

## SEMESTER VI

<b>3PCCCS306</b>	<b>Complier Design</b>	<b>3L:0T: 0P</b>	<b>3 Credits</b>
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### Objectives of the course

- To understand and list the different stages in the process of compilation.
- Identify different methods of lexical analysis
- Design top-down and bottom-up parsers
- Identify synthesized and inherited attributes
- Develop syntax directed translation schemes
- Develop algorithms to generate code for a target machine

### Detailed contents

#### Module 1:

The aim is to learn how to design and implement a compiler and also to study the underlying theories. The main emphasis is for the imperative language. Introduction: Phases of compilation and overview. Lexical Analysis (scanner): Regular languages, finite automata, regular expressions, from regular expressions to finite automata, scanner generator (lex, flex). Syntax Analysis (Parser): Context-free languages and grammars, push-down automata, LL(1) grammars and top-down parsing, operator grammars, LR(O), SLR(1), LR(1), LALR(1) grammars and bottom-up parsing, ambiguity and LR parsing, LALR(1) parser generator (yacc, bison) Semantic Analysis: Attribute grammars, syntax directed definition, evaluation and flow of attribute in a syntax tree. Symbol Table: Its structure, symbol attributes and management. Run-time environment: Procedure activation, parameter passing, value return, memory allocation, and scope. Intermediate Code Generation: Translation of different language features, different types of intermediate forms. Code Improvement (optimization): Analysis: control-flow, data-flow dependence etc.; Code improvement local optimization, global optimization, loop optimization, peep-hole optimization etc. Architecture dependent code improvement: instruction scheduling (for pipeline), loop optimization (for cache memory) etc. Register allocation and target code generation Advanced topics: Type systems, data abstraction, compilation of Object Oriented features and non-imperative programming languages.

### Course Outcomes

- For a given grammar specification develop the lexical analyser
- For a given parser specification design top-down and bottom-up parsers
- Develop syntax directed translation schemes
- Develop algorithms to generate code for a target machine

<b>3PCCCS307</b>	<b>Computer Networks</b>	<b>3L:0T: 0P</b>	<b>3 Credits</b>
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### Objectives of the course

To develop an understanding of modern network architectures from a design and performance perspective.

To introduce the student to the major concepts involved in wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs).

To provide an opportunity to do network programming  
To provide a WLAN measurement ideas.

### Detailed contents

#### Module 1:

Data communication Components: Representation of data and its flow Networks , Various Connection Topology, Protocols and Standards, OSI model, Transmission Media, LAN: Wired LAN, Wireless LANs, Connecting LAN and Virtual LAN, Techniques for Bandwidth utilization: Multiplexing - Frequency division, Time division and Wave division, Concepts on spread spectrum.

#### Module 2:

Data Link Layer and Medium Access Sub Layer: Error Detection and Error Correction - Fundamentals, Block coding, Hamming Distance, CRC; Flow Control and Error control protocols - Stop and Wait, Go back – N ARQ, Selective Repeat ARQ, Sliding Window, Piggybacking, Random Access, Multiple access protocols -Pure ALOHA, Slotted ALOHA, CSMA/CD,CDMA/CA

#### Module 3:

Network Layer: Switching, Logical addressing – IPV4, IPV6; Address mapping – ARP, RARP, BOOTP and DHCP–Delivery, Forwarding and Unicast Routing protocols.

#### Module 4:

**Transport Layer:** Process to Process Communication, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), SCTP Congestion Control; Quality of Service, QoS improving techniques: Leaky Bucket and Token Bucket algorithm.

#### Module 5:

**Application Layer:** Domain Name Space (DNS), DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls, Basic concepts of Cryptography

### **Suggested books**

Data Communication and Networking, 4th Edition, Behrouz A. Forouzan, McGraw-Hill.

Data and Computer Communication, 8th Edition, William Stallings, Pearson Prentice Hall India.

### **Suggested reference books**

Computer Networks, 8th Edition, Andrew S. Tanenbaum, Pearson New International Edition.

Internetworking with TCP/IP, Volume 1, 6th Edition Douglas Comer, Prentice Hall of India.

TCP/IP Illustrated, Volume 1, W. Richard Stevens, Addison-Wesley, United States of America.

### **Course Outcomes**

Explain the functions of the different layer of the OSI Protocol.

Draw the functional block diagram of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) describe the function of each block.

For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component

For a given problem related TCP/IP protocol developed the network programming.

Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.

3PECCSA302	Computer graphics	3L:0T: 0P	3 Credits
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### Module 1

**Introduction and Overview of Graphics Systems:-** Use of Computer graphics, Video Display Devices, Refresh Cathode-Ray Tubes, Raster and Random Scan Displays, Colour CRT Monitors, Direct View Storage Tubes, Flat Panel Displays, Three-Dimensional Viewing Devices, Stereoscopic & Virtual Reality Systems, Raster and Random Scan Systems, Different Input and Hard Copy Devices, Graphics Softwares.

### Module 2

**Output Primitives: -** Points and Lines, Line Drawing Algorithms (DDA & Bresenham's), Circle and Ellipse Generating Algorithms, Conic Sections.

### Module 3

**Two-Dimensional Geometric Transformations:-** Different types of transformations and their matrix representations, Homogeneous Coordinates, Composite Transformations, transformations between Coordinate Systems, Affine transformations, Window-to-Viewport Coordinate transformation, Clipping-Point, Line, Polygon, Curve and Text Clipping.

### Module 4

**Three-Dimensional Concepts and Object Representation:-** Three Dimensional Display Methods, Polygon Surfaces, Curved Lines & Surfaces, Quadric Surfaces, Spline Representations, Cubic Spline interpolation methods, Bezier Curves and Surfaces.

**Three Dimensional Transformations and Viewing:** Translation, Rotation, Scaling, Reflection, Shears, Composite Transformations, Projections- Parallel and Perspective, Projection Transformations, Clipping.

### Suggested Books:

1. *D. Hearn & M.P. Baker - Computer Graphics, 2/e , Pearson Education, New Delhi, 2005*
2. *Prabat K Andleigh and Kiran Thakrar, "Multimedia Systems and Design", PHI, 2005*
3. *W.M. Newman. et. al.- Principle of Interactive Computer Graphics, McGraw Hill Publication, New Delhi, 1995.*
4. *S. Harrington -Computer Graphics- A Programming Approach, McGraw Hill Publication, New Delhi, 1994.*
5. *J.D. Foley et. al- A Fundamental of Computer Graphics Addition Wesley, London, 1993.*

## **Course Outcomes**

The aim of this course is to give the fundamentals of graphics and animation. The concept of

Principles of 2D Graphics, 3D Graphics, Visible Surface Determination, are studied in detail for a competitive computer professional.

To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations.

To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations.

<b>3OECCS301</b>	<b>Soft Skills &amp; Interpersonal Communication</b>	<b>3L:0T: P</b>	<b>3 Credits</b>
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### **Course Objective :**

- 1.To develop inter personal skills and be an effective goal oriented team player.*
- 2.To develop professionals with idealistic, practical and moral values.*
- 3.To develop communication and problem solving skills.*
- 4. To re-engineer attitude and understand its influence on behaviour.*

### **Unit 1: Self Analysis**

- Introduction to Soft Skills and Hard Skills, Importance of Soft Skills, Attributes regarded as Soft Skills, Identifying and improving your Soft Skills, Art of Negotiation
- Stage Fright
- Self Discovery, Importance of knowing oneself, Process of knowing oneself, SWOT Analysis, Benefits of SWOT analysis, SWOT Analysis , Self Esteem, Ways to improve Self Esteem, Aristotle on Self-Gender and Self, Feminist Self, Escaping the Self
- Self Development
- Developing Positive Attitude and Self Confidence, Forming Values

### **Unit II : Goal Setting and Career Planning**

- Wish List, SMART Goals, Blue print for Success, Short term, Long Term, Life Time Goals,
- Art of Listening, Art of Reading, Art of Speaking, Art of Writing, writing E-mail
- Motivation Skills, Personality Development, Improving Perception
- Time Management, Stress Management, Conflict Handling
- Problem Solving and Decision Making, adaptability.

### **Unit III : Effective Communication**

- Communication Skills, Concept/Meaning, Definition
- Types of Communication, Process of Communication, stages of Communication
- Difference between General and Technical Communication
- Barriers to Communication
- Communication Network
- 7 C's of Communication
- Verbal & non verbal Communication

#### **Unit IV : Interpersonal Skills**

- Interpersonal Communication, Basic Skill set
- Effective Interpersonal Communication in Organization
- Team Building, Communicating in a Team
- Intercultural Communication
- Leadership traits through Communication
- Communicating assertively
- Presentation Skills

#### **Suggested Readings :**

- 1. Covey Sean Seven Habits of Highly Effective Teens, New York, Fireside Publishers, 1998.*
- 2. Carnegie Dale, How to win Friends and Influence People, New York: Simon & Schuster, 1998.*
- 3. Thomas A Harris, I am ok, You are ok, New York-Harper and Row, 1972*
- 4. Dr. K. Alex Soft Skills, S. Chand*

<b>3PROJCS301</b>	<b>Project-I</b>	<b>0L:0T:6P</b>	<b>3 Credits</b>
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The knowledge gained in previous courses are to be applied to a practical problem in various disciplines

Demonstrate their ability to work independently and collaboratively