Dr. N.G.P. ARTS AND SCIENCE COLLEGE

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

Approved by Government of Tamil Nadu & Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA)

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Department of Mathematics

Board of Studies Meeting

The minutes of the 17th meeting of Board of Studies held on 04.04.2024 at 10.00 am at Hall K-206.

Members Present:

S.No	Name	Category
1	**Dr. R. Sowrirajan** Head, Department of Mathematics Dr.N.G.P.Arts and Science College, Coimbatore	Chairman
2	**Dr. S. Narayanamoorthy** Associate Professor Department of Mathematics Bharathiar University Coimbatore	University Nominee
3	**Dr. A. Ramesh babu** Assistant Professor (Sr. Grade) Department of Mathematics Amritha Viswa Vidyapeetham Coimbatore	Subject expert
4	**Dr. S. Eswaramoorthi** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
5	**Dr. M. Sangeetha** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
6	**Mr. M. Santhosh Kumar,** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
7	**Dr. S. Gokilamani** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member

8	**Dr. S. Manimekalai,** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
9	**Dr. S. Kannaki** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
10	**Ms. R. Anandhi** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
11	**Ms. M. Lavanya** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
12	**Mr. S. Rameshkumar** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
13	**Mr. C. Sivakumar** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
14	**Ms. A. Thamilpriya** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
15	**Dr. S. Mathankumar** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
16	**Dr. P. Umamaheswari** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
17	**Mr. D. Sundar** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
18	**Ms. M. Vinitha** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member
19	**Dr. K. Kavitha** Dept of Mathematics,	Internal Member

	Dr. N. G. P. Arts and Science College Coimbatore	
20	**Dr. N. Kuppuchamy** Dept of Tamil, Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member
21	**Dr. A. Hazel Verbina** Dept of English Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member
22	**Dr. V. Gopala Krishnan** Dept of Physics Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member
23	**Dr. V. Pream Sudha** Dept of CS with Data Analytics, Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member
24	**Dr. B. Rosiline Jeetha** Dept of Computer Science Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member
25	**Dr. S. Kamalaveni** Dept of Commerce with IT Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member
26	**Ms. Sowmiya K** I M.Sc. Mathematics	Student representative
27	**Ms. Habhipriya V P** II B.Sc. Mathematics	Student representative

The HoD and Chairman of the Department of Mathematics welcomed and introduced all the members and appreciated them for their continuous support and contribution for the development of academic standard and enrichment of the syllabus.

Further Chairman informed the inability of the following members to attend the meeting and requested to grant leave of absence.

1. Dr. N. Balamani , Subject expert
2. Mr. L. Madhan Mohan, Industry expert
3. Mr. P. Vijayakumar, Meritorious Alumni
4. Dr. P. Umadevi, Internal Member

The items of the agenda were taken one by one for discussion and the following resolutions were passed.

Item 17.1: *To review and approve the minutes of the 16th meeting of BoS held on 18.10.2023*

The chairman of the Board presented the minutes of the previous meeting held on **18.10.2023** and requested the members to approve. After brief discussion the following resolution was passed.

Resolution:

Resolved to approve the minutes of the 16th meeting of BoS held on 18.10.2023

Item 17.2: *To consider and approve the scheme, regulations and syllabus for the I Semester to the students admitted in UG and PG during the academic year 2024-25.*

The chairman presented the detailed scheme, regulation and syllabus for the I semester to the students admitted during the academic year 2024-2025. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Course Code	Course	Changes and Reason
24MTU1CA	Calculus	As per the recommendation given by Dr. Rameshbabu the board decided to follow the book "Calculus Tenth Edition" by H. Anton, S. Davis and I. Bivens instead of "Calculus" by Shanthi Narayanan as textbook to give more concentration on applications. - Topics such as Arc length, unit normal, Tangent line is included in unit I. - Topics such as Maxima and Minima for functions is included in unit III - Applications of surface integrals is included in unit V The board also discussed and decided to remove "Computation using Scilab" from each unit since it is decided to offer this as a skill development course.

New Courses Introduced:

Course Code	Course	Changes and Reason
Nil		

Courses Removed: Nil

Course Code	Course	Changes and Reason
Nil		

IDC Offered:

Course Code	Course	Department
24MTU1ID	Mathematics for Computing I	B.Sc. (CSDA/AI&ML)
24MTU1IA	Business Mathematics	B.Com.(CA/PA/IT/BA/BPS)
24MTU1IB	Mathematics for Management I	BBA(CA)
24MTU1IC	Numerical Methods and Statistics	B.Sc. (CS/IT/CT/ BCA/Cognitive)
24MTU1IM	Fundamentals of Mathematics with MATLAB	B.Sc. Physics
24MTP1EA	Mathematical Foundations in Data Science	M. Sc. CSDA

After discussion the following resolution was passed with the above changes and modifications.

Resolution:

Resolved to approve the above modifications and adopt the revised syllabi for the students admitted in UG and PG for the academic year 2024-2025.

Item 17.3: *To consider and approve the syllabi for III Semester to students admitted in UG and PG from the academic year 2023-24.*

The Chairman presented the detailed syllabi for the III semester to the students admitted during the academic year 2023-2024. As per the discussion there are no changes in the syllabus and hence the same can be followed with new subject code for the academic year 2023-2024.

B. Sc. Mathematics:

Changes Made:

Course Code	Course	Changes and Reason
Nil		

New Courses Introduced:

Course Code	Course	Changes and Reason
Nil		

Courses Removed:

Course Code	Course	Changes and Reason
Nil		

IDC Offered:

Course Code	Course	Department
232MT1A3IA	Business Mathematics	B.Com./II B.Com.(IB/ B&I/ AT/ Fin/ CSCA)
232MT1A3IE	Basic Mathematics	B.Sc. Biotechnology
232MT1A3IF	Principles of Biostatistics	B.Sc. Microbiology/ Biochemistry
232MT1A3IC	Operations Research	B.Sc. Cognitive
232MT1A3ID	Discrete Mathematics	B.Sc. (CSDA/AI&ML)
232MT1A3EP	Mathematics with MATLAB	B.Sc. Chemistry

M. Sc. Mathematics:

Changes Made:

Course Code	Course	Changes and Reason
		Nil

New Courses Introduced:

Course Code	Course	Changes and Reason
		Nil

Courses Removed:

Course Code	Course	Changes and Reason
		Nil

After discussion the following resolution was passed without the changes.

Resolution:

Resolved to approve the syllabus for the III semester for the students admitted in UG and PG during the academic year 2023-2024.

Item 17.4: *To consider and approve syllabi for the V Semester to the students admitted in UG from the academic year 2022-23.*

The Chairman presented the detailed syllabi for the V semester for the students admitted during the academic year 2022-2023. As per the requirement of the current scenario and stake holder's feedback in the curriculum new courses are introduced. The details of changes made also presented as follows.

B. Sc. Mathematics:

Changes Made:

Course Code	Course	Changes and Reason
222MT1A5CC	Number Theory	Based on Dr. Narayanamoorthy's suggestion, the board decided to adopt the following changes in the course: • Unit IV and Unit V is merged after removing the topics Composite numbers from Unit IV and Quadratic reciprocity law from Unit V.

		• The concept of "Basics of Cryptography" is introduced as a separate unit as Unit V..
222MT1A5CA	Modern Algebra	As per Dr. Narayanamoorthy's suggestion, the following changes has been made in the contents of the course: • The concept of Sylow's theorems should is introduced as separately as unit III • The units I, II and III are rearranged in such a way that unit I is formed by Groups and Subgroups and unit II consists of Normal subgroups. Topics like basics of set theory, unique factorization theorem, and another counting principle are removed as it does not any effect on the new concepts.
222MT1A5CB	Real Analysis	As per the suggestions given by Dr. Rameshbabu the following revision are made in the contents: • The contents of unit V is removed as it seems to be hard to understand for the students. • Unit I can be divided in to two units by including the topics such as topological mappings, connectedness, C-R equation, properties of Monotic functions. Unit I contains the concepts limits, continuity and connectedness and Unit II comprises of derivatives and monotonic functions.
222MT1A5DB	Discrete Mathematics	As per the recommendation of Dr. Rameshbabu, the board decided to follow the textbook " Discrete Mathematics and its Applications Fourth Edition" by K.H.Rosen instead of the book "Discrete Mathematics" by Kolman and Busby to give more concentration on Boolean algebra and its applications. To include this, the theoretical concept of Semigroups is removed from the contents. Based on this change, the contents are rearranged as follows: • Unit I consists of Counting principle and permutations\ • Unit II consists of recurrence relations and generating functions • Unit III consists of relations and posets • Unit IV consists of Boolean functions and circuit design... • Unit V deals with languages and automata.
222MT1A5SP	R Programming Lab	Based on Dr. Narayanamoorthy's suggestion, the following programs are included to give more practical experience on Statistical methods. • Creating bar charts, pie charts, box plots and scatter plots instead of writing R functions using available R packages • Create time series objects and plot multiple time series in one chart

| | | • Writing R code to find sample covarianceand paired t test |
| | | • Writing R code for a function using If-else comand |

New Courses Introduced:

Course Code	Course	Changes and Reason
222MT1A5EP	Programming in MATLAB	To apply a computational tool, for solving various Mathematical problems.
222MT1A5DA	Fuzzy Sets and Fuzzy Logic	To provide insights on the applications of Fuzzy systems in Pattern recognition and Decision Making.
222MT1A5DC	Mathematical Foundations in Cryptography	To learn about various Mathematical concepts that forms basis for Cryptography
222MT1A5GA	Vedic Mathematics	To gain arithmetic solving ability using simple formulas.

Courses Removed:

Course Code	Course	Changes and Reason
192MT1A5CB	Complex Analysis - I	Shifted to sixth semester
192MT1A5CD	Programming in Python	Shifted to sixth semester
192MT1A5DB	Astronomy – I	Replaced by Mathematical foundations in Cryptography
192MT1A5DC	Combinatorics	Shifted to sixth semester

After discussion the following resolution was passed with the above changes and modifications.

Resolution:

Resolved to approve the above modification and adopt the revised syllabi for the students admitted in UG during the academic year 2022-2023.

Item 17.5: *To consider and approve the Diploma, Certificate, Skill oriented courses to be offered during the academic year 2024-25*

The Chairman presented the syllabus for the Value-Added Course "Tableau" offered to to the students of Mathematics Programme. The board members discussed in view of the job opportunities available.

Resolution:

Resolved to approve the syllabus for the Diploma, Certificate, Skill oriented courses to be offered during the academic year 2024-2025.

Item 17.6: *To approve the panel of examiners for question paper setting and evaluation of answer scripts for the odd semester during the academic year 2024-2025.*

The Chairman presented the panel of examiners for question paper setting and evaluation of answer scripts for the odd semester during the academic year 2024-2025.

Resolution:

Resolved to approve the panel of examiners for question paper setting and evaluation of answer scripts for the odd semester during the academic year 2024-2025.
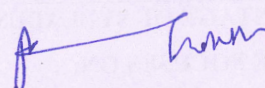
Item 17.7: *Any other Matter*

The chairman discussed about providing the skill oriented course to provide practical knowledge on the various concepts like Calculus, trigonometry and differential equations. The board members accepted the same and suggested to provide Hands-on-training for this course using online resources.

Resolution:

Resolved to approve the syllabus for the students admitted in UG and PG during the academic year 2024-2025.

Finally, the Chairman thanked all the members for their cooperation and contribution in enriching the syllabus with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with formal vote of thanks proposed by the chairman.

Date: 04.04.2024

(Dr.R.Sowrirajan)

BoS Chairman/HoD
Department of Mathematics
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Faculty: BAS   **Board: Mathematics**   **Semester: I**

Course Code/ Name: 24MTU2CB   CALCULUS

Unit	Existing	Changes
I	**Maxima, Minima and Points of Inflexion** Maximum and minimum value of a function- necessary conditions for extreme values - sufficient condition - use of second order derivative - application - criteria for concavity upwards - concavity downwards - inflexion at a given point - ~~Computations using Scilab~~	Maxima and minima of functions of two variables - Lagrange's multipliers
II	**Curvatures and Evolute** Introduction - definitions - length of arc as a function derivative of arc - radius of curvature - Cartesian equations - Newtonian method - centre of curvature - properties of the evolutes - ~~Computations using Scilab~~	
III	**Singular Points and Envelopes** Introduction - cusps, nodes and conjugate points - definitions - tangents at the origin - conditions for any point (x, y) to be a multiple point - types of cusps - Radii of curvature at multiple points - ~~Envelopes : one parameter family of the curves - determination of envelope — theorem - Computations using Scilab.~~	Arc length – Unit tangent, normal and binomial vectors
IV	**Divergence and Curl** Divergence and Curl - Illustrations of curl f and div f - Gradient, Divergence and curl of sums - gradient, divergence and curl of products - second order Differential operator - Laplacian operator- Differential operators in terms of curvilinear co ordinates - differential of length - ~~Computations using Scilab.~~	
~~V~~	**Vector Calculus** Line integrals - circulation, irrotational vector point functions - surface integrals - flux across a surface: solenoidal vector point functions - volume integrals - reduction of volume to surface integrals - physical interpretation of Gauss' theorem - ~~Computations using Scilab.~~	applications of surface integrals

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

✓	Skill Development	☐ Entrepreneurial Development
✓	Employability	☐ Innovations
☐	Intellectual Property Rights	☐ Gender Sensitization
☐	Social Awareness/ Environment	☐ Constitutional Rights/ Human Values / Ethics

Faculty: BAS   **Board: Mathematics**   **Semester: V**

Course Code/ Name: 222MT1A5CA   MODERN ALGEBRA

Unit	Existing	Changes
I	**Group Theory:** ~~Set theory – Mappings – examples of mappings – integers – unique factorization theorem~~ - group - some examples of groups- some preliminary lemmas.	**Group Theory** Group - some examples of groups- some preliminary lemmas- Subgroups –Euler theorem - Fermat theorem – counting principle
II	**Subgroups:** Subgroups –Euler theorem - Fermat theorem – counting principle - Normal subgroups and quotient groups - Homomorphisms.	**Normal subgroups** Normal subgroups and quotient groups – Homomorphisms- Automorphisms – Inner automorphism - Cayley's theorem
III	**Automorphisms and Permutation groups:** Automorphisms – Inner automorphism - Cayley's theorem - ~~Permutation groups – another counting principle.~~	**Sylow's theorem:** Sylow's theorem - second proof - third proof - third part of Sylow's theorem - direct products -definitions- finite abelian groups.
IV	**Ring Theory:** Definition and examples of rings–some special classes of rings - Homomorphisms - Ideals and Quotient rings – more Ideals and Quotient rings.	
V	**Polynomial Rings:** The field of Quotients of an integral domain – Euclidean rings – particular Euclidean ring – Polynomial rings - polynomials over the rational field -polynomial rings over commutative rings	

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

✓	Skill Development	☐	Entrepreneurial Development
✓	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty: BAS   Board: Mathematics   Semester: V

Course Code/ Name: 222MT1A5CB   REAL ANALYSIS

Unit	Existing	Changes
I	**Derivatives:** Introduction- derivatives and continuity – Algebra – The chain rule – one-sided derivatives and infinite derivatives – Functions with non-zero derivative – Zero derivatives and local extrema – Rolle's theorem – The Mean- Value theorem – Intermediate-value theorem for derivatives – Taylor's formula with remainder	Limits, Continuity and Connectedness: Topological mappings (homeomorphism) - Bolzano's theorem - Connectedness - Components of a metric space - Arc wise connectedness - Uniform continuity - Uniform continuity and compact sets - Fixed point theorem for contraction - discontinuities of real valued functions - Monotonic functions.
II	**Function of Bounded Variation:** Introduction - Properties of monotonic functions – functions of bounded variation – total variation – Additive property – total variation on [a, x] as a function of x - functions of bounded variation expressed as the difference of increasing functions – Continuous functions of bounded variation - curves and paths - Rectifiable paths and arc length.	Derivatives and monotonic functions: Rolle's theorem – The Mean- Value theorem – Intermediate-value theorem for derivatives – Taylor's formula with remainder Derivatives of vector valued functions - partial derivatives - Differentiation of functions of a complex variable - The Cauchy - Riemann equations - Properties of monotonic functions.
III	**The Riemann–Stieltjes Integral:** Introduction - Riemann-Stieltjes integral – Linear properties – Integration by parts – change of variables in a Reimann-Stieltjes Integral – reduction to a Riemann Integral - step functions - Reduction to a finite sum - Euler's summation formula - Monotonically increasing integrators - additive and linearity properties - Riemann's condition - comparison theorems - Integrators of bounded variation.	Unit II is changed as Unit III
IV	**Properties of Riemann–Stieltjes Integral:** Necessary and Sufficient condition for existence of Riemann–Stieltjes - Mean value theorem - integral as a function of the interval - second fundamental theorem - change of variable - second mean value theorem - integral depending on a parameter - differentiation under the integral sign - interchanging the order of integration - Lebesgue's criterion for existence of Riemann Integrals - Complex valued Riemann– Stieltjes Integrals.	Unit III is changed as Unit IV
V	~~Multiple Riemann Integrals:~~ ~~Introduction – measure of a bounded interval – Integral of a bounded function – sets of measure zero and lebesgue's criterion - Evaluation of a multiple integral – Jordan measurable in R power n – Multiple integration over Jordan measurable set – Jordan content expressed as a Riemann Integral - Additive property – Mean value theorem~~	Unit IV is changed as Unit V

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

✓	Skill Development	☐	Entrepreneurial Development
✓	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty: **BAS**   **Board: Mathematics**   **Semester: V**

Course Code/ Name: 222MT1A5CC   NUMBER THEORY

Unit	Existing	Changes
I	**Preliminaries and Divisibility Theory in the Integers:** Mathematical induction - The Binomial theorem - The division algorithm - The greatest common divisor - The Euclidean Algorithm - The Diophantine equation $ax+by=c$.	
II	**Primes and theory of Congruences:** The fundamental theorem of Arithmetic - The Sieve of Eratosthenes - The Goldbach conjecture - Basic properties of congruence - Binary and decimal representations of integers - Linear congruences and the Chinese remainder theorem.	
III	**Fermat's Theorem and Number-Theoretic Functions:** Pierre de Fermat - Fermat's little theorem and Pseudoprimes – Wilson's theorem - The sum and number of divisors - The Mobius inversion formula - The greatest integer function.	
IV	**Euler's Generalization, Primitive Roots and Indices:** Euler's Phi function - Euler's theorem - The order of an integer modulo n Primitive roots for primes ~~Composite numbers having primitive roots.~~	**Euler's Generalization, Primitive Roots and Indices:** Euler's Phi function - Euler's theorem - The order of an integer modulo n - Primitive roots for primes - Euler's criterion - The Legendre symbol and its properties.
~~V~~	~~**The Quadratic Reciprocity law:**~~ Euler's criterion - The Legendre symbol and its properties ~~Quadratic reciprocity law - Quadratic congruence with composite moduli.~~	**Cryptography:** From Caesar Cipher to public key cryptography - The Knapsack cryptosystem - An application of primitive roots to cryptography.

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty: BAS   **Board: Mathematics**   **Semester: V**

Course Code/ Name: 222MT1A5EP- Programming in MATLAB

Unit	Content
I	**Starting with MATLAB:** MATLAB Windows-Working in the command window-Arithmetic operations with scalars-Display formats-Elementary MATH built-in functions-Defining scalar variables-Useful commands for managing variables-Script files-Examples of MATLAB applications. 1. Creating a matrix using MATLAB 2. Write a simple program with arithmetic operators 3. Creating a MATLAB program with script file 4. Creating a MATLAB program with function file
II	**Creating Arrays:** Creating a one-dimensional array (vector)- Creating a two-dimensional array (matrix)- notes about variables in MATLAB-The transpose operator-Array addressing-Using a colon : in addressing arrays-Adding elements to existing variables-Deleting elements-Built-in functions for handling arrays-Strings and strings as variables 5. Write a simple program to generate Fibonacci numbers 6. Write a simple program to calculate a compound interest 7. Write a program to check whether the given number is odd or even 8. Write a program to find the electricity bill
III	**Mathematical Operations with Arrays:** Addition and subtraction-Array multiplication-array division-Element-by-element operations-using arrays in MATLAB built-in math functions-built-in functions for analyzing arrays-Generation of random numbers-Examples of MATLAB applications-Problems 9. Write a MATLAB program for solving three linear equations 10. Write a program to use least square approximation to find the solution of the system of consistent system 11. Write a program to find the Pseudo inverse of the singular matrix
IV	**Two-Dimensional Plots:** The plot command- the fplot command- Plotting multiple graphs in the same plot- formatting a plot- Plots with logarithmic axes- Plots with error bars- Plots with special graphics- Histograms- Polar plots- Putting multiple plots on the same page- Multiple figure windows- Plotting using the plots tool strip- Examples of MATLAB applications 12. Calculate and plot the position, velocity, and acceleration of the piston for one revolution of the crank using MATLAB 13. Write a MATLAB for plotting multiple diagram in a single window 14. Calculating the Electric Dipole using MATLAB
V	**User-Defined Functions and Function Files and Applications in Numerical Analysis:** Creating a function file- structure of a function file- local and global variables- saving a function file- using a user-defined function- examples of simple user-defined functions- comparison between script files and function files. Solving an equation with one variable- finding a minimum or a maximum of a function- numerical integration- ordinary differential equations- examples of MATLAB applications 15. Find the solution of the algebraic equation 16. Use MATLAB to apply Numerical Integration methods 17. Use MATLAB to solve the differential equation

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON: Enhancing the programming Skill

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: BAS   **Board: Mathematics**   **Semester: V**

Course Code/ Name: 222MT1A5SP R Programming

S.No.	Existing	Changes
1	Create and modify R data sets	
2	~~Write their own R functions and use available package in R~~	Create Bar charts, Pie charts, Box plots and Scatterplots
3	Perform and interpret Correlation Analysis	
4	Perform and interpret Simple and multiple Linear Regression	
5	Perform and interpret one and two sample z-tests	
6	Perform and interpret two sample population proportions tests	
7	Perform and interpret two sample population Standard deviation tests	
8	Perform and interpret one and two sample t – tests	
9	Perform and interpret Chi - Square test for 2x2 tables	
10	Perform and interpret Paired t and U –test	
11	Perform and interpret Chi - Square test for Goodness of Fit	
12	~~Perform and interpret sign test~~	Create time series objects and plot multiple time series in one chart
13		Write R code to the function by using if-else command. $$f(x) = x \ if \ x < \frac{1}{2}$$ $$= (1-x) \ if \frac{1}{2} < x < 1$$ $$= 0 \ otherwise$$
14		Write a R function to find sample covariance
15		Write R code for paired t-test. Also interpret the results as obtained in R.

PERCENTAGE OF SYLLABUS REVISED: 25%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty: BAS   **Board: Mathematics**   **Semester: V**

Course Code/ Name: 222MT1A5DA   FUZZY SETS AND FUZZY LOGIC

Unit	Content
I	**Fuzzy Sets and Operations on Fuzzy sets:** Properties of α–cuts – Representation theorem - Extension Principle for fuzzy sets - Standard fuzzy operations – Union- intersection - complement - combinations of operations - aggregation operations.
II	**Fuzzy Relations:** Crisp and Fuzzy Relations - projections-binary fuzzy relations- binary relations on a single set-Fuzzy equivalence relations-compatibility relations -ordering relations -fuzzy morphisms
III	**Possibility Theory:** Fuzzy Measures - Evidence Theory - Possibility Theory - Fuzzy Sets and Possibility Theory.
IV	**Fuzzy Systems:** Fuzzy Controllers - Fuzzy Systems and Neural Networks - Fuzzy Automata - Fuzzy Dynamic Systems.
V	**Pattern Recognition & Fuzzy Decision Making:** Fuzzy Clustering - Fuzzy Pattern Recognition - Fuzzy Image Processing - Individual & Multiperson Decision Making - Multicriteria & Multistage Decision Making - Fuzzy Ranking Methods.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development	☐ Entrepreneurial Development
✓	Employability	☐ Innovations
☐	Intellectual Property Rights	☐ Gender Sensitization
☐	Social Awareness/ Environment	☐ Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: BAS **Board: Mathematics** **Semester: V**

Course Code/ Name: 222MT1A5DB   DISCRETE MATHEMATICS

Unit	Existing	Changes
I	**Relations and Digraphs** Product sets and partitions - relations and digraphs - paths in relations and digraphs - properties - equivalence relations - operations on relations.	Counting: The Basic of Counting - The Pigeonhole Principle - Permutations and Combinations - Discrete Probability - Probability Theory - generalized permutations and combinations.
II	Functions Functions - functions for Computer Science - permutation functions - growth of functions.	
III	**Order relations and Structures** Partially ordered sets - extremal elements of partially ordered sets - Lattices - Finite Boolean Algebras - functions on Boolean Algebras.	logic gates - Minimization of circuits.
IV	~~Semigroups and Groups~~ ~~Binary operations Revisited- semigroups - products and quotients of semigroups - Groups - products and quotients of groups - other Mathematical structures.~~	
V	**Languages and finite state machines** Languages - representations of special Grammars and Languages - Finite State Machines - Monoids, Machines and Languages - Machines and regular languages - Simplification of Machines.	

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

☑ Skill Development	☐ Entrepreneurial Development
☑ Employability	☐ Innovations
☐ Intellectual Property Rights	☐ Gender Sensitization
☐ Social Awareness/ Environment	☐ Constitutional Rights/ Human Values/ Ethics

Faculty: BAS   **Board: Mathematics**   **Semester: V**

Course Code/ Name: 222MT1A5DC   Mathematical Foundations in Cryptography

Unit	Content
I	Computer Security Concepts and Symmetric ciphers - A Definition of Computer Security-The Challenges of Computer Security -OSI Security Architecture - Security Attacks- model of security attacks- Cipher Techniques- Substitution Techniques- Transportation Techniques
II	Modular Arithmetic – Divisibility and the Division Algorithm-The Euclidean Algorithm-Modular Arithmetic-Groups
III	Rings and Finite field- Rings, Fields-Finite Fields of the Form GF(p) Polynomial Arithmetic- Finite Fields of the Form GF(2n)
IV	Public Key Cryptography RSA Algorithm- Diffie Hellman Key exchange - ElGamal Cryptosystem -Elliptic Curve Arithmetic -Elliptic Curve Cryptography -Pseudorandom Number Generation Based on an Asymmetric Cipher
V	Cryptographic Hash functions- Applications of Cryptographic Hash Functions -Two simple Hash functions- Requirements and Security - Hash Functions Based on Cipher Block Chaining -Secure Hash Algorithm (SHA)

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

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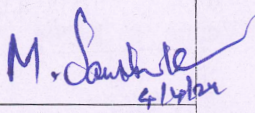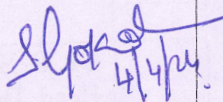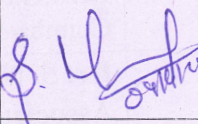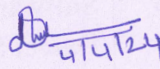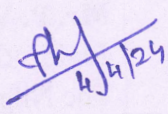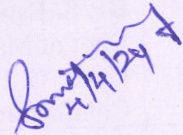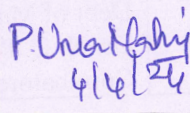Approved by Government of TamilNadu & Accredited by NAAC with A++ Grade(3rd Cycle -3.64CGPA)

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ATTENDANCE OF THE SEVENTEENTH BOARD OF STUDIES MEETING
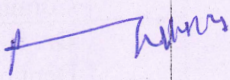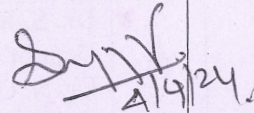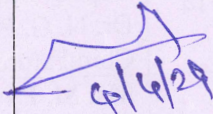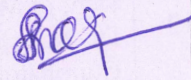
Faculty: Basic and Applied Sciences **Board: Mathematics**

Date : 04/04/2024
Time : 10.00 a.m.
Venue : K 206

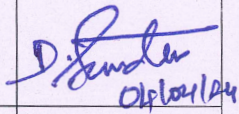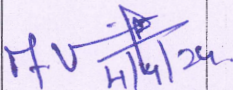| S.No	Name and address	Designation	Signature
1	**Dr. R. Sowrirajan** Head, Department of Mathematics Dr.N.G.P.Arts and Science College, Coimbatore	Chairman	
2	**Dr. S. Narayanamoorthy** Associate Professor Department of Mathematics Bharathiar University Coimbatore	VC Nominee	4/4/24
3	**Dr. A. Ramesh babu** Assistant Professor (Sr. Grade) Department of Mathematics Amritha Viswa Vidyapeetham Coimbatore	Subject expert	4/4/24
4	**Dr. N. Balamani** Assistant Professor and Head, School of Physical and Computational Sciences, Avinashilingam University	Subject expert	ABSENT
5	**Mr. L. Madhan Mohan** Team Leader Software Projects Daivel Software Solutions Coimbatore	Industry expert	ABSENT
6	**Mr. P. Vijayakumar** Junior Revenue Inspector Collectorate The Nilgiris	Meritorious Alumni	ABSENT
7	**Dr. S. Eswaramoorthi** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member	
8	**Dr. P. Umadevi** Dept of Mathematics, Dr. N. G. P. Arts and Science College Coimbatore	Internal Member	ABSENT

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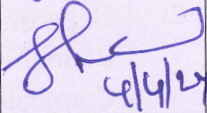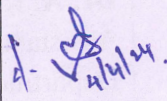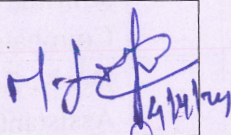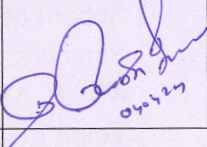
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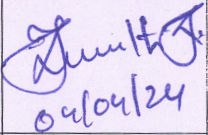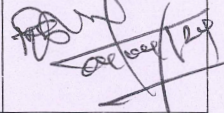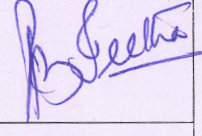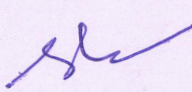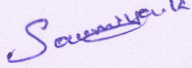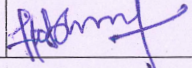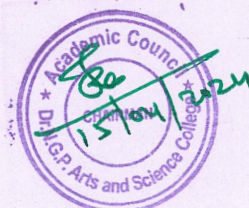|			
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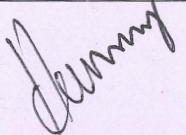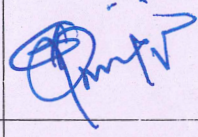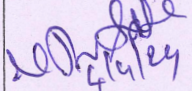
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29	**Dr. S. Kamalaveni** Dept of Commerce with IT Dr. N. G. P. Arts and Science College Coimbatore	Co-opted Member	
30	**Ms. Sowmiya K** I M.Sc. Mathematics	Student representative	
31	**Ms. Habhipriya V P** II B.Sc. Mathematics	Student representative	

Date: 04/04/2024

(Dr.R.Sowrirajan)
BoS Chairman/HoD
Department of Mathematics
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

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