E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI – 625 014.
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DEPARTMENT OF COMPUTER APPLICATIONS

CBCS SYLLABUS

BACHELOR OF COMPUTER APPLICATIONS

PROGRAMME CODE - J

COURSE STRUCTURE

(w.e.f. 2017 – 2018 onwards)

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CRITERION - I

1.2.2 Details of Programmes offered through Choice Based Credit System (CBCS) / Elective Course System

Syllabus copies with highlights of contents focusing on Elective Course System

To be Noted:

HIGHLIGHTED	COURSE
	Elective

Annexure - 14

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DEPARTMENT OF COMPUTER APPLICATIONS-UG

COURSE STRUCTURE - SEMESTER WISE

(w.e.f. 2017–2018 Batch onwards)

Sem	Part	Sub. Code	Title of the paper	Teaching hrs(per week)	Duration of Exam (hrs)	Marks allotted			Credits
						C.A	S.E	Total	
1	I	171T1	Part I - Tamil	6	3	25	75	100	3
	II	172E1	Part II - English	6	3	25	75	100	3
	III	17J11	Core - Programming in C	4	3	25	75	100	4
	III	17J1P	Core - Programming in C Lab	5	3	40	60	100	3
	III	17ACJ1	Allied I – Financial Accounting	5	3	25	75	100	5
	IV	17SEJ1P	Skill Based I – Office Automation Lab	2	2	40	60	100	2
	IV	17NMJ1	PC – Software (NME)	2	2	25	75	100	2
2	I	171T2	Part I - Tamil	6	3	25	75	100	3
	II	172E2	Part II - English	6	3	25	75	100	3
	III	17J21	Core - Object Oriented Programming with C++	4	3	25	75	100	4
	III	17J2P	Core - Object Oriented Programming with C++ Lab	5	3	40	60	100	3
	III	17AMJ2	Allied II – Resource Management Techniques	5	3	25	75	100	5
	IV	17SEJ2P	Skill Based II – Linux Lab	2	2	40	60	100	2
	IV	17NMJ2	Animation Using Flash (NME)	2	2	25	75	100	2
3	I	171T3	Part I - Tamil	6	3	25	75	100	3
	II	172E3	Part II - English	6	3	25	75	100	3
	III	17J31	Core – Digital Principles & Computer Organization	4	3	25	75	100	3
	III	17J32	Core – Java Programming	4	3	25	75	100	4
	III	17J3P	Core – Java Programming Lab	3	3	40	60	100	3
	III	17AMJ3	Allied III - Graph Theory	5	3	25	75	100	5
	IV	17SEJ3P	Skill Based III - Multimedia Lab	2	2	-	-	100	2
4	I	171T4	Part I - Tamil	6	3	25	75	100	3
	II	172E4	Part II - English	6	3	25	75	100	3
	III	17J41	Core - Data Structures and Computer Algorithms	4	3	25	75	100	3
	III	17J4P	Core - Data Structures and Computer Algorithms Lab	3	3	25	75	100	3
	III	17J42	Core – Relational Database Management System	4	3	40	60	100	4
	III	17AMJ4	Allied IV - Numerical Methods	5	3	25	75	100	5
	IV	17SEJ4P	Skill Based IV – RDBMS Lab	2	2	-	-	100	2

5	III	17J51	Core – Operating System	5	3	25	75	100	4
	III	17J52	Core – Data Communication and Computer Networks	6	3	25	75	100	4
	III	17J53	Core – Dot Net Programming	5	3	25	75	100	4
	III	17J5P	Core – Dot Net Programming Lab	5	3	40	60	100	3
	III		**Elective I**	5	3	25	75	100	5
	IV	17SEJ5P	Skill Based V – Networking Lab	2	2	-	-	100	2
	IV	174EV5	Environmental Studies	2	2	-	-	100	2
6	III	17J61	Core – Software Engineering	5	3	25	75	100	4
	III	17J62	Core - Web Technology	6	3	25	75	100	4
	III	17J6P	Core – Web Technology Lab	5	3	40	60	100	3
	III		**Elective II**	5	3	25	75	100	5
	III	17JPR6	**Elective III (Project)**	5	3	20	80	100	5
	IV	17SEJ6P	Skill Based VI - Android Lab	2	2	-	-	100	2
	IV	174VE6	Value Education	2	2	-	-	100	2
	PART V	175NS4 / 175PE4	N.S.S / Physical Education	-	2	-	-	-	1
			Total	180				-	140

Elective I
Semester - V (Choose any one)

1. Computer Graphics - 17JE5A
2. Enterprise Resource Planning - 17JE5B

Elective II
Semester - VI (Choose any one)

1. Data Mining - 17JE6A
2. Compiler Design - 17JE6B

Annexure – 12

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DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Elective-I

Title of the Paper	**: Computer Graphics**	
Semester	**: V**	**Contact Hours: 5**
Sub Code	**: 17JE5A**	**Credits : 5**

Objectives:

To make students understand about fundamentals of Graphics to enable them to design animated scenes for virtual object creations.

Unit- I

A Survey of computer graphics: Computer –Aided Design – Presentation Graphics – Computer art – Entertainment – Education and Training – Visualization – Image Processing – Graphical user Interfaces. **Overview of Graphics system:** Video display devices- Refresh Cathode-Ray Tubes, Raster scan Displays, Random-Scan Displays, Color CRT Monitors, Direct-View Storage Tubes,3D Viewing Devices, Stereoscopic Reality Systems- Raster Scan systems-Random scan system -I/P devices-Hard copy devices-Graphics software.

Unit-II

Output Primitives: Points and lines-Line drawing algorithms: DDA Algorithms, Bresenham's Line Algorithm-Loading the frame buffer-Circle generating algorithms- Other curves-Pixel Addressing-Filled area primitives-Fill-Area Functions-Cell Array- Character Generation.

Unit- III

Attributes of Output Primitives: Line attributes: Line Type, Line Width, Line Color-

Curve attribute-Color and grayscale levels-Area fill attributes-Character attributes-Bundled attributes-Inquiry functions-Antialising: Antialising Area Boundaries.

Unit- IV

Two- Dimensional Geometric Transformations: Basic Transformations: Translation-Rotation-Scaling-Matrix representations and homogeneous coordinates-Composite transformations: Translations-Rotations-Scaling-General pivot point Rotation-General Scaling Directions-Concatenation Properties-General Composite Transformations and Computational Efficiency-Other Transformations: Reflection-Shear-**Three Dimensional Concepts :** Three-Dimensional display methods: parallel project – perspective projection – depth cueing – visible Line and surface – Identification. Exploded and cutaway views – Three-Dimensional and stereoscopic- views- Three-Dimensional graphics Packages.

Unit- V

Two –Dimensional Viewing: The Viewing Pipeline-Viewing Coordinate reference frame-Window-to-View port Coordinate transformation-Two-Dimensional Viewing functions-Clipping Operations-Point clipping-Line clipping: Cohen-Sutherland Line Clipping, Liang-Barsky Line Clipping, Nicholle-Lee-Nicholl Line Clipping- Line Clipping using NonRectangular – Clip Windows – Splitting Concave Polygon -Polygon Clipping: Sutherland-Hodgeman Polygon Clipping – Weiler Atherton Polygon Clipping - Other Polygon Clipping Algorithms-Curve Clipping-Text clipping –Exterior Clipping.

Text Book:

1. Donald Hearn & Pauline Baker M., *Computer Graphics C version*, Pearson Education, India, 2nd Edition, 2017.

Chapters:

Unit - I : 1,2

Unit - II : 3.1, 3.2, 3.3, 3.5, 3.7, 3.10, 3.11, 3.12, 3.13, 3.14

Unit - III : 4

Unit - IV : 5.1 - 5.4 , 9.1, 9.2

Unit - V : 6

Reference Books:

1. Malay K. Pakhira, *Computer Graphics, Multimedia and Animation,* Prentice Hall Of India Pvt. Ltd., New Delhi, 2008.
2. Mukherjee D.P., *Fundamentals Of Computer Graphics And Multimedia* Prentice Hall Of India Pvt. Ltd., New Delhi, 1st Edition, 2009.
3. Peter Shirley, *Fundamentals of Computer Graphics*, A.K. Peters Ltd., Wellesley, United States, 3rd Edition, 2009.
4. Dr. Jeffrey McConnell J, *Computer Graphics Theory into Practice*, Jones & Bartlett Publishers, Sudbury, 1st Edition, 2006.
5. Donald D. Hearn, *Computer Graphics with Open GL,* University of Illinois at Urbana-Champaign, India, 4th Edition, 2011.

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(w.e.f. 2017-2018 Batch onwards)

Elective I

Title of the Paper	**:**	**Enterprise Resource Planning**	
Semester	**:**	**V**	**Contact Hours: 5**
Sub Code	**:**	**17JE5B**	**Credits : 5**

Objectives:

To acquire knowledge about Business Modeling, Architecture, Commercial ERP, ERP Implementation, The ERP Domain, ERP A Curtain Raiser.

Unit- I

ERP A Curtain Raiser: An Overview-Accommodating Variety-Integrated Management Information-Seamless Integration-Supply Chain management-Resource Management-IntegrateddataModel-Scope-Technology-Benefits-Evolution-ERP Revisited-ERP and the modern Enterprise.

Unit- II

Business Engineering And ERP: An Overview-What is Business Engineering-Significance of Business Engineering-Principles of Business Engineering-BPR, ERP AND IT-Business Engineering with Information Technology-ERP and Management Concerns.

Unit- III

Business Modeling For ERP: An Overview-Building the Business Model-**ERP and The Competitive advantage:** An Overview-ERP and the Competitive Strategy-**Marketing Of ERP:** An Overview-Market Dynamics and Competitive Strategy.

Unit- IV

ERP Implementation: An Overview- Role of Consultants, Vendors and Users-Customization-Precautions-ERP: Post Implementation Options-ERP Implementation Methodology- Guidelines for ERP Implementation.

Unit- V

The ERP Domain: An Overview-MFG/PRO-IFS/Avalon Industrial and Financial Systems-Baan-SAP-SAP R/3 Applications-Example of an Indian ERP Package-The Arrival of ERP.

Text book:

1. Vinod Kumar Garg, Venkitakrishnan N.K., *Enterprice Resource Planning*, New Delhi, II Edition, 2011.

Chapters:

Unit- I : 1

Unit- II : 2

Unit- III : 3, 5, 7

Unit- IV : 4

Unit- V : 6

Reference Books:

1. Joseph Brady A., Ellen Monk F. & Bret Wagner, *Concepts in Enterprise Resource Planning*, Thompson Course Technology, 3rd Edition, 2008.
2. Vinod Kumar Garg & Venkitakrishnan N. K., *Enterprise Resource Planning – Concepts and Practice*, PHI, 2nd Edition, 2004
3. Mary Sumner, *Enterprise Resource Planning*, Pearson Education, 9th Edition, 2012.
4. Alexis Leon, *Enterprise Resource Planning*, Mc-Graw Hill Education, 2nd Edition, 2014.
5. Jaiswal, *Textbook of Enterprise Resource Planning*, Macmillan Publishers, 1st Edition, 2005.

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(w.e.f. 2017-2018 Batch onwards)

Elective II

Title of the Paper : Data Mining
Semester : VI **Contact Hours: 5**
Sub Code : 17JE6A **Credits : 5**

Objectives:

To acquire knowledge about retrieval of data from voluminous data in a desired manner, Association Rules, Decision Trees, Clustering Techniques.

Unit-I

Data Mining: Introduction - What is Data Mining? – Data Mining Functionalities –KDD vs Data Mining – Other related Areas- DM Technique- Other mining problems – Issues and challenges in DM – DM applications areas- DM Applications case studies. **Association Rules:** Introduction – What is an Association Rule - Methods to Discover Association Rules- Apriori Algorithm.

Unit-II

Data Warehousing: Introduction - Data warehouse Architecture - Dimensional Modeling - categories of Hierarchies - Aggregate Function – Summarisability - Fact Dimension Relationship - OLAP operations - Lattice of Cuboids - OLAP Server – ROLAP - MOLAP - Data Marting - ETL - Data Cleaning - ETL vs ELT.

Unit-III

Decision Trees: Introduction-what is a Decision Tree- Tree Construction Principle- Best Split - Splitting Indices - Splitting criteria - Decision Tree Construction algorithms – CART -

ID3 - C4.5 – CHAID – Pruning Technique. **Genetic Algorithm:** Introduction – Basic Steps of GA – Selection – Crossover – Mutation – Data Mining Using GA.

Unit-IV

Clustering Techniques: Introduction – Clustering Paradigms – Partitioning Algorithms – **K**-Medoid Algorithm – CLARA – CLARANS – Hierarchical Clustering – DBSCAN – BIRCH – CURE. **Other Techniques:** Introduction – What is a Neural Network - Learning in NN – Unsupervised Learning – Support Vector machine.

Unit-V

Web Mining: Introduction – Web Mining – Web Content Mining – Web Structure Mining – Web Usage Mining – Text Mining – Unstructured Text – Text Clustering. Temporal and Spatial Data Mining: Introduction – What is Temporal Data Mining – Temporal Association Rules – Sequence Mining – Spatial MINING – Spatial Mining Tasks – Spatial Clustering – Spatial Trends.

Text Book:

1. Arun K Pujari, *Data Mining : Concepts and Techniques*, Universities Press, Patna, 4th Edition, 2017.

Chapters:

Unit I : 3.1 - 3.11, 4.1. - 4.4

Unit II : 2.1 - 2.12, 2.22 - 2.26

Unit III : 6.1 - 6.11, 6.18, 8.1 - 8.6

Unit IV : 5.1 - 5.10, 9.1 - 9.6

Unit V : 11.1 - 11.7, 11.10, 12.1 - 12.4, 12.12 - 12.5

Reference Books:

1. Arun K.Pujari, *Data Mining Techniques*, Universities press, 3rd Edition, 2013.
2. Mourya S.K., Shalu Gupta, *Data Mining and Data warehousing* , Narosa Publishing House Private Ltd., 1st Edition, 2013.
3. Jiawei Han & Micheline Kamber, *Datamining Concepts & Techniques*, Morgon Kaufmann Publishers, San Francisco, USA, 2nd Edition, 2010.
4. Margaret Dunham H. & Sridhar S., *Introductory and Advanced topics in Data Mining,* Pearson Education, New Delhi, II Edition, 2016.
5. Gupta G. K., *Introduction To Data Mining With Case Studies,* Eastern Economy Edition, Prentice Hall Of India, II Edition 2011.

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Elective II

Title of the Paper	**: Compiler Design**	
Semester	**: VI**	**Contact Hours: 5**
Sub Code	**: 17JE6B**	**Credits : 5**

Objectives:

To acquire knowledge about Compilers , Lexical Analysis , Syntax Analysis, Intermediate Code Generation, Code Generation, Code Optimization.

Unit- I

Introduction To Compilers-Introduction-What are Compilers: Analysis-Synthesis Model-Examples of Software Tools Used for Analysis-Conventional Compiler-Classification of Compilers-Analysis of source program-Phases of a Compiler: Lexical Analysis(Scanning/Scanner)-Syntax Analysis(Parsing/Parser)-Semantic Analysis-Code Optimization-Code Generation-Symbol Table Management -Error Detection and Reporting-Cousins of Compiler: Preprocessor-Assemblers-Loaders-Linkers-Grouping of Phases: Front End and Back End-Passes-Reducing the Number of Passes-Compiler Construction Tools-Scanner Generator-Parser Generator-Syntax-Directed Translation Engines-Automatic Code Generator-Data-Flow Engines **Lexical Analysis** -Introduction-Definition of Lexical Analysis-Role of Lexical Analyser: Issues in Lexical Analysis-Tokens, Patterns, Lexemes- Attributes for Tokens-Lexical Errors-Panic Mode Error Recovery Strategy-Input Buffering:Buffer Methods-Buffer Pairs-Sentinels-Specification of Tokens-Recognition of Tokens:Finite AUTOMATA-NFA-DFA-Regular Expression to NFA-Conversion of NFA to DFA-Minimisation of DFA Optimisation of

DFA from Regular Expression-LEX Tool-Declarations-Transition Rules-Auxiliary Procedures-Lexical Library.

Unit- II

Syntax Analysis-Introduction-Role of the Parser:Error Handling-Error Recovery Strategies-Writing Grammars-Grammars-Definition-Type of Grammar-Context-free-grammar-A Production(Productions for A)-Derivations using a Grammar-Notations for CFG-Sentential Forms-Parse Tree (Derivation tree)-Yield of Parser Tree. **Parsing**-Introduction-Types of Parsing:Top down Parsing(Ll(K))-Bottom up Parsing(LR(K))-Shift Reduce Parsing-Operator Precedence Parsing:Detailed Steps for Solving Operator Precedence Parsing Problems-Error Recovery in Operator Precedence Parsing-Handling Errors during Reductions-LR Parsers:SLR Parser-Canonical LR Parser-LALR Parser.

Unit- III

Intermediate Code Generation-Introduction-Generation of Intermediate Code:Representation of intermediate language-Types of three address statement-Implementation of three address Code-styles of syntax directed Translations-Declarations:Declaration in a procedure- Translation scheme for declaration in a procedure-Declaration in nested procedures-Assignment statement: Syntax directed translation scheme Ready using Temporary names-Addressing array elements-Boolean Expression:Numerical representation-Flow of control statements - Case Statements - Backpatching-Procedural calls-Calling the Procedure - Type Conversion

Unit- IV

Code Generation-Issues in the Design of Code Generator : Input to the code Generator - Target programs-Memory management -Instruction Selection - Register Allocation -Evaluation Order -The Target machine -Runtime Storage Management: Static allocation -Stack allocation - Basic Blocks and flow Graphs: Basic Block -Transformation on Basic Block - Flow graph - Loops-Next use Information -A Simple Code Generator : Code Generation- Code Generation Algorithm - Register and Address Descriptors-Function Gatereg()-Conditional Statements -DAG

Representation of Basic Blocks: DAG for Basic Block - DAG Construction -Applications of DAGS-Peephole Optimisation : Definition Goals-Method

Unit- V

Code Optimisation - Introduction : Criteria for code Improving Transformation -Getting Better Performance -An Organisation for an Optimising Compiler - Principal sources of optimisation : function -Preserving Transformations -loop Optimisation -Optimisation of Basic Blocks: Basic Blocks-Basic Block Optimisation -Building Expression DGAs-Introduction to Global Data Flow Analysis: Point and paths-Reaching Definitions-Global Data Flow Analysis-Dataflow Analysis of Structured Programs-Dataflow Equations for Reaching Definitions-Computation of"gen" and "kill" - Computation of "in" and "out"-Dealing with loops - Representation of sets.

Text book:

1. Dr.Venkatesh R., Dr. Uma Maheshwari N. & Ms.Jeyanthi S., *Compiler Design*, Yes Dee Publishing Pvt. Ltd., India, 2015.

Chapters:

Unit- I : 1.1 to 1.7, 2.1 to 2.8.

Unit- II : 3.1 to 3.5, 4.1 to 4.5.

Unit- III : 5.1 to 5.9.

Unit- IV : 6.1 to 6.9.

Unit- V : 7.1 to 7.4.

Reference Books:

1.Alfred V.Aho & Ravi Sethi Jeffrey D.Ullman, *Compilers Principles, Techniques and Tools,* Pearson Education, 3rd Edition, 2007.

2. D.Chithra, *Principles of Compiler Design*, CBS, 2nd Edition, 2011.

3. Alfred V.Aho, Ravi Sethi Jeffrey D.Ullman, *Compilers Principles, Techniques and Tools*, Darling Kindersley (India), 1st Edition, 2007.

4. Sandeep Saxena & Rajkumar Singh Rathore, *Compiler Design*, S.Chand and Co. Ltd., 2nd Edition, 2013.

5. Aho, Ravi Sethi, Ullman, *Compilers,* Narosa Publishing House, 2nd Edition, 2006.

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Elective III

Title of the Paper	**: Project**	
Semester	**: VI**	**Contact Hours: 5**
Sub Code	**: 17JPR6**	**Credits : 5**

The students are allowed to develop their project within our campus with the help of the internal staff members.

In the first review the students submit their title of the project and synopsis, and also submit the determination of the modules.

In the second review 50% of the project is completed and demonstrate the project.

In the final review the students prepare the power point presentation. The oral is must for the completion of the project.

This report will be evaluated 80 marks for external examiner and 20 marks for internal examiner.