SHIV NADAR
INSTITUTION OF EMINENCE DEEMED TO BE
UNIVERSITY
DELHI NCR

BTech - Computer Science and Engineering
Proposed Curriculum (2025 onwards)

Total credits　　　　–　160

Credit breakup –

- **Core**　　　　　　　–　**79**
- **Electives**　　　　　　**21**
- **Experiential Learning**　–　**8**
- **CCC/UWE**　　　　　–　**40**
- **Project**　　　　　　　–　**12**

Specializations offered – (Applicable for 2022 batch onwards)

- **Artificial Intelligence**
- **Data Science**
- **Cybersecurity**
- **Systems and Networks**

Program Structure | Computer Science and Engineering

Semester 1 (20 credits)				
Course Code	Title	Credits	Category	Prerequisites
SOE 4801	Introduction to Engineering: Ideas to Impact	2	Experiential	NA
CSD1001	Problem Solving Using Programming	4(3:0:1)	Core	NA
PHY1001	Fields, Waves & Quanta	5	Core	NA
MAT1007	Multivariate Calculus	4	Core	NA
ECE1001	The Electron's Path: Fundamentals of EEE	3	Core	NA
	Nature's Code: Chemistry & Biology	2	Core	NA

Semester 2 (18 credits)				
Course Code	Title	Credits	Category	Prerequisites
	Connected Intelligence: Sensors and IoT	3	Core	NA
	The Matter of Materials	2	Core	NA
	Design to Reality: CAD and 3D Printing	2	Experiential	NA
	Linear Systems and Transforms	4	Core	NA
	Forces in Action	3	Core	NA
	Environment & Sustainability	4	CCC/UWE	NA

Semester 3 (23 credits)				
Course Code	Title	Credits	Category	Prerequisites
CSD2001	Data Structures and Algorithms	4(3:0:1)	Core	CSD1001
CSD2002	Discrete Mathematics	4(3:1:0)	Core	CSD1001
CSD2003	Computer Organization	5(3:1:1)	Core	CSD1001
CSD2004	Object Oriented Programming	4(3:0:1)	Core	CSD1001
	CCC/UWE	6	CCC/UWE	NA

Semester 4 (22 credits)				
Course Code	Title	Credits	Category	Prerequisites
CSD3001	Operating Systems	4(3:0:1)	Core	CSD2001, CSD2003
CSD2006	Introduction to Probability and Statistics	4(3:1:0)	Core	NA
CSD2007	Applied Linear Algebra	4(3:1:0)	Core	NA
CSD4801	Introduction to Database Systems	4(3:0:1)	Experiential	CSD2001
	CCC/UWE	3	CCC/UWE	NA
	Elective 1	3	Elective	NA

Semester 5 (23 credits)				
Course Code	**Title**	**Credits**	**Category**	**Prerequisites**
CSD4001	Computer Networks	4(3:0:1)	Core	CSD3001
CSD4002	Artificial Intelligence and Machine Learning	4(3:0:1)	Core	CSD2007
	Major Elective 2	3	Elective	
	Major Elective 3	3	Elective	
	CCC/UWE	9	CCC/UWE	

Semester 6 (24 credits)					
Course Code		**Title**	**Credits**	**Category**	**Prerequisites**
CSD3002		Formal Languages and Automata Theory	4	Core	CSD2001
CSD4004		Advanced Algorithms	4(3:0:1)	Core	CSD2001
CSD4007		Advanced Computer Architecture	3(3:1:0)	Elective	CSD3001, CSD2003
		Major Elective 4	3	Elective	
Any one:	CSD4902	Software Project	3 (0:0:3)	Project Basket	CSD2001
	CSD4901	Software Engineering	3 (2:0:1)		
		CCC/UWE	6	CCC/UWE	

Semester 7 (21 credits)				
Course Code	**Title**	**Credits**	**Category**	**Prerequisites**
	Major Elective 5	3	Elective	
	Major Elective 6	3	Elective	
	Major Elective 7	3	Core	
	CCC/UWE	6	CCC/UWE	
CSD4903	Project-1	6	Project Basket	CSD2001

Semester 8 (9 credits)				
Course Code	**Title**	**Credits**	**Category**	**Prerequisites**
CSD4904	Project-2/Internship	3	Project Basket	CSD2001
	CCC/UWE	6	CCC/UWE	

List of Courses

List of courses in Experiential Learning category

Course code	Title	Credits	Semester	Prerequisites
	Introduction to Engineering	2	1	NA
	Practicum: CAD and 3D Printing	2	2	NA
CSD4801	Introduction to Database Systems	4	4	CSD2001
		8		

List of courses in Core category

Course code	Title	Credits	Semester	Prerequisites
CSD1001	Problem Solving Using Programming	4	1	NA
PHY1001	Fields, Waves & Quanta	5	1	NA
MAT1007	Multivariate Calculus	4	1	NA
ECE1001	The Electron's Path: Fundamentals of EEE	3	1	NA
	Nature's Code: Chemistry & Biology	2	1	NA
	Connected Intelligence: Sensors and IoT	3	2	NA
	The Matter of Materials	2	2	NA
	Linear Systems and Transforms	4	2	NA
	Forces in Action	3	2	NA
CSD2001	Data Structures and Algorithms	4	3	CSD1001
CSD2002	Discrete Mathematics	5	3	CSD1001
CSD2003	Computer Organization	4	3	CSD1001
CSD2004	Object Oriented Programming	4	3	CSD1001
CSD3001	Operating Systems	4	4	CSD2001, CSD2003
CSD2006	Introduction to Probability and Statistics	4	4	NA
CSD2007	Applied Linear Algebra	4	4	NA
CSD4801	Introduction to Database Systems	4	4	CSD2001
CSD4001	Computer Networks	4	5	CSD2001
CSD4002	Artificial Intelligence and Machine Learning	4	5	CSD2001
CSD3002	Formal Languages and Automata Theory	4	6	CSD2001
CSD4004	Advanced Algorithms	4	6	CSD2001
CSD4007	Advanced Computer Architecture	4	6	CSD3001, CSD2003
		79		

List of electives:

Course code	Title	Credits	Prerequisites
CSD4201	Advanced Data Management Systems	3 (3:0:0)	CSD4801
CSD4237	AI Applications	3 (2:0:1)	Knowledge of Probability and Statistics and Machine Learning
CSD4203	Algorithms for Big Data	3 (3:0:0)	CSD2001
CSD4204	Applied Cryptography	3 (3:0:0)	CSD1001, CSD2002
CSD4205	Blockchain Technology	3 (3:0:0)	CSD2001
CSD4206	Cloud Computing	3 (2:1:0)	CSD1001
CSD4207	Compiler Design	3 (3:0:0)	CSD2001
CSD4208	Computer Graphics	3 (2:0:1)	CSD2001
CSD4209	Computer Vision	3 (2:0:1)	CSD2001
CSD4210	Deep Learning	3 (2:0:1)	CS4002
CSD4211	Image Processing and Its Applications	3 (2:0:1)	CSD2002
CSD4212	Distributed Systems	3 (2:0:1)	CSD2001, CSD3001
CSD4213	Embedded systems	3 (3:0:0)	CSD2003
CSD4214	Ethical Hacking	3 (3:0:0)	CSD2001
CSD4215	Foundations of Data Science	3 (2:0:1)	CSD2001
CSD4216	Foundation of Information Security	3 (3:0:0)	CSD2001
CSD4217	Generative AI	3 (3:0:0)	CSD4002
CSD4218	High Performance Computer Architecture	3 (2:0:1)	CSD2003
CSD4219	Information Retrieval	3 (3:0:0)	CSD2001
CSD4220	Internet of Things	3 (2:0:1)	CSD2001, CSD4001
CSD4221	Optimization Techniques	3(3:0:0)	CSD2001
CSD4222	Medical Imaging	3 (2:0:1)	CSD4002
CSD4223	Mobile Computing	3 (2:0:1)	CSD4001
CSD4024	Natural Language Processing	3 (2:0:1)	CSD2001
CSD4225	Object Oriented Analysis and Design	3 (3:0:0)	CSD2001
CSD4226	Parallel and Concurrent Programming	3 (2:0:1)	CSD3001
CSD4227	Real Time Systems	3 (3:0:0)	CSD3001
CSD4228	Reinforcement Learning	3 (2:0:1)	CSD2006
CSD4229	Secure coding	3 (3:0:0)	CSD2001
CSD4230	Social and Information Networks	3 (2:0:1)	CSD2001
CSD4231	Special Topics in Applications	3 (3:0:0)	CSD2001
CSD4232	Special Topics in Artificial Intelligence	3 (3:0:0)	CSD2001
CSD4233	Special Topics in Cybersecurity	3 (3:0:0)	CSD2001
CSD4234	Special Topics in Systems and Networks	3 (3:0:0)	CSD2001
CSD4235	Special Topics in Data Science	3 (3:0:0)	CSD2001
CSD4236	Connected Car Technologies	3 (2:0:1)	CSD4001