CS112 FUNDAMENTALS OF COMPUTER SCIENCE & ENGINEERING

CS112 FUNDAMENTALS OF COMPUTER SCIENCE & ENGINEERING 3-0-2

COURSE CONTENT:

Computer: Definition**,** classification, Organization i.e. CPU, register, Bus Architecture, Instruction Set, Memory & Storage Systems, I/O Devices, and System and Application Software, Computer Application in e-Business, Bio-Informatics, Health Care, Remote Sensing & GIS, Meteorology and Climatology, Computer Gaming, Multimedia and Animation etc.

Operating System: Definition, Function, Types, Management of File, Process & Memory. Introduction to MS Word, MS Power Point, MS Excel

Introduction to algorithm, Complexities and Flowchart, Introduction to Programming, Categories of

Programming Languages, Program Design, Programming Paradigms, Characteristics or Concepts of OOP, Procedure Oriented Programming VS Object Oriented Programming, Introduction to C++: Character Set, Tokens, Precedence and Associatively, Program Structure, Data Types, Variables, Operators, Expressions, Statements and Control Structures, I/O Operations, Array, Functions.

Object & Classes, Scope Resolution Operator, Constructors & Destructors, Friend Functions, Inheritance, Polymorphism, Overloading Functions & Operators, Types of Inheritance, Virtual Functions, Introduction to Data Structures

Computer Networking: Introduction, Goals, ISO-OSI Model, Functions of different layers. Internet working concepts**,** Devices, TCP/IP Model, Introduction to Internet, World Wide Web, E-Commerce.

Computer Security Basics: Introduction to Viruses, Worms, Malware, Trojans, Spyware, and Anti-Spyware Software, Different types of attacks like Money Laundering, Information Theft, Email Spoofing, Denial of Services (DoS), Cyber Stalking, Logic Bombs, Hacking, Spamming, Cyber Defamation, Pharming Security Measures Firewall, Computer Ethics & Good Practices, Introduction to Cyber Laws about internet fraud, Good Computer Security Habits.

Database Management System: Introduction, File Oriented Approach and Database approach, Data Models, Architecture of Database System, Data Independence, Data Dictionary, DBA, Primary Key, Data Definition Language and Manipulation Languages.

Cloud Computing: Definition, Cloud Infrastructure, Cloud Segments or service delivery models (laaS, PaaS, SaaS), Cloud deployment models/ types of cloud (public, private, community and hybrid cloud), Pros and Cons of Cloud Computing.

EVALUATION

Evaluation will be continuous an integral part of the class followed by an external examination.

REFERENCES

E Balaguruswamy, Fundamentals of Computers, TMH
Silakari and Shukla, Basic Computer Engineering, Wiley India
V Rajaraman, Fundamentals of Computes, PHI
Ajoy Kumar Ray & Tinku Acharya, Information Technology Principles and Application
Peter Norton, Introduction to Copmputers, TMH

LIST OF EXPERIMENTS:

1. Study and Practice of Internal & External DOS Commands
2. Study and Practice of Basic LINUX Commands – ls, cp, mv, rm, chmod, kill, ps etc.
3. Study and Practice of MS Windows – Folder Related Operations, My Computer, Window-Explorer, Control Panel
4. Creation and Editing of Text Files using MS Office (MS Word)
5. Creation and Operating of Spreadsheet using MS Excel
6. Creation and Editing Power Point Slides using MS Power Point
7. Creation and Manipulation of Database Tables using SQL in MS Access
8. WAP to illustrate Arithmetic Expressions
9. WAP to illustrate Arrays
10. WAP to illustrate Functions
11. WAP to illustrate constructor & Destructor
12. WAP to illustrate Objects & Classes
13. WAP to illustrate Operator Overloading
14. WAP to illustrate Function Overloading
15. WAP to illustrate Derived Classes & Inheritance
16. WAP to insert and Delete end Element from the stack
17. WAP to insert and delete end element from the Queue