JAYPEE UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Curriculum for B. Tech. 4 Year Electronics Engineering (VLSI Design and Technology)

FIRST SEMESTER

S. No.	Course Code	Dept.	Title of Course	L	T	P	Total	Credits
1.	MA101	MATH	Engineering Mathematics	3	1	0	4	4
2.	PH101	PHY	Engineering Physics-1	3	1	0	4	4
3.	HS101	HSS	English	2	0	2	3	3
4.	CS101	CSE	Computer Programming	3	1	0	4	4
5.	PH201	PHY	Physics Lab-1	0	0	2	2	1
6.	CS201	CSE	Computer Programming Lab	0	0	4	4	2
7.	ME201	MEC	Workshop Practices	0	0	3	3	1.5
8.	HS001	HSS	Value Added Course (Human Values and Professional Ethics)	2	0	0	2	2 (Audit Qualifying)
			TOTAL				**26**	**19.5**

SECOND SEMESTER

S. No.	Course Code	Dept.	Title of Course	L	T	P	Total	Credits
1.	HS104	HSS	Life Skills and Effective Communication	1	0	2	3	2
2.	MA104	MATH	Discrete Mathematics	3	1	0	4	4
3.	PH102	PHY	Physics-1	3	1	0	4	4
4.	EC101	ECE	Electrical Science	3	1	0	4	4
5.	CS102	CSE	Object Oriented Programming	3	1	0	4	4
6.	PH202	PHY	Physics Lab-2	0	0	2	2	1
7.	EC201	ECE	Electrical Science Lab	0	0	2	2	1
8.	CS202	CSE	Object Oriented Programming lab	0	0	2	2	1
9.	ME203	MEC	Engineering Drawing & Design Lab			3	3	1.5
10.			Value Added Course	2	0	0	2	2 (Audit)
			TOTAL				**28**	**22.5**

THIRD SEMESTER

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits
				L	T	P	Total	
1.	HS103	HSS	Techniques for Decision Making	2	1	0	3	3
2.	CS113	CSE	Data Structures and Algorithms	3	0	0	3	3
3.	EC103	ECE	Signals & Systems	3	1	0	4	4
4.	EC104	ECE	Analog Electronics	3	1	0	4	4
5.	EC105	ECE	Measurement & Instrumentation	3	0	0	3	3
6.	GE101	GE	Value Added Course Environmental Science	2	-	-	2	2(Audit) Qualifying
7.	CS220	CSE	Data Structures and Algorithms Lab	0	0	2	2	1
8.	EC203	ECE	Signals & Systems Lab	0	0	2	2	1
9.	EC204	ECE	Analogue Electronics Lab	0	0	2	2	1
10.	EC205	ECE	Measurement & Instrumentation Lab	0	0	2	2	1
11.			Value Added Course	0	0	2	2	2(Audit)
12.			Value Added Course	0	0	2	2	2(Audit)
13.		ECE	Internship/Summer Training (4 weeks - 160-180 hours)	-	-	-	-	4 (Audit, Optional)
			TOTAL				**31**	**21**

FOURTH SEMESTER

S.No.	Course Code	Dept.	Title of Course	Contact Hours				Credits
				L	T	P	Total	
1.		HSS	HSS Elective – 1	3	0	0	3	3
2.	EC107	ECE	Digital Circuit Design	3	0	0	3	3
3.	EC108	ECE	Analog and Digital Communication	3	1	0	4	4
4.		ECE	Introduction to Micro-fabrication	3	0	0	3	3
5.	EC110	ECE	Control Systems	3	1	0	4	4
6.	EC207	ECE	Digital Circuit Design Lab	0	0	2	2	1
7.	EC208	ECE	Analog and Digital Communication Lab	0	0	2	2	1
8.		ECE	Introduction to Micro-fabrication Lab (Foundry familiarization workshop/MOOC Virtual lab)	0	0	2	2	1
9.	EC209	ECE	Hardware Lab	0	0	2	2	1
			TOTAL				**25**	**21**

FIFTH SEMESTER

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits
				L	T	P	Total	
1.		HSS	HSS Elective-2	2	1	0	3	3
2.	MA106	MATH	Probability and Random Processes	3	1	0	4	4
3.		ECE	Semiconductor Devices and Materials	3	0	0	3	3
4.			Science Elective	3	0	0	3	3
5.	EC111	ECE	Microprocessor and Interfacing	3	0	0	3	3
6.	EC112	ECE	Digital Signal Processing	3	0	0	3	3
7	EC210	ECE	Microprocessor and Interfacing Lab	0	0	2	2	1
8.	EC211	ECE	Digital Signal Processing Lab	0	0	2	2	1
9.	EC212	ECE	Minor Project – 1	0	0	4	4	2
10.		ECE	Internship/Summer Training (4 weeks - 160-180 hours)	-	-	-	-	4 (Audit) Qualifying
			TOTAL				**27**	**23**

SIXTH SEMESTER

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits
				L	T	P	Total	
1.		HSS	HSS Elective-3	3	0	0	3	3
2.	EC113	ECE	Telecommunication Networks	3	0	0	3	3
3.	EC114	ECE	VLSI Design	3	0	0	3	3
4.		ECE	Discipline Elective – 1	3	0	0	3	3
5.		ECE	Discipline Elective – 2	3	0	0	3	3
6.	EC213	ECE	Telecommunication Networks Lab	0	0	2	2	1
7.	EC214	ECE	VLSI Design Lab	0	0	2	2	1
8.	EC215	ECE	Communication Lab-I	0	0	2	2	1
9.	EC216	ECE	Minor Project-2	0	0	4	4	2
10.	HS004	HSS	Value Added Course (Indian Constitution and Traditional Knowledge)	2	0	0	2	2 (Audit) Qualifying
			TOTAL				**27**	**20**

1. All students will undergo Value Added Course; however it will not count for   CGPA calculations and will not be reflected in transcript of those students who fail to qualify.
2. Students will undergo 4 & 6weeks Industrial Training during Summer Vacation after 4th & 6th Semester respectively.

SEVENTH SEMESTER

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits
				L	T	P	Total	
1.		All Branches	Open Elective – 1	3	0	0	3	3
2.		ECE	Discipline Elective – 3	3	0	0	3	3
3.		ECE	Discipline Elective– 4	3	0	0	3	3
4.		ECE	Discipline Elective – 5	3	0	0	3	3
5.	EC217	ECE	Major Project Part-I	0	0	8	8	4
6.		ECE	Internship/Summer Training (6 weeks - 240-270 hours)	-	-	-	-	6 (Audit) Qualifying
7.		HSS	Value Added Course	2	-	-	2	2 (Audit)
			TOTAL				**22**	**16**

EIGHTH SEMESTER

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits
				L	T	P	Total	
1.		Engg. Branch	Open Elective – 2	3	0	0	3	3
2.		ECE	Discipline Elective– 6	3	0	0	3	3
3.		ECE	Discipline Elective – 7	3	0	0	3	3
4.	EC218	ECE	Major Project Part-II	0	0	16	16	8
			TOTAL				**25**	**17**

Total Credits for B. Tech. –160. (Value Added Courses (Audit courses) will not count for CGPA calculations.)

List of Discipline Electives

S. No.	Discipline Elective	
	Course Code	Course Title
1.		Digital Hardware Design
2.		Analog IC Design
3.		Essential of VLSI Testing
4.		Embedded Systems
5.		Modeling and Simulation of Semiconductor Devices
6.		Mixed signal design
7.		Bio Medical Electronics
8.		RF Electronics
9.		Low Power VLSI
10.		Nano Electronics
11.		CAD for VLSI
12.		Introduction to MEMS
13.		Neural Network
14.		Wireless Sensor Networks
15.		Internet Based Automation
16.		FPGA based System Design
17.		Image and Video Processing

S. No.	Science Elective	
	Course Code	Course Title
1.	EC301	Power Science
2.	EC302	Science of Semiconductors
3.	PH302	Nano-science
4.	CH303	Biochemistry

S. No.	Open Elective -1	
	Course Code	**Course Title**
1.	EC330	Sensors and Transducers
2.	EC331	Introduction to Microprocessors and Microcontrollers
	Open Elective -2	
	Course Code	**Course Title**
1.	EC332	Introduction to Neural Network
2.	EC341	Introduction to Robotics

S. No.	Value Added Courses	
	Course Code	**Course Title**
1.	HS001	Value Added Course-1 (Human Values and Professional Ethics)
2.	HS007	Value Added Course-2 (Career Management and Development)
3.	CS002	Value Added Course-3 (Programming in Python)
4.	HS004	Value Added Course-4 (Indian Constitution and Traditional Knowledge)
5.	HSS	Value Added Course-5 (**Choice based**)
	24B19HS791	Legal and Ethical Issues in Business
	24B19HS792	Introduction to Financial Markets
	24B19HS793	Academic Research and Paper Writing
6.	EC001	Fundamentals of Electronic Devices

Minor Specializations

S. No.	Minor Specialization Offered by ECE dept.	Credits	
1	Embedded System	20	
2	Internet of Robotics Things	20	

Minor Specialization-1: Embedded System

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits	Sem.
				L	T	P	Total		
1.	EC333	ECE	Electronic Circuit Design	3	0	0	3	3	III
2.	EC334	ECE	Transducers Engineering	3	0	0	3	3	IV
3.	EC401	ECE	Transducers Engineering Lab	0	0	2	2	1	IV
4.	EC335	ECE	Digital Control System	3	0	0	3	3	V
5.	EC336	ECE	Microcontroller and Embedded System	3	0	0	3	3	VI
6.	EC402	ECE	Microcontroller and Embedded System lab	0	0	2	2	1	VI
7.	EC337	ECE	Embedded Control System	3	0	0	3	3	VII/VIII
8.	EC338	ECE	Real Time Embedded System Design	3	0	0	3	3	VII/VIII
			Total				**22**	**20**	

Minor Specialization-2 offered by ECE dept. with CSE dept. : Internet of Robotics Things for ECE and CSE students)

S. No.	Course Code	Dept.	Title of Course	L	T	P	Total	Credits	Sem.
				Contact Hours				**Credits**	**Sem.**
1.	EC105/ EC335	ECE	Measurement & Instrumentation (for CSE)/ Digital Control System (for ECE)	3	0	0	3	3	V
2.	EC338	ECE	Sensors, Actuators & Signal Processing	3	0	0	3	3	IV
3.		CSE	Statistical Methods and Data Analysis	3	0	0	3	3	III
4.		CSE	Statistical Methods and Data Analysis Lab	0	0	2	2	1	III
5.	EC339	ECE/ CSE	Robotics & Machine Vision	3	0	0	3	3	VII/VIII
6.	EC403	ECE	Robotics Programming Lab	0		2	2	1	VII/VIII
7.		CSE	Internet of Things Lab	0	0	2	2	1	VII/VIII
8.		CSE	Internet of Things Technology and Applications	2	0	0	2	2	VII/VIII
9.		CSE	Machine Learning	3	0	0	3	3	VI
			Total				**23**	**20**	

*Students of ECE will be registered in course of 'Introduction to Artificial Intelligence' as prerequisite of 'Artificial Intelligence and Applications'.

Minor Specialization offered by Mechanical Engg. dept. with ECE dept. (for ECE and MEC students):

Industrial Automation

S. No.	Course Code	Dept.	Title of Course	L	T	P	Total	Credits	Sem.
1	EC334	ECE	Transducers Engineering	3	0	0	3	3	IV
2	EC401	ECE	Transducers Engineering Lab	0	0	2	2	1	IV
3	MEC350	MEC	Robotics	3	0	0	3	3	V
4	EC335/ EC340	ECE	Digital Control System (for ECE students) /Microprocessors based Control System (For MEC students)	3	0	0	3	3	V
5	ME401	MEC	Robotics/CIM Lab	0	0	2	2	1	V
6	ME351	MEC	Industrial Automation	3	0	0	3	3	VI
7	ME352	MEC	Control of Industrial Automation	3	0	0	3	3	VI
8	ME353	MEC	Special Purpose Vehicle	3	0	0	3	3	VII
			Total				**22**	**20**	

Minor Specialization offered by Mechanical Engg. dept. with ECE dept. (for ECE and MEC students):

Mechatronics

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits	Sem.
				L	T	P	Total		
1	EC334	ECE	Transducers Engineering	3	0	0	3	3	IV
2	EC401	ECE	Transducers Engineering Lab	0	0	2	2	1	IV
3	ME354	MEC	Vehicle Dynamics	3	0	0	3	3	V
4	ME355	MEC	Computer Integrated Manufacturing	3	0	0	3	3	V
5	ME402	MEC	CIM Lab	0	0	2	2	1	V
6	ME356	MEC	Control of Mechanical System	3	0	0	3	3	VI
7	EC335	ECE	Micro-controller and Embedded System	3	0	0	3	3	VI
8	ME357	MEC	Automated Guided Vehicles	3	0	0	3	3	VII
			Total				**22**	**20**	

Minor Specialization-1: Human Resource Management (offered by HSS dept.)								
S. No.	Course Code	Dept.	Title of Course	L	T	P	Contact Hours	Credits
1	HS325	HSS	Human Resource Management	3	0	0	3	3
2	HS326	HSS	Team Building and Leadership	3	0	0	3	3
3	HS327	HSS	Performance Management	3	0	0	3	3
4	HS328	HSS	Training & Development	3	0	0	3	3
5	HS329	HSS	Organizational Change	3	0	0	3	3
6	HS330	HSS	Negotiation & Counselling	3	0	0	3	3
7		HSS	Minor Project	0	0	4	4	2
						Total	22	20

Minor Specialization-2: Financial Management (offered by HSS dept.)								
S. No.	Course Code	Dept.	Title of Course	L	T	P	Contact Hours	Credits
1	HS319	HSS	Fundamentals of Accounting	3	0	0	3	3
2	HS320	HSS	Financial Management	3	0	0	3	3
3	HS321	HSS	Financial Modeling	3	0	0	3	3
4	HS322	HSS	Fundamentals of Financial Markets	3	0	0	3	3
5	HS323	HSS	Security Analysis & Investment Management	3	0	0	3	3
6	HS324	HSS	International Financial Management	3	0	0	3	3
7		HSS	Minor Project	0	0	4	4	2
						Total	22	20

Minor Specialization-3: Digital Marketing (offered by HSS dept.)								
S. No.	Course Code	Dept.	Title of Course	L	T	P	Contact Hours	Credits
1	HS307	HSS	Consumer behaviour	3	0	0	3	3
2	HS308	HSS	Ethics, IPR and Cyber laws	3	0	0	3	3
3	HS309	HSS	Digital Marketing research	3	0	0	3	3
4	HS310	HSS	Introduction to Social Media Marketing	3	0	0	3	3
5	HS311	HSS	Introduction to E-commerce	3	0	0	3	3
6	HS312	HSS	Digital Marketing Analytics	3	0	0	3	3
7		HSS	Minor Project	0	0	4	4	2
						Total	22	20

			Minor Specialization-4: Marketing (offered by HSS dept.)					
S. No.	Course Code	Dept.	Title of Course	L	T	P	Contact Hours	Credits
1	HS313	HSS	Consumer behaviour	3	0	0	3	3
2	HS314	HSS	Marketing management	3	0	0	3	3
3	HS315	HSS	Marketing research	3	0	0	3	3
4	HS316	HSS	Services marketing	3	0	0	3	3
5	HS317	HSS	Brand management	3	0	0	3	3
6	HS318	HSS	Sales and distribution management	3	0	0	3	3
7		HSS	Minor Project	0	0	4	4	2
						Total	22	20