

**DEPARTMENT OF PHYSICS  
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX M.Tech. (Solid State Electronic Technology)**  
 Department : **Department of Physics**  
 Year : **I**  
 Model : **2**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
<b>Semester-I (Autumn)</b>									
1.	PHC-501	Numerical Analysis and Computational Techniques	PCC	3	2	0	2	3	0
2.	PHC-503	Fabrication and Characterization Techniques	PCC	3	3	0	0	3	0
3.	PHC-505	Laboratory Work in Solid-State Electronic Materials	PCC	3	0	0	6	0	6
4.	PHC-507	Semiconductor Device Physics	PCC	4	3	1	0	3	0
5.	PHC-509	Science and Technology of Thin Films	PCC	3	3	0	0	3	0
6.		Social Science Course	SSC	2	-	-	-	-	-
		<b>Total</b>		<b>18</b>					
<b>Semester-II (Spring)</b>									
1.		Program Elective-I	PEC	4	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
6.	PHC-700	Seminar	SEM	2	-	-	-	-	-
		<b>Total</b>		<b>21</b>					

**DEPARTMENT OF PHYSICS  
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Program Code : **XXX M.Tech. (Solid State Electronic Technology)**  
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 Model : **2**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
<b>Semester-I (Autumn)</b>									
1.	PHC-691	Internship Social Activity	ISA	3	-	-	-	-	-
2.	PHC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-
		<b>Total</b>		<b>13</b>					
<b>Semester-II (Spring)</b>									
1.	PHC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-
		<b>Total</b>		<b>14</b>					

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	18	21	13	14
<b>Total Credits</b>	<b>66</b>			

M.Tech. (Solid State Electronic Technology)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	PHL-541	Materials for Renewable Energy and Storage	PEC	4	3	1	0	3	0
2.	PHL-542	Analog Integrated Circuit Design	PEC	4	3	1	0	3	0
3.	PHL-543	Digital Signal Processing	PEC	4	3	1	0	3	0
4.	PHL-544	Thin Film Technology	PEC	4	3	1	0	3	0
5.	PHL-545	Nanoscience and Nanotechnology	PEC	4	3	1	0	3	0
6.	PHL-546	Functional Properties of Materials & Devices	PEC	4	3	1	0	3	0
7.	PHL-547	Engineered Materials for Device Application	PEC	4	3	1	0	3	0
8.	PHL-548	Semiconductor Micro-electronic Technology	PEC	4	3	1	0	3	0
9.	PHL-549	Nano-electronics and Photonics	PEC	4	3	1	0	3	0
10.	PHL-550	Solar Photovoltaic and Energy Storage	PEC	4	3	1	0	3	0
11.	PHL-551	Advance Fuel Cell and Battery Technology	PEC	4	3	1	0	3	0
12.	PHL-552	MEMS and NEMS	PEC	4	3	1	0	3	0
13.	PHL-553	Advanced Ceramics and Composites	PEC	4	3	1	0	3	0

**M.Tech. (Solid State Electronic Technology)**

**Science, Technology, and Advanced Research-tools Basket**

<b>Teaching Scheme</b>					<b>Contact Hours/Week</b>			<b>Exam Duration</b>	
<b>S.No.</b>	<b>Subject Code</b>	<b>Course Title</b>	<b>Subject Area</b>	<b>Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Theory</b>	<b>Practical</b>
1.	PHT-501	Advanced Materials for Energy Harvesting and Storage	STAR	3	3	0	0	3	0
2.	PHT-502	Functional Materials	STAR	3	3	0	0	3	0
3.	PHT-503	Fundamentals of Nanoscience and Technology	STAR	3	3	0	0	3	0
4.	PHT-504	Computational Science with Python	STAR	3	2	0	2	3	0
5.	PHT-505	Quantum Simulations	STAR	3	2	0	2	3	0
6.	PHT-506	Superconducting Qubits-based Quantum Computing	STAR	3	3	0	0	3	0