



KONGU ARTS AND SCIENCE COLLEGE

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

ERODE – 638 107

PROGRAM NAME
B.Sc. (Mathematics)



KONGU ARTS AND SCIENCE COLLEGE

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

ERODE – 638 107

2022-2021



KONGU ARTS AND SCIENCE COLLEGE

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SYLLABUS

Sem	Course Code	SKILL BASED PRACTICAL - II STATISTICAL ANALYSIS USING SPSS	Total Marks: 75		Hours Per Week	Credits
IV	19UANSP404			CIA : 20	ESE : 55	3

OBJECTIVE

To enable the students to get practice on the mathematical software SPSS.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO1	Represent the data through charts and diagrams.
CO2	Fit a straight line for the given data using regression and Plot exponential curve fit.
CO3	Calculate measures of central tendency and dispersion and also to find geometric and harmonic mean.
CO4	Solve probability problems using theoretical distributions.
CO5	Find the regression and correlation coefficient of numerical data.

LIST OF PROGRAMS

1. Data entry and naming variables.
2. Presentation of data through charts and diagrams.
3. Fitting a straight line for the given data using regression.
4. Plotting exponential curve fit.
5. Finding mean and median of numerical data.
6. Finding geometric mean and harmonic mean of numerical data.
7. Determining standard deviation, variance, and checking the consistency of the given data.
8. Solving probability problems using Poisson distribution.
9. Solving probability problems using Binomial distribution.
10. Solving probability problems using Normal distribution.
11. Finding regression relation of numerical data.
12. Finding correlation coefficient of numerical data.

REFERENCE BOOK

Dr.H.Premraj, SPSS (Statistical Package for Social Sciences), Margham Publications, Chennai 2018.



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PRINCIPAL,
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S. V. R.
HEAD OF THE DEPARTMENT
DEPARTMENT OF MATHEMATICS
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2020-2021
V, VI, VII

Sem	Course Code	ELECTIVE - I SCIENTIFIC COMPUTING WITH SAGEMATH	Total Marks: 100		Hours Per Week	Credits
V	20UANEP505		CIA : 40	ESE : 60	3	3

OBJECTIVE

To enable the students to get practice on the Mathematical Scientific Open Source Software SageMath.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO1	Use SageMath as a calculator and declare variables and solve.
CO2	Plot and solve equations.
CO3	Find ordinary and partial derivatives.
CO4	Solve ODE and evaluate integrals.
CO5	Compute Permutation and Combination.

LIST OF PROGRAMS

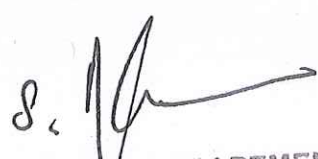
1. Use SageMath as a Calculator and define own functions.
2. Declare variables and solving single and multi variable problems using SageMath.
3. Plot functions with advanced techniques including scatter plots using SageMath.
4. Solve linear and non linear equations using SageMath.
5. Find higher derivatives and plotting in SageMath.
6. Find partial derivatives of a given function using SageMath.
7. Solve Ordinary differential equations using SageMath.
8. Evaluate single and multiple integrals using SageMath.
9. Perform matrix operations and hence find inverse of a matrix using SageMath.
10. Use Sage Math for Permutations and Combinations.

REFERENCE BOOKS

1. Gregory V. Bard. Sage for Undergraduates, American Mathematical Society, Available online at <http://www.gregorybard.com/sage.html>.
2. Tuan A . Le and Hieu D. Nguyen. Sage Math Advice for Calculus available online at <http://users.rowen.edu/~nguyen/sage/SageMathAdviceforCalculus.pdf>



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Sem	Course Code	SKILL BASED PRACTICAL - III MATLAB PROGRAMMING	Total Marks: 75		Hours Per Week	Credits
V	20UANSP508			CIA : 20	ESE : 55	3

OBJECTIVE

To enable the students to get practice on the mathematical software MATLAB.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO1	Solve the Transcendental and Differential equations
CO2	Evaluate the given function by Simpson's rule and solve the roots of the Quadratic equation
CO3	Generate the Fibonacci sequence, Pascal triangle
CO4	Compute the Trace, Sum, Mean, Median, Variance, Standard deviation of a matrix
CO5	Plot the Sine curve and find Eigen values and Eigen Vectors of a matrix.

LIST OF PROGRAMS

1. Write a Program to compute the solution of Transcendental equation.
2. Write a Program to compute the solution of Differential equation.
3. Write a Program to evaluate the given function by Simpson's rule.
4. Write a Program to solve for the roots of a Quadratic equation, whether they are distinct real roots, repeated real roots or complex roots.
5. Write a Program to generate the Fibonacci sequence of numbers.
6. Write a Program to generate the Pascal triangle
7. Write a Program to calculate the Trace of a matrix.
8. Write a Program to compute Sum, mean, median, variance and standard deviation of an array (or) a matrix.
9. Write a Program to plot the Sine curve.
10. Write a Program to find the Eigen values and Eigen vectors of a matrix.

REFERENCE BOOKS

1. Rudra Pratap, Getting Started with MATLAB -A Quick Introduction for Scientists and Engineers , January 2010
2. Amos Gilat , MATLAB: An Introduction with Applications, January 2012.



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Sem	Course Code	ELECTIVE - II OBJECT ORIENTED PROGRAMMING IN C++ - THEORY	Total Marks: 100		Hours Per Week	Credits
			CIA : 25	ESE : 75		
VI	20UANET605				5	4

OBJECTIVE

To enable the students to understand the concepts of C++ Programming structures, Classes and Objects, Control statements, Functions, Operators, and Inheritance properties.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO1	Know about basic concepts of Object Oriented Programming.
CO2	Understand Tokens, Expressions and Control structure.
CO3	Know about functions manage in C++ and Console I/O operations.
CO4	Understand Classes, Objects, Constructors and Destructors.
CO5	Utilize Operators Overloading and Inheritance.

SYLLABUS

Unit	Content	Hour
I	Principles of object-Oriented Programming: Software evolution – A look at procedure-oriented Programming – Object-oriented Programming Paradigm – Basic Concept of Object-Oriented Programming – Benefits of OOP – Object-Oriented languages – Applications of OOP.	10
II	Tokens, Expressions and Control structure: Introduction – Tokens – Keywords – Identifiers and constants – basic data types – User defined data types - Derived data types – Symbolic constants – Declaration of variables – Dynamic insulation of variables – Reference variables – operations in C++ - Scope resolution operator –Memory management operators – Manipulators – Expressions and their types – Control structures.	9
III	Functions in C++: Introduction – The main function – Function prototyping – Call by reference – Return by reference - Inline functions – Default arguments – Constant arguments – Function over loading –Math library functions. Managing Console I/O operations: Introduction – C++ streams – C++ stream classes – Unformatted I/O operations - Formatted I/O operations – Managing output with manipulators.	9
IV	Classes and Objects: Introduction – Specifying a class – Defining Member Functions – A C++ Program with class – Making an outside Function Inline – Nesting of Member Functions – Private Member Functions – Arrays within a class – Memory Allocation for Objects – Arrays of Objects – Objects as Function Arguments – Friendly functions – Returning Objects – Constant Member Functions. Constructors and Destructors: Introduction – Constructors – Parameterized Constructors –Constructors with Default Arguments - Copy Constructor – Destructors.	8



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V	<p>Operators overloading: Introduction – Defining Operator Overloading – Overloading Unary Operators – Overloading Binary Operators - Rules of Overloading Operators.</p> <p>Inheritance: Defining Derived Classes – Single inheritance – Making a Private Member Inheritable – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance.</p>	8
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Teaching Methodology : Chalk and Talk, Power Point Presentation, Seminar, Quiz, Internet.

TEXT BOOK

E. Balaguruswamy, “Object – Oriented Programming with C++”, Tata McGraw-Hill Publishing Company limited, 1999.


- Unit I : Chapter 1 : Sections 1.1-1.8
- Unit II : Chapter 3 : Sections 3.1-3.24
- Unit III : Chapter 4 : Sections 4.1-4.11
Chapter 10 : Sections 10.1-10.6
- Unit IV : Chapter 5 : Sections 5.1- 5.17
Chapter 6 : Sections 6.1- 6.7, 6.9-6.11
- Unit V : Chapter 7 : Sections 7.1- 7.7
Chapter 8 : Sections 8.1- 8.12

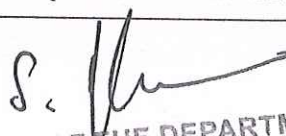
REFERENCE BOOKS

1. Ashok N Kamthane , “Object-Oriented Programming with ANSI and TURBOC C++,” Pearson Education publication. 2003.
2. Maria Litvin & Gray Litvin , “C++ for you”, Vikaspublication, 2002.

QUESTION PAPER PATTERN		
SECTION – A	SECTION – B	SECTION – C
10x1=10 Marks (Multiple choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3x10 = 30 Marks (Answer any three questions) One question from each unit




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Sem	Course Code	ELECTIVE - III	Total Marks: 100		Hours Per Week	Credits
VI	20UANEP607	OBJECT ORIENTED PROGRAMMING IN C++ - PRACTICAL	CIA : 40	ESE : 60	5	4

OBJECTIVE

To enable the students to understand the concepts of C++ Programs based on structures, Classes and Objects, Control statements, Functions, Operators, and Inheritance properties.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO1	Create a class FLOAT.
CO2	Represent points in the polar and rectangle systems.
CO3	Create a class MAT of size M*N.
CO4	Find Area Computation using Derived Class.
CO5	Apply overloading concepts for vector addition, Multiplication of a vector by a scalar quantity

LIST OF PROGRAMS

1. Write a function "power()" to raise a number m to a power n . The function takes a "double" value for m and " int" value for n , and returns the result correctly. Use a default value of 2 for n to make the function to calculate squares when this argument is omitted. Write a "main()" that gets the values of m and n from the user to test the function.
2. Write a program to compute compound interest of a given amount AMT for n years. Use function overloading so that the program gets input of interest rate RATE in any of the data type "float" or " int".
3. Create a class which consists of employee detail ENO, ENAME, DEPT, BASIC SALARY. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade and display the pay slip in a neat format using console I/O.
4. Define two classes POLAR and RECTANGLE to represent points in the polar and rectangle system. Write a program to convert from one system to another.
5. Create a class FLOAT that contains one float data member. Overload all the four arithmetic operators so that they operate on the objects of FLOAT.

REFERENCE BOOK

E. Balaguruswamy, "Object – Oriented Programming with C++", Tata McGraw-Hill Publishing Company limited, 1999.



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ACTIVITIES



KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE.

DEPARTMENT OF MATHEMATICS

RAMANUJAN ASSOCIATION INAUGURATION – 25.07.2020


KONGU ARTS AND SCIENCE COLLEGE
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Erode

DEPARTMENT OF MATHEMATICS
DBT STAR COLLEGE
SCHEME

*cordially invites you all for the inauguration of
RAMANUJAN ASSOCIATION ACTIVITIES
for the academic year 2020 - 2021*

TOPIC
FUNDAMENTALS OF LINEAR ALGEBRA

PRESIDENTIAL ADDRESS
Thiru. K. Palanisamy
Correspondent



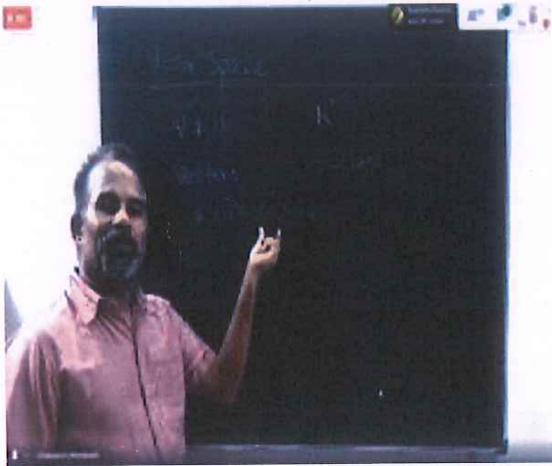
FELICITATION
Dr. N. Raman
Principal

Dr. M. AZHAGAPPAN M.Sc., M.Phil., Ph.D.,
HOD, DEPARTMENT OF MATHEMATICS, CONTROLLER OF EXAMINATIONS
YADAVA COLLEGE, MADURAI


to join the google meet : meet.google.com/mvz-wbpr-qav
DATE: 25.07.2020 TIME : 11.00 AM

JKONGU
A Message to All

Ramanujan Association activities was inaugurated on 25.07.2020 with an Inspirational speech on **Fundamentals of Linear Algebra** by **Dr.M.Azhagappan**, HOD, Department of Mathematics, Controller of Examinations, Yadava College, Madurai. The students of Mathematics department were participated. The main objective of the programme was to improve their Analysis skills.



Beneficiaries : 362 Students


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KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE.

DEPARTMENT OF MATHEMATICS

IDP - Webinar on "Applications of Geogebra - A FOSS" - 15.10.2020

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DBT STAR COLLEGE SCHEME

DEPARTMENT OF MATHEMATICS
(Recognised and Funded by DBT, New Delhi)
cordially invites you to the
Inter- Disciplinary Programme
on
Applications of Geogebra - A FOSS
For the First year Students of
Mathematics, Physics, Biochemistry, Biotechnology

Thiru. K. Palanisamy
Correspondent
has graciously consented to preside over the function

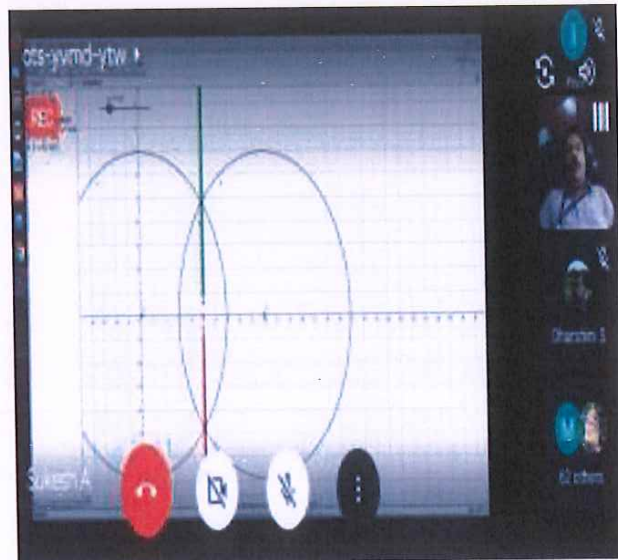
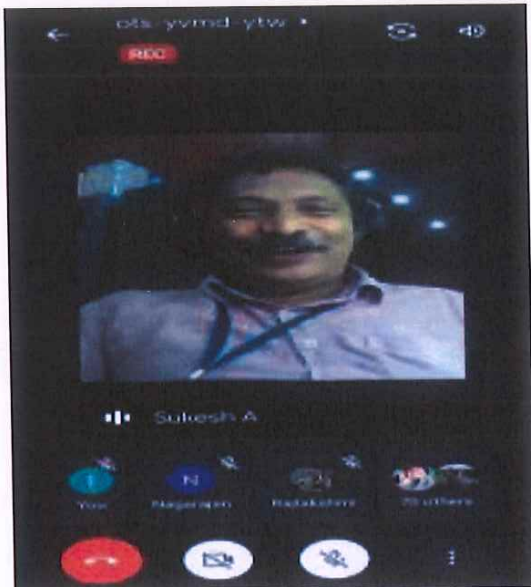
Dr. N. Raman
Principal
has kindly consented to felicitate the function

Dr. A. Sukesh
Assistant Professor,
Government College of Engineering,
Kannur, Kerala.
has graciously consented to be a resource person

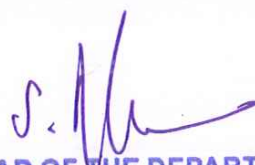
15
02.00 PM to 03.30 PM

Join the meet in.....
meet.google.com/ajk-yvmd-ytw

An IDP - Webinar on "Applications of Geogebra - A FOSS" was conducted by **Dr.A.Sukesh**, Assistant Professor, Government College of Engineering, Kannur, Kerala under DBT Star College Scheme for the benefit of our UG students on 15.10.2020. The main aim of the programme is to train the students in the Open source software Geogebra.



Beneficiaries : 150 Students


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KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE.



DEPARTMENT OF MATHEMATICS

ORIENTATION PROGRAMME – 24.08.2020 – 28.08.2020

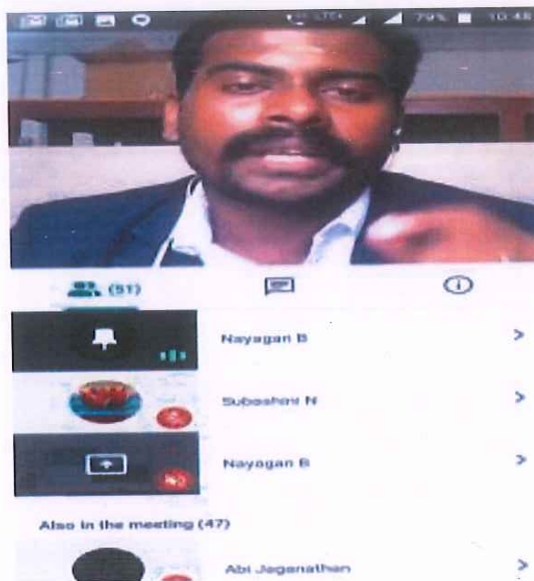
Orientation Programme, was organized for I B.Sc Mathematics students and was conducted as follows from 24.08.2020 to 28.08.2020. The main aim of the programme is to motivate and develop the various skills of the students.

Kongu Arts and Science College (Autonomous)
Erode- 638 107
DBT STAR COLLEGE SCHEME
DEPARTMENT OF MATHEMATICS

(Recognized and Funded by DBT, Government of India, New Delhi)
Online Orientation Programme for the First year Students for the Academic Year (2020 - 2021)

 Programme Introduction Dr. S. Nagarajan Associate Professor and Head 24.08.2020 10.00 am	 Communicative English Ms. P. V. Rajalakshmi Assistant Professor of English 24.08.2020 11.00 am	 இன்று புகழ்மயப் பிரதிபலிப்பு Jci Senator B. Nayagan Zone Trainer, JCI Erode Jasmine World Record Holder 25.08.2020 10.00 am
 Induction Programme for Star Department Students Dr. R. Rajendran Associate Professor Department of Microbiology PSG College of Arts and Science, Coimbatore 26.08.2020 10.00 am	 வணக்க வாய்வுகள் Dr. N. K. Dhanasekiam Head Mistress, Government High School, Valayapalayam 26.08.2020 11.30 am	 INFINITY - Opportunities Beyond Limit Mr. K. K. Sureshkumar Placement Officer 27.08.2020 10.00 am
 Road Map to Success Ms. M. Kavitha Assistant Professor of BBA 27.08.2020 11.00 am	 Life with Math Dr. T. Venugopal Controller of Examinations, SCSVMV, Kanchipuram 28.08.2020 10.00 am	Join meet in.... meet.google.com/fvm-ribf-exa

KONGU
Assuring the best



Beneficiaries: 54 Students

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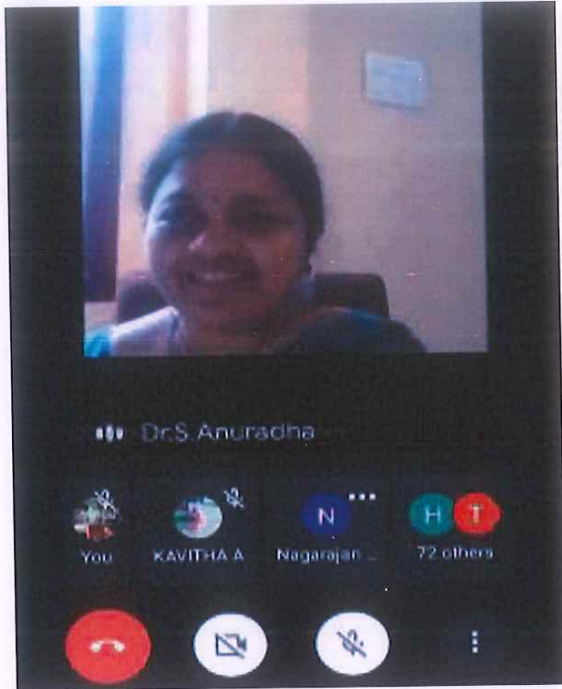


KONGU ARTS AND SCIENCE COLLEGE

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DEPARTMENT OF MATHEMATICS

“PI DAY CELEBRATIONS” - 14.03.2021.




“PI day celebrations” was organized under DBT Star College Scheme. A special talk given by **Dr.S.Anuradha**, Professor and Head, Hindusthan College of Arts and Science, Coimbatore for the benefit of our students on 14.03.2021. She motivated the students to make more inventions and improve their knowledge in Mathematical fields.

Beneficiaries: 362 Students


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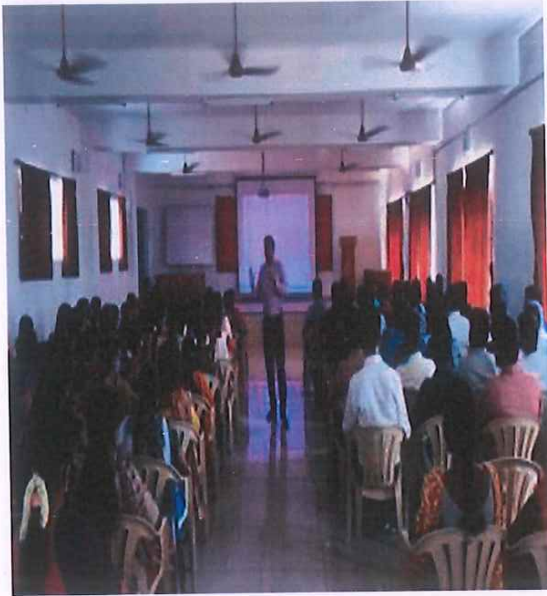

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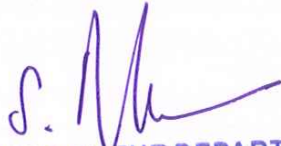
DEPARTMENT OF MATHEMATICS

“INTRODUCTION TO R - SOFTWARE”- 19.03.2021 - 20.03.2021.




A two day Workshop on “Introduction to R - Software” was organized for the II B.Sc Students on 19.03.2021 – 20.03.2021 by **Mr.C.Surendar**, Technical Head Development, Covai Consultancy Services, Coimbatore under DBT Star College Scheme. The main aim of this programme is to train the students to work with R-software.

Beneficiaries: 223 Students


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**KONGU ARTS AND SCIENCE COLLEGE
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DEPARTMENT OF MATHEMATICS**

RAMANUJAN DAY CELEBRATION - 22.12.2020

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE
DEPARTMENT OF MATHEMATICS
Intra Department Function
133rd Birth Anniversary of Srinivasa Ramanujan
Date: Dec 22, 2020



133rd Birth Anniversary of Srinivasa Ramanujan celebrated as **Ramanujan Day** on 22.12.2020. Various competitions were conducted through online for the students to exhibit their talents in Mathematics. A special talk was given by **Dr.T.Gavaskar** , Assistant Professor, Department of Mathematics, Central university of Tamilnadu, Thiruvarur on Ramanujan history to motivate the students. The aim of this day is to exhibit the mathematical talents among the students.



Beneficiaries: 362 Students

S. N.
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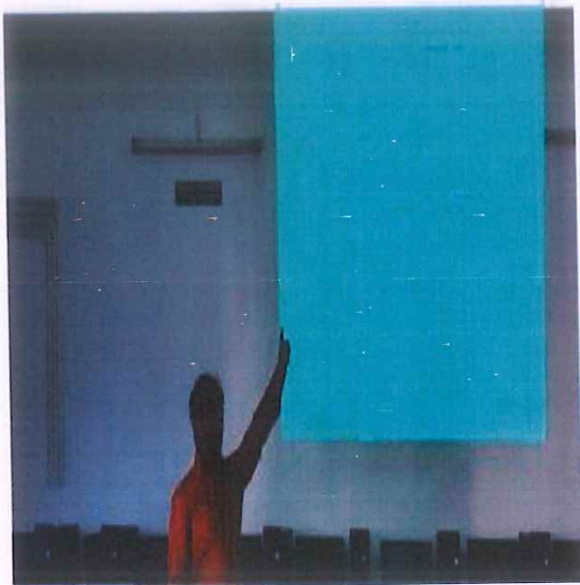
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DEPARTMENT OF MATHEMATICS

WORKSHOP ON DATA ANALYSIS USING SPSS 08.03.2021 – 09.03.2021



A two day Workshop on “Data Analysis using SPSS” was organized for the II B.Sc Students on 08.03.2021 – 09.03.2021 by Mr.S.Alagupandi Technical Head, Training Aakkam Industrial Training and Research Institute, Coimbatore under DBT Star College Scheme. The training programme is to master the students in SPSS.

Beneficiaries: 119 Students


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