

## SEMESTER VI

### 601: INFORMATION SECURITY –I

NUMBER OF CREDITS: 5 (3L +2T)

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**OBJECTIVES:** to provide the student with an overview of the field of Information Security and Assurance. Students will be exposed to the spectrum of Security activities, methods, methodologies, and procedures. Coverage will include inspection and protection of information assets, detection of and reaction to threats to information assets, and examination of pre- and post incident procedures, technical and managerial responses and an overview of the Information Security Planning and Staffing functions

**PREREQUISITE:**

Introduction to operating system, Computer Network

**LEARNING OUTCOME:**

After completing the course, students will be able to:

- Identify and prioritize information assets.
- Identify and prioritize threats to information assets.
- Define an information security strategy and architecture.
- Plan for and respond to intruders in an information system.
- Describe legal and public relations implications of security and privacy issues.
- Present a disaster recovery plan for recovery of information assets after an incident.
- Awareness and Understanding of Government Regulations impacting Information Assurance and Security Practices

**TEXT BOOKS**

- M. Whitman and H. Mattord. Principles of Information Security, 2nd Edition (Course Technology, 2005).
- Bruce Schneier, “Secrets and Lies: Digital Security in a Networked World,” Wiley, ISBN 0- 471-25311-1 ---,
- Applied Cryptography: Protocols, Algorithms, and Source Code in C,Wiley, ISBN 0-471-11709-9.

### Syllabus

**UNIT I :** Introduction, Definition of security, Assessing security, Security terminology , Historical developments, Structure of security, Introduction to Information Security, The Need for Security , Legal, Ethical, and Professional Issues in Information Security

**UNIT II :** Risk Management and Special requirements such as Emanation Security/TEMPEST Standards, Planning for Security, Rainbow Series Reports for DOD; FIPS for all Federal Govt; DHS and CNSS guidance: Firewalls & VPNs

**UNIT III** Cryptography: Applications of cryptography, Terminology, Evolution of cryptography, Caesar ciphers, one-time pads, Operation of DES, AES ,Public-key cryptosystems, Topics in Information Systems Security, Minimum privilege ,Compartmentalization , Dual controls ,Security perimeters, Trustworthy software, proof of design correctness, Single-points-of-failure, Covert channels, Inference

**UNIT IV :** Technology: IDS and Access Control Cryptography, Physical Security including Emanations Security , (EMSEC)/TEMPEST/CFR 32 Marking, Handling, labeling and destruction of Sensitive information)  
Implementing Security, Security and Personnel, InfoSec Maintenance

**UNIT V:** Security models: Requirements ;Types, State-machine models, Mandatory/Discretionary controls, Information-flow models, Informal models, Kerberos Authentication, Authentication in centralized systems, Distributed Authentication

**UNIT VI:** Denial of Service attacks, Security vs. ATM, IP, wireless mobile networks, QoS, Traffic modeling, Network topology , Security Protocols, Zero-knowledge proofs, Subliminal channels, Oblivious transfer, Digital signature schemes, Bit commitment, Digital cash, Secure contract signing, Secure voting, Digital certified mail, Anonymous message broadcast  
TEMPEST and related topics

**UNIT VII :** Secure programming languages- concepts structured multiprogramming, shared classes,  
cooperating sequential processes, structure of te multiprogramming system RC-4000 software.

**SEM VI**  
**602: BUSINESS INTELLIGENCE (PROPOSED)**  
**Credits: 5, Lectures: 3 Tutorial :2**

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**Objectives**

- The goal of the course is that the student: -Shall have knowledge on how a technical component of Business Intelligence (software, a wide variety of technical equipment) is managed in theory.

**Pre-requisite**

- **Basic information about business operations and computer systems.**

**Reference Book(s):**

1. Data Mining Concepts and Techniques By Jiawei Han & Micheline Kamber
2. Decision Support System & Business Intelligence: Efraim Turban, Ramesh Sharda, Pearson Publication.

**Teaching Methodology:**

Class lectures, Case Discussions, Reading and Analyzing Research Papers

**Syllabus**

**Unit 1: Decision Support System and Business Intelligence:**

Business Environment and Computerized Decision Support, Managerial Decision Making, Computerized support for Decision Making, Decision Support System, Early Framework for Computerized Decision Support, Business Intelligence, Importance of BI, BI for Decision makers, The BI process, A framework for Business Intelligence.

**Unit 2: Data warehousing for Business Intelligence:**

Introduction to Data Warehousing, Data Warehouse a Blend of Many Technologies, Data Warehouse Users, Benefits of Data Warehousing, Metadata, Classification of Metadata, and Importance of Metadata. Data Marts, Reasons for creating Data Marts, Building Data Marts: Top down Approach & Bottom up Approach, Characteristics of Data Warehouse Architecture, Two tier Architecture, Three Tier Architecture. Data Warehouse Schema, Star, Snow Flake & Fact Constellation Schema. OLAP, Need for OLAP, OLAP Operations, OLAP Models.

**Unit 3: Data Preprocessing:**

Need, Objectives and Techniques, Data Cleaning, Data Integration, Data Transformation, Data Reduction.

**Unit 4: Data Mining for Business Intelligence:**

Introduction, Need for Data Mining, KDD Process, Data Mining Architecture, Data Mining Functionalities, Association Rule Mining, Market Basket Analysis, Classification of Association Rules, Apriori Algorithm.

**Unit 5: Classification:**

Classification & Prediction, Issues regarding classification & Prediction, Comparing Classification Methods, Classification by Decision Tree Induction.

**Unit 6: Clustering:**

Cluster Analysis, Introduction, Need, Major clustering methods. Types of Data in Cluster Analysis, Partitioning Methods: K-Means Method, K-Medoids Method.

**Unit 7: Introduction to Business Intelligence Tools:**

Functionalities provided by Business Intelligence Tools, BI Tools Business Objects / Informatica / Cognos / Qlikview.

SEMESTER VI

**603: WEBSITE DEVELOPMENT**

**NUMBER OF CREDITS: 5 (3L +2T)**

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**OBJECTIVES:** To make students able to develop the website.

**PREREQUISITE:** Knowledge of Internet Basics

**LEARNING OUTCOME:**

After completion of this course students will able to develop static and dynamic web pages through JavaScript. PHP and My SQL.

**TEXT BOOKS**

- PHP and MySQL Web Development by Welling Thomson Fourth Edition, Pearson publication
- Teach Yourself PHP, MySQL and Apache by Julie C. Meloni  
Pearson publication

## Syllabus

### UNIT I: INTRODUCTION TO PHP

Installing and configuring PHP, **Building blocks of PHP:** PHP tags, variables, data types, operators, expressions, constants, **Control Structures:** conditional statements, loops, switch statement

### UNIT II: WORKING WITH FUNCTIONS AND ARRAYS

**Working with functions:** What is a function? Function declaration and definition, Calling function, user defined functions, variable scope, **working with arrays:** Creating, sorting and reordering arrays, PHP classes.

### **UNIT III: STRING MANIPULATION**

**Working with strings, dates and time:** Formatting, investigating and manipulating strings with PHP, using date and time functions in PHP, **working with forms:** Creating a simple input form

### **UNIT IV: WORKING WITH FILES**

Saving data, storing and retrieving Bob's order, processing files, opening file, writing to a file, closing a file, reading from a file, uses other useful file functions.

### **UNIT V: WORKING WITH COOKIES AND SESSIONS**

**Working with cookies:** Introducing cookies, setting and deleting cookies with PHP

**Working with session:** starting a session, working with session variables, passing session IDs in the query string, destroying sessions and unsetting variables, using sessions

### **UNIT VI: MYSQL**

Creating web database: Using MySQL monitor, logging into MySQL, creating databases and users, setting users and privileges, column data types

**Working with MySQL database:** Inserting data into database, retrieving data from the database, retrieving data with specific criteria, retrieving data from multiple tables, retrieving data in particular order, grouping and aggregate data, using sub queries, updating records, deleting records from databases, dropping table and database

### **UNIT VII: ACCESSING MYSQL DATABASE FROM WEB WITH PHP**

Web database architecture,

**Querying database from the web:** checking and filtering input data, setting up connection,

Choosing database to use, querying database, retrieving the query result, disconnecting from the database

## SEMESTER VI

### 604: Operation Research

(4 Credits, 4L + 2T)

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**Course Description:** Operations research helps in solving problems in Different environments that needs decisions. The module converts topics that include: linear programming, Transportation, Assignment, and CPM/ PERT techniques. Analytic techniques and computer packages will be used to solve problems facing business managers in decision environments.

**Course Objectives:** This module aims to introduce students to use quantitative methods and techniques for effective decisions–making; model formulation and applications that are used in solving business decision problems.

**Pre-requisites:**

Mathematics and Statistics up to XII std.

**Reference Books:**

1. Operations Research Techniques for Management 7th Edition, Kapoor V.K., Sultan Chand & Sons
2. Operations Research 9th Edition, Kantiswarup, Gupta P.K. & Sultan Chand & Sons Manmohan
3. Operations Research J.K. Sharma
4. Operations Research Annand Sharma
5. Quantitative Techniques in Management 3rd Edition , Vora N.D., Tata McGraw Hill co.

**Syllabus:**

**Unit I: Introduction to Operation Research**

Operation Research – Introduction, Models, Scope and limitations, Application in real life situation

**Unit II: Linear Programming Problem:**

Linear Programming (L.P.): Mathematical Formulation of L.P. problem, Applications in real life situation ,Graphical Method. Simplex Method – Concept of slack, surplus & artificial variables. Manual solutions of L.P.P. upto 3 iterations. Minimization & Maximization Problems.

- Special Cases – (i) Alternative optima (ii) Unbounded solutions & (iii) Infeasible solutions to be shown graphically & also by simplex method.

### **Unit III : Transportation Models**

Introduction: Definition of the transportation model Applications in real life situation .  
Balanced Minimization / Maximization. Determination of the initial basic feasible solution using (i) North-West Corner Rule (ii) Least cost method & (iii) Vogel's approximation method for balance transportation problems. Optimality Test & obtaining of optimal solution.

### **Unit IV: Assignment Models**

Introduction: Applications in real life situation ,Assignment Problem – Hungarian method.

### **Unit V : Network Analysis**

Construction of Network – Rules & Precautions. Applications in real life situation, C.P.M. & P.E.R.T. Networks. Obtaining of Critical Path. Time estimates for activities. Probability of completion of project. Determination of floats (total, free, independent & interfering) Crashing of Simple Networks.

### **Unit VI : Decision Theory And Decision Tree**

Decision Environments – risk & uncertainty, Payoff table, Regret table, Decision making under uncertainty, Maximin & Maximax criteria, Minimax Regret criterion, Laplace criterion, Hurwicz criterion, Expected Monetary Value criterion, Expected Value of Perfect Information (E.V.P. I.), Expected Opportunity Loss (E.O.L.), Decision Tree, Simple examples

### **Unit VII : Queuing Theory**

Characteristics of M/M/I Queue model; Application of Poisson and Exponential distribution in estimating. Arrival Rate and Service Rate; Applications of Queue model for better service to the customers



## SEMESTER VI

### 605: Lab Assignments on PHP

No. of credits: 2 (L:0, T:0, P: 4)

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1. Create a registration form which contains fields name, Roll No, Gender and a submit button All the details should be displayed in the server page when the user clicks the submit button.
2. Write a program to check whether the given number is prime or not.
3. Create an associative array with book details and display it in a table.
4. Write a program to create an array and try with all array functions.
5. Write the program which describes Boolean data type.
6. Write the program which describes integer, float and string data type.
7. Write the program for type casting of different data type.
8. Find the biggest of 2 numbers.
9. Find the biggest of 3 numbers.
10. Check whether a number is positive or negative.
11. Find the biggest of two numbers using ternary operator.
12. Check whether the given number is odd or even.
13. Find the factorial of a number (while loop)
14. Reverse the digit (Use do while)
15. Find the sum of the digits (Use for loop)
16. Display the fibanocci series for a particular limit.(Use for loop)
17. Check the given letter is vowel or not.
18. Write a program of function passing a two values and add the two values in the function.
19. Write a program of function showing with return value.
20. Create Cookie, store a value "Ram" in the cookie.
21. Write a program of Cookie showing expire of cookie
22. Write a program to display the contents of a file(use fread)
23. Write a program to display the contents of a file(use fgets)
24. Write a program to display the contents of a file. (use fgets)
25. Write a program to create a file and write contents to it
26. Write a program to append data to an existing file.
27. Write a program to upload a file and display the contents in server.

**Semester: VI**

**Course Name: Minor Project-IV**

**No. of Credits: 2(L: 0, T:2, P:4)**

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**Objective:** The objective of this course is to develop skills to solve a problem which requires more efforts than laboratory experiment; this also demands that students has to work in a group and distribute work to solve problem. Finally student document work as dissertation and evaluated it by panel of examiner. Examiner expected to evaluate on their work by testing the functionality of project and content of dissertation along with judging contribution of individual.