BOARD OF STUDIES MEETING – 2022-23
K.S.R.M COLLEGE OF ENGINEERING
AUTONOMOUS

Minutes of the Meeting

Date	09.06.2023	Day	Friday
Time	04:30 PM	Venue	CE Block-108
Dept./SS	H&S(Mathematics)	Convener	Dr. G. Radha

Members Present : 09   **Members Absent : 00**

S.No	Name	Designation	Signature	S.No	Name	Designation
1.	Prof. R. Bhuvana Vijaya	Prof., JNTU,Ananthapur.	Online			
2.	Prof. A. Mallikarjuna Reddy	Prof., SKU, Ananthapur.	Online			
3.	Prof. V.Sugunamma	Prof., SVU, Tirupati.	online			
4.	Sri. Devireddy Nagendra Reddy	Sr R&D Manager.	online			
5.	Smt. Levaka Sudha Preethi	R&D Lead.	online			
6.	Dr.V.Ramachandra Reddy	Associate Prof., KSRMCE.	Ramet			
7.	Sri. Y. Satheesh Kumar Reddy	Assistant Prof., KSRMCE.	Y.Sa—/Phly			
8.	Sri. G. Sreedhar	Assistant Prof., KSRMCE.	G. Sreedhar			
9.	Sri. B.Veera Sankar	Assistant Prof., KSRMCE.	B.V.			
10.	Smt. K.Rajeswaramma	Assistant Prof., KSRMCE.	K.Raji			

Dr. G. Radha, Associate Professor, welcomed all the members to the meeting and presented the agenda of the meeting.

The resolutions are:

	To do item	Discussion	Resolution	Coordinator/in-charge
1.	1. Overview of R-20 regulations. 2. Prior discussion of upcoming regulations. 3. Any other item that may be brought to the notice of the chair.	The chairman presented the syllabus of R20 regulations and discussed with upcoming regulations.	1. The members are suggested some modifications in open electives (Operations Research & Advanced Numerical Methods). 2. The members after analyzing **R20** regulations suggested that for all the branches there must be **Four** papers in **upcoming regulations** because some important topics are missed in R20 regulations. 3. Out of these **Three** papers must be common for all branches up to III Semester and the fourth paper must be department specific which should be included in the IV Semester. 4. The experts advised that this information should bring to the notice and discussed in the common board compulsorily and to be implemented so the students will have thorough understanding of their core subjects also.	Dr. G. Radha

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

Convener

HOD H&S
Dr. I. SREEVANI M.Sc., Ph.D
Professor & HOD
Dept.of Humanities & sciences
K.S.R.M. College of Engineering

Course Title	ADVANCED NUMERICAL METHODS				OPEN ELECTIVE– I (R20UG)		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
200E602		L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	40	60	100
Mid Exam Duration: 90 Minutes					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.
CO5	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, Horner's Method.

Solution of linear system of equations: Gauss Crout's Method, Relaxation method.

UNIT II: Interpolation and Approximation

Finite Differences-Other Difference Operators- To find one or more missing terms. Divide Difference -Newton's divided difference interpolation, Inverse interpolation formula.

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.

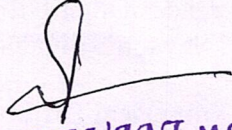**UNIT V:Boundary Value Problems in Ordinary and Partial Differential Equations**

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	OPERATIONS RESEARCH				OPEN ELECTIVE– IV (R20UG)		
Course Code	Category	Hours/Week		Credits	Maximum Marks		
200E617		L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	40	60	100
Mid Exam Duration: 90 Minutes					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.
CO5	**Distinguish** a game situation from a pure individual's decision problem and to explain concepts of players, strategies, payoffs, rationality.

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.
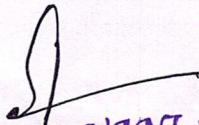
UNIT V:Game Theory

Introduction to Game Theory, Properties of a Game, Characteristics of Game Theory, Classification of Games, The Maximin-Minimax Principle, Two-Person and Zero-Sum Game, Games with Mixed Strategies, Method of finding out odds.

Text books:

1. Operations Research byN.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 RussellLSasieni 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	ADVANCED NUMERICAL METHODS (R18)				OPEN ELECTIVE - I		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
		L	T	P	C	Continuous Internal Assessment	End Exams	Total
180E2601		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
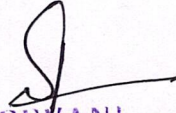
Finite difference methods for solving two-point linear boundary value problems - Finite difference techniques for the solution of two dimensional Laplace's equation.

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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.
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1. Chapra.S.C., and Canale.R.P., "Numerical Methods for Engineers, Tata McGraw Hill, 5th Edition, New Delhi, 2007.
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Course Title	OPERATIONS RESEARCH (R18)				OPEN ELECTIVE - IV		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
		L	T	P	C	Continuous Internal Assessment	End Exams	Total
180E2616		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.
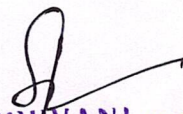
UNIT V: Project Management: CPM and PERT

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.
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BOS Meeting Link

1 message

Radha Gajjala <radhagajjala@ksrmce.ac.in>   Fri, Jun 9, 2023 at 12:22 PM
To: "Dr. R.Bhuvana Vijaya" <bhuvanarachamalla.maths@jntua.ac.in>, prof.malliavutala@gmail.com, Sugunamma V
<vsugunar@gmail.com>, Nagendra Reddy D <nagendra.reddi@gmail.com>, sudha preethi <sudhapreethi@gmail.com>, HOD
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<sreedhar.g@ksrmce.ac.in>, veerasankar@ksrmce.ac.in, ramachandra reddy <vrcreddy@ksrmce.ac.in>, raji@ksrmce.ac.in

Good Afternoon Madam / Sir
Herewith I am attaching Google Meet Link for the BOS meeting which will be held today(09.06.2023) at 4:10 pm.
So I request all of you to please join the meeting at stipulated time.

https://meet.google.com/afh-bgwd-nsm

Thanking You
Withregards
Dr.G.Radha,
Associate Professor,
Department of Humanities and Sciences,
K.S.R.M.College of Engineering (Autonomous),
Kadapa.