JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

I Year - I Semester		L	T	P	C
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FUNDAMENTALS OF COMPUTER SCIENCE (ES1112)					

COURSE OBJECTIVES:

This course is designed to:

1. Explain the concepts of computers and classify based on type and generation.
2. Demonstrate the techniques of writing algorithms pseudo codes & schematic flow of logic in software development process.
3. Teach about the purpose of networks and types of networks and media to connect the computers
4. Teach about Operating Systems and its concepts.
5. Illustrate about database architecture and its components
6. Illustrate about distributed computing, peer to peer, grid, cloud on demand and utility computing.

UNIT I:

A Simple Computer System: Central processing unit, the further need of secondary storage, Types of memory, Hardware, Software and people.

Peripheral Devices: Input, Output and storage, Data Preparation, Factors affecting input, Input devices, Output devices, Secondary devices, Communication between the CPU and Input/ Output devices. (Text Book 1)

UNIT II:

Problem Solving and Programming: Algorithm development, Flowcharts, Looping, some programming features, Pseudo code, the one-zero game, some structured programming concepts, documents.

Programming Languages: Machine Language and assembly language, high -level and low level languages, Assemblers, Compilers, and Interpreters (Text Book 1)

UNIT III:

Computer Networks : Introduction to computer Networks, Network topologies-Bus topology, star topology, Ring topology, Mesh topology, Hybrid topology, Types of Networks: Local area Network, Wide Area Networks, Metropolitan Networks, Campus/ Corporate Area Network, Personal Area Network, Network Devices- Hub, Repeater, Switch, Bridge, Router, Gateway, Network interface Card, Open System Inter connection Model (Text Book 2)

Operating systems: Introduction, Evolution of operating systems, Process Management- Process control block, Process operations, Process scheduling, Command Interpreter, Popular operating systems- Microsoft DOS, Microsoft Windows, UNIX and Linux. (Text Book 2)

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UNIT IV:

Database Systems: File-Oriented Approach, Database-oriented Approach-Components of Database system, Advantages & Disadvantages of Database approach, Applications of Database systems, Database views, Three-schema architecture, Database models-Hierarchical model, Network Model, relational Model, Object-oriented Data Model, Components of database management systems, Retrieving Data through Queries (Text Book 2)

Computer Systems and Development: Investigation, Analysis, Design, system processing and general program design, Presentation to management and users, Implementation, Documents. (Text Book 1)

UNIT V:

Emerging Computer Technologies: Distributed Networking, Peer-to-peer Computing, Categorization of Peer-to-peer system Applications of Peer-to-peer networks, Grid Computing-components of Grid computing, Applications of Grid computing,, Cloud Computing-characteristics of cloud computing systems, cloud computing services, cloud computing architecture, cloud computing applications, Cloud computing concerns

Wireless Networks: Wireless network operations, Types of wireless networks, security in wireless Networks, Limitations of wireless Networks, Bluetooth – Bluetooth Piconets, Avoiding Interference in Bluetooth Devices, Bluetooth Security, Differences between Bluetooth and Wireless Networks. (Text Book 2)

TEXT BOOKS:

1. An Introduction to Computer studies –Noel Kalicharan-Cambridge
2. Fundamentals of Computers –Reema Thareja-Oxford higher education

REFERENCES:

1. Introduction to Information Technology – ITL education Solution Limited, Pearson
2. Computer Science and overview-J. Glenn Brookshear, Dennis Brylow-Pearson

COURSE OUTCOMES:

On completion of the course the student will be able to

1. Explain the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
2. Recognize the Computer networks, types of networks and topologies.
3. Summarize the concepts of Operating Systems and Databases.
4. Recite the Advanced Computer Technologies like Distributed Computing & Wireless Networks.