

**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**

**Computer Science and Engineering**



**Indian Institute of Information Technology Kalyani**

**WEBEL IT Park Campus**

**West Bengal 741235, India**

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## Course Structure

1 <sup>st</sup> Year (Semester: I)							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
<b>Theoretical Papers</b>							
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
<b>Sessional Papers</b>							
7	CSC111	Programming-I (C Language) Laboratory	0	0	3	3	2
8	ECC111	Basic Electronics Engineering Laboratory	0	0	3	3	2
<b>Total</b>			<b>18</b>	<b>2</b>	<b>6</b>	<b>26</b>	<b>24</b>

1 <sup>st</sup> Year (Semester: II)							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
<b>Theoretical Papers</b>							
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
<b>Sessional Papers</b>							
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
<b>Total</b>			<b>15</b>	<b>3</b>	<b>6</b>	<b>24</b>	<b>22</b>

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<b>2<sup>nd</sup> Year (Semester: III)</b>							
Sl No.	Code No.	Subject	Contact Periods/Week				Credit
			L	T	P	Total	
<b>Theoretical Papers</b>							
1	MAC301	Mathematics - III (Calculus and Differential Equations)	3	1	0	4	4
2	CSC301	Computer Organization and Architecture	3	0	0	3	3
3	CSC302	Algorithms - I	3	1	0	4	4
4	CSC303	Discrete Mathematics	3	1	0	4	4
5	HUC301	Humanities - III (Psychology)	3	0	0	3	3
<b>Sessional Papers</b>							
6	CSC311	Computer Organization and Architecture Laboratory	0	0	3	3	2
7	CSC312	Algorithms - I Laboratory	0	0	3	3	2
8	CSC313	Programming - II Laboratory (Python)	1	0	2	3	2
<b>Total</b>			<b>16</b>	<b>3</b>	<b>8</b>	<b>27</b>	
						<b>Total Credits</b>	<b>24</b>

<b>2<sup>nd</sup> Year (Semester: IV)</b>							
Sl No.	Code No.	Subject	Contact Periods/Week				Credit
			L	T	P	Total	
<b>Theoretical Papers</b>							
1	MAC401	Mathematics - IV (Numerical Analysis and Computing)	3	1	0	4	4
2	CSC401	Operating Systems	3	1	0	4	4
3	CSC402	Formal Languages and Automata Theory	3	1	0	4	4
4	CSC403	Object Oriented Programming (JAVA)	3	0	0	3	3
5	HUC404	IPR Law: Concepts and Applications	3	0	0	3	3
<b>Sessional Papers</b>							
6	CSC411	Operating Systems Laboratory	0	0	3	3	2
7	CSC412	Numerical Analysis and Computing Laboratory (R/Sci Lab)	0	0	3	3	2
8	CSC413	Programming- III Laboratory (JAVA)	0	0	3	3	2
<b>Total</b>			<b>15</b>	<b>3</b>	<b>9</b>	<b>27</b>	
						<b>Total Credits</b>	<b>24</b>

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<b>3<sup>rd</sup> Year (Semester: V)</b>							
Sl No.	Code No.	Subject	Contact Periods/Week				Credit
			L	T	P	Total	
<b>Theoretical Papers</b>							
1	CSC501	Compiler Design	3	1	0	4	4
2	CSC502	Artificial Intelligence	3	1	0	4	4
3	ECC502	Microprocessor and Microcontroller System	3	0	0	3	3
4	HUC501	Humanities - IV (Organizational Behaviour)	3	0	0	3	3
<b>Sessional Papers</b>							
5	CSC511	Compiler Design Laboratory	0	0	3	3	2
6	ECC512	Microprocessor and Microcontroller System Laboratory	0	0	3	3	2
7	HUC511	Soft Skill Development	0	0	3	3	2
8	CSC591	Project - I (A)	0	0	5	5	3
<b>Total</b>			<b>12</b>	<b>2</b>	<b>14</b>	<b>28</b>	
						<b>Total Credits</b>	<b>23</b>

<b>3<sup>rd</sup> Year (Semester: VI)</b>							
Sl No.	Code No.	Subject	Contact Periods/Week				Credits
			L	T	P	Total	
<b>Theoretical Papers</b>							
1	CSC601	Computer Networks	3	1	0	4	4
2	CSC602	Machine Learning	3	0	0	3	3
3	CSC603	Database Management System	3	1	0	4	4
4	CSC604	Cryptography and Network Security	3	0	0	3	3
<b>Sessional Papers</b>							
5	CSC611	Computer Networks Laboratory	0	0	3	3	2
6	CSC612	Machine Learning Laboratory	0	0	3	3	2
7	CSC613	Database Management System Laboratory	0	0	3	3	2
8	CSC691	Project - I (B)	0	0	5	5	3
<b>Total</b>			<b>12</b>	<b>2</b>	<b>14</b>	<b>28</b>	
						<b>Total Credits</b>	<b>23</b>

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<b>4<sup>th</sup> Year (Semester: VII)</b>							
Sl No.	Code No.	Subject	Contact Periods/week				Credit
			L	T	P	Total	
<b>Theoretical Papers</b>							
1	CSC701	Algorithms - II	3	0	0	3	3
2	CSC702	Software Engineering	3	0	0	3	3
3	CSE7XX	Elective - I	3	0	0	3	3
4	CSE7XX	Elective - II	3	0	0	3	3
<b>Sessional Papers</b>							
5	CSC711	Algorithms - II Laboratory	0	0	3	3	2
6	CSC791	Project - II (A)	0	0	15	15	10
<b>Total</b>			<b>12</b>	<b>0</b>	<b>18</b>	<b>30</b>	
						<b>Total Credits</b>	<b>24</b>

<b>4<sup>th</sup> Year (Semester: VIII)</b>							
<b>Theoretical Papers</b>							Credits
Sl No.	Code No.	Subject	Contact Periods/Week				
			L	T	P	Total	
1	CSE8XX	Elective - III	3	0	0	3	3
2	CSE8XX	Elective - IV	3	0	0	3	3
3	CSE8XX	Elective - V	3	0	0	3	3
<b>Sessional Papers</b>							
4	CSC891	Project - II (B)	0	0	15	15	10
5	CSC892	Comprehensive Viva	0	0	0	0	3
<b>Total</b>			<b>9</b>	<b>0</b>	<b>15</b>	<b>24</b>	
						<b>Total Credits</b>	<b>22</b>

<b>Total Program Credit</b>	<b>24+22+24+24+23+23+24+22</b>	<b>186</b>
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## List of Elective Subjects

Sl. No.	Semester	Course Name	Course code	L-T-P	Credit
		<b>CSE</b>			
1	<b>Autumn</b>	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		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
14		Data Communications	CSE734	3-0-0	3
15		Digital Signal Processing	CSE735	3-0-0	3
		<b>ECE</b>			
1	<b>Autumn</b>	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		
		<b>CSE</b>			
1	<b>Spring</b>	Data Mining	CSE821	3-0-0	3
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		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

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17		Cyber Physical Systems	CSE837	3-0-0	3
18		Cloud Computing	CSE838	3-0-0	3
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
		<b>ECE</b>			
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		Satellite Communication Systems	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
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