

# **BACHELOR'S DEGREE PROGRAMME**

**B.Tech**

**Curricula Academic Curricula (2018-2012)**

**(Choice Based Credit Scheme)**



**RAFFLES**  
**UNIVERSITY**

Raffles University, Neemrana, Rajasthan [INDIA]-301705

[www.rafflesuniversity.edu.in](http://www.rafflesuniversity.edu.in)

## STRUCTURE OF UNDERGRADUATE ENGINEERING PROGRAM

S.No.	Category of Course	Abbreviation Used	Credits
1.	Humanities and Social Sciences including Management Courses	HSMC	13
2.	Basic Sciences Courses	BSC	26
3.	Engineering Sciences Courses including workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.	ESC	26
4.	Professional Core Courses	PCC	98
5.	Professional Elective Courses relevant to chosen specialization/ branch	PEC	13
6.	Open Subjects- Electives from other technical and /or emerging subjects	OEC	12
7.	Project Work, Seminar and internship in industry or elsewhere	PROJ	16
8.	Mandatory Courses (Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge)	MC	Non Credit
<b>Total</b>			<b>204</b>

**PROFESSIONAL CORE COURSE (PCC)**

<b>Subject Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
PCC-ME 201	Strength of material	III	4
PCC-ME 202	Thermodynamics	III	4
PCC-ME 203	Material science & Engineering	III	3
PCC-ME 204	Manufacturing Processes-I	III	3
PCC-ME 205	Machine Drawing &Auto CAD Lab	III	2
PCC-ME 206	Thermodynamics Lab	III	1
PCC-ME 207	Manufacturing Processes-I Lab	III	1
PCC-ME 208	Strength of Materials Lab	III	1
PCC-ME 209	Material Science & Engineering Lab	III	1
PCC-ME 210	Kinematics of Machines	IV	4
PCC-ME 211	Fluid Mechanics	IV	4
PCC-ME 212	Manufacturing Processes-II	IV	3
PCC-ME 213	I. C. Engines	IV	4
PCC-ME 214	Industrial Engineering	IV	4
PCC-ME 215	Design of Machine Elements	IV	4
PCC-ME 216	Kinematics of Machines Lab	IV	1
PCC-ME 217	Fluid Mechanics Lab	IV	1
PCC-ME 218	Manufacturing Processes-II Lab	IV	1
PCC-ME 219	I. C. Engines Lab	IV	1
PCC-ME 301	Dynamics of Machines	V	4
PCC-ME 302	Hydraulic Machines	V	4
PCC-ME 303	Heat Transfer	V	4
PCC-ME 304	Design of Transmission Systems	V	4
PCC-ME 305	Measurement & Metrology	V	3
PCC-ME 306	Hydraulic Machines Lab	V	1
PCC-ME 307	Dynamics of Machines Lab	V	1
PCC-ME 308	Heat Transfer Lab	V	1
PCC-ME 309	Measurement & Metrology Lab	V	1
PCC-ME 310	Automobile Engineering	VI	3
PCC-ME 311	Mechanical Vibration	VI	4
PCC-ME 312	Operation Research	VI	4
PCC-ME 313	Automobile Engineering Lab	VI	1
PCC-ME 314	Mechanical Vibration Lab	VI	1
PCC-ME 401	Computer Aided Design	VII	3
PCC-ME 402	Refrigeration & Air Conditioning	VII	4

PCC-ME 403	Refrigeration & Air Conditioning Lab	VII	1
PCC-ME 404	Non-Conventional Energy Resources	VIII	3
PCC-ME 405	Power Plant Engineering	VIII	4
PCC-ME 406	CNC Machines & Automation	VIII	3
PCC-ME 407	CNC Machines & Automation Lab	VIII	1

#### **PROFESSIONAL ELECTIVE COURSE (PEC)**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
PEC-ME 301	Applied Thermodynamics	VI	4
PEC-ME 302	Tribology	VI	4
PEC-ME 303	Numerical Methods & Analysis	VI	4
PEC-ME 401	Welding Technology	VII	3
PEC-ME 401	Advanced strength of material	VII	3
PEC-ME 403	Production Planning & Control	VII	3
PEC-ME 404	Mechatronics	VIII	3
PEC-ME 405	Rapid Prototyping	VIII	3
PEC-ME 406	Foundry Technology	VIII	3
PEC-ME 407	Gas Turbine and Gas Power Plant	VIII	3
PEC-ME 408	Aerodynamics & Their Analysis	VIII	3
PEC-ME 409	Advance Manufacturing Processes	VIII	3

#### **OPEN ELECTIVE COURSE (OEC)**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
OEC-301	Instrumentation & Control	VI	3
OEC-302	Total Quality Management	VI	3
OEC-303	Product Design & Development	VI	3
OEC-304	Cyber Laws And Security	VI	3
OEC-305	Soft Computing	VI	3
OEC-306	Special Electrical Machines	VI	3
OEC-401	Non-Conventional Energy Sources	VII	3
OEC-402	Management information system	VII	3
OEC-403	Soft Skills for Engineers	VII	3
OEC-404	Utilization of electrical power & Traction	VIII	3
OEC-405	Optimization Techniques in Engineering	VIII	3
OEC-406	Microprocessor & Microcontroller	VIII	3
OEC-406	Reliability and Maintenance Engineering	VIII	3

**BASIC SCIENCE COURSES (BSC)**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
BSC-101	Engineering Physics-I	I	4
BSC-102	Engineering Mathematics-I	I	4
BSC-103	Physics-I Lab	I	1
BSC-104	Engineering Physics-II	II	4
BSC-105	Engineering Mathematics-II	II	4
BSC-106	Engineering Chemistry	II	3
BSC-107	Physics-II Lab	II	1
BSC-108	Engineering Chemistry Lab	II	1
BSC-201	Mathematics-III	III	4

**ENGINEERING SCIENCE COURSE (ESC)**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
ESC-101	Electronic Components & Devices	I	4
ESC-102	Engineering Mechanics	I	4
ESC-103	Computer Fundamental	I	4
ESC-104	Work shop	I	2
ESC-105	Electronics Engineering Lab	I	1
ESC-106	Basic Mechanical Engineering	II	4
ESC-107	Basic electrical Engineering	II	4
ESC-108	Computer Programming	II	3
ESC-109	Basic Electrical Engineering Lab	II	1
ESC-110	Engineering Graphics & Design	II	2
ESC-111	Computer Programming Lab	II	1

**HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
HSMC-101	Communicative English	I	3
HSMC-102	Language Lab	I	1
HSMC-301	Principles of Management	V	3
HSMC-401	Engineering Economics	VII	3
HSMC-402	Entrepreneurship Development	VIII	3

**PROJECT WORK, SEMINAR AND INTERNSHIP IN INDUSTRY OR ELSEWHERE**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
PROJ-ME 311	Industrial Training-I / Seminar	V	2
PROJ-ME 401	Industrial Training-II / Seminar	VII	2
PROJ-ME 402	Project-I	VII	6
PROJ-ME 403	Project- II	VIII	6

**MANDATORY COURSES**

<b>Code No.</b>	<b>Subject</b>	<b>Preferred semester</b>	<b>Credit</b>
MC-I	Environmental Studies	I	0
MC-II	Environmental Studies Lab	I	0
MC-III	Essence of Indian Traditional Knowledge	III	0

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**Department of Mechanical Engineering**

**3<sup>rd</sup> Semester**

Sr. No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credits
				L	T	P	TA	MTA	ETA		
1	BSC	BSC 201	Mathematics-III	3	1	0	20	20	60	100	4
2	PCC	PCC-ME 201	Strength of Materials	3	1	0	20	20	60	100	4
3	PCC	PCC-ME 202	Thermodynamics	3	1	0	20	20	60	100	4
4	PCC	PCC-ME 203	Material Science & Engineering	3	0	0	20	20	60	100	3
5	PCC	PCC-ME 204	Manufacturing Processes-I	3	0	0	20	20	60	100	3
6	MC	MC-III	Constitutional Law	2	0	0	20	20	60	100	0
7	PCC	PCC-ME 205	Machine Drawing & Auto CAD Lab	0	0	3	60	--	40	100	2
8	PCC	PCC-ME 206	Thermodynamics Lab	0	0	2	60	--	40	100	1
9	PCC	PCC-ME 207	Manufacturing Processes-I Lab	0	0	2	60	--	40	100	1
10	PCC	PCC-ME 208	Strength of Materials Lab	0	0	2	60	--	40	100	1
11	PCC	PCC-ME 209	Material Science & Engineering Lab	0	0	2	60	--	40	100	1
			<b>Total</b>	<b>17</b>	<b>3</b>	<b>11</b>				<b>1100</b>	<b>24</b>

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**4<sup>th</sup> Semester**

S No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credits
				L	T	P	TA	MTA			
1	PCC	PCC-ME 210	Kinematics of Machines	3	1	0	20	20	60	100	4
2	PCC	PCC-ME 211	Fluid Mechanics	3	1	0	20	20	60	100	4
3	PCC	PCC-ME 212	Manufacturing Processes-II	3	0	0	20	20	60	100	3
4	PCC	PCC-ME 213	I. C. Engines	3	1	0	20	20	60	100	4
5	PCC	PCC-ME 214	Industrial Engineering	3	1	0	20	20	60	100	4
6	PCC	PCC-ME 215	Design of Machine Elements	3	1	0	20	20	60	100	4
7	PCC	PCC-ME 216	Kinematics of Machines Lab	0	0	2	60	--	40	100	1
8	PCC	PCC-ME 217	Fluid Mechanics Lab	0	0	2	60	--	40	100	1
9	PCC	PCC-ME 218	Manufacturing Processes-II Lab	0	0	2	60	--	40	100	1
10	PCC	PCC-ME 219	I. C. Engines Lab	0	0	2	60	--	40	100	1
			<b>Total</b>	<b>18</b>	<b>5</b>	<b>8</b>				<b>1000</b>	<b>27</b>

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**5<sup>th</sup> Semester**

S. No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credits
				L	T	P	TA	MTA			
1	PCC	PCC-ME 301	Dynamics of Machines	3	1	0	20	20	60	100	4
2	PCC	PCC-ME 302	Hydraulic Machines	3	1	0	20	20	60	100	4
3	HSMC	HSMC301	Principles of Management	3	0	0	20	20	60	100	3
4	PCC	PCC-ME 303	Heat Transfer	3	1	0	20	20	60	100	4
5	PCC	PCC-ME 304	Design of Transmission Systems	3	1	0	20	20	60	100	4
6	PCC	PCC-ME 305	Measurement & Metrology	3	0	0	20	20	60	100	3
7	PCC	PCC-ME 306	Hydraulic Machines Lab	0	0	2	60	--	40	100	1
8	PCC	PCC-ME 307	Dynamics of Machines Lab	0	0	2	60	--	40	100	1
9	PCC	PCC-ME 308	Heat Transfer Lab	0	0	2	60	--	40	100	1
10	PCC	PCC-ME 309	Measurement & Metrology Lab	0	0	2	60	--	40	100	1
11	PROJ	PROJ-ME 301	Industrial Training-I Seminar	0	0	2	100	--	100	200	2
			<b>Total</b>	<b>15</b>	<b>10</b>	<b>10</b>				<b>1200</b>	<b>28</b>

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**6<sup>th</sup> Semester**

S. No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credits
				L	T	P	TA	MTA	ETA		
1	PCC	PCC-ME 310	Automobile Engineering	3	0	0	20	20	60	100	3
2	PCC	PCC-ME 311	Mechanical Vibration	3	1	0	20	20	60	100	4
3	PEC	PEC-ME 301-303	Professional Elective-I	3	1	0	20	20	60	100	4
4	PEC	PEC-ME 304-306	Professional Elective-II	3	1	0	20	20	60	100	4
5	OEC	OEC 301-303	Open Elective-I	3	0	0	20	20	60	100	3
6	OEC	OEC 304-306	Open Elective-II	3	0	0	20	20	60	100	3
7	PCC	PCC-ME 312	Automobile Engineering Lab	0	0	2	60	--	40	100	1
8	PCC	PCC-ME 313	Mechanical Vibration Lab	0	0	2	60	--	40	100	1
			<b>Total</b>	<b>18</b>	<b>3</b>	<b>4</b>				<b>800</b>	<b>23</b>

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**7<sup>th</sup> Semester**

S. No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credits
				L	T	P	TA	MTA	ETA		
1	PCC	PCC-ME 401	Computer Aided Design	3	0	0	20	20	60	100	3
2	PCC	PCC-ME 402	Refrigeration & Air Conditioning	3	1	0	20	20	60	100	4
3	HSM C	HSMC 401	Engineering Economics	3	0	0	20	20	60	100	3
4	PEC	PEC-ME 401-403	Professional Elective-III	3	1	0	20	20	60	100	4
5	OEC	OEC 401-403	Open Elective-III	3	0	0	20	20	60	100	3
6	PCC	PCC-ME 403	Refrigeration & Air Conditioning Lab	0	0	2	60	--	40	100	1
7	PRO J	PROJ-ME 401	Industrial Training-II/ Seminar	0	0	2	100	--	100	200	2
8	PRO J	PROJ- ME 402	Project-I	0	0	6	100	--	100	200	6
			<b>Total</b>	<b>15</b>	<b>2</b>	<b>10</b>				<b>1000</b>	<b>26</b>

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**8<sup>th</sup> Semester**

S. No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credits
				L	T	P	TA	MTA	ETA		
1	PCC	PCC-ME 404	Power Plant Engineering	3	0	0	20	20	60	100	3
2	HSMC	HSMC402	Entrepreneurship Development Management	3	0	0	20	20	60	100	3
3	PCC	PCC-ME 405	CNC Machines & Automation	3	1	0	20	20	60	100	4
4	PEC	PEC-ME 404-406	Professional Elective-III	3	0	0	20	20	60	100	3
5	PEC	PEC-ME 407-409	Professional Elective-IV	3	0	0	20	20	60	100	3
6	OEC	OEC-404-406	Open Elective-IV	3	0	0	20	20	60	100	3
7	PCC	PCC-ME 407	CNC Machines & Automation Lab	0	0	2	60	--	40	200	1
8	PROJ	PROJ- ME 403	Project- II	0	0	6	200	--	200	200	6
			<b>Total</b>	<b>18</b>	<b>1</b>	<b>8</b>				<b>1000</b>	<b>26</b>