

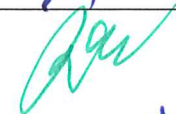
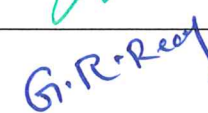
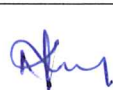
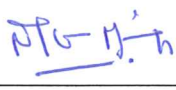
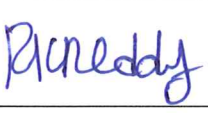
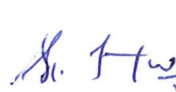
AMR/MATHS/BOS/2024-25/MOM/1

Date : 24-09-2024

DEPARTMENT OF MATHEMATICS

MINUTES OF MEETING - BOARD OF STUDIES (BOS)

The Meeting of the Board of Studies of Mathematics was held on 24th September 2024 at 11.15 AM through online (Zoom Meeting Platform). The following members were attended the online meeting.

S.No	Name of the Member	Designation/occupation	category	Signature
1	Dr. G Bhaskar Reddy	Head of the Department	Chairman	
2	Dr. V Ravindranath	Professor, Mathematics Department, UCEK, JNTUK, Kakinada	University Nominee	
3	Dr. G Rami Reddy	Professor, Mallareddy Engineering College, JNTUH	Subject experts outside parent university	
4	Dr. Koteswaramma N	Professor, Vasireddy Venkatadri Institute of Technology, Guntur		
5	Mr. V Bhaskar Reddy	Sr. Software Engineering, Capgemini	Industrialist	
6	Mr. P Nagur Meeraiah	Asst. Professor	Faculty Members	
7	Mr. R Rama Krishna Reddy	Asst. Professor		
8	Mr. Sk. Gousha Lajam	Asst. Professor		
9	Mr. R Shantha Kumari	Software Engineer Infinite Software Pvt. Ltd	Alumni Member	

The Meeting began with chairman, Board of studies extending a warm welcome to all the members of participating in the meeting.

The following points were discussed and approved during the meeting

- The following proposed AMR 24 Course Structure and the detailed syllabi of Mathematics related subjects of I-I, I-II were presented, discussed and approved .

1. For Group – A (CSE , EEE)

GROUP –A – COURSES (CSE ,EEE)					
I Year – I SEM					
S.No.	Title	Credits	S. No.	Title	Credits
1	Communicative English	2	6	Communicative English Lab	1
2	Engineering Chemistry/Chemistry/Fundamental Chemistry	3	7	Engineering Chemistry/ Chemistry/Fundamental Chemistry Lab	1
3	Linear Algebra & Calculus	3	8	Engineering Workshop	1.5
4	Basic Civil & Mechanical Engineering	3	9	Computer Programming Lab	1.5
5	Introduction to Programming	3	10	Health and wellness, Yoga and Sports	0.5
I SEM - TOTAL CREDITS					20.5
I Year – II SEM					
1	Engineering Physics	3	6	IT Workshop	1
2	Differential Equations & Vector Calculus	3	7	Engineering Physics Lab	1
3	Basic Electrical and Electronics Engineering	3	8	Electrical and Electronics Engineering Workshop	1.5
4	Engineering Graphics	3	9	Data Structures Lab / Electrical Circuits Lab	1.5
5	Data Structures / Electrical Circuit Analysis – I (Branch specific)	3	10	NSS/NCC/Scouts & Guides/Community Service	0.5
II SEM - TOTAL CREDIT					19.5

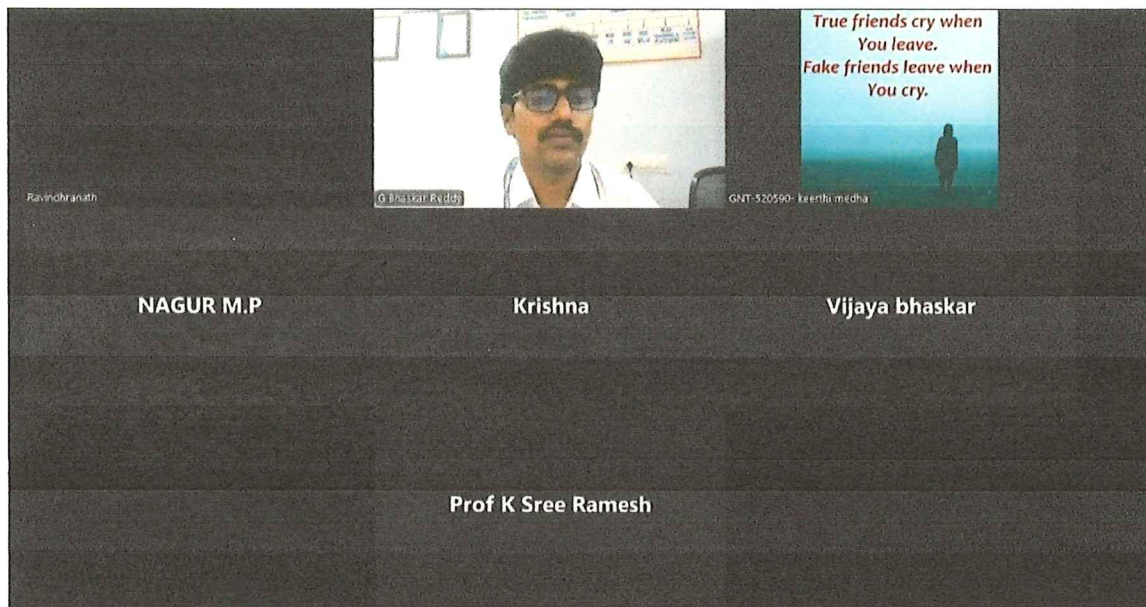
2. For Group –B (ECE, CE, AGE, Cyber Security)

GROUP –B – COURSES (Cyber Security ,ECE,MECH,CE, AGE)					
I Year – I SEM					
S. No.	Title	Credits	S. No.	Title	Credits
1	Engineering Physics	3	6	IT Workshop	1
2	Linear Algebra & Calculus	3	7	Engineering Physics Lab	1
3	Basic Electrical & Electronics Engineering	3	8	Electrical & Electronics Engineering Workshop	1.5
4	Engineering Graphics	3	9	Computer Programming Lab	1.5
5	Introduction to Programming	3	10	NSS/NCC/Scouts & Guides/Community Service	0.5
I SEM - TOTAL CREDITS					20.5
I Year – II SEM					
1	Communicative English	2	6	Communicative English Lab	1
2	Engineering Chemistry / Chemistry / Fundamental Chemistry	3	7	Engineering Chemistry / Chemistry /Fundamental Chemistry Lab	1
3	Differential Equations & Vector Calculus	3	8	Engineering Workshop	1.5
4	Basic Civil & Mechanical Engineering	3	9	Engineering Mechanics & Building Practices Lab Engineering Mechanics Lab / Network Analysis and Simulation Lab / Data structures Lab	1.5
5	Engineering Mechanics/ Network Analysis/ Data structures (Branch specific)	3	10	Health and wellness, Yoga and Sports	0.5
II SEM - TOTAL CREDITS					19.5

2. Detailed Syllabus of Linear Algebra and Calculus (T) I Year – I Sem (**Annexure -1**) , Differential Equations and Vector Calculus (T) (**Annexure -2**)

The following points were suggested for future possible implementations:

1. Suggested to prepare the course structure for all 4 years of B.Tech.
2. Suggested to make use of autonomy of changing the syllabus upto 20% by the next BoS.



Copy to:

1. Principal
2. IQAC


Chairman

BoS-Dept.ofMathematics

L	T	P	C
3	0	0	3

ANNEXURE – 1

LINEAR ALGEBRA & CALCULUS (Common to All Branches of Engineering)

Course Objectives:

To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

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

- CO1:** Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2:** Utilize mean value theorems to real life problems.
- CO3:** Familiarize with functions of several variables which is useful in optimization.
- CO4:** Learn important tools of calculus in higher dimensions.
- CO5:** Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.

UNIT I

Matrices

Rank of a matrix by echelon form, normal form. Cauchy–Binet formulae (without proof). Inverse of Non- singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Jacobi and Gauss Seidel Iteration Methods.

UNIT II

Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, Eigenvectors and their properties, Diagonalization of a matrix, Cayley-Hamilton Theorem (without proof), finding inverse and power of a matrix by Cayley-Hamilton Theorem, Quadratic forms and Nature of the Quadratic Forms, Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT III

Calculus

Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems and applications on the above theorems.

G.R. Reddy

P. K. Reddy

A. J. T.

S. G. M.

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UNIT IV

Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Directional derivative, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.

UNIT V

Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals).

Textbooks:

1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

Reference Books:

1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Micheael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)

G.R.Reddy

DR Reddy
Cay

K. T. T. S. S. S.

ANNEXURE – 2

DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

(Common to All Branches of Engineering)

L	T	P	C
3	0	0	3

Course Objectives:

- To enlighten the learners in the concept of differential equations and multivariable calculus.
- To furnish the learners with basic concepts and techniques at plus two level to lead them into advanced level by handling various real-world applications.

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

- CO1:** Solve the differential equations related to various engineering fields.
- CO2:** Identify solution methods for partial differential equations that model physical processes.
- CO3:** Interpret the physical meaning of different operators such as gradient, curl and divergence.
- CO4:** Estimate the work done against a field, circulation and flux using vector calculus.

UNIT I

Differential equations of first order and first degree

Linear differential equations – Bernoulli's equations- Exact equations and equations reducible to exact form. Applications: Newton's Law of cooling – Law of natural growth and decay- Electrical circuits.

UNIT II

Linear differential equations of higher order (Constant Coefficients)

Definitions, homogenous and non-homogenous, complimentary function, general solution, particular integral, Wronskian, Method of variation of parameters. Simultaneous linear equations, Applications to L-C-R Circuit problems and Simple Harmonic motion.

UNIT III

Partial Differential Equations

Introduction and formation of Partial Differential Equations by elimination of arbitrary constants and arbitrary functions, solutions of first order linear equations using Lagrange's method. Homogeneous Linear Partial differential equations with constant coefficients.

UNIT IV

Vector differentiation

Scalar and vector point functions, vector operator Del, Del applies to scalar point functions-Gradient, Directional derivative, del applied to vector point functions-Divergence and Curl, vector identities.

UNIT V

Vector integration

Line integral-circulation-work done, surface integral-flux, Green's theorem in the plane (without proof), Stoke's theorem (without proof), volume integral, Divergence theorem (without proof) and related problems.

Textbooks:

1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

Reference Books:

1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, Dennis G. Zill and Warren S. Wright, Jones and Bartlett, 2018.
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
5. Higher Engineering Mathematics, B. V. Ramana, , McGraw Hill Education, 2017

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G.R. Rao

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