Indian Institute of Information Technology Kalyani

Autonomous institution under MoE, Govt. Of India & Department of Information Technology & Electronics, Govt. of West Bengal, WEBEL IT Park Campus, West Bengal 741235, India

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Course Structure and Syllabus

for

4 Years B. Tech.

in

Electronics and Communication Engineering

Indian Institute of Information Technology Kalyani

WEBEL IT Park Campus

West Bengal 741235, India

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Course Structure

1st Year (Semester: I)							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
Theoretical Papers							
1	MAC101	Mathematics - I (Linear Algebra)	3	1	0	4	4
2	PHC101	Physics	3	1	0	4	4
3	ECC101	Basic Electrical and Electronics Engineering	3	0	0	3	3
4	CSC101	Programming -I (C Language)	3	0	0	3	3
5	HUC101	English for Communication	3	0	0	3	3
6	HUC102	Humanities - I (Values & Ethics in Profession)	3	0	0	3	3
Sessional Papers							
7	CSC111	Programming-I (C Language) Laboratory	0	0	3	3	2
8	ECC111	Basic Electronics Engineering Laboratory	0	0	3	3	2
Total			**18**	**2**	**6**	**26**	**24**

1st Year (Semester: II)							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
Theoretical Papers							
1	MAC201	Mathematics-II (Probability and Statistics)	3	1	0	4	4
2	PHC201	Physics II	3	1	0	4	4
3	ECC201	Digital Logic Design and Circuit	3	0	0	3	3
4	CSC201	Data Structures and Algorithms	3	1	0	4	4
5	HUC201	Humanities - II (Economics)	3	0	0	3	3
Sessional Papers							
6	ECC211	Digital Logic Design and Circuit Laboratory	0	0	3	3	2
7	CSC211	Data Structures and Algorithms Laboratory	0	0	3	3	2
Total			**15**	**3**	**6**	**24**	**22**

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2ndYear (Semester: III)							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
Theoretical Papers							
1	MAC301	Mathematics-III (Calculus and Differential Equations)	3	1	0	4	4
2	ECC301	Signals and Systems	3	1	0	4	4
3	ECC302	Semiconductor Devices	3	1	0	4	4
4	CSC301	Computer Organization and Architecture	3	0	0	3	3
5	HUC301	Humanities - III (Psychology)	3	0	0	3	3
Sessional Papers							
6	ECC312	Semiconductor Devices Laboratory	0	0	3	3	2
7	CSC311	Computer Organization and Architecture Laboratory	0	0	3	3	2
Total			**15**	**3**	**6**	**24**	**22**

2ndYear (Semester: IV)							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
Theoretical Papers							
1	ECC401	Circuit Theory	3	1	0	4	4
2	ECC402	Analog Electronic Circuits	3	1	0	4	4
3	ECC403	Electromagnetic Engineering	3	1	0	4	4
4	ECC404	Statistical Signal Processing	3	1	0	4	4
5	HUC401	IPR Law: Concepts and Applications	3	0	0	3	3
Sessional Papers							
6	ECC411	Circuit Theory Laboratory	0	0	3	3	2
7	ECC412	Analog Electronic Circuits Laboratory	0	0	3	3	2
Total			**15**	**4**	**6**	**25**	**23**

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3rd Year (Semester: V)

Sl No.	Code No.	Subject	L	T	P	Total	Credits
			Contact Periods/Week				

Sl No.	Code No.	Subject	L	T	P	Total	Credits
Theoretical Papers							
1	ECC501	Communication - I	3	1	0	4	4
2	EEC501	Control System Engineering	3	1	0	4	4
3	ECC502	Microprocessor and Microcontroller Systems	3	0	0	3	3
4	HUC501	Humanities - IV (Organizational Behaviour)	3	0	0	3	3
Sessional Papers							
5	ECC511	Communication - I Laboratory	0	0	3	3	2
6	ECC512	Microprocessor and Microcontroller Systems Laboratory	0	0	3	3	2
7	HUC511	Soft Skill Development	0	0	3	3	2
8	ECC591	Project - I (A)	0	0	5	5	3
Total			**12**	**2**	**14**	**28**	**23**

3rd Year (Semester: VI)

Sl No.	Code No.	Subject	L	T	P	Total	Credits
Theoretical Papers							
1	ECC601	Communication- II	3	1	0	4	4
2	ECC602	Digital Signal Processing	3	0	0	3	3
3	CSC601	Computer Networks	3	1	0	4	4
4	CSC602	Machine Learning	3	0	0	3	3
Sessional Papers							
5	ECC611	Communication - II Laboratory	0	0	3	3	2
6	ECC612	Digital Signal Processing Laboratory	0	0	3	3	2
7	CSC611	Computer Networks Laboratory	0	0	3	3	2
8	ECC691	Project - I (B)	0	0	5	5	3
Total			**12**	**2**	**14**	**28**	**23**

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<table>
<tr><th colspan="9">4thYear (Semester: VII)</th></tr>
<tr><th rowspan="2">Sl No.</th><th rowspan="2">Code No.</th><th rowspan="2">Subject</th><th colspan="4">Contact Periods/Week</th><th rowspan="2">Credits</th></tr>
<tr><th>L</th><th>T</th><th>P</th><th>Total</th></tr>
<tr><td colspan="8">Theoretical Papers</td></tr>
<tr><td>1</td><td>ECC701</td><td>VLSI Engineering</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>2</td><td>ECC702</td><td>RF and Microwave Engineering</td><td>3</td><td>1</td><td>0</td><td>4</td><td>4</td></tr>
<tr><td>3</td><td>ECE/CSE7XX</td><td>Elective - I</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>4</td><td>ECE/CSE7XX</td><td>Elective - II</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td colspan="8">Sessional Papers</td></tr>
<tr><td>5</td><td>ECC711</td><td>VLSI Engineering Laboratory</td><td>0</td><td>0</td><td>3</td><td>3</td><td>2</td></tr>
<tr><td>6</td><td>ECC712</td><td>RF and Microwave Engineering Laboratory</td><td>0</td><td>0</td><td>3</td><td>3</td><td>2</td></tr>
<tr><td>7</td><td>ECC791</td><td>Project - II (A)</td><td>0</td><td>0</td><td>15</td><td>15</td><td>10</td></tr>
<tr><td colspan="3">Total</td><td>12</td><td>1</td><td>21</td><td>34</td><td>27</td></tr>
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<table>
<tr><th colspan="9">4thYear (Semester: VIII)</th></tr>
<tr><th rowspan="2">Sl No.</th><th rowspan="2">Code No.</th><th rowspan="2">Subject</th><th colspan="4">Contact Periods/Week</th><th rowspan="2">Credits</th></tr>
<tr><th>L</th><th>T</th><th>P</th><th>Total</th></tr>
<tr><td colspan="8">Theoretical Papers</td></tr>
<tr><td>1</td><td>ECE/CSE8XX</td><td>Elective - III</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>2</td><td>ECE/CSE8XX</td><td>Elective - IV</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>3</td><td>ECE/CSE8XX</td><td>Elective - V</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td colspan="8">Sessional Papers</td></tr>
<tr><td>4</td><td>ECC891</td><td>Project - II (B)</td><td>0</td><td>0</td><td>15</td><td>15</td><td>10</td></tr>
<tr><td>5</td><td>ECC892</td><td>Comprehensive Viva</td><td>0</td><td>0</td><td>0</td><td>0</td><td>3</td></tr>
<tr><td colspan="3">Total</td><td>9</td><td>0</td><td>15</td><td>24</td><td>22</td></tr>
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Total Program Credit	(24+22+22+23+23+23+27+22)	**186**

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List of Elective Subjects

Sl. No.	Semester	Course Name	Course code	L-T-P	Credit
		CSE			
1		Logic & Reasoning	CSE721	3-0-0	3
2		Data Analytics & Optimization Techniques	CSE722	3-0-0	3
3		Ad-Hoc and Sensor Networks	CSE723	3-0-0	3
4		Mobile Computing	CSE724	3-0-0	3
5		Cyber Law and Security	CSE725	3-0-0	3
6		Computational Number Theory	CSE726	3-0-0	3
7	**Autumn**	Computational Complexity	CSE727	3-0-0	3
8		Computer Graphics and Multimedia	CSE728	3-0-0	3
9		Computational Geometry	CSE729	3-0-0	3
10		Computer Vision and Image Understanding	CSE730	3-0-0	3
11		Fuzzy Logic and Applications	CSE731	3-0-0	3
12		Mathematical Methods	CSE732	3-0-0	3
13		Neural Networks and Deep Learning	CSE733	3-0-0	3

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14		Data Communications	CSE734	3-0-0	3
15		Digital Signal Processing	CSE735	3-0-0	3
		ECE			
1		Optical Communication	ECE721	3-0-0	3
2		Remote Sensing and GIS	ECE722	3-0-0	3
3		Modern Radar Systems	ECE723	3-0-0	3
4		Satellite Communication Systems	ECE724	3-0-0	3
5		Mixed-Signal and RF Design	ECE725	3-0-0	3
6		Principle of Nano-electronics and devices	ECE726	3-0-0	3
7		VLSI Technology	ECE727	3-0-0	3
8		Embedded System Design	ECE728	3-0-0	3
9		Fundamentals of RISC-V Processor Architecture and Design	ECE729	3-0-0	3
10		Antenna Engineering	ECE730	3-0-0	3
11		Wireless Communications	ECE731	3-0-0	3
		CSE			
1		Data Mining	CSE821	3-0-0	3

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2		Speech and Natural Language Processing	CSE822	3-0-0	3
3		Soft Computing	CSE823	3-0-0	3
4		Big Data Analytics	CSE824	3-0-0	3
5		Coding Theory	CSE825	3-0-0	3
6		Distributed Operating Systems	CSE826	3-0-0	3
7		Distributed Database Management System	CSE827	3-0-0	3
8		Advanced Computer Architecture	CSE828	3-0-0	3
9		Fault Tolerant Computing	CSE829	3-0-0	3
10	**Spring**	Real Time Systems	CSE830	3-0-0	3
11		Robotics: Machines and Control	CSE831	3-0-0	3
12		Internet of Things	CSE832	3-0-0	3
13		Blockchain Technology	CSE833	3-0-0	3
14		Information Theory and Coding	CSE834	3-0-0	3
15		Advanced Cryptography	CSE835	3-0-0	3
16		Digital and Cyber Forensics	CSE836	3-0-0	3
17		Cyber Physical Systems	CSE837	3-0-0	3
18		Cloud Computing	CSE838	3-0-0	3

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19		Parallel and Distributed Computing	CSE839	3-0-0	3
20		Quantum Computing	CSE840	3-0-0	3
21		Quantum AI	CSE841	3-0-0	3
22		Graph Theory and Applications	CSE842	3-0-0	3
23		Operation Research	CSE843	3-0-0	3
		ECE			
1		Multiple Input Multiple Output System	ECE821	3-0-0	3
2		Sensors and Instrumentation	ECE822	3-0-0	3
3		Adaptive Systems and Signal Processing	ECE823	3-0-0	3
4		CAD for VLSI	ECE824	3-0-0	3
5		Low power circuits and systems	ECE825	3-0-0	3
6		RF and Microwave Networks	ECE826	3-0-0	3
7		MEMs and Applications	ECE827	3-0-0	3
8		Biomedical System Engineering and Automation	ECE828	3-0-0	3
9		5G and Wireless Technology	ECE829	3-0-0	3
10		Integrated Nano photonics	ECE830	3-0-0	3

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11		Mobile Communication and Fading	ECE831	3-0-0	3
12		Fiber Optics, Components and Devices	ECE832	3-0-0	3
13		Signal Theory	ECE833	3-0-0	3
14		RF CMOS Circuits	ECE834	3-0-0	3
15		CAD for VLSI	ECE835	3-0-0	3