(0 – 0- 3)

5th Semester		
SL. NO.	Name of Lab	List of Experiments
CS1508-P	Microprocessor	1. A Program to add: *(i)* Two 8-bit numbers *(ii)* Two 16-bit numbers 2. A Program to find the smallest number in a data array. 3. A Program to find multiplication of two 8-bit numbers. 4. A Program to find a square root of a number. 5. Program and verification of Speed control of stepper motor. 6. Program and verification of Seven-segment display.

(VI Semester)

(CS1601) Internet Fundamentals & Application (2 -1 - 0)

Evolution of Internet, TCP/IP addressing and routing. Internet applications FTP, Telnet, Email, Chat. World Wide web, HTTP protocol. Designing web pages HTML, forms, CGI scripts and clickable maps, JavaScript.
Java servlets, Perl. DHTML, XML. E-Commerce and security issues including symmetric and asymmetric key, encryption and digital signature authentication. Internet telephony, virtual reality over the web. Intranet and extra net, firewall design issues.

Suggested Text Books & References

* Black, "Computer Networks".
* Stevens, "Unix Networking Programming", 2nd Edition

(CS1602) Interactive Computer Graphics (2- 1 –0)

Graphics hardware and display devices; graphics primitives- drawing lines and curves; 2d and 3d transformations segments and their applications; generating curves, surfaces and volumes in 3d, wire-frame models, Bezier and spline curves and surfaces; geometric modeling- elementary geometric algorithms for polygons, boundary representations, constructive solid geometry, spatial data structures; hidden surface and line elimination; rendering, shading, light models. Realistic image synthesis techniques, textures and image-based rendering; video games
and computer animation.

Laboratory: Programming for generating tines, curves and rendered surfaces. Interactive graphics programming- modeling and updating objects in an object hierarchy, video games, computer animation and realistic image synthesis.

Suggested Text Books & References

- Rogers "Procedural Elements of Computer Graphics", McGraw Hill.
- Newman & Sproule, "Principles of Interactive Computer Graphics", ", McGraw Hill.1987
- Harringtones. S., "Computer Graphics", A Programming Approach 2nd Edition, McGraw Hill. 1987.
- Rogers & Adams "Mathematical Elements of computer Graphics", 2nd Edition, McGraw Hill.
- Henary Baper,"Computer Graphics".

(CS1603) LANGUAGE PROCESSORS (3- 1 –0)

Compiler Structure: Analysis - Synthesis model of complication, various phases of a compiler, Tool based approach to compiler construction.
Lexical Analysis: Interface with input, parser and symbol table, Token, lexeme and patterns. Difficulties in lexical analysis, Error reporting, Implementation, Regular definition, Transistion diagrams, LEX.
Syntax Analysis: CFGs, Ambiguity, associativity, precedence, Top down parsing, Recursive descent parsing, Transformation on the grammars, Predictive parsing, Bottom up parsing, Operaor precedence grammars, LR parses (SLR, LALR, LR), YACC.
Syntax Directed Definitions: Inherited and synthesized attributes, dependency graph, Evaluation order, bottom up and top down evaluation of attributes, I-and S- Attributes definitions.
Type Checking: Type system, type expressions, structural and name equivalence of types, type conversion, overloaded functions and operators, polymorphic functions.
Run Time System: Storage organization, activation tree, activation record, parameter passing, symbol table, dynamic storage allocation.
Intermediate Code Generation: Intermediate representations, translation of declarations, assignments, control flow, Boolean expressions and procedure calls. Implementation issues.
Code Generation and Instruction selection: Issues, basic blocks and flow graphs, register allocation, code generation, Dag representation of programs, code generation from dags, peep hole optimization.

Suggested Text Books & References

- Aho, A. V. Sethi R. and Ullman, J.D. "Compilers Principles, Techniques and Tools", Adision-Wesley, 1988.
- Fischer, C. and LeBlanc, RJ. "Crafting a Compiler with C, Benjamin Commings", 1991.
- Holub, A.C. "Compiler Design in C", Prentice Hall of India, 1993.

(CS1604) Computer Architecture (3- 1 –0)

Overview of von Neumann architecture: Instruction set architecture; The Arithmetic and Logic Unit, The Control Unit, Memory and I/O Devices and their interfacing to the CPU; Measuring and reporting performance ; CISC and RlSC processors, Pipelining, Basic concepts of pipelining, data hazards, control hazards, and structural hazards; Techniques for overcoming or reducing the effects of various hazards. Hierarchical Memory Technology: Inclusion, Coherence and locality properties; Cache memory organizations, Techniques for reducing cache misses; Virtual memory organization, mapping and management techniques, memory replacement policies. Instruction-level parallelism: Concepts of instruction-level parallelism (ILP), Techniques for increasing ILP; Super scalar, super pipelined and VUW processor architectures; Vector and symbolic processors; Case studies of contemporary microprocessors

Multiprocessor Architecture: Taxonomy of parallel architectures; Centralized shared-memory architecture, synchronization, memory consistency, interconnection networks; Distributed shared-memory architecture, Cluster computers. Non von Neumann Architectures: Data flow Computers, Reduction computer architectures, Systolic Architectures.

Suggested Text Books & References

- Hwang, K. "Advanced computer architecture with Parallel programming", McGraw Hill.
- Patterson D.A and Hennessy, J.L. "Computer architecture a quantitative approach", 2nd Edition, Morgan Kaufman, 1996.
- Stone, H.S. "Advanced Compter Architecture" , Adision-Wesley, 1989.
- Siegel, H.J."Interconnection Network for Large Scale Parallel Processing", 2nd Edition, McGraw Hill. 1990.

(CS1605) Operating System II (3- 1 –0)

System Administration: Understand configuration of H/W, configuration of Kernel, Setting up of serial H/W, configuration of TCP/IP Networking, Name Service & Resolve configuration,
Understanding of various Network Application, Management of NIS, Understanding NFS and AFS, configurations of Mail, configuration NNTP/TIN, file System & Quota Management

Suggested Text Books & References

* Linux Administration.
* Hpux Administration Manual
* DELALPHA Administration Manual.
* Tanbaum: Modern Operating System

(CS1606) Analysis and Design of Algorithm (3- 1 –0)

Algorithms and Complexity - asymptotic notations, orders, worst-case and average-case, amortized complexity.
Basic Techniques - divide & conquer, dynamic programming, greedy method, backtracking, branch and bound, randomization. Data Structures - heaps, search trees, union-find problems. Applications - sorting & searching, combinatorial problems, optimization problems, computational geometric problems, string matching. Graph Algorithms - BFS and DFS, connected components, spanning trees, shortest paths, max-flow. NP-completeness.
Approximation algorithms.
Laboratory: Implementation of algorithms covered in class: This will involve running the algorithms under varying Input sets and measuring running times, use of different data structures for the same algorithm (wherever applicable) to see its effect on time and space, comparison of different algorithms for the same problem etc.

Suggested Text Books & References

- Horowitz E. & Sahni,S, "Fundamental of Computer Algorithm", Galgoyia.
- Aho, Hopcroft & Ullman, " The DESIGN & ANALYSIS OF ALGORITHM", Adision-Wesley. Sedgewick,"Algorithms in C".

VI –SEMESTER PRACTICAL

(0-0-3)

6th Semester		
SL. NO.	Name of Lab	List of Experiments
CS1607-P	System Administration	1) TCP/IP configuration 2) Configuration of mail server 3) Configuration of file server 4) Configuration of print server 5) Study of Novel NetWare

(0-0-3)

6th Semester		
SL. NO.	Name of Lab	List of Experiments
CS1608-P	Internet Lab	1) Configuration of IIS server 2) Study of scripting Language 3) Static Web Page designing 4) Dynamic Web Page designing

(0-0-3)

6th Semester		
SL. NO.	Name of Lab	List of Experiments
CS1609-P	Computer Graphics	1) Creation of lines and Plane 2) Creation of different polygons 3) Implementation of different polygons filling algorithms 4) Implementation of different clipping algorithm

(0-0-3)

6th Semester		
SL. NO.	Name of Lab	List of Experiments
CS1610-P	Language Processor	1. Write a Compiler for a small language. 2. Design a predictive parser for small language. 3. Design a Scanner(Lex, Flex) 4. Design a Parser.(Yacc/Bysy) 5. Study of code Optimisation.

(VII Semester)

(CS1701) Software Engineering (3- 1 –0)

Introduction, Software Life-cycle models, Software requirements, specification, specification-axiomatic and algebraic specifications. Function-oriented software design, Object-oriented design, UML, User interface design, coding and unit testing, integration and systems testing, Software reliability and fault-tolerance, Software project planning, monitoring, and control. Software maintenance. Computer-aided software engineering (CASE), Software reuse, Component model of software development. Laboratory: Development of requirements specification, function oriented design using SNSD, Object-oriented design using UML test case.

Suggested Text Books & References

* Jalote,Pankaj,**"** Integrated Approach to S/W", Narosa.
* Pressman, R,"S/W Engg., A Practioner's Approach", 4th Edition., , McGraw Hill. 1990, Pfleerger,S.L. "S/W Engineering" , MacMillon.

(CS1702) Object Oriented Programming & Methodology (3- 1 –0)

Introduction to the principles of object-oriented programming (classes, object messages, encapsulation, inheritance, polymorphism. exception handling, and object-oriented containers). Object design implementation in a programming language, e.g., C++ or Java. Object oriented analysis, modeling and design. UML may be introduced. Use cases, Use case driven analysis. Structural Modeling: classes, relationship., interfaces, class diagrams, and object diagrams, in UML. Behavioral Functional modeling: use case diagram., sequence diagrams, in UML. Dynamic Modeling: state charts. Architectural Modeling. Analysis, patterns. Design patterns. Distributed Object Model.