

## **Course Structure**

### **BTech. in Computer Science and Engineering**

**(For Batch 2023 Onward)**

**ABV-Indian Institute of Information Technology & Management,  
Gwalior**

## 4 year (8 semester) B.Tech. in Computer Science and Engineering

**(Total credits: 171)**

SEMESTER -1	Sl no	Course Code	Subjects	Credits	L-T-P
	1	EE101	Fundamentals of Electrical and Electronics	4	3-0-2
	2	PH101	Engineering Physics	4	3-0-2
	3	MA101	Engineering Mathematics	4	3-1-0
	4	EE102	Engineering Design Principles	3	2-0-2
	5	CS101	Principles of Computer Programming	4	3-0-2
	6	HS101	Freshman Skills	2	2-0-0
	7	HS102	Sports and Physical Education	2	0-1-2
			<b>Total</b>	<b>23 Credits</b>	

SEMESTER -2	Sl no	Course Code	Subjects	Credits	L-T-P
	1	EE103	Digital Electronics	4	3-0-2
	2	MA102	Probability and Statistics	4	3-1-0
	3	CS102	Data Structures	4	3-0-2
	4	EE104	Hardware Workshop	3	1-0-4
	5	CS103	Object Oriented Programming	4	3-0-2
	6	HS103	Ecology and Environment Sciences	2	2-0-0
	7	CS104	Mobile Application Technologies	2	0-1-2
			<b>Total</b>	<b>23 credits</b>	
	MO-1 (Optional)			2/3-0-0	

EXIT AFTER YEAR - 1

Certificate in Engineering Sciences (46 credits)

SEMESTER -3	Sl no	Course Code	Subjects	Credits	L-T-P
	1	HS201	Indian Culture, Ethics and Moral Values	2	2-0-0
	2	CS201	Discrete Structures	4	3-1-0
	3	CS202	Computer Organization and Architecture	4	3-0-2
	4	CS203	Design and Analysis of Algorithms	4	3-0-2
	5	CS204	Database Systems	4	3-0-2
	6	CS205	Paradigms of Programming Languages	4	3-0-2
			<b>Total</b>	<b>22 credits</b>	

SEMESTER -4	Sl no	Course Code	Subjects	Credits	L-T-P
	1	HS202	Entrepreneurship and Innovation	2	2-0-0
	2	CS206	Theory of Computation	3	3-0-0
	3	CS207	Operating Systems	4	3-0-2
	4	CS208	Computer Networks	4	3-0-2
	5	CS209	Mathematical Foundations of Computing	4	3-1-0
	6	CS210	Software Engineering	4	3-0-2
			<b>Total</b>	<b>21 credits</b>	
	MO-2 (Optional)			2/3-0-0	

EXIT AFTER YEAR - 2

Diploma in Computer Science and Engineering (89 credits)

SEMESTER -5	Sl no	Course Code	Subjects	Credits	L-T-P
	1	MS301	Business Economics	3	3-0-0
	2	CS0XX	Department Elective-1	3	3-0-0
	3	EE303	Microprocessor and Interfacing	4	3-0-2
	4	CS301	Compiler Design	4	3-0-2
	5	CS302	Computer Graphics	4	3-0-2
	6	CS303	Trustworthy Artificial Intelligence	4	3-0-2
			<b>Total</b>	<b>22 credits</b>	

SEMESTER -6	Sl no	Course Code	Subjects	Credits	L-T-P
	1	ENXXX	Art of Engineering Research	2	2-0-0
	2		Multidisciplinary/Open Elective- 1/MOOC 1	3	3-0-0
	3	CS0XX	Department Elective-2	3	3-0-0
	4	CS305	Optimization Techniques	4	3-1-0
	5	CS306	Machine Learning	4	3-0-2
	6	CS307	Information Security Systems	4	3-0-2
			<b>Total</b>	<b>20 credits</b>	

Colloquium of 3 credits in summer semester (MOOC, NPTEL etc. in lieu of colloquium)

EXIT AFTER YEAR - 3

**BSc in Computer Science and Engineering (131 credits)**

SEMESTER -7	Sl no	Course Code	Subjects	Credits	L-T-P
	1		Multidisciplinary/Open Elective- 2/MOOC 2	3	3-0-0
	2	CS0XX	Department Elective -3	3	3-0-0
	3	CS401	Natural Language Processing	4	3-0-2
	4	CS402	Digital Image Processing	4	3-0-2
	5	CS403	Cloud Computing	4	3-0-2
	6	CS404	Big Data Analytics	4	3-0-2
	7	CS498	Colloquium (Based on industrial training)/MOOC	3	0-0-6
			<b>Total</b>	<b>25 credits</b>	

SEMESTER -8	Sl no	Course Code	Subjects	Credits	L-T-P
	1	CS499	BTech Project/Internship	12	0-0-24
	2		Multidisciplinary/Open Elective- 3/MOOC 3	3	3-0-0
			<b>Total</b>	<b>15 credits</b>	

FINAL EXIT AFTER YEAR - 4

**BTech. In Computer Science and Engineering (171 credits)**

### Minor in CSE (23 credits)

SN	Subject	CODE	L-T-P	Credits
1	Design and Analysis of Algorithms	CS203	3-0-2	4
2	Database Systems	CS204	3-0-2	4
3	Operating Systems	CS207	3-0-2	4
4	Computer Networks	CS208	3-0-2	4
5	Software, System Analysis and Design	CS0XX	3-0-2	4
6	CSE Elective Course	CS0XX	3-0-0	3

#### **NOTE:**

A candidate from CSE can receive a Minor Degree in EEE/Mathematics & Scientific Computing if he/she earns the prescribed credits (Over and above) the credits prescribed by the respective major programme.

A Minor in Computer Science is open to student(s) from other discipline subject to successful completion of the above credits with a minimum of 6 CGPA. A student can opt for the courses depending on the convenience. For example: CS207 and CS210 are offered in 4<sup>th</sup> semester. A student can opt for these courses along with his regular courses in 4<sup>th</sup> semester OR he can take one of the two courses in 4<sup>th</sup> semester and the other in his 6<sup>th</sup> semester. This reduces the credit load in a particular semester. In addition, if a given course is floated in summer semester, the student can also opt for the same in summer semester.

#### **B.Tech (CSE) Department Elective Courses**

SN	Subject	Code	L-T-P	Credits
1	Graph Theory	CS001	3-0-0	3
2	Software, System Analysis and Design	CS002	3-0-2	4
3	Digital Signal Processing	CS003	3-0-0	3
4	Data Analytics and Visualisation	CS004	3-0-0	3
5	Cryptography and Network Security	CS005	3-0-0	3
6	Control System Engineering	CS006	3-0-0	3
7	System Simulation and Modeling	CS007	3-0-0	3
8	IoT Protocols	CS008	3-0-0	3
9	Game Programming	CS009	3-0-0	3
10	Formal languages and Automata	CS010	3-0-0	3
11	Advanced Network Technologies	CS011	3-0-0	3
12	Empirical Techniques in Software Engineering	CS012	3-0-0	3
13	Digital Water Marking and Steganalysis	CS013	3-0-0	3
14	Deep Learning	CS014	3-0-0	3
15	Blockchain Technology	CS015	3-0-0	3
16	Introduction to Robotics	CS016	3-0-0	3
17	Stochastic Processes and Queuing Theory	CS017	3-0-0	3
18	Advanced Competitive Programming	CS018	3-0-0	3
19	Network Programming	CS019	3-0-0	3
20	Combinatorial Mathematics	CS020	3-0-0	3
21	Network Design and Optimization	CS021	3-0-0	3
22	Software reliability	CS022	3-0-0	3
23	Computer Vision	CS023	3-0-0	3
24	Recommender Systems	CS024	3-0-0	3
25	Modern Cryptography	CS025	3-0-0	3
26	Robot Motion Planning	CS026	3-0-0	3
27	Nature Inspired Computing	CS027	3-0-0	3
28	Game Theory and Applications	CS028	3-0-0	3
29	Human – Computer Interaction	CS029	3-0-0	3
30	Randomized Algorithms	CS030	3-0-0	3