PCCS4203 System Programming

Module I (10 Hrs)

Introduction: System Software, Application Software, Machine Structure, Evolution of components of a programming system (Assembler, Loader, Macros, Compiler, Formal Systems), Evolution of Operating Systems, Functions of Operating System.

Machine Structure: General Machine Structure, Approach to a new machine, Memory Registers, Data, Instructions, special features.

Machine Language: Long Way, No looping, Address Modification, Looping

Introduction to Assembly Language Program

Module II (10 Hrs)

Assemblers: Design Procedure, Design of Assembler, Table Processing.

Macros Language and Macro Processor: Macro Instructions, Features of a Macro Facility, Implementation.

Loaders: Loader Schemes, Design of an Absolute Loader, Direct Linking loader, Bootstrap Loader.

Module III (12 Hrs)

Programming Languages: Importance of High Level Languages, Features, Data Types and Data Structures, Storage Allocation and Scope Name, Accessing Flexibility, Functional Modularity, Asynchronous Operations, Extensibility and Compile time Macros.

Formal Systems: Uses of Formal Systems, Formal Specification, Formal Grammars, Backus-Naur Form, Canonic Systems, Canonic Systems vs Formal Systems

Compilers: Introduction to Compilers, Phases of a compiler(Lexical Phase, Syntax Phase, Interpretation Phase, Optimization, Code Generation, Assembly, passes of a compiler), Intermediate Form, Storage Allocation, Code Generation, Data Structure

Text Book:

Systems Programming by John J Donovan (McGraw-Hill Education)

Reference Book:

(1) System Software: An Introduction to systems programming by Leland Beck (Pearson)

(2) System Software : Nityashri,(McGraw-Hill Education)

(3) Operating System and System Programming – Dhamdhere (McGraw-Hill Education)

(4) System Programming with C and Unix.- Hoover (Pearson Education)