

MSc in Computer Science with Specialization in Software Systems Engineering

Software Systems Engineers use computing to solve real-world problems. They take on different roles such as software architects, analysts, designers, developers, testers, consultants, and project managers. This specialization offered by the School of CSE, DUK aims to prepare students to assess software requirements, design, develop, and test software systems, plan and manage software projects, and solve technical challenges by applying computational theories.

The programme's curriculum includes lectures, laboratory works, student seminars, individual and group assignments, individual and group projects, internal tests, end-semester examinations, industrial seminars & workshops, internships and final research/industry project & dissertation. The University's collaboration with local software companies at Technopark, Technocity, Infopark and Smart City facilitates students to do their projects & internships in software industries and get hands-on experience in real-life projects.

The programme is designed to prepare students to get placements in global software companies as software engineers, software architects, technical/project leaders and project coordinators/managers. Students have the opportunity to get placed in the companies they have engaged with for their internships and projects. The programme also provides a foundation for further doctoral research and a career in academia.

Semester 1		
Type of the Course	Title of the Course	Credits
University Core 1	Digital Experience Laboratory	4
University Core 2	Design Thinking and Innovation	3
Program Core 1	Data Structures and Algorithms	4
Program Core 2	Mathematics for Computer Science	3
Program Core 3	Programming for Problem Solving	4
Program Core 4	Fundamentals of Software Engineering	4
Program Core 5	Python for Data Science	3
Program Core Lab 1	Python Programming Lab	1
Total Credits		26

Semester 2		
Type of the Course	Title of the Course	Credits
University Core 3	Digital Access for Community Empowerment	3
Program Core 6	Database Systems	4
Program Core 7	Operating Systems	3
Program Core 8	Web Technology	4
Program Core 9	Management of Software Systems	4
Program Elective 1		4
Mini Project 1	M.Sc Mini Project 1	1
Total Credits		23

Electives for Semester 2
Mobile Application Development
Social Network Analytics and Security
Network and System Security
Information Retrieval

Semester 2 Internship		
Type of the Course	Title of the Course	Credits
Internship/Team Project		2
Total Credits		2

Semester 3		
Type of the Course	Title of the Course	Credits
Program Core 10	Cloud and Edge Computing	4
Program Core 11	Secure Software Engineering	3
Program Elective 2	Elective 2	4
Program Elective 3	Elective 3	4
Program Elective 4	Elective 4	4
Program Core Lab 4	IoT Experience Lab	2
Mini Project 2		3
Industrial Seminars 1		1
Total Credits		25

Electives for Semester 3
Blockchain Technologies
Computer Vision
Data Mining and Big Data
Natural Language Processing
Human-computer Interaction
Machine Learning
Software Project Management
Advanced Software Testing
Software Quality Assurance
Software Architecture
Entrepreneurship

Semester 4		
Type of the Course	Title of the Course	Credits
Internship/Project		24
Total Credits		24

Audit courses (NPTEL)	
1. Advanced Computer Architecture	13. Introduction to Industry 4.0 and Industrial Internet of Things
2. Algorithms for Big Data	14. Introduction to Soft Computing
3. Applied Natural Language Processing	15. Mobile Computing
4. Blockchain and its Applications	16. Modern Application Development
5. Data Mining	17. Operating System Fundamentals
6. Deep Learning	18. Practical Machine Learning with Tensorflow
7. Design and Engineering of Computer Systems	19. Randomized Methods in Complexity
8. Foundations of Cryptography	20. Reinforcement Learning
9. Foundations to Computer Systems Design	21. Systems and Usable Security
10. Google Cloud Computing Foundation Course	22. VLSI Design Verification and Test
11. GPU Architectures and Programming	
12. Human-Computer Interaction	