K.S.R.M COLLEGE OF ENGINEERING

UGC-Autonomous
Kadapa,AP
www.ksrmce.ac.in

Dated: 25-06-2019

Lr./KSRMCE/Principal Office /2019-20/

Principal Office Orders

As per the decisions of the Academic Council meeting held on 15- 06 –2019 the undersigned members are been appointed as the Board of studies for MATHEMATICS Engineering for a period of 2 years.

S.No.	Name	Designation
1.	Prof. B. Rama Bhupal Reddy	Prof in Mathematics,KSRMCE
2	Prof. E. Kesava Reddy	Prof in Mathematics,JNTUA
3	Prof. A. Mallikarjuna Reddy	Prof in Mathematics,YVU,Kadapa
4	Prof. G. Sankar Sekhar Raju	Principal,JNTUACE,Pulivendula
5	Dr. D. Krishna Mohan Raju	Alumni
6	Sri. Y. Satheesh Kumar	Asst.Prof in Mathematics,KSRMCE
7	Dr.G.Radha	Asst.Prof in Mathematics,KSRMCE
8	Sri G.Sreedhar	Asst.Prof in Mathematics,KSRMCE
9	B.Veera Shankar	Asst.Prof in Mathematics,KSRMCE
10	Dr.V.Ramachandra Reddy	Asst.Prof in Mathematics,KSRMCE
11	Dr. Y. Bhavani Kumar	Industry Expert

The orders will come in to force for with immediate effect.

V. S. S. Murty

Principal

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KADAPA - 516 003. (A.P.)

Cc to:

The Management/ Director for information
The HoD of H&S for necessary actions
The Members for Information
The Website Committee for upload

BOARD OF STUDIES MEETING – 2020-21

K.S.R.M COLLEGE OF ENGINEERING

AUTONOMOUS

Minutes of the Meeting

Date	**10.01.2021**	**Day**	**Sunday**
Time	**11 AM**	**Venue**	**Virtual meeting:** https://meet.google.com/ioi-zmzv-dai
Dept./SS	**Humanities and Sciences (Mathematics)**	**Convener**	**Dr.B.Rama Bhupal Reddy**

MembersPresent:11 **Members Absent: 00**

S.No	Name	Designation	Signature	S.No	Name	Designation
1.	Prof. B.Rama Bhupal Reddy	Prof., Mathematics, KSRMCE	B.Ramu			
2.	Prof .G. Sankara Sekhar Raju	Principal, JNTUP				
3.	Prof . A. Mallikarjuna Reddy	Prof., of Mathematics, Dept. of Mathematics, SK University				
4.	Prof. E. Kesava Reddy	Professor of Mathematics, JNTUACE, Ananthapuramu.				
5.	Dr. Y. Bhavani kumar	Industry list				
6.	Dr. D.Krishna Mohan Raju	Alumni				
7.	Sri.Y. Satheesh Kumar Reddy	Assistant Prof., KSRMCE				
8.	Dr. G. Radha	Assistant Prof., KSRMCE	G.Radha			

9.	Sri. G. Sreedhar	Assistant Prof., KSRMCE	G. Sreedhar
10.	Sri. B. Veera Sankar	Assistant Prof., KSRMCE	B.V.
11.	Dr.V. Ramachandra Reddy	Assistant Prof., KSRMCE	Ramee

Prof. B.Rama Bhupal Reddy, welcomed all the members to the meeting and presented the agenda of the meeting.

There solutions are:

	Todo item	**Discussion**	**Resolution**	**Coordinator/in-charge**
1	To finalize the curriculum and syllabus for I sem& II sem B.Tech under R20 Regulations.	The Board of Chairman has presented the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus	The committee discussed and approved.	Prof. B.Rama Bhupal Reddy
2..	To finalize the open electives for VI, VII & VIII sem B.Tech under R18 regulations.	The Board of Chairman has presented the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus.	The committee has approved the open electives with few suggestions for VI, VII & VIII sem B.Tech.	Prof. B.Rama Bhupal Reddy
3.	To finalize and approve the syllabus for Certificate Courses.	The Board of Chairman has presented the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus	The committee appreciated the courses and approved the content for offering Certificate Courses to implement in 2020-21.	Prof. B.Rama Bhupal Reddy

The Head of the Department have proposed the Vote of thanks and concluded the meeting.

B. Ramu

Convener

V. S. S. Murty

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ESTD 1980

HOD H&S <hod.hs@ksrmce.ac.in>

Fwd: Approved syllabus in BOS meeting

1 message

Ramabhupal Reddy <reddybrb@gmail.com> Sat, Jan 16, 2021 at 3:42 PM
To: hod.hs@ksrmce.ac.in

Madam,
Herewith I am forwarding the mail approvals of Subject experts.

with regards,
Dr. B.Rama Bhupal Reddy

---------- Forwarded message ---------
From: **Dr Bhavani Kumar Yellapragada** <drybkumar@gmail.com>
Date: Sat, Jan 16, 2021 at 11:40 AM
Subject: Re: Approved syllabus in BOS meeting
To: Ramabhupal Reddy <reddybrb@gmail.com>
Cc: Dr Bhavani Kumar Yellapragada <drybkumar@gmail.com>

Dear Dr Rambhupal Reddy garu,
My bank account details are as follows

Bank Name is SBI, SVU BRANCH TIRUPATI.

BANK ACCOUNT NUMBER IS 10105231232.

BANK IFSC CODE IS SBIN0001197.

HOPE IT MEETS YOUR REQUIREMENTS.
WITH BEST REGARDS

On Tue, 12 Jan 2021, 15:27 Dr Bhavani Kumar Yellapragada, <drybkumar@gmail.com> wrote:

---------- Forwarded message ---------
From: **Dr Bhavani Kumar Yellapragada** <drybkumar@gmail.com>
Date: Mon, Jan 11, 2021 at 12:13 PM
Subject: Re: Approved syllabus in BOS meeting
To: Ramabhupal Reddy <reddybrb@gmail.com>
Cc: Dr Bhavani Kumar Yellapragada <drybkumar@gmail.com>

Dear Dr Ramabhupal Reddy garu,
Thank you for your mail with enclosed corrected/modified R18 and R20 syllabus.
I have gone through the enclosures. I have no objections and I approved the same . Pls go ahead.

If you kindly send minutes, if anything prepared, to give concurrence from the BOS member side. Then I will do needful.

with best regards

Y B Kumar

On Mon, Jan 11, 2021 at 11:34 AM Ramabhupal Reddy <reddybrb@gmail.com> wrote:
Sir,
Herewith I am attaching the Approved syllabus of Mathematics of R 20 and open electives (R18) in the BOS meeting held on 10-01-2021. Please find the attachment and acknowledge the same.

With regards
Dr. B.Rama Bhupal Reddy,

Course Title	Linear Algebra & Calculus (R20)				B. Tech. I Sem (Common to All Branches)		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
2021101	BS	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	--	3	40	60	100
Mid Exam Duration: 2Hours					End Exam Duration: 3Hours		

Course Objectives:

- This course will illuminate the students in the concepts of calculus and linear algebra.
- 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 : On successful completion of this course, the students will be able to

CO 1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications.
CO 2	Utilize mean value theorems to real life problems.
CO 3	Classify the functions of several variables which is useful in optimization techniques.
CO 4	Evaluate multiple integrals.
CO 5	Define Beta and Gamma functions.

Bridge Course: Limits, continuity, Types of matrices

UNIT I: Matrices (12 Hours)

Rank of a matrix by Echelon form, Normal form. Solving system of homogeneous and non-homogeneous linear equations. Eigen values and Eigen vectors for real matrices – Cayley-Hamilton theorem (without proof), finding inverse and power of a matrix by Cayley–Hamilton theorem. Diagonalisation by orthogonal transformation.

Learning Outcomes:

At the end of this unit, the student will be able to

- solve systems of linear equations, using technology to facilitate row reduction determine the rank, eigen values and eigen vectors (L3).
- identify special properties of a matrix and use this information to facilitate the calculation of matrix characteristics (L3)

UNIT II: Mean Value Theorems (08 Hours)

Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, Taylor's and Maclaurin's theorems with remainders (without proof), related problems.

Learning Outcomes:

At the end of this unit, the student will be able to

- translate the given function as series of Taylor's and Maclaurin's with remainders (L3)

- analyze the behaviour of functions by using mean value theorems (L3)

UNIT III: Multivariable Calculus (10 Hours)

Partial derivatives, total derivative, chain rule, change of variables, Jacobians, Maxima and minima of functions of two variables – Lagrange's method of undetermined multipliers.

Learning Outcomes:
At the end of this unit, the student will be able to

- find partial derivatives numerically and symbolically and use them to analyze and interpret the way a function varies. (L3)
- acquire the Knowledge maxima and minima of functions of several variable (L1)
- utilize Jacobian of a coordinate transformation to deal with the problems in change of variables (L3)

UNIT IV: Multiple Integrals (10 Hours)
Evaluation of double integrals in Cartesian coordinates and polar coordinates – Change of variables in double integrals – Change the order of integration in double integrals – Evaluation of triple integrals in Cartesian and polar coordinates – Change of variables between cartesian, cylindrical and spherical polar coordinates.

Learning Outcomes:

At the end of this unit, the student will be able to

- evaluate double integrals of functions of several variables in two dimensions using cartesian and polar coordinates (L5)
- evaluate multiple integrals in Cartesian, cylindrical and spherical geometries (L5)

UNIT V:Beta and Gamma functions (08 Hours)

Beta and Gamma functions and their properties,relation between Beta and Gamma functions, evaluation of definite integrals using Beta and Gamma functions.

Learning Outcomes:

At the end of this unit, the student will be able to

- understand beta and gamma functions and its relations (L2)
- conclude the use of special function in evaluating definite integrals (L4)

Text Books:

1. Higher Engineering Mathematics, Dr. B.S. Grewal, Khanna Publishers-43 edition 2014.
2. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley Publications, 9th edition-2013.
3. Introductory Linear Algebra with applications, Kolman, Bernard Hill, David R
4. Linear Algebra, Hoffman Kennethkunze Ray

Reference Books:

1. Higher Engineering Mathematics, B.V. Ramana, Mc. Graw Hill Education (India) Pvt. Ltd, New Delhi, 11th Edition, Reprint 2010.
2. Linear Algebra: A Modern Introduction, D Poole, 2nd Edition, Brooks/Cole, 2005.
3. A Text Book of Engineering Mathematics, N.P. Bali and Manish Goyal, Lakshmi Publications, Reprint 2008
4. Linear Algebra and its applications, Gilbert Strang.

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Course Title	Differential Equations and Vector Calculus (R20)				B. Tech. II Sem (Common to All Branches)		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
2021201	BS	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	--	3	40	60	100
Mid Exam Duration: 2Hours					End Exam Duration: 3Hours		

Course Objectives:

- To enlighten the learners in the concept of differential equations.
- 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 : On successful completion of this course, the students will be able to

CO 1	Classify second and higher order liner D.E's with constant coefficients.
CO 2	Solve partial differential equations.
CO 3	Analyze the applications of partial differential equations.
CO 4	Understand vector differentiation concepts.
CO 5	Apply vector integration concepts.

UNIT I: Linear differential equations of higher order (constant coefficients) (10 Hours)
Definitions, homogeneous and non- homogeneous, complimentary function, general solution, particular integral, Wronskian, Method of variation of parameters.

Learning Outcomes:
At the end of this unit, the student will be able to

- identify the essential characteristics of linear differential equations with constant coefficients (L3)
- solve the linear differential equations with constant coefficients by appropriate method (L3)
- classify and interpret the solutions of linear differential equations (L3)

UNIT II: Partial Differential Equations (10 Hours)

Introduction and formation of Partial Differential Equations by elimination of arbitrary constants and arbitrary functions, solutions of first order equations using Lagrange's method.

Learning Outcomes:
At the end of this unit, the student will be able to

- apply a range of techniques to find solutions of standard PDEs (L3)
- outline the basic properties of standard PDEs (L2)

UNIT III: Applications of Partial Differential Equations (10 Hours)

Classification of PDE, method of separation of variables for second order equations. Applications of Partial Differential Equations: One dimensional Wave equation.
Learning Outcomes:

At the end of this unit, the student will be able to

- classify the PDE (L3)
- learn the applications of PDEs (L2)

UNIT IV: Vector differentiation (08 Hours)

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

Learning Outcomes:

At the end of this unit, the student will be able to

- apply del to scalar and vector point functions (L3)
- illustrate the physical interpretation of Gradient, Divergence and Curl (L3)

UNIT V:Vector integration (08 Hours)

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 applications of these theorems.

Learning Outcomes:

At the end of this unit, the student will be able to

- find the work done in moving a particle along the path over a force field (L4)
- evaluate the rates of fluid flow along and across curves (L4)
- apply Green's, Stokes and Divergence theorem in evaluation of double and triple integrals (L3)

Text Books:

1. Higher Engineering Mathematics, Dr. B.S. Grewal, Khanna Publishers-43 edition 2014.
2. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley Publications, 9th edition- 2013
3. Calculus and Analytic geometry, G.B. Thomas and R.L. Finney, Pearson, 9th Edition, Reprint, 2002.
4. Advanced Engineering Mathematics, Greenberg Michael D, Cengage Publishers.

Reference Books:

1. Higher Engineering Mathematics, B.V. Ramana, Mc. Graw Hill Education (India) Pvt. Ltd, New Delhi, 11th Edition, Reprint 2010.
2. A Text Book of Engineering Mathematics, N.P. Bali and Manish Goyal, Lakshmi Publications, Reprint 2008.
3. Applied Calculus, Hegarty John C
4. Advanced Calculus, Widder V David, Pearson Publishers

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Course Title	ADVANCED NUMERICAL METHODS (R18)				OPEN ELECTIVE - I		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
180E2601		L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hours		

Course Objectives:

1. To solve algebraic, transcendental equations and system of linear equation by various methods.
2. To interpolate and approximate equal and unequal intervals by various formulae.
3. To discuss approximation of numerical differentiation and integration.
4. To solve Ordinary Differential Equations (ODEs) in initial value problems (IVPs) by various methods.
5. To solving ODEs & partial Differential Equations (PDEs) in boundary value problems (BVPs) by various methods.

Course Outcomes: On successful completion of this course, the students will be able to

CO 1	Understand the basic knowledge on solution of system of equations.
CO 2	Use interpolation and approximation to solve engineering problems.
CO 3	Estimate the numerical differentiation and integration.
CO 4	Apply initial value problems for solving first order differential equation.
CO 5	Discuss the boundary value problems in ordinary and partial differential equations.

UNIT I:

Solution of Equations: Solution of algebraic and transcendental equations- Fixed point iteration method, Newton-Raphson method.

Solution of linear system of equations: Gauss-Jordan method, Iterative methods of Gauss-Jacobi and Gauss-Seidel.

UNIT II: Interpolation and Approximation

Interpolation with equal intervals- Newton's forward and backward difference formulae. Interpolation with unequal intervals, Lagrange's interpolation, Newton's divided difference interpolation.

UNIT III: Numerical Differentiation and Integration

Numerical differentiation: Finding first and second order derivatives using Newton's formulae. Numerical integration: Newton - Cote's quadrature formulae, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule.

UNIT IV:Initial Value Problems for Ordinary Differential Equations

Single Step methods: Taylor's series method, Euler's method, Fourth order Runge - Kutta method for solving first order equations.

Multi step method: Milne's predictor - corrector method.

UNIT V: Boundary Value Problems in Ordinary and Partial Differential Equations

Finite difference methods for solving two-point linear boundary value problems - Finite difference techniques for the solution of two dimensional Laplace's equation.

Text books:

1. Grewal.B.S., and Grewal.J.S., "Numerical methods in Engineering and Science", Khanna Publishers, 9th Edition, New Delhi, 2007.
2. Kandasmay,P; Thilagavathy, K; Gunavathi, K, Numerical Methods, S.Chand And Company Ltd, 2007.
3. Applied Numerical Analysis, Pearson Publishers, 7th Edition, Curtis F. Gerald, Patrick O. Wheatley.
4. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley Publications, 10th edition Reprint 2021.

Reference Books:

1. Chapra.S.C., and Canale.R.P., "Numerical Methods for Engineers, Tata McGraw Hill, 5th Edition, New Delhi, 2007.
2. Sankara Rao. K., "Numerical methods for Scientists and Engineers", Prentice Hall of India Private, 3rd Edition, New Delhi. 2007.
3. Applied Numerical Methods with MATLAB for Engineers and Scientists, Special Indian Edition, Steven C Chapra.
4. Advanced Engineering Mathematics, Neil Opeter V.

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Course Title	LINEAR ALGEBRA (R18)				OPEN ELECTIVE - II		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
180E2606		L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hours		

Course Objectives:

1. Understanding basic concepts of linear algebra (systems of linear equations, matrix calculus, vectors and basic vector operations).
2. Learn about vector spaces and subspaces.
3. To become proficient in solving computational problems of linear algebra.
4. To understand the axiomatic structure of modern mathematics and learn to construct simple proof.
5. To gain basic knowledge of search engine operations and optimization path.

Course Outcomes: On successful completion of this course, the students will be able to

CO 1	Understand the concepts of vector space, subspace and linear independence.
CO 2	Apply principles of linear transformations in solving engineering problems.
CO 3	Discuss principles of matrix algebra to linear transformations in solving engineering problems.
CO 4	Demonstrate Understanding of inner products, associated norms.
CO 5	Determine Orthogonal bases in least square approximations which are used in engineering applications.

UNIT I: Vector Space

The n-space R^n and vector space, subspaces, bases, linear combination, span, linear independence, dimensions, finite dimensional, Row and Column spaces, Rank and nullity, Bases for subspace, invertibility .

UNIT II: Linear transformations

Basic properties of Linear transformations, invertible linear transformation, matrices of linear transformations.

UNIT III: Vector Space of Linear transformations

Vector space of linear transformations, change of bases, similarity.

UNIT IV: Inner product spaces

Inner product spaces, the dot product on R^n, inner product spaces.

UNIT V: Least Square Approximation

Orthogonal bases, orthogonal complements, Least Square Approximation.

Text books:

1. Linear Algebra and its applications by David C. Lay, Pearson Education.
2. Linear Algebra by Kenneth Hoffman/ Ray Kunze, Prentice-Hall of India private limited.
3. Linear Algebra and its applications, Gilbert Strang.
4. Linear Algebra: A Modern Introduction, D Poole, 2nd Edition, Brooks/Cole, 2005.

Reference Books:

1. Advanced Engineering Mathematics, Erwin Kreysing, Wiley publication.
2. An Introduction to Linear Algebra, V. Krishnamurthy, V.P. Mainra and J.L. Arora, East-west press pvt ltd.
3. Introductory Linear Algebra with Applications, Kolman Bernard Hill David R.
4. Elementary Linear Algebra, Perry Willam L.

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Course Title	NUMBER THEORY AND ITS APPLICATIONS (R18)				OPEN ELECTIVE - III		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
180E2611		L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hours		

Course Objectives:
This course enables the students to learn the concepts of number theory and its applications to information security.

Course Outcomes: On successful completion of this course, the students will be able to

CO 1	Understand basics of number theory concepts.
CO 2	Use Euclidean algorithm and its applications.
CO 3	Discribe Congruences, Chinese remainder theorem and its applications.
CO 4	Apply the concept of Congruences to various applications.
CO5	Classify divisibility test.

Unit-I-Integers, Greatest common divisors
The well-ordering property, Divisibility, Representation of integers, Computer operations with integers, Prime numbers, Greatest common divisors.

Unit-II - Prime Factorization
The Euclidean algorithm, the fundamental theorem of arithmetic, Factorization of integers and the Fermat numbers, Linear Diophantine equations.

Unit-III-Congruences
Introduction to congruences, Linear congruences, The Chinese remainder theorem, Systems of linear congruences.

Unit-IV Applications of Congruences-I
Divisibility tests, The perpetual calendar, Round-robin tournaments, Computer file storage and hashing functions. Wilson's theorem and Fermat's little theorem.

Unit-V Applications of Congruences-II
Pseudo primes- Euler's theorem- Euler's p hi-function- The sum and number of divisors- Perfect numbers and Mersenne primes.

Text books:

1. Kenneth H Rosen "Elementary number theory and its applications", AT & T Information system & Bell laboratories.
2. Neal Koblitz " A course in Number theory & Cryptography", Springer.
3. 250 Problems in Elementary Number Theory, W. Sierpinski Polish Academy of Sciences, American Elsevier Publishing Company, Inc. New York.
4. Essentials of Number Theory, Daniel A. Klain, Preliminary Edition, last updated March *22, 2020.*

Reference Books:

1. Herbert S. Zuckerman, "An Introdution to the Theory of Numbers", Hugh L. Montgomery, Ivan Niven, Wiley publishers.
2. Tom M Apostol "Introduction to Analytic Number theory", Springer.
3. Elementary Number Theory in Nine Chapters, James J. Tattersall.

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Course Title	OPERATIONS RESEARCH (R18)				OPEN ELECTIVE - IV		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
180E2616		L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hours		

Course Objectives:

The course is intended to identify and develop operations research models, understand the mathematical tools to solve optimization problems and develop a report that describes the model, the solving techniques and analyze the results.

Course Outcome: On successful completion of this course, the students will be able to

CO 1	**Understand** various concepts of Operations research.
CO 2	**Apply** linear programming to optimization techniques.
CO 3	**Discuss** Transportation problem.
CO 4	**Solve** Assignment problem.
CO 5	**Use** CPM and PERT in Project Management.

UNIT I: Introduction to Operations research

Introduction, Models of Operations research, Advantages of Operations research, Limitations of Operations research

UNIT II: Linear Programming

Linear programming, Assumptions of linear programming, Properties of linear programming solution, Development of LP models, Graphical method, Simplex method.

UNIT III: Transportation Problem

Transportation problem, Mathematical model for transportation problem, Types of transportation problem, Starting solutions: North- West corner rule, Least cost method, Vogel's approximation method.

UNIT IV: Assignment Problem

Assignment problem – Hungarian method.

UNIT V: Project Management: CPM and PERT

Network Techniques, Important terms, Construction of Network diagrams, CPM and PERT.

Text books:

1. Operations Research by N.K.Tiwari, Shishir K. Shandilya Prentice-Hall of India.
2. Operations Research by R. Pannerselvam, PHI Publications, 2nd Edition, 2012
3. Fundamentals of Operations Research, Prism publishers, Ackoff Russell LSasieni Maurice W.
4. Introduction to Operations Research, Cengage Publishers, Ecker Joseph Gkupferschmid Michael.

Reference Books:

1. Engineering Optimization by Singiresu S. Rao New Age International Publishers.
2. Operations Research by Kanthi Swarup, P.K.Gupta and Manmohan, S. Chand & Sons, 2004.
3. Introduction to Operations Research, TMH Publishers, Hiller Fredrick S, Lieberman Gerald J, Nag Bodhibr.
4. Introduction to Operations Research a Computer Oriented algorithmic, Gillett Billy E.

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Course Title	NUMERICAL METHODS FOR ENGINEERS (R20)	Certificate Course CSE, EEE & ECE Branches

Course Objectives:
This course would greatly benefit the students to improve their problem solving ability.

Course Outcomes: On successful completion of this course, the students will be able to	
CO 1	**Solve** the equations by different methods.
CO 2	**Solve** the system of equations by different methods.
CO 3	**Apply** interpolation and approximation techniques to solve engineering problems.
CO 4	**Estimate** the numerical differentiation and integration.
CO 5	**Apply** initial value problems for solving first order differential equations.

Module I: Solution of Equations:

Solution of algebraic and transcendental equations: Bisection method, Regula-falsi method, Newton-Raphson method.

Module II: Solution of System of Equations:

Solution of linear system of equations: Gauss-Jordan method, Iterative methods of Gauss-Jacobi and Gauss-Seidel.

Module III: Interpolation and Approximation:

Interpolation with equal intervals- Newton's forward and backward difference formulae. Interpolation with unequal intervals, Lagrange's interpolation.

Module IV: Numerical Differentiation and Integration:

Numerical differentiation: Finding first and second order derivatives using Newton's formulae. Numerical integration: Newton - Cote's quadrature formulae, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule.

Module V: Initial Value Problems for Ordinary Differential Equations:

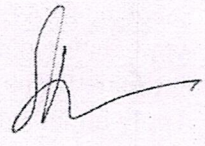
Single Step methods: Taylor's series method, Euler's method, Fourth order Runge - Kutta method for solving first order equations.

Text books:

1. Numerical Methods, S Arumugam A.Thangapandi Issac, A Somasundaram SCITECH publishers, Second edition Reprint 2013.
2. Higher Engineering Mathematics, Dr. B.S Grewal, Khanna Publishers-44 edition, 2017.

Reference Books:

1. Introductory Methods of Numerical Analysis, SS Sastry, 5th edition, PHI
2. Numerical methods for Engineers and Scientists, Sharma. J.N,
3. Numerical Methods, Kandasmay,P; Thilagavathy, K; Gunavathi, K, S.Chand and Company Ltd, 2007.



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Bridge Course for Engineering Mathematics

Syllabus

1. **Matrices:** **06 Hrs**

   1.1 Types of Matrices

   1.2 Operations on Matrices

   1.3 Determinants and Cofactors

   1.4 Inverse of a Square Matrix

2. **Differential Calculus:** **05 Hrs**

   2.1 Limits

   2.2 Continuity

   2.3 Differentiation

   2.4 Methods to evaluate differentiation

3. **Integral Calculus:** **05 Hrs**

   3.1 Integration

   3.2 Methods to evaluate Integration

   3.3 Definite Integration

HOD/H&S

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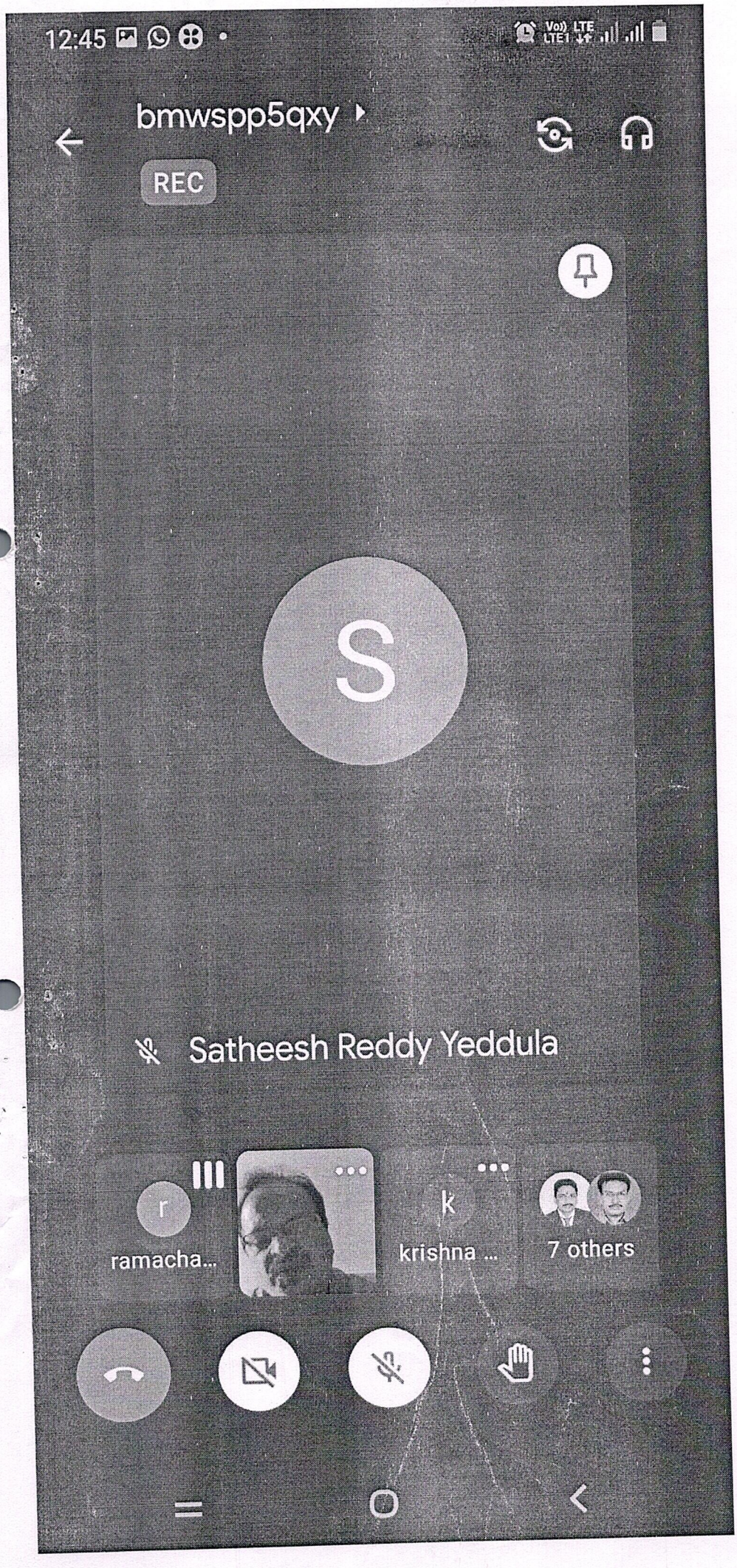
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K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India– 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

An ISO 14001:2004 & 9001: 2015 Certified Institution

24-05-2021

Department of Humanities & Sciences

Skill Development Programme Aptitude Timetable

I. B. Tech II Semester

Academic Year-2020-21

S. No	Branch & Section	Name of the faculty	Day & Timing
1.	CE-A	Sri. B. Veera Sankar	Wednesday – 4.00pm -5.00pm Thursday - 4.00pm -5.00pm
2.	CE-B	Sri. B. Veera Sankar	Monday – 4.00pm -5.00pm Tuesday - 4.00pm -5.00pm
3.	EEE	Sri. Y. Satheesh Kumar Reddy	Monday – 4.00pm -5.00pm Friday - 4.00pm -5.00pm
4.	ME	Dr. V. Ramachandra Reddy	Monday – 4.00pm -5.00pm Tuesday - 4.00pm -5.00pm
5.	ECE-A	Sri. G. Sreedhar	Wednesday – 5.00pm -6.00pm Thursday - 5.00pm -6.00pm
6.	ECE-B	Dr. B. Rama Bhupal Reddy	Monday – 4.00pm -5.00pm Tuesday- 4.00pm -5.00pm
7.	ECE-C	Dr. G. Radha	Monday– 4.00pm -5.00pm Tuesday- 4.00pm -5.00pm
8.	CSE-A	Sri. Y. Satheesh Kumar Reddy	Saturday - 4.00pm -5.00pm Wednesday - 5.00pm -6.00pm
9.	CSE-B	Dr. G. Radha	Wednesday – 4.00pm -5.00pm Thursday - 4.00pm -5.00pm
10	CSE-C	Dr. V. Ramachandra Reddy	Wednesday – 4.00pm -5.00pm Thursday - 4.00pm -5.00pm

❖ **After remedial classes, 5.00 pm to 6.00 pm class timings will be shifted to 4.00 – 5.00pm**

HOD/H&S

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B.Tech., II Semester (R20)

VERBAL ABILITY SYLLABUS

(Common to All Branches)

1. **Spotting Errors**
   - **Articles**
   - **Prepositions**
   - **Adjectives**
2. **Vocabulary**
   - **Antonyms**
   - **Synonyms**
   - **One word Substitutes**
   - **Idioms and Phrases**
3. **Transformation of Sentences**
   - **Change of Voice**
   - **Change of Speech**
4. **Sentence Formation**
5. **Reading Comprehension**
6. **Cloze Test**
7. **Paragraph Formation**

Text Books:

1. Verbal Ability and Reasoning, P.A Anand and Lalit Singh, Wiley (Higher Education), New Delhi, India
2. Campus Placement –A Comprehensive Guide , Ankur Malhothra , Mc Graw Hill Education (India) Pvt Ltd.
3. Unveiling the Secrets of Verbal Ability- Abhishek Verma and Shweta Bajaj, Pathak Publisher and Distributor, New Delhi.

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