



## Course Specification Document

<b>Title</b>	Cloud Computing
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<b>Credits</b>	2.5 ECTS
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<b>Aims</b>	This course aims to provide the student with knowledge related to the fundamental principles of cloud computing, its standard models, important characteristics, applications, and the mechanisms and technologies used in building clouds. This enables the student to analyze cloud computing requirements and develop cloud applications.
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### Intended learning outcomes

On successful completion of this course, the student will be able to:

- Understand the mechanism of cloud computing.
- Differentiate between cloud computing models.
- Understand the differences between cloud services.
- Identify challenges in cloud computing.
- Understand cloud security techniques.
- Grasp future mechanisms of cloud computing.
- Familiarize himself with cloud environments like AWS and S3.
- Create cloud applications.
- Program some cloud computing services and models.

### Syllabus

- **Introduction to cloud computing:** Definition of cloud computing (NIST), importance of cloud computing across various sectors, fundamental concepts in cloud computing (On-Demand Self-Service, Broad Network Access, Resource Pooling, Rapid Elasticity, Measured Service), core service models in cloud computing (SaaS, PaaS, IaaS).
- **Cloud deployment models:** Types of clouds (Public, Private, Hybrid and Community), benefits (Cost Efficiency, scalability and flexibility, accessibility and mobility, disaster recovery and backup, collaboration and sharing), cloud service providers (Amazon Web Services - AWS, Microsoft Azure, Google Cloud Platform - GCP, IBM Cloud and Oracle Cloud).
- **Challenges of cloud computing:** Security challenges, data privacy, downtime and reliability.
- **Cloud computing applications:** E-commerce, Telemedicine and remote healthcare, Entertainment and streaming services.
- **Cloud computing security:** Data encryption, identity and access management, compliance with regulations.
- **Future trends:** Serverless computing, Edge computing, Quantum computing.
- **Cloud application development:** AWS (EC2), S3, cloud resource virtualization.