GUJARAT UNIVERSITY

K. S. SCHOOL OF BUSINESS MANAGEMENT
[Five Years' (Full-time) Integrated Degree Course]

Semester-6 [M.Sc. (CA & IT)]

Subject Code: - KS_C_CC -364
Subject Name: - System Software
Course Credit: - 3

Objective:

Explain the concepts, structure and mechanisms of system software, Introduce design principles and implementation issues of System Software, Introduction of assembly language programming, Detailed study of Language processing, Compiler, Assembler, Parser, Scanner, Unix Device driver, Program compilation and Debugging.

Unit No.	Course Content	Weight-age (%)
1	**System Software** :- System Software, Goals of System Software, Overview of Language Processor, Fundamentals of language specification, Symbol Tables, Software Tools	**(20%)**
2	**Assemblers and Device Driver**:- Elements of Assembly Language Programming, A Simple Assembly Scheme, Pass Structure of Assemblers, Design of a Two Pass Assembler, Device Driver, Character Driver, Block Driver, Driver Installation	**(20%)**
3	**Macros and Macro Preprocessor and Interpreter:-** Macro Definition and Call, Macro Expansion, Nested Macro Calls, Advanced Macro Facilities, Activities and Data Structures Involved in Designing a Macro Processor, Interpreters: Use and Overview, Pure and Impure Interpreters	**(20%)**
4	**Scanning and Parsing and Compiler:-** Classification of Programming language, Introduction to Compilation, Scanning: Regular Expression, DFA, NFA, Parsing: Top Down , Top Down Without back tracking , Recursive Decent Parsing , First and Follow , LL(1), Bottom Up : Operator Precedence Grammar / Parser ,Language Processor development tools, Causes of a large semantic Gap, Binding and Binding Times, Data Structures used in Compilers, Scope Rules, Memory Allocation, Compilation of Expression and Control structure, Code Optimization	**(20%)**
5	**Linkers & Loaders :-** Introduction to Linkers, Relocation and Linking Concepts, Design of a Linker, Self-Relocating Programs, Linking for Overlays, Introduction to Loaders, Programs in Memory, Different Loading Schemes, Types of Loaders, Linking Loaders, Overlay, Binder, Dynamic Loader	**(20%)**

Recommended Lecture Scheme: Approximately 40 to 45 hours in a semester

Recommended Practical Scheme: Applicable

Assignment: Five assignments should be given.

Main Reference Books:
1. System Programming
   By D.M. Dhamdhare, Tata McGraw Hill
2. Unix Device Driver
   By George Pajere
3. Systems Programming
   By Srimanta Pal, Oxford University Press

Reference Books:
1. Compilers
   By Aho , Sethi & Ulman
2. Compiler Construction Principles & Practice Principles and Practice
   By Keneth Louden
3. System Software - An Introduction to Systems Programming
   By Leland L. Beck, Pearson Education Asia, 3rd Edition, 2000
4. System Software
   By Shantanu Chattopadhyay, Prentice-Hall India, 2007