SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

(Approved by AICTE, New Delhi, Affiliated to JNTUK, Kakinada)
Accredited by NAAC with 'A+' Grade, Accredited by NBA (UG : Civil, CSE, ECE, EEE, IT & ME)
SRKR MARG, CHINA AMIRAM, BHIMAVARAM – 534204, W.G.Dt., A.P., INDIA

Prof. K.V.Murali Krishnam Raju
M.Tech., PGDCS, Ph.D.
PRINCIPAL

Estd. 1980

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

Ref. No: SRKREC/Committee/BoS/ME/4 Date: 04-06-2025

PROCEEDINGS OF THE PRINCIPAL

Subject: Board of Studies (BoS) for the Department of Mechanical Engineering (ME) - Nomination of Members - Reg.

The Board of Studies for the department of Mechanical Engineering (MEE) is constituted with the following members. This order will come into force with immediate effect until further proceedings.

S. No.	Name	Position in the Committee	Associated with
01	Dr. K. Suresh Babu	Chairman	Professor & Head, Dept. of Mechanical Engineering, SRKR Engineering College (A)
02	All Faculty members	Members	All Faculty members of each specialization of the department
03	Prof. K. Venkata Subbaiah	Expert from Other University	Senior Professor Dept. of Mechanical Engineering, College of Engineering (A), Andhra University, Visakhapatnam.
04	Dr. Sridhar Muddada	Expert from R&D Organization	Scientist E, Ocean Structures Group National Institute of Ocean Technology, Narayanapuram, Pallikaranai, Chennai 600100
05	Dr. A. Gopala Krishna	JNTUK Nominee	Professor, Dept. of Mechanical Engineering, University College of Engineering (UCEK), JNTUK, Kakinada
06	Sri. G. Bhanu Prasad	Industry Expert	Founder & GM Operations, PMI Toolings Pvt. Ltd., Hyderabad
07	Dr. Chiranjeevi Phanindra B	Alumni	Scientist/Engineer - SF, Division Head, Anthropometry Biomechanics and Human Performance Division, Human Space Flight Centre, ISRO, Bangalore - 560094

PRINCIPAL

S.R.K.R. ENGINEERING COLLEGE China Amiram BHIMAVARAM Pin: 534 204. (AUTONOMOUS)

PRINCIPAL
S.R.K.R. Engineering College(A)
China Amiram, Bhimavaram-534 204.
W.G.Dist., Andhra Pradesh

Copy to:
1. Principal's Office
2. HOD of ME
3. Members of the Committee
4. Master file

Fw: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

1 message

M Indra Reddy <indrareddy@srkrec.ac.in> Thu, 7 May 2026 at 9:07 pm
To: reddy.indra.m@gmail.com <reddy.indra.m@gmail.com>

Sent from Outlook for Android

From: Mechanical Head <mech@srkrec.ac.in>
Sent: Monday, May 4, 2026 8:02:47 AM
To: M Indra Reddy <indrareddy@srkrec.ac.in>
Subject: Fw: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

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From: Mechanical Head
Sent: Thursday, April 16, 2026 2:43 PM
To: chiran333@gmail.com <chiran333@gmail.com>; Chiranjeevi Phanindra <chiran@cosmoserv.space>
Subject: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

Dear Sir,

Greetings from SRKR Engineering College.

I am pleased to inform you that, the Board of Studies meeting is scheduled to be held in **blended mode** on **Friday, 17th April 2026**, in the Department of Mechanical Engineering.

You are kindly requested to **attend physically or join the meeting online by 3:00 PM** without fail by using the following zoom link.

https://us02web.zoom.us/j/81755244972?pwd=Dcv8TCmhJ26rnvrUiYPFbn106BKR4I.1

I am herewith attaching the proposed course structure and syllabus of IV B.Tech under R23 regulations for your kind reference.

Thanking you,

With best regards,

Dr. K. Sita Rama Raju,
Prof. & Head,
Department of Mechanical Engineering,
SRKR Engineering College(A), Bhimavaram.
Ph. No. 9440639106

R23 IV B.Tech proposed Curriculum & Syllabus.pdf
872 KB

Fw: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

1 message

M Indra Reddy <indrareddy@srkrec.ac.in> Thu, 7 May 2026 at 9:07 pm
To: reddy.indra.m@gmail.com <reddy.indra.m@gmail.com>

Sent from Outlook for Android

From: Mechanical Head <mech@srkrec.ac.in>
Sent: Monday, May 4, 2026 8:01:55 AM
To: M Indra Reddy <indrareddy@srkrec.ac.in>
Subject: Fw: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

---

From: Mechanical Head
Sent: Thursday, April 16, 2026 2:47 PM
To: bhanuprasadgali@gmail.com <bhanuprasadgali@gmail.com>
Subject: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

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M Indra Reddy <indrareddy@srkrec.ac.in> Thu, 7 May 2026 at 9:07 pm
To: reddy.indra.m@gmail.com <reddy.indra.m@gmail.com>

Sent from Outlook for Android

From: Mechanical Head <mech@srkrec.ac.in>
Sent: Monday, May 4, 2026 8:02:59 AM
To: M Indra Reddy <indrareddy@srkrec.ac.in>
Subject: Fw: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

From: Mechanical Head
Sent: Thursday, April 16, 2026 2:41 PM
To: drkvsau@yahoo.co.in <drkvsau@yahoo.co.in>
Subject: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

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872 KB

Fw: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

1 message

Mechanical Head <mech@srkrec.ac.in> Mon, 4 May 2026 at 8:02 am
To: Indra Reddy M <reddy.indra.m@gmail.com>

From: Mechanical Head
Sent: Thursday, April 16, 2026 2:46 PM
To: Sridhar Muddada <sridharmuddada.niot@gov.in>
Subject: Intimation of Board of Studies Meeting – SRKR Engineering College (Autonomous), Bhimavaram

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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM-534204
DEPARTMENT OF MECHANICAL ENGINEERING

Dt: 03-07-2025

CIRCULAR

This is to inform you that the Department of Mechanical Engineering has scheduled a 14thBoard of Studies meeting on 05-07-2025 at 11:00 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 3/4 B.Tech. Mechanical Engineering Program under R23 Regulations.
2. To discuss and finalize the course structure and syllabus for Minors, Honors, and Open Elective courses (offered by Mechanical Engineering Department) for 3/4 B.Tech. Mechanical Engineering Program under R23 Regulations.
3. Any other item with the permission of the chair.

Head of the Department

Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)
BHIMAVARAM-534 204.

MINUTES OF THE MEETING

14th Board of Studies meeting in blended mode (Both offline and virtual using zoom platform) was held on 05-07-2025 (Saturday) in CAD Lab-2 of Mechanical Engineering Department at 11:00 AM in order to discuss the following items:

1. Discussion and finalization of course structure and Syllabus of 3/4 B.Tech Mechanical Engineering program under R23 Regulations.
2. Discussion and finalization of courses and Syllabus for Minors, Honors and open Elective courses (offered by Mechanical Engineering) of 3/4 B.Tech Mechanical Engineering program under R23 Regulations

MINUTES OF THE MEETING RESOLUTIONS

(1). Feedbacks collected from various stakeholders like students, alumni, employers and parents has been discussed while designing course structure and syllabus for 3/4 B.Tech (R23) Mechanical Engineering program.

(2). One of the BOS Members Dr. A. Gopala Krishna, Professor, Dept. of Mechanical Engineering, JNTUK has suggested to
(a) Add Dynamic Analysis in Finite Element Methods course (Professional Elective-III).
(b) Add Cryogenic Cooling Systems in Refrigeration and Air Conditioning course (professional Elective-II).
(c) Add 3D printing in Product Design and Development course (Open Elective-II).
(d) Remove IC Engines related topics and Add Electrical Vehicles and Hydrogen cells in Automobile Engineering course (Minors).
(e) Remove Rectangular, I and T cross-sections and keep only Torsional stresses for circular cross-section only in Engineering Mechanics and Strength of Materials course (Minors)
(f) Add ~~3D~~ 3D printing in Manufacturing Processes course (Minors).

(3). One of the BOS Members Prof. K. Venkata Subbaiah, Sr. Professor, Dept. of Mech. Engg., Andhra University has suggested to
(a) Add EBQ models in Inventory Models in operations Research course
(b) Include programming for control charts and Sample testing techniques using Python in Industrial Engineering Lab.
(c) Remove 'Introduction to' word in titles of course titles (Minors)

(4). One of the BOS Members Dr. Sridhar Muddada, Sr. Scientist E, National Institute of ocean Technology, Chennai has suggested to
(a) Include Fluid Mechanics by Pijush K in reference books of Fluid Mechanics and Hydraulic Machines course.
(b) Add wave and Tidal Energy conversion in ~~ocean~~ Ocean Energy topic of Sustainable Energy Technologies course (Open Elective-I)

(c) Add Derivation of Navier-Stokes Equations in Computational Fluid Dynamics course (Professional Elective-II) and Include the text book An Introduction to Computational Fluid Dynamics: The finite volume Method by H. Versteeg and W. Malalasekera.

(d) Add onshore and offshore wind energy in Renewable Energy Technologies course (professional Elective-III).

5. One of the BOS Members Dr. Chiranjeevi Phanidra B, Scientist ISRO, Bangalore has suggested to

(a) Include Fluid Mechanics by Frank M. White in reference books of Fluid Mechanics and Hydraulic Machines course.

(b) Add Soft robotics in Gripper Selection topic in Industrial Robotics course (professional Elective-I).

(c) Add Zero-order, First-order and Second order system in introduction of Sensors and Instrumentation course (profession Elective-I)

(d) Include the text book Fundamentals of Heat and Mass transfer by Frank P in Heat transfer course.

6. One of the BOS Members Sri. G. Bhanu Prasad, PMI Toolings, Hyderabad has suggested to add 3D scanning in product Design and Development course (open Elective-II).

7. Resolved to offer professional Elective-I, II & III with 4 courses as options along with MOOCS-I, II & III for 3/4 B.Tech Mechanical Engineering program under R23 Regulations.

8. Resolved to offer open Elective-I & II with 4 courses as options for 3/4 B.Tech other programs offered by Mechanical Engineering Program under R23 Regulations.

9. Finalized the course structure and Syllabus for 3/4 B.Tech Mechanical Engineering program under R23 Regulations.

10. Finalized the course structure and Syllabus for Honors in Mechanical Engineering under program under R23 Regulations

11. Finalized the course structure and Syllabus for Minors in Mechanical Engineering program under R23 Regulations.

MEMBERS PRESENT

S.NO	Name of the member	Designation	Signature
1.	Dr. A. Gopala Krishna	Professor, Mechanical, UCEK, JNTUK	A. Gopala Krishna
2.	Dr. K. Sita Rama Raju	Professor & HOD	
3.	Prof. K. Venkata Subbaiah	Sr. Professor, Mechanical, AU.	Attended Online
4.	Dr. Sridhar Muddada	Scientist E, NIOT, Chennai	
5	Sri. G. Bhanu Prasad	Founder & GM, PMI Tooling, HYD.	
6.	Dr. Chiranjeevi Phanick B	Scientist, ISRO, Bangalore.	
7.	Dr K. Brahma Raju	Professor	
8.	S. RAJESH	Professor	
9.	K. Suresh Babu	Professor	
10	P. Rama murty Raju	Professor	
11	N. Harsha	Asst. Professor	N Harsha
12	Dr. V. DURGA PRASAD	Professor	
13	P.V.ch.R.K. Santosh	Asst Professor	
14	P Praveen	Asst Professor	
15	M. Indra Reddy	Asst. professor	
16.	D. Shantanu	Asst Professor	
17.	K.M.N.V.S.A. SIVARAM.	Assistant Professor	
18.	B. Soundarya Santhoshi	Assistant professor	
19.	K. Sandeep Varma	Assistant Professor	
20	Durga Hemanth kumar K	Assistant Professor	
21	Dr. G.S.V. Sesha kumar	Assistant Professor	
22	Dr. P. Ravi Varma	Asst. Prof	
23	Dr. S. Madhavarao	Assistant professor	
24.	V.K. Chaitanya Varma	Assistant Professor	
25.	Dr. ch. Rama Bhadri Raju	Associate Professor	
26.	Dr. M. Anil kumar	Assistant Professor	
27.	N. Satish.	Assistant Professor	
28	C. SRINIVAS	Associate professor	ch Srinivas
29	Dr. V.K. Vishwendha Raju	Professor	
30	D.V.R.S. PADMA RAO	Associate Professor	
31	Dr. K. prasad Raju	Assist prof	
32	N. Sudheer kumar Varma	Assist Professor	
33	ch N V S Swamy	Assistant professor	
34	G. Chatapathi Rama	Associate Professor	

S.NO	Name of the member	Designation	Signature
35.	K Sunil Kumar	Asst Professor	
36	V.V. MURALI Krishnam Raju	Asst professor	
37.	G. H. Tammi Raju	Asst. professor	

RESOLUTIONS FOR THE MEETING DATED 05-07-2025

(1). Feedbacks collected from various stakeholders like students, alumni, employers and parents has been discussed while designi course structure and syllabus for 3/4 B.Tech (R23) Mechanical Engine program.

S.R.K.R ENGINEERING COLLEGE

DEPARTMENT OF MECHANICAL ENGINEERING
CHINA AMIRAM: BHIMAVARAM – 534204

Feedback Analysis 2024-25

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 206 feedback forms have been obtained from various stake holders.

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

1. Holistic development of interpersonal and communication skills should be promoted.
2. Students should be trained to explore and understand emerging technologies
3. Students need a course/Lab on IOT
4. Students should have more hands-on experience to connect theory with practice.
5. Increasing syllabus depth to match external and academic standards.
6. Need more focus on quality than quantity.
7. Internships are to be included in syllabus.
8. Introduce software course AIML in semester
9. Include industrial tours in the curriculum.
10. Put more programming courses as elective subjects.
11. Include new technologies in the syllabus

Professor & Head
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(b) Add Cryogenic Cooling Systems in Refrigeration and Air Conditioning course (professional Elective-II).

(c) Add 3D printing in Product Design and Development course (Open Elective-II).

(d) Remove IC Engines related topics and Add Electrical vehicles and Hydrogen cells in Automobile Engineering course (Minors).

(e) Remove Rectangular, I and T cross-sections and keep only Torsional stresses for circular cross-section only in Engineering Mechanics and Strength of Materials course (Minors)

(f) Add ~~3D~~ 3D printing in Manufacturing Processes course (Minors).

UNIT-V (10 Hrs)	Axisymmetric Solids Subjected to Axisymmetric Loading: Introduction, Axisymmetric formulation, Finite element modeling - triangular element, Problem modeling and boundary conditions. Dynamic Analysis: Formulation of finite element model, element consistent and lumped mass matrices, evaluation of eigen values and eigen vectors, free vibration analysis.

UNIT-V (10 Hrs)	**AIR CONDITIONING SYSTEMS:** Classification of equipment's, Comfort air conditioning – requirements of industrial air conditioning, air conditioning load calculations. cooling, heating humidification and dehumidification, filters, grills and registers, fans and blowers. **INTRODUCTION TO CRYOGENICS:** Joule-Thomson expansion, refrigerant mixtures, multi stage vapour compression refrigeration.

UNIT-IV (10 Hrs)	**Creativity Techniques:** Creative thinking, concept generation: clarify the problem search external and internal explorer systematically, concept selection & testing, concurrent engineering, rapid prototyping, 3D printing and 3D scanning

SYLLABUS	
UNIT-I (10Hrs)	**Introduction to Automobile**, Automobile Layout, Chassis and body, Types of automobile engines, engine parts, Air filters, Electric vehicles(EV) and Hydrogen cells.

UNIT-V (10 Hrs)	**Flexure Stresses in Beams**: Theory of pure bending, Flexural formula, Section modulus of rectangular, circular, I, and T sections, Determination of bending stress. **Torsional Stresses in Shafts:** Pure torsion, Torsion formula, analysis of torsional stresses for circular cross-section parts.

UNIT-V (10 Hrs)	**Unconventional Machining:** Introduction, Need, AJM, Wire-EDM, ECM, LBM, PAM - Principle, working, advantages, limitations, Process Parameters and applications. **3D Printing**-Principle, Procedure, Classification, Advantages and Applications

(3). One of the BOS Members Prof. K. Venkata Subbaiah, Sr. Professor, Dept. of Mech. Engg., Andhra University has suggested to

(a) Add EBQ models in Inventory Models in Operations Research course

(b) Include Programming for control charts and Sample testing techniques using Python in Industrial Engineering Lab.

(c) Remove 'Introduction to' word in titles of course titles

(c) Add Derivation of Navier-Stokes Equations in Computational Fluid Dynamics course (Professional Elective-II) and Include the text book "An Introduction to Computational Fluid Dynamics: The finite volume method by H. Versteeg and W. Malalasekera.

(d) Add onshore and offshore wind energy in Renewable Energy Technologies course (Professional Elective-III).

UNIT-III (10 Hrs)	**Job Sequencing:** Introduction, Assumptions, Johnson's algorithm for N-Jobs 2-MachinesProblems, N-Jobs 3-Machines Problems, N-Jobs M-Machines Problems, Graphical solution for 2-Jobs and M-Machines Problems. **Inventory Models:** Definition of Inventory, Costs associated with Inventory Problems, Classification of Models, EOQ & EBQ Models with and without Shortages, Inventory Problems with Price Breakups..

SYLLABUS	
1	To show that the sample means from a normal universe follow a normal distribution
2	To show that the sample means from a non-normal universe follow a rectangular distribution
3	To draw the control chart for mean and range for the measurements of output of a manufacturing process and to study its process capability and write a Python program to draw the control chart.
4	To draw the control chart for the fraction defective for a given lot of marble balls for the constant sample size, and write a Python program to draw the control chart.
5	To draw the control chart for the fraction defective for a given lot of marble balls for the variable sample size, and write a Python program to draw the control chart.
6	To draw the control chart for defects observed on a given lot of steel discs, and write a Python program to draw the control chart.
7	To conduct Single Sampling Plan on a given lot of marbles, and hence to draw its Operating Characteristic curve. Also write a Python program to draw the Operating Characteristic curve.
8	To draw two handed process charts for Bolt, Washer and nut assembly (Present and Improved methods)
9	To draw Multiple Activity chart using an electric toaster.
10	To measure the skill and dexterity in the movement of Wrist and Fingers using pin board and to estimate the standard time for the best method of performance.
11	To measure the Heart rate during working and recovery periods of the subjects under different loads, using Bicycle Ergometer

SYLLABUS	
UNIT-I (10Hrs)	**INTRODUCTION:** Finite difference method, finite volume method, finite element method, governing equations and boundary conditions, Derivation of finite difference equations, Derivation of the Navier-Stokes equations. **SOLUTION METHODS:** Solution methods of elliptical equations – finite difference formulations, interactive solution methods, direct method with Gaussian elimination.

Textbooks:	
1.	Computational fluid dynamics, T. J. Chung, Cambridge University press, 2002.
2.	Introduction to Computational Fluid Dynamics, An: The Finite Volume Method" by H. Versteeg and W. Malalasekera.

UNIT-IV (10 Hrs)	**WIND ENERGY:** Sources and potentials, onshore and offshore wind energy, horizontal and vertical axis windmills, performance characteristics, betz criteria, types of winds, wind data measurement.

5. One of the BOS Members Dr. Chiranjeevi Phanidra B - Scientist ISRO, Bangalore has suggested to

(a) Include ~~Include~~ Fluid Mechanics by Frank M. White in reference books of Fluid Mechanics and Hydraulic Machines course.

(b) Add Soft robotics in Gripper Selection topic in Industrial Robotics course (Professional Elective-I).

(c) Add Zero-order, First-order and Second order system in introduction of Sensors and Instrumentation course (Profession Elective-I)

(d) Include the ~~be~~ text book Fundamentals of Heat and Mass transfer by Frank P in Heat transfer course.

Textbooks:	
1.	Fluid Mechanics and Hydraulic Machinery, by R. K. Bansal, Laxmi Publications.
2.	Fluid Mechanics- Fundementals and Applications by Y.A. Cengel, J.M.Cimbala, 6th Edn, McGrawHill
Reference Books:	
1.	Hydraulics and Fluid Mechanics Including Hydraulics Machines-P.N.Modi,S.M.Seth, StandardBookHouse
2.	Fluid Mechanics & Hydraulic Machines – R.K.Rajput,S.Chand& Company,
3.	Fluid Mechanics & Fluid Power Engineering – D.S. Kumar, SK. Kataria& Sons Publishers.
4.	Fluid Mechanics and Machinery by D. Rama Durgaiah, New Age International.
5.	Fluid Mechanics : Frank M. White,McGrawHill 7th edition
6.	Fluid Mechanics by Pijush K. Kundu and Ira M. Cohen,
e-Resources	
1.	https://onlinecourses.nptel.ac.in/noc25_me132
2.	https://onlinecourses.nptel.ac.in/noc25_me144

SYLLABUS	
UNIT-I (10Hrs)	**INTRODUCTION:** Basics of Measurement-Zero, First and Second order systems, Classification of errors– Error analysis – Static and dynamic characteristics of transducers – Performance measures of sensors – Classification of sensors – Sensor calibration techniques – Sensor Output Signal Types.

Textbooks:	
1.	Heat Transfer, J. P. Holman, TMH Publications, Special Indian edition.
2.	Heat Transfer, P.K.Nag, TMH Publications, Third edition.
3.	Fundamentals of heat and mass transfer" by Frank P. Incropera and David P. Dewitt, Wiley India Pvt Ltd; Fifth edition
Reference Books:	
1.	Heat and mass transfer, R.K. Rajput, S. Chand Publications, Revised edition.
2.	Fundamentals of Engg. Heat and Mass Transfer, R.C.Sachdeva, New Age International Publications, Fifth edition.
3.	Principles of Heat Transfer, Frank Kreith, R. M. Manglik& M. S. Bohn, Cengage learning publishers, Special edition.
4.	Heat and Mass Transfer, Domkundwar, Arora, Domkundwar, Dhanpath Rai & Co. Publications.
5.	Heat and Mass Transfer, Cengel, McGraw Hill Publications, Fifth edition.

6. One of the BOS Members Sri. G. Bhanu Prasad, PMT, Hyderabad has suggested to add 3D scanning in product Design and Development course (Open Elective - II).

Course Code	Category	L	T	P	C	C.I.E.	S.E.E.	Exam
B23MEOE04	OE	3	--	--	3	30	70	3 Hrs.

PRODUCT DESIGN AND DEVELOPMENT

(Offered by ME)

(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE & IT)

Course Objectives:

1. To impart the process of product design and Development
2. To expose the various factors influencing product design.

Course Outcomes

S.No	Outcome	Knowledge Level
1.	**Apply** the product design and development process to solve engineering problems	K3
2.	**Demonstrate** concept generation, selection and robust design using design morphology.	K3
3.	**Use** product planning methods to convert needs into specifications.	K3
4.	**Use** creative thinking to generate, select and test product concepts.	K3
5.	**Apply** DFX principles to optimize designs, ensuring cost, legal and ethical compliance.	K3

SYLLABUS

UNIT-I (10Hrs)	**Introduction**: Classification/Specifications of Products, Product life cycle. Product mix, Introduction to product design, Modern product development process, Innovative thinking.
UNIT-II (10 Hrs)	**Morphology of design:** Conceptual Design: Generation, selection & embodiment of concept. Product architecture, Industrial design: process, need, Robust Design Development Economics - quantitative and qualitative analysis
UNIT-III (10 Hrs)	**Product planning:** Identify opportunities, prioritize projects, allocate resources, project planning, Identify customer needs, product specifications, target specifications and final specifications, concept generation and selection
UNIT-IV (10 Hrs)	**Creativity Techniques:** Creative thinking, concept generation: clarify the problem search external and internal explorer systematically, concept selection & testing, concurrent engineering, rapid prototyping, 3D printing and 3D scanning

7. Resolved to offer professional Elective - I, II & III with 4 courses as options along with MOOCS - I, II & III for 3/4 B.Tech Mechanical Engineering program under R23 Regulations.

	Course Code	Course
#PE-I	B23ME3105	Mechanical Vibrations
	B23ME3106	Robotics
	B23ME3107	Additive Manufacturing
	B23ME3108	Sensors and Instrumentation
	B23ME3109	MOOCS-I

	Course Code	Course
#PE-II	B23ME3203	Advanced Solid Mechanics
	B23ME3204	Design for Manufacturing
	B23ME3205	Computational Fluid Dynamics
	B23ME3206	Energy Storage Technologies
	B23ME3207	MOOCS-II
#PE-III	B23ME3208	Non-destructive Evaluation
	B23ME3209	Renewable Energy Technologies
	B23ME3210	Finite Element Methods
	B23ME3211	Refrigeration and air conditioning
	B23ME3212	MOOCS-III

8. Resolved to offer open Elective - I & II with 4 courses as options for 3/4 B.Tech other programs offered by Mechanical Engineering Programs under R23 Regulations.

MECHANICAL ENGINEERING	B23MEOE01	Applied Operations Research	**AIDS, CE, CIC, CSBS, CSE, CSG, CSIT, ECE& EEE**
	B23MEOE02	Sustainable Energy Technologies	**AIDS, AIML, CE, CIC, CSBS, CSE, CSG, CSIT, ECE, EEE& IT**

MECHANICAL ENGINEERING	B23MEOE03	Industrial Management	**AIDS, AIML, CE, CIC, CSBS, CSE, CSG, CSIT, ECE, EEE & IT**
	B23MEOE04	Product Design and Development	
	B23MEOE05	Operations Management	
	B23MEOE06	Advanced Manufacturing Processes	

9. Finalized the course structure and Syllabus for 3/4 B.Tech Mechanical Engineering program under R23 Regulations.

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SRKR MARG, CHINA AMIRAM, BHIMAVARAM – 534204 W.G.Dt., A.P., INDIA

Regulation: R23	III / 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
B23ME3101	Machine Tools & Metrology	PC	3	0	0	3	30	70	100
B23ME3102	Fluid Mechanics & Hydraulic Machines	PC	2	1	0	3	30	70	100
B23ME3103	Design of Machine Elements	PC	2	1	0	3	30	70	100
B23ME3104	Operations Research	HS	1	1	0	2	30	70	100
#PE-I	Professional Elective -I	PE	3	0	0	3	30	70	100
#OE-I	Open Elective-I	OE	3	0	0	3	30	70	100
B23ME3110	Fluid Mechanics & Hydraulic Machines Lab	PC	0	0	3	1.5	30	70	100
B23ME3111	Machine Tools & Metrology Lab	PC	0	0	3	1.5	30	70	100
B23ME3112	Embedded systems & IOT Lab	SEC	0	1	2	2	30	70	100
B23ME3113	Evaluation of Community Service Internship	PR	--	--	--	2	--	50	50
B23MC3101	Employability Skills	MC	2	--	--	--	30	--	30
		TOTAL	**16**	**4**	**8**	**24**	**300**	**680**	**980**

	Course Code	Course
#PE-I	B23ME3105	Mechanical Vibrations
	B23ME3106	Robotics
	B23ME3107	Additive Manufacturing
	B23ME3108	Sensors and Instrumentation
	B23ME3109	MOOCS-I
#OE-I	Student has to study one Open Elective offered by AIDS or AIML or CE or CIC or CSBS or CSG or CSE or CSITor ECE or EEE or IT or S&H from the list enclosed.	

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Regulation: R23	III / 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
B23ME3201	Heat Transfer	PC	2	1	0	3	30	70	100
B23ME3202	Industrial Engineering and Management	PC	2	1	0	3	30	70	100
#PE-II	Professional Elective -II	PE	3	0	0	3	30	70	100
#PE-III	Professional Elective -III	PE	3	0	0	3	30	70	100
#OE-II	Open Elective-II	OE	3	0	0	3	30	70	100
B23ME3213	Heat Transfer Lab	PC	0	0	3	1.5	30	70	100
B23ME3214	Industrial Engineering Lab	PC	0	0	3	1.5	30	70	100
B23ME3215	Theory of Machines Lab	PC	0	0	2	1	30	70	100
B23ME3216	Tinkering Lab	ES	0	0	2	1	30	70	100
B23BS3201	Soft Skills	SEC	0	1	2	2	30	70	100
B23AC3201	Technical paper writing and IPR	AC	2	--	--	--	30	--	30
		TOTAL	15	3	12	22	330	700	1030

	Course Code	Course
#PE-II	B23ME3203	Advanced Solid Mechanics
	B23ME3204	Design for Manufacturing
	B23ME3205	Computational Fluid Dynamics
	B23ME3206	Energy Storage Technologies
	B23ME3207	MOOCS-II
#PE-III	B23ME3208	Non-destructive Evaluation
	B23ME3209	Renewable Energy Technologies
	B23ME3210	Finite Element Methods
	B23ME3211	Refrigeration and air conditioning
	B23ME3212	MOOCS-III
#OE-II	Student has to study one Open Elective offered by AIDS or AIML or CE or CIC or CSBS or CSG or CSE or CSIT or ECE or EEE or IT or S&H from the list enclosed.	

*Mandatory Industry Internship /Mini Project of 08 weeks duration during summer vacation

10. Finalized the course structure and syllabus for Honors in Mechanical Engineering under program under R23 Regulations

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Estd. 1980

Regulation: R23	

MECHANICAL ENGINEERING (Honors)

COURSE STRUCTURE
(With effect from 2023-24 admitted Batch onwards)

Course Code	Course Name	Year/ Sem	Cr	L	T	P	C.I.E	S.E.E	Total Marks
B23MEH101	Product Design and Development	III-I	3	3	0	0	30	70	100
B23MEH201	Industrial Robotics & Automation	III-II	3	3	0	0	30	70	100
B23MEH301	Advanced CAD	IV-I	3	3	0	0	30	70	100
B23MEH401	*MOOCS-I	III-I to IV-I	3	--	--	--	--	--	100
B23MEH501	*MOOCS-II	III-I to IV-I	3	--	--	--	--	--	100
B23MEH601	*MOOCS-III	III-I to IV-I	3	--	--	--	--	--	100
		TOTAL	**18**	**9**	**0**	**0**	**90**	**210**	**600**

*Three MOOCS courses of any **MECHANICAL ENGINEERING** related Program Core Courses from NPTEL/SWAYAM with a minimum duration of 12 weeks (3 Credits) courses other than the courses offered need to be takenby prior information to the concern. These courses should be completed between III Year I Semester to IV Year I Semester

11. Finalized the course structure and Syllabus for Minors in Mechanical Engineering program under R23 Regulations.

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Regulation: R23	

MECHANICAL ENGINEERING (Minors)

(Applicable for AIDS, AIML, CIC, CE, CSBS,CSE, CSG, CSIT, ECE, EEE &, IT)

COURSE STRUCTURE
(With effect from 2023-24 admitted Batch onwards)

Course Code	Course Name	Year/ Sem	Cr	L	T	P	C.I.E	S.E.E	Total Marks
B23MEM101	Engineering Materials	II-II	3	3	0	0	30	70	100
B23MEM201	Manufacturing Processes	III-I	3	3	0	0	30	70	100
B23MEM301	Engineering Mechanics and Strength of Materials [For all programmes except CIVIL]	III-II	3	3	0	0	30	70	100
B23MEM302	Automobile Engineering [For CIVIL]								
B23MEM401	Thermal Engineering	IV-I	3	3	0	0	30	70	100
B23MEM501	*MOOCS-I	II-II to IV-I	3	--	--	--	--	--	100
B23MEM601	*MOOCS-II	II-II to IV-I	3	--	--	--	--	--	100
		TOTAL	**18**	**12**	**0**	**0**	**120**	**280**	**600**

*Two MOOCS courses of any **MECHANICAL ENGINEERING** related Program Core Courses from NPTEL/SWAYAM with a minimum duration of 12 weeks (3 Credits) courses other than the courses offered need to be takenby prior information to the concern. These courses should be completed between II Year II Semester to IV Year I Semester.