PIT3I103 SYSTEM PROGRAMMING

Module I (12 Hrs)
Introduction: System Software, Application Software, components of a programming system: Assembler, Loader, Linker, Macros, Compiler, Program Development Cycle, Evolution of Operating Systems, Functions of Operating System, Machine Structure: General Machine Structure, Approach to a new machine, Memory Registers, Data, Instructions, Evolution of Machine Language: Long Way, No looping, Address Modification, Looping, Introduction to Assembly Language Program.

Module II (12 Hrs)
Assemblers: Design Procedure, Design of Assembler, Two-pass 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. Dynamic Loading and Linking, Algorithm and Data structures for Linking Loader, Linkers and Linkage Editors.

Module III (10 Hrs)
Programming Languages: Importance of High Level Languages, Features, Data Types and Data Structures, Storage Allocation and Scope Name, Accessing Flexibility, Functional Modularity, Formal Systems: Uses of Formal Systems, Formal Specification, Formal Grammars, Introduction to Compilers, passes of compiler, Phases of a compiler, Interpreter.

Module IV (06 Hrs)
Software Tools for Program Development, Editor, Design and User Interface, Programming Environment and Integrated Development Environments, Debugger Functionalities, Debug Monitors, Debugger Facilities, Debugger Internal Mechanism Operating.

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

Reference Book:
(1) Operating System and System Programming – Dhamdhere (McGraw-Hill Education)
(2) System Programming,by Srimanta Pal, Oxford University Press
(3) System Software, S. Chattopadhyay (Prentice-Hall India)
(4) System Programming with C and UNIX. - Hoover (Pearson Education)
(5) System Software: An Introduction to systems programming by Leland Beck (Pearson)
(6) System Software: Nityashri (McGraw-Hill Education)