

**ACADEMIC AFFAIRS OFFICE  
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

No. Acd./ 1414 /Senate-88

Dated: September 17, 2021

**Head, Department of Electronics & Communication Engineering**

The Senate in its 88<sup>th</sup> meeting held on 03.09.2021 considered and approved the following proposals of Department of Electronics & Communication Engineering regarding M.Tech. (VLSI):

- a) Course structure of the program "M.Tech. (VLSI)" (**Appendix-A**)
- b) The permissible range of credits in a semester to be 04-16 credits.

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**Assistant Registrar (Curriculum)**

**Copy to (through e-mail):-**

1. Chairman Senate & Director
2. All faculty
3. Head of all Departments/ Centres
4. Dean, Academic Affairs
5. ADoAA (IT Systems & Admission)/ (Curriculum)/ (Evaluation)
6. Assistant Registrar (Evaluation)
7. Meeting Section
8. Channel i/ Acad portal/ Academic webpage of iitr.ac.in

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code: **567 M.Tech. (VLSI)**  
 Department: **EC Department of Electronics and Communication Engineering**  
 Year: **I**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>Semester-I (Autumn)</b>														
1.	ECN-572	MOS Device Physics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	ECN-573	Digital VLSI Circuit Design	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	ECN-576	Simulation Lab-1	PCC	2	0	0	3	0	3	-	100	-	-	-
		<b>Total</b>		<b>10</b>										
<b>Semester-II (Spring)</b>														
1.	ECN-581	Analog VLSI Circuit Design	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	ECN-578	Digital System Design	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.		Elective Lab	PEC	2	0	0	3	0	3	-	100	-	-	-
		<b>Total</b>		<b>10</b>										

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 Year: **II**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>Semester-III (Autumn)</b>														
1.	ECN-584	Mixed Signal Circuit Design	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	ECN-700	Seminar	SEM	2	0	0	0	0	3	-	100	-	-	-
3.		Elective 1	PEC	4	-	-	-	-	-	-	-	-	-	-
		<b>Total</b>		<b>10</b>										
<b>Semester-IV (Spring)</b>														
1.		Elective 2	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Elective 3	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Elective Lab	PEC	2	0	0	3	0	3	-	100	-	-	-
		<b>Total</b>		<b>10</b>										

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Program Code: **567 M.Tech. (VLSI)**  
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 Year: **III**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>Semester-I (Autumn)</b>														
1.	ECN-701A	Dissertation Stage-I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		<b>Total</b>		<b>12</b>										
<b>Semester-II (Spring)</b>														
1.	ECN-701B	Dissertation Stage-II (continued from III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		<b>Total</b>		<b>18</b>										

<b>Summary</b>						
Semester	1	2	3	4	5	6
<b>Semester-wise Total Credits</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>12</b>	<b>18</b>
<b>Total Credits</b>	<b>70</b>					

**Program Elective Courses M.Tech. (VLSI)**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	ECN-591	VLSI Physical Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	ECN-571	Semiconductor Device Modeling	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	ECN-586	Device & Circuit Interaction	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	ECN-593	CAD for VLSI	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	ECN-594	VLSI Digital Signal Processing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	ECN-595	VLSI Testing and Testability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	ECN-596	MEMS and NEMS	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	ECN-588	Performance & Reliability of VLSI Circuits	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	ECN-577	VLSI Technology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	ECN-582	Semiconductor Microwave Devices and Applications	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	ECN-583	Optoelectronic Materials and Devices	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	ECN-585	VLSI System Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	ECN-587	Nano Scale Devices	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	ECN-589	Advanced VLSI Interconnects	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
15.	ECN-590	Organic Electronics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	ECN-592	Compound Semiconductor and RF Devices	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

17.	ECN-575	Microelectronics Lab-1	PEC	2	0	0	3	0	3	-	100	-	-	-
18.	ECN-598	Simulation Lab-2	PEC	2	0	0	2	0	-	-	100	-	-	-
19.	ECN-597	Microelectronics Lab-2	PEC	2	0	0	2	0	-	-	100	-	-	-
20.	ECN-525	Hardware Architecture for Deep Learning	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-