

### 13. Courses of Study and Scheme of Assessment

#### BE AUTOMOBILE ENGINEERING

(2019 Regulations)  
(Minimum credits to be earned: 165)

Course Code	Course Title	Periods / week				Maximum Marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 1</b>									
19W001	Calculus and its Applications	3	1	0	4	50	50	100	BS
19A102	Physics	3	0	0	3	50	50	100	BS
19A103	Chemistry	3	0	0	3	50	50	100	BS
19A104	Engineering Materials	3	0	0	3	50	50	100	ES
19G105	English Language Proficiency	2	1	0	3	50	50	100	HS
19A110	Engineering Graphics	0	0	4	2	100	0	100	ES
19A111	Basic Sciences Laboratory	0	0	4	2	100	0	100	BS
19A112	Engineering Practices Lab	0	0	2	1	100	0	100	ES
19IP15	Induction Programme **	0	0	0	0	-	-	-	MC
<b>Total 26 periods</b>		<b>14</b>	<b>2</b>	<b>10</b>	<b>21</b>	<b>550</b>	<b>250</b>	<b>800</b>	
<b>SEMESTER 2</b>									
19W002	Complex Variables and Transforms	3	1	0	4	50	50	100	BS
19A202	Materials Science	2	0	0	2	50	50	100	BS
19A203	Chemistry of Engineering Materials	2	0	0	2	50	50	100	BS
19A204	Engineering Mechanics	3	1	0	4	50	50	100	ES
19A205	Manufacturing Processes	3	0	0	3	50	50	100	ES
19A210	C Programming Laboratory	0	0	4	2	50	50	100	ES
19_____	Language Elective	0	0	4	2	100	0	100	HS
19A212	Manufacturing Practice Lab	0	0	2	1	100	0	100	ES
19A215	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Semester 2- Summer Term</b>									
19A213	Internship €	0	0	0	2 <sup>£</sup>	100	0	100	EEC
<b>Total 25 periods</b>		<b>13</b>	<b>2</b>	<b>10</b>	<b>22</b>	<b>600</b>	<b>300</b>	<b>900</b>	

\*\* As per norms

\* - As per AICTE Norms: Total 60 hrs; Grade: Completed/Not Completed; Not counted for CGPA

CA Continuous Assessment

FE Final Examination

€ This course will be conducted prior to the commencement of the third semester for a period of three weeks

£ For internship, one credit is equivalent to a minimum of 40 hours of work as per norms

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**BE AUTOMOBILE ENGINEERING**
**(2019 Regulations)**

Course Code	Course Title	Periods / week			Maximum Marks				
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<b>SEMESTER 3</b>									
19A301	Numerical Methods	2	1	0	3	50	50	100	BS
19A302	Strength of Materials	3	1	0	4	50	50	100	ES
19A303	Kinematics of Machinery	3	1	0	4	50	50	100	PC
19A304	Engineering Thermodynamics	3	1	0	4	50	50	100	PC
19A305	Automotive Chassis	3	0	0	3	50	50	100	PC
19O306	Economics for Engineers	3	0	0	3	50	50	100	HS
19A310	Strength of Materials Laboratory	0	0	2	1	100	0	100	ES
19A311	Machine Drawing	0	0	4	2	100	0	100	ES
19K312	Environmental Science **	2	0	0	0	-	-	-	MC
19A315	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Total 29 periods</b>		<b>19</b>	<b>4</b>	<b>6</b>	<b>24</b>	<b>500</b>	<b>300</b>	<b>800</b>	
<b>SEMESTER 4</b>									
19A401	Probability and Statistics	2	1	0	3	50	50	100	BS
19A402	Fluid Mechanics and Machinery	2	1	0	3	50	50	100	PC
19A403	Basics of Electrical and Electronics Engineering	3	0	0	3	50	50	100	ES
19A404	Dynamics of Machinery	2	1	0	3	50	50	100	PC
19A405	Engineering Design	3	1	0	4	50	50	100	PC
19A406	Automotive PowerTrain	3	0	0	3	50	50	100	PC
19A410	Thermal Engineering and Fluid Machinery Laboratory	0	0	2	1	100	0	100	ES
19A411	Basics of Electrical and Electronics Lab	0	0	2	1	100	0	100	ES
19O412	Indian Constitution **	2	0	0	0	-	-	-	MC
19Q413	Soft Skills Development	0	0	2	1	100	0	100	EEC
19A415	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Total 27 periods</b>		<b>17</b>	<b>4</b>	<b>6</b>	<b>22</b>	<b>600</b>	<b>300</b>	<b>900</b>	

\*\* As per norms

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 5</b>									
19A501	Hydraulics and Pneumatics	3	0	0	3	50	50	100	PC
19A502	Automotive Electrical and Electronics	3	0	0	3	50	50	100	PC
19A503	Vehicle System Design I	2	1	0	3	50	50	100	PC
19A504	Design for Manufacture and Assembly	2	1	0	3	50	50	100	PC
19A505	Alternate Power Train	3	0	0	3	50	50	100	PC
19A510	Automotive Electrical and Electronics Laboratory	0	0	2	1	100	0	100	PC
19A512	Engine Testing and Trouble Shooting Lab	0	0	2	1	100	0	100	PC
19A511	Vehicle Performance characteristics Lab	0	0	2	1	100	0	100	EEC
19Q513	Business and Managerial Communications	0	0	2	1	100	0	100	EEC
19A515	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
19A____	Professional Elective I	3	0	0	3	50	50	100	PE
<b>Total 26 periods</b>		<b>16</b>	<b>2</b>	<b>8</b>	<b>22</b>	<b>700</b>	<b>300</b>	<b>1000</b>	
<b>SEMESTER 6</b>									
19A601	Vehicle Dynamics	3	1	0	4	50	50	100	PC
19A602	Production planning and Operations Research	2	1	0	3	50	50	100	PC
19A603	Vehicle System Design-II	2	1	0	3	50	50	100	PC
19A604	Finite Element Analysis	3	1	0	4	50	50	100	PC
19A605	Automotive control system	3	0	0	3	50	50	100	PC
19	Open Elective I	3	0	0	3	50	50	100	OE
19A611	Design and Analysis Laboratory	0	0	2	1	100	0	100	EEC
19A612	Innovation Practices	0	0	2	1	100	0	100	EEC
19Q613	Quantitative and Reasoning Skills	0	0	2	1	100	0	100	EEC
19A615	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Total 26 periods</b>		<b>16</b>	<b>4</b>	<b>6</b>	<b>23</b>	<b>600</b>	<b>300</b>	<b>900</b>	

At the end of 6th semester, the students are required to earn the minimum number of activity points from the AICTE mandated ACTIVITY POINT PROGRAMME to qualify for the award of BE/BTech degree (Refer Section 4 (vii) (c) of 2019 Regulations)

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CA Continuous Assessment

FE Final Examination

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 7</b>									
19A701	Metrology and Quality Engineering	3	0	0	3	50	50	100	PC
19____	Open Elective II	3	0	0	3	50	50	100	OE
19A703	Automotive emission & NVH control	3	0	0	3	50	50	100	PC
19A____	Professional Elective II	3	0	0	3	50	50	100	PE
19A710	Vehicle Servicing Laboratory	0	0	2	1	100	0	100	EEC
19A711	Project Work I	0	0	4	2	100	0	100	EEC
19A____	Professional Elective IV	3	0	0	3	50	50	100	PE
19A____	Professional Elective III	3	0	0	3	50	50	100	PE
<b>Total 24 periods</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>500</b>	<b>300</b>	<b>800</b>	
<b>SEMESTER 8</b>									
19A____	Professional Elective V	3	0	0	3	50	50	100	PE
19A____	Professional Elective VI	3	0	0	3	50	50	100	PE
19A810	Project Work II	0	0	8	4	50	50	100	EEC
<b>Total 14 periods</b>		<b>6</b>	<b>0</b>	<b>8</b>	<b>10</b>	<b>150</b>	<b>150</b>	<b>300</b>	

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## PROFESSIONAL ELECTIVES

### DESIGN ENGINEERING

19A001	Aerodynamics of Road Vehicles
19A002	Automatic Transmission
19A003	Automotive Electronics
19A004	Automotive Product Development Strategies
19A005	Mechatronics
19A006	Automotive Embedded Systems
19A007	Vehicle Concept Styling and Design
19A008	Signals and Systems
19A009	Automotive Instrumentation
19A010	Automotive Testing
19A011	Automotive Product Life Cycle Management
19A012	Vibration and Noise Engineering
19A013	Vehicle Development Process
19A014	Mathematical modeling of Mechanical systems
19A015	Model based design
19A016	Surface Finishing Process
19A017	Internet of Things
19A018	Artificial Intelligence
19A019	Introduction to Digital Signal Processing
19A020	Mobility and Infrastructure
19A021	Virtual Product Development
19A022	Motor Transport
19A023	Solar vehicles
19A024	Vehicle communication systems
19A025	Automotive Styling
19A026	Electric Vehicle Design
19A027	Power train design (electric and hybrid)
19A028	Power Electronics and Drives
19A029	Automotive Communication Protocols
19A030	Vehicle Diagnostic Systems
19A031	Advanced materials for green vehicles
19A032	Flexible manufacturing system
19A033	Vehicle Stability and Control
19A034	Alternative Sources of Energy
19A035	Vehicle testing and trouble shooting
19A036	Modern vehicle technology
19A037	Electrical charging system

### THERMAL ENGINEERING

19A038	Automotive HVAC
19A039	Modelling and Simulation of Internal Combustion Engines
19A040	Advanced Theory of Internal Combustion Engines
19A041	Computational Fluid Dynamics

### INDUSTRIAL & MANUFACTURING ENGINEERING

19A042	Value Engineering
19A043	Commercial Fleet Operation
19A044	Quality Assurance and Reliability
19A045	Total Quality Management
19A046	Materials for Automobile Industry
19A047	Process Planning and Cost Estimation
19A048	Lean Methods for Automobile Engineers
19A049	Quality Management System for Automotive Industry
19A050	Electric Vehicle Thermal Engineering

### LANGUAGE ELECTIVES

19G001	Communication Skills for Engineers
19G002	German- Level A1.1
19G003	French Language Level 1
19G004	Basic Japanese

### ONE-CREDIT COURSES

#### AUTOMOBILE ENGINEERING

19AF01	Gasoline Engine Management System
19AF02	Diesel Engine Management System
19AF03	Vehicle System Engineering
19AF04	Computer Aided Industrial Design for Automobiles
19AF05	Sketching for Designers
19AF06	Industrial Design
19AF07	Computer Aided Automobile Styling
19AF08	Vehicle Design Process
19AF09	Active Safety Systems
19AF10	Passive Safety Systems

19AF11 Integrated Product Development  
19AF12 Car Design and Packaging Fundamentals  
19AF13 Automotive Communication Protocols  
19AF14 Challenges and Issues in Fuel Cell Technologies  
19AF15 Product Development Practices  
19AF16 Product Costing

**ENGLISH**

19GF01 Interpersonal and Organizational Communication  
19GF02 Human Values Through Literature

**HUMANITIES**

19OFA1 Export – Import Practices  
19OFA2 Insurance - Concepts and Practices  
19OFA3 Public Finance  
19OFA4 Security Analysis and Portfolio Management  
19OFA5 Social Entrepreneurship

### Summary of Credit Distribution

BE AUTOMOBILE ENGINEERING										
S. No	Course Category	Credits Per Semester								Total Credits
		1	2	3	4	5	6	7	8	
1	HS	3	2	3	0	0	0	0	0	8
2	BS	12	8	3	3	0	0	0	0	26
3	ES	6	10	7	5	0	0	0	0	28
4	PC	0	0	11	13	17	11	6	0	64
5	PE	0	0	0	0	3	0	9	6	18
6	OE	0	0	0	0	0	3	3	0	6
7	EEC	0	0+2	0	1	2	3	3	4	15
8	MC	-	-	-	-	-	-	-	-	-
	<b>TOTAL</b>	<b>21</b>	<b>20+2</b>	<b>24</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>21</b>	<b>10</b>	<b>165</b>

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