manufacturing processes	3	0	0	3	50	50	100	PC	
15A403	Automotive Transmission	3	0	0	3	50	50	100	PC	
15A404	Dynamics of Machinery	2	2	0	3	50	50	100	PC	
15A405	Engineering Design	3	2	0	4	50	50	100	PC	
15____	Open Elective I*	3	0	0	3	50	50	100	OE	
15A410	Engine Troubleshooting Laboratory	0	0	2	1	100	-	100	PC	
15A411	Manufacturing Process Laboratory	0	0	2	1	100	-	100	ES	
15A412	Two and three wheelers Laboratory	0	0	2	1	100	-	100	PC	
Total 28hrs		16	6	6	22	600	300	900		

CA - Continuous Assessment
 FE - Final Examination

CAT-Category; BS – Basic Science; HS – Humanities & Social Sciences; ES – Engineering Sciences; PC – Professional Core; PE – Professional Elective; OE – Open Elective; EEC – Employability Enhancement Course

* – LTPE for open electives can be either 3 0 0 3 or 2 2 0 3.

BE AUTOMOBILE ENGINEERING

(2015 Regulations)

Code No.	Course	Hours / week				Maximum marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER V									
15A501	Basics of Electrical and Electronics Engineering	3	0	0	3	50	50	100	ES
15A502	Vehicle Component Design I	2	2	0	3	50	50	100	PC
15A503	Production Planning	2	2	0	3	50	50	100	PC
15A504	Automotive Chassis System	3	0	0	3	50	50	100	PC
15A505	Design for Manufacture and Assembly	2	2	0	3	50	50	100	PC
15___	Open Elective II*	3	0	0	3	50	50	100	OE
15A510	Basics of Electrical and Electronic Engineering Laboratory	0	0	2	1	100	-	100	ES
15A511	Industrial visit cum Lecture	0	0	4	2	100	-	100	EEC
15A512	Innovation Practices	0	0	4	2	100	-	100	EEC
Total 30hrs		15	6	10	23	600	300	900	
SEMESTER VI									
15A601	Vehicle Dynamics	2	2	0	3	50	50	100	PC
15A602	Automotive Electrical Systems	3	0	0	3	50	50	100	PC
15A603	Vehicle Component Design II	2	2	0	3	50	50	100	PC
15A604	Finite Element Analysis	2	2	0	3	50	50	100	PC
15A___	Professional Elective I	3	0	0	3	50	50	100	PE
15___	Open Elective III*	3	0	0	3	50	50	100	OE
15A610	Design Analysis Laboratory	0	0	4	2	100	-	100	PC
15A611	Vehicle Performance Characteristics Laboratory	0	0	2	1	100	-	100	PC
15A612	Automotive Electronics Laboratory	0	0	4	2	100	-	100	PC
Total 31hrs		15	6	10	23	600	300	900	

CA - Continuous Assessment

FE - Final Examination

CAT-Category; BS – Basic Science; HS – Humanities & Social Sciences; ES – Engineering Sciences; PC – Professional Core; PE – Professional Elective; OE – Open Elective; EEC – Employability Enhancement Course

* – LTPC for open electives can be either 3 0 0 3 or 2 2 0 3.

BE AUTOMOBILE ENGINEERING**(2015 Regulations)**

Code No.	Course	Hours / week				Credits	Maximum mark			
		Lecture	Tutorial	Practical	CA		FE	Total	CAT	
SEMESTER VII										
15A701	Metrology and Quality Engineering	2	2	0	3	50	50	100	PC	
15A702	Vehicle Body Engineering	2	2	0	3	50	50	100	PC	
15A703	Automotive Emission, NVH control	3	0	0	3	50	50	100	PC	
15A___	Professional Elective II	3	0	0	3	50	50	100	PE	
15A___	Professional Elective III	3	0	0	3	50	50	100	PE	
15A___	Professional Elective IV	3	0	0	3	50	50	100	PE	
15A710	Vehicle Servicing Laboratory	0	0	4	2	100	-	100	PC	
15A720	Project Work I	0	0	4	2	100	-	100	EEC	
Total 28hrs		16	4	8	22	500	300	800		
SEMESTER VIII										
15A___	Professional Elective V	3	0	0	3	50	50	100	PE	
15A___	Professional Elective VI	3	0	0	3	50	50	100	PE	
15A820	Project Work II	0	0	16	8	50	50	100	EEC	
Total 22hrs		6	0	16	14	150	150	300		

CA - Continuous Assessment
 FE - Final Examination

CAT-Category; BS – Basic Science; HS – Humanities & Social Sciences; ES – Engineering Sciences; PC – Professional Core; PE – Professional Elective; OE – Open Elective; EEC – Employability Enhancement Course

LANGUAGE ELECTIVES

15C080	Communication Skills for Engineers
15C081	Basic German
15C082	Basic French
15C083	Basic Japanese

OPEN ELECTIVES

(Students can opt for all open electives from single stream or several streams)

MATHEMATICS

15OH01	Advanced Linear Algebra
15OH02	Algebraic Structures
15OH03	Calculus of Variations and Tensor Analysis
15OH04	Graph Theory and its Applications
15OH05	Mathematical Finance
15OH06	Mathematical Modeling and Simulation
15OH07	Number Theory for Computing
15OH08	Operations Research
15OH09	Reliability and Quality Control
15OH10	Soft Computing
15OH11	Stochastic Models

PHYSICS

15OH20	Analytical Techniques for Materials Characterization
15OH21	Laser Technology
15OH22	Micro Electromechanical Systems
15OH23	Nanomaterials and Applications
15OH24	Physics for Solar PV Systems and Solid-State Lighting Systems
15OH25	Sensors for Engineering Applications
15OH26	Thin Film Technology
15OH27	Nonlinear Science and Engineering Applications
15OH28	Nonlinear Fiber Optics
15OH29	Chaotronics

CHEMISTRY

15OH36	Corrosion Science and Engineering
15OH37	Energy Storing Devices and Fuel Cells
15OH41	Polymer Science and Technology

COMPUTER APPLICATIONS

15OH46	Computer Graphics and Virtual Reality
15OH47	Data and File Structures
15OH48	Database Management System
15OH49	High Performance Computing
15OH50	Mainframe Systems
15OH51	Mobile Application Development
15OH52	Multicore Programming
15OH53	Object Oriented Programming
15OH54	Programming in Python
15OH55	Responsive Web Design
15OH56	Social Web Mining
15OH57	Software Engineering
15OH58	Java Programming
15OH59	Geographic Information System
15OH60	Programming for Robotics

HUMANITIES

15OH61	An Introduction to Indian Constitution
15OH62	Entrepreneurship
15OH63	Human Resource Management
15OH64	Industrial Psychology
15OH65	Principles of Management
15OH66	Business Statistics
15OH67	Disaster Management
15OH68	Financial and Managerial Accounting

15OH69 Marketing Management
15OH70 Defence Practices and Disaster Management

ENGLISH

15OH75 English and Soft Skills for Employability
15OH76 English for Competitive Examinations
15OH77 German Language – International Level A1.1
15OH78 German Language – International Level A1.2

APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES

15OH81 Data Structures and Algorithms
15OH82 Optimization Techniques
15OH83 Data Science
15OH84 Data Visualization
15OH85 Artificial Intelligence
15OH86 Pervasive Computing
15OH87 Parallel and Distributed Computing
15OH88 Cyber Security
15OH89 Randomized Algorithms
15OH90 Approximation Algorithms
15OH91 Network Science
15OH92 Applied Stochastic Processes
15OH93 Modelling and Simulation
15OH94 Graph Algorithms

OPEN ELECTIVES OFFERED BY ENGINEERING DEPARTMENTS

15TH02	Sound and Thermal Isolation Products and Characterization	(Department of Textile Technology)
15TH03	Technical Textiles in Engineering Applications	(Department of Textile Technology)
15TH04	Electro Active Textiles	(Department of Textile Technology)
15TH05	Filtration Products and Characterization	(Department of Textile Technology)
15TH06	Industrial Textiles	(Department of Textile Technology)

PROFESSIONAL ELECTIVES

DESIGN ENGINEERING

15A001 Aerodynamics of Road Vehicles
15A002 Automatic Transmission
15A003 Automotive Electronics
15A004 Automotive Control Systems
15A005 Automotive Product Development Strategies
15A006 Hydraulics and Pneumatics Systems
15A007 Mechatronics
15A008 Automotive Embedded Systems
15A009 Vehicle Concept Styling and Design
15A010 Signals and Systems
15A011 Automotive Instrumentation
15A012 Automotive Testing
15A013 Automotive Product Life Cycle Management
15A014 Vibration and Noise Engineering
15A015 Vehicle Development Process
15A016 Automotive Tribology
15A017 Modelling of Dynamic Systems
15A018 Automotive Biomechanics
15A019 Intellectual Property Rights

THERMAL ENGINEERING

15A021 Automotive HVAC
15A022 Modelling and Simulation of Internal Combustion Engines

15A023	Advanced Theory of Internal Combustion Engines
15A024	Computational Fluid Dynamics
15A025	Fuels and Combustion

INDUSTRIAL & MANUFACTURING ENGINEERING

15A031	Value Engineering
15A032	Commercial Fleet Operation
15A033	Quality Assurance and Reliability
15A034	Total Quality Management
15A035	Materials for Automobile Industry
15A036	Process Planning and Cost Estimation
15A037	Lean Methods for Automobile Engineers

MISCELLANEOUS AUTOMOTIVE TECHNOLOGIES

15A040	Two and Three Wheeler Technology
15A041	Intelligent Vehicle Technology
15A042	Special Purpose Vehicles
15A043	Electric Hybrid and Fuel Cell Vehicles
15A044	Alternate Fuels

ONE CREDIT COURSES

15AF01	Gasoline Engine Management Systems
15AF02	Diesel Engine Management Systems
15AF03	Vehicle System Engineering
15AF04	Computer Aided Industrial Design for Automobiles
15AF05	Sketching for Designers
15AF06	Industrial Design
15AF07	Computer Aided Automobile Styling
15AF08	Vehicle Design Process
15AF09	Active Safety Systems
15AF10	Passive Safety Systems
15AF11	Integrated Product Development
15AF12	Car Design and Packaging Fundamentals
15AF13	Automotive Communication Protocols
15AF14	Challenges and Issues in Fuel Cell Technologies
15AF15	Product Development Practices

OFFERED BY HUMANITIES DEPARTMENT

15OF01	Export – Import Management
15OF02	Insurance & Risk Management
15OF03	Values and Ethics at Work Place
15OF04	Development of Industrialisation
15OF05	Creativity and Social Enterprise
15OF06	Social and Psychological Well Being
15OF13	Security Analysis and Portfolio Management
15OF14	Implementation of Quality Management System
15OF15	Financial Management
15OF16	Personality Development Through Transactional Analysis

OFFERED BY THE DEPARTMENT OF ENGLISH

15OF10	Corporate Communication
15OF11	Interpersonal and Organizational Communication
15OF12	Human Values Through Literature

OFFERED BY THE DEPARTMENT OF MATHEMATICS

15OF21	Principles of Business Analytics
--------	----------------------------------

SUMMARY OF CREDIT DISTRIBUTION

Automobile Engineering												
S. No	Course Work subject Area	Credits Per Semester								Total Credit	Credit Range	
		I	II	III	IV	V	VI	VII	VIII		Min	Max
1	HS	3	3	3						9	9	18
2	BS	15	12	3	3					33	27	36
3	ES	5	10	12	1	4				32	27	36
4	PC	1		6	15	12	17	11		62	54	72
5	PE						3	9	6	18	18	27
6	OE				3	3	3			9	9	18
7	EEC		0+4*			4		2	8	18	18	27
	Total	24	25+4*	24	22	23	23	22	14	181	175	185

* Summer Term

CAT-Category; BS – Basic Sciences; HS – Humanities and Social Sciences; ES – Engineering Sciences; Arts & Science; PC – Professional Core; PE – Professional Electives; OE – Open Electives; EEC – Employability Enhancement Courses.