

**Scheme of Teaching and Examination for  
VI Semester DIPLOMA in COMPUTER SCIENCE & ENGINEERING**

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME						
			Periods per Week	Periods in one Session (Year)	Hours of Exam.	Terminal Exam. (A) Marks	Final Exam. (B) Marks	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject	
1.	Professional Studies & Entrepreneurship	00601	06	60	03	20	80	100	26	36	
2.	System Software	18602	06	50	03	20	80	100	26	36	
3.	Visual Basic	18603	06	60	03	20	80	100	26	36	
4.	Computer Graphics	18604	04	50	03	20	80	100	26	36	
5.	Elective*		04	60	03	20	80	100	26	36	
	Artificial Intelligence & Expert System	18605A									
	E-Commerce	18605B									
	Multimedia	18605C									
	Java	18605D									
<b>Total :-</b>			<b>26</b>						<b>500</b>		

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME						
			Periods per Week	Periods in one Session (Year)	Hours of Exam.	Marks Internal Exam (A)	Marks External Exam (A)	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject	
6.	Visual Basic	18606	06	60	03	10	40	50	16	21	
<b>Total :-</b>			<b>06</b>						<b>50</b>		

**SESSIONAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME			
			Periods per Week	Periods in One Session (Year)	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject
7.	Professional Studies & Entrepreneurship	00607	04	50	20	30	50	25
8.	Elective	18608	06	60	20	30	50	25
	Artificial Intelligence & Expert System	18608A						
	E-Commerce	18608B						
	Multimedia	18608C						
	Java	18608D						
9.	Project Work & Presentation in Seminar	18609		--	40	60	100	50
<b>Total :-</b>			<b>10</b>		<b>200</b>			

<b>Total Periods per Week</b>	<b>42</b>	<b>Total Marks = 750</b>
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# PROFESSIONAL STUDIES & ENTREPRENEURSHIP

<b>Subject Code</b> <b>00601</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>	<b>:</b>	<b>20</b>

**Rationale:**

The paper has been introduced to achieve dual purpose for the students. Firstly, this course provides the basics of Professional management and secondly it also prepares the student to develop self reliance by becoming an entrepreneur.

This makes them conversant with their duties and responsibility to make them successful in their career building by developing profession expertise.

**Objectives:**

With the input provided in this paper, the students will be able to :-

- Acquire basic knowledge of management.
- Understand the various area of management such as human resources, marketing, finance and commercial aspect, production & material management etc.
- Understand the benefit of becoming an entrepreneur.
- Handle a project efficiently and independently.
- To avail subsidies / grants / loan etc. from various of agencies.

### **PART-I: PROFESSIONAL STUDIES**

**TOPIC:**

**01 – INTRODUCTION:**

- |       |   |      |
|-------|---|------|
| 01.01 | Professional Ethics:<br>Definition, Objective, Right & Wrong, Duty & Obligation   | [05] |
| 01.02 | Management:<br>Definition, Function and Objectives.   | [05] |
| 01.03 | Leadership:<br>Definition, Types – Autocratic, Democratic and Laissez – faire, Functions and Characteristics of Leadership. | [05] |
| 01.04 | Motivation :<br>Definition, Types and Importance / Benefits   | [05] |
| 01.05 | Forms of Business organization:<br>Sole proprietorship, Partnership, Joint Stock company and Co-operative Societies.        | [05] |
| 01.06 | Supervisor’s/Technician’s role:<br>Concept of supervisory management, career needs, Role of Technicians in an organization. | [05] |

### **PART-II: ENTREPRENEURSHIP**

**TOPIC:**

**02 – INTRODUCTION:**

- |       |   |      |
|-------|---|------|
| 02.01 | Entrepreneurship:<br>Concept, Characteristics of a successful entrepreneurship, basic ingredients of entrepreneurship:<br>1. Finance 2. Technology 3. Sales and Marketing | [10] |
| 02.02 | Project Report:<br>Meaning, Project Identification, Project Selection, Contents of a project Report, Techno-Economic Feasibility Report ( TEFR), Market Survey.           | [10] |

02.03 Sources of Finance: [05]  
Government, Commercial Banks, Financial institutions:  
SIDBI – Small Industries development Bank of India  
SFC – State Financial Corporations  
IDBI – Industrial Development Bank of India  
IFCI – Industrial Finance Corporation of India  
ICICI – Industrial Credit Investment Corporation of India

02.04 Acts : [05]  
Indian factories Act 1948 ( Main Provision Only)  
Consumers Protection Act 1986 ( Main Provision Only)

**03 – PROJECT WORK:**

As elaborated in Sessional Paper (00607).

**Books Recommended :**

1. Essential of Management, Tata McGraw Hill, Publishing Company Ltd., New Delhi. - Herald Koonz & Cyril O' Donnel.
2. Business Organization and Management, S. C. Chand and Company (Pvt.) Ltd., Ram Nagar, New Delhi - M. C. Shukla.
3. Managerial Economics, Sultan Chand & Sons, New Delhi - R. L. Vashney & K. L. Maheshwari
4. Project Appraisal and Follow up, Govind Prakashan, Mumbai. - D. P. Sharda
5. Modern Marketing Management, Progressive Corporation Pvt. Ltd., P51, Mahatma Gandhi Road, Bombay-400 001 - Dr. Rustam S. Davar
6. A hand book for new entrepreneurs (with special reference to science and technology target group) - Entrepreneurship Development Institute of India, 83-A, Swastic Society Navrangpura, Ahmedabad, PIN-380 009.

**Reference Books :**

1. Leadership in Organisation - Published by I.S.T.E. Mysore
2. Motivation - Published by I.S.T.E. Mysore
3. Motivation - I.I.T. Kanpur - Published by I.S.T.E. Mysore
4. A Hand book on Project Appraisal and follow up, Govind Prakashan, 204, Saraswati Kunj, 90, S. V. Road, Goregoan, Bombay-400 062. - D. P. Sarda
5. Bihar Industrial Policy - Government of Bihar, Department of Industries.
6. Entrepreneurship Guide - Bihar State Financial Corporation, Fraser Road, Patna-800 001.

# SYSTEM SOFTWARE

<b>Subject Code 18602</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>		<b>:</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>		<b>:</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>		<b>:</b>
						<b>100</b>
						<b>80</b>
						<b>20</b>

**Rationale & Objective:**

This course will enable the students to have understanding and knowledge of various System Software's like assembler, compiler, macro-processor, linker and loader

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction	(06)
02	Language Processors	(04)
03	Assemblers	(08)
04	Macros and Macro Processors	(06)
05	Compilers and Interpreters	(10)
06	Linkers	(08)
07	Software Tools	(08)
<b>Total:-</b>		<b>(50)</b>

**CONTENTS:**

**TOPIC: 01 – INTRODUCTION:** **[06]**

- 01.01 What is System Software?
- 01.02 Components of System Software
- 01.03 Evolution of System Software
- 01.04 The model of a computer system

**TOPIC: 02 – LANGUAGE PROCESSORS:** **[04]**

- 02.01 Introduction
- 02.02 Language Processing activities.
- 02.03 Fundamental of Language Processing.
- 02.04 Fundamentals of Language Specification.

**TOPIC: 03 – ASSEMBLERS:** **[08]**

- 03.01 Elements of Assembly Language Programming.
- 03.02 A Simple Assembly Scheme.
- 03.03 Pass Structure of Assemblers.

**TOPIC: 04 – MACROS AND MACRO PROCESSORS:** **[06]**

- 04.01 Macro Instructions
- 04.02 Macro Instruction argument
- 04.03 Conditional Macro expansion
- 04.04 Macro calls with macros

**TOPIC: 05 – COMPILERS AND INTERPRETERS:** **[10]**

- 05.01 Aspects of compilation
- 05.02 Memory Allocation
- 05.03 Various phases of a compiler and their functions
- 05.04 Code Optimization
- 05.05 Interpreters

**TOPIC: 06 – LINKERS:**

[08]

- 06.01 Relocation and Linking Concepts
- 06.02 Design of a Linker
- 06.03 Loaders
- 06.04 Various types of linking and loading schemes

**TOPIC: 07 – SOFTWARE TOOLS:**

[08]

- 07.01 Software Tools for Program Development
- 07.02 Editors
- 07.03 Debug Monitors
- 07.04 Programming Environments
- 07.05 User Interfaces

**Books Recommended:**

- 1. System Programming - J.J. Donovan  
McGraw Hill, New Delhi
- 2. System Programming and Operating Systems - Dhamdhare  
Tata McGraw Hill, New Delhi
- 3. Assemblers, Compilers and Program Translation - P. Calingaert  
Computer Science Press, Meryland
- 4. System Software - An Introduction to System Programming - Leland L. Beck, Addison Wesley

# VISUAL BASIC

<b>Subject Code 18603</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>	<b>:</b>	<b>20</b>

**Rationale & Objective:**

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Visual Basic 6.0	(08)
02	Visual Basic Development	(10)
03	Building Objects in Visual Basic	(08)
04	Connecting to Databases	(12)
05	Introduction to Building Internet Applications	(12)
06	Designing User Interfaces	(10)
		<b>(60)</b>

**CONTENTS:**

**TOPIC: 01 – VISUAL BASIC 6.0: [08]**

- 01.01 Data Access:
- Developing for the Internet
  - Controls and Application Design Capabilities
  - VB's Control Set
  - Building Controls in Visual Basic
- 01.02 Integrating Development Environment with Wizards

**TOPIC: 02 – VISUAL BASIC DEVELOPMENT: [10]**

- 02.01 The Development Interface
- 02.02 Development Windows:
- Event-Driven Programming
  - Working with Objects and Controls
    - Toolbox controls
    - Working with objects
    - Visual Basic Modules
  - Building Event-Driven Code

**TOPIC: 03 – BUILDING OBJECTS IN VISUAL BASIC: [08]**

- 03.01 Object Basics
- 03.02 Building Object Models

**TOPIC: 04 – CONNECTING TO DATABASES:** [12]

- 04.01 Date Access Objects, Remote Data Objects, ActiveX Data Objects, OLE DB, Data Bound Controls.
- 04.02 Using DAO to build a simple database interface
- 04.03 Working with the Visual Basic Report Designer

**TOPIC: 05 – INTRODUCTION TO BUILDING INTERNET APPLICATIONS:** [12]

- 05.01 HTML basics
- 05.02 IIS and Active Server Pages
- 05.03 Building IIS Applications:
  - Web Class Designer
  - IIS Object Model
  - Building the interface
  - Building the functionality

**TOPIC: 06 – DESIGNING USER INTERFACES:** [10]

- 06.01 Visual Elements of a Visual Basic Application:
  - Menus, Toolbars and Tab Strips
  - ActiveX and Other Controls

# COMPUTER GRAPHICS

<b>Subject Code 18604</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>	<b>:</b>	<b>20</b>

**Rationale:**

This course will provide an introduction to fundamental concepts in Computer Graphics from a practical perspective. It aims to cover mathematical concepts essential for computer graphics, graphic devices, various algorithms and multimedia systems. Ideally, a student who successfully completed these courses will be familiar with modern methods in computer graphics, with the use of commonly used tools in this area and having knowledge to write algorithms for generating images.

**Objective:**

This course is an introduction to computer graphics and provides familiarity with graphics software and hardware systems. The course covers the following concepts:

- Understanding of graphics and its applications
- The fundamentals of input, display and hardcopy devices, scan conversion of geometric primitives
- Output primitives
- Geometric representations
- Two and Three-dimensional Transformations
- Windowing and clipping methods
- Segments
- Three-dimensional concepts
- Hidden-element removal
- Multimedia hardware and applications

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction and Applications	(03)
02	Graphic Devices	(05)
03	2D Drawing Geometry	(08)
04	Conics and Curves	(08)
05	Graphic Operations	(12)
06	3D Graphics	(10)
07	Animation	(04)
		<b>(50)</b>

**CONTENTS:**

**TOPIC: 01 – INTRODUCTION AND APPLICATIONS: [03]**

What is CG, Characteristics & Classification of CG

Applications: Presentation graphics, painting and drawing, scientific visualization, image processing, digital art, entertainment, CAD in architecture, animation.

**TOPIC: 02 – GRAPHIC DEVICES: [05]**

Display devices: Random-scan and raster scan monitors, Color CRT, Plasma panel displays, LCD Panels  
Input/ Output Devices.



**TOPIC: 03 – 2 D DRAWING GEOMETRY:** [08]

2 D transformation: Use of homogeneous coordinate systems, translation, scaling, rotation, mirror reflection, rotation about an arbitrary point.

Interactive techniques: Constraints, Grids, Gravity field, Rubber-band, Dragging, Painting & drawing.

**TOPIC: 04 – CONICS AND CURVES:** [08]

DDA lines circle drawing algorithm, Bresenham's lines circle drawing algorithm, Generation of ellipses, Curve drawing, Parametric representation, need of cubic curves, Drawing cubic Bezier and B-spline curves & their properties. (No derivations needed)

**TOPIC: 05 – GRAPHIC OPERATIONS:** [12]

Windowport and viewport:

- Elimination of totally visible and totally invisible lines with respect to a rectangular window using line end point codes
- Explicit line clipping algorithm
- Sutherland cohen algorithm
- Mid point sub-division algorithm
- Polygon Clipping : Sutherland- Hodgman algo
- Polygon representation, Inside & outside test of Polygon

Filling:

- Stack based and queue based seed fill algorithms
- Scan line fill algorithm

Character generation

**TOPIC: 06 – 3 D GRAPHICS:** [10]

Transformations:

- Transformation matrices for translation, scaling and rotation around axis

Parallel Projection: Orthographic, Axonometric, Oblique projection with multi views

Perspective Projection:

- Vanishing point : Single – point, Two- point & Three point

Hidden Surface Removal:

- Back face removal

**TOPIC: 07 – ANIMATION:** [04]

Basics of animation, Types of animation, Types of animation system. Tweaking and Morphing

**Books Recommended:**

**Text Books**

- |   |  |
|---|--|
| 1. Computer Graphics, 2 <sup>nd</sup> Edition 2010    | - Udit Agarwal, Katson Publications                      |
| 2. Computer Graphics, Second Edition, 1995.           | - D. Hearn & P.M. Baker Prentice Hall of India           |
| 3. OpenGL Programming Guide, Third Edition, 2000      | - Woo, Nelder, Davis, Shreiner<br>Pearson Education Asia |
| 4. Multimedia, Making It Working, Fifth Edition, 2001 | - T. Vaughan McGraw Hill                                 |

**Reference Books**

- |  |  |
|--|--|
| 1. Fundamentals of Interactive Computer Graphics, Second Edition | - J.D. Foley & A. Van Dam<br>Addison Wesley                    |
| 2. Computer Graphics - A Programming                             | - S. Harrington McGraw Hill Approach International Ed.         |
| 3. Multimedia Systems, 2000                                      | - Rajneesh Agrawal & Bharat Bhushan Tiwari, Excel Publications |

# ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS

<b>Subject Code 18605A</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>		<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>		<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>		<b>:</b>	<b>20</b>

**Rationale & Objective:**

For effective teaching / learning of "Artificial Intelligence & Expert System", it is necessary that the list of assignment should be prepared by the subject teacher based on the topic covered in related theory papers and given to the students based on present day professional scenario. The assignment should cover problems related to "Artificial Intelligence & Expert System" based on wide requirement in Information technology / Computer science. These should strive to inculcate the skills necessary for a student to effectively use the tools & techniques as per the present day industry requirement.

The teacher should prepare the students to cover minimum ten problems.

**CONTENTS:**

<b><u>TOPIC: 01</u></b>	<b>[12]</b>
Meaning of artificial intelligence, artificial intelligence and the world, representation in artificial intelligence, state space search.	
<b><u>TOPIC: 02</u></b>	<b>[12]</b>
Architecture of artificial intelligence system, production system design, implementation and limitation, Intervence & control, logic, uncertainty, Fuzzy logic.	
<b><u>TOPIC: 03</u></b>	<b>[14]</b>
Knowledge representation, prdicates calculus, logic & deductions using predicates calculus, syntax & semanties, qualifiers and anioms, encoding facts as predicate calculus, deduction as search-forward chaining & unification, sholeneisation, backward chaining, goal trees for backward chaining.	
<b><u>TOPIC: 04:</u></b>	<b>[10]</b>
Natural language processing, Introduction. Overview of linguistics, grammars and languages, Basic parsing techniques, Natural language generations and systems.	
<b><u>TOPIC: 05:</u></b>	<b>[12]</b>
Vision expert system, defining the problems, overview of the solution, phylosophical issues, human versus machine, MYCIN & DENDRAL.	

**Books Recommended:**

- |   |                   |
|---|-------------------|
| 1. Artificial Intelligence, Tata McGraw Hill                      | - Rowe & Rich     |
| 2. Artificial Intelligence – An Engineering Approach, McGraw Hill | - Robert Sehahott |
| 3. Artificial Intelligence & Expert System, PHI                   | - W. Patterson    |

# E- COMMERCE

<b>Subject Code 18605B</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>		<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>		<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>		<b>:</b>	<b>20</b>

**Rationale & Objective:**

"Electronic Commerce" or "Doing, business online" is becoming critical in three interrelated dimensions. Customer-to-business interactions, customer-to-customer, intra-business interactions. Electronic Commerce facilitates the network form of organization where small flexible firms rely on other partner companies for component supplies and product distribution to meet changing customer demand more effectively. The transaction management aspect of electronic commerce enables firms to reduce costs by enabling better coordination in sales, production and distribution processes and automated supply chain network. Electronic Data Interchange (EDI), Electronic Mail and Electronic Fund Transfer (EFT), streamline business process, reduces paperwork and increase automation. The course will enable the students to understand e-commerce, its applications, the processes and the security issues.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Electronic Commerce Framework	(08)
02	Architectural Frame Work of E-Commerce	(08)
03	E-Business Activities	(06)
04	Security Issues	(10)
05	Electronic Payment Systems	(08)
06	Electronic Commerce Applications	(12)
07	Implementation of E-commerce	(08)
		<b>(60)</b>

**CONTENTS:**

**TOPIC: 01 – ELECTRONIC COMMERCE FRAMEWORK: [08]**

Defining electronic commerce; technology of digital convergence; convergence of content and transmission types of electronic commerce – inter-organizational E-commerce, EDI over WAN, Extranets, Electronic Fund Transfer, e-mail, Fax, Intra-organizational e-mail, Customer to Business e-mail (B2B, B2C, C2C).

Components of E-Commerce

- Institutions – Government, Merchants, Manufacturers, Suppliers, consumers, banks, financial institutions
- Processes – Marketing, Sales, Payments, Fulfillment, Support

Networks – Corporate, Internet, Commercial

**TOPIC: 02 – ARCHITECTURAL FRAME WORK OF E-COMMERCE: [08]**

- Web Architecture - web browser, HTTP, TCP/IP, Web server, HTML, CGI Scripts

**TOPIC: 03 – E-BUSINESS ACTIVITIES: [06]**

Supply-chain management, selling-chain management, operating resource management, ERP, CRM, customer asset management.

**TOPIC: 04 – SECURITY ISSUES: [10]**

Firewalls and proxy application gateways, Secure Electronic Transaction (SET), public and private key encryption, digital signatures and digital certificates, Secure Socket Layer (SSL)

**TOPIC: 05 – ELECTRONIC PAYMENT SYSTEMS:** [08]

Digital cash, electronic to ATM, Debit cards at Point of Sale (POS), Smart Cards, Online Credit Card based Systems, Electronic Fund Transfer (EFT), Payment gateways.

**TOPIC: 06 – ELECTRONIC COMMERCE APPLICATIONS:** [12]

E-commerce Banking, Online Shopping, Business Models and Revenue Models, On-line publishing, E-commerce in retailing industry, Digital Copyrights, Electronic Data Interchange, Electronic Fund Transfer, Electronic Bulletin Boards, Electronic Cataloguing.

**TOPIC: 07 – IMPLEMENTATION OF E-COMMERCE:** [08]

Visit and analyse various popular sites. Developing E-commerce Enabled Application - getting an internet, merchant bank account, web hosting, obtaining digital certificate, finding a provider of online transactions, creating or purchasing a shopping cart software

**Books Recommended:**

1. Electronic Commerce - A Manager's Guide - Ravi Kalakota and Andrew B. Whinston  
Addison Wesley (Singapore) Pvt. Ltd., New Delhi
2. E-Business - Roadmap for Success - Ravi Kalakota and Maxia Robinson  
Addison Wesley (Singapore) Pvt. Ltd., New Delhi
3. E-Business (R) Evolution - Amor  
Addison Wesley (Singapore) Pvt. Ltd., New Delhi
4. Frontiers of Electronic Commerce - Ravi Kalakota and Andrew B. Whinston  
Addison Wesley (Singapore) Pvt. Ltd., New Delhi
5. E-Business with Net Commerce (with CD) - Shurety  
Addison Wesley (Singapore) Pvt. Ltd., New Delhi

# MULTIMEDIA

<b>Subject Code 18605C</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>	<b>:</b>	<b>20</b>

## Rationale & Objective:

This course will enable the students to understand the basic concepts of graphics and multimedia, familiarize with multimedia input, output and storage devices and appreciate features of multimedia software and develop small applications.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction to Computer Graphics and Multimedia	(10)
02	Multimedia Hardware	(14)
03	Multimedia Software	(08)
04	Basic Concepts of Virtual Reality	(02)
05	Multimedia System and its Applications	(26)
		<b>(60)</b>

## CONTENTS:

### **TOPIC: 01 – INTRODUCTION TO COMPUTER GRAPHICS AND MULTIMEDIA:** [10]

- Introduction to multimedia, concepts of animation and simulation, various applications of multimedia in education, research and development, business and games, training, entertainment.

### **TOPIC: 02 – MULTIMEDIA HARDWARE:** [14]

Sound and Video cards, compression techniques, Memory & Storage devices, Input devices, Output hardware, Communication device. Introduction of Multimedia authoring tools & its types.

### **TOPIC: 03 – MULTIMEDIA SOFTWARE:** [08]

Features of any one of authoring tools such as Macro-media/ Adobe Photo-shop/ 3-D studio/ Paint-Shop Pro/ Animator Pro/ Director and Harvard graphics

### **TOPIC: 04 – BASIC CONCEPTS OF VIRTUAL REALITY:** [02]

### **TOPIC: 05 – MULTIMEDIA SYSTEM AND ITS APPLICATIONS:** [26]

Music & Sound: Audio basic concepts, Analog and Digital concepts, MIDI hardware, MIDI file. Sound- editing process. Audio file format, MIDI versus digital Audio, Video: Basic concepts, Analog Video & Digital Video, Video capture & editing, Video file format.  
Text & Images: Introduction, file format

## Books Recommended:

1. Multimedia - Villam Casanove and Molina  
Prentice Hall of India, New Delhi
2. Multimedia Bible - Win Rosch
3. Multimedia Making IT work, Osborne - Tay Vaughan  
McGraw Hill
4. Multimedia System, Addison Wesley - Buford
5. Multimedia System, Excel - Agrwal & Tiwari
6. Multimedia in Action, Vikas - James E. Skuman
7. Multimedia Technology and Its Application, Galgotia Publications - David Hillman
8. Multimedia Systems, Addison Wesley - Sleinritz

# JAVA

<b>Subject Code 18605D</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>		<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>		<b>:</b>	<b>80</b>
	<b>06</b>	<b>-</b>	<b>-</b>	<b>Internal Exam.</b>		<b>:</b>	<b>20</b>

**Rationale:**

This course is designed to impart knowledge and skills required to solve the real world problems using object-oriented approach utilizing Java language constructs. This course covers the subject in two parts, viz, Java Language and Java Library.

**Objective:**

After completion of the course students is expected to understand the following:

- Java tokens for creating expressions and creating datatypes.
- The way various expression and data types are assembled in packages.
- Implementation of Inheritance, Exception handling and Multithreading in Java.
- Java I/O basics and Applets.
- Setting up GUI using AWT/ Swing.
- Network Programming in Java.
- Accessing relational databases from Java Programmes.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	The JAVA Language	(50)
02	The JAVA Library	(10)
<b>Total:</b>		<b>(60)</b>

**CONTENTS:**

<b><u>TOPIC: 01 – THE JAVA LANGUAGE:</u></b>		<b>[50]</b>
01.01	Introduction to Java	[02]
01.01.01	An overview of JAVA, JAVA Applets and Applications.	
01.01.02	Difference between Java Script and JAVA.	
01.01.03	Object Oriented programming features.	
01.02	Data types, Variable & Arrays	[04]
01.02.01	Java Token & Keywords	
01.02.02	Integers types, Floating point types	
01.02.03	The JAVA class libraries	
01.02.04	Declaring a variable, Dynamic initialization	
01.02.05	The scope and lifetime of variable	
01.02.06	Type conversion and casting	
01.02.07	Arrays:	[06]
	- One-dimensional arrays	
	- Multi-dimensional arrays	
01.02.08	Alternative array declaration syntax	
01.03	Operators	[04]
01.03.01	Arithmetic operations	
01.03.02	The Bitwise operators	
01.03.03	Relational operators	

01.03.04	Boolean logical operators	
01.03.05	The assignment operator	
01.03.06	The ? Operator	
01.03.07	Operator precedence	
01.04	Control Statements	[06]
01.04.01	Selection statements	
01.04.02	Iteration statements	
01.05	Introduction Classes and objects	[08]
01.05.01	Class fundamentals	
01.05.02	Declaring objects, Assigning object reference variables	
01.05.03	Introducing methods	
01.05.04	Constructors	
01.05.05	Garbage Collection	
01.05.06	A stack class, overloading constructors	
01.05.07	Using objects as parameters, argument passing	
01.05.08	Returning objects, Recursion	
01.06	Inheritance	[06]
01.06.01	Inheritance basics, member access and inheritance	
01.06.02	Using class, creating a multilevel hierarchy	
01.06.03	Method overriding, dynamic method dispatch	
01.06.04	Using abstract classes, using final with inheritance, the object class	
01.07	Packages and Interfaces	[04]
01.07.01	Packages: Defining a package, understanding class path, importing packages.	
01.07.02	Interfaces: Defining an interface,	
01.08	Exception handling	[04]
01.08.01	Exception handling fundamentals	
01.08.02	Exception types, uncaught exceptions, using try and catch	
01.09	Multithreaded Programming	[02]
01.09.01	The JAVA thread model, The main thread, creating a thread	
01.09.02	Alive ( ) and Joint ( ), Suspend ( ) and Resume ( ), Thread priorities.	
01.10	I/O, Applets and Other Topics	[04]
01.10.01	I/O Basics: Streams, The stream classes, The predefined streams, Reading console input, Writing console output, Reading and Writing files.	
01.10.02	Applet fundamentals	
	<b><u>TOPIC: 02 – THE JAVA LIBRARY:</u></b>	<b>[10]</b>
02.01	String Handling	[02]
02.01.01	The string constructor, Special string operations	
02.02	Exploring JAVA Lang	[02]
02.02.01	Simple type wrappers, Runtime memory management	
02.02.02	Array Copy, Object, Clone ( ) and the cloneable interface.	
02.02.03	Class & class loader	
02.03	The Utility Classes	[02]
02.03.01	The enumeration interface, Vector & Stack	
02.03.02	Dictionary, Hash-table, string tokenizer	
02.03.03	Bitset	
02.03.04	Date: Date Comparison, String and time zones	
02.03.05	Random, Observer interface	

02.04	Input/ Output - Exploring JAVA I/O	[04]
02.04.01	The JAVA I/O classes and interface	
02.04.02	File Namefilter & Directories	
02.04.03	I/O stream classes: File input stream, file output stream, Byte array input stream, Byte array output stream, Filtered streams	
02.04.04	Buffered streams: Buffered input stream, Buffered output stream, Pushback input stream, Sequence input stream	

### **Books Recommended:**

#### **Text Books**

1. The Complete Reference - Java2, Fourth Edition, 2001 - H. Schildt, Tata McGraw Hill
2. Java: How to Program Java 2, Second Edition, 2001 - Dietal and Dietel, Pearson Education

#### **Reference Books**

1. Java Examples in a Nutshell, Third Edition, 2001 - D. Hanagan 'O' Reilly
2. A Programmers Guide to Java Certification, First Edition, 1999 - K. Mughal and R.W. Rasmussen  
Pearson Education Comprehensive Primer  
Publication
3. Java Foundation Classes - M.T. Nelson, Tata McGraw Hill



# VISUAL BASIC

<b>Subject Code</b> <b>18606</b>	<b>Practical</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>40</b>
	<b>-</b>	<b>-</b>	<b>03</b>	<b>Internal Exam.</b>	<b>:</b>	<b>10</b>

## Rationale & Objective:

## CONTENTS:

### List of Experiments:

- 01 Create a form with one textbox and two command buttons having caption "Font" and "Exit". The user types text in the textbox and clicks on Fonts. The current form gets enlarged and now in addition to above controls, the form contains frame on which following control are placed.
- (a) Combo box, which will contain list of fonts.
  - (b) Combo box, which will contain font style (bold, italic).
  - (c) Combo box, which will contain font size.
  - (d) Check box with caption "Underline".
  - (e) Checkbox with caption "Strikethrough".
  - (f) Label with caption "Sample" for showing preview.
  - (g) Two command buttons with caption "OK" and "Cancel" respectively.
- The user should now be able to do the following:
- (i) Choose an option from each combo box for Font, Style & Size.
  - (ii) Select effect as Underline or Strikethrough.
  - (iii) While performing a & b, the user should be able to see the preview as label.
  - (iv) To complete the task, the user has to click on OK. The form should shrink back to its original size and display, and the text should be displayed according to the attribute set.
  - (v) Exit is used to terminate the application.
- 02 Develop an application, which will contain numbers of images using control array. Using scrollbar increase or decrease numbers of images.
- 03 Develop a program that will cut, copy and paste text of text box.
- 04 Create a project that will open & save contents of file using menu editor.
- 05 Create a project with a file list, picture box & command button. Write appropriate code in appropriate event of controls so that upon startup, the list box should display the list of all \*.bmp & \*.ice in the current directory. After the user selection of file from the list box, the selected file should be displayed in the picture box control on clicking a command button.
- 06 Write a user-defined procedure that:
- (a) Takes a name of text file as arguments, opens that file, reads it & then displays its contents in a textbox.
  - (b) Open a text file & retrieve the contents of the first line in the text file. Put first 3 text words into three string variables.

- 07 Write a simple animation application using timer control. Your project should contain an image, which moves around the form and changes its direction when it hits, the sides of the form.
- 08 Create a form with two command button having caption "Display Windows Directory" and "Exit". Make use of windows API DLL GetWindowDirectory ( ) to display the directory in which Microsoft Window is installed when command button named "Display Window Directory" is clicked. "Exit" button is used to exit the application.
- 09 Develop an application that will take the name of sound file (e.g. file with extension.wav) as an argument and will play the file. Use API function for playing the file.
- 10 Create a Employee database named emp.mdb. Select six fields at minimum such as empno, empname, salary, destination etc. Design a form so that senior manager of the company can navigate through the records using
- (a) Data control
  - (b) DAO
- 11 Design a control, by extending textbox by offering the following features:
- (a) The textbox will support all the regular properties values that the standard textbox control supports, but it will not accept numeric letters.
  - (b) The textbox will also contain two new properties called Autosize that supply four possible values -> NA, 2-small, 3-medium, 4-large. These values will appear as an enumeration in dropdown list box inside a properties window. When set to 1-NA, the textbox font size will not change. When set to 2-small the text box will be sized to 25% of the textbox height value. When set to 4-large the text box will be sized to 75% of the textbox height value.
  - (c) The textbox will also contain two new properties called Ucase & Lcase. These will be boolean properties. When Ucase is set to true, the text in the textbox will be converted to uppercase letters. When Lcas is set to true, the text in the textbox will be converted to lowercase letters. Both Ucase & Lcase are said to be false by default. Your control must make sure when one of the case property is set to true, the other is set to false.
  - (a) The textbox will also have a event called Badkey for, when the user tries to type something like numeric letter in the textbox.
- 12 The home page of AdWorld should contain a list of all the stores containing "Toys, Flowers, Books and Confectionery". Write a code for the following.
- (a) The caption of the web page "AdWorld" should be in blue colour and centered.
  - (b) The scrolling text displaying "A shop at your fingertips" should be in green.
  - (c) The list of stores on the web page should be displayed in red colour and the font size should be 30.
  - (d) The home page should have the pink colour as background.
  - (e) When the user moves the mouse pointer or click on any of the stores, the corresponding image associated with the store should appear along with the description of the store.
  - (f) Whenever the mouse moves over the item, flowers from the list of stores the item colour should change to green and the size should change to 60.

## PROFESSIONAL STUDIES & ENTREPRENEURSHIP

<b>Subject Code</b> <b>00607</b>	<b>Sessional</b>			<b>No of Period in one session : 50</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>30</b>
	<b>-</b>	<b>-</b>	<b>04</b>	<b>Internal Exam.</b>	<b>:</b>	<b>20</b>

### Rationale:

The paper has been introduced to achieve dual purpose for the students.

Firstly, this course provides the basics of Professional management and secondly it also prepares the student to undertake independent venture by becoming an entrepreneur.

This makes them conversant with their duties and responsibility to make them successful in their career building.

### Objectives:

With the input provided in this paper, the students will be able to :-

- Acquire basic knowledge of management.
- Understand the area of management such as human resources, marketing, finance and commercial aspect.
- Understand the benefit of becoming an entrepreneur.
- Handle a project efficiently and in dependently.

### To prepare a Project Report on any of the followings:

<u>S.No.</u>	<u>Topics</u>
01	Project Identification and formulation Report.
02	Project Profile/Pre-feasibility Report.
03	Techno-economical Feasibility Report (TEFR).
04	Market Survey Report.

### CONTENTS

#### S.NO.                      TOPICS

#### TOPIC – 01 : PROJECT IDENTIFICATION AND FORMULATION REPORT:

- ◆ Introduction.
- ◆ Collection of Data.
- ◆ Compilation of Data.
- ◆ Analysis and Assimilation of Data.
- ◆ Product Selection.
- ◆ Report Finalisation and Report Writing.

#### TOPIC - 02 : PROJECT PROFILE/PRE-FEASIBILITY REPORT :

- ◆ Introduction of the product.
- ◆ Market.
- ◆ Man Power (Personnel Required).
- ◆ Manufacturing Process.
- ◆ Plant and Machinery.
- ◆ Cost of Project.

- ◆ Means of Finance.
- ◆ Cost of Production.
- ◆ Annual Turnover.
- ◆ Profit.
- ◆ Profit on Investment.

**TOPIC – 03: TECHNO-ECONOMICAL FEASIBILITY REPORT (TEFR).**

- ◆ Introduction on product.
- ◆ Market Prospects and Marketing.
- ◆ Location.
- ◆ Manufacturing Programme and Annual Turnover.
- ◆ Manufacturing Process.
- ◆ Cost of Project.
- ◆ Means of Finance.
- ◆ Requirement of Raw materials, Consumables, Utilities and Working Capital.
- ◆ Organisational Structure, Management and Man Power.
- ◆ Project Implementation Schedule.
- ◆ Profitability and Cash Flow.

**TOPIC - 04 : MARKET SURVEY REPORT:**

- ◆ Data Collection & Processing through Primary & Secondary Sources- Questionnaire method, e-mail, by post, by phone.
- ◆ Present Status.
- ◆ Growth of the Industry.
- ◆ Import and Export.
- ◆ Present market Demand.
- ◆ Forecast.
- ◆ Future Prospect/Scope.
- ◆ Market Segmentation.

**Books Recommended:**

1. Essential of Management, Tata McGraw Hill, - Herald Koonz & Cyril O' Donnel. Publishing Company Ltd., New Delhi.
2. Business Organisation and Management, S. C. Chand - M. C. Shukla and Company (Pvt.) Ltd., Ram Nagar, New Delhi
3. Managerial Economics, Sultan Chand & Sons, New - R. L. Vashney & K. L. Maheshwari Delhi
4. Project Appraisal and Follow up, Govind Prakashan, - D. P. Sharda Mumbai.
5. Modern Marketing Management, Progressive - Dr. Rustam S. Davar Corporation Pvt. Ltd., P51, Mahatma Gandhi Road, Bombay-400 001

6. A hand book for new entrepreneurs (with special reference to science and technology target group) - Entrepreneurship Development Institute of India, 83-A, Swastic Society Navrangpura, Ahmedabad, PIN-380 009.
7. Student discipline - Published by I.S.T.E. Mysore
8. Communication Skill - Published by I.S.T.E. Mysore
9. Decision Making - Published by I.S.T.E. Mysore
10. Pollution Control in Industry - Published by I.S.T.E. Mysore
11. S.S.M. in Environmental Engineering - Published by I.S.T.E. Mysore
12. Leadership in Organisation - Published by I.S.T.E. Mysore
13. Small Enterprise Management - Published by I.S.T.E. Mysore
14. Motivation - Published by I.S.T.E. Mysore
15. Fundamentals of Environmental Pollution - Krishnan and Kannan
16. Enviromental Engineering, T.T.T.I., Madras - Tata Mcgraw Hill
17. Motivation I.I.T. Kanpur - Published by I.S.T.E. Mysore
18. Mine Management - V.N. Singh, Bangle Prining Press Ranchi
19. Hand book on Project Appraisal and follow up, Govind Prakashan, 204, Saraswati Kunj, 90, S. V. Road, Goregoan, Bombay-400 062. - D. P. Sarda
20. Bihar Industrial Policy - Government of Bihar, Department of Industries.
21. Entrepreneurship Guide - Bihar State Financial Corporation, Fraser Road, Patna-800 001.
22. Management Economics, S. Chand & Sons, 4792/23, Dariaganj, New Delhi-110 002. - R. L. Varshney & G. L. Maheshwari
23. Management Principles & Practices, S. Chand & Sons, 4792/23, Dariaganj, New Delhi-110002. - L. Prasad & S. S. Gulshan

# ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS

<b>Subject Code 18608A</b>	<b>Sessional</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>20</b>
	<b>-</b>	<b>-</b>	<b>3</b>	<b>Internal Exam.</b>	<b>:</b>	<b>30</b>

**Rationale & Objective:**

For effective teaching / learning of "Artificial Intelligence & Expert System", it is necessary that the list of assignment should be prepared by the subject teacher based on the topic covered in related theory papers and given to the students based on present day professional scenario. The assignment should cover problems related to "Artificial Intelligence & Expert System" based on wide requirement in Information technology / Computer science. These should strive to inculcate the skills necessary for a student to effectively use the tools & techniques as per the present day industry requirement.

The teacher should prepare the students to cover minimum ten problems.

**CONTENTS:**

<b><u>TOPIC: 01</u></b>		<b>[12]</b>
	Meaning of artificial intelligence, artificial intelligence and the world, representation in artificial intelligence, state space search.	
<b><u>TOPIC: 02</u></b>		<b>[12]</b>
	Architecture of artificial intelligence system, production system design, implementation and limitation, Intervence & control, logic, uncertainty, Fuzzy logic.	
<b><u>TOPIC: 03</u></b>		<b>[14]</b>
	Knowledge representation, prdicates calculus, logic & deductions using predicates calculus, syntax & semanties, qualifiers and anioms, encoding facts as predicate calculus, deduction as search-forward chaining & unification, sholeneisation, backward chaining, goal trees for backward chaining.	
<b><u>TOPIC: 04:</u></b>		<b>[10]</b>
	Natural language processing, Introduction. Overview of linguistics, grammars and languages, Basic parsing techniques, Natural language generations and systems.	
<b><u>TOPIC: 05:</u></b>		<b>[12]</b>
	Vision expert system, defining the problems, overview of the solution, phylosophical issues, human versus machine, MYCIN & DENDRAL.	

**Books Recommended:**

- |   |                    |
|---|--------------------|
| 1. Artificial Intelligence, Tata McGraw Hill                      | - Rowe & Rich      |
| 2. Artificial Intelligence – An Engineering Approach, McGraw Hill | - Robert Sehalhott |
| 3. Artificial Intelligence & Expert System, PHI                   | - W. Patterson     |

# e-COMMERCE

<b>Subject Code 18608B</b>	<b>Sessional</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>20</b>
	<b>-</b>	<b>-</b>	<b>3</b>	<b>Internal Exam.</b>	<b>:</b>	<b>30</b>

## Rationale & Objective:

For effective teaching / learning of “Electronic Commerce” or "Doing, business online", it is necessary that the list of assignment should be prepared by the subject teacher based on the topic covered in related theory papers and given to the students because e-commerce is becoming critical in three interrelated dimensions. Customer-to-business interactions, customer-to-customer, intra-business interactions. Electronic Commerce facilitates the network form of organization where small flexible firms rely on other partner companies for component supplies and product distribution to meet changing customer demand more effectively. The assignment should cover present explosive problems related to e-commerce. These should strive to inculcate the skills necessary for a student to effectively use the tools & techniques as per the present day industry requirement.

## CONTENTS:

### Problems based on following topics:-

<u>S.No.</u>	<u>Topics</u>
01	Electronic Commerce Framework
02	Architectural Frame Work of E-Commerce
03	E-Business Activities
04	Security Issues
05	Electronic Payment Systems
06	Electronic Commerce Applications
07	Implementation of E-commerce
08	Banking system in e-commerce.

# MULTIMEDIA

<b>Subject Code 18608C</b>	<b>Sessional</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>20</b>
	<b>-</b>	<b>-</b>	<b>3</b>	<b>Internal Exam.</b>	<b>:</b>	<b>30</b>

## Rationale & Objective:

For effective teaching / learning of "Multimedia", it is necessary that the list of assignment should be prepared by the subject teacher based on the topic covered in related theory papers and given to the students based on present day professional requirement. Students will enable the students to understand the basic concepts of graphics and multimedia, familiarize with multimedia input, output and storage devices and appreciate features of multimedia software and develop small applications. These should strive to inculcate the skills necessary for a student to effectively use the tools & techniques as per the present day industry requirement.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction to Computer Graphics and Multimedia	(10)
02	Sound and Video cards,	
03	CD ROM and DVD	
04	sound file formats, compression techniques scanners, digital cameras, printers, plotters and other peripheral and storage devices.	
05	Features of any one of authoring tools such as Macro-media/ Adobe Photo-shop/ 3-D studio/ Paint-Shop Pro/ Animator Pro/ Director and Harvard graphics	
06	Education, Video Conferencing, training, Entertainment, electronic encyclopedia	
07	Music & Sound: Audio basic concepts, Analog and Digital concepts, MIDI hardware, MIDI messages, MIDI file.	
08	Video: Basic concepts.	
09	Analog Video & Digital Video	
10	Text, Sound MIDI, Digital Audio file format, MIDI under video environments, Audio & Video capture.	



# JAVA

<b>Subject Code 18608D</b>	<b>Sessional</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>		
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>50</b>
	<b>-</b>	<b>-</b>	<b>3</b>	<b>Internal Exam.</b>	<b>:</b>	<b>20</b>
					<b>30</b>	

**Rationale & Objective:**

**CONTENTS:**

**List of Experiments:**

- 01 Write a program to display prime numbers between 0-50
- 02 Write a program, which will read a string and count all occurrences of a particular letter.
- 03 An Employee class has the following attributes and behaviours.

Employee
employeeName
employeeAddress
department
annualSalary
displayDetails()

- 04 In the program above initialize the variables and write code to display some test values. Code the main() method invoking the methods of the above class and save the file, compile it and execute it.
- 05 Extend the Employee class to another class called **empProject**. Add a new variable called ProjectName and methods called getProjectName() and setProjectName to get and set the new variable.
- 06 Define a class called manager extending the Employee class and adds a variable projectArray. It should implement the interface defined above (printReport and implement the method defined by it) for printing of reports as needed.
- 07 Create an interface called Calculator implemented by a class called mathProcessor.
  - (a) Add
  - (b) Subtract
  - (c) Multiply
  - (d) Divide

any two numbers i.e. int's, double or float.  
 Note: Instead of accepting input from the user assign suitable values to relevant variables to test the working.
- 08 Write an exception that generates every time an integer passed on to a method is outside the range 1-9.

- 09 Write a program which takes command line arguments and does the following processing accordingly using nested try and catch statements:
- (a) If one command-line argument is present than divide-by-zero exception is generated.
  - (b) If two command line arguments are present than an array out of bounds exception is generated.
- If no command line arguments is passed then an appropriate message is displayed.
- 10 Write a Program, which throws an exception when a particular function **throws Demo** is called, and then this exception is caught inside the main where this function is called. What are the results if you do not catch the exception thrown by **throws Demo** function.
- 11 Design a multithread application that uses two classes,
- (a) Star Class that prints "\*\*\*\*\*" on the console
  - (b) Dollar class prints "\$\$\$\$" on the console
- Let object of start class constitute thread-1 and the object of Dollar class constitute thread-2. Both threads have the same priority.
- 12 Write an application to do the following:
- Inherit a class from thread class that has a constructor that takes a string as a parameter and passes it to the Thread class. In the run method, execute a loop 10 times to print the name of the thread that is executing and invoke the sleep method.
- Define another class called Start Thread that invokes the start method of Thread.
- 13 Create a small text editor, which creates an array of String objects and after reading a line of text stores it in a array. The text editor created should read upto 50 lines or till you enter "exit".
- 14 Create an applet to display welcome message and embed it in a web page.
- 15 Modify this program so that the applet welcomes a specific person whose name is passed to it as an HTML parameter. If no name is passed, the applet should use a default name. Also pass the font size and style as parameters to the applet.
- 16 Embed the applet created above in an HTML file in such a way that the text is aligned centrally and provide a gap of 50 pixels all around the applet.

# PROJECT WORK AND ITS PRESENTATION IN SEMINAR

<b>Subject Code 18609</b>	<b>Sessional</b>			<b>No of Period in one session : 60</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Annual Exam.</b>	<b>:</b>	<b>20</b>
	<b>-</b>	<b>-</b>	<b>3</b>	<b>Internal Exam.</b>	<b>:</b>	<b>30</b>

## Rationale :

The Project work and its presentation in seminar has impressed a lot to the professionals by giving tangible result in achieving the required competence in handling a project and finding out solutions to various problem and at the same time enhancing the knowledge by interactions and discussions in a seminar on the project. Therefore this subject has its unchallenged place in the curriculum.

## Objective:

The objective to achieve by covering this curriculum are many fold :

- Innovative skills in the students.
- self confidence.
- Ability to select a problem.
- Ability to analyse the problem.
- Logical approach to solution of a problem.
- Skill in quality documentation and report writing.
- Ability to prepare Project Report (Computer Printed).
- Ability to participate in Seminar.
- Commercial Skill.
- Learning to learn the process in a student.

## CONTENTS

<b><u>S.No.</u></b>	<b><u>Topics</u></b>
01	Project Work.
02	Report Writing.
03	Presentation in Seminar.
04	Final Report.

### **TOPIC 01:- PROJECT WORK**

The project assignments may consist of :-

01.01	Installation of Computer Systems, peripherals & software.
01.02	Programminng customer based application.
01.03	Web page designing.
01.04	Data Base applications.
01.05	Networking.
01.06	Software Development.
01.07	Fabrication of Components / equipments.
01.08	Fault diagnosis & their rectification in computer systems / equipments.
01.09	Bringing improvements in the existing Systems / equipments.

## **TOPIC 02 : REPORT WRITING**

The Project report should consists of :-

- 02.01 Introduction.
- 02.02 Problem statement.
- 02.03 Background.
- 02.04 Organisational Setup.
- 02.05 Plan Lay Out.
- 02.06 General Environment of Problem and problem identification.
- 02.07 Analysis of problem & Development of Algorithm.
- 02.08 Probable Solution.
- 02.09 Reasons.
- 02.10 Suggestions.
- 02.11 Others-as introduced by teacher.guide.

## **TOPIC 03 : PRESENTATION IN SEMINAR**

- 03.01 Presentation of the project work.
- 03.02 Discussion by participation.
- 03.03 Suggestion of improvement in report to be recorded.
- 03.04 Incorporation of approved suggestions in the report.

## **TOPIC 04 : FINAL REPORT**

- 04.01 Preparation of final project report incorporating all suggestions approved.

### **NOTE:-**

The students have various aptitudes and strengths. Project Work, therefore, should match the aptitudes of students. For this purpose, students should be asked to identify the type of Project Work, they would like to execute. It is also essential that the faculty of the respective department may have a brain storming to identify suitable project assignments.

The project work should be done individually. It is not possible, them it can not be done in group of more than 3 students.

The teachers are free to evolve other criteria, depending upon the type of project report.

It is advisable that two students or two projects which are related best be given merit certificate preferably at the annual day of the institute.