KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

PROGRAM NAME

Master of Computer Applications – (M.C.A.) 3 YRS / 2YRS

KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

2019-2020

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SYLLABUS

Sem.	Course Code	CORE PAPER – XXI BIG DATA ANALYTICS	Total Marks: 100		Hours Per Week	Credits
V	17PBHCT501		CIA:25	ESE:75	4	4

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

- Gain insight into the data science process.
- Understood the basic concepts, lifecycle, technology and tools in big data analytics.

Course Outcomes:

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

CO1 Understood the flow of a data science process
CO2 Understood the overview and state of the practice in analytics
CO3 Understood the data analytics lifecycle
CO4 Describe the advanced analytical theory and methods in text analysis
CO5 Describe the technology and tools in data analytics

UNIT-I

Data Science: Benefits and uses of data science and big data – Facets of data – The data science process – The big data ecosystem and data science - **The data Science process:** Overview of the data science process – Defining research goals and creating a project chapter – Retrieving data – Cleansing, integrating, and transforming data – Exploratory data analysis – Build the models – Presenting findings and building applications.

UNIT-II

Big Data Analytics: Overview – State of the Practice in Analytics – Key Roles for the New Big Data Ecosystem – Examples of Big Data Analytics.

UNIT-III

Data Analytics Lifecycle: Data Analytics Lifecycle Phases: Overview – Discovery – Data Preparation – Model Planning – Model Building – Communicate Results – Operationalize – **Case Study**: Global Innovation Network and Analysis (GINA).

UNIT-IV

Advanced Analytical Theory and Methods: Text Analysis - Text Analysis Steps- A Text Analysis Example- Collecting Raw Text - Representing Text- Term Frequency-Inverse Document Frequency (TFIDF)- Categorizing Documents by Topics- Determining Sentiments.

UNIT-V

Advanced Analytics-Technology and Tools: MapReduce and Hadoop: Analytics for Unstructured Data - The Hadoop Ecosystem - **Database Analytics**: SQL Essentials – Database - Text Analysis- Advanced SQL

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TEXTBOOK:

1. Davy Cielen, Arno D.B. Meysman, Mohamed Ali, Introducing Data Science, Dreamtech Press, 2016. Unit - I
2. David Dietrich, Barry Heller, Beibei Yang, Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data -, EMC Education Services, Wiley Publications, 2015. Unit II - V

BOOKS FOR REFERENCE:

1. Nina Zumel, John Mount, Practical Data Science with R, Manning Publications, 2014.
2. Jure Leskovec, Anand Rajaraman, Jeffrey D. Ullman, Mining of Massive Datasets, Cambridge University Press, 2014.
3. Chris Eaton, Dirk Deroos et al. , Understanding Big data, McGraw Hill, 2012.

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

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Sem.	Course Code	CORE PAPER –XXII INTERNET OF THINGS	Total Marks: 100		Hours Per Week	Credits
V	17PBHCT502		CIA:25	ESE:75	4	3

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

- Understood the basic concepts of Internet of Things

Course Outcomes:

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

CO1 Define IoT deployment levels
CO2 Analyze IoT applications in different domain
CO3 Understand IoT system management and design methodology
CO4 Build IoT systems using Python packages
CO5 Explore and learn about Internet of Things with the help of Raspberry Pi

UNIT-I

Internet of Things: Introduction – Physical Design of IoT – Logical Design of IoT – IoT Enabling Technologies – IoT Levels & Deployment Templates.

UNIT-II

Domain Specific IoTs: Introduction – Home Automation – Cities – Environment – Energy – Retail – Logistics – Agriculture – Industry – Health & Lifestyle.

IoT and M2M: Introduction – M2M – Difference between IoT and M2M – SDN and NFV for IoT.

UNIT-III

IoT System Management with NETCONF-YANG: Need for IoT Systems Management – Simple Network Management Protocol (SNMP) – Network Operator Requirements – NETCONF.

IoT Platforms Design Methodology: Introduction – IoT Design Methodology – Case Study on IoT System for Weather Monitoring – Motivation for using Python.

UNIT-IV

IoT Systems – Logical Design using Python: Introduction – Installing Python – Python Data Types & Data Structures – Control Flow – Functions – Modules – Packages – File Handling – Date/Time Operations – Classes – Python Packages of Interest for IoT.

Python Web Application Framework – Django

UNIT-V

IoT Physical Devices & Endpoints: Basic building blocks of an IoT Device – Exemplary Device: Raspberry Pi – Raspberry Pi Interfaces – Programming Raspberry Pi with Python – Other IoT Devices. Case Studies Illustrating IoT Design: Introduction – Home Automation – Cities – Environment – Agriculture.

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TEXTBOOK:

Arshdeep Bahga, Vijay Madisetti. Internet of Things: A Hands-on Approach – Universities Press 2015

(Unit I: Chapter 1; Unit II: Chapter 2, 3; Unit III: Chapter 4, 5; Unit IV: Chapter 6, 8; Unit V: Chapter 7, 9)

BOOKS FOR REFERENCE:

1. Pethuru Raj, Anupama C. Raman, The Internet of Things: Enabling Technologies, Platforms and Use Cases, CRC Press, 2017.
2. Rajkumar Buyya, Amir Vahid Dastjerdi, Internet of Things: Principles and Paradigms, Morgan Kaufmann Publications, 2016.

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

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Sem.	Course Code	CORE PAPER – XXIII CLOUD COMPUTING	Total Marks: 100		Hours Per Week	Credits
V	17PBHCT503		CIA:25	ESE:75	4	3

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

- Understood the basic concepts of Cloud Computing Architectures, Applications and Storages

Course Outcomes:

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

CO1 Define cloud types
CO2 Explain cloud architecture, services and applications
CO3 Understand load balancing and virtualization
CO4 Understand the cloud security
CO5 Analyze cloud backup solutions

UNIT-I

Defining Cloud Computing: Cloud Types - Examining the Characteristics of Cloud Computing - Assessing the Role of Open Standards - **Assessing the Value Proposition**: Measuring the Cloud's Value – Avoiding Capital Expenditures - Computing the Total Cost of Ownership – Specifying Service Level Agreements – Defining Licensing Models.

UNIT-II

Understanding Cloud Architecture: Exploring the Cloud Computing Stack – Connecting to the Cloud - **Understanding Services and Applications**: Defining Infrastructure as a Service – Defining Platform as a Service - Defining Software as a Service – Defining Identity as a Service - Defining Compliance as a Service.

UNIT-III

Understanding Abstraction and Virtualization: Using Virtualization Technologies – Load Balancing and Virtualization – Understanding Hypervisors - **Capacity Planning**: Capacity Planning – Defining Baseline and Metrics – Network Capacity – Scaling.

UNIT-IV

Managing the Cloud: Administrating the Clouds – Cloud Management Products – Emerging Cloud Management Standards - **Understanding the Cloud Security**: Securing the Cloud – Securing Data – Establishing Identity and Presence.

UNIT-V

Moving Applications to the Cloud: Applications – Applications and Cloud APIs - **Working with Cloud-Based Storage**: Measuring the Digital Universe – Provisioning Cloud Storage – Exploring Cloud Backup Solutions – Cloud Storage Interoperability.

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TEXTBOOK:

Barrie Sosinsky, Cloud Computing Bible, Wiley Publishing, 2016.
(Unit I: Chapter 1, 2; Unit II: Chapter 3, 4; Unit III: Chapter 5, 6; Unit IV: Chapter 11, 12; Unit V: Chapter 14, 15)

BOOKS FOR REFERENCE:

1. Michael Miller, Cloud Computing, Pearson Education, New Delhi, 2008.
2. Anthony T. Velte, Cloud Computing - A Practical Approach, First Edition, Tata McGraw Hill Education Private Limited, 2009.
3. Kevin T. McDonald, Cloud Computing, First Edition, BPB Publications, 2011.

QUESTION PAPER PATTERN		
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Sem.	Course Code	ELECTIVE – III SCRIPTING LANGUAGES	Total Marks: 100		Hours Per Week	Credits
V	17PBHET506		CIA:25	ESE:75	4	3

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

- Understood the basic concepts of web pages with dynamic data handling

Course Outcomes:

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

CO1 Develop forms using HTML
CO2 Understand the basics of Cascading Style Sheet
CO3 Analyze the role of Java script in web development
CO4 Explain the role of Ajax in web applications
CO5 Develop an Ajax based applications

UNIT-I

DHTML: Introduction to HTML - Basic tags – Forms and Form Controls - Introduction of DHTML- HTML vs. DHTML, Advantages of DHTML, CSS of DHTML, Event Handling, Data Binding, Browser Object Models.

UNIT-II

Cascading Style Sheet: Overview - Advantages - Style rules – Different selectors – Properties –Values - Embedded CSS – Internal and External CSS –Using Colors and color values.

UNIT-III

Java Script: Role of Java script in web development - variables, Operators, control Structures and looping – Functions – events – Page redirect – Dialog box – Form Validation: Numeric, Alphanumeric, Email and character length validation.

UNIT-IV

Introduction to AJAX: What is AJAX – Role in web applications - AJAX technologies – Real time examples – Pros and Cons – Setting up AJAX transactions – XML HTTP Request - Ready state properties – Open and Send functions – Sending the request

UNIT-V

AJAX Based Applications: Writing Ajax application – AJAX with PHP – AJAX with XML - Ajax-based login form – Ajax Based AutoCompleter – Ajax based Selection – Some real time examples.

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TEXTBOOK:

1. Steven E. Callihan, Html: Css/ Javascript/ Dhtml . Emc Pub, 2002 (Unit-I, II & III)
2. Steven Holzner, Ajax-a-beginners-guide. McGraw-Hill Education Pub, 2008 (Unit –IV & V)

BOOKS FOR REFERENCE:

1. Thomas A. Powel, Ajax: The Complete Reference, Mc Graw Hill Publications, 2008
2. Danny Goodman, JavaScript Bible, Fourth edition, Hungry Minds publishers, 2001
3. John Pollock, JavaScript A Beginner's Guide, Third edition, Mc Graw Hill Publications, 2010
4. Thomas A. Powel, HTML & CSS: The Complete Reference, Fifth Edition, Mc Graw Hill Publications, 2010

QUESTION PAPER PATTERN		
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Sem.	Course Code	ELECTIVE – IV BUSINESS INTELLIGENCE	Total Marks: 100		Hours Per Week	Credits
V	17PBHET507		CIA:25	ESE:75	4	3

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

- Understood the primary concepts of business intelligence
- Gain knowledge to analyze data sets using the essential concepts

Course Outcomes:

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

CO1 Remember and view the basics of business view & IT, digital data structure and OLTP

CO2 Elucidate the definition of business intelligence and basics of data integration programming logics using controls, loops and arrays

CO3 Comprehend the data modeling, metrics and performance Management.

CO4 Understand and prepare the reports using statistical methods

CO5 Present the applications of analytics and further movement of BI

UNIT-I

Business view of Information Technology Applications: Business Enterprise Organization, Its functions, and core business process – Business Excellence Framework – Key purpose of using IT in Business – Characteristics of Internet-ready IT Applications – Enterprise Applications and Bespoke IT Applications - Case Study Briefs.

Types of Digital Data: Introduction – 'GoodLife' Database – Structured Data – Unstructured Data – Semi-Structured Data - Difference between Semi-Structured and Structured Data.

Introduction to OLTP and OLAP : OLTP – OLAP – OLAP Architectures – OLTP and OLAP – Role of OLAP Tools in the BI Architecture – OLAP Operations on Multidimensional Data – Leveraging ERP Data Using Analytics.

UNIT-II

Getting Started with Business Intelligence : Using Analytical Information for Decision Support –Information Sources and BI – Definitions and Examples in Business Intelligence, Data Mining, Analytics, Machine Learning , Data Science – Perspectives of 'Data' – Business Intelligence(BI) Defined – BI & Stated Objectives – Questions about BI –Evolution of BI and Role of DSS, EIS, MIS, and Digital Dashboards – Need for BI – BI for Past, Present and Future – The BI value chain – Introduction to Business Analytics.

BI Definitions and Concepts: BI Component Framework – BI Users –Business Intelligence Applications – BI Roles and Responsibilities – Best Practices BI/DW – The Complete BI professional – Popular BI Tools.

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Basics of Data Integration: Need for Data Warehouse – Definition of Data Warehouse – Data Mart – ODS – Ralph Kimball's Approach Vs W.H. Immon's Approach – Goals of Data Warehouse – Constitutes of a Data Warehouse – Extract, Transform, Load – Data Integration – Data Integration Techniques – Data Quality – Data Profiling – A case Study from the Healthcare Domain.

UNIT-III

Multidimensional Data Modeling: Introduction – Data Modeling Basics – Types of Data Model – Data Modeling Techniques – Fact Table – Dimension Table – Typical dimension Models – Dimensional Modeling Life Cycle – Designing the Dimensional Model.

Measures, Metrics, KPIs, and Performance Management : Understanding measures and Performance – Measurement System Terminology – Navigating a Business Enterprise, Role of Metrics, and Metrics Supply Chain – "Fact Based Decision Making" and KPIs – KPI Usage in Companies – Origins of Business Metrics and KPIs – Measures to Business Decisions connection Dots.

UNIT-IV

Basics of Enterprise Reporting: Reporting Perspectives Common to all levels of Enterprise – Report Standardization and Presentation Practices – Enterprise Reporting Characteristics in OLAP World – Balanced Scorecard – Dashboards – Creating Dashboards – Scorecards Vs. Dashboards – The Buzz Behind Analysis.

Understanding Statistics: Role of Statistics in Analytics – Data, Data Description and Summarization – Statistical Tests – Understanding Hypothesis and t-Test – Correlation Analysis – Regression – ANOVA – The F-Test – Time Series Analysis.

UNIT-V

Application of Analytics: Application of Analytics – Analytics in Industries – Application of Analytics.

BI Road Ahead: Understanding BI and Mobility – BI and Cloud Computing – Business Intelligence for ERP systems – Social CRM and BI.

TEXT BOOK:

R.N. Prasad & Seema Acharya, Fundamentals of Business Analytics, Wiley India Pvt. Ltd, New Delhi, 2nd Edition, 2016.

(Unit I: Chapter 1, 2, 3; Unit II: Chapter 4, 5, 6; Unit III: Chapter 7, 8;
Unit IV: Chapter 9, 10; Unit V: Chapter 11, 13)

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BOOKS FOR REFERENCE:

1. Ramesh Sharda, Dursan Delen & David King,Business Intelligence. A Managerial Approach. Efraim Turban. Pearson Education Inc., Second Edition, 2014.
2. Purba Halady Rao, Business Analytics – an application focus, Prentice Hall of India, New Delhi, 2013.
3. Rajendra M Sonar, Next Generation Business Intelligence – A Knowledge –based Approach, Vikas Publishing House Pvt. Ltd., New Delhi, 2011.
4. Elizabeth Vitt, Michael Luckevich & Stacia Misner, Business Intelligence, Microsoft Press, Prentice Hall of India Publications, New Delhi, 2005.

QUESTION PAPER PATTERN		
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Sem.	Course Code	ELECTIVE – IV MOBILE APPLICATION DEVELOPMENT	Total Marks: 100		Hours Per Week	Credits
V	17PBHET508		CIA:25	ESE:75	4	3

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

- To understand the basic concepts in Mobile Computing
- To know about Android Operating System

Course Outcomes:

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

CO1 Understand about Android Programming, IDE environment, Activities, Fragments and Intents
CO2 Apply the Android User Interface Design
CO3 Implement menus and data persistence concepts
CO4 Create their own content and SMS messaging
CO5 Access location based services, JSON services and their own android services

UNIT-I

Android Programming: Introduction - Obtaining the Required Tools- Launching Your First Android Application.

Using Android Studio for Android Development: Exploring the IDE - Using Code Completion - Debugging Your Application - Publishing Your Application.

Activities, Fragments, and Intents: Understanding Activities - Linking Activities Using Intents – Fragments - Displaying Notifications.

UNIT-II

Android User Interface: Understanding the Components of a Screen - Adapting to Display Orientation - Managing Changes to Screen Orientation - Utilizing the Action Bar - Creating the User Interface Programmatically - Listening for UI Notifications.

Designing Your User Interface with Views: Using Basic Views - Using Picker Views - Using List Views to Display Long Lists - Understanding Specialized Fragments.

UNIT-III

Displaying Pictures and Menus with Views: Using Image Views to Display Pictures - Using Menus with Views - Using WebView.

Data Persistence: Saving and Loading User Preferences - Persisting Data to Files - Creating and Using Databases.

UNIT-IV

Content Providers: Sharing Data in Android - Using a Content Provider - Predefined Query String Constants – Projections - Filtering - Sorting - Creating Your Own Content Providers - Using the Content Provider.

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Messaging: SMS Messaging - Sending SMS Messages Programmatically - Sending SMS Messages Using Intent - Receiving SMS Messages - Caveats and Warnings - Sending Email.

UNIT-V

Location-Based Services: Displaying Maps - Creating the Project - Obtaining the Maps API Key - Displaying the Map - Displaying the Zoom Control - Changing Views - Navigating to a Specific Location - Getting the Location That Was Touched - Geocoding and Reverse Geocoding - Getting Location Data -Monitoring a Location.

Networking: Consuming Web Services Using HTTP - Consuming JSON Services. Developing Android Services: Creating Your Own Services - Establishing Communication between a Service and an Activity - Binding Activities to Services - Understanding Threading.

TEXT BOOK:

J.F. DiMarzio, Beginning Android Programming with Andriod Studio, John Wiley & Sons, Inc., Wrox Press, 2017.

(Unit I – Chapter 1, 2, 3; Unit II – Chapter 4, 5; Unit III - Chapter 6, 7; Unit IV - Chapter 8, 9; Unit V - Chapter 10, 11, 12)

BOOKS FOR REFERENCE:

1. John Horton, Android Programming for Beginners, Packt Publishing, UK, 2015
2. Ashoke.K.Talukder et.al, Mobile Computing: Technology, Applications and Service Creation, McGraw Hill Education, 2012.
3. Pradeep Kothari Android Application Development, Black Book 2014.

QUESTION PAPER PATTERN		
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Sem.	Course Code	CORE PRACTICAL – IX SOFTWARE TESTING LAB	Total Marks: 100		Hours Per Week	Credits
V	17PBHCP510		CIA:40	ESE:60	5	4

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

- To impart the testing knowledge using manual testing and automated testing tools.

Course Outcomes:

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

CO1 Introspect and write manual test cases for the failure
CO2 Implement and carryout functional testing using WinRunner
CO3 Create and test bitmap checkpoints, parameterization, database application, debugging and test result evaluation using Quick Test Professional tool
CO4 Perform HTTP and JDBC test using JMeter
CO5 Test programs using selenium tool

1. Write a python program to find multiplication of elements in list and prepare manual test cases for the generated errors.
2. Using python, write a binary search function which searches an item in a list. The function should return the index of element to be searched in the list. Introspect the causes for its failure and write down the possible reasons for its failure.
3. Implement testing of an application using WinRunner.
4. Implement data driven testing using WinRunner.
5. Implement bitmap checkpoint using QTP.
6. Implement testing of calculator with parameterization using QTP.
7. Demonstrate how to test a database application using QTP.
8. Implement Debugging and Test result evaluation using QTP.
9. Perform HTTP test using JMeter.
10. Perform JDBC test using JMeter.
11. Using Selenium IDE, write test suites to perform basic arithmetic operations.
12. Write and test a program to login a specific web page.
13. Write and test a program to update 10 students' records into table into Excel file.
14. Install Selenium server and demonstrate it using a script in Java/PHP.

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ACTIVITIES

KONGU ARTS AND SCIENCE COLLEGE
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DEPARTMENT OF COMPUTER SCIENCE (P.G.)

Seminar on "Big Data Analytics: Trends and Applications"
27 September 2019

The Department of Computer Science (P.G.) has organized a Seminar on "Big Data Analytics: Trends and Applications" on 27 September 2019. The Resource Personwas Dr. N.Karthikeyeni Visalakshi, Assistant Professor, Department of Computer Science, Government Arts and Science College, Kangeyam.

The objective of this seminar is to impart knowledge on Big Data. The seminar was attended by M. C.A. Students. The resource person has provided informationabout the trends, technologies and applications of Big Data. She explained many emerging trends in the big data segment like IoT networks, Data as a product, quantum computing, and data use for hyper-personalization. The students learned how Big Data applications used in various sectors and industries and learned how the sectors are being benefited by an application. Big Data techniques and processing methods are explained in a detailed manner.

No. of Beneficiaries: 37

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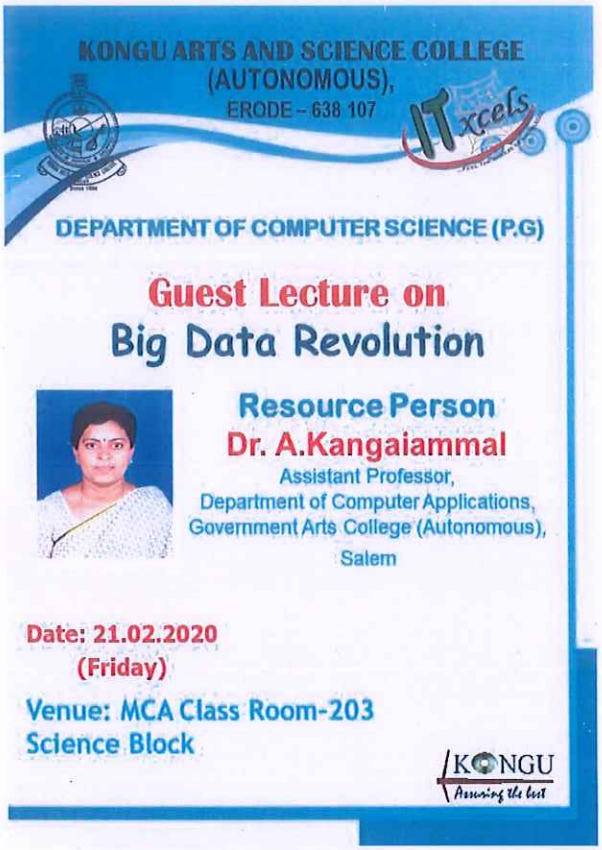
DEPARTMENT OF COMPUTER SCIENCE (P.G.)

Guest Lecture on "Big Data Revolution"

21 February 2020



The Department of Computer Science (P.G.) has organized a Guest Lecture on **"Big Data Revolution"** on 21 February 2020. The Resource Person was **Dr. A.Kangaiammal**, Assistant Professor, Department of Computer Applications, Government Arts College (Autonomous), Salem.

The objective of this seminar is to impart knowledge on Big data. The seminar was attended by M.C.A. Students. The resource person has delivered information about the Revolution of Big Data in this era and also how information technology that is affecting an industries around the globe. The students understood the emergence of **Big Data** is the result of innovators challenging the key problems. Revolution in big data makes changes to make their way from operations to analytics.

No. of Beneficiaries: 35

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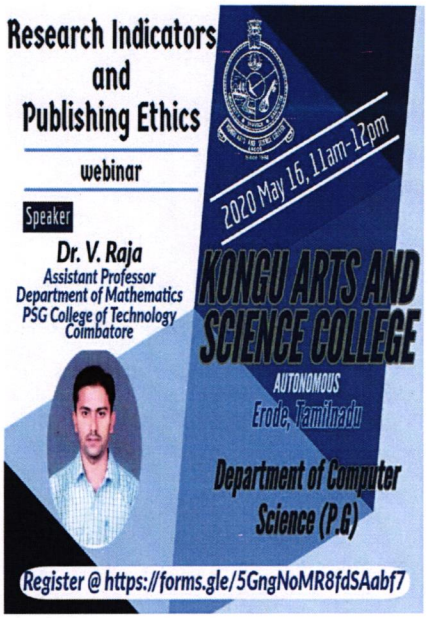
DEPARTMENT OF COMPUTER SCIENCE (P.G.)

One Day Virtual Webinar on Research Indicators and Publishing Ethics
16 May 2020

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(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)
Nanjanapuram, Erode 638107

1EA1QA-CE000027

E-Certificate of Participation

This is to certify that Prof./Dr./Mr./Mrs./Ms

KRITHIKA S

Kongu Arts and Science College (Autonomous)

has actively participated in the Webinar organized on

"RESEARCH INDICATORS AND PUBLISHING ETHICS"

by Department of Computer Science(P.G.) on 16.05.2020.

Dr.B.JAYANTHI HOD | Dr.N.RAMAN Principal | K.PALANISAMY Correspondent

E- Certificate - Signature not required

The Department of Computer Science (P.G.) organized an One Day Virtual Webinar on "Research Indicators and Publishing Ethics" on 16 May 2020. The Resource Person for this webinar was Dr. V.Raja, Assistant Professor, Department of Mathematics, PSG College of Technology, Coimbatore.

The objective of this webinar is to impart knowledge on Research and its Publications. This webinar was attended by Research Scholars and Faculty members from various reputed institutions. The resource person gave a detailed lecture about Research ideas in various domains and also explains the publication ethics should be followed for the research papers in reputed journals. The queries of the participants were clarified at the end of the webinar.

E-certificates were issued to the participants.

No. of Beneficiaries: 45

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE (PG)
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Dr. N. RAMAN
PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
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