B. TECH. MECHATRONICS

(Duration: 4 Years)

CURRICULUM

(Applicable for Students admitted from Academic Year 2018-19)

DEPARTMENT OF MECHATRONICS ENGINEERING

SCHOOL OF MECHANICAL SCIENCES

HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE

B.TECH –MECHATRONICS

(165 - CREDIT STRUCTURE)

SEMESTER - I

SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	BS	MEA4101/ ELA4101	Engineering Graphics and Computer aided Design / Professional English and soft skills	1	1	2	3	1	4
2	BS	MAA4101	Matrices and calculus	3	0	2	4	1	5
3	BS	PHA4101/CYA4101	Engineering Physics / Engineering Materials	3	0	0	3	1	3
4	PC	CSA4101/ GEA4102	Problem Solving Using C* / Sustainable Engineering Systems	2	0	2*/ 0	3/2	1	4/3
5	PC	MHB4102/ MHB4101	Introduction to Digital Systems* Engineering and Design	2/3	0	2*/ 0	3	1	3
6	BS	GEA4131	Engineering Immersion Lab	0	0	2	0.5	2	2
7	BS	PHA4131/ CYA4131	Engineering Physics Lab / Materials Chemistry Lab	0	0	2	1	0	2
			Total	11/ 12	1	12/ 10	17.5/ 16.5	7	23/ 22

*Project based Learning

SEMESTER - II

SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	BS	MAA4117	Analytical Mathematics	3	0	2	4	0	5
2	BS	PHA4101/ CYA4101	Engineering Physics / Engineering Materials	3	0	0	3	1	3
3	BS	ELA4101/ MEA4101	Professional English and soft skills /Engineering Graphics and Computer aided Design	1	1	2	3	1	4
4	PC	GEA4102/ CSA4101	Sustainable Engineering Systems /Problem Solving Using C*	2	0	0/ 2*	2/3	1	3/4
5	PC	MHB4101 /MHB4102	Engineering and Design /Introduction to Digital Systems*	2/3	0	0/ 2*	3	1	3
6	PC	MEB4116	Engineering Mechanics	3	1	0	4	1	4
7	PC	MHB4117	Basics of Mechatronics	2	0	2	3	1	3
8	PC	MHB4141	Floor Shop Training	0	0	2	1	2	1
8	BS	PHA4131/ CYA4131	Engineering Physics Lab / Materials Chemistry Lab	0	0	2	1	0	2
9	BS	GEA4131	Engineering Immersion Lab	0	0	2	0.5	2	2

Total	16/17	2	16	24.5/25.5	10	30/31

SEMESTER - III

SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	BS	MAA4201	Partial Differential Equations and Transforms	3	1	0	4	0	5
2	PC	MHB4201	Manufacturing Processes	3	0	0	3	0	3
3	PC	MHB4202	Mechanics of Machines	3	0	2	4	1	5
4	PC	MHB4203	Embedded Systems	3	0	2	4	1	5
5	DE		Department Elective – I	3	0	0	3	0	3
6	NE		Non Department Elective – I	2	0	0	2	0	2
7	PC	MHB4231	Computer Aided Design Lab	0	0	2	1	0	2
8	PC	MHB4232	Manufacturing Processes Lab	0	0	3	1	0	3
9	PC	MHB4233	Design Project-I	0	0	2	1	0	2
Total				**17**	**1**	**11**	**23**	**2**	**30**

SEMESTER - IV

SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	PC	MHB4218	Electrical Machines and Drives	3	0	0	3	1	3
2	PC	GEA4216	Professional ethics and life skills	2	0	0	2	1	2
3	PC	MHB4219	Solid and Fluid Mechanics	3	0	0	3	2	3
4	PC	MHB4220	Statistics and Data Analytics	3	0	2	4	0	5
5	DE		Department Elective-II	3	0	0	3	0	3
6	NE		Non Department Elective–II	2	0	0	2	0	2

7	PC	MHB4242	Electrical Machines and Drives lab	0	0	2	1	0	2
8	PC	MHB4243	Solid and Fluid Mechanics Lab	0	0	3	2	0	3
9	PC	MHB4244	Design Project II	0	0	2	1	0	2
			Total	**16**	**0**	**9**	**21**	**4**	**25**

			SEMESTER - V						
SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	PC	MHB4301	Metrology and Measurements	3	0	2	4	0	5
2	PC	MHB4304	Control Systems	2	1	2	4	2	5
3	PC	MHB4305	Hydraulics and Pneumatics	3	0	0	3	1	3
4	HS	GEA4304	Business Economics	3	0	0	3	1	3
5	DE		Department Elective-III	3	0	0	3	0	3
6	NE		Non Department Elective–III	2	0	0	2	0	2
7	PC	MHB4334	Hydraulics and Pneumatics Lab	0	0	2	1	0	2
8	PC	MHB4335	Virtual Instrumentation Lab	0	1	3	3	2	4
9	PC	MHB4336	Design Project III	0	0	2	1	0	2
			Total	**16**	**2**	**11**	**24**	**6**	**29**

			SEMESTER - VI						
SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	PC	MHB4321	Sensors and Motion Control	3	0	0	3	2	3
2	PC	MHB4322	Design of Mechatronics System	3	0	2	4	3	5
3	PC	MHB4323	CNC Technology	3	0	2	4	3	5
4	PC	MHB4324	Industrial Electronics	3	0	0	3	3	3
5	DE		Department Elective-IV	3	0	0	3	0	3

6	NE		Non Department Elective–IV	2	0	0	2	0	2
8	PC	MHB4345	Sensors and Motion Control Lab	0	0	3	2	0	3
9	PC	MHB4346	Design Project IV	0	0	2	1	0	2
10	PC	MHB4347	Comprehension	1	0	0	1	0	1
Total				**18**	**0**	**9**	**23**	**11**	**27**

SEMESTER - VII

SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	PC	MHB4407	NDT and Condition Monitoring	3	0	0	3	2	3
2	PC	MHB4408	Robotics and Machine Vision	3	1	0	4	3	4
3	PC	MHB4409	Artificial Intelligence for Mechatronics	3	0	2	4	3	5
4	PC	MHB4410	Fundamentals of Signal Processing	3	0	2	4	0	5
5	DE		Department Elective - V	3	0	0	3	0	3
6	NE		Non Department Elective –V	2	0	0	2	0	2
7	PC	MHB4437	Robotics and Machine Vision Lab	0	0	2	1	0	2
8	PC	MHB4438	NDT and Condition Monitoring Lab	0	0	3	2	0	3
9	PC	MHB4439	Design Project V	0	0	2	1	0	2
Total				**17**	**1**	**11**	**24**	**8**	**29**

SEMESTER - VIII

SL. NO	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
1	PC	MHB4448	Project	0	0	24	8	0	24
Total				**0**	**0**	**16**	**8**	**0**	**24**
Total							**165**		

SEM	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
			LIST OF DEPARTMENTAL ELECTIVES WITH GROUPING - SEMESTER WISE						
Elective I									
3	DE	MHC4251	Basics of Robotics	3	0	0	3	1	3
3	DE	MHC4252	Mechatronics System Applications	3	0	0	3	1	3
3	DE	MHC4253	Mobile Robots	3	0	0	3	1	3
Elective II									
4	DE	MHC4266	Industrial Robots	3	0	0	3	1	3
4	DE	MHC4267	Machining Technology	3	0	0	3	1	3
4	DE	MHC4268	Applied Pneumatics For Industrial Automation	3	0	0	3	1	3
4	DE	MHC4269	Product Development	3	0	0	3	1	3
Elective III									
5	DE	MHC4355	Building Automation	3	0	0	3	1	3
5	DE	MHC4356	Electronic Devices And Circuits	3	0	0	3	1	3
5	DE	MHC4357	Industrial Instrumentation	3	0	0	3	1	3
Elective IV									
6	DE	MHC4370	Analog Electronics	3	0	0	3	1	3
6	DE	MHC4371	Operational Research	3	0	0	3	1	3
6	DE	MHC4372	Robotic Operating System	3	0	0	3	1	3
6	DE	MHC4373	Virtual Reality	3	0	0	3	1	3
Elective V									
7	DE	MHC4459	Robotic Process Automation	3	0	0	3	1	3
7	DE	MHC4460	Industrial Engineering	3	0	0	3	1	3

7	DE	MHC4461	Total Quality Management	3	0	0	3	1	3
7	DE	MHC4462	Finite Element Analysis	3	0	0	3	1	3

LIST OF NON DEPARTMENTAL ELECTIVES OFFERED BY MECHATRONICS WITH GROUPING - SEMESTER WISE									
SEM	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
Elective I									
3	NE	MHD4281	Building of Mobile Robots	2	0	0	2	1	2
Elective II									
4	NE	MHD4292	AI in Robotics	2	0	0	2	1	2
4	NE	MHD4293	Robotics & IOT, Sensors for Autonomous Vehicles	2	0	0	2	1	2
Elective III									
5	NE	MHD4382	Machine Vision	2	0	0	2	1	2
Elective IV									
6	NE	MHD4392	Immersive Technologies	1	1	0	2	0	2
6	NE	MHD4393	Design Thinking and Product Development	2	0	0	2	1	2
6	NE	MHD4394	Industry 4.0	2	0	0	2	1	2
Elective IV									
7	NE	MHD4481	Product Prototyping	2	0	0	2	1	2