Key Thematic Areas in Computer Science

A typical undergraduate programme tends to map its courses to key ***Thematic Areas***

The aim is to equip appropriate ***Theories, Concepts, Knowledge, Techniques, Skills and Competences in computing science***

Key Thematic Areas in Computer Science

- Mathematics for Computer Science
- Computer Architecture
- Networking & Communications
- Programming
- Algorithms and Complexity
- Information Systems
- Management of Organization & Business
- Software Engineering
- Computational Intelligence

Mathematics for Computer Science

Foundational Concepts

- Discrete Mathematics
- Differential Calculus
- Integral Calculus
- Probability and Statistics
- Linear Algebra

Computer Architecture

- *Internal Components*

- Physics for Computing
- Computer Systems
- Computer Architecture
- Operating Systems
- Digital Electronics
- Assembly Language Programming

Networking & Communications

- *Theory and Concepts*
- *Techniques*
- *Services Platforms*
- *Knowledge and Skills*

- Data Communications
- Computer Networks
- Operating Systems
- Network Security
- Network Design
- Network Management
- Distributed Programming
- Web and Services
- Computer Network Security
- Distributed Databases
- IoT
- Blockchain

Programming

- *Programming Concepts*
- *Problem Solving*
- *Hands-on Skills*

- Programming in various languages
- OOP
- Web and Services Programming
- Embedded Systems
- Mobile Programming
- AI Programming
- Computer Games Programming
- Programming Projects
- Compiler Construction
- Automata Theory

Algorithms and Complexity

- *Abstraction*

- Data Structures & Algorithms
- Analysis & Design of Algorithms

Information Systems

- *Modelling*
- *Practical Skills*
- *Assurance*
- *Impacts*

- Systems Analysis and Design
- Database Systems
- Information Systems
- Informatics
- Management Information Systems
- Information Assurance & Security
- Information Systems Security and Audit
- Business Intelligence & Analytics

Management of Organization & Business

- *organizational management & leadership*
- *Resources Management*
- *Innovation*
- *Entrepreneurship*
- *Impacts*

- Organizations & Management
- Project Management
- Data Management
- Innovation & Entrepreneurship
- ICTs and Society

Software Engineering

- *Modelling*
- *Human-Computer Interactions*
- *Visualization*

- Programming
- Systems Analysis and Design
- Human-Computer Interaction
- Computer Graphics
- Software Engineering

Computational Intelligence

- *AI Paradigms*
- *Advanced Applications*
- *Knowledge and Skills*

- Artificial Intelligence
- Machine Learning
- Knowledge Discovery
- Language Technologies
- Robotics
- Computer Vision
- Embedded Intelligent Systems
- Business Intelligence & Analytics
- Deep Learning