

Doctor of Philosophy in Computer Sciences PhD-CS
Scheme of Studies
Minor/Core Courses

S #	Code	Course Title	Credit Hours
1.	CSC-800	Advanced Research Methodology	3(3-0)
2.	STT-813	Advanced Statistical Methods for Computing	3(3-0)

1.	CSC-799	Research Thesis	50(0-100)
2.	CSC-819	Seminar-I	1(1-0)
3.	CSC-820	Seminar-II	1(1-0)

❖ *Any Four courses from below relevant Specialization.*

Major/Specialization in Software Engineering

S#	Code	Course Title	Credit Hours
1.	CSE-726	Advanced Software Engineering	3(3-0)
2.	CSE-732	Object Oriented Software Engineering	3(3-0)
3.	CSE-734	Formal Software Specification and Development	3(3-0)
4.	CSE-736	Software Quality Assurance	3(3-0)
5.	CSE-738	Software Requirements Engineering	3(3-0)
6.	CSE-739	Software Engineering Processes	3(3-0)
7.	CSE-742	Software Project Management	3(3-0)
8.	CSE-743	Trends in Software Engineering	3(3-0)
9.	CSE-744	Software Analysis and Design Patterns	3(3-0)
10.	CSE-746	Topics in Object Oriented Analysis and Design	3(3-0)
11.	CSE-748	Software Architecture	3(3-0)
12.	CSE-808	Software Risk Management	3(3-0)
13.	CSE-809	Software Measurements & Metrics	3(3-0)
14.	CSE-810	Software Configuration Management	3(3-0)
15.	CSE-811	Component Based Software Engineering	3(3-0)
16.	CSE-812	Special Topics in Software Engineering-I	3(3-0)
17.	CSE-813	Special Topics in Software Engineering-II	3(3-0)
18.	CSE-820	Advanced Topics in Software Engineering	3(3-0)
19.	CSE-821	Object Oriented Modeling	3(3-0)
20.	CSE-822	Model and Specification-based Software Testing	3(3-0)
21.	CSE-823	Software Fault Tolerance	3(3-0)

Major/Specialization in Networks

S#	Code	Course Title	Credit Hours
1.	CSN-750	Advanced Computer Networks	3(3-0)
2.	CSN-751	Network Security	3(3-0)
3.	CSN-752	Wireless Networks	3(3-0)
4.	CSN-755	Integrated Services Over Packet Networks	3(3-0)
5.	CSN-756	Network Transfer Protocol	3(3-0)
6.	CSN-759	Network Management	3(3-0)
7.	CSN-760	Networked Multimedia Services	3(3-0)

8.	CSN-766	Internet of Things for Industrial Applications	3(3-0)
9.	CSN-803	Cloud Computing Security	3(3-0)
10.	CSN-804	Network Switching and Routing	3(3-0)
11.	CSN-805	Wireless Sensor Networks	3(3-0)
12.	CSN-806	Advanced Simulation and Modeling	3(3-0)
13.	CSN-814	Special Topics in Networks-I	3(3-0)
14.	CSN-815	Special Topics in Networks-II	3(3-0)
15.	CSN-831	Network Performance Evaluation	3(3-0)
16.	CSN-832	Network Programming	3(3-0)

Major/Specialization in Artificial Intelligence

S#	Code	Course Title	Credit Hours
1.	CAI-757	Pattern Recognition	3(3-0)
2.	CAI-758	Decision Support System	3(3-0)
3.	CAI-761	Machine Learning	3(3-0)
4.	CAI-762	Neural Networks	3(3-0)
5.	CAI-764	Computer Vision	3(3-0)
6.	CAI-765	Data Mining	3(3-0)
7.	CAI-767	Advanced Topics in Artificial Intelligence	3(3-0)
8.	CAI-769	Multimedia Databases	3(3-0)
9.	CAI-770	Advanced Computer Graphics	3(3-0)
10.	CAI-775	Advanced Data Mining	3(3-0)
11.	CAI-801	Semantic Web	3(3-0)
12.	CAI-802	Information Retrieval	3(3-0)
13.	CAI-816	Special Topics in Artificial Intelligence-I	3(3-0)
14.	CAI-817	Special Topics in Artificial Intelligence-II	3(3-0)
15.	CAI-841	Advanced Topics in AI Programming	3(3-0)
16.	CAI-842	Design of Intelligent Systems	3(3-0)
17.	CAI-843	Digital Image Processing	3(3-0)
18.	CAI-844	Multi Agent Systems	3(3-0)

Major/Specialization in Database Systems

S#	Code	Course Title	Credit Hours
1.	CSD-807	Big Data Analysis	3(3-0)
2.	CSD-876	Advanced DBMS	3(3-0)
3.	CSD-877	Data Warehousing	3(3-0)
4.	CSD-878	Object Oriented Databases	3(3-0)
5.	CSD-879	Web-Based DBMS	3(3-0)
6.	CSD-880	Topics in DBMS	3(3-0)