B. TECH. COURSE STRUCTURE 2022

INFORMATION TECHNOLOGY

Semester I	**Semester II**	**Semester III**	**Semester IV**	**Semester V**	**Semester VI**	**Semester VII**	**Semester VIII**
Computational Thinking through Programming (4 credits (3L + 0T +1P))	Data Structures (4 credits (3L + 0T +1P))	Software Engineering (4 credits (3L + 0T +1P))	Compiler Design (3 credits (3L + 0T + 0P))	Foundations of Cryptography (3 credits (3L + 0T + 0P))	Techno-Entrepreneurship (4 credits (4L + 0T + 0P))	Elective III (4 credits)	Major Project (20 credits)
Database Management System (4 credits (3L + 0T + 1P))	Object Oriented Programming & System Design (4 credits (3L + 0T +1P))	Theory of Automata (3 credits (3L + 0T + 0P))	Mathematics for CS I (Discrete Mathematics) (3 credits (3L + 0T + 0P))	Cloud Computing (3 credits (3L + 0T + 0P))	Elective II (4 credits)	Elective IV (4 credits)	
System Programming & Scripting (4 credits (3L + 0T + 1P))	Computer Organization & Architecture (4 credits (4L + 0T + 0P))	Data Communications (3 credits (3L + 0T + 0P))	Operating System (4 credits (3L + 0T + 1P))	Computer Graphics (4 credits (3L + 0T + 1P))	Mini Project-II (6 credits)	Professional Ethics (2 credits (2L + 0T + 0P)) / Advanced Competitive Coding (2 credits (0L + 0T + 2P))	
Web Design & Application Development-I (4 credits (3L + 0T + 1P))	Web Design & Application Development-II (4 credits (3L + 0T + 1P))	Probability and Statistics for CS (3 credits (3L + 0T + 0P))	Computer Networks (4 credits (3L + 0T + 1P))	Soft Computing (4 credits (3L + 0T + 1P))	Industrial Training/Internship (6 credits)	Mini Project-III (10 credits)	
Professional Communication - I (3 credits (3L + 0T + 0P))	Professional Communication - II (3 credits (3L + 0T + 0P))	Design Analysis and Algorithm (4 credits (3L + 0T + 1P))	Advanced Programming Language (4 credits (3L + 0T + 1P))	Elective I (4 credits)			
Sports - I (1 credits)	Sports - II (1 credits)	Competitive Coding - I (2 credits (0L + 0T + 2P))	Competitive Coding - II (2 credits (0L + 0T + 2P))	Competitive Coding - II (2 credits (0L + 0T + 2P))			
		Sports - III (1 credits)					
20	20	20	20	20	20	20	20

COMPUTER SCIENCE

Semester I	**Semester II**	**Semester III**	**Semester IV**	**Semester V**	**Semester VI**	**Semester VII**	**Semester VIII**
Computational Thinking through Programming (4 credits (3L + 0T +1P))	Data Structures (4 credits (3L + 0T +1P))	Software Engineering (4 credits (3L + 0T +1P))	Compiler Design (3 credits (3L + 0T + 0P))	Foundations of Cryptography (3 credits (3L + 0T + 0P))	Techno-Entrepreneurship (4 credits (4L + 0T + 0P))	Elective III (4 credits)	Major Project (20 credits)
Database Management System (4 credits (3L + 0T + 1P))	Object Oriented Programming & System Design (4 credits (3L + 0T +1P))	Theory of Automata (3 credits (3L + 0T + 0P))	Mathematics for CS I (Discrete Mathematics) (3 credits (3L + 0T + 0P))	Machine Learning (4 credits (3L + 0T + 1P))	Elective II (4 credits)	Elective IV (4 credits)	
System Programming & Scripting (4 credits (3L + 0T + 1P))	Computer Organization & Architecture (4 credits (4L + 0T + 0P))	Data Communications (3 credits (3L + 0T + 0P))	Operating System (4 credits (3L + 0T + 1P))	Computer Graphics (4 credits (3L + 0T + 1P))	Mini Project-II (6 credits)	Professional Ethics (2 credits (2L + 0T + 0P)) / Advanced Competitive Coding (2 credits (0L + 0T + 2P))	
Web Design & Application Development-I (4 credits (3L + 0T + 1P))	Web Design & Application Development-II (4 credits (3L + 0T + 1P))	Probability and Statistics for CS (3 credits (3L + 0T + 0P))	Computer Networks (4 credits (3L + 0T + 1P))	Elective I (4 credits)	Industrial Training/Internship (6 credits)	Mini Project-III (10 credits)	
Professional Communication - I (3 credits (3L + 0T + 0P))	Professional Communication - II (3 credits (3L + 0T + 0P))	Design Analysis and Algorithm (4 credits (3L + 0T + 1P))	Advanced Programming Language (4 credits (3L + 0T + 1P))	Mathematics for CS II (Linear Algebra + Calculus) (3 credits)(3L + 0T + 0P)			
Sports - I (1 credits)	Sports - II (1 credits)	Competitive Coding - I (2 credits (0L + 0T + 2P))	Competitive Coding - II (2 credits (0L + 0T + 2P))	Competitive Coding - III (2 credits (0L + 0T + 2P))			
		Sports - III (1 credits)					
20	20	20	20	20	20	20	20

COMPUTER SCIENCE & ARTIFICIAL INTELLIGENCE

Semester I	**Semester II**	**Semester III**	**Semester IV**	**Semester V**	**Semester VI**	**Semester VII**	**Semester VIII**
Computational Thinking through Programming (4 credits (3L + 0T +1P))	Data Structures (4 credits (3L + 0T +1P))	Software Engineering (4 credits (3L + 0T +1P))	Compiler Design (3 credits (3L + 0T + 0P))	Machine Learning (4 credits (3L + 0T + 1P))	Techno-Entrepreneurship (4 credits (4L + 0T + 0P))	Elective II (4 credits)	Major Project (20 credits)
Database Management System (4 credits (3L + 0T + 1P))	Object Oriented Programming & System Design (4 credits (3L + 0T +1P))	Theory of Automata (3 credits (3L + 0T + 0P))	Mathematics for CS I (Discrete Mathematics) (3 credits (3L + 0T + 0P))	Artificial Intelligence (4 credits (3L + 0T + 1P))	Deep Learning (4 credits (3L + 0T + 1P))	Elective III (4 credits)	
System Programming & Scripting (4 credits (3L + 0T + 1P))	Computer Organization & Architecture (4 credits (4L + 0T + 0P))	Data Communications (3 credits (3L + 0T + 0P))	Operating System (4 credits (3L + 0T + 1P))	Elective-I (3 credits (3L + 0T + 0P))	Mini Project-II (6 credits)	Professional Ethics (2 credits (2L + 0T + 0P)) / Advanced Competitive Coding (2 credits (0L + 0T + 2P))	
Web Design & Application Development-I (4 credits (3L + 0T + 1P))	Web Design & Application Development-II (4 credits (3L + 0T + 1P))	Probability and Statistics for CS (3 credits (3L + 0T + 0P))	Computer Networks (4 credits (3L + 0T + 1P))	Mathematics for CS II (Linear Algebra + Calculus) (3 credits (3L + 0T + 0P))	Industrial Training/Internship (6 credits)	Mini Project-III (10 credits)	
Professional Communication - I (3 credits (3L + 0T + 0P))	Professional Communication - II (3 credits (3L + 0T + 0P))	Design Analysis and Algorithm (4 credits (3L + 0T + 1P))	Advanced Programming Language (4 credits (3L + 0T + 1P))	Computer Graphics (4 credits)(3L + 0T + 1P)			
Sports - I (1 credits)	Sports - II (1 credits)	Competitive Coding - I (2 credits (0L + 0T + 2P))	Competitive Coding - II (2 credits (0L + 0T + 2P))	Competitive Coding - III (2 credits (0L + 0T + 2P))			
		Sports - III (1 credits)					
20	20	20	20	20	20	20	20

COMPUTER SCIENCE & BUSINESS

Semester I	**Semester II**	**Semester III**	**Semester IV**	**Semester V**	**Semester VI**	**Semester VII**	**Semester VIII**
Computational Thinking through Programming (4 credits (3L + 0T +1P))	Data Structures (4 credits (3L + 0T +1P))	Software Engineering (4 credits (3L + 0T +1P))	Compiler Design (3 credits (3L + 0T + 0P))	Business Economics (4 credits (4L + 0T + 0P))	Techno-Entrepreneurship (4 credits (4L + 0T + 0P))	Elective III (4 credits)	Major Project (20 credits)
Database Management System (4 credits (3L + 0T + 1P))	Object Oriented Programming & System Design (4 credits (3L + 0T +1P))	Theory of Automata (3 credits (3L + 0T + 0P))	Mathematics for CS I (Discrete Mathematics) (3 credits (3L + 0T + 0P))	Machine Learning (4 credits (3L + 0T + 1P))	Elective II (4 credits)	Elective IV (4 credits)	
System Programming & Scripting (4 credits (3L + 0T + 1P))	Computer Organization & Architecture (4 credits (4L + 0T + 0P))	Data Communications (3 credits (3L + 0T + 0P))	Operating System (4 credits (3L + 0T + 1P))	Elective I (4 credits (4L + 0T + 0P))	Mini Project-II (6 credits)	Professional Ethics (2 credits (2L + 0T + 0P)) / Advanced Competitive Coding (2 credits (0L + 0T + 2P))	
Web Design & Application Development-I (4 credits (3L + 0T + 1P))	Web Design & Application Development-II (4 credits (3L + 0T + 1P))	Probability and Statistics for CS (3 credits (3L + 0T + 0P))	Computer Networks (4 credits (3L + 0T + 1P))	Business Decision Making (3 credits (3L + 0T + 0P))	Industrial Training/Internship (6 credits)	Mini Project-III (10 credits)	
Professional Communication - I (3 credits (3L + 0T + 0P))	Professional Communication - II (3 credits (3L + 0T + 0P))	Design Analysis and Algorithm (4 credits (3L + 0T + 1P))	Advanced Programming Language (4 credits (3L + 0T + 1P))	People Management (3 credits (3L + 0T + 0P))			
Sports - I (1 credits)	Sports - II (1 credits)	Competitive Coding - I (2 credits (0L + 0T + 2P))	Competitive Coding - II (2 credits (0L + 0T + 2P))	Competitive Coding - III (2 credits (0L + 0T + 2P))			
		Sports - III (1 credits)	10				
20	20	20	20	20	20	20	20

1 credit for 1 hour theory, 1 credit for 1 hour tutorial, 1 credit for 2 hours lab per week

Abbreviations: L - Lecture, T - Tutorial, P - Practical

Note:

According to National Education Policy (NEP) 2020, we are going to implement it in the following manner:

- After successful completion of 40 credit course, one can get **Certificate in Programming**
- After successful completion of 80 credit course, one can get **Diploma in Programming**
- After successful completion of 120 credit course, one can get **B.Sc. in IT/CS/CSAI/CSB**
- After successful completion of 160 credit course, one will get **B.Tech. in IT/CS/CSAI/CSB**

Pool of Electives

Algorithmic Graph Theory	Algo Trading	Artificial Intelligence (AI)
AI for IoT	Big Data Analytics	Blockchain and Cryptocurrency
Business Analytics		Complexity Theory
Computational Algebra and Number Theory	Computer Music	Convex Optimization
Cyber Security	Data Mining and Warehousing	Deep Learning
Digital Business Strategy	Digital Product Development	Distributed Systems
E-Business and Digital Economy	Game Theory	Game Development
Global Business and Economy	Graph Theory	Image and Vision Processing
Information and Coding Theory	Innovation and Design Thinking	Intelligent Agents and Planning
Internet of Things	Machine Learning	MongoDB
Natural Language Processing	Network Security	Organizational Behavior
Reinforcement Learning	Quantum Computing	Soft Computing

7th Senate

- Digital Product Development and Innovation
- Quantum Computing
- Cyber Security
- Computer Music
- Game Development
- Algo Trading

8th Senate

- Economic & Financial Analysis

- Numerical Linear Algebra
- Internet of Things
- Soft Computing
- E-Business and Digital Economy
- Business Analytics

9th Senate

- Advanced Computer Algorithm
- Computational Linguistics
- Numerical Methods

10th Senate

- DevOps
- AI for Arts
- Optimization Techniques
- Soft Computing
- People Management
- Performing Arts
- Creativity

Note: The pool of electives may be offered accordingly based on the availability of faculties and their specialization.