

**UNIVERSITY POLYTECHNIC
B.I.T., MESRA, RANCHI**

Syllabus of Diploma in Engineering (Computer Engineering) (Semester V)

**COURSE STRUCTURE
(W.E.F. 2011 Batch Students)
(Total Unit 7.0)**

Course Code	Theory	Unit	Course Code	Sessional	Unit
DCP 5001	Data Communication and Networking	1.0	DCP 5002	Networking Lab.	0.5
DCP 5003	Introduction to JAVA Programming	1.0	DCP 5004	JAVA Programming Lab.	0.5
DCP 5005	Operating System	1.0	DCP 5010	Visual Basic Lab.	1.0
DCP 5007	Computer System Architecture	1.0	DCP 5012	Project – I	1.0
		4.0			3.0

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Subject: Data Communication and Networking

Course Code : DCP 5001

Module 1:

04 Lectures

Introduction: A communication model, data communications, data communications networking protocols and protocols architecture.

Module 2:

06 Lectures

Data transmission and transmission Media: Concepts and terminology, analog and digital data transmission, transmission impairments guided transmission media, wireless transmission.

Module 3:

06 Lectures

Data Encoding and Communication Interface: Digital data- digital signals. Digital data- analog signals, analog data- digital signals. analog data- analog signals, Spread spectrum, asynchronous and synchronous transmission line configurations, interfacing.

Module 4:

08 Lectures

Data Link Control and Multiplexing: Flow control, error detection, error control, high level data link control, other data link control protocols frequency division multiplexing, synchronous time division multiplexing, statistical time-division multiplexing, statistical time-division multiplexing.

Module 5:

06 Lectures

Protocols and Architecture: Protocols, OSI, TCP/IP protocol suite.

Module 6:

06 Lectures

Switching: Circuit-switched networks, Virtual-circuit networks, Datagram networks, Structure of a switch.

Module 7:

04 Lectures

Network Management: Network Management System, Simple network management protocol (SNMP), Network security.

Text Book:

B.A. Forouzan, "Data Communication and Networking". 4e, TMH

Reference Books:

1. Stallings. W., "Data and Computer Communication", 6e, PHI.
2. Andrew S. Tanenbaum, "Computer Networks", 4e, PHI

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Syllabus of Diploma in Engineering (Computer Engineering) (Semester V)

Subject: - Introduction to JAVA Programming.

Course Code : DCP 5003

Module 1:

02 Lectures

Introduction: Review of object oriented programming; Features of JAVA; JAVA for Internet programming; Difference between JAVA and C++; Introduction to JAVA Development Kit and JAVA API (inbuilt packages).

Module 2:

06 Lectures

Programming in JAVA: Structure of a JAVA program; Writing, compiling and executing a JAVA program; Byte-code; JAVA Virtual Machine; Data types, variables and constants; Operators and expressions; Typecasting; Mathematical operations using the Math class; Programming constructs; Array processing; Command-line arguments.

Module 3:

08 Lectures

Classes and Objects: The Math class; static members; The String class; Wrapper classes; The System class; Keyboard input and output; Defining a class; Method overloading Inheritance; Method overriding; final methods; final class. abstract methods and classes; Visibility control.

Module 4:

06 Lectures

Interfaces and Packages: Defining and implementing interface; Extending interface; Multiple inheritance using interface; Using system packages; Creating and accessing packages; Adding a class to a package.

Module 5:

08 Lectures

Multithreading and Exception Handling: Creating a thread; Thread priority; Managing threads; Lifecycle of a thread. Inbuilt exceptions; Handling an exception; Handling multiple exceptions within a block; User-defined exceptions.

Module 6:

06 Lectures

Applets and Graphics Programming: Creating an applet; Applet lifecycle; Drawing regular shapes; Writing text messages;

Module 7:

04 Lectures

Data File Processing: Concept of streams; The File class; I/O exceptions; Character I/O and Byte I/O;

Text Book:

E Balagurusamy, "Programming with JAVA 2", 2e, TMH

Reference Book:

Herbert Schildt, "JAVA 2 The complete reference", 5e, TMH

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Subject: - Operating System

Course Code : DCP 5005

Module 1:

04 Lectures

Introduction: Simple Monitor, Performance, Multiprogramming, time-sharing, Real-time systems.

Module 2:

04 Lectures

Operating system Services: Type of services, The user view, The Operating system view.

Module 3:

06 Lectures

File System: File concept and support, Access and allocation methods, Directory systems, file protection.

Module 4:

06 Lectures

Process Management: Process Concept, Process Scheduling, Threads.

Module 5:

08 Lectures

CPU scheduling: Scheduling concept and algorithms, algorithm evolution

Module 6:

06 Lectures

Memory Management: Preliminaries, Bare machine, Resident, Monitor, swapping, multiple partition, paging, and segmentations.

Module 7:

06 Lectures

Disk scheduling: Physical Characterization, FCFS scheduling and shortest-see-time-first.

Text book:

Silberchartz Galvin Gane, "Operating system Concepts", 6e, John Wiley & Sons Inc

Reference Book:

H.M. Deitel, "Operating Systems", 2e, Addition Wesley

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Syllabus of Diploma in Engineering (Computer Engineering) (Semester V)

Subject: - Computer System Architecture

Course Code : DCP 5007

Module 1:

06 Lectures

Introduction: Digital computers, Map Simplification; Combinational circuits; Sequential circuits.

Module 2:

08 Lectures

Digital components: Registers; Register with Parallel load; Shift Registers; Bidirectional shift register with Parallel load. Binary counters; Binary counter with parallel load.

Module 3:

06 Lectures

Basic Computer Organization: Stored program organization; Computer registers; common Bus System; Computer Instruction; Instruction Cycle.

Module 4:

04 Lectures

Input-output and Interrupt: Input output configuration; Program Interrupt;

Module 5:

06 Lectures

Central Processing Unit: General Register Organization; Stack Organization; Reverse Polish Notation; Instruction Formats.

Module 6:

06 Lectures

Input Output Organization: Input output interface; Handshaking; Asynchronous serial transfer.

Module 7:

04 Lectures

Memory Organization: Main memory; RAM ; ROM Types of ROM

Text Book:

M.Morris Mano, "Computer System Architecture", 3e, Pearson Education

Reference Book:

Thomas L. Floyd, "Digital Fundamentals", 8th edition, Pearson Education