# DEPARTMENT OF MECHANICAL ENGINEERING

# B.Tech. (Mechanical Engineering) 2022 Batch COURSE COMPONENTS & CURRICULUM

PROGRAM STRUCTURE					
S. No. Category / Component					
1	Basic Science courses	BSC	19		
2	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	ESC	16		
3	Humanities and Social Sciences including Management courses	HSMC	18		
4	Professional core courses	PCC	68		
5	Professional Elective courses relevant to chosen specialization/branch	PEC	15		
6	Open Elective Course Titles – Electives from other technical and /or emerging Course Titles	OES	9		
7	Project work, seminar and internship in industry or elsewhere	P	15		
8	8 Mandatory Courses [Environment studies, Induction Programme, Indian Constitution, Value Education, etc.]				
9	Online Courses		5*		
	Tota	al Credits	165		

<sup>\*</sup>The students shall earn 5 credits through online courses between 2<sup>nd</sup> and 7<sup>th</sup> semester (both inclusive)

#### SEMESTERWISE CURRICULUM

		SEMESTER- I				
S. No.	Course Code	Course Title	Hours per Week		Credits	
110.			L	T	P	
1	20PH1020	Application of Engineering Materials	3	0	0	3
2	20MA1003	Mathematics for Data Science and Machine Learning		0	2	3
3	20ME1001	Materials Engineering Laboratory	0	0	2	1
4	20ME1002	Computer Aided Drafting Laboratory	0	0	4	2
5	20CS1004	Applications of Python Programming	3	0	0	3
6	20CS1005	Python Programming Laboratory	0	0	2	1
7	20EC2017	Media Laboratory	0	0	2	1
8	20EN1001	English for Engineering and Technology	2	0	0	2
9	20ME1003	Soft Skills	1	0	0	1
10	19ME1003	Engineering Mechanics	3	0	0	3
11		Mandatory Course – I	2	0	0	0
	Total Cred					20
		SEMESTER- II				
S.	Corrego		H	ours	per	
S. No.	Course Code	Course Title		Week		Credits
140.	Code		L	T	P	
1	19ME2020	Drone Technology	3	0	0	3
2	20ME1004	Additive manufacturing Laboratory	0	0	2	1
3	20ME1005	Fluid Power Control and Mechatronics Laboratory	0	0	2	1
4	20ME1006	Professional Ethics	2	0	0	2
5	20ME1007	3D Printing Technology	3	0	0	3
6	20ME1008	Dynamics and Vibration Laboratory	0	0	2	1
7	20MA1004	Mathematical Modelling for Engineering Problems	2	0	2	3
8	20EC2018	Fundamentals of Printed Circuit and Arduino Board	3	0	0	3
		Design				
9	20EC2019	Fundamentals of Printed Circuit and Arduino Board 0 0 2		2	1	
		Design Lab				
10	20MS2003	Concept of Entrepreneurship	1	0	0	1
			Total Credits		19	

MECHANICAL ENGINEERING 2.1

		SEMESTER- III					
a				ours			
S.	Course	Course Title		Wee	Credits		
No.	Code		L	T	P		
1	20MA2002	Applied Computational Mathematics	2	0	2	3	
2	19ME2025	Thermodynamics		0	0	3	
3	20ME2016	Fluid Mechanics and Fluid Machines	2	1	0	3	
4	21ME2001	Fluid Mechanics and Strength of Materials Laboratory	0	0	4	2	
5	21ME2002	Strength of Materials	3	0	0	3	
6	20ME2003	Production and Metrology Laboratory	0	0	4	2	
7	ITP2903 /	Industrial training -1 / Internship – 1	15 Days		1		
	ISP2993				1		
8	20MS2004	Entrepreneurship and Product Development	3	0	0	3	
			ota	l Cre	dits	20	
	I	SEMESTER- IV	T			T	
S.	Course	G WILL	Н	ours		Credits	
No.	Code	Course Title	_	Wee			
-	2014 4 2002	C' 1 CN ' 1M 4	L	T	P	2	
1	20MA2003	Simulation of Numerical Mathematics	2	0	2	3	
2	21ME2003	Design of Machine Elements	3	0	0	3	
3	19ME2026	Applied Thermodynamics	3	0	0	3	
4	20ME2001	Engineering Design and Analysis Laboratory	0	0	4	2	
5	20ME2010	Kinematics and Dynamics of Machinery	3	1	0	4	
6	20ME2015	Applied Thermodynamics Laboratory	0	0	4	2	
7	20ME2014	Industrial Safety and Quality Standards	3	0	0	3	
8	20EE2001	Electric Vehicle Design	3	0	0	3	
9		Mandatory Course – II	2	0	0	0	
		The state of the s	- 4 - 1	α	J*4	22	
			ota	Cre	dits	23	
		SEMESTER- V				23	
S.	Course	SEMESTER- V		ours	per		
S. No.	Course Code		Н	ours Wee	per k	23 Credits	
No.	Code	SEMESTER- V  Course Title	H	ours Wee T	per k P	Credits	
<b>No.</b>	<b>Code</b> 20ME2002	SEMESTER- V  Course Title  CNC Programming	H L 3	ours Wee T	per k P	Credits 3	
No. 1 2	Code 20ME2002 21ME2004	SEMESTER- V  Course Title  CNC Programming  Computer Aided Manufacturing Laboratory	H L 3	ours Wee T 0	per ek P 0 2	Credits 3 1	
No. 1 2 3	Code 20ME2002 21ME2004 21ME2005	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory	H 3 0 0	ours Wee T 0 0	per	Credits  3 1 1	
No.  1 2 3 4	Code 20ME2002 21ME2004 21ME2005 21ME2006	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer	H L 3 0 0 3	ours Wee  T 0 0 0	per ek P 0 2	3 1 1 1 3	
No.  1 2 3 4 5	20ME2002 21ME2004 21ME2005 21ME2006 20ME2007	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management	H 3 0 0 3 3	0 0 0 0 0 0	per	3 1 1 3 3 3	
No.  1 2 3 4	Code 20ME2002 21ME2004 21ME2005 21ME2006	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics	H L 3 0 0 3	ours Wee  T 0 0 0	per   P   0   2   2   0	3 1 1 1 3	
No.  1 2 3 4 5 6	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory	H 3 0 0 3 3 3	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per   P   0   2   2   0   0   0	Credits  3 1 1 3 3 3 1	
No.  1 2 3 4 5 6 7	20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics	H 3 0 0 3 3 3 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per	3 1 1 3 3 3 3 3	
No.  1 2 3 4 5 6 7 8	Code  20ME2002  21ME2004  21ME2005  21ME2006  20ME2007  21ME2007  20ME2005  20ME2011	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering	H 3 0 0 3 3 3 0 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per	Credits  3 1 1 3 3 3 1 3 3 1 3	
No.  1 2 3 4 5 6 7 8 9	Code  20ME2002  21ME2004  21ME2005  21ME2006  20ME2007  21ME2007  20ME2005  20ME2011  20CS2057	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design	H 3 0 0 3 3 3 0 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per	Credits  3 1 1 3 3 3 1 3 3 3 3 3	
No.  1 2 3 4 5 6 7 8 9	Code  20ME2002  21ME2004  21ME2005  21ME2006  20ME2007  21ME2007  20ME2005  20ME2011  20CS2057  ITP2904 /	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2	H L 3 0 0 3 3 3 0 0 0 3 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per ck P 0 2 2 0 0 0 2 0 2 ays	Credits  3 1 1 3 3 3 1 3 3 3 3	
No.  1 2 3 4 5 6 7 8 9	Code  20ME2002  21ME2004  21ME2005  21ME2006  20ME2007  21ME2007  20ME2005  20ME2011  20CS2057  ITP2904 /	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2	H L 3 0 0 3 3 3 0 0 0 3 2	0 0 0 0 0 0 0 0 0	per ck P 0 2 2 0 0 0 2 0 2 ays	Credits  3 1 1 3 3 3 1 22	
No.  1 2 3 4 5 6 7 8 9 10	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  T SEMESTER- VI	H 3 0 0 3 3 3 0 0 2 otal	0 0 0 0 0 0 0 0 15 Da	per ek	Credits  3 1 1 3 3 3 1 3 1 1 3 1	
No.  1 2 3 4 5 6 7 8 9 10	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2	H 3 0 0 3 3 3 0 3 2 0 tal	0 0 0 0 0 0 0 0 15 Da	P   0   2   2   0   0   2   0   2   2   2	Credits  3 1 1 3 3 3 1 22	
No.  1 2 3 4 5 6 7 8 9 10  S. No.	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course Code	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  T SEMESTER- VI  Course Title	H 3 0 0 3 3 3 0 0 3 2 0 tal	0 0 0 0 0 0 0 0 0 15 Da 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P   0   2   2   0   0   2   0   2   1   2   1   1   1   1   1   1   1	Credits  3 1 1 3 3 3 1 22  Credits	
No.  1 2 3 4 5 6 7 8 9 10  S. No.	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course Code  20ME2012	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  TSEMESTER- VI  Course Title  Internet of Things for Mechanical Systems	H	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P   0   2   2   0   0   2   0   2   1   1   1   1   1   1   1   1   1	Credits  3 1 1 3 3 3 1 22  Credits	
No.  1 2 3 4 5 6 7 8 9 10  S. No. 1 2	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course Code  20ME2012 20ME2017	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  T SEMESTER- VI  Course Title  Internet of Things for Mechanical Systems Automotive Materials and Electronics	H  L 3 0 0 3 3 3 2 0 tal  H  L 3 3 3	0 0 0 0 0 0 0 0 0 1 5 Da 1 Cree  T 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P   0   2   2   0   0   2   0   2   2   1   1   1   1   1   1   1   1	Credits  3 1 1 3 3 3 1 22  Credits	
No.  1 2 3 4 5 6 7 8 9 10  S. No.  1 2 3	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course Code  20ME2012	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  T SEMESTER- VI  Course Title  Internet of Things for Mechanical Systems Automotive Materials and Electronics Biomechanics and Biomaterials	H  L 3 0 0 3 3 3 2 0 otal	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per ek P 0 2 2 0 0 0 2 2 0 2 2 0 2 2 0 2 2 0 0 2 2 0	Credits  3 1 1 3 3 3 1 22  Credits	
No.  1 2 3 4 5 6 7 8 9 10  S. No.  1 2 3 4	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course Code  20ME2012 20ME2017	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  TSEMESTER- VI  Course Title  Internet of Things for Mechanical Systems Automotive Materials and Electronics Biomechanics and Biomaterials Open Elective-I	H 3 0 0 3 3 3 2 0 0tal H L 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P	Credits  3 1 1 3 3 3 1 22  Credits  3 3 3 3 3 3 3 3 3	
No.  1 2 3 4 5 6 7 8 9 10  S. No.  1 2 3	Code  20ME2002 21ME2004 21ME2005 21ME2006 20ME2007 21ME2007 20ME2005 20ME2011 20CS2057 ITP2904 / ISP2994  Course Code  20ME2012 20ME2017	Course Title  CNC Programming Computer Aided Manufacturing Laboratory Heat Transfer Laboratory Heat and Mass Transfer Automation of Product Life Cycle Management Computational Fluid Dynamics Computational Fluid Dynamics Laboratory Finite Element Methods in Engineering Fundamentals of Web Design Industrial Training -2 / Internship - 2  T SEMESTER- VI  Course Title  Internet of Things for Mechanical Systems Automotive Materials and Electronics Biomechanics and Biomaterials	H  L 3 0 0 3 3 3 2 0 otal	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	per ek P 0 2 2 0 0 0 2 2 0 2 2 0 2 2 0 2 2 0 0 2 2 0	Credits  3 1 1 3 3 3 1 22  Credits	

MECHANICAL ENGINEERING 2.2

7	ITP2905 /	Industrial training -3 / Internship -3	15 Days		1			
	ISP2995							
8	20MS2007	Business Plan	3	0	0	3		
	T			l Cre	22			
		SEMESTER- VII						
Sl.	Course	Commo Titalo	Hours per Week			Credits		
No.	Code	Course Title		L T P				
1	20ME2004	Design of Medical Devices and Implants	3	0	0	3		
3	20ME2009	Intelligent Robotic System	3	0	0	3		
4	20ME2013	Sensor Technology for Machines	3	0	0	3		
5	21ME2009	Application of AI for Mechanical Engineering Systems	2	0	2	3		
6	20ME2006	Engineering Economics and Operation Research	3	0	0	3		
7	20CS2058	Basics of Data Analytics - R programming and Tableau	3	0	2	4		
9	20MS2008	Artificial Intelligence for Business	3	0	0	3		
	Total Credits					22		
	SEMESTER- VIII							
S.	Course		Hours per			Credits		
No.	Code	Course Title	Week					
140.	Code			T	P			
1	22ME2999	Project			-	12		
				T	otal	12		

## B.Tech. (Hons.) Mechanical Engineering with Specialization in 3D Printing COURSE STRUCTURE

S.No.	Course Code	Course Title	Course Component	No of Course s	Credit s for Cours e	Total Credit s
1	21ME2013	Design for Additive	Professional	1	3	3
1	21WIE2013	Manufacturing	Elective Courses	1		3
2	<sup>2</sup> 21ME2014	Advanced Additive	Laboratory	1	2	2
	21WIE2014	Manufacturing Laboratory	Course			2
3	22ME2997		Project	1	6	6
4			MOOC Courses	3	1	3
5			Certificate	1	4	4
			Courses			4
			_		Total	18

## B.Tech. (Hons.) Mechanical Engineering with Specialization in Electric Vehicles COURSE STRUCTURE

S.No.	Course Code	Course Title	Course Component	No of Course s	Credit s for Cours e	Total Credit s
1	21ME2015	Design of Electric Vehicles	Professional	1	3	3
		and Battery Management	Elective Courses			
2	21ME2016	Electric Vehicles Laboratory	Laboratory	1	2	2
	2111112010	Electric venicles Euboratory	Course		2	2
3	22ME2998		Project	1	6	6
4			MOOC Course	3	1	3
5			Certificate	1	4	4
3			Courses			4
					Total	18

MECHANICAL ENGINEERING 2.3