

SHIV NADAR UNIVERSITY

Department of Computer Science and Engineering, SOE B.Tech. (CSE) with Specialization

Overall Credit Structure

Category	BS	ES	CCC + UWE	Major Core	Projects	Major Electives	Total
Credits	17	13	42	61	12	15	160

*CCC and UWE with minimum 18 credits in each category

Basic Sciences Courses (BS) - 17 Credits

PHY101	Introduction to Physics-I	3-1-0	4
PHY102	Introduction to Physics-II	3-1-1	5
MAT103	Mathematical Methods –I	3-1-0	4
MAT161	Applied Linear Algebra	3-1-0	4

Major Electives (ME) - 15 Credits

CSD350	Natural Language Processing	2-0-1	3
CSD351	Advanced Database Management System	2-0-1	3
CSD352	Computational Neuroscience	2-0-1	3
CSD353	Computer Graphics	2-0-1	3
CSD355	Foundation of Data Sciences	2-0-1	3
CSD356	Foundation of Information Security	2-0-1	3
CSD357	Image Processing and Its Applications	2-0-1	3
CSD358	Information Retrieval	2-0-1	3
CSD360	Introduction to Logic and Functional Programming	2-0-1	3
CSD361	Introduction to Machine Learning	2-0-1	3
CSD363	Social and Information Networks	2-0-1	3
CSD450	Algorithms for Big Data	3-0-0	3
CSD451	Applied Cryptography	2-0-1	3
CSD452	Big Data Analytics	2-0-1	3
CSD454	Computer Vision	2-0-1	3
CSD455	Data Mining and Warehousing	2-0-1	3
CSD456	Deep Learning	2-0-1	3
CSD457	Internet of things	2-0-1	3
CSD458	Introduction to Geometric Algorithms	3-0-0	3
CSD459	Performance Modelling of Computer Communication Networks	3-0-0	3
CSD462	Virtualization and Cloud Computing	2-0-1	3
CSD463	Wireless and Mobile Systems	3-0-0	3
CSD464	Wireless Sensor Networks	2-0-1	3
CSD481	Special Topics in Artificial Intelligence	3-0-0	3
CSD482	Special Topics in Applications	3-0-0	3
CSD483	Special Topics in Systems	3-0-0	3
CSD484	Special Topics in Theoretical in Computer Science	3-0-0	3
CSD485	Special Module in Artificial Intelligence	1-0-0	1
CSD486	Special Module in Applications	1-0-0	1
CSD487	Special Module in Systems	1-0-0	1
CSD488	Special Module in Theoretical in Computer Science	1-0-0	1

Engineering Sciences Courses (ES) - 13 Credits

CSD101	Introduction to Computing and Programming	3-0-1	4
EED101	Introduction to Electrical Engineering	3-1-1	5
MED201	Material Science and Engineering	3-0-1	4

Major Core (MC) + Projects - 61+12 Credits

CSD102	Data Structures	3-0-1	4
CSD204	Operating Systems	3-0-1	4
CSD205	Discrete Mathematics	3-1-0	4
CSD210	Introduction to Probability and Statistics	3-1-0	4
CSD211	Computer Organization and Architecture	3-1-1	5
CSD213	Object Oriented Programming	3-0-1	4
CSD304	Computer Networks	3-0-1	4
CSD311	Artificial Intelligence	3-0-1	4
CSD317	Introduction to Database Systems	3-0-1	4
CSD319	Design and Analysis of Algorithms	3-0-1	4
CSD326	Software Engineering	3-0-1	4
CSD334	Theory of Computation	3-0-0	3
CSD345	Software Design Lab	0-0-2	2
CSD346	Seminar*	0-0-2	2
EED201	Signals and Systems	3-0-1	4
EED206	Digital Electronics	3-1-1	5
CSD493	Project-I	0-0-6	6
CSD494	Project-II/Internship*	0-0-6	6

* Satisfactory/Unsatisfactory courses.

Core Common Curriculum - CCC

- Indian History and Society (IHS)
- World History and Society (WHS)
- Culture and Communication (CAS)
- Physical and Living Systems (PLS)
- Cognition and Intelligence (CAI)
- Technology and Society (TAS)
- Environment and Ecology (EAE)
- Reasoning and Analysis (RAA)

Specialization

1. *Artificial Intelligence and Machine Learning*
2. *Data Science and Big Data Analytics*
3. *Cyber Security and Privacy*

- The student must complete minimum of 12 credits in the area of specialization as follows-
 - Any four elective courses from the chosen specialization bucket (12 Credits) **OR**
 - Any two elective courses from the chosen specialization bucket (6 Credits) and Project-I in the area of specialization (6 Credits)
- Overall CGPA ≥ 7 and Specialization CGPA ≥ 8

At the time of graduation, students who have completed the specialization requirement may apply for specialization in CSE to UG advisor for further processing. A student can apply for a specialization only in one of the mentioned areas.

Specialization Buckets

Artificial Intelligence and ML	Data Science and Big Data Analytics	Cyber Security and Privacy
<i>CSD350, CSD357, CSD360</i>	<i>CSD350, CSD351, CSD355, CSD358</i>	<i>CSD356, CSD451, CSD457</i>
<i>CSD361, CSD454, CSD456</i>	<i>CSD361, CSD363, CSD450, CSD452</i>	<i>CSD459, CSD463, CSD464</i>
<i>CSD481, CSD485</i>	<i>CSD455, CSD462, CSD482, CSD486</i>	<i>CSD483, CSD487</i>

Program Structure Semester Wise

Codes Convention- M-MAT, P-PHY, E-EED, C-CSD, U-UWE, ME-MED

Sem	BS	ES	CCC	UWE	MC1	MC2	MC3	MC4	EL	EL	Project	Total 160
1st	<i>M-103, P-101</i>	<i>C-101, ME-201</i>	<i>CCC704</i>									20
2nd	<i>M-160, P-102</i>	<i>E-101</i>	<i>CCC2</i>		<i>C-201</i>							21
3rd			<i>CCC3</i>	<i>ESD201</i>	<i>C-205</i>	<i>C-211</i>	<i>C-213</i>	<i>E-206</i>				24
4th			<i>CCC4</i>	<i>U-2</i>	<i>C-204</i>	<i>C-210</i>	<i>E-201</i>		<i>EL1</i>			21
5th			<i>CCC5</i>	<i>U-3</i>	<i>C-311</i>	<i>C-317</i>	<i>C-319</i>	<i>C-345</i>	<i>EL2</i>			23
6th			<i>CCC6</i>	<i>U-4, U-5</i>	<i>C-304</i>	<i>C-326</i>	<i>C-334</i>	<i>C-346</i>	<i>EL3</i>			24
7th			<i>CCC7</i>	<i>U-6, U-7</i>					<i>EL4</i>	<i>EL5</i>	<i>C-493</i>	21
8th											<i>C-494</i>	06