



MCKV INSTITUTE OF ENGINEERING

NAAC Accredited "A" Grade Autonomous Institute under UGC Act 1956
Approved by AICTE & affiliated to Maulana Abul Kalam Azad University of Technology, West Bengal

243 G.T. Road (N), Liluah, Howrah- 711204, West Bengal, India

Ph: +91 33 26549315/17 Fax +91 33 26549318 Web: www.mckvie.edu.in/

Curriculum for Undergraduate Degree (B.Tech.) in Automobile Engineering (w.e.f. AY: 2020-21)

Part I: Introduction, Theme & Category wise Credit Distribution

A. Definition of Credit:

Sl. No.	Description	Credit
1	1 Hr. Lecture (L) Per Week	1.0
2	1 Hr. Tutorial (T) Per Week	1.0
3	1 Hr. Practical/ Lab (P) Per Week	0.5
4	2 Hrs. Practical/ Lab (P) Per Week	1.0

B. Range of Credits:

As per AICTE, a student covering 160 credits during 4 years of studies as per curriculum of the Institute will be eligible to get Under Graduate B.Tech. degree. A student will be eligible to get B.Tech. degree with Honours, if he/ she completes an additional 20 credits. These could be acquired through MOOCs prescribed by the Institute. Every student admitted to the 4 years B.Tech. programme is required to earn a minimum of 100 Activity Points under Mandatory Additional Requirement (MAR), in addition to the required academic grades, for getting B.Tech./ B.Tech. (Honours) degree.

C. Category wise Credit Distribution:

Sl. No.	Category	Credit Allotted	Credit as per AICTE
1	Humanities and Social Sciences including Management Courses	12	12
2	Basic Science Courses	26	25
3	Engineering Science Courses including Workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.	28	24
4	Professional Core Courses	57	48
5	Professional Elective Courses relevant to chosen specialization/ branch	15	18
6	Open Elective Courses from other technical and / or emerging subjects	9	18
7	Project Work, Seminar and Internship in Industry or elsewhere	13	15
8	Mandatory Courses [Environmental Sciences, Induction Training, Indian Constitution, Essence of Indian Traditional Knowledge, Aptitude Skill]	Non-Credit	Non-Credit
Total		160	160



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D. Course Code and Definition:

Sl. No.	Course Code	Definitions
1	L	Lecture
2	T	Tutorial
3	P	Practical
4	BS	Basic Science Courses
5	ES	Engineering Science Courses
6	HM	Humanities and Social Sciences including Management Courses
7	PC	Professional Core Courses
8	PE	Professional Elective Courses
9	OE	Open Elective Courses
10	MC	Mandatory Courses
11	PW	Project/ Internships/ Sessional

E. Courses in different Category:

Humanities and Social Sciences including Management Courses							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	I	HM-HU101	English	2	0	0	2
2	V	HM-HU501	Economics for Engineers	3	0	0	3
3	VI	HM-HU604	Quantitative Methods for Decision Making	3	0	0	3
4	VII	HM-HU702	Values & Ethics	2	0	0	2
<i>Total Theory</i>				10	0	0	10
Practical/ Sessional							
1	II	HM-HU291	Language Laboratory	0	0	2	1
2	V	HM-HU591	Soft Skill Development Laboratory	0	0	2	1
<i>Total Practical/ Sessional</i>				0	0	4	2
Total				10	0	4	12



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Basic Science Courses							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	I	BS-PH101	Physics	3	1	0	4
2	I	BS-M101	Mathematics-I	3	1	0	4
3	II	BS-CH201	Chemistry	3	1	0	4
4	II	BS-M201	Mathematics-II	3	1	0	4
5	III	BS-M303	Mathematics-III	2	1	0	3
6	III	BS-BIO301	Biology	2	0	0	2
7	IV	BS-M404	Numerical Methods	2	0	0	2
<i>Total Theory</i>				18	5	0	23
Practical/ Sessional							
1	I	BS-PH191	Physics Laboratory	0	0	3	1.5
2	II	BS-CH291	Chemistry Laboratory	0	0	3	1.5
<i>Total Practical/ Sessional</i>				0	0	6	3
Total				18	5	6	26

Engineering Science Courses including Workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	I	ES-EE101	Basic Electrical and Electronics Engineering	4	0	0	4
2	II	ES-CS201	Programming for Problem Solving	3	0	0	3
3	III	ES-AUE301	Engineering Mechanics	3	1	0	4
4	III	ES-AUE302	Fluid Mechanics & Hydraulic Machines	4	0	0	4
5	IV	ES-AUE401	Materials Engineering	3	0	0	3
<i>Total Theory</i>				16	2	0	18
Practical/ Sessional							
1	I	ES-EE191	Basic Electrical & Electronics Engineering Laboratory	0	0	4	2
2	I	ES-ME191	Engineering Graphics & Design	1	0	4	3
3	II	ES-CS291	Programming for Problem Solving	0	0	4	2
4	II	ES-ME292	Workshop/Manufacturing Practices	1	0	4	3
<i>Total Practical/ Sessional</i>				2	0	14	10
Total				18	2	14	28



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Professional Core Courses							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	III	PC-AUE301	Applied Thermodynamics	3	1	0	4
2	III	PC-AUE302	Manufacturing Methods	3	0	0	3
3	IV	PC-AUE401	Strength of Materials	3	1	0	4
4	IV	PC-AUE402	Machine tools and Machining Technology	3	0	0	3
5	IV	PC-AUE403	Theory of Machines	3	1	0	4
6	IV	PC-AUE404	Metrology & Instrumentation	3	0	0	3
7	V	PC-AUE501	Automotive Engines	3	0	0	3
8	V	PC-AUE502	Automotive Body & Chassis Engineering	3	0	0	3
9	V	PC-AUE503	Heat Transfer	3	0	0	3
10	V	PC-AUE504	Design of Machine Element	3	1	0	4
11	VI	PC-AUE601	Automotive Transmission	3	0	0	3
12	VI	PC-AUE602	Automotive Electrical and Electronic Systems	3	0	0	3
13	VI	PC-AUE701	Vehicle Dynamics	3	0	0	3
<i>Total Theory</i>				39	4	0	43
Practical/ Sessional							
1	III	PC-AUE391	Machine Drawing	0	0	3	1.5
2	IV	PC-AUE491	Manufacturing & Testing Lab	0	0	3	1.5
3	V	PC-AUE591	Fluid Mechanics & Heat Transfer Lab	0	0	3	1.5
4	V	PC-AUE592	Automobile Engineering Lab I (Engine & Chassis Component Lab)	0	0	3	1.5
5	VI	PC-AUE691	Automobile Engineering Lab II (Engine Testing and Pollution Measurement Lab)	0	0	3	1.5
6	VI	PC-AUE692	Automobile Engineering Lab III (Automotive Design Lab)	0	0	3	1.5
7	VI	PC-AUE693	Automobile Engineering Lab IV (Vehicle Maintenance Lab)	0	0	3	1.5
8	VII	PC-AUE791	Automobile Engineering Lab V (Automotive Electrical & Electronics Lab)	0	0	3	1.5
9	VIII	PC-AUE881	Comprehensive Viva Voce	0	0	0	2
<i>Total Practical/ Sessional</i>				0	0	24	14
Total				39	4	24	57



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Professional Elective Courses relevant to chosen specialization/ branch							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	VI	PE-AUE601	Elective -I	3	0	0	3
2	VII	PE-AUE701	Elective -II	3	0	0	3
3	VII	PE-AUE702	Elective-III	3	0	0	3
4	VIII	PE-AUE801	Elective-IV	3	0	0	3
5	VIII	PE-AUE802	Elective-V	3	0	0	3
<i>Total Theory</i>				15	0	0	15
Practical/ Sessional							
	-	-	-	-	-	-	-
<i>Total Practical/ Sessional</i>				0	0	0	0
Total				15	0	0	15

List of Elective Courses	
PE-AUE601	Elective-I
PE-AUE601A	Hybrid & Electric Vehicles
PE-AUE601B	Transport Management & Motor Vehicles Act
PE-AUE601C	Tyre Technology
PE-AUE701	Elective – II
PE-AUE701A	Advanced Manufacturing Technology and Management
PE-AUE701B	Advanced Automotive Materials
PE-AUE701C	Finite Element Method & its Applications
PE-AUE702	Elective – III
PE-AUE702A	Automotive Component & System Design
PE-AUE702B	Automotive Pollution control & Alternate Fuels
PE-AUE702C	Two and Three Wheelers
PE-AUE801	Elective - IV
PE-AUE801A	Off Road Vehicles
PE-AUE801B	Automotive Air Conditioning
PE-AUE801C	Battery Technology and Management Systems
PE-AUE801D	Fuel cell Technology
PE-AUE802	Elective - V
PE-AUE802A	Thermal Management of Hybrid Systems
PE-AUE802B	Noise, Vibrations and Harshness
PE-AUE802C	Electric Motors for Automotive Applications



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Open Elective Courses from other technical and / or emerging subjects							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	VII	OE-AUE701	Open Elective – I	3	0	0	3
2	VIII	OE-AUE801	Open Elective - II	3	0	0	3
3	VIII	OE-AUE802	Open Elective - III	3	0	0	3
<i>Total Theory</i>				9	0	0	9
Practical/ Sessional							
<i>Total Practical/ Sessional</i>				0	0	0	0
Total				9	0	0	9

List of Open Elective Courses	
OE-AUE701	Open Elective – I
OE-AUE701A	Quality Control & Reliability Engineering
OE-AUE701B	Mechatronic Systems
OE-AUE701C	Machine Learning
OE-AUE701D	Cloud Computing
OE-AUE801	Open Elective - II
OE-AUE801A	Tribology
OE-AUE801B	Internet of Things
OE-AUE801C	Soft Computing
OE-AUE802	Open Elective - III
OE-AUE802A	Computational Fluid Dynamics
OE-AUE802B	Entrepreneurship Development
OE-AUE802C	Robotics and Robot Application
OE-AUE 802D	Non-Destructive Testing Methods



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Project Work, Seminar and Internship in Industry or elsewhere							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	V	PW-AUE581	Project-I (Mini Project-30 hrs. Total)	0	0	2	1
2	VI	PW-AUE681	Project-II (Summer Internship-90 hrs. Total)	0	0	0	3
3	VII	PW-AUE781	Project-III	0	0	6	3
4	VIII	PW-AUE882	Project-IV	0	0	12	6
<i>Total Theory</i>				0	0	18	13
Practical/ Sessional							
<i>Total Practical/ Sessional</i>				0	0	0	0
Total				0	0	18	13

Mandatory Courses [Environmental Sciences, Induction Training, Indian Constitution, Essence of Indian Traditional Knowledge, Aptitude Skill]							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	IV	MC471	Environmental Science	2	0	0	0
2	V	MC571	Aptitude Skill Development-I	2	0	0	0
3	VI	MC671	Aptitude Skill Development-II	2	0	0	0
4	VI	MC673	Essence of Indian Knowledge Tradition	2	0	0	0
5	VII	MC772	Constitution of India	2	0	0	0
<i>Total Theory</i>				10	0	0	0
Practical/ Sessional							
<i>Total Practical/ Sessional</i>				0	0	0	0
Total				10	0	0	0