

Program: Diploma
Semester: Fifth
Course: Java Programming
Course Code: 3D.301

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Course Objective:

- Objective of this course is to provide the ability to design console based, GUI based and web based applications.
- To understand integrated development environment to create, debug and run multi-tier and enterprise-level applications.
- The student will be able to create network based applications.
- Create business applications and database application
- Implement Server side programming.
- Create Animation using Applet, Thread and AWT controls.

Unit I:

JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting. Operators :Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special,

Unit II:

Expressions & its evaluation. If statement, if...else... statement, Nesting of if...else... statements, else...if Ladder, Switch, ?operators, Loops –While, Do, For, Jumps in Loops, Labeled Loops. Defining a Class, Adding Variables and Methods,

Unit III:

Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods. Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control. Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package Adding a Class to a Package, Hiding Classes.

Unit IV:

Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Executable Interface. Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets ,Getting Input from the User.

Suggested Books:

E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH
Peter Norton, "Peter Norton Guide To Java Programming ", Techmedia Publicatio

Program: Diploma

Semester: Fifth

Course: Java Programming Lab

Course Code: 3DP.301

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List of programs:

1. WAP to find square root of given number
2. WAP to enter principal, rate & time and find simple interest
3. Enter a character from keyboard and find out the ASCII value of the character
4. Enter two numbers from keyboard and find out n^*
5. Enter a number from keyboard and find out Fibonacci series
6. Enter a number from keyboard and find out Fibonacci series using recursion algorithm.
7. Enter a number from keyboard and find out factorial of the number
8. Enter a number from keyboard and check whether the number is palindrome or not
9. Enter a number from keyboard and print the prime numbers present within it
10. Enter a number from keyboard and print the Armstrong number within it and also count how many numbers are there within it
11. Programs using switch statement
12. WAP to swap two numbers without using third variable
13. Programs to draw the varieties of triangles
14. Program to draw a rectangle of any size
15. Program to draw a diamond shape figure
16. Program to find out the path of environment variable, path of the desktop and the execution path of the given program
17. Enter a number from keyboard and convert it into binary form and vice-versa
18. Program to sort an array in an ascending order
19. Program to move the bubbles using thread.
20. Insertion sort of data using single link list
21. Enter data from the keyboard and apply all the operations of stack.
22. Polynomial operation using link list
23. An application Using on applet and database
24. An application Using on AWT and database

Program: Diploma
Semester: Fifth
Course: Software Engineering
Course Code: 3D.303

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Course Objective:

- Understanding User Conceptual models and development of better specifications.
- Improvement in design languages and reusable code.
- Perform background research and a feasibility study prior to embarking on a development project.
- To work in a team to implement a project plan, URD, SRD and ADD, by developing detailed designs and code.
- Experience and/or awareness of testing problems, a simple testing report, and a simple Systems User Manual (SUM).
- To search appropriate literature including research publications, industrial newspapers and articles, and internet resources.

Unit I:

Introduction to Software Engineering: Definition, Software Engineering Paradigms, waterfall method, prototyping, interactive Enhancement, The Spiral model, Fourth Generation Technique Software Metrics: Role of Metrics and measurement, Metrics for software productivity and quality, Measurement software, size-oriented metrics, function oriented metrics, Metrics for software quality, Integrating metrics within the software engineering process.

Unit II:

Software Requirement Specification (SRS): Problem analysis, structuring information, Data flow diagram and data dictionary, structured analysis, Characteristics and component of (SRS), Metrics of SRS, function point, Number of errors and found, change request frequency.

Unit III:

Planning a Software Project: Cost estimation, uncertainties in cost estimation, Single variable model, COCOMO model, On software size estimation, Project scheduling and milestones, Software & Personal Planning, Rayleigh curve, Personal Plan, Quality Assurance Plan, Verification & Validation (V & V), inspection & review. System Design: Design Objectives, Design Principles, problem, Partitioning, Abstraction, Top Down and Bottom-up techniques, Structure Design, Structure Charts, Design Methodology, Design Review, Automated Cross Checking, , total number of modular, number of parameters.

Unit IV:

Detailed Design: Module specification, Specifying functional module, specifying data abstraction, PDL and Logic/Algorithm Design. Coding: Coding by Top-down and Bottom-up, Structured Programming, Information Hiding, Programming style, Internal Documentation. Testing: Level of testing, Test cases and test criteria. Psychology of Testing, Functional Testing, Structural Testing.

Suggested Readings:

1. *Software Engineering, Roger S. Pressman.*
2. *Integrated Approach to Software Engineering, Pankaj Jalote*

Program: Diploma
Semester: fifth
Course: Operating Systems
Course Code: 3D.304

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Course Objective: To study and apply concepts relating to operating systems, such as concurrency and control of asynchronous processes, deadlocks, memory management, processor and disk scheduling, parallel processing, and file system organization.

Unit I:

Introduction: What is an operating system, batch systems, multi programmed, time-sharing systems, personal-computer systems, parallel systems, distributed systems, real-time systems.

Processes: Process Concept, Thread, design issues of thread, user space thread and kernel space thread. Usage of thread. Process states, Operation on Processes- creation and termination. Implementation of process:- process table. Process Synchronization.

Unit II:

Scheduling: Basic Concepts, preemptive and non preemptive scheduling. Scheduling Algorithms. Types of scheduling: - batch, interactive and real-time. Goals of scheduling algorithms. FCFS, SJF, RR, priority, multiple queues, three-level scheduling.

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock. Banker's algorithm.

Unit III:

Memory management: Multiprogramming. Address binding (relocation), and protection. Swapping. Virtual memory: - logical versus physical address space, paging, page fault, page table and its entries, demand paging, multi level page table, TLB, its entries and working. Page replacement algorithms: - LRU, optimal, NRU, FIFO, second chance, clock, NFU. Working set. What is segmentation, what are its benefits and drawbacks.

Unit IV:

File system: What is file, file naming, file types(directory, regular, device), sequential access and random access files, file attributes, operations on file, hierarchical directory structure, path name(relative and absolute), operation on directories, disk layout, disk partition, file system layout, disk block allocation:-contiguous allocation linked list allocation,

I/O management: Basic principles and overall structure of I/O management subsystem, Device controllers, layers of the I/O subsystem:- interrupt handlers device driver, device independent I/O software and user space I/O software.

Suggested Readings:

1. Operating Systems, Galvin, John Wiley
2. Operating Systems , Milankovic, TMH
3. An Introduction to Operating System, Bhatt,PHI
4. Modern Operating System, Tannenbaum,PHI
5. Guide to Operating Systems, Palmer, VIKAS
6. Operating Systems,Prasad,Scitech

Program: Diploma
Semester: fifth
Course: Operating Systems Lab
Course Code: 3DP.304

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List of program:

1. List all files and directories in the directory that you are currently in.
2. Command that can be used to list just the files and directories.
3. Command to list the files in alphabetical order by the names of the files.
4. Command to list the files in reverse alphabetical order by the names of the files.
5. Write 'format' commands that –
 - a) Would erase all the contents off a disk
 - b) Quickly erases all the contents of a floppy diskette
 - c) Would erase all the contents of C: hard disk drive.
6. Write 'copy' commands that –
 - a) Copy all files in the current directory to a disk drive.
 - b) Copy the contents of file1.txt to file2.txt
 - c) Copy the contents in myfile2.txt and combines it with the contents in myfile1.txt.
7. Write command to specify the location where MS-DOS looks when using a command.
8. Write command to use to view or change the label of the computer disk drives.
9. Write command to create directories in MS-DOS.
 - a) Creates the "test" directory in the directory in the currently directory.
 - b) Creates the "test" directory in the c:\ directory.
10. Write command used to switch directories in MS-DOS.
11. Write command to delete files from the computer.
12. Write syntax of CALL command to execute one batch file.
13. A command that erases all contents of the current screen page in video card memory and also sets colours to default values.
14. A command to change settings for all the tree standard I/O channels.
15. A command for closure of current interpreter session.

Program: Diploma
Semester: fifth
Course: Computer Security
Course Code: 3D.305

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Course Objective:

- Describe and analyze the hardware, software, components of a network and the interrelations.
- Manage multiple operating systems, systems software, network services and security. Evaluate and compare systems software and emerging technologies.
- Explain concepts and theories of networking and apply them to various situations, classifying networks, analyzing performance and implementing new technologies.
- Understand network intrusions and how to identify them such as
 - a. Computer Viruses
 - b. Network worms
 - c. Botnets
- Use appropriate resources to stay abreast of the latest industry tools and techniques analyzing the impact on existing systems and applying to future situations.
- Understand Network Devices functions and configurations (hub, switch, tap and routers)
- Understand Network Security Devices (IDS, Firewall..etc)

Unit I:

Introduction and Security trends: Need for security, Security basics: Confidentiality, Integrity, Availability, Authentication, AccessControl. Threats to security: Virusesand Worms, Intruders, Insiders, Criminal organizations, Terrorists, Information warfare Avenues of attack, steps in attack. Types of attack: Active and Passive attacks, Denial of service, backdoors and trapdoors, sniffing, spoofing, man inthe middle, replay, TCP/IP Hacking, encryption attacks. Malware: Viruses, Logic bombs.

Organizational/Operational security: Role of people in security: Password selection, Piggybacking, Shoulder surfing, Dumpster diving,installing unauthorized software/hardware, Access by non employees, Security awareness, Individual user responsibilities. Physical security: Access controls. Biometrics: finger prints, hand prints, Retina, patterns, voice patterns, signature and writing patterns, key strokes, Physical barriers. Network security basics, model for network security.

Unit II:

Cryptography and Public key Infrastructure: Introduction, Cryptography, Cryptanalysis, Cryptology, Substitution techniques: Caesar's cipher, mono alphabetic and poly-alphabetic, Transposition techniques – Rail fence technique, simple columnar, Steganography. Hashing– concept. Symmetric and a symmetric cryptography: Introduction Symmetric encryption: DES (Data encryption standard) algorithm, Diffie-Hellman algorithm, Problem of key distribution, A symmetric key cryptography: Digital Signature, Key escrow. Public key infrastructures: basics, digital certificates, certificate authorities, registration authorities, steps for obtaining a digital certificate, steps for verifying authenticit yan dintegrityofa certificate. Trust models: Hierarchical, peerto peer, hybrid.

Unit III:

Network security: Fire walls: concept, design principles, limitations, trusted systems, Kerberos–concept. Security topologies–security zones, DMZ, Internet, Intranet, VLAN, security implication, tunneling. IP security: overview, architecture, IPSec, IPSec configurations, IPSec security Virtual Private Network. Email security: Email security standards: Working principle of SMTP, PEM, PGP, S/MIME, pam.

Unit IV:

System security: Intruders, Intrusion detection systems (IDS), host based IDS, network based IDS. Password Management, vulnerability of password, password selection strategies, component of a good password. Operating system security: Operating system hardening, general steps for securing windows operating system, Hardening Unix/Linux based operating system, updates: hot fix, patch, service pack. Application and web security: Application hardening, application patches, web servers, active directory. Web security threats, web traffic security approaches, secure socket layer, transport layer security, secure electronic transaction. Software development: secure code techniques, buffer overflows, code injection, least privilege, good practices, requirements, testing.

Suggested Books:

1. Introduction to Computer Security by Matt Bishop.

2. Cryptography & Network Security : Principles & Practice.

Program: Diploma
Semester: fifth
Course: Simulation & Modeling
Course Code: 3D.306

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Course Objective:

- Describe, investigate and analyse complex engineering systems and associated issues (using systems thinking and modelling techniques).
- Comprehend and apply advanced theory-based understanding of engineering fundamentals and specialist bodies of knowledge in the selected discipline area to predict the effect of engineering activities.
- Apply underpinning natural, physical and engineering sciences, mathematics, statistics, computer and information sciences.
- Develop creative and innovative solutions to engineering challenges
- Characterise a given engineering system in terms of its essential elements, that is, purpose, parameters, constraints, performance requirements, subsystems, interconnections and environmental context.
- Develop a modeling strategy for a real world engineering system, which considers prediction and evaluation against design criteria, and integrates any required sub-system models.
- Interpret the simulation results of an engineering system model, within the context of its capabilities and limitations, to address critical issues in an engineering project.

Unit I:

Introduction to Simulation and examples:

Introduction: System and System environment, Components of system, Type of systems, Type of models, Steps in simulation study, Advantages and Disadvantages of simulation.

Examples: Simulation of Queuing systems, Other examples of simulation.

Unit II:

Principles and Software:

General Principles: Concepts of discrete event simulation, List processing.

Simulation Software: History of simulation software, Desirable software features, General-purpose simulation packages, Object oriented simulation, Trends in simulation software

Unit III:

Statistical and Queuing Models in Simulation:

Statistical Models: Useful statistical model, Discrete distribution, Continuous distribution, Poisson process, Empirical distribution.

Queuing Models: Characteristics of Queuing systems, Queuing notations, Long run measures of performance of Queuing systems, Steady state behavior of infinite population Markovian models

Unit IV:

Random Number and Variate Generation:

Random Number: Properties of random numbers, Generation of pseudo random numbers, Techniques for generating random numbers, Tests for random numbers.

Random Variate Generation: Inverse transforms technique, Convolution method, Acceptance rejection techniques.

Suggested Readings:

(1) *Averill Law, W. David Kelton, .Simulation Modeling and Analysis, McGRAWHILL*
Geffery Gordon, .System Simulation, PHI

(2) *Donald W. Body, .System Analysis and Modeling., Academic Press Harcourt India*

Program: Diploma

Semester: fifth

Course: Simulation & Modeling Lab

Course Code: 3DP.306

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List of program:

1. Write a program to simulate SJF CPU Scheduling
2. Write a program for FCFS CPU scheduling algorithm
3. Write a program for Round Robin CPU Scheduling Algorithm
4. Write a program to simulate single queuing system
5. Write a program to simulate an Airport
6. Write a program for Bomber Fighter Plane simulation
7. Write a program to simulate check out line in grocery store
8. Write a program to simulate a single queue with multiple servers

Program: Diploma

Semester: fifth

Course: Seminar in Executive communication

Course Code: 40.301

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Course Objective:

To impart more advanced basic skills through intensive practice, in this unit again the students get opportunities to apply their general awareness and classroom learning to practical situation to achieve the targeted career goal in this increasingly competitive world Some of the career oriented units are Discussion Skills, Interview Skills, Job Search Strategies , Job Correspondence etc. , they need to undergo ,

- *An average student acquires basic skills required for a cherished job.*
- *Their appreciative personality development becomes a value added attribute in their professional sphere.*
- The course enhances *communication*, leadership and teamwork *skills*; and personal development *skills* using practical approach and exposure of students to the realities of the world
- To put greater emphasis on development of non-technical skills, such as flexibility, leadership and good *communication*.

(Activity Based)

WORKSHOPS

- Debate
- Extempore
- Group Discussion
- Panel Discussion
- Presentation-Paper & Oral
- Reports: Survey Report, Project Report, Case Study

Suggested Books & Readings:

- Monippally, Matthukutty. M. 2001. *Business Communication Strategies*. 11th Reprint. Tata McGraw-Hill. New Delhi
- Swets, Paul. W. 1983. *The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates*. Prentice Hall Press. New York
- Lewis, Norman. 1991. *Word Power Made Easy*. Pocket Books
- Sen , Leena .*Communication Skills* ; Eastern Economy Edition
- Ghanekar , Dr. Anjali . *Essentials of Business Communication Skills* ; Everest Publishing House
- David Green . *Contemporary English Grammar, Structure & Composition* ; MacMillan
- Dictionary; Oxford
- Dictionary ; Longman

Websites

- www.tatamcgrawhill.com/digital_solutions/monippally
- www.dictionary.cambridge.org
- www.wordsmith.org
- www.edufind.com
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- www.englishclub.com
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- www.wikipedia.org/wiki/english_grammar