

# National Institute of Technology, Jamshedpur

## Department of Electronics & Communication Engineering

### B.Tech.(Hons.) Course Structure

#### SEMESTER I

Sl. No.	Subject Code	Subject	L	T	P	Credits
1	PH1101	Engineering Physics	3	1	0	4
2	MA1101	Engineering Mathematics-I	3	1	0	4
3	EE1101	Basic Electrical and Electronics Engineering	3	1	0	4
4	CE1101	Environment and Ecology	3	0	0	3
5	MM1101	Material Science	3	0	0	3
6	ME1103	Engineering Graphics	2	0	2	3
7	PH1102	Physics Laboratory	0	0	3	2
8	EE1102	Basic Electrical & Electronics Laboratory	0	0	3	2
9		Yoga/NSS/NCC/Life Skills				
<b>Total</b>			<b>17</b>	<b>3</b>	<b>8</b>	<b>25</b>

#### SEMESTER II

Sl. No.	Subject Code	Subject	L	T	P	Credits
1	CH1201	Engineering Chemistry	3	1	0	4
2	MA1201	Engineering Mathematics-II	3	1	0	4
3	ME1201	Engineering Mechanics	3	1	0	4
4	HS1201	English for Communication	3	1	0	4
5	CS1201	Computer Programming	2	0	2	3
6	ME1202	Engineering Mechanics Laboratory	0	0	3	2
7	CH1202	Engineering Chemistry Laboratory	0	0	3	2
8	MF1201	Workshop Practices	0	0	3	2
9		Yoga/NSS/NCC/Life Skills				
<b>Total</b>			<b>14</b>	<b>4</b>	<b>11</b>	<b>25</b>

### SEMESTER III

Code	Subject	L	T	P	Cr
MA1301	Engineering Mathematics-III	3	1	0	4
EC1301	Signals and Systems	3	0	0	3
EC1302	Electromagnetic Engineering	3	1	0	4
<b>EC1303</b>	<b>Network and Systems</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
EC1304	Solid State Electronics	3	1	0	4
<b>EC1306</b>	<b>Data Structures and Program Design</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
EC1305	Solid State Electronics Lab	0	0	2	2
<b>EC1307</b>	<b>Data Structures and Program Design Lab</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>
	<b>Total</b>	<b>18</b>	<b>4</b>	<b>4</b>	<b>26</b>

### SEMESTER IV

Code	Subject	L	T	P	Cr
EC1401	Digital Circuits & Systems	3	1	0	4
EC1403	Antennas and Wave Propagation	3	1	0	4
EC1404	Analog Communication	3	1	0	4
EC1406	Analog Electronics	3	1	0	4
<b>EC1408</b>	<b>Control Systems</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
EC1402	Digital Circuits & Systems Lab	0	0	2	2
EC1405	Analog Communication Lab	0	0	2	2
EC1407	Analog Electronics Lab	0	0	2	2
	<b>Total</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>25</b>

## SEMESTER V

Code	Subject	L	T	P	Cr
EC1501	VLSI Design	3	1	0	4
EC1503	Digital Communication	3	1	0	4
EC1505	Electronic Measurements and Instrumentation	3	0	0	3
EC1506	Microprocessor & Microcontroller	3	1	0	4
<b>HS1501</b>	<b>Intellectual Property Right</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
EC1502	VLSI Design Lab	0	0	2	2
EC1504	Digital Communication Lab	0	0	2	2
EC1507	Microprocessor & Microcontroller Lab	0	0	2	2
	<b>Total</b>	<b>15</b>	<b>3</b>	<b>6</b>	<b>24</b>

## SEMESTER VI

Code	Subject	L	T	P	Cr
EC1601	Digital Signal Processing	3	1	0	4
EC1603	Industrial Electronics & Drives	3	1	0	4
EC1604	RF & Microwave Engineering	3	1	0	4
EC1606	Embedded Systems	3	1	0	4
EC16XX	Elective-1	3	0	0	3
<b>HS1601</b>	<b>Soft Skills</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
EC1602	Digital Signal Processing Lab	0	0	2	2
EC1605	RF & Microwave Engineering Lab	0	0	2	2
	<b>Total</b>	<b>18</b>	<b>4</b>	<b>4</b>	<b>26</b>

### Professional Elective Courses (Elective-1):

1. VLSI Technology (EC1607)
2. Information Theory and Coding (EC1608)
3. Advanced Logic Design (EC1609)
4. Image Processing (EC1610)
5. Mobile Communication (EC1611)
6. Artificial Intelligence (EC1612)

## SEMESTER VII

Code	Subject	L	T	P	Cr
EC1701	Mobile & Wireless Communications	3	1	0	4
EC17XX	Elective-2	3	0	0	3
EC17XX	Elective-3	3	0	0	3
<b>HS1701</b>	<b>Principles of Management</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
EC1702	Industrial Training Viva-Voce	0	0	0	2
EC1703	Minor Project	0	0	8	4
	<b>Total</b>	<b>12</b>	<b>1</b>	<b>8</b>	<b>19</b>

### Professional Elective Courses (Elective-2 & 3):

1. CMOS VLSI Design (EC1704)
2. Low Power VLSI Design (EC1705)
3. FPGA Design (EC1706)
4. Software for Embedded Systems (EC1707)
5. Real Time Operating Systems (EC1708)
6. Wireless Sensor Networks (EC1709)
7. Soft Computing (EC1710)
8. Broadband Networks (EC1711)
9. Electronic Design automation Tools (EC1712)
10. Modern Radar Systems (EC1713)

## SEMESTER VIII

Code	Subject	L	T	P	Cr
EC1801	Optical Communications	3	1	0	4
EC18XX	Open Elective	3	0	0	3
EC18XX	Elective-4	3	0	0	3
EC1802	Comprehensive Viva Voce	0	0	2	2
EC1803	Major Project	0	0	8	8
	<b>Total</b>	<b>9</b>	<b>1</b>	<b>12</b>	<b>20</b>

**Grand Total 190**

### **Professional Elective Courses (Elective-4):**

1. Satellite Communications (EC1804)
2. Network Planning & Management (EC1805)
3. Biomedical Instrumentation (EC1806)
4. Network Security (EC1807)
5. Applied Photonics (EC1808)
6. Adaptive Signal Processing (EC1809)
7. Statistical Signal Processing (EC1810)

### **Open Elective:**

1. Linguistic Languages (German/French/Sanskrit) (HS1828)
2. Professional Ethics for Engineering (CE1829)
3. Disaster Management, Mitigation and Preparedness Program (CE1830)
4. Energy (ME1831)
5. Entrepreneurship (HS1801)