### **Curriculum Format**

Programme Name:	B. Tech. Mechanical Engineering
Programme Department:	Mechanical Engineering
Curriculum applicable to (for admitted year xxxx- xx format):	AY 2019-20
Curriculum Version:	3.0
Approved by & Date	3 <sup>rd</sup> Academic Council, 27-04-2019

## University Core [Min. 71 Credits]

Course Code	Category	Course Title	Ver.	TF	P C	Pre/Co-Requisite	Anti-requisite	Course Discipline
BIC4002		Internship/CO-OP	1.0		1	0		Engineering
CAP4001		Capstone	1.0			4		Engineering
	Engineering Clinics Basket	Minimum of 4 Credits from the courses in the basket		П	Т			
ECS1001		Engineering Clinics - Embedded C & Arduino	1.0	0 4	4 2	None		Engineering
ECS1002		Engineering Clinics - Python & Raspberry Pi	1.0	0 4	4 2	None		Engineering
ECS2001/		Engineering Clinics - Robotics & Reverse Engineering (or)						
ECS2002		Engineering Clinics - System Design	1.0	0 4	4 2	None		Engineering
	Engineering Basket	Minimum of 13 Credits from courses in the basket		П	Т			
CSE1004		Problem Solving using JAVA [Compulsory]	2.0	2	2	3 None	SWE1001	Engineering
CSE2001		Data Structures and Algorithms [Compulsory]	1.1	3	2	4 CSE1001/CSE1004	SWE2001	Engineering
ECE1001		Fundamentals of Electrical Engineering	1.1	3	2	4 None	ECE1005	Engineering
		Fundamentals of Electrical and Electronics Engineering						
ECE1002		[Compulsory]	1.1	3	2	4 None	ECE1005	Engineering
MEC1004		Engineering Drawing	1.0	0	2	1 None		Engineering
MEC1002		Engineering Graphics [Compulsory]	1.0	0	4	2 None	MEC1004	Engineering
	English Basket	Minimum of 4 Credits from courses in the basket		П	Т			
ENG1001		English for Essential Communication	2.0	1 2	2 2	EPT	ENG1005	Humanities
ENG1002		English for Effective Communication	2.0	1 2	2 2	EPT, ENG1001	ENG1006	Humanities
ENG2001		English for Professional Communication	2.0	1 2	2 2	ENG1002	ENG2004	Humanities
	Humanities Basket	Minimum of 2 Credits from courses in the basket		П	Т			
LIB1001		Anthropology - An Introduction	1.0	2 (	) 2	None		Humanities
LIB1002		Critical Thinking Skills	1.0	2 (	) 2	None		Humanities
LIB1003		Psychology - An Introduction	1.0	2 (	) 2	None		Humanities
LIB1004		Sociology - An Introduction	1.1	2 (	) 2	None		Humanities
FRL1001		Basic French	1.0	2 (	) 2	None		Humanities
FRL1004		Basic Spanish	1.0	2 (	) 2	None		Humanities
FRL2001		Proficiency in French	1.0	3 (	) 3	FRL1001		Humanities
	Soft skills Basket	All are Compulsory						
STS1002/		Fundamentals of Aptitude (or)						
STS1004		Introduction to Problem Solving	1.0	0	2 1	None		Humanities
STS1007/		Arithmetic problem solving (or)			Τ			
STS1009		Introduction to quantitative, logical and verbal ability	1.0	0	2   1	STS1002/STS1004		Humanities
STS2006/		Getting started to skill enhancement (or)						
STS2008		Numerical ability and cognitive intelligence	1.1	0	2   1	STS1007/STS1009		Humanities

STS2007/		Enhancing problem solving skills (or)							
STS2009		Advanced aptitude and reasoning skills	1.0	0	2	1	STS2006/STS2008		Humanities
STS3002/		JAVA for beginners (or)							
STS3003		Foundation to programming skills	1.0	0	2	1	CSE1001/CSE1004/SWE1001		Humanities
STS4001/		Computational thinking (or)							
STS4002		Advanced JAVA Programming	1.0	0	2	1	STS3002/STS3003		Humanities
	Management Basket	Minimum of 6 Credits from courses in the basket							
MGT1001		Ethics and Values [Compulsory]	2.0		Ρ/	F	None		Management
MGT1002		Lean Start-up Management	1.1	2	0	2	None		Management
MGT1003		Fundamentals of Marketing	1.0	2	0	2	None		Management
MGT1004		Introduction to Organizational Behaviour	1.0	2	0	2	None	MGT1027	Management
MGT1005		Fundamentals of Creativity and Innovation Management	1.1	2	0	2	None		Management
MGT1006		Fundamentals of Operations Management	1.1	2	0	2	None		Management
MGT1007		Economics for Engineers	1.0	2	0	2	None		Management
MGT1008		Accounting and Finance for Engineers	1.0	2	0	2	None		Management
MGT1010		Fundamentals of Behavioral Finance	1.0	2	0	2	None		Management
MGT1015		Fundamentals of Consumer Behaviour	1.0	2	0	2	None		Management
MGT1020		Fundamentals of Services Marketing	1.0	2	0	2	None		Management
MGT1021		Fundamentals of Supply Chain Analytics	1.0	2	0	2	CSE1006		Management
MGT1022		Fundamentals of Insurance and Risk Management	1.0	2	0	2	None		Management
MGT1026		Basics of Investment Analysis and Portfolio Management	1.0	2	0	2	None		Management
MGT1027		Fundamentals of Team Building and Leadership	1.0	2	0	2	None	MGT1004	Management
MGT1028		Social Process and Social Change	1.0	2	0	2	None		Management
MGT1029		Basic Law for Engineers	1.0	2	0	2	None		Management
MGT1030		Fundamentals of Sustainability Management	1.0	2	0	2	None		Management
	Science Basket	Minimum of 22 Credits from courses in the basket							
MAT1001		Calculus for Engineers [Compulsory]	1.0	3	2	4	None	MAT1008	Science
		Applications of Differential and Difference Equations							
MAT1002		[Compulsory]	1.0	3	2	4	MAT1001	MAT1009	Science
MAT1011		Applied Statistics [Compulsory]	1.0	1	2	2	None	MAT1014, MAT1006	Science
PHY1002		Semiconductor Device Physics	1.0	3	0	3	None		Science
PHY2003		Condensed Matter Physics	1.0	3	0	3	PHY1001/PHY1006/PHY1007		Science
PHY2004		Optoelectronics	1.0	3	0	3	None		Science
PHY2005		Introduction to Nanotechnology	1.0	3	0	3	None		Science
MAT2005		Linear Algebra	1.1	3	0	3	None	MAT1009	Science
MAT2001		Numerical Methods for Engineers	1.0	2	2	3	MAT1002/MAT1009	CSE1002	Science
MAT2002		Complex Variables and Partial Differential Equations	1.0	3	0	3	MAT1002/MAT1009		Science
PHY1008		Modern Physics	1.0	2	2	3	None	PHY1005	Science
PHY1007		Principles of Electronics	1.0	2	2	3	None	PHY1005	Science
PHY1006		Physics of Materials [Compulsory]	1.0	2	2	3	None	PHY1005	Science
CHY1004		Engineering Chemistry [Compulsory]	10	2	2	3	None	CHY1003	Science
			11.0	2	-	_			
CHY1001		Environmental Studies [Compulsory]	3.0	2	- P/	F	None	CHY1002	Science

## Programme Core [Min. 43 Credits]

Course Code Category

Course Title

Ver. T P C Pre-Requisite

Anti-requisite Course Discipline

MEC1001	Engineering Mechanics Statics	1.0	3 0	3	None	Engineering
MEC1005	Workshop Practice	1.0	02	1	None	Engineering
MEC1003	Engineering Mechanics Dynamics	1.0	3 0	3	MEC1001	Engineering
MEC2002	Thermodynamics	1.0	3 0	3	MAT1001	Engineering
MEC3003	Applied Thermodynamics	1.0	3 2	4	MEC2002	Engineering
MEC3001	Heat and Mass Transfer	1.0	3 2	4	MEC3003, MAT1002	Engineering
MEC2003	Strength of Materials	1.0	3 2	4	MEC1003, MAT1001	Engineering
MEC3002	Theory of Machines	1.0	3 2	4	MEC1003	Engineering
MEC3024	Product Development and Management	1.0	2 4	4	None	Engineering
MEC4023	Design Process, Planning and Management	1.0	2 4	4	MEC3024	Engineering
MEC2004	Fluid Mechanics	1.0	3 2	4	MEC1001,MAT1002	Engineering
MEC3004	Machine Design	2.0	3 0	3	MEC2003	Engineering
PHY2002	Materials Science and Engineering	1.0	3 2	4	None	Science
MEC2005	Fundamentals of Manufacturing Processes	1.0	22	3	MEC2001/PHY2002	Engineering
MEC2006	Machining Processes and Manufacturing Technology	1.0	2 2	3	MEC2005	Engineering

# Programme Electives [Min. 23 Credits]

Course Code	Category	Course Title	Ver.	TP	י  C	:	Pre-Requisite	Anti-requisite	Course Discipline
	Design Basket	Minimum of 5 Credits from courses in the basket			Τ				
MEC2010		Machine Drawing	1.0	0	4	2	MEC1002		Engineering
MEC2007		Introduction to Mechanical Engineering Design Process	2.0	3 (	0	3	MEC1002		Engineering
MEC4018		Robotics	1.0	3 (	D	3	MEC3002	ECE4011	Engineering
MEC4002		Finite Element Method	2.0	3	2	4	MEC2003		Engineering
MEC4017		Introduction to Mechancial Vibrations	2.0	3	2	4	MEC3002		Engineering
MEC2008		Product Design and Development	1.0	3 (	0	3	MEC2007		Engineering
MEC2009		Engineering Design	1.0	3 (	0	3	None		Engineering
MEC4014		Advanced Strength of Materials	1.0	3 (	0	3	MEC2003		Engineering
MEC4016		Fracture Mechanics	1.0	3 (	0	3	MEC2003, MEC2001/PHY2002		Engineering
	Manufacturing Basket	Minimum of 6 Credits from courses in the basket			Т				
MEC3005		Automation in Manufacturing	2.0	3	2	4	MEC2006		Engineering
MEC3008		Casting Science and Engineering	1.0	3 (	0	3	MEC2005		Engineering
MEC3009		Welding Science and Technology	2.0	3	2	4	MEC2005		Engineering
MEC3007		Composite Materials	2.0	3	2	4	MEC2001/PHY2002		Engineering
MEC3015		Advanced Machining Processes	2.0	3	2	4	MEC2006		Engineering
MEC4015		Metal Forming	1.0	3 (	0	3	MEC2005		Engineering
MEC3016		Powder Metallurgy	1.0	3 (	0	3	MEC2001/PHY2002		Engineering
MEC3012		Additive Manufacturing	1.0	3 (	0	3	MEC2001/PHY2002		Engineering
MEC4013		Characterization of Materials	1.0	3 (	0	3	MEC2001/PHY2002		Engineering
MEC3019		Polymer Engineering and Science	2.0	3	2	4	MEC2001/PHY2002		Engineering
	Thermal Basket	Minimum of 6 Credits from courses in the basket			Т				
MEC3006		Fluid Dynamics and Hydraulic Machines	1.0	3	2	4	MEC2004		Engineering
MEC4021		Design of Heat Exchangers	2.0	2	2	3	MEC3001		Engineering
MEC4003		Internal Combustion Engines	2.0	2	2	3	MEC3003		Engineering
MEC4020		Advanced Fluid Mechanics	1.0	3 (	0	3	MEC2004		Engineering
MEC4001		Computational Fluid Dynamics	2.0	3	2	4	MEC2004, MEC3001		Engineering
MEC4004		Refrigeration and Air Conditioning	2.0	3	2	4	MEC3003		Engineering

MEC4008		Automobile Engineering	2.0	32	4	MEC2002		Engineering
MEC4005		Power Plant Engineering	1.0	30	3	MEC3003		Engineering
MEC4006		Introduction to Gas Dynamics	1.0	30	3	MEC2002, MEC3006		Engineering
MEC3010		Renewable Source of Energy	1.0	30	3	MEC2002		Engineering
	Industrial Engg. Basket	Minimum of 3 Credits from courses in the basket						
MEC2011		Engineering Economy and Costing	1.0	30	3	None		Engineering
MEC2012		Macroergonomics	1.0	3 0	3	None		Engineering
MEC2013		Quality Reliability and Maintenance Management	1.0	3 0	3	None		Engineering
MEC3011		Operations Research	1.0	30	3	None		Engineering
MEC2014		Production Planning and Inventory Control	1.0	30	3	None		Engineering
MEC4009		Artificial Neural Network	1.0	30	3	MAT1002		Engineering
MEC4010		Genetic Algorithms	1.0	3 0	3	CSE1001/CSE1004		Engineering
MEC4012		Engineering Optimization	1.0	30	3	MAT1002	MAT2003, MAT2004	Engineering
	General Basket	Minimum of 3 Credits from courses in the basket						
MEC2015		Instrumentation and Control Basics	1.0	22	3	PHY1001, ECE1002		Engineering
MEC3017		Automatic Control Systems	1.0	3 0	3	None	ECE2003	Engineering
MEC4011		Machine Learning	1.0	3 0	3	CSE1001/CSE1004	CSE3008	Engineering
MEC3013		Introduction to Data Sciences	1.0	3 0	3	MAT1010	CSE1006	Engineering

## University Electives [Min. of 14 Credits]

Course Code		Course Title	Ver. T P C	Pre-Requisite	Anti-requisite		
Any Course after fulfilling Programme Core & University Core requirements and without duplicity can be taken as University Elective							

Credit Summary	Credits
University Core	69
Programme Core	51
Programme Electives	23
University Electives	16
Total Credits	159
Course Discipline	%
Engineering	67.7
Science & Maths	16.4
Management	3.1
Humanities	10.1
Open	2.5
Total Credits	159
Minimum Credits required for Programme completion	159

Verified by: (HoD, Mechanical Engineering)