SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)
(Approved by AICTE, New Delhi, Affiliated to JNTUK, Kakinada)
Accredited by NAAC with 'A+' Grade
Recognised as Scientific and Industrial Research Organisation
SRKR MARG, CHINA AMIRAM, BHIMAVARAM – 534204, W.G.Dt., A.P., INDIA

Prof. M. Jagapathi Raju
M.Tech (IIT, KGP), Ph.D (A.U), FIE, MISTE
PRINCIPAL

Estd. 1980

Phones: 08816-223332 Ext. 201
Direct: 08816-222748
Mobile No's.: 9848773515, 9848381818
Email: principal@srkrec.ac.in
principalsrkrec@gmail.com
Website: www.srkrec.ac.in

PROCEEDINGS OF THE PRINCIPAL

Date: 12-09-2023

Ref. No: SRKREC/Committee/BoS/ME/5

Sub: Appointment of BoS members for Mechanical Engineering (ME) department-Reg.

The following members are nominated as Board of Studies members for the Department of Mechanical Engineering. This order will come into force with immediate effect until further orders.

S.No	Name	Position in the committee	Associated with
1	Dr. P.Rama Murthy Raju	Chairman	Professor& Head Dept. of Mechanical Engineering SRKR Engineering College
2	Dr. M.Kumara Swamy	JNTUK Nominee	Associate Professor of Mechanical Engg, University College of Engineering Kakinada (UCEK), JNTU Kakinada
3	Prof. G. Ravi Kiran Sastry	Subject Expert from outside the Parent University	Professor Dept. of Mechanical Engineering National Institute of Technology Andhra Pradesh Tadepalligudem, Andhra Pradesh
4	Prof.K.Venkata Subbaiah	Subject Expert from outside the Parent University	Professor & Head Dept. of Mechanical Engineering College of Engineering (A), Andhra University Visakhapatnam.
5	Dr. P.V.S.Ganesh Kumar	Representative from Research Laboratory	Associate Director Naval Science & Technological Laboratory (NSTL) Visakhapatnam, Andhra Pradesh.
6	Sri. G. Bhanu Prasad	Representative from Industry	Founder & GM Operations, PMI Toolings Pvt. Ltd., Hyderabad
7	Sri. Sateesh L V R K Ponnada	Postgraduate meritorious Alumni	Senior Simulation Engineer, CADFEM India, Somajiguda, Hyderabad.
8	Dr. K.Brahma Raju	Faculty Representatives	Professor, Dept. of Mechanical Engineering, SRKREC
9	Dr.V.Durga Prasada Rao		Professor, Dept. of Mechanical Engineering, SRKREC
10	Dr. K.Suresh Babu		Professor, Dept. of Mechanical Engineering, SRKREC
11	Dr. K.V.M.Krishnam Raju		Professor, Dept. of Mechanical Engineering, SRKREC
12	Dr.V.K.Viswanadha Raju		Professor, Dept. of Mechanical Engineering, SRKREC
13	Dr. S.Rajesh		Professor, Dept. of Mechanical Engineering, SRKREC

S.R.K.R. ENGINEERING COLLEGE Pin: 534 204 BHIMAVARAM

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W.G.Dist., Andhra Pradesh

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(Autonomous)

14	Dr. K.Sita Rama Raju		Professor, Dept. of Mechanical Engineering, SRKREC
15	Dr. A.Bala Krishna		Professor, Dept. of Mechanical Engineering, SRKREC
16	Sri Ch.Srinivas		Associate Professor Dept. of Mechanical Engineering, SRKREC
17	Sri Ch. GopalaRaju		Associate Professor, Dept. of Mechanical Engineering, SRKREC
18	Sri P.V.R.S. Padma Raju		Associate Professor, Dept. of Mechanical Engineering, SRKREC
19	Sri G. Chatapathi Raju		Associate Professor, Dept. of Mechanical Engineering, SRKREC
20	Dr. Ch. Rama Bhadri Raju		Associate Professor, Dept. of Mechanical Engineering, SRKREC
21	Gedi Jagadeesh (22B91D0402)	9182052211	M.Tech. Student saijagadeeshjd110@gmail.com
22	Kattunga Jagadeesh Sai (20B91A0390)	9508707695	4/4 B.Tech Student jagadeeshsai9177@gmail.
23	Dangeti Sri Sai Supreeth (21B91A0338)	7780753859 Student Representatives	3/4 B.Tech Student supreeth112899@gmai
24	Pakala Saiteja (22B95A0333)	6281446784	3/4 B.Tech Student pakalasaitejas03@gmail
25	Androthu Raju (22B91A0302)	9121683446	2/4 B.Tech Student androthuraju@gmail.com

PRINCIPAL

c.c.to:
1. Principal's table
2.HOD Mech. Engg. . 3. All the above Members 4. Dean Academics Office.

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DEPARTMENT OF MECHANICAL ENGINEERING

Dt: 08-07-2024

CIRCULAR

This is to inform you that the Department of Mechanical Engineering has scheduled a 13thBoard of Studies meeting on 10-07-2024 at 10:00 AM in blended mode (both offline and using zoom virtual meeting platform). In this connection all the Board of Studies members are requested to attend the same.

Agenda:

1. To discuss and finalize the course structure and syllabus for 2/4 B.Tech. Mechanical Engineering program under R23 Regulations.
2. To discuss and finalize the optimization techniques syllabus for 2/4 B.Tech. AIML & IT program under R23 Regulations.
3. Any other item with the permission of the chair.

Head of the Department
Professor & Head
Dept. of Mechanical Engg.
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Mechanical Engineering Department <hodmechsrkr@gmail.com

ntimation of Department of Mechanical Engineering Board of Studies Meeting on 0.07.2024 at 2:00 PM-Online Mode @ S.R.K.R. Engineering College (A)-Reg.

message

lechanical Department <hodmechsrkr@gmail.com>
o: bhanuprasadgali@gmail.com

Mon, Jul 8, 2024 at 2:08 PI

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College (A) as subject expert other than parent university.

You are requested to attend the online meeting scheduled on 10-07-2024 (Wednesday) at 2.00 PM. by using the following online ZOOM meeting link.

https://us02web.zoom.us/j/89597000554?pwd=izaKmW5OupH6sHCvQ620vlaqReKb3b.1

Kindly accept our invitation and make it convenient to attend the Board of Studies meeting.

Thanking you,

Yours Sincerely,
Dr. P. RAMA MURTY RAJU
Professor & Head,
Department of Mechanical Engineering
S.R.K.R. Engineering College (A)
China Amiram, Bhimavaram,
West Godavari District
Andhra Pradesh-534204
Mobile No. : 9440519992

Professor & Head
Dept. of Mechanical Engg.
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Mechanical Engineering Department <hodmechsrkr@gmail.com

ntimation of Department of Mechanical Engineering Board of Studies Meeting on 0.07.2024 at 2:00 PM-Online Mode @ S.R.K.R. Engineering College (A)-Reg.

message

lechanical Department <hodmechsrkr@gmail.com> Mon, Jul 8, 2024 at 2:06 PI
o: "Prof. GRK" <grksastry@nitandhra.ac.in>

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College (A) as subject expert other than parent university.

You are requested to attend the online meeting scheduled on 10-07-2024 (Wednesday) at 2.00 PM. by using the following online ZOOM meeting link.

https://us02web.zoom.us/j/89597000554?pwd=izaKmW5OupH6sHCvQ620vlaqReKb3b.1

Kindly accept our invitation and make it convenient to attend the Board of Studies meeting.

Thanking you,

Yours Sincerely,

Dr. P. RAMA MURTY RAJU
Professor & Head,
Department of Mechanical Engineering
S.R.K.R. Engineering College (A)
China Amiram, Bhimavaram,
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Mechanical Engineering Department <hodmechsrkr@gmail.com

ntimation of Department of Mechanical Engineering Board of Studies Meeting on 0.07.2024 at 2:00 PM-Online Mode @ S.R.K.R. Engineering College (A)-Reg.

message

lechanical Department <hodmechsrkr@gmail.com> Mon, Jul 8, 2024 at 2:04 PI
o: "Prof.K.Venkatasubbaiah" <drkvsau@yahoo.co.in>

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College (A) as subject expert other than parent university.

You are requested to attend the online meeting scheduled on 10-07-2024 (Wednesday) at 2.00 PM. by using the following online ZOOM meeting link.

https://us02web.zoom.us/j/89597000554?pwd=izaKmW5OupH6sHCvQ620vlaqReKb3b.1

Kindly accept our invitation and make it convenient to attend the Board of Studies meeting.

Thanking you,

Yours Sincerely,

Dr. P. RAMA MURTY RAJU
Professor & Head,
Department of Mechanical Engineering
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Mechanical Engineering Department <hodmechsrkr@gmail.com

ntimation of Department of Mechanical Engineering Board of Studies Meeting on 0.07.2024 at 2:00 PM-Online Mode @ S.R.K.R. Engineering College (A)-Reg.

message

lechanical Department <hodmechsrkr@gmail.com> Mon, Jul 8, 2024 at 2:01 PI
o: Kumaraswamy Mokenapalli <kmpalli12@gmail.com>

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College (A) as a University Nominee.

You are requested to attend the online meeting scheduled on 10-07-2024 (Wednesday) at 2.00 PM. by using the following online ZOOM meeting link.

https://us02web.zoom.us/j/89597000554?pwd=izaKmW5OupH6sHCvQ620vlaqReKb3b.1

Kindly accept our invitation and make it convenient to attend the Board of Studies meeting.

Thanking you,

Yours Sincerely,
Dr. P. RAMA MURTY RAJU
Professor & Head,
Department of Mechanical Engineering
S.R.K.R. Engineering College (A)
China Amiram, Bhimavaram,
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P. Rama Murty Raju
Professor & Head
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MINUTES OF THE MEETING

13th Board of studies meeting in blended mode (both offline & virtual using Zoom platforms) was held on 10-04-2024 (~~Saturday~~ Wednesday) in CAD Lab-2 of Mechanical Engineering Department at 10:00 AM in order to discuss the following items:

1. Discussion and finalization of course structure and syllabus of 2/4 B.Tech Mechanical Engineering program under R23 regulations.

2. Discussion and finalization of optimization Techniques syllabus of 2/4 B.Tech AIML & IT program under R23 regulations.

MINUTES OF THE MEETING RESOLUTIONS

1. Feedbacks collected from various ~~st~~ stake holders like students, alumni, employers and parents has been discussed while designing the course structure and syllabus for 2/4 B.Tech (R23) Mechanical Engineering program.

2. One of the BOS members Dr. G. Ravi-Kiran Sastry, professor, Dept. of Mechanical Engineering, NIT AP, Tadepalligudem has suggested to change the ~~chem~~ order of the syllabus ~~units~~ like properties of pure substance (UNIT-1), Vapour power cycles (UNIT-2), Steam Nozzles (UNIT-3), Steam Turbines (UNIT-4) & Steam Condensers (UNIT-5) in Thermal Engineering course

3. Finalized the course structure and syllabus for 2/4 B.Tech (R23) Mechanical Engineering program under R23 regulations.

4. Finalized the optimization techniques syllabus for 2/4 B.Tech AIML & IT program under R23 regulations.

MEMBERS PRESENT

S.No	Name of the Member	Designation	Signature
1.	Dr. M. Kumar Swamy	professor JNTUK, UCE, Kakinada	
2.	Prof. K. Venkata Subbiah	professor, AUCE, Vizag.	Attended online.
3.	Prof. G.R.K. Sastry	professor, NITAP.	
4.	Dr. S. RAJESH	professor & Dean Exec	
5.	Dr. P. RAMAMURTY RAJU	Professor & HOD	
6.	Dr. V. DURGA PRASAD	Professor	
7.	Dr. A. BALAKRISHNA	Professor	
8.	G. Chakrapathi Rani	Associate Prof.	
9.	CH. Gopala Raju	Assoc Prof.	
10	C. SRINIVAS	Associate professor	
11	K. Suresh Babu	Professor	
12	P. Ravi Varma	Asst. Prof	
13.	Dr. Ch. Rama Bhadri Raju	Associate Prof	
14.	M. Anilkumar	Assistant Professor	
15	K Durga Hemanth Kumar	Assistant Professor	
16.	M. Rajesh	Assitant Professor	
17	Dr. I. Rama Pavan Kumar Varma	Assistant professor	
18	U. Rajendra Prasad Varma	Assistant Professor	
19	S. Madhavarao	Assistant professor	S. Madhav.
20	P.V. Ch. R.K. Santosh	Assistant Professor	
21	V. Praveen	Assistant Professor	
22	V. Manikanth	Asst. prof	
23	Dr. G.S.V. Seshu Kumar	Asst. Prof	
24.	SK. S. Ali	Asst. prof	
25	M. Indra Reddy	Asst professor	

RESOLUTIONS FOR THE MEETING DATED 10-07-2024

1. Feedbacks collected from various ~~stk~~ stake holders like students, alumni, employers and parents has been discussed while designing the course structure and syllabus for 2/4 B.Tech (R23) Mechanical Engineering programs.

S.R.K.R ENGINEERING COLLEGE

DEPARTMENT OF MECHANICAL ENGINEERING
CHINA AMIRAM: BHIMAVARAM – 534204

Feedback Analysis 2023-24

A feedback on the curriculum is obtained from students, faculty, parents and alumni. After study of the feedback form various stake holders some important points of the feedback are identified. Total 185 feedback forms have been obtained from various stake holders.

The following are the key points obtained from the study of the feedback:

1. All round development of the interpersonal and communicational skills to be encouraged
2. Students should be trained to explore and understand emerging technologies
3. Students need a course/Lab on MATLAB
4. Students should have more hands-on experience to connect theory with practice.
5. According to the competence outside we can increase the depth of the syllabus. It may overload the students but increases the standards.
6. Need more focus on quality than quantity.
7. Internships are to be included in syllabus.
8. Can add python language in first year
9. Introduce software courses in every semester
10. Include industrial tours in the curriculum.
11. Put more programming courses as elective subjects.
12. Include new technologies in the syllabus
13. Library stock should be increased.

PROFESSOR
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Dept. of Mechanical Engg.
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CHINA AMIRAM (P.O.)
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2. One of the BOS members Dr. G. Ravi Kiran Sastry, professor, Dept. of Mechanical Engineering, NIT A.P, Tadepalligudem has suggested to change the ~~chem~~ order of the syllabus ~~units~~ like properties of pure substance (UNIT-1), vapour power cycles (UNIT-2), Steam Nozzles (UNIT-3), Steam Turbines (UNIT-4) & Steam Condensers (UNIT-5) in Thermal Engineering course

Course Code	Category	L	T	P	C	C.I.E.	S.E.E.	Exam
B23ME2202	PC	3	–	–	3	30	70	3 Hrs.

THERMAL ENGINEERING

(For ME)

Course Objectives: The objectives of the course are to

1.	To expose the basic principles of steam properties and industrial application of steam
2.	To analyze the energy transfers and transformations in these components including individual performance evaluation
3.	To study the thermodynamic analysis of Rankine cycle and its modifications.

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

S.No	Outcome	Knowledge Level
1.	**Apply** the phenomena of pure substances in calculating the properties of steam in different scenarios.	K3
2.	Compute the performance parameters of ideal and modified Rankine cycles.	K3
3.	**Solve** the problems of steam nozzles in power plants to estimate their performance.	K3
4	**Outline** the functionality of steam turbines in power plants to estimate their performance.	K3
5.	**Determine** various performance parameters of steam Condensers.	K3

SYLLABUS

UNIT-I (10Hrs)	**Properties of Pure Substance**: Definition of pure substance, phase change of a pure substance, p-T (Pressure-Temperature) diagram for a pure substance, p-V-T(Pressure-Volume-Temperature) surface, phase change terminology and definitions, Formation of steam, determining various properties like Enthalpy, Entropy, Internal energy during steam formation, Enthalpy-Entropy (h-s) charts (Mollier's diagram), Determination of dryness fraction using Tank or bucket calorimeter, throttling calorimeter, separating and throttling calorimeter.
UNIT-II (10Hrs)	**Vapor Power Cycles:** Vapor power cycle- Rankine cycle- Reheat cycle (single Reheater)- Regenerative cycle- Thermodynamic variables effecting efficiency and output of Rankine and Regenerative cycles (Single open feed water heater)- Improvements of efficiency, Binary vapor power cycle
UNIT-III (10Hrs)	**Steam Nozzles:** Type of nozzles- Flow through nozzles- Condition for maximum discharge- Nozzle efficiency- Super saturated flow in nozzles- - Steam injectors
UNIT-IV (10Hrs)	**Steam Turbines**: Classification of steam turbines- Impulse turbine and reaction turbine- Compounding in turbines- Velocity diagrams in impulse and reaction turbines- Degree of reaction- Condition for maximum efficiency of reaction turbines
UNIT-V (10Hrs)	**Steam Condensers:** Classification of condenser- Jet, Evaporative and surface condensers- Vacuum and its measurement- Vacuum efficiency- Sources of air leakage in condensers- Condenser efficiency- Daltons law of partial pressures- Determination of mass of cooling water.

Text Books:

1.	Thermodynamics and Heat Engines by R.Yadav, Volume -II , Central Publishing House.
2.	Heat Engineering by Vasandani and D.S Kumar,Metropolitan Book Company, New Delhi.
3.	Engineering Thermodynamics, PK Nag 6th Edition , McGraw Hill.
4.	Thermal Engineering, by R. K. Rajput, Lakshmi Publications.
5.	A Treatise on Heat Engineering by Vasandhani and Kumar

Reference Books:

1.	Thermal Science and Engineering by D.S. Kumar, S.K. Kataria and Sons.
2.	Thermal Engineering by PL Ballaney, Khanna Publishers.
3.	Thermal Engineering by M.L. Marthur & Mehta, Jain bros. Publishers.

e-Resources

1.	https://nptel.ac.in/courses/112/103/112103275/

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3. Finalized the course structure and syllabus for 2/4 B.Tech (R23) Mechanical Engineering program under R23 regulations.

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Accredited by NAAC with 'A' Grade

Regulation: R23	II - IV - B.Tech. I - Semester							
MECHANICAL ENGINEERING								
COURSE STRUCTURE (With effect from 2023-24 admitted Batch onwards)								
Course Code	Course Name	Category	L	T	P	Cr	C.I.E.	S.E.E.	Total Marks
B23BS2103	Numerical Methods & Transform Techniques	BS	3	0	0	3	30	70	100
B23HS2101	Universal Human Values -II Understanding Harmony and Ethical Human Conduct	HS	2	1	0	3	30	70	100
B23ME2101	Thermodynamics	PC	3	0	0	3	30	70	100
B23ME2102	Mechanics of Solids	PC	3	0	0	3	30	70	100
B23ME2103	Material Science and Metallurgy	PC	3	0	0	3	30	70	100
B23ME2104	Mechanics of Solids and Materials Science Lab	PC	0	0	3	1.5	30	70	100
B23ME2105	Computer-aided Machine Drawing	PC	0	0	3	1.5	30	70	100
B23ME2106	Python programming Lab	SEC	0	1	2	2	30	70	100
B23MC2101	English Proficiency	MC	2	0	0	-	30	-	30
		TOTAL	16	2	8	20	270	560	830

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE
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Regulation: R23	II - IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING								
COURSE STRUCTURE (With effect from 2023-24 admitted Batch onwards)								
Course Code	Course Name	Category	L	T	P	Cr	C.I.E.	S.E.E.	Total Marks
B23HS2201	Managerial Economics and Financial Analysis	HS	2	0	0	2	30	70	100
B23BS2205	Complex Variables and Statistical Methods	ES	3	0	0	3	30	70	100
B23ME2201	Manufacturing processes	PC	3	0	0	3	30	70	100
B23ME2202	Thermal Engineering	PC	3	0	0	3	30	70	100
B23ME2203	Theory of Machines	PC	3	0	0	3	30	70	100
B23ME2204	Thermal Engineering Lab	PC	0	0	3	1.5	30	70	100
B23ME2205	Manufacturing processes Lab	PC	0	0	3	1.5	30	70	100
B23ME2206	Advanced 3D and Surface Modelling	SEC	0	1	2	2	30	70	100
B23ME2207	Design Thinking & Innovation	ES	1	0	2	2	30	70	100
B23MC2202	Environmental Science	MC	2	0	0	-	30	-	30
		TOTAL	17	1	10	21	300	630	930

4. finalized the optimization techniques syllabus for 2/4 B.Tech AIML & IT program under R23 regulations.

Course Code	Category	L	T	P	C	C.I.E.	S.E.E.	Exam
B23HS2203	HS	2	–	–	2	30	70	3 Hrs.

OPTIMIZATION TECHNIQUES
(Common to AIML & IT)

Course Objectives:

1	To define an objective function and constraint functions in terms of design variables, and then state the optimization problem.
2	To state single variable and multi variable optimization problems, without and with constraints and solve by classical methods.
3	To apply linear programming technique to an optimization problem, define slack and surplus variables, by using Simplex method.
4	To apply transportation technique to real life problems of transportation.
5	To solve Integer programming problems that encounter in real life practical cases.
6	To design optimum schedules for projects.

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

S.No	Outcome	Knowledge Level
1	**Apply** classical optimization techniques to minimize or maximize single and multi-variable optimization problems without or with constraints and arrive at an optimal solution.	K3
2	**Apply** suitable optimization algorithms to formulate and solve linear programming problems.	K3
3	**Apply** specialized methods to determine optimal schedules for transportation problems.	K3
4	Solve Integer programming problems by using suitable optimization algorithms.	K3
5	Apply analytical methods to project networks to determine optimal time schedules.	K3

SYLLABUS

UNIT-I (10Hrs)	**Classical Optimization Techniques:** Statement of an Optimization problem, classification of Optimization problems, Single variable optimization without and with constraints, multi variable optimization without constraints, multivariable optimization with equality constraints - solution by the method of Lagrange multipliers, multivariable optimization with inequality constraints – Kuhn Tucker conditions.
UNIT-II (10 Hrs)	**Linear Programming:** Definition and formulation of LPP, Graphical solution, Standard form of a linear programming problem, Simplex method and Algorithm, Artificial Variable Technique - Big M method.
UNIT-III (10 Hrs)	**Transportation Problem:** Mathematical Formulation, Tabular Representation, Balanced and unbalanced transportation Problems - Initial Solution by north – west corner rule, least cost method and Vogel's approximation method, testing for optimality by MODI method.
UNIT-IV (10 Hrs)	**Integer Programming:** Introduction to Integer programming, methods of integer programming, Gomory's cutting plane method - All Integer Programming Problems, Branch and Bound method for all integer programming problems.
UNIT-V (10 Hrs)	**Network Analysis:** Introduction, Project Scheduling by CPM and PERT, Network diagram representation, rules for drawing network diagram, Labelling by Fulkerson's rule, Network calculations - EST, EFT, LST, LFT, Float/Slack and critical path, CPM and PERT calculations.

Textbooks:

1.	"Engineering optimization: Theory and practice", S. S.Rao, New Age International (P) Limited, 3rd edition, 1998.
2.	Operations Research, Dr. S. D. Sharma, Kedarnath, Ramnath & Co

Reference Books:

1.	"Optimization Methods in Operations Research and systems Analysis", by K.V. Mital and C. Mohan, New Age International (P) Limited, Publishers, 3rd edition, 1996.
2.	"Introductory Operations Research", H.S. Kasene & K.D. Kumar, Springer (India), Pvt.Ltd.

e-Resources

1.	https://nptel.ac.in/courses/112/106/112106134/
2.	https://nptel.ac.in/courses/110/106/110106062/

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