

Colloquium

ECSC 401B

0 - 3 - 0 = 3

Contents: The students will deliver talks on their experience during the 50 working days of practical training and topics of current interest in the computer science and engineering field. These would include technology, research as well as standards issues.

Parallel & Distributed Computing

ECSL 401B

3 - 0 - 0 = 3

Classification of parallel computing structures, instruction level parallelism - static and dynamic pipelining, improving branch performance, superscalar and VLIW processors; High performance memory system; Shared memory multiprocessors and cache coherence; Multiprocessor interconnection networks; Performance modelling; issues in programming multiprocessors; Data parallel architectures. Models of distributed computing; Basic issues; Causality, Exclusion, Fairness, independence, Consistency; Specification of DIstributed Systems; Transition systems, Petri nets, process algebra properties; Safety, Liveness, Stability.

Computer Graphics

ECSL 402B

3 - 0 - 0 = 3

Graphics pipeline; Graphics hardware: Display devices, input devices; Raster Graphics; line and circle drawing algorithms; Windowing and 2D/3D clipping. Cohen and Sutherland line clipping, Cyrus Beck clipping method; 2D and 3D Geometrical Transformations: scaling, translation, rotation, reflection; Viewing Transformations: parallel and perspective projection; Curves and Surfaces: cubic splines, Bezier curves, B-splines, Parametric surfaces. Surface of revolution Sweep surfaces, Fractal curves and surfaces; Hiddenline/surface removal methods; illuminations model; shading: Gouraud, Phong; Introduction to Ray-tracing; Animation; Programming practices with standard graphics libraries like OpenGL

Suggested Readings:

- Procedural elements of computer graphics, D F Rogers, TMHI
- Mathematical Elements for Computer Graphics Rogers, Adams, TMHI
- Introduction to Computer Graphics, Foley, Dam, Phillips, Feiner, Addison Wesley
- Computer Graphics: C Version, D Hearn and M P Baker, Prentice Hall

Web Based Application Design

ECSL 403B

3 - 0 - 0 = 3

Overview of Internet :

Introduction to internet and WWW, Concepts of Networking and Layers of OSI Reference Model, Internet Protocols like TCP/IP, HTTP, FTP, Domain Name Service, etc. Concepts of URL, Web Browser, Search Engines, Chat & Bulletin Boards , Various Internet & Web Technologies, Hardware and Software Requirements for different Internet Applications,

Principles of Web Design:

Key Issues for building a website, Structure of Web Page, Introduction of HTML, Elements of HTML syntax, Head and Body Sections, Building HTML Documents, Inserting images, Hyperlinks, Backgrounds and Color Control, Order lists, Table layout and building table on a web page, animation techniques, frames, etc Tools for Building Website like Microsoft FrontPage/ Netscape Communicator.

Developing ASP.NET web applications using Microsoft Visual Studio .NET

Create an ASP.NET Web Application Project by using Visual Studio .NET. Adding server controls and web page functionality to an ASP.NET page, using the debugging features of Visual Studio .NET, Use of validation controls to validate user input, Access data by using the built-in data access tools in Visual Studio .NET, Overview of .NET technologies and how ASP.NET integrates with them., use of Microsoft ADO.NET to access data in a Web application., Configuration and deployment of an ASP.NET application.

Reference Books:

- **“World Wide Web Design with HTML” by C Xavier from TMH**
- **“ASP.Net with Web Design The Complete Reference” by Powell from TMH**
- **“ASP.Net” by Duthie from TMH**

Computer Graphics Lab

ECSP 401B

0 – 0 – 4 = 2

Implementation of the Line, Circle and Ellipse generation algorithms, Solid Area Scan Conversion algorithms, Clipping algorithms, Rendering, @-D and 3-D transformations, SPMLines and Bezier Curves.
C/C++/PHIGS/OPENGL may be used for the implementation.

Mini Project

ECSD 401B

0 – 0 – 6 = 3

Contents: Design/implementation work under the guidance of a faculty member. Prior to registration a detailed plan of work should be submitted by the student to the Director of the School for approval by faculty board.

Applied Graph Theory

SPML 401B

3 – 0 – 0 = 3

Introduction to Graph, Finite & Infinite graph, Incidence and Degree; Paths and Circuits, Euler graph, Hamiltonian paths and circuits; Trees and Fundamental Circuits, Distance and Centres, Spanning Tree; Cut-sets and Cut-vertices, Connectivity and Separability, 1-Isomorphism and 2-Isomorphism; Planar and Dual of graph, Geometric dual, Combinatorial dual;

Vector Spaces of Graph, Basis vectors of a graph, Circuit and Cut-set subspaces; Matrix representation of graph, Incidence matrix, Circuit matrix, Cut-set matrix, Path matrix, Adjacency matrix; Colouring, Chromatic number, Chromatic Polynomial; Covering and Partitioning, Chromatic partitioning, Matching, Covering;

Suggested Readings:

1. Algorithm Graph Theory, Gibbons, Cambridge University Press
2. Graphs, Networks and Algorithms, M. N. S. Swamy K. Tulasiraman
3. Graph Theory – with application to Engineering and Computer Science , Narshing Deo, PHI
4. A First Look at Graph Theory, John Clark & D.A. Holt, Allied Publishers Ltd.