

## Chhattisgarh Swami Vivekanand Technical University, Bhilai

### SEVENTH SEMESTER - MASTER OF COMPUTER APPLICATIONS (INTEGRATED)

S. No	Board of Study	Subject Code	Subject	Period / week			Scheme of Exam			Total Marks	Credit L+(T+P)/2
				L	T	P	Theory/Practical				
							ESE	CT	TA		
1	Computer Applications	421711 (21)	Programming in Advanced JAVA	4	1	0	80	20	20	120	5
2	Computer Applications	421712 (21)	Formal Languages & Automata Theory	4	1	0	80	20	20	120	5
3	Computer Applications	421713 (21)	Computer Graphics	4	1	0	80	20	20	120	5
4	Computer Applications	421714 (21)	Data Warehousing & Mining	4	1	0	80	20	20	120	5
5	Humanities	421715 (46)	Professional Communication in English	4	1	0	80	20	20	120	5
6	Computer Applications	421721 (21)	JAVA Lab - II	0	0	6	50	-	25	75	3
7	Computer Applications	421722 (21)	Computer Graphics Lab	0	0	6	50	-	25	75	3
8	Management	421723 (76)	Managerial Skills	0	0	3	-	-	50	50	2
<b>Total</b>				<b>20</b>	<b>5</b>	<b>15</b>	<b>500</b>	<b>100</b>	<b>200</b>	<b>800</b>	<b>33</b>

ESE: End Semester Examination CT: Class Test TA: Teacher's Assessment L: Lecture T: Tutorial P: Practical

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject:** Programming in Advanced JAVA

**Total Theory Periods:** 40

**Total Marks in End Semester Exam:** 80

**Minimum no. of class tests to be conducted:** 2

**Branch:** Computer Applications

**Code:** 421711 (21)

**Total Tutorial Periods:** 10

**UNIT-I Swing & JDBC** Swings:- benefits of swing over AWT , Frames panels and borders ,labels and buttons , tabbed panes , scrolling panes, split panes ,combo boxes , list boxes , text component, menu, toolbar and actions , progress bars,sliders and scrollbars , dialogs .Introduction to JDBC, JDBC Drivers Type, Connection, JDBC URLs, Driver Manager,Statement – Creating, Executing, Closing, Result Set – Data Types and Conversions. Prepared Statement, Callable Statement, Mapping SQL and Java Types, JDBC-ODBC Bridge Driver

**UNIT-II RMI** Distributed Applications, Introduction to RMI, Java RMI Architecture, Writing an RMI Server,Designing a Remote Interface, Implementing a Remote Interface, Creating a Client Program,Compiling the Programs, Running the Programs

**UNIT-III Servlets** Movement to Server Side JAVA, Overview of Servlets, Common Gateway Interface (CGI), The JAVA Servlet Architecture, Generic Servlet and HTTP Servlet, The Servlet Interface, Requests and Responses, The Life Cycle of a Servlet, Retrieving Form Data in a Servlet, Session Tracking, Cookies.

**UNIT-IV Java Beans** Java Beans Concepts and the Beans Development Kit, Using the Bean Box, Writing a Simple Bean, Properties, Manipulating Events in the BeanBox, The BeanInfo Interface, Bean Customization, Bean Persistence.

**UNIT-V Java Server Pages (JSP) & J2ME** Overview of JSP, JSP Scripting elements, Compare and Contrast JSP with CGI and Servlet Technologies, List JSP directives, Integrate JSP with Java Beans Components, Handle JSP exceptions, Develop a basic Java Server Pages, Deploy Java Server Pages, Compare two-tier and multi-tier web application architectures, Database Connectivity. Overview of J2ME, JavaME documentation and application

## **Text Books:**

1. Herbert Schildt (2006), “The Complete Reference Java 2 (Updated to Cover J2SE 1.7)”, Ed. 05, Tata McGraw-Hill publishing company Ltd. New Delhi, India.
2. Cay S. Horstmann Gary Cornell, “ Core Java 2 Volume-I Fundamentals”, Ed-07, PEARSON Education, Singapore Pte. Ltd., Indian Branch, New Delhi, India 2005.

## **Reference Books:**

1. Michael Morgan, “Java 2 for Professionals Developers”, Ed. 01, SAMS, Techmedia, New Delhi, India 2000.
2. Bruce Eckel, “ Thinking in Java, The Definitive Introduction to Object-Oriented Programming in the Language of World-Wide-Web”, Ed-03, PEARSON Education, Singapore Pte. Ltd., Indian Branch,New Delhi, India 2005.
3. Philip Heller and Simon Roberts, “Java 2 Developer’s Hand Book”, BPB Publication, New Delhi.

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject :** Formal Languages & Automata Theory

**Total Theory Periods :** 40

**Total Marks in End Semester Exam :** 80

**Minimum no. of class tests to be conducted :** 2

**Branch :** Computer Applications

**Code:** 421712 (21)

**Total Tutorial Periods :** 10

**UNIT-1** Review of mathematical preliminaries, Relations, functions, set theory, predicate and propositional calculus, principle of mathematical induction/strong mathematical induction.

**UNIT-2** Formal Languages, Phrase structured grammar and their classification, Chomsky hierarchy, closure properties of families of languages, regular grammar, properties of regular sets, finite automata NFA, DFA & 2DFA, FSM with output, Determinism and Non determinism, FA minimization and related theorems.

**UNIT-3** Context free grammar and their properties, derivation tree, simplifying CFG, unambiguifying CFG, CNF and GNF of CFG, push down automata, Two way PDA, relation of PDA with CFG, Determinism and Non determinism in PDA and related theorems.

**UNIT-4** Concept of Linear Bounded Automata, context sensitive grammars and their equivalence; Unrestricted grammars and their equivalence with TM, determinism and non determinism in TM, TM as acceptor/generator/algorithms and related theorems, Multi tape, multi track TM, automata with two push down store and related theorems.

**UNIT-5** Introduction to Complexity theory. Introduction to recursive function theory, Recursively enumerable sets, recursive sets, partial recursive sets, Russell's paradox, Church's hypothesis, post correspondence problem, undesirability and some non-computable problems.

## **Text Books:**

1. Hopcroft and Ullman: Introduction to automata theory, Languages & Computation, Narosha Publication house.
2. Mishra & Chandrashekhara: Theory of Computer Science, Automata Languages & computation, 2nd Ed PHI, New Delhi.

## **Reference Books:**

1. Lewish Papadimitra: Theory of Computation, Prentice hall of India, New Delhi
2. Liu C.L.: Elements of Discrete Mathematics, Mc Graw Hill.
3. Hopcroft, Rajeev Motwani and Ullman: Introduction to Automata theory, languages and computation.

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject:** Computer Graphics

**Total Theory Periods:** 40

**Total Marks in End Semester Exam:** 80

**Minimum no. of class tests to be conducted :** 2

**Branch:** Computer Applications

**Code:** 421713 (21)

**Total Tutorial Periods:** 10

**UNIT-1 Computer Graphics and output primitives:** Concepts and applications, Random and Raster scan devices, Refresh Cathode ray tubes, LCD monitors, Laser, printers, Keyboards, mouse, scanners, Graphics software Output primitives: Line drawing algorithm : DDA along with Bresenhan's. Circle generating algorithm, Midpoint algorithms: ellipse and other curves. Attributes of output primitive. Antialiasing, Area filling: Filled area primitive: Scan-line Polygon Fill Algorithm, boundary fill algorithm, flood fill algorithm.

**UNIT-2 2-D Transformation, viewing, Clipping:** Two-dimensional Transformations: Translation, scaling, rotation, reflection, shear, matrix representation of all homogeneous coordinates, composite transformations. 2D-projections – parallel and perspective projection. Two dimensional viewing, Viewing pipeline Window-to-view port transformation. Clipping operations. Line Clipping: Cohen Sutherland, Nicholl-lee-Nichol land Liang-barsky, Polygon Clipping

**UNIT-3 3-D transformation and Visible surface detection** Three- dimensional object representations: Polygon Surface, Tables, Plane Equation. Curved lines and Surfaces: Spline representations, Interpolating and approximation curves, continuity conditions Cubic Splines, Bezier curves B-Spline curves: characteristics and generation.

**UNIT-4 3-D Transformation. Visible Surface detection Algorithm :**Object based and image based methods, depth comparison, A-Buffer, Back face removal, Scan-line method, Depth Sorting Method Area subdivision method.

**UNIT-5 Overview .of multimedia, classification, basic concept of sound/audio MIDI:** devices, messages, software. Speech, Video and Animation: Basic concept, computer-based animation, methods of controlling animation, display of animation, and transmission of animation.

## **Text Books:**

1. Computer Graphics by Donald Hearn & M. Pauline Baker PHI
2. Multimedia Computing communication & applications "By Ralf Steimnety & Kerla Neshtudt. Prince Hall.

## **Reference Books:**

- 1 Principles of interactive compo Graphics; W.M. Newman & Robert F Sproull.
- 2 Computer Graphics By Rogers TMH
- 3 Introductions to Computer Graphics Anirban Mukhopadhyay & Arup Chattopadhyay
- 4 Schaum's outlines -computer Graphics Mc Graw Hill International Edition.5
5. Principles of Multimedia by Ranjan Parekh TMH
6. "Multimedia Systems Design", P. K. Andleigh & K. Thakrar, Prentice Hall Pvt. Ltd.

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject:** Data Warehousing and Mining

**Total Theory Periods:** 40

**Total Marks in End Semester Exam:** 80

**Minimum no. of class tests to be conducted:** 2

**Branch:** Computer Applications

**Code:** 421714 (21)

**Total Tutorial Periods:** 10

**UNIT-1 Introduction:** Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining, Data Warehouse and OLAP Technology for Data Mining, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology From Data Warehousing to Data Mining.

**UNIT-2 Data Preprocessing & Data Mining Primitives, Languages, and System Architectures:** Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation, Online Data Storage. Data Mining Primitives, Data Mining Query Languages, Designing Graphical User Interfaces Based on a Data Mining Query Language Architectures of Data Mining Systems. **Concepts Description: Characterization and Comparison:** Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases.

**UNIT-3 Mining Association Rules in Large Databases:** Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining. **Classification and Prediction:** Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.

**UNIT-4 Cluster Analysis Introduction:** Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

**UNIT-5 Mining Complex Types of Data:** Multidimensional Analysis and Descriptive Mining of Complex, Data Objects, Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World Wide Web.

## **Text Books:**

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. Data Mining Techniques – ARUN K PUJARI, University Press
- 3 Building the Data Warehouse- W. H. Inmon, Wiley Dreamtech India Pvt. Ltd..

## **Reference Books:**

1. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
2. Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY STUDENT EDITION
3. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT EDITION
- 4.Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject:** Professional Communication in English

**Total Theory Periods:** 40

**Total Marks in End Semester Exam:** 80

**Minimum no. of class tests to be conducted:** 2

**Branch:** Computer Applications

**Code:** 421715 (46)

**Total Tutorial Periods:** 10

**Unit-1** Communication Process, Elements, Objectives, Principles, Barriers in communication, Communication in Organization. Note-taking from lectures and written materials: Listening – Introduction, Advantages and Importance, How to become a good listener, Barriers in effective listening.

**Unit-2** Written Presentation of Technical material and Preparation of Bibliography with special reference to technical reports its structure and layout; Planning and Preparation; Use of Illustrations; writing the Report, Formal and Informal Reports, Elements of letter writing and style of writing.

**Unit-3** Basics of Official Correspondence: Handling Correspondence, Receipt and Dispatch of Mails, Filing system, Classification of Mails; Quotation, Orders, Tenders, Sales Letters; Letter Writing – Principles, Structure and Layout, Planning, Preparation of Resume, Advertising and Jobs Description.

**Unit-4** Précis Writing: Steps of Précis Writing, Dos and Don'ts of Précis Writing. Principle Planning, Preparation for Presentation; Meetings, Conferences, Interviews. Audio-Visual Communications, Telephonic Conversations.

**Unit-5** Seminars: Preparation, Presentation and Practice; Principles of Effective Oral Communication, Speech Preparation, Pronunciation, Voice Control, Physical Behaviour, Techniques of Effective Speech and Interpersonal Communication. Group Discussion: Definition, Process, Characteristics and Formation of Groups, Do's and Don'ts, Helpful Expression and Evaluation.

## **Text Books:**

1. Essentials of Effective Communication – Ludlow R and Pantone F., Prentice Hall, India Pvt. Ltd., 1995.
2. Business Correspondence and Report Writing – RC Sharma and Krishna Mohan, Prentice Hall, India.

## **Reference Books :**

1. Essentials of Business Communication – Rajendra Pal and JS Kurlahalli, S.Chand & Sons, New Delhi, 1999.
2. Developing Communication Skills – Krishna Mohan and Meera Banerjee, McMillan India Ltd. New Delhi, 2000.
3. Business Communication – Asha Kaul, Prentice Hall, India Pvt Ltd, New Delhi, 2000.
4. Professional Communication Skills – Alok Jain, P.S. Bhatia and A.M. Shiekh, S. Chand & Company Ltd., 2005.
5. Business Communication: Strategy and Skill – Prentice Hall, New Jersey, 1987.
6. Writing Technical Papers – D H Menzel, H M Jones & LG Boyd, McGraw Hill, 1961.
7. A Manual for Writers of Term Papers, Thesis and Dissertation – KL Turbrian, University of Chicago Press, 1973.

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject:** JAVA LAB - II

**Total Periods:** 60

**Total Marks in End Semester Exam:** 50

**Branch:** Computer Applications

**Code:** 421721 (21)

## Experiments to be performed:

1. Write programs for TCP server and Client interaction as per given below.
  - i. A program to create TCP server to send a message to client.
  - ii. A program to create TCP client to receive the message sent by the server.
2. Write programs for Datagram server and Client interaction as per given below.
  - i. A program to create Datagram server to send a message to client.
  - ii. A program to create Datagram client to receive the message sent by the server.
3. Write a program by using JDBC to execute a SQL query for a database and display the results.
4. Write a program by using JDBC to execute an update query without using PreparedStatement and display the results.
5. Write a program by using JDBC to execute an update query by using PreparedStatement and display the results.
6. Write a program to execute a stored procedure in the database by using CallableStatement and display the results.
7. Write a program to receive two numbers from a HTML form and display their sum in the browser by using HttpServlet.
8. Write a program to display a list of five websites in a HTML form and visit to the selected website by using Response redirection.
9. Write a program to store the user information into Cookies. Write another program to display the above stored information by retrieving from Cookies.
10. Write a program in Java Beans to add a Button to the Bean and display the number of times the button has been clicked.
11. Write a program for Java Bean with Simple property by using SimpleBeanInfo class.
12. Write a program for Java Bean with Indexed Property by using SimpleBeanInfo class.
13. Write a program to develop a Enterprise Java Bean of "Session Bean" type.
14. Write a program to develop a Enterprise Java Bean of "Entity Session Bean" type.
15. Write a program to develop a Enterprise Java Bean of "Message Driven Bean" type

## List of Equipments/Machine required :

1. Software: The Java Development Kit version 1.3 (JDK 1.3 or more) and Java Servlets Development Kit.
2. Operating System: Win32 Release for Windows 98 and Windows NT on Intel hardware. For Windows NT, only version 4.0 is supported.
3. RAM / Processor: A 486/DX or faster processor and at least 64 megabytes of RAM are recommended.

## Recommended Books:

1. "Head First Java" by Kathy Sierra & Bert Bates O'Reilly Publication
2. "Head First Servlets and JSP" by Bryan Basham, Kathy Sierra & Bert Bates

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

**Semester:** VII

**Subject:** Computer Graphics Lab

**Total Periods:** 60

**Total Marks in End Semester Exam:** 50

**Branch:** Computer Applications

**Code:** 421722 (21)

## Experiments to be performed:

- (i) Write a program to draw a Line Using DDA algorithm.
- (ii) Write a program to draw a Line Using Bresenham's algorithm.
- (iii) Write a program to draw polygon (Triangle, square, pentagon etc).
- (iv) Write a program to draw Circle/Ellipse using Mid Point Circle algorithm.
- (v) Write a program to implement Area filling using Scan Line Method.
- (vi) Write a program to implement Boundary fill 4-connected / 8-connected Algorithm using Recursion/Non Recursion.
- (vii) Write a program to implement Flood fill Algorithm using Recursion/ Non Recursion.

**OR**

Write a program to Fill a solid colored area./ Write a program to Fill a Multicolor Boundary area.

- (viii) Write a program to Translate a Line/Polygon.
- (ix) Write a program to Rotate and Scaling of a Line/Polygon With respect to
  - i) Origin
  - ii) Pivot Rotation
- (x) Write a program to perform Shearing of Polygon with respect to
  - i) X-axes
  - ii) Y-axes
- (xi) Write a program to perform reflection of polygon with respect to
  - i) X-axes
  - ii) Y-axes
  - iii) With respect to origin
  - iv) With respect to line  $Y=X$
  - v) With respect to line  $Y=mX+C$
- (xii) Draw Bzier curve using Local Control Point (60,20),(80,100),(150,90),(180,50).
- (xiii) Write a program to perform Clipping of Line using Cohen Sutherland Algorithm.
- (xiv) Prepare a game using graphics basic object and various transformations.

**OR**

Create a Paint Brush Like Application that include facility to draw all the basic object.

**OR**

Develop any useful tool (like watch) using graphics basic object and various transformations.

- (xv) Implementation of text compression using dynamic Huffman coding/ static Huffman coding

## List of Equipments/Machine required:

- (i) PC with Windows XP
- (ii) Turbo C/C++ compiler

## Recommended Books:

- (i) Graphics and programming in C Rogers T , Stevens BPB
- (ii) Graphics under C by Yashwant Karnetkar BPB



# **Chhattisgarh Swami Vivekanand Technical University, Bilai**

**Semester:** VII  
**Subject:** Managerial Skills  
**Total Periods:** 30

**Branch:** Computer Applications  
**Code:** 421723 (21)

**UNIT-1** Introduction to skills & personal skills Importance of competent managers, skills of effective managers, developing self awareness on the issues of emotional intelligence, self learning styles, values, attitude towards change, learning of skills and applications of skills.

**UNIT-2** Problem solving and building relationship: Problem solving, creativity, innovation, steps of analytical problem solving, limitations of analytical problem solving, impediments of creativity, multiple approaches to creativity, conceptual blocks, conceptual block bursting. Skills development and application for above areas.

**UNIT-3** Building relationship Skills for developing positive interpersonal communication, importance of supportive communication, coaching and counseling, defensiveness and disconfirmation, principles of supportive communications. Personal interview management. Skill analysis and application on above areas.

**UNIT-4** Team building: Developing teams and team work, advantages of team, leading team, team membership. Skill development and skill application. Empowering and delegating: Meaning of empowerment, dimensions of empowerment, how to develop empowerment, inhibitors of empowerment, delegating works. Skills development and skill application on above areas.

**UNIT-5** Communication related to course: How to make oral presentations, conducting meetings, reporting of projects, reporting of case analysis, answering in Viva Voce, Assignment writing.

## **Text Books**

1. David A Whetten, Cameron Developing Management skills, PHI 2008
2. Kevin Gallagher, Skills development for Business and Management Students, Oxford, 2010
3. Monipally, Mutthukutty Business Communication Strategies Tata McGraw Hill. 1e

## **Reference Books**

1. Krishnamohan & Meera Banerjee, 1998. Developing Communication Skills, New Delhi: McMillan India Ltd.
2. Ragendra Pal & Korlahali J.S. 1996. Essentials of Business Communication, New Delhi: 1996: Sultan Chand & Sons.