Sem.	Course Code	Core Paper – I	Total Marks:100		Hours Per Week	Credits
I	21PBICT101	ANALYSIS & DESIGN OF ALGORITHMS	CIA : 50	ESE :50	5	4

Course Objectives: On successful completion of the course the students will have:

1. Understood the Elementary Data Structures and algorithms.
2. Understood various methods like Basic Traversal and Search Techniques, divide and conquer method, Dynamic programming, backtracking
3. Employability opportunities by enhancing the knowledge in analysis and design of algorithms.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Analyze the time complexity and space complexity of an algorithm	
CO 2	Implement searching and sorting algorithms in real world problems	K1
CO 3	Apply the concept of Greedy method	–
CO 4	Distinguish between greedy method and dynamic programming	K6
CO 5	Predict an appropriate algorithm for applications.	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Introduction: - Algorithm Definition and Specification – Space complexity-Time Complexity-Asymptotic Notations - Elementary Data Structure: Stacks and Queues – Binary Tree - Binary Search Tree - Heap - Heapsort- Graph.

Unit –II :

Basic Traversal And Search Techniques: Techniques for Binary Trees-Techniques for Graphs - Divide and Conquer: - General Method – Binary Search – Merge Sort – Quick Sort.

Unit –III :

The Greedy Method: - General Method – Knapsack Problem – Minimum Cost Spanning Tree – Single Source Shortest Path.

Unit –IV :

Dynamic Programming - General Method – Multistage Graphs – All Pair Shortest Path – Optimal Binary Search Trees – Traveling Salesman Problem

Unit –V :

Backtracking: - General Method – 8-Queens Problem – Sum of Subsets – Graph Coloring – Hamiltonian Cycles – Branch And Bound: - The Method – Traveling Salesperson.

Skill Development Activities:

1. Analyze the computing time of selection sort with suitable values.
2. Consider the array [-3,5,6,7,20,8,2,9,12,15,30,17] and draw the corresponding complete binary tree.
3. Derive an optimal solution to the knapsack instance n=7,m=15,(p1,p2,...p7)=(10,5,15,7,6,18,3), and (w1,w2,..w7)=(2,3,5,7,1,4,1).

TEXT BOOKS

1	Ellis Horowitz,"Computer Algorithms", Galgotia Publications.
2	Ellis Horowitz,Sartaj Sahni, SanguthevarRajasekaran, "Fundamentals of Computer Algorithms".
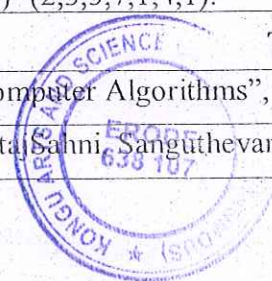
Dr. N RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANA...
ERODE - 638 107

Universities Press (India) Pvt. Ltd., 2nd Edition.2008

REFERENCE BOOKS

1. Alfred V.Aho, JohnE.Hopcroft, Jeffrey. D.Ullman, "Data Structures and Algorithms".
2. Goodrich, "Data Structures & Algorithms in Java", Wiley 3rd edition.
3. AnanyLevith,"Introduction to the Design and Analysis of algorithm", Pearson Education Asia, 2003.

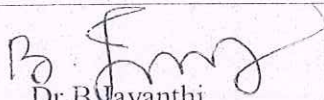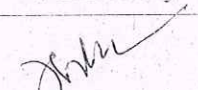## Web Resources

1. https://nasirmir.files.wordpress.com/2012/09/fundamentals-of-computer-algorithms-by-ellis-horowitz-1984.pdf
2. https://kailash392.files.wordpress.com/2019/02/fundamentalsof-computer-algorithms-by-ellis-horowitz.pdf

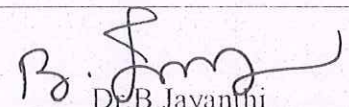| Course Designed By	Verified By	Approved By HOD
Dr.B.Jayanthi	Dr.J.Ghayathri	Dr.B.Jayanthi

QUESTION PAPER PATTERN

SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer **Four options** should be given ('**None of these**' should be avoided)	SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit	SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory - Case Study

Mapping of COs with POs and PSOs:

PO/ PSO CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	M	M	S	L	S	L	S	S	L
CO2	M	M	S	M	M	S	S	M	S	M	S	S
CO3	S	M	S	L	L	M	M	S	S	S	S	S
CO4	M	S	S	M	S	S	S	M	S	M	M	S
CO5	S	S	S	L	M	S	M	S	S	S	S	S

S-Strong, M-Medium, L-Low

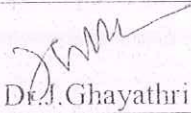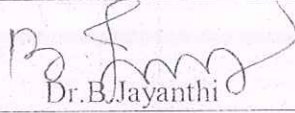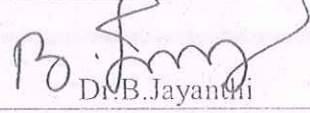**Dr. N. RAMAN**
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	Core Paper – II ADVANCED JAVA PROGRAMMING	Total Marks:100		Hours Per Week	Credits
I	21PBICT102		CIA : 50	ESE :50	5	4

Course Objectives: On successful completion of the course the students will have:

1. Employability opportunities by enhancing the knowledge in advanced JAVA concepts
2. Skills to develop web based applications by applying the advanced Java concepts

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Create Applications using Swing Components.	
CO 2	Write distributed applications using RMI	K1 – K6
CO 3	Establishing Database Connectivity using JAVA	
CO 4	Implement application using Applets and Servlet	
CO 5	Apply XML Schemas in web	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :	JAVA SWING

Introduction – AWT Class Hierarchy – Creating Container – Adding Components – Layout – Panel – Text Filed – TextArea – List – Checkbox – Check Box Group – Choice – Event Handling – Dialog Boxes – ScrollBar – Manu – Swing – JTree – JColorChooser - Dialogs

Unit –II :	REMOTE METHOD INVOCATION AND JDBC

RMI : Introduction – Remote Method Invocation – Java RMI Interfaces and Classes- Application – Compiling the Program – Generating Stub Classes – Running the Program – Callback JDBC: Introduction – Drivers – Architecture – Classes and Interfaces – SQL Statements – Retrieving Result

Unit –III :	JAVA and XML

Introduction – XML and DOM – DOM Nodes – Node Interface – Document Node – Element Node – Text Node – Attr Node – Parsing XML

Unit –IV :	APPLETS & SERVLET

Client Side Java – Life Cycle – Writing an Applet – Class File – Running the Applet – Security – Utility Methods – AppletContext Interface - Passing Parameters - Event Handling - Server-Side Java – Advantages Over Applets – Servlet Alternatives – Servlet Strengths – Architecture – Life Cycle – GenericServlet – HttpServlet – Passing Parameters - Retrieving Parameters – Cookies – Filters – Problems – Security Issues

Unit –V :	JSP

Introduction – JSP and HTTP – Engines – JSP and Servlet – Anatomy - Syntax – Components

Skill Development Activities:
1 Prepare a slide to demonstrate JDBC connectivity using MySQL in Java.

2. From a desktop which is using Windows OS explore the DOM nodes and write a report on it.

3. Take a screen shot of browser cookies and demonstrate its nature and process.

TEXT BOOKS

1	Uttam K. Roy, Advanced Java Programming, Oxford University Press, 2015.

REFERENCE BOOKS

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANANAPURAM E - 838 107.

1	Deitel and Deitel, "Java How to Program", Third Edition, PHI/Pearson Education Asia.
2	Campione, Walrath and Huml, "The Java Tutorial", AddisonWesley,1999.

Web Resources

1	http://www.sietk.org/downloads/javabook.pdf

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

QUESTION PAPER PATTERN

SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer **Four options** should be given ('None of these' should be avoided)	SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit	SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory – Case Study

Mapping of COs with Pos and PSOs:

PO/ PSO CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	S	M	M	S	L	S	L	S	S	M
CO2	S	S	L	M	M	S	S	S	S	S	M	S
CO3	S	M	S	L	L	M	S	S	S	S	S	S
CO4	S	M	M	M	S	S	S	M	S	M	S	M
CO5	S	M	M	L	M	S	S	S	S	S	S	M

S-Strong, M-Medium, L-Low

Sem.	Course Code	Core Paper – III	Total Marks:100		Hours Per Week	Credits
I	21PBICT103	ADVANCED DATABASE MANAGEMENT SYSTEMS	CIA : 50	ESE :50	5	4

Course Objectives: On successful completion of the course the students will have:

1. Acquire Knowledge of Database Models, Applications of Database Models and Emerging Trends
2. Skills to use normalized database tables for the software programs and projects.
3. Employability opportunities by enhancing the knowledge in Relational Database Management System.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Improve the database design by normalization.	
CO 2	Analyze the concepts of transaction management, concurrency control, and reliability in Distributed and object oriented Databases	K1
CO 3	Apply recursive query processing techniques	–
CO 4	Illustrate experiments using XML databases	K6
CO 5	Enforce Integrity constraints in Temporal databases	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Relational and Parallel Database Design: Basics, Entity Types, Relationship Types, ER Model, ER-to-Relational Mapping algorithm.
Normalization: Functional Dependency, 1NF, 2NF, 3NF, BCNF,4NF and 5NF. Architecture,I/O Parallelism, Interquery Parallelism, Intraquery Parallelism, Intraoperation Parallelism, Interoperation Parallelism.

Unit –II :

Distributed and Object based Databases: Architecture, Distributed data storage, Distributed transactions, Commit protocols, Concurrency control, Query Processing.
Complex Data Types, Structured Types and Inheritance, Table Inheritance, array and Multiset, Object Identity and Reference Types, Object Oriented versus Object Relational.

Unit –III :

Spatial Database: Spatial Database Characteristics, Spatial Data Model, Spatial Database Queries, Techniques of Spatial Database Query.
Logic based Databases: Introduction, Overview, Propositional Calculus, Predicate Calculus, Deductive Database Systems, Recursive Query Processing.

Unit –IV :

XML Databases: XML Hierarchical data model, XML Documents, DTD, XML Schema, XML Querying, XHTML, Illustrative Experiments.

Unit –V :

Temporal Databases: Introduction, Intervals, Packing and Unpacking Relations, Generalizing the relational Operators, Database Design, Integrity Constraints. Multimedia Databases: Multimedia Sources, Multimedia Database Queries, Multimedia Database Applications

Skill Development Activities:

1. A manufacturing company produces products. The following product information is stored: product ID and quantity on hand. These products are made up of many components.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

3. Demonstrate XQuery with XML.

TEXT BOOKS

| 1 | Abraham Silberschatz, Henry F Korth , S Sudarshan, "Database System Comcepts", 6th edition , McGraw-Hill International Edition , 2011 |
| 2 | C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", 8th Edition, Pearson Education Reprint 2016 |

REFERENCE BOOKS

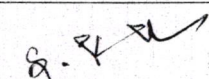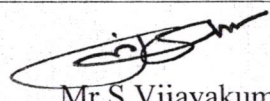| 1 | RamezElmasri, Shamkant B Navathe, "Fundamental of Database Systems", Pearson, 7th edition 2016. |
| 2 | Mark. L. Gillenson, "Fundamentals of Database System", Wiley India, 2008 |

Web Resources

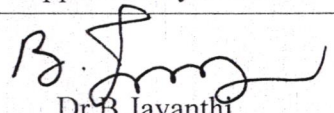| 1 | http://deccancollege.ac.in/csestdmat/dr.p.vishvapathi/korth6thed.pdf |
| 2 | https://docs.google.com/file/d/0b9aja_iv4khyr1i1q1mxq2vzx0u/edit |

Course Designed By	Verified By	Approved By HOD
Ms. S. Krithika	Mr.S.Vijayakumar	Dr.B.Jayanthi

QUESTION PAPER PATTERN

| SECTION-A (10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer **Four options** should be given ('**None of these**' should be avoided) | SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit | SECTION-C (5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory – Case Study |

Mapping of COs with Pos and PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	M	M	S	L	S	L	S	S	M
CO2	S	M	S	M	M	S	S	S	S	S	M	S
CO3	S	M	S	L	L	M	S	S	S	S	M	S
CO4	S	S	M	M	S	S	S	M	S	M	M	S
CO5	M	S	M	L	M	S	S	S	S	S	S	M

S-Strong, M-Medium, L-Low

Dr. N. RAMAN
PRINCIPAL.
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	Core Paper – IV	Total Marks:100		Hours Per Week	Credits
I	21PBICT104	SOFTWARE PROJECT MANAGEMENT & SOFTWARE ENGINEERING	CIA : 50	ESE :50	5	4

Course Objectives: On successful completion of the course the students will have:

1. Understood the concepts of Project Planning and Estimation
2. Understood the concepts of Software Quality Management
3. Knowledge in alternate plans to handle expected/unexpected risk during project development
4. Employability opportunities by enhancing the knowledge in Software Quality Management

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Identify the challenges in Software Development process.	
CO 2	Explain about the Software Requirement Analysis and Specification	K1 – K6
CO 3	Do the Project planning, tracking, Risk analysis, Quality management and Project Cost estimation using different techniques.	
CO 4	Solve the issues and challenges faced in Software Design Process	
CO 5	Predict the possible causes of Software failure and knowledge of how to prevent them	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Introduction to Software Project Management: Importance – Contract Management and Technical Project Management – Activities – Plans, Methods and Methodologies – Categories – Project Charter – Stakeholders – Objectives – Management – Management Control – Life Cycle - Traditional Versus Modern Project Management Practices – Project Evaluation and Programme Management: Introduction - Business Case – Portfolio Management – Cost-benefit Evaluation Techniques – Risk Evaluation - Programme Management- Allocation of Resources – Strategic Programme Management- Creating a Programme – Reservations - Benefits

Unit –II :

Project Planning – Project Planning Steps – Selection of an Appropriate Project Approach: Introduction – Methodologies and Technologies - Software Processes and Process Models – Waterfall Model – Spiral Model – Software Prototyping – Incremental Delivery – Systems Development Method – Rapid Application Development – Agile Methods – Extreme Programming – Scrum – Lean Software Development

Unit –III :

Software Effort Estimation : Introduction – Problems – Basis of Software Estimation – Techniques – Models – Expert Judgement – Analogy – Function Point Analysis – COSMIC – COCOMO II – Cost Estimation – Staffing Pattern-
Activity Planning: Introduction – Objectives – Plan – Project Schedules & Activities – Network Planning Models – Forward & Backward Pass – Identifying the Critical Path – Activity Float

Unit –IV :

Risk Management: Introduction – Risk – Categories – Approaches – Framework – Identification – Assessment – Planning – Management – Evaluation – Applying PERT Technique – Monte Carlo Simulation – Critical Chain.
Managing People in Software Environments : Introduction – Understanding Behaviour & organizational Behaviour – Selecting Right Person for the job- Motivation – Oldham-Hackman Job Characteristics
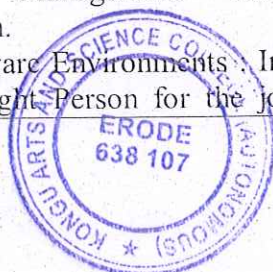
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM E   638 107,

Model – Stress – Management - Health and Safety – Ethical and Professional concerns.

Unit –V :

Working in teams : Introduction – Becoming a Team – Decision Making – Organization and Team Structures – Coordination Dependencies – Dispersed and Virtual Teams – Communication Genres & Plans – Leadership

Software Quality: Introduction – Software Quality in Project Planning – Importance of Software Quality – Defining Software Quality – Software Quality Models – ISO 9126 – Product and Process Metrics – Product versus Process Quality Management – Quality Management System – Process Capability Models – Techniques for enhancing quality – Testing – Software Reliability – Quality Plans.

Skill Development Activities:

1. Incorporate and develop a portfolio for our college ERP software development.
2. Using COOCOMO II model do the cost analysis for a retail shop software project development.
3. Develop a model for ticket reservation system for Bus and depict the risks and exhibit the risk management of the system.
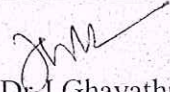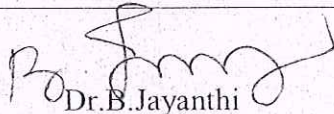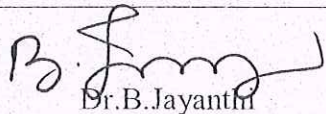
TEXT BOOKS

| 1 | Bob Hughes, Mike Cotterell, Rajib Mall " Software Project Management, McGraw Hill Education, 6th Edition, 2018 |

REFERENCE BOOKS

| 1 | S.A. Kelkar, Software Project Management: A concise study, PHI, Third edition, 2012. |
| 2 | Walker Royce, Software Project Management : A unified frame work, Pearson Education, 1998 |

Web Resources

| 1 | https://www.docdroid.net/JubqqhZ/software-project-management-2nd-ed-by-bob-hughes-mike-cotterell-and-rajib-mall-pdf |
| 2 | http://engineersevanigam.blogspot.com/2013/07/software-project-management-5th-edition.html |

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

QUESTION PAPER PATTERN

| SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer **Four options** should be given (**'None of these'** should be avoided) | SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit | SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory -- Case Study |

Mapping of COs with Pos and PSOs:

PO/ PSO	PO							PSO				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	M	M	S	L	S	L	S	M	S
CO2	S	M	S	M	M	S	S	S	S	S	S	M
CO3	M	S	S	L	L	M	S	S	S	S	M	S
CO4	S	M	S	M	S	S	S	M	S	M	M	S
CO5	S	S	M	L	M	S	S	S	S	S	S	M
S-Strong, M-Medium, L-Low												

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	Core Practical– I	Total Marks:100		Hours Per Week	Credits
I	21PBICP105	ADVANCED JAVA PROGRAMMING LAB	CIA : 50	ESE :50	5	4

Course Objectives: On successful completion of the course the students should have:

1. Acquired knowledge in Java Programming.

2. Capability to deploy java programs in different environments

3. Establish connection between client and server

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Handle HTML form data with Java Servlet	
CO 2	Invoke the remote methods in an application using Remote Method Invocation	K1
CO 3	Access database using Java Data Base Connectivity in web applications	–
CO 4	Create dynamic web pages, using Servlets and JSP	K6
CO 5	Create an applet application	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

List of Programs

1. Display a welcome message using Servlet.

2. Design a Purchase Order form using Html form and Servlet.

3. Develop a program for calculating the percentage of marks of a student using JSP.

4. Design a Purchase Order form using Html form and JSP.

5. Write a program using JDBC for creating a table, Inserting, Deleting records and list out the records.

6. Write a simple Servlet program to create a table of all the headers it receives along with their associated values.

7. Write a program in JSP by using session object.

8. Write a program to build a simple Client Server application using RMI.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

9. Create an applet for a calculator application.

10. Program to send a text message to another system and receive the text message from the system (use socket programming)

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

Mapping of COs with POs and PSOs:

PO/ PSO	PO							PSO				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	M	M	S	L	S	L	S	M	L
CO2	S	M	S	M	M	S	S	S	S	S	S	M
CO3	M	S	S	L	L	M	S	S	S	S	S	S
CO4	S	S	S	M	S	S	S	M	S	M	M	S
CO5	S	M	S	L	M	S	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	Core Practical– II ADVANCED DATABASE MANAGEMENT SYSTEMS LAB	Total Marks:100		Hours Per Week	Credits
I	21PBICP106		CIA : 50	ESE :50	5	4

Course Objectives: On successful completion of the course the students should have:

1. Acquired knowledge in SQL, PL/SQL commands, and XML databases
2. Implement the database concepts using standard queries
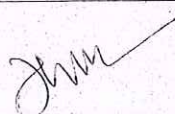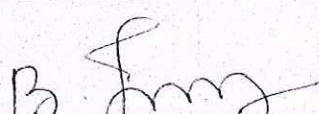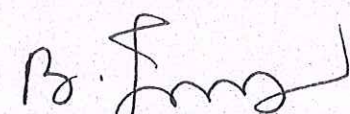3. Manage to create reports using the queries and tables

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Design the database schema with the use of appropriate data types for storage of data in database	
CO 2	Application of SQL commands	K1 – K6
CO 3	Implementation of PL/SQL Concepts	
CO 4	Application of Concurrency mechanism in Databases	
CO 5	Create XML databases	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Program List

1. Creation of tables and views.
2. Application of DML and DCL Commands
3. Application of TCL commands
4. Application of PL/SQL.
5. Use of Cursors, Procedures and Functions
6. Application of Triggers.
7. Application of Concurrency control in Distributed databases
8. Application of XML Database
9. Application of Temporal Database using Integrity constraint
10. Multimedia database queries

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Mapping of COs with POs and PSOs:

PO/ PSO CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	L	M	M	S	L	S	L	S	S	L
CO2	M	S	L	M	M	S	S	S	S	S	S	S
CO3	S	M	S	L	L	M	S	S	S	S	M	L
CO4	M	S	M	M	S	S	S	M	S	M	M	S
CO5	M	S	L	L	M	S	S	S	S	S	S	S
S-Strong, M-Medium, L-Low												

Sem.	Course Code	Core Paper – V	Total Marks:100		Hours Per Week	Credits
II	21PBICT201	CRYPTOGRAPHY & NETWORK SECURITY	CIA : 50	ESE : 50	4	4

Course Objectives: On successful completion of the course the students should have:

1. Understood Cryptography Theories, Algorithms and Systems.
2. Understood Approaches and Techniques to build protection mechanisms in order to secure computer networks.
3. Understood about the malicious software & firewalls.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Outline the fundamentals of networks security, security architecture, threats and vulnerabilities	K1 — K6
CO 2	Apply the different cryptographic operations of symmetric cryptographic algorithms	
CO 3	Apply the different cryptographic operations of public key cryptography	
CO 4	Apply the various Authentication schemes to simulate different applications.	
CO 5	Understand various Security practices and System security standards	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Introduction - Security trends – Legal, Ethical and Professional Aspects of Security, Need for Security at Multiple levels, Security Policies – Model of network security – Security attacks, services and mechanisms – OSI security architecture – Classical encryption techniques: substitution techniques, transposition techniques, steganography- Foundations of modern cryptography: perfect security – information theory – product cryptosystem – cryptanalysis.

Unit –II :

Symmetric Encryption and Message Confidentiality - Symmetric Encryption Principles, Symmetric Block Encryption Algorithms, Stream Ciphers and RC4, Cipher Block Modes of Operation, Location of Encryption Devices, Key Distribution. Public-key Cryptography and Message Authentication: Approaches to Message Authentication, Secure Hash Functions and HMAC, Public-Key Cryptography Principles, Public-Key Cryptography Algorithms, Digital Signatures, Key Management.

Unit –III :

Authentication Applications - Kerberos, x.509 Authentication Service, Public-Key Infrastructure. Electronic Mail Security: Pretty Good Privacy (PGP), S/MIME.

Unit –IV :

IP Security - IP Security Over view, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations. Web Security: Web Security Considerations, Secure Socket Layer(SSL) and Transport Layer Security(TLS), Secure Electronic Transaction(SET).Network Management Security: Basic Concepts of SNMP, SNMPv1 Community Facility, SNMPv3.

Unit –V :

Intruders - Intruders, Intrusion Detection, Password Management. Malicious Software: Virus and Related Threats, Virus Countermeasures, Distributed Denial of Service Attacks. Firewalls: Firewall Design Principles, Trusted Systems, Common Criteria for Information Technology Security Evaluation.
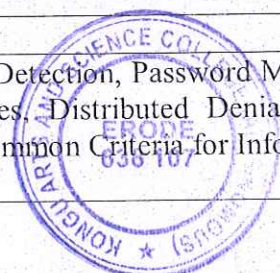
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Skill Development Activities:
1. Implement Caesar Cipher Substitutioon Technique for both encoding and decoding a text using Python.
2. Demonatrate RC4 and DES algorithm using Cryptool.
3. Implement a digital signature to secure an email message and verify the signature on a signed message
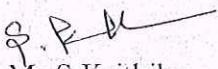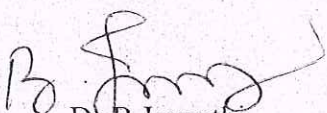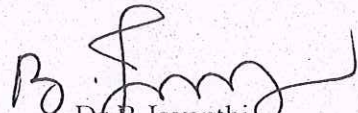
TEXT BOOKS

1	Behrouz A. Ferouzan, "Cryptography & Network Security", Tata McGraw Hill, 2007, Reprint 2015.
2	Stallings William, "Cryptography and Network Security - Principles and Practice 2017.
3	William Stallings, "Network Security Essentials Applications and Standards "Third Edition, Pearson Education, 2008.

REFERENCE BOOKS

1	Charles Pfleeger, "Security In Computing", 4th Edition, Prentice Hall Of India, 2006.
2	Ulysess Black, "Internet Security Protocols", Pearson Education Asia, 2000.
3	Charlie Kaufman And Radia Perlman, Mike Speciner, "Network Security, Private Communication In Public World", Second Edition,PHI 2002.
4	Bruce Schneier And Neils Ferguson, "Practical Cryptography", First Edition, Wiley Dreamtech India Pvt Ltd, 2003.

Web Resources

1	https://books.google.co.in/books?id=Nmkce_QPaY8C&source=gbs_book_other_versions
2	http://www.cs.vsb.cz/ochodkova/courses/kpb/cryptography-and-network-security_-principles-and-practice-7th-global-edition.pdf
3	shorturl.at/prxHS

Course Designed By	Verified By	Approved By HOD
Ms.S.Krithika	Dr.B.Jayanthi	Dr.B.Jayanthi

QUESTION PAPER PATTERN

SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer **Four options** should be given (**'None of these'** should be avoided)	SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit	SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory - Case Study

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Mapping of COs with POs and PSOs:

PO/ PSO CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	L	M	M	S	L	S	L	S	M	L
CO2	M	S	S	M	M	S	S	S	S	S	S	S
CO3	S	M	S	L	L	M	S	S	S	S	M	L
CO4	S	M	S	M	S	S	S	M	S	M	M	S
CO5	S	L	S	L	M	S	S	S	S	S	M	S
S-Strong, M-Medium, L-Low												

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	Core Paper –VI	Total Marks:100		Hours Per Week	Credits
II	21PBICT202	ADVANCED OPERATING SYSTEMS	CIA : 50	ESE :50	4	4

Course Objectives: On successful completion of the course the students should have:

1. Gained knowledge on Distributed Operating Systems.
2. Gained insight into the components and management aspects of real time and mobile operating systems.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Explain the features of Operating System	
CO 2	Apply the concept of deadlock.	K1
CO 3	Implement the concept of real time operating systems	–
CO 4	Explore the Operating Systems for Handheld Systems	K6
CO 5	Analyze the architecture of LINUX and internal representation of files	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Basics of Operating Systems: What is an Operating System – Main frame Systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real-Time Systems – Handheld Systems – Feature Migration – Computing Environments - Process Scheduling – Cooperating Processes – Inter Process Communication- Deadlocks – Prevention – Avoidance – Detection – Recovery.

Unit –II :

Distributed Operating Systems: Issues – Communication Primitives – Lamport's Logical Clocks – Deadlock handling strategies – Issues in deadlock detection and resolution - distributed file systems – design issues – Case studies – The Sun Network File System-Coda.

Unit –III :

Realtime Operating Systems : Introduction – Applications of Real Time Systems – Basic Model of Real Time System – Characteristics – Safety and Reliability - Real Time Task Scheduling.

Unit –IV :

Operating Systems for Handheld Systems: Requirements – Technology Overview – Handheld Operating Systems – PalmOS-Symbian Operating System- Android –Architecture of android – Securing handheld systems

Unit –V :

Case Studies :Linux System: Introduction – Memory Management – Process Scheduling – Scheduling Policy - Managing I/O devices – Accessing Files- iOS : Architecture and SDK Framework - Media Layer - Services Layer - Core OS Layer - File System.

Skill Development Activities:

1. Create a short video about the installation process of any one operating system.
2. Differentiate the real operations between smart phones OS with Laptop OS with Live Demo.
3. Illustrate the deadlock occurrence and recovery with real time example.

TEXT BOOKS
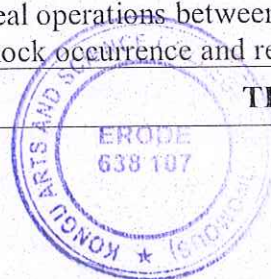
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
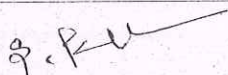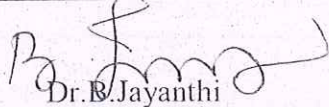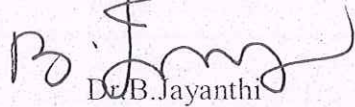(AUTONOMOUS)
NANJANAPURAM ERODE - 638 107.

1	Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, "Operating System Concepts", Seventh Edition, John Wiley & Sons, 2004.
2	MukeshSinghal and Niranjan G. Shivaratri, "Advanced Concepts in Operating Systems – Distributed, Database, and Multiprocessor Operating Systems", Tata McGraw-Hill, 2001
3	Rajib Mall, "Real-Time Systems: Theory and Practice", Pearson Education India, 2006.

REFERENCE BOOKS

1	Pramod Chandra P.Bhatt, An introduction to operating systems, concept and practice, PHI, Third edition, 2010
2	Daniel.P.Bovet& Marco Cesati,"Understanding the Linux kernel",3rd edition,O"Reilly, 2005

Web Resources

1	http://www.cs.put.poznan.pl/akobusinska/downloads/Operating_Systems_Concepts.pdf

| Course Designed By	Verified By	Approved By HOD
Ms.S.Krithika	Dr.B.Jayanthi	Dr.B.Jayanthi

QUESTION PAPER PATTERN

SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer Four options should be given ('None of these' should be avoided)	SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit	SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory – Case Study

Mapping of COs with POs and PSOs:

PO/ PSO	PO							PSO				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	S	M	M	S	L	S	L	S	M	L
CO2	S	M	L	M	M	S	S	S	S	S	S	M
CO3	S	L	S	L	L	M	S	S	S	S	S	S
CO4	M	L	S	M	S	S	S	M	S	M	M	S
CO5	L	S	M	L	M	S	S	S	S	S	S	S

S-Strong, M-Medium, L-Low
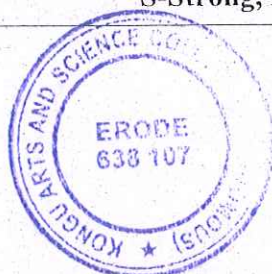
Dr. N. RAMAN
PRINCIPAL,
KONGU ART'S '"D SCIENCE COLLEGE
(NOUS)
NANJAN.   ERODE - 638 107.

Sem.	Course Code	Core Paper –VII ARTIFICIAL INTELLIGENCE & MACHINE LEARNING	Total Marks:100		Hours Per Week	Credits
II	21PBICT203		CIA : 50	ESE :50	4	4

Course Objectives: On successful completion of the course the students should have:

1. Enable the students to learn the basic functions of AI, Heuristic Search Techniques.
2. Provide knowledge on concepts of Representations and Mappings and Predicate Logic.
3. Introduce Machine Learning with respect Data Mining, Big Data and Cloud.
4. Study about Applications & Impact of ML.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Explore various heuristics techniques	
CO 2	Analyze the issues in Knowledge representation	K1 -- K6
CO 3	Apply different types of reasoning	
CO 4	Apply various algorithms for Learning	
CO 5	Understand the working pattern of ANN	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

INTRODUCTION: Definitions - Artificial Intelligence Problems - Topics of Artificial Intelligence Timelines of Artificial Intelligence - Production Systems - State Space Representation - Branches of Artificial Intelligence - Applications of Artificial Intelligence
HEURISTIC SEARCH TECHNIQUES Generate-and-Test - Hill Climbing- Search Techniques - Problem Reduction - Constraints Satisfaction - Means-ends Analysis

Unit –II :

GAME PLAYING MINIMAX Procedure - Alpha-Beta Pruning - Combined Approach
KNOWLEDGE REPRESENTATION Knowledge Management - Types of Knowledge - Knowledge Representation -Approaches to Knowledge Representation- Issues in Knowledge Representation - Knowledge Base
KNOWLEDGE REPRESENTATION STRUCTURES First-order Logic - Resolution - Frames - Conceptual Dependency- Scripts - Semantic Network

Unit –III :

REASONING: Types of Reasoning - Non-monotonic Inference Methods - Non-monotonic Reasoning - Truth Maintenance Systems - Reasoning with Fuzzy Logic - Rule-based Reasoning - Diagnosis Reasoning
LEARNING Types of Learning - Machine Learning - Intelligent Agents

Unit –IV :

ASSOCIATION LEARNING: Basics of Association- Apriori Algorithm - Eclat Algorithm - FP Growth Algorithm - Tertius Algorithm
CLUSTERING: k-means Clustering Fuzzy Clustering Hierarchical Clustering Agglomerative and Divisive Clustering (ADC) Hierarchical Agglomerative Clustering (HAC) Cluster Similarity
REINFORCEMENT LEARNING Markov Decision Problem Q-learning Temporal Difference Learning Automata
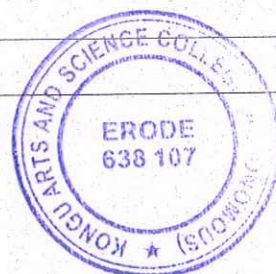
ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Unit –V :

STATISTICAL LEARNING Hidden Markov Linear Classifiers Quadratic Classifiers Decision Trees Bayesian Networks ARTIFICIAL NEURAL NETS ANN Basics ANN Learning Process Types of Networks Perceptron Multilayer Perceptron Error Back-propagation Algorithm RBF Networks ANN Summary

Skill Development Activities:

1. Design the activities of home robot which is used as an assistant (for housekeeping activities) for you while you are doing online courses using Means-ends analysis.

2. Demonstrate the process to carried out while doing online purchase of a mobile phone using Scripts, conceptual dependency and semantic network

3. Develop an architecture, using k means clustering to classify the patients in a multispecialty hospital.
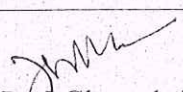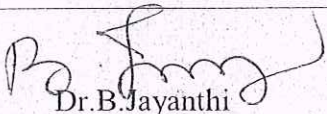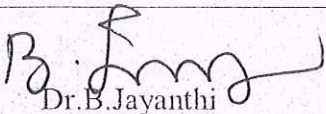
TEXT BOOKS

1	Vinod Chandra S.S. and Anand Hareendran S, ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING, PHI Learning Private Limited, Delhi, 2014

REFERENCE BOOKS

1	Elaine Rich and Kevin Knight," Artificial Intelligence", Tata McGraw Hill Publishers company Pvt Ltd, Second Edition, 1991.
2	George F Luger, "Artificial Intelligence",4th Edition, Pearson Education Publ,2002.
3	Andreas C. Muller, & Sarah Guido, Introduction to Machine Learning with Python A guide for data scientists,O'Reilly Publishers, 2018

Web Resources

1	https://www.routledge.com/rsc/downloads/AI_FreeBook.pdf

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

QUESTION PAPER PATTERN

SECTION-A(10 X 1 = 10 Marks)	SECTION-B (5 X 3 = 15 Marks)	SECTION-C(5 X 5 = 25 Marks)
Answer ALL the questions Choose the correct answer **Four options** should be given (**'None of these'** should be avoided)	Answer ALL the questions Either or type Two questions from each unit	Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory - Case Study

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Mapping of COs with POs and PSOs:

PO/ PSO CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	L	M	M	S	L	S	L	S	M	L
CO2	M	S	M	M	M	S	S	S	S	S	S	M
CO3	M	S	L	L	L	M	S	S	S	S	S	S
CO4	S	M	S	M	S	S	S	M	S	M	S	M
CO5	M	S	M	L	M	S	S	S	S	S	S	S
S-Strong, M-Medium, L-Low												

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM ERODE - 638 107.

Sem.	Course Code	Core Paper –VIII	Total Marks:100		Hours Per Week	Credits
II	21PBICT204	PYTHON PROGRAMMING	CIA : 50	ESE :50	4	4

Course Objectives: On successful completion of the course the students should have:

1. Acquired knowledge to design and program different tasks using Python language
2. Mastered Python objects and GUI programming

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Define the structure and components of a Python program	
CO 2	Use lists, tuples, and dictionaries in Python programs	K1
CO 3	Write loops and decision statements in Python	–
CO 4	Design object-oriented programs with Python classes.	K6
CO 5	Build and package Python modules for reusability	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Exploring Python: Interactive Execution- Bitwise Operators – Encodings – **Creating Python Programs** : Commands – Statements – Levels of Abstraction – The Software Development Process – **Defining Functions**: Testing Functions – Name Scopes – Writing a function that calls itself – Using global names inside of functions – Raising Exceptions – Functions are values – A Few words about nothing

Unit –II :

Strings, Lists, Tuples and Sets: Lists : Tuples – String Functions – Sets – Triple Quoted String, Raw strings and Escape Characters- **Dictionaries** : Combining two dictionaries with Update – Making Copies – Zip list initiation – Loops – Dynamic Programming – Persistent Variables – Internal Dictionaries

Unit –III :

Files: Operating System Commands – Recovering from Exceptions – Standard I/O – Persistence and Pickle – Reading from a URL – **Classes:** Class Basics – Constructors – Respect Class Boundaries – Calling methods from inside other methods – Objects and References – Printing – Inheritance – Classe, Types and Tests – Class Variables – Multiple Inheritance – Classes as Dynamic Records – **Functional Programming:** The Functional Programming Paradigm – Examples – Simple Reductions – Computing Variance of a List – Combining Functional and Object-Oriented Programming – Iterating over Multiple-Lists

Unit –IV :

Object-Oriented Programming: Community – Discovering Objects – Encapsulation and properties – **Scopes, Name Spaces, and Modules**: The LEGB Rule – Qualified Names – Modules – **Advanced Features:** Keyword Arguments – Object Overloading – Regular Expressions and String Processing – Iterators and Generators – Module Reload – Documentation Strings

Unit –V :

Case Studies: GUI Programming with Tkinter – Web – Based Applications – A Simple Blog – A Wiki Web – A Sudoku Solver
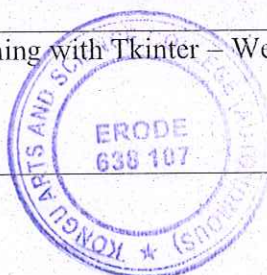
ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM. ERODE - 638 107.

Skill Development Activities:
1. Demonstrate how to raise User-defined Exceptions
2. Is Python dictionaries better than lists and array? Construct a comparison table.
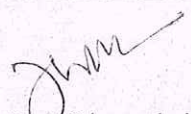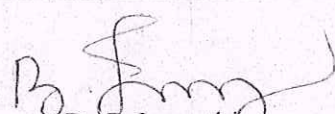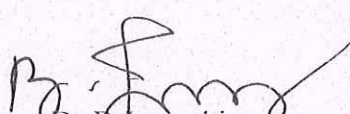3. Demonstrate Python Regular Expression in various validation purposes.

TEXT BOOKS

| 1 | Exploring Python, Timothy A. Budd, McGraw Hill Edition 2003, Reprint 2018 |

REFERENCE BOOKS

1	Wesley J Chun, Core Python Programming, Prentice Hall PTR, 2000
2	Katie Cunningham, Python in 24 Hours, Sams Teach Yourself, Second Edition, 2013
3	Gowrishankar S, Veena A ." Introduction to Python Programming", CRC Press, 2018

Web Resources

| 1 | http://index-of.es/Python/Exploring%20Python.pdf |

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

QUESTION PAPER PATTERN

SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer **Four options** should be given ('**None of these**' should be avoided)	SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit	SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory – Case Study

Mapping of COs with POs and PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	L	M	M	S	L	S	L	S	M	L
CO2	S	M	L	M	M	S	S	S	S	S	M	S
CO3	M	S	L	L	L	M	S	S	S	S	S	M
CO4	M	S	M	M	S	S	S	M	S	M	S	M
CO5	M	S	M	L	M	S	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE 638 107.

Sem.	Course Code	Elective Paper – I	Total Marks:100		Hours Per Week	Credits
		DATA MINING			4	3
II	21PBIET207		CIA : 50	ESE :50		

Course Objectives: On successful completion of the course the students should have:

1. Understood the fundamental concepts of Data Mining Techniques and various Algorithms used for Information Retrieval from Datasets

2. Understood the concept of extracting the required data from Spatial, Multimedia, Text and Web Data set

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Preprocess the data for mining applications	
CO 2	Create the architecture of Data warehouse	K1 – K6
CO 3	Characterize the kinds of patterns that can be discovered by different Classification methods	
CO 4	Build model based clustering methods	
CO 5	Identify applications in data mining	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Unit –I :

Data Mining And Data Preprocessing: Data Mining – Motivation – Definition – Data Mining on Kind of Data –Functionalities – Classification – Data Mining Task Primitives – Major Issues in Data Mining – Data Preprocessing – Definition – Data Clearing – Integration and Transformation – Data Reduction.

Unit –II :

Data Warehousing: Multidimensional Data Model –Data Warehouse Architecture – Data Warehouse Implementation –From data Warehousing to Data Mining – On Line Analytical Processing - On Line Analytical Mining

Unit –III :

Frequent Patterns, Associations And Classification: The Apriori Algorithm – Definition of Classification and Prediction – Classification by Decision Tree Induction - Bayesian Classification – Rule Based Classification – Classification by Back Propagation – Lazy Learners – K-Nearest Neighbor – Other Classification Methods.

Unit –IV :

Cluster Analysis: Definition – Types of data in Cluster Analysis – Categorization of major Clustering Techniques – Partitioning Methods – Hierarchical Clustering – BIRCH - ROCK – Grid Based Methods – Model Based Clustering Methods – Outlier Analysis.

Unit –V :

Spatial, Multimedia, Text And Web Data: Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web – Data Mining Applications – Trends in Data Mining.

Skill Development Activities:

1. Suppose that a data warehouse consists of the four dimensions, date, spectator, location, and game, and the two measures, count and charge, where charge is the fare that a spectator pays when watching a game on a given date. Spectators may be students, adults, or seniors, with each category having its own charge rate. Draw a star schema diagram for the data warehouse
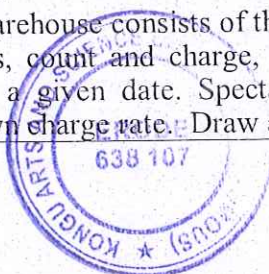
2. Illustrate the use of partitioning algorithm using market basket data.
3. Use the K-means algorithm to cluster the following data {2,4,10,12,3,20,30,11,25} into two clusters. Initially value assigned to m1 = 2 and m2 = 4.

TEXT BOOKS

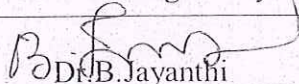| 1 | Jiawei Han and MichelineKamber, "Data Mining: Concepts and Techniques (The Morgan Kaufmann Series in Data Management Systems) 3rd Edition, July 6, 2011. |
| 2 | Ian H. Witten, Eibe Frank, Mark A. Hall, "Data Mining: Practical Machine Learning Tools and Techniques", Elsevier; Third edition, 2014 |

REFERENCE BOOKS

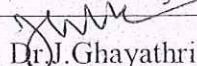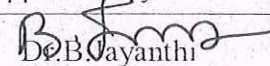| 1 | Margret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson Education, 2003 |
| 2 | Arun K.Pujari, "Data Mining Techniques", University Press, 2001 |
| 3 | MJ Zaki, W Meira Jr, W Meira"Data Mining and Analysis: Fundamental Concepts and Algorithms", Cambridge University Press, 2014 |

Web Resources

| 1 | shorturl.at/fqHPW |
| 2 | https://bit.ly/3dYxTx8 |

Course Designed By	Verified By	Approved By HOD
Dr.B.Jayanthi	Dr.J.Ghayathri	Dr.B.Jayanthi

QUESTION PAPER PATTERN

| SECTION-A(10 X 1 = 10 Marks) Answer ALL the questions Choose the correct answer Four options should be given ('None of these' should be avoided) | SECTION-B (5 X 3 = 15 Marks) Answer ALL the questions Either or type Two questions from each unit | SECTION-C(5 X 5 = 25 Marks) Answer ALL questions Question Number: 16 to 19 (Either or type) Question Number 20 is Compulsory - Case Study |

Mapping of COs with POs and PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO
CO1	S	M	S	M	M	S	L	S	L	S	L	S
CO2	M	S	L	M	M	S	S	S	S	S	S	M
CO3	M	S	M	L	L	M	S	S	S	S	M	S
CO4	M	S	M	M	S	S	S	M	S	M	S	M
CO5	S	L	M	L	M	S	S	S	S	S	M	S

S-Strong, M-Medium, L-Low

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPU ERODE - 638 107.

Sem.	Course Code	Core Practical– III	Total Marks:100		Hours Per Week	Credits
II	21PBICP209	LINUX LAB	CIA : 50	ESE :50	4	4

Course Objectives: On successful completion of the course the students should have:

1. Create and develop programs using Linux platform
2. Practical knowledge to work with system software
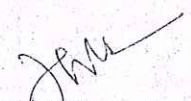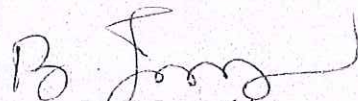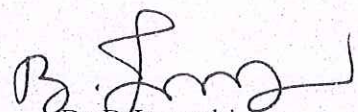3. Explore the advantages of open source environment

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Implement the basic set of commands and utilities in Linux/UNIX systems	
CO 2	Handle signals using the signal library functions	
CO 3	Implement full duplex communication between two independent processes using FIFO	K1 – K6
CO 4	Use thread synchronization and counting semaphore in Linux	
CO 5	Implement CPU Scheduling in Linux	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Program List

1. Write a shell script to change date format. Show the time taken in execution of this script.
2. Demonstrate the use of basic Unix Shell Commands: ls, mkdir, rmdir, cd, cat, banner, touch, file, wc, sort, cut, grep, dd, dfspace, du, ulimit.
3. Write a linux shell programming to findout wheter the given string is Palindrome or not
4. Implementation of simple Linux commands.
5. Virtual File System (VFS) Implementation in Linux
6. Signal Handling in Linux
7. Implementation of FIFO in Linux
8. Application to demonstrate: producer/consumer problem with counting semaphores and Mutex.
9. Deadlock Avoidance Using Semaphores
10. Implementing a CPU scheduling policy in a Linux OS.

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Dr.B.Jayanthi	Dr.B.Jayanthi

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPUR ERODE - 638 107.

Mapping of COs with POs and PSOs:

PO/ PSO CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	L	M	M	S	L	S	L	S	M	S
CO2	S	M	S	M	M	S	S	S	S	S	M	S
CO3	M	S	L	L	L	M	S	S	S	S	L	M
CO4	S	L	M	M	S	S	S	M	S	M	S	S
CO5	M	S	L	L	M	S	S	S	S	S	M	S
S-Strong, M-Medium, L-Low												

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM. ERODE - 638 107.

Sem.	Course Code	Core Practical–IV PYTHON PROGRAMMING LAB	Total Marks:100	Hours Per Week	Credits
II	21PBICP210		CIA : 50 ESE :50	4	4

Course Objectives: On successful completion of the course the students should have:

1. Acquired programming skills in core Python

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Solve mathematical expression using python operators	
CO 2	Use lists, tuples, and dictionaries in Python programs	K1
CO 3	Operate files for storing, manipulating and retrieving purpose	–
CO 4	Identify Python object types	K6
CO 5	Create user defined module as per requirement	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Program List

1. Write a Python program to find the roots of Quadratic Equation.
2. Write a Python program to find the grade of students.
3. Write a Python program to find the given word is palindrome or not using function.
4. Write a Python program to implement list operations
5. Write a Python program to implement tuple operations
6. Write a Python program to implement dictionary operations
7. Write a Python program to sort the lines of a file
8. Write a Python program to call the methods using class.
9. Create a own module in Python.
10. Write a python program to apply Regular expression notations.

Course Designed By	Verified By	Approved By HOD
Dr.J.Ghayathri	Ms.S.Karthikeyeni	Dr.B.Jayanthi

Mapping of COs with POs and PSOs:

PO/ PSO	PO							PSO				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO
CO1	S	S	M	M	M	S	L	S	L	S	S	L
CO2	S	M	S	M	M	S	S	S	S	S	M	S
CO3	M	S	S	L	L	M	S	S	S	S	S	M
CO4	S	M	S	M	S	S	S	M	S	M	M	S
CO5	S	S	M	L	M	S	S	S	S	S	S	M

S-Strong, M-Medium, L-Low

Dr. N. RAMAN
PRINCIPAL.
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	Core Practical– V	Total Marks:50		Hours Per Week	Credits
II	21PBICP211	WEB DEVELOPMENT USING ASP.NET	CIA : 25	ESE :25	2	2

Course Objectives: On successful completion of the course the students should have:
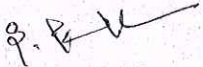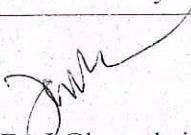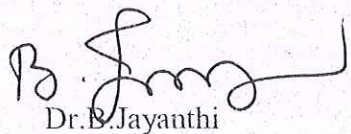
1. Practical knowledge in ASP.NET

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Create simple application using standard web controls	
CO 2	Implement various ASP.NET controls for different applications	K1
CO 3	Design and debug web applications using ASP.NET	—
CO 4	Create database driven ASP.NET web applications	K6
CO 5	Validate the inputs using ASP.NET controls	

K1 :Remember; K2: Understand; K3 :Apply; K4: Analyze; K5 : Evaluate; K6 :Create

Program List

1. Write a program to display a feedback form. The different options for the list box must be DOTNET, OSS, CST, DS, ADIS. When the 'Submit' Form button is clicked after entering the data, a message must be displayed as "Submission Accepted" or "Invalid. ReEnter".

2. Write a program that gets user input such as the user name, mode of payment, appropriate credit card. After the user enters the appropriate values the Validation button must validates the values entered.

3. Create an application using ad-rotator control.

4. Create a web application using ASP.NET and ADO.NET to insert 3 records inside the SQL database table having following fields (DeptId, DeptName, EmpName, Salary). Update the salary for any one employee and increment it to 25% of the present salary. Perform delete operation on a particular row of the database table.

5. Create a Login Module which adds Username and Password in the database using ASP.NET and ADO.NET and consider Username in the database should be as a primary key.

Course Designed By	Verified By	Approved By HOD
Ms.S.Krithika	Dr.J.Ghayathri	Dr.B.Jayanthi

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Mapping of COs with POs and PSOs:

PO/ PSO	PO							PSO				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	M	M	S	L	S	L	M	S	L
CO2	M	M	S	S	M	S	S	S	S	S	M	S
CO3	S	M	S	L	L	M	S	S	S	M	S	M
CO4	M	M	L	S	S	S	S	M	S	M	M	L
CO5	S	M	S	L	M	S	S	S	S	S	S	M
S-Strong, M-Medium, L-Low												

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM ERODE - 638 107.

Sem.	Course Code	CORE PAPER – IX	Total Marks: 100		Hours Per Week	Credits
III	20PBICT301	DIGITAL IMAGE PROCESSING	CIA:25	ESE:75	4	4

Objective(s): On successful completion of the course the students should have:
- Understood the fundamentals of Digital Image Processing, image compression and segmentation

Course Outcomes:

At the end of the course, students will be able to

CO1   Review the fundamental concepts of a digital image processing system.
CO2   Analyze images in the frequency domain using various mathematical transforms.
CO3   Evaluate the techniques for image enhancement and image restoration
CO4   Categorize various compression techniques and Interpret Image compression standards.
CO5   Interpret image segmentation and representation techniques

UNIT- I

Introduction: What is Digital image processing – the origin of DIP – Examples of fields that use DIP – Fundamentals steps in DIP – Components of an image processing system.

Digital Image Fundamentals: Elements of Visual perception – Light and the electromagnetic spectrum – Image sensing and acquisition – Image sampling and Quantization – Some Basic relationship between Pixels – Linear & Nonlinear operations.

UNIT- II

Image Enhancement in the spatial domain:- Background – some basic Gray level Transformations – Histogram Processing – Enhancement using Arithmetic / Logic operations – Basics of spatial filtering – Smoothing spatial filters – Sharpening spatial filters – Combining spatial enhancement methods.

UNIT- III

Image Restoration: A model of the Image Degradation / Restoration Process – Noise models – Restoration is the process of noise only – Spatial Filtering – Periodic Noise reduction by frequency domain filtering – Linear, Portion – Invariant Degradations – Estimating the degradation function – Inverse filtering – Minimum mean square Error Filtering – Constrained least squares filtering – Geometric mean filter – Geometric Transformations.

UNIT- IV

Image Compression: Fundamentals – Image compression models – Elements of Information Theory – Error Free compression – Lossy compression – Image compression standards.

UNIT- V

Image Segmentation: Detection and Discontinuities – Edge Linking and Boundary deduction – Threshold – Region Based segmentation – Segmentation by Morphological watersheds – The use of motion in segmentation.
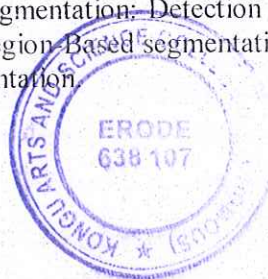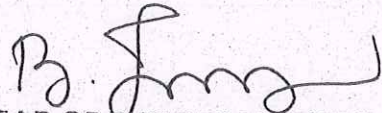
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107

REFERENCE BOOKS :

1. Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing", Second Edition, PHI/Pearson Education.
2. B. Chanda, D. Dutta Majumder, "Digital Image Processing and Analysis", PHI, 2003.
3. Nick Efford, "Digital Image Processing a practical introducing using Java", Pearson Education, 2004.

QUESTION PAPER PATTERN		
SECTION – A	SECTION – B	SECTION - C
10 × 1 = 10 Marks	5 × 7 = 35 Marks	3 × 10 = 30 Marks
(Multiple Choice, Four options)	(Either or choice)	(Answer any three Questions)
Two questions from each unit	Two questions from each unit	One question from each unit

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107

Sem.	Course Code	CORE PAPER –X	Total Marks: 100		Hours Per Week	Credits
III	20PBICT302	PYTHON PROGRAMMING	CIA:25	ESE:75	4	4

Objective(s): On successful completion of the course the students should have:
- Develop an understanding on the basic concepts of Python Programming
- To understand File operations, Classes and Objects

Course Outcomes:

At the end of the course, students will be able to

CO1   Select an appropriate data type while developing an application.
CO2   Use Exceptions to handle errors
CO3   Implement modules, packages and object oriented concepts
CO4   Compile files in an application
CO5   To develop web applications using Python

UNIT- I

Python: Introduction – Numbers – Strings – Variables – Lists – Tuples – Dictionaries – Sets – Comparison.

UNIT- II

Code Structures: if, elif, and else – Repeat with while – Iterate with for – Comprehensions – Functions – Generators – Decorators – Namespaces and Scope – Handle Errors with try and except – User Exceptions.

UNIT- III

Modules, Packages, and Programs: Standalone Programs – Command-Line Arguments – Modules and the import Statement – The Python Standard Library. **Objects and Classes**: Define a Class with class – Inheritance – Override a Method – Add a Method – Get Help from Parent with super – In self Defense – Get and Set Attribute Values with Properties – Name Mangling for Privacy – Method Types – Duck Typing – Special Methods – Composition

UNIT- IV

Data Types: Text Strings – Binary Data. **Storing and Retrieving Data**: File Input/Output – Structured Text Files – Structured Binary Files - Relational Databases – NoSQL Data Stores. **Web:** Web Clients – Web Servers – Web Services and Automation

UNIT- V

Systems: Files –Directories – Programs and Processes – Calendars and Clocks **Concurrency**: Queues – Processes – Threads – Green Threads and gevent – twisted – Redis. **Networks:** Patterns – The Publish-Subscribe Model – TCP/IP – Sockets – ZeroMQ –Internet Services – Web Services and APIs – Remote Processing – Big Fat Data and MapReduce – Working in the Clouds.

REFERENCE BOOKS:

1. Bill Lubanovic, "Introducing Python", O'Reilly, First Edition-Second Release, 2014.
2. Mark Lutz, "Learning Python", O'Reilly, Fifth Edition, 2013.
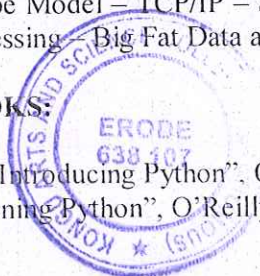
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107

3. David M. Beazley,"Python Essential Reference". Developer's Library, Fourth Edition, 2009.
4. Sheetal Taneja,Naveen Kumar, "Python Programming-A Modular Approach",Pearson
   Publications.

QUESTION PAPER PATTERN		
SECTION – A	SECTION – B	SECTION - C
10 × 1 = 10 Marks	5 × 7 = 35Marks	3 × 10 = 30 Marks
(Multiple Choice, Four options)	(Either or choice)	(Answer any three
Two questions from each unit	Two questions from each unit	Questions) One question
		from each unit

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE 638 107.

Sem.	Course Code	CORE PAPER –XI	Total Marks: 100		Hours Per Week	Credits
III	20PBICT303	NETWORK SECURITY AND CRYPTOGRAPHY	CIA:25	ESE:75	4	4

Objective(s): On successful completion of the course the students should have:
- Understood the process of implementing the cryptographic algorithms.

Course Outcomes:

At the end of the course, students will be able to
CO1	Explain network security services, Symmetrical and Asymmetrical cryptography
CO2	Evaluate the authentication and hash functions
CO3	Discuss about authentication applications
CO4	Outline Web security, Firewalls and Password security
CO5	Implement Cryptographic algorithms

UNIT- I

Introduction to Cryptography – Security Attacks – Security Services –Security Algorithm - Stream cipher and Block cipher - Symmetric and Asymmetric-key Cryptosystem Symmetric Key Algorithms: Introduction – DES – Triple DES – AES – IDEA – Blowfish – RC5.

UNIT- II

Public-key Cryptosystem: Introduction to Number Theory - RSA Algorithm – Key Management - Diffie-Hell man Key exchange – Elliptic Curve Cryptography Message Authentication and Hash functions – Hash and Mac Algorithm – Digital Signatures and Authentication Protocol.

UNIT- III

Network Security Practice: Authentication Applications – Kerberos – X.509 Authentication services and Encryption Techniques. E-mail Security – PGP – S / MIME – IP Security.

UNIT- IV

Web Security - Secure Socket Layer – Secure Electronic Transaction. System Security - Intruders and Viruses – Firewalls– Password Security

UNIT- V

Case Study: Implementation of Cryptographic Algorithms – RSA – DSA – ECC (C / JAVA Programming).

Network Forensic – Security Audit - Other Security Mechanism: Introduction to: Stenography – Quantum Cryptography – Water Marking - DNA Cryptography

REFERENCE BOOKS:

1. William Stallings, "Cryptography and Network Security", PHI/Pearson Education,
2. Bruce Schneir, "Applied Cryptography", CRC Press.
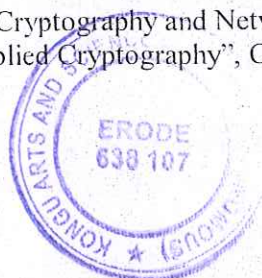
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

3. A.Menezes, P Van Oorschot and S.Vanstone, "Hand Book of Applied Cryptography", CRC Press, 1997 [Free Downloadable].
4. Ankit Fadia, "Network Security", MacMillan.

QUESTION PAPER PATTERN

SECTION - A	SECTION - B	SECTION - C
$10 \times 1 = 10$ Marks	$5 \times 7 = 35$ Marks	$3 \times 10 = 30$ Marks
(Multiple Choice, Four options)	(Either or choice)	(Answer any three Questions)
Two questions from each unit	Two questions from each unit	One question from each unit

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJAN, ERODE - 638 107

Sem.	Course Code	CORE PAPER –XII	Total Marks: 100		Hours Per Week	Credits
III	20PBICT304	BUSINESS INTELLIGENCE	CIA:25	ESE:75	4	4

Objective(s): On successful completion of the course the students should have:

- Understood the process of implementing the Big data

Course Outcomes:

At the end of the course, students will be able to

CO1   Describe the framework for business intelligence
CO2   Explore on Big Data applications Using Pig and Hive
CO3   Analyze the HADOOP and Map Reduce technologies associated with big data.
CO4   Deploy big data in the cloud.
CO5   Apply big data analytics to a variety of domains

UNIT- I

Introduction to Business Intelligence - Changing Business Environments and Computerized Decision Support - A Framework for Business Intelligence - Intelligence Creation and Use and BI Governance - Transaction Processing Versus Analytic Processing -Successful BI Implementation - Major Tools and Techniques of Business Intelligence

UNIT- II

Big Data: Volume, Velocity, Variety in practice: cloud or in house Apache Hadoop: Core of Hadoop, Hadoop lower levels, HDFS and Map Reduce improving, Programbility: Pig and Hive

UNIT- III

Big Data: From the Technology Perspective-All about Hadoop: The history of Hadoop-Components of Hadoop- Application Development in Hadoop-Getting your data into Hadoop- Other Hadoop Components.

UNIT- IV

Hadoop- Integrated Hadoop System- Analytical Databases with Hadoop Connectivity-Hadoop- Centered Companies. Big Data in the Cloud: Iaas And Private Clouds-Platform Solutions-Big Data Cloud platforms compared.

UNIT- V

Future of Big Data: More Powerful and Expressive tools for Analysis – Streaming Data Processing – Rise of Data Marketplace – Development of Data Science Workflows and Tools Increased Understanding and demand for Visualization

Case Study: Big Data Analytics in Banking Sector, Manufacturing
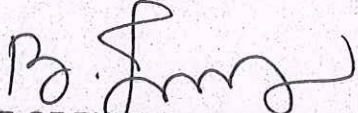
REFERENCE BOOKS:

1. Business Intelligence: A Managerial Approach, Efraim Turban, Ramesh Sharda, Dursun Delen, David Kind, Pearson II Edition, 2012(Unit I)
2. Planning for Big Data. O'Reilly Radar Team, 2012.(ebook) (Unit II -V)
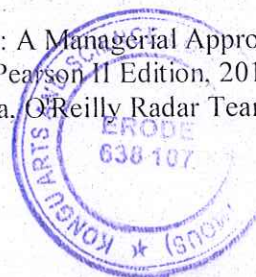
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
N\`   APURAM, ERODE - 638 107.

3. Understanding Big Data, Analytics for Enterprise Class Hadoop and Streaming Data, Chris Eaton, Dirk Deroos, Tom Deutsch, George Lapis, Paul Zikopoulos, Tata Mc Graw Hill, 2012 Edition. (ebook) (Unit II)

4. Michael Minelli , Michele Chambers, Ambiga Dhiraj " Big Data Big Analytics ", Wiley Publications, Indian Reprint 2014

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 × 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 × 7 = 35 Marks (Either or choice) Two questions from each unit	3 × 10 = 30 Marks (Answer any three Questions) One question from each unit

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

ERODE
638 107

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM ERODE - 638 107.

Sem.	Course Code	ELECTIVE – II CLOUD COMPUTING	Total Marks: 100		Hours Per Week	Credits
III	20PBIET306		CIA:25	ESE:75	4	4

Objective(s): On successful completion of the course the students should have:
- Understood the Cloud computing architectures, applications and challenges

Course Outcomes:

At the end of the course, students will be able to

    CO1 Understand the fundamentals concepts in cloud computing

    CO2 Analyze the uses of cloud for corporation and community.

    CO3 Explain the Collaboration on various application and its management

    CO4 Evaluate Social Networks deployed in cloud.

    CO5 Describe the storage capabilities in cloud

UNIT- I

    Introduction: Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT- II

    Cloud Computing For Everyone: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedules managing projects, presenting on road

UNIT- III

    Using Cloud Services: Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT- IV

    Outside The Cloud: Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis

UNIT- V

    Storing And Sharing: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAP   ERODE - 638 107.

REFERENCE BOOKS:

1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009
2. Anthony T. Velte,Cloud Computing A Practical Approach 1st Edition, Tata Mcgraw Hill Education Private Limited (2009)

QUESTION PAPER PATTERN		
SECTION – A	**SECTION - B**	**SECTION - C**
10 × 1 = 10 Marks	**5 × 7 = 35 Marks**	**3 × 10 = 30 Marks**
(Multiple Choice, Four options)	(Either or choice)	(Answer any three Questions)
Two questions from each unit	Two questions from each unit	One question from each unit

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	CORE PRACTICAL – V	Total Marks: 100		Hours Per Week	Credits
III	20PBICP308	PYTHON PROGRAMMING LAB	CIA: 40	ESE:60	4	4

Objective(s): On successful completion of the course the students should have:
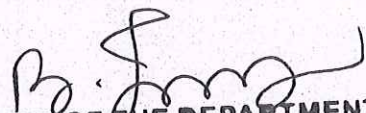
- Acquired a practical knowledge in Python

Course Outcomes:

At the end of the course, students will be able to

CO1	Develop a program using different data types in Python
CO2	Implement Conditional branches, loops, functions and modules in Python
CO3	Develop a program to throw Exceptions
CO4	Implement Inheritance and Polymorphism concepts in Python
CO5	Create a dynamic web pages using forms in Python

Implement the following in Python:

1. Programs using elementary data items, lists, dictionaries and tuples.
2. Programs using conditional branches.
3. Programs using loops.
4. Programs using functions
5. Programs using exception handling
6. Programs using inheritance
7. Programs using polymorphism
8. Programs to implement file operations.
9. Programs using modules.
10. Programs for creating dynamic and interactive web pages using forms.

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

Sem.	Course Code	CORE PRACTICAL – VI	Total Marks: 100		Hours Per Week	Credits
III	20PBICP309	DIGITAL IMAGE PROCESSING USING MATLAB	CIA:40	ESE:60	4	4

Objective(s): On successful completion of the course the students should have:
- Acquired to write MATLAB Programs for image processing
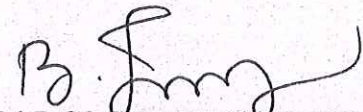
Course Outcomes:

At the end of the course, students will be able to

CO1   Implement image enhancement techniques and create Histogram using MATLAB
CO2   Apply image filtering and restoration techniques
CO3   Implement image compression techniques and use operators for edge detection
CO4   Create an image and extract it using morphology
CO5   Apply image segmentation techniques

Implement the following using MATLAB:

1. Implement Image enhancement Technique.
2. Histogram Equalization
3. Image Restoration.
4. Implement Image Filtering.
5. Edge detection using Operators (Roberts, Prewitts and Sobels operators)
6. Implement image compression.
7. Image Subtraction
8. Boundary Extraction using morphology.
9. Image Segmentation

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE.

Sem.	Course Code	CORE PRACTICAL – VII	Total Marks: 100		Hours Per Week	Credits
III	20PBICP310	WEB DESIGNING LAB	CIA:40	ESE:60	2	4

Objective(s): On successful completion of the course the students should have:
- Understood the basic components of Web Development using HTML and PHP.

Course Outcomes:

At the end of the course, students will be able to

CO1   Design a web page using advanced HTML tags
CO2   Implement Bullets and Numbering and paragraph tags in HTML
CO3   Implement Frames and Tables in web page
CO4   Design a page using a hyperlink tag in HTML
CO5   Design a web page using Forms and apply validation for the form using PHP

List of Programs:

1. Develop a website for your college using advanced tags of HTML.

2. Write names of several countries in a paragraph and store it as an HTML document, world.html. Each country name must be a hot text. When you click India (for example), it must open India.html and it should provide a brief introduction about India.

3. Develop a HTML document to i)display Text with Bullets / Numbers - Using Lists ii) to display the Table Format Data

4. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.

5. Write a HTML document to print your Bio-Data in a neat format using several components.

6. Develop a HTML document to display a Registration Form for an inter-collegiate function.

7. Using HTML form accept Customer details like Name, City, Pin code, Phone number and Email address and validate the data and display appropriate messages for violations using PHP (Eg. Name is Mandatory field; Pin code must be 6 digits, etc.).

8. Write a program to accept two numbers n1 and n2 using HTML form and display the Prime numbers between n1 and n2 using PHP.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE -638 107

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Sem.	Course Code	ADVANCED LEARNERS COURSE	Total Marks: 100		Hours Per Week	Credits
III	20PBIAL311	COMPUTER SIMULATION	CIA: -	ESE:100	--	2

Objective(s): On successful completion of the course the students should have:
- Understood the basics and applications of simulation
- Understood the design and implementation of simulation concepts using case studies

Course Outcomes:
At the end of the course, students will be able to

CO1 Familiar with the Simulation Languages
CO2 Build an Applications using Simulation
CO3 Apply the Simulation in a right way
CO4 Develop and implement the simulation designs in real world
CO5 Understand the Phases in implementation

UNIT-I

Introduction to Computer Simulation: Simulation Defined, Different Types of Simulation, Brief History of Simulation, **Simulation Languages:** Simulation Language Features, Simulators and Integrated Simulation Environments, Hardware Requirements for Simulation, Animation.

UNIT-II

Applications of Simulation: Why Use Simulation, Simulation as a Design Tool, Estimation of Simulation Time, Methodology for Manufacturing Simulations, Forcing Completion of Design with Simulation, The Simulation Decision, Make It Work Vs. Does It Work, Optimizing and Developing Solutions, Genetic Algorithms, Ethics in Simulation.

UNIT-III

Starting a Simulation the Right Way: Intelligence, Managerial Phase, Developmental Phase, Human Component Considerations.

UNIT-IV

Simulation Quality and Development: Quality Assurance Phase, Selection of a Language or Tool, Model Construction, Verification - **Developing a Simulation-Implementation:** Experimental Design, Production Runs, Output Analysis, Output Reporting, Post Processing Output, Operations, Maintenance and Archival Phase.

UNIT–V

Case Study : DePorres Tours : Intelligence Phase – Maintenance Phase – Managerial Phase – Development Phase – Quality Phase – Implementation – Operations, Maintenance and Archival phase.

TEXT BOOK:
Roger McHaney, "Understanding Computer Simulation", Ventus Publishing ApS, 1st edition 2009.

REFERENCE BOOKS:
1. Geoffrey Gordon, "System Simulation", PHI Learning, Second Edition, 2009
2. Averill Law , "Simulation Modeling and Analysis", Mc Graw Hill Education, V Edition, 2014.
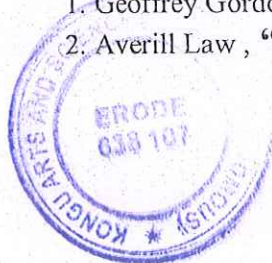
Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE
KONGU ARTS AND SCIENCE COLLEGE
AUTONOMOUS
ERODE - 638

Sem.	Course Code	PROJECT WORK AND VIVA VOCE	Total Marks: 100		Hours Per Week	Credits
IV	20PBICV401		CIA:--	ESE:200	--	6

Objective(s): On successful completion of the course the students should have:

- Practical knowledge in developing a project.

Course Outcomes:

At the end of the course, students will be able to

CO1 Acquire practical knowledge within a area of technology

CO2 Identify, analyze, formulate projects with a comprehensive and systematic approach

CO3 Compare and contrast the several existing solutions

CO4 Contribute as an individual or in a team in development of technical projects

CO5 Develop effective communication skills for presentation of project related activities

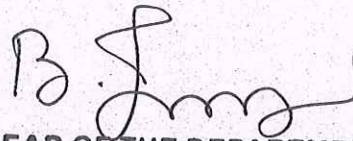### Guidelines for Project Work & Viva-Voce

GENERAL

- Student has to take up the project work for a period of six months.

- The project may be developed using the software package that they have learned from the courses studied or implementation of any innovative idea.

- Guide will be allocated to each student and the project title should be approved by the guide.

- The project work can be done in the companies or organizations.

- Students should communicate with their guide regularly about the progress of the project.

- Review Presentation is to be given only on approval of the guide.

- No Students will be permitted to appear for viva voce without the project report.

- The impressions on the typed copies should be black in colour. The font and size should be: 'TimesNewRoman - 12 point'.

- The project report may be about 50 to 80 pages; A-4 size typed pages (excluding Program code) One and a half line spacing should be used for typing the general text and all paragraphs should be justified. The margins should be: Left - 1.25'', Right - 1'', Top and Bottom - 0.75''.

- All page numbers should be typed in Arabic numbers and the preliminary pages should be numbered in lower case Roman numerals.

- Cover wrapper should be in Silver Grey colour.

- The specimen is annexed along with the Project guidelines.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.

- The project report should be hard bound; should consist of a contents page; all pages of report should be numbered; content should be well organized in a meaningful manner; paragraph alignment should be maintained, printouts of text & screen layouts should be original and should not be photocopied.

- Students should submit one copy of fair draft report in the form of hard binding during the End Semester Examination after they are duly signed by the concerned guide and the Head of the Department.

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM ERODE - 638 107.