

Course Title	FUNDAMENTALS OF DISTRIBUTED & CLOUD COMPUTING
Course Code	CSN 222
Course Purpose and Objectives	<p>This course studies the key design principles of distributed systems, which are collections of independent networked computers that function as single coherent systems. It covers fundamental concepts of distributed systems including network architectures, communication protocols, processes and threads and naming. It covers important paradigms in distributed systems, including logical clocks, distributed mutual exclusion; consistency, replication, fault tolerance, coordination, agreement and security.</p> <p>In addition, the course introduces the student to the domain of cloud computing and examine the core technologies and methods that define cloud computing, that include SaaS, PaaS and IaaS. Benefits and drawbacks of cloud computing are also analyzed.</p>
Learning Outcomes	<ol style="list-style-type: none"> 1. Explain and discuss the principles and theoretical models used in designing distributed systems. 2. Describe the trade-offs which must be made when designing a distributed system. 3. Apply the algorithms and models taught to implement programs that perform distributed computation, through the application of taught protocols. 4. Recognise the core concepts of cloud computing. 5. Apply theoretical knowledge of cloud computing design to develop prototype applications that address a specific goal.
Course Content	<ul style="list-style-type: none"> • Fundamentals: definition of a distributed system • Communication • Naming • Coordination • Consistency and replication • Fault tolerance • Security • Information Systems Architecture • Middleware & Web Services • Cloud Computing • Fog & Edge Computing • Distributed Ledger Technology • The Internet of Things (IoT) & Critical Information Infrastructures (CII) • Cloud Software as a Service • Cloud Platform as a Service • Cloud Infrastructure as a Service • Cloud Technology • Emerging Technologies