📘 **Semester 1: Foundations**

- **Fundamentals of Computers & IT**
  - Hardware and software basics
  - Operating systems overview (Windows, Linux)
  - Internet and networking basics
- **Programming in C**
  - Variables, operators, control structures
  - Functions, arrays, strings
  - File handling basics
- **Digital Logic & Computer Organization**
  - Logic gates, Boolean algebra
  - CPU architecture, memory hierarchy
- **Mathematics for Computing**
  - Discrete mathematics, probability, algebra

📊 **Semester 2: Core Programming & Systems**

- **Object-Oriented Programming (OOP)**
  - C++ / Java basics
  - Classes, inheritance, polymorphism
  - Exception handling
- **Data Structures & Algorithms**
  - Arrays, linked lists, stacks, queues
  - Trees, graphs, searching & sorting
- **Database Management Systems (DBMS)**
  - Relational models, SQL queries
  - Normalization and transactions
- **Operating Systems**
  - Process management, memory management
  - File systems and scheduling

🖥️ **Semester 3: Advanced IT Concepts**

- **Web Technologies**
  - HTML, CSS, JavaScript
  - PHP / ASP.NET basics
  - Client-server architecture
- **Computer Networks**
  - OSI & TCP/IP models
  - Routing, switching, IP addressing
  - Network security basics
- **Software Engineering**
  - SDLC (Software Development Life Cycle)
  - UML diagrams, project documentation
- **Electives** (varies by institute)
  - Artificial Intelligence basics
  - Data Science with Python
  - Cloud Computing

📑 **Semester 4: Applied & Emerging Areas**

- **Information Security**
  - Cryptography, authentication, firewalls
  - Cybersecurity principles
- **Mobile Application Development**
  - Android/iOS basics
  - Cross-platform tools
- **Big Data & Cloud Computing**
  - Hadoop, virtualization basics
- **Capstone Project / Internship**
  - Real-world ITCS application
  - Industry training and viva

🎓 **Practical Projects & Labs**

- Programming labs (C, C++, Java, Python)
- Database labs (SQL, MySQL, Oracle)
- Web design projects (HTML/CSS/JS websites)
- Networking labs (LAN setup, router configuration)
- Final year project (software or IT solution)

⏳ **Learning Outcomes**

By the end of the ITCS course, students will:

- Gain **strong programming skills** in multiple languages
- Understand **data structures, algorithms, and operating systems**
- Design and manage **databases with SQL**
- Build **web and mobile applications**
- Apply **networking and cybersecurity principles**
- Work on **industry-level projects** integrating IT and CS concepts