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DEPARTMENT

OF

MECHANICAL ENGINEERING

29th BOS MINUTES

11-08-2025

XXXXII Academic Council

Department of Mechanical Engineering

29th BOS meeting minutes

Minutes of the 29th BOS meeting-Mechanical Department held on 11-08-2025 in Hybrid mode in room no.M118(HOD Chamber) from 2:30 pm onwards.

Following is the link for the meeting

https://kluniversity.webex.com/kluniversity/j.php?MTID=m86301a9ccd563351455e1619cc84fe24

The following members were present

1. Dr.T.Vijaya Kumar, Associate Professor, HOD-ME & Chairman BOS
2. Dr. A.Jagadeesh, Director-FED, Professor-ME
3. Dr. K.RamaKrishna, Dean-Quality, Professor-ME
4. Dr. P. V. Chalapathi, Professor, Dean Faculty affairs
5. Dr. A.Srinath, Dean Skill Development & progression
6. Dr. D.V.A. Rama Sastry, Associate professor
7. Dr.K.V.Narsimha Rao, Professor, Associate Dean, IQAC
8. Dr.G.Diwakar, Professor, PG Coordinator
9. Dr. V .L.Mangesh, Professor
10. Dr.G.Murali, Professor, Group Head- Energy & CFD & RPAC Chairman
11. Dr.S.N.Padhi, Professor, Group Head-Design & Manufacturing
12. Dr.S.S.Rao, Professor, Group Head-Smart Manufacturing
13. Dr. P. Kasi V Rao, Associate Professor, Associate Dean Academics
14. Dr.K.V.Durga Rajesh, Associate Professor, Deputy HOD
15. Dr .T. Kanthimathi, Assistant Professor, Professor I/C Academics
16. Dr.P.Raj Kumar, Assistant professor
17. Dr.A.Venu Gopal, Professor & Dean Academics, NIT Warangal
18. Dr. P. Srinivasa Rao, Global Training Head, Cyient Technologies, Hyderabad
19. Dr.K.Ravi Teja, Manager, Hyundai R & D Division, Hyderabad

Dr. T.K. RAMA KRISHNA RAO
PRINCIPAL
College of Engineering
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Green fields, VADDESWARAM-522 302
Guntur District, Andhra Pradesh

11/8/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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AGENDA and RESOLUTIONS

Agenda Item-1

Agenda-1:To present the significant events of the department for the A.Y.2024-25	Resolution Passed: The achievements made by the department are appreciated by the BOS members

BOS chairman presented the following significant events of the department for the A.Y.2024-25

Honors received by Faculty:

- Dr. B. Nageswara Rao, received best Researcher Award at International Teaching Excellence awards 2025 on the occasion of International day of Education on 24-01-2025, DevElet Technologies LLP.
- Dr.A. Srinath is awarded "Active SPOC Certification" for being brand ambassador at KL Deemed to be University by NPTEL during the period July-December'2024.
- Dr. G. Murali has won the Scopus Index Conclave International Research Award 2025 (SIRA 2025) with the Title, "International Outstanding Research Award" for his specialization in Mechanical Engineering.
- Dr. V. L. Mangesh, received recognition for acted as Invited Speaker for 16th International Conference on Advancements in Polymeric Materials-2025 at IPT Lucknow, by CIPET: SARP-APDDRL and Department of chemicals, Ministry of chemicals and fertilizers, Government of India.

Research achievements of the Department:

- No. of Ph.D's awarded in the A.Y.2024-25 is 14 and the Ph.D's awarded for the A.Y. 2025-26 till date is 10.
- H-index of the department is 42 as per Scopus and 36 as per WOS.
- Dr.B. Nageswara Rao, is having highest no. of citations of 4925, H-index 34 and i10 index 159
- Dr. G. Murali, published in "Journal of Renewable Energy and Sustainable Energy Reviews having an impact factor of 16.3.
- Dr.A. Jagadeesh, have top cited article "A Review; on Path planning Strategies for navigation of mobile robot" as 782 citations.

Honors received by students:

- T Druva Vasistha (2200079039), Won III Prize in Basket ball event at Vignan's Foundation for science, Technology and Research, Vadlamudi, Guntur, AP.

19/8/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522

- T V C Aditya (2200079027), Won III Prize in 4 x 100 Relay event at Vignan's Foundation for science, Technology and Research, Vadlamudi, Guntur, AP.
- Sk. Intiyaz (2300070022), Secured 1st place in 74 kgs class in Bench Press Championship at Sri Gummadi Pulleswara Rao Power Lifting Zone, Mangalagiri, Guntur District-AP.
- Mr. Palvai Mahesh (2100079048), Secured 1st place in Body Building Competition in 55kg weight class at Zonal Body Building Competition-2025.

Placement Details:

- 1 student was selected by Sansyu (Japanese Company) with 25 LPA.
- 1 student was selected Shikoku Kakoki Company Ltd. (Japanese Company) with 31 LPA.
- 1 student was selected for Deloitte with 7.6 LPA.
- 3 students selected in Hyundai Motors, Chennai with a pay package o 7.5 LPA.
- 12 students were selected in Sanvira with 8 to 10 LPA.
- 4 Students selected in Hyundai motors, India with 5.5 LPA
- 1 student selected in Blue star Ltd., with 6.2 LPA.
- 1 student selected in Shapoorji Pallonji with 4.25 LPA
- 2 students selected in Electrosteel Castings Limited with 5.5.LPA
- 1 student selected in Worley with 5.8 LPA.
- 1 student selected in Vena Energy with 6 LPA.

A significant no.of students were placed in core companies for the A.Y.2024-25 compared to previous year's placement statistics.

Conferences/Workshops/FDP/Training programs conducted by the department:

- Workshop on "EV Vehicle Assembly Operations and Fault detection" by Gutta Jithendra Nath, Entrepreneur, ZEM (Zero Emission Mobility) Vehicles, Kanuru, Vijayawada on 04-10-2024.
- Five-Days Online Faculty Development Program (FDP) titled "Advances in Engineering Design, Smart Manufacturing and Thermal Systems" organized by the Department of Mechanical Engineering in association with Academic Staff College from 23rd to 28th December 2024.
- 6-Day Training Program on "Product Design & Drafting by CATIA organized by Skill Development Division in association with APSSDC" from 10-02-2025 to 15-02-2025.
- Conducted International Conference on Innovations and Challenges in Mechanical Engineering (ICICME-2025) on 12th and 13th May 2025

BOS members congratulated the award winners and appreciated the efforts made by the department. The significant events of the A.Y. 2024-25 are given in **Annexure-1.**

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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Agenda Item-2

Agenda-2: To approve the resolutions made in DAC meeting held on 04-07-2025	Resolution Passed: The resolutions made in DAC are approved and recommended the same to the Academic Council for further approval.

BOS Chairman presented the following DAC deliberations to the members

- Based on the feedback given by Y23 admitted batch students to reduce the no. of contact hours so that they can carry out preparations for competitive exams, following modifications were proposed in the curriculum of Y24 & Y25 B.Tech admitted batch students
  1. The L-T-P-S of skill development courses is changed to 1-0-0-4 instead of 0-0-2-4
  2. The L-T-P-S of PE-1 course is changed to 3-0-2-0 instead of 3-0-2-4
  3. The L-T-P-S of PE-3 Course is changed to 3-0-0-2 instead of 3-0-2-4
  4. The no. of SIL courses is reduced to 2 instead of 3 with an L-T-P-S of 0-0-2-0
- Dr.T. Kanthimathi, suggested to add pure substances and vapour power cycles concepts to thermodynamics course and remove Psychometric concepts. She also suggested to include the concepts of steam turbines, compressors and optimization in "Thermal Systems Engineering" course.
  It is resolved to approve the modifications proposed for Thermodynamics course and to propose new course titled " Design of Thermal Systems" with an with an L-T-P-S of 3-1-0-4 in place of " Thermal Systems Engineering" including the concepts of Steam turbines, compressors and optimization techniques.
- Dr.M.Nageswara Rao, faculty member, suggested to add CAD modelling to Engineering Graphics course to enable I year students gain knowledge modelling software.
  It is resolved to approve and add CAD modelling using Fusion 360 topic to Engineering Graphics course for Y25 admitted batch students.
- Mr. M.Prasad Rao parent of M.Sai Nagendhar(ID No.2300070013) requested to solve more examples for problem based courses. Chairman DAC explained that it is possible to solve one problem per model in the class hours, so to make students practise more problems assignments were given where they can practice and contact faculty for clarification of doubts.

The detailed minutes of Department Academic Committee (DAC) is given in **Annexure-2**.
The detailed Stake Holders feedback and the action taken report is given in **Annexure-3**.

Agenda Item-3:

Agenda-3: To approve the B.Tech curriculum of Y25 admitted batch students and modifications proposed for Y24 batch curriculum	Resolution Passed: It is resolved to approve the curriculum of Y24 and Y25 admitted batch B.Tech students and to recommend the same to academic council for further approval.

BOS Chairman presented the curriculum of Y24 & Y25 admitted batches. He explained that based on the feedback received from the stake holders few new courses were introduced and

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 502

revisions were made in few courses for Y25 & Y24 admitted batch. He also explained that for Y24 admitted batch students Y25 structure will be followed from II year I sem onwards.

Following are the deliberations made on the new courses introduced for Y25 & Y24 admitted batch students

Agenda 3.1: To approve the new courses proposed for Y24 & Y25 admitted batch students	Resolution Passed: It is resolved to approve the new courses introduced for Y24 and Y25 admitted batch B.Tech students and to recommend the same to academic council for further approval.

- Based on the recommendation of Dr. Dr.B.Nageswar Rao, faculty member, it is resolved to offer new maths courses " Mathematical modelling & Numerical Methods" and" Probability and Statistics" in place of Computations in Mechanics and Statistics course for Y24 & Y25 admitted batch with an L-T-P-S of 2-0-2-0.
- Upon considering the recommendation of Dr.S.Ramesh Kumar, faculty member, it is resolved to offer Python programming as Engineering Science course for Y25 admitted batch with an L-T-P-S of 2-0-2-0.
- It is resolved to offer Mathematical Optimization as new course in place of Optimization techniques to Y24 & Y25 admitted batch L-T-P-S of 2-2-0-0 based on the recommendation of Dr. Lakshmi Narayana, alumni.
- As per the recommendation of the Dr.K.V.Narsimha Rao, faculty member, it is resolved to offer new audit course Insights of Sustainable development Goals to make students understand the importance of sustainable development with an L-T-P-S of 2-0-0-0.
- As per the suggestions of Dr.S.V.S.Narayana Murthy, Industry person, it is resolved to offer a new course titled Automated Manufacturing by including the suggested concepts. It is also resolved to revise the Manufacturing processes course and rename it as "Manufacturing Processes and Technology" by including topics on Metal cutting, Unconventional Machining and GD & T for Y24 & Y25 admitted batch.
- Dr.P.Srinivas Rao, BOS External member suggested to change the sequence of syllabus modules of Automated manufacturing course by changing CO-4 syllabus as CO-2 , CO-2 as CO-3 and CO-3 as CO-4 so that there will be a smooth flow of syllabus. It is resolved to approve the changes proposed by the stake holder.
- Upon considering the recommendations of Mr.Vamsi Subhash Lanka, industry person It is resolved to offer new Flexi core course titled " Modern Vehicle Technology" in place of Electric vehicle technology by including all the suggested topics to Y24 & Y25 admitted batch L-T-P-S of 2-0-2-0.
- It is resolved to offer new course Robotics & Mechatronics as Flexi core course to Y24 & Y25 admitted batch with an L-T-P-S of 2-0-2-0 based on the recommendation of Dr.S.S.Rao, faculty member.
- As per the suggestion of Dr.Satish Ben, academic peer, a new skill development course SDC-3 titled Applied Mechanical Design Practise with an L-T-P-S of 1-0-0-4 for Y24

Dr. T. VIJAYA KUMARS
HOD-Mechanical Engineering
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(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

and Y25 admitted batch by including the concepts of concurrent engineering, product development, Generative Design , Design for manufacturing and assembly.

- By considering the suggestion of Mr.G.Naga Sai Ram alumni, It is resolved to offer Refrigeration and Air conditioning as professional elective-2 with an L-T-P-S of 3-0-0-0 in Automotive and Energy Engineering specialization.
- As per the recommendations of E25-Smart Manufacturing cohort members, cohort professor I/C Dr.S.S.Rao, suggested the following new courses inder Smart manufacturing Specialization.
    i. AI and IOT in Manufacturing-PE-1 (L-T-P-S:3-0-2-0) in place of Reverse Engineering and Rapid Prototyping course
    ii. Precision and Micro manufacturing-PE-2 (L-T-P-S:3-0-0-0) in place of Modern Manufacturing Course
    iii. Additive and Hybrid Manufacturing-PE-3 (L-T-P-S: 3-0-0-2)in place of Sustainable Design and Social Innovation in smart Manufacturing course
    iv. Digital Manufacturing-PE-4(L-T-P-S: 3-0-0-0) in place of Robotics & Industrial Automation Course
    v. Precision Innovation & Entrepreneurship-PE-4(L-T-P-S:3-0-0-0) in place of Mechanical Measurements and Metrology course
    vi. Sustainable Manufacturing-PE-5(L-T-P-S:3-0-0-0) in place of Advanced Materials manufacturing & Testing Course.

It is resolved to approve the new courses and the modification suggested by the E25 cohort for Y24 & Y25 admitted batch students.

Courses Introduced for Y24 and Y25 B.Tech admitted batch

S.No.	Course Code	Course Title	Category	Remarks
1	25UC0032	INSIGHTS OF SUSTAINABLE DEVELOPMENT GOALS	AUC	Based on the recommendations of faculty member this course is introduced to make students understand and apply the SDG goals in their leanings.
2	25MT2019	PROBABILITY & STATISTICS	BSC	Based on the suggestion of faculty member this course is introduced by including the concepts of Probability & Statistics
3	25MT2004	MATHEMATICAL OPTIMIZATION	BSC	As per the recommendation of alumni, this course is introduced to include optimization concepts in place of Optimization Techniques course
4	25MT2003	MATHEMATICAL MODELLING & NUMERICAL METHODS	BSC	Based on the suggestion of faculty member this course is introduced by including the concepts of numerical methods in place of Computations in Applied Mechanics and Statistics
5	25SC2007	PYTHON PROGRAMMING	ESC	As per the recommendation of faculty member this course is introduced to make mechanical students learn Python language.

Dr. T. VIJAYA KUMAR 8/25
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

6	25ME2210	AUTOMATED MANUFACTURING	PCC	Based on the recommendation of industry person to include latest concepts of automation this course is introduced in place of Manufacturing Technology
7	25ME3214	DESIGN OF THERMAL SYSTEMS	PCC	Based on the recommendations of faculty member this course offered in place of Thermal Systems Engineering.
8	25ME2221F	MODERN VEHICLE TECHNOLOGY	FCC	By considering the recommendations of industry person this course is introduced by including latest concepts on Vehicle technology
9	25ME3122F	ROBOTICS & MECHATRONICS	FCC	Based on the suggestion of faculty member this course is introduced by including the concepts of Mechatronics
10	25SDME03	APPLIED MECHANICAL DESIGN PRACTICE	SDC	By considering the recommendation of academic peer. this course is introduced by including the latest skill related design concepts like Generative Design, product development
11	25AEE3203	REFRIGERATION & AIR CONDITIONING	PE	By considering the recommendation of alumni this course is introduced by including the modern cooling technologies
12	25SMF3101	AI AND IOT IN MANUFACTURING	PE	By considering the recommendation of group head this course is introduced to include AI concepts in manufacturing in place of Reverse Engineering and Rapid prototyping
13	25SMF3203	PRECISION AND MICRO MANUFACTURING	PE	By considering the recommendation of group head this course is introduced in place of Modern Manufacturing Processes course
14	25SMF3304	ADDITIVE AND HYBRID MANUFACTURING	PE	By considering the recommendation of group head this course is introduced in place of Sustainable Design and Social Innovation in Smart manufacturing course
15	25SMF3405	DIGITAL MANUFACTURING	PE	By considering the recommendation of group head this course is introduced in place of Robotics and Industrial Automation course
16	25SMF3406	PRECISION INNOVATION & ENTREPRENEURSHIP	PE	By considering the recommendation of group head this course is introduced in place of Mechanical Measurements and Metrology course
17	25SMF3507	SUSTAINABLE MANUFACTURING	PE	By considering the recommendation of group head this course is introduced in place of Advanced Materials Manufacturing & Testing course

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 30

It is resolved to approve the new courses introduced for Y24 & Y25 B.Tech admitted batch students.

Agenda 3.2: To approve the revisions proposed in the curriculum of B .Tech Y24 & Y25 admitted batch students	Resolution Passed: It is resolved to approve the revisions proposed for B.Tech Y24 and Y25 admitted batch students and to recommend the same to academic council for further approval.

- By considering the recommendation of Dr G Rudra Narsimha Rao, Academic Peer, it is resolved to include Machining concepts in Workshop Practices for Engineers course for Y25 admitted batch.
- Based on the recommendation of Dr.S.N.Padhi, faculty member, It is resolved to include Mechanical Vibrations topic to Kinematics & Dynamics course for Y24 & Y25 admitted batch.
- Based on the recommendation of Dr.S.N.Padhi, faculty member, It is resolved to include Mechanical Vibrations topic to Kinematics & Dynamics course for Y24 & Y25 admitted batch.
- As per the suggestions of Dr. Dr.D.V.A.RamaSastry, faculty member, it is resolved to include Hypermesh tool in "Finite Element Analysis" course for Y24 & Y25 admitted batch with an L-T-P-S of 1-0-0-4 and offer it as SDC-1.
- By considering the recommendation of Dr. Jeswin JayaSingh, Industry person, it is resolved to include topics on CAPP, tool path generation, NC code verification in SDC-2 course "Computer Integrated Manufacturing" course for Y25 & Y25 admitted batch with an L-T-P-S of 1-0-0-4.
- Based on the recommendation of Dr.G.Murali, faculty member, It is resolved to revise the course Thermal Management of Electric and electronic systems by adding skilling component and to offer it as professional elective-3 with an L-T-P-S of 3-0-0-2.
- Upon considering the recommendation of Dr.S.N.Padhi, faculty member, It is resolved to offer Advanced Strength of Materials course as PE-1 with an L-T-P-S of 3-0-2-0 and Modelling analysis and Design of Robotic systems course as PE-3 with a L-T-P-S of 3-0-0-2 in Engineering Design specialization for Y24 and Y25 admitted batch.
- .Based on the recommendation of Dr.S.S.Rao, faculty member, Syllabus of Flexible Manufacturing Systems course is revised by adding the topics on applications in FMS and to offer it as PE-2 with and L-T-P-S of 3-0-0-0 under Smart Manufacturing Specialization

Proposed revisions in the courses offered to Y24 & Y25 admitted batch students

S.No.	Course Code	Course Title	Category	% of Revision	Remarks
1	25ME1002	ENGINEERING GRAPHICS	ESC	25%	As per the feedback of faculty to enable students gain the knowledge on modelling from I year itself CAD modelling concepts are added to Engineering Graphics course

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 3

2	25ME2109	THERMODYNAMICS	ESC	25%	Based on the feedback of faculty member to avoid repetition of the topics in DTS course, the modification were made
3	25ME1004	WORKSHOP PRACTICES FOR ENGINEERS	ESC	50%	As per the feedback of academic peer, machining concepts are included in the course, to make the students aware of various machining operations in manufacturing.
4	25ME2108	MANUFACTURING PROCESS & TECHNOLOGY	PCC	75%	As per the feedback of industry person to include latest topics in core manufacturing courses a new course was included and this course is revised by including the concepts of metal cutting, unconventional machining and GD & T
5	25ME2211	KINEMATICS & DYNAMICS OF MACHINES	PCC	15%	Based on the feedback of faculty member, mechanical vibrations topic is added as more opportunities are emerging in this field
6	25SDME01	FINITE ELEMENT ANALYSIS	SDC	25%	As per the feedback of faculty member, Hypermesh tool is added the curriculum as it is being the requirement in many placement drives
7	25SDME02	COMPUTER INTEGRATED MANUFACTURING	SDC	30%	As per the feedback of industry person, concepts on CAPP, tool path generation, NC code verification in Computer Integrated Manufacturing course to make students learn the latest simulation tools in manufacturing
8	25AEE3304	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONIC SYSTEMS	PE	25%	As per the recommendation of faculty member the L-T-P-S of the course is changed to 3-0-0-2. Skill component is added to make students learn the simulation of battery management systems
9	25EGD3101	ADVANCED STRENGTH OF MATERIALS	PE	25%	As per the recommendation of faculty member, the course is offered as PE-1 with an L-T-P-S of 3-0-2-0. Lab component is added to give practical exposure to students
10	25EGD3304	MODELING ANALYSIS & DESIGN OF ROBOTIC SYSTEMS	PE	25%	As per the recommendation of faculty member, the course is offered as PE-3 with an L-T-P-S of 3-0-0-2. No. of class hours is reduced on the request of studetns. Previously the course L-T-P-S is 3-0-2-4
11	25SMF3202	FLEXIBLE MANUFACTURING SYSTEMS	PE	25%	As per the recommendation of smart manufacturing research group to revise the syllabus of Flexible Manufacturing Systems course by adding the topics on applications in FMS.

- Dr.Venu Gopal, BOS external member, enquired with BOS Chairman whether elective system is like minor degree or not. BOS chairman explained to the member that any student should select 5 courses in a pool 8 courses under one specialization to

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302

attain as specialization degree and it is not like minor degree. He also explained that it is not possible to switch between specializations to obtain the specialization degree.

- Dr. Venu Gopal enquired about the regulations of Honors degree.Dr.D.V.A. Ramasastry, explained that the student willing to attain Honors degree need to obtain 20 extra credits than the regular student out of which 12 credits can be obtained by courses offered under Honors bucket and 8 credits from the advanced courses offered by the parent department.
- External BOS members Dr.Venu Gopal, Dr.P.Srinivass Rao and Dr. Ravi Teja appreciated the efforts taken by the department in framing the curriculum suitable for the present industry needs by satisfying the zeal of the students.

The Course Structure of B.Tech Y25 admitted batch students is given in **Annexure-4**.
The Course Structure of B.Tech Y24 admitted batch students is given in **Annexure-5**.
The syllabus for the new courses introduced for Y24 & Y25 admitted batch is given in **Annexure-6**.
The revisions made in the curriculum of Y24 & Y25 B.Tech admitted batch students is given in **Annexure-7**.

Agenda 3.3: To approve the Honors courses offered to students opting and eligible for Honors degree for Y24 & Y25 admitted batch	Resolution Passed: It is resolved to approve the Honors courses offered to Y24 & Y25 admitted batch students and to recommend the same to the Academic counsel

- Chairman BOS presented the Honors courses to be offered to Y24 & Y25 admitted batch students for Honors through Innovation, Honors through Research, Honors Flexi Core and Honors through Experiential Learning programs. Following is the list of list of Honors courses

Sl No	Category	Acronym	Course Code	Course Title
1	HONORS THROUGH INNOVATION	HTI	25DT01IF	ENTREPRENEURAL TECHNOLOGY DEVELOPMENT AND PROTOTYPING
2	HONORS THROUGH INNOVATION	HTI	25DT02IF	PROBLEM DEFINITION AND VALIDATION
3	HONORS THROUGH INNOVATION	HTI	25DT03IF	PRODUCT DESIGN AND PROTOTYPE VALIDATION
4	HONORS THROUGH INNOVATION	HTI	25DT04IF	SCALABLE SOLUTION DEVELOPMENT
5	HONORS THROUGH RESEARCH	HTR	25IE01RF	INDEPENDENT STUDY & RESEARCH
6	HONORS THROUGH RESEARCH	HTR	25IE02RF	RESEARCH METHODOLOGY, ETHICS & SCIENTIFIC WRITING
7	HONORS THROUGH RESEARCH	HTR	25IE03RF	RESEARCH SEMINAR
8	HONORS THROUGH RESEARCH	HTR	25IE04RF	TERM PAPER
9	HONORS FLEXI CORE	HFC	25ME01HF	RENEWABLE ENERGY SYSTEMS

11/8/25
Dr. T VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)

10	HONORS FLEXI CORE	HFC	25ME02HF	ROBOTICS AND CONTROL : THEORY AND PRACTICE
11	HONORS FLEXI CORE	HFC	25ME03HF	ADVANCED MANUFACTURING TECHNOLOGIES
12	HONORS FLEXI CORE	HFC	25ME04HF	ADVANCED FINITE ELEMENT ANALYSIS
13	HONORS FLEXI CORE	HFC	25ME05HF	MULTIDISCIPLINARY DESIGN OPTIMIZATION
14	HONORS THROUGH EXPERIENTIAL LEARNING	HTE	25ME01EF	ENERGY STORAGE SYSTEMS AND TECHNOLOGIES
15	HONORS THROUGH EXPERIENTIAL LEARNING	HTE	25ME02EF	MECHANICAL SYSTEMS DESIGN
16	HONORS THROUGH EXPERIENTIAL LEARNING	HTE	25ME03EF	ADVANCED MANUFACTURING PROCESSES
17	HONORS THROUGH EXPERIENTIAL LEARNING	HTE	25ME04EF	MECHATRONICS AND ROBOTICS
18	HONORS THROUGH EXPERIENTIAL LEARNING	HTE	25ME05EF	TECHNOLOGIES FOR CLEAN AND RENEWABLE ENERGY PRODUCTION

It is resolved to approve the Honors courses offered to Y24 & Y25 admitted batch students.

Agenda Item-4

Agenda-4: To consider and approve the curriculum of Y25 admitted batch M.Tech programs	Resolution: It is resolved to approve the curriculum of M.Tech programs and recommend the same to the academic council for further approval

Based on the feedback given by the PG coordinator following modifications were made to the structure of M.Tech-Thermal Engineering, M.Tech-Machine Design & M.Tech-Mechanical Engineering programs of Y25 admitted batch.

1. No. of Professional electives are reduced to 3 instead of 5
2. No. of professional core courses is increased to 6 instead of 5
3. No. of Audit courses are reduced to 1 instead of 2
4. L-T-P-S of Professional core course is 3-0-2-4

It is resolved to approve the modifications proposed in the structures of M.Tech-Thermal Engineering, M.Tech-Machine Design & M.Tech-Mechanical Engineering programs of Y25 admitted batch.

The Course Structure of Y25 M.Tech admitted students is given in **Annexure-8, 9 & 10.**

Agenda Item-5

Agenda-5: To consider and approve the request of Y16 batch student Mr.Ajith Singh (Id.No.160070408) to complete his degree.	Resolution: It is resolved to approve the request of Mr.Ajith Singh to complete his degree and recommend the same to the academic council for further approval

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)

BOS Chairman presented the request of Y16 batch student Mr. Ajith Singh (ID.No.160070408) to permit him to complete his degree by fulfilling the degree

Student has to complete the following courses

i. 16ME2207-Machine Design
ii. 15CS30A6-Fundamentals of DBMS
iii. 3rd Global Certification course

It is resolved to approve the request of Mr.Ajith Singh to complete his degree within one semester by fulfilling all the degree requirements. Request letter of the student is given in **Annexure-11**.

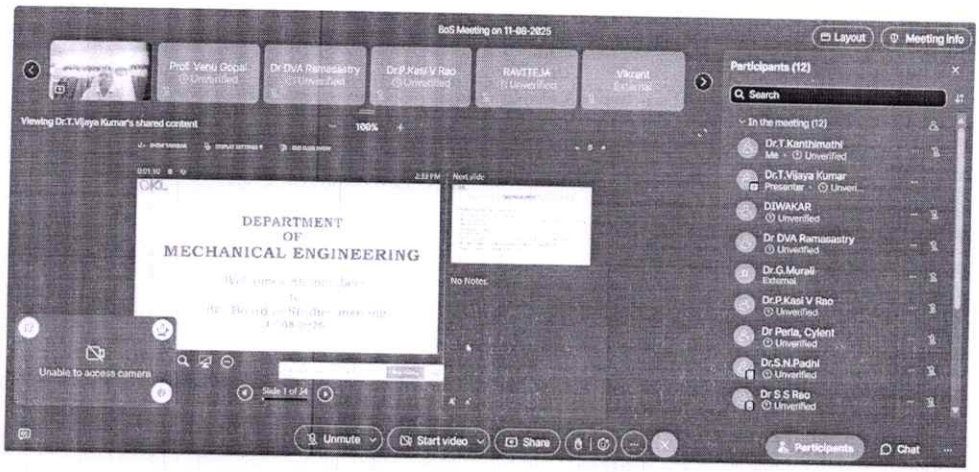
Agenda Item-6

Agenda-6: Any other point with the permission of the chair: Modifications proposed in the syllabus of Research Methodology paper under Pre-Ph.D Courses	Resolution: It is resolved to approve the modifications proposed in the syllabus of Research Methodology paper and to recommend the same to the academic council for further approval.

Chairman BOS presented the recommendation of Dean R & D to modify the syllabus of Research Methodology (21RES104) paper under Pre-PH.D courses. The syllabus is modified based on the branch of study.

It is resolved to approve the modification proposed in the syllabus Research Methodology (21RES104) paper under Pre-PH.D courses. The Syllabus of the same is given in **Annexure-12**.

Meeting Photos:



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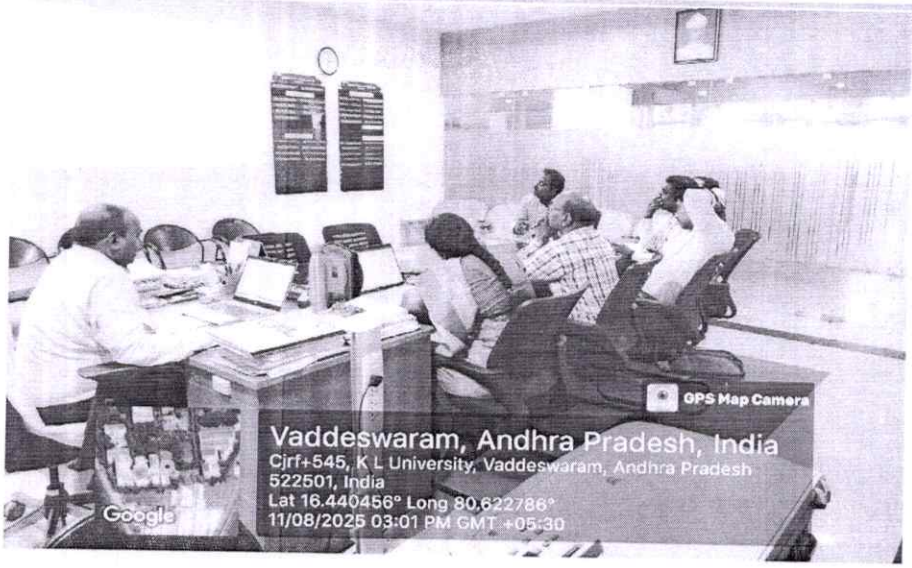

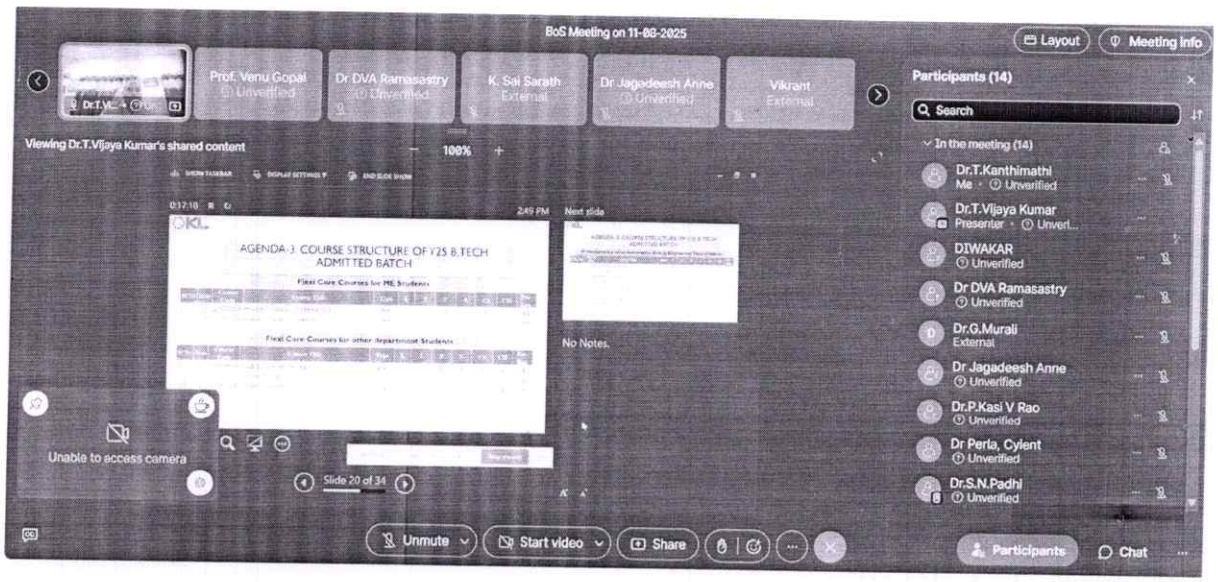

Professor I/C Academics

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Chairman-BOS

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K L E F
Department of Mechanical Engineering

Significant Events happened in the Department from July-2024 to June-2025

1.0 Honours Received

1.1 Honours received by Faculty

Dept.	Name of the Faculty	Details of Honors	By
ME	Dr. B. Nageswara Rao	2024 - Top 2% most cited scientists by Standford University and Elsevier	Standford University and Elsevier
ME	Dr. M. Nageswara Rao	2024 - Top 2% most cited scientists by Standford University and Elsevier	Standford University and Elsevier
ME	Dr. Atul Bhattad	2024 - Top 2% most cited scientists by Standford University and Elsevier	Standford University and Elsevier
ME	Mr. S. Ramesh Kumar	Certificate of Excellence for design submission at Aakruti Global 2024 Design Contest	Dassault Systems
ME	Dr. G. Yedukondalu	Certificate of Excellence for design submission at Aakruti Global 2024 Design Contest	Dassault Systems
ME	Dr. B. Nageswara Rao	Best Researcher Award at International Teaching Excellence awards 2025 on the occasion of International day of Education on 24-01-2025	DevElet Technologies LLP
ME	Dr. V. L. Mangesh	Recognition for acted as Invited Speaker for 16th International Conference on Advancements in Polymeric Materials-2025 at IPT Lucknow	CIPET: SARP-APDDRL and Department of chemicals, Ministry of chemicals and fertilizers, Government of India
ME	Dr.A Srinath	Awarded "Active SPOC Certification" for being brand ambassador at KL Deemed to be University	NPTEL-during July-Dec'2024
ME	Dr.G.Murali	Won The Scopus Index Conclave International Research Award 2025	SIRA-2025

1.2 Honours received by Students

Dept.	Name of the Student	Details of Honors	By
ME	Mr. P. Abhiram Chowdary (2300070010)	Won a grant of Rs. 40,000/- for his idea "Smart Car Parking" during Ideathon	Ideathon held at K L University by ACIC-KL Startups Foundation
ME	5 Students from III/IV	Completed NPTEL Online	NPTEL

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	B.Tech (ME)	Certification on "Robotics" with a valid score, apart of "Modelling Analysis & Design of Robotic Systems" Course offered in III Year Odd Sem	
ME	Mr. Palvai Mahesh (2100079048)	Stood 6th place at Mr. Andhra Open Body Building Championship on 23rd February 2025 at Chintalapudi, Eluru District	Navyandra Pradesh Fitness Body Builders Association – AP
ME	T Druva Vasistha (2200079039)	Won III Prize in Basket ball event	Vignan's Foundation for science, Technology and Research, Vadlamudi, Guntur, AP
ME	T V C Aditya (2200079027)	Won III Prize in 4 x 100 Relay event	Vignan's Foundation for science, Technology and Research, Vadlamudi, Guntur, AP
ME	Sk. Intiyaz (2300070022)	Secured 1st place in 74 kgs class in Bench Press Championship	Sri Gummadi Pulleswara Rao Power Lifting Zone, Mangalagiri, Guntur District-AP
ME	Mr. Palvai Mahesh (2100079048)	Secured 1st place in Body Building Competition in 55kg weight class	Zonal Body Building Competition-2025
ME	D. Guna Vardhan (2100079042)	secured all India rank of 1930 with GATE Score 625	GATE-2025
ME	G. T K S Sekhar (2100079067)	secured all India rank of 6790 with GATE Score 394	GATE-2025
ME	4 Students from III & IV/IV B.Tech (ME)	Runner-up, Durability Test Award with cash prize 5000	SIEP E-Bike Challenge - 2025 Organized by Imperial Society of Innovative Engineers (ISIEINDIA)
ME	2 Students from II/IV B.Tech (ME)	Completed NPTEL Online Certification on "Kinematics of Mechanisms and Machines" with a valid score, apart of "Kinematics and Dynamics of Machines" Course offered in II Year Even Sem	NPTEL

1.3	**Placements Details**

Sl.	Company Name	No. of students	Package	Company

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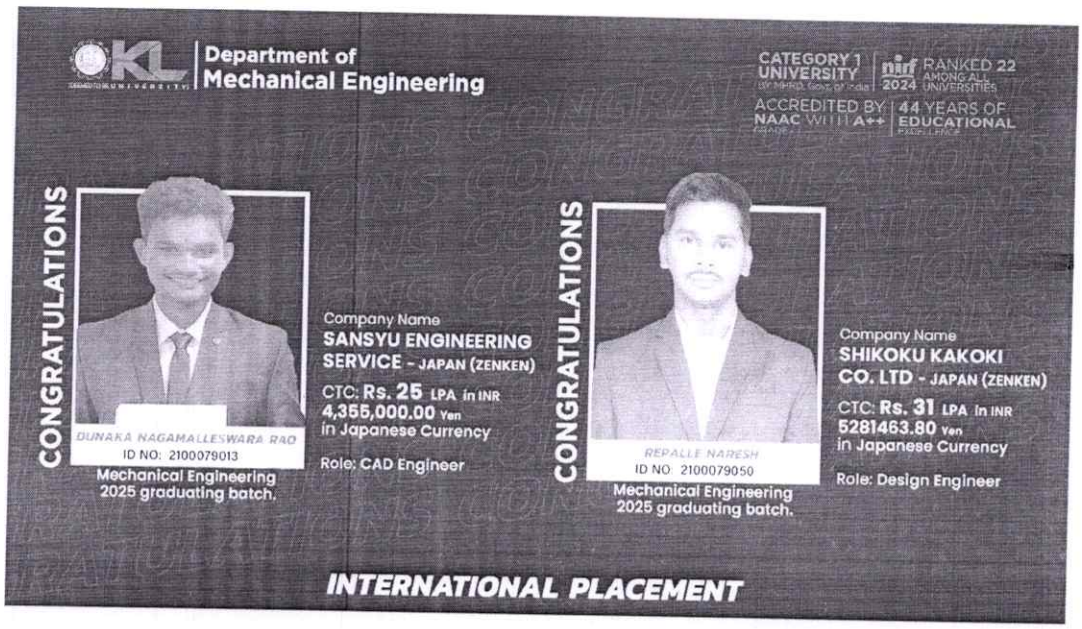
No.		selected	(in Lakhs)	profile
1	Sansyu (Japanese company)	1	25 LPA	
2	Shikoku Kakoki Co., Ltd (Japanese company)	1	31 LPA	
3	Deloitte	1	7.6 LPA	
4	Procmart	3	3 LPA	
5	LTI Mindtree	1	4.05 LPA	
6	Blue Star Ltd.,	1	6.2 LPA	
7	Infosys	1	3.6 LPA	
8	TCS NINJA	5	3.36 LPA	
9	Hyundai Motors, Chennai	3	7.5 LPA	
10	Power Mech Projects Limited	17	3.5 LPA	
11	Shapoorji Pallonji	1	4.25 LPA	
12	Electrosteel Castings Limited	2	5.5 LPA	
13	Capgemini	1	4.25 LPA	
14	Voltas (Tata Group)	2	5.0 LPA	
15	Usai Forge	5	2.4 LPA	
16	Vena Energy	1	6 LPA	
17	Worley	1	5.8 LPA	
18	Cognecto	1	3.0 LPA	
19	Timken	9	3.0 LPA	
20	Taurus	1	2.4 LPA	
21	Hyundai motor India Engineering Pvt. Ltd.	4	5.5 LPA	
22	Sanvira	12	8 to 10 LPA	



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DETAILS OF THE STUDENTS ***PLACED FOR THE AY 2024-25***

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1.4	Ph.D. awarded

S. No.	Dept.	Name of the Faculty/Scholar	Name of the Supervisor	Month and Year
1	ME	K M V Ravi Teja	Dr. B. Nageswara Rao	September 2024
2	ME	A Sirisha Bhadrakali	Dr. D.V.A. Rama Sastry	September 2024
3	ME	A Munitanuja	Dr. B. Nageswara Rao	September 2024
4	ME	P V C K Subhashini	Dr. K.V. Durga Rajesh	November 2024
5	ME	Chendrasekhar Sunnapu	Dr. Medikondu	November 2024

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			Nageswara Rao	
6	ME	Gari Surya Chandra Swamy	Dr. K.V. Durga Rajesh	December 2024
7	ME	Ghulanavar Rohit Dundappa	Dr. A. Jagadeesh	February-2025
8	ME	Chaitanya Girish Burande	Dr. S. N. Padhi	February-2025
9	ME	VSS Somasundar Avantsa	Dr. G. Yedukondalu	February-2025
10	ME	Gadipelly Bhaskar	Dr. K. V. Narasimha Rao	February-2025
11	ME	K. Prasanth Kumar Reddy	Dr. B. Nageswara Rao	March-2025
12	ME	Harish Mugutkar	Dr. T. Vijaya Kumar	March-2025
13	ME	Janumala Emeema	Dr. G. Murali	April-2025
14	ME	Sayela Chandra Sekhar	Dr. N.B.V.Prasad	April-2025

4.0 Seminars / Workshops

4.1 Workshops / Seminars Attended by the Department through Virtual/Offline Mode

S. No.	Dept.	No. of Faculty	Seminar / Workshop / Short Term Course
1	ME		
2	ME		

4.2 Conferences/workshop/seminar Conducted by the Department through Virtual/Offline Mode

S. No.	Dept.	Conference/Workshop/FDP/Seminar
1	ME	Workshop on "EV Vehicle Assembly Operations and Fault detection" by Gutta Jithendra Nath, Entrepreneur, ZEM (Zero Emission Mobility) Vehicles, Kanuru, Vijayawada on 04-10-2024
2	ME	Five-Days Online Faculty Development Program (FDP) titled "Advances in Engineering Design, Smart Manufacturing and Thermal Systems" organized by the Department of Mechanical Engineering in association with Academic Staff College from 23rd to 28th December 2024.
3	ME	6-Day Training Program on "Product Design & Drafting by CATIA organized by Skill Development Division in association with APSSDC" from 10-02-2025 to

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		15-02-2025
4	ME	Conducted International Conference on Innovations and Challengs in Mechanical Engineering (ICICME-2025) on 12th and 13th May 2025

5.0 Guest Lectures/Webinar

5.1 Guest Lectures/Webinar Arranged through Virtual/Offline Mode

S. No.	Dept.	Name of the Event	Date	On Topic
1	ME	Visit of Foreign Professor 'Dr. Filipe Fernandes' from University of Coimbra, Portugal to KLEF (Deemed to be University) to teach and engage with our academic community	22nd July 2024 (Monday) to 27th July 2024 (Saturday)	Mechanical Engineering Course 'Manufacturing Technology - 22ME3313'
2	ME	Conducted Alumni Guest Lecture on **"Overview on Mechanical Industries & Growth Opportunities"** by Mr. Venkata Kumar Kancharla (Y0-Batch Y0IP224), Head-Production Engineering Department, TATA Hitachi, Dharwad, India, 2000-2004 batch of Industrial and Production Engineering, conducted by Smart Manufacturing Cohort	24-08-2024	Overview on Mechanical Industries & Growth Opportunities
3	ME	Conducted Alumni Guest Lecture on **"Industrial Evolution in Green Hydrogen"** by Mr. R Bala Venkata Murali (11207003), Senior Process Engineer, TATA Consulting Engineers, Bangalore, India., 2011-2013 batch of M.Tech (Thermal Engineering), conducted by Smart Manufacturing Cohort	25-09-2024	Industrial Evolution in Green Hydrogen
4	ME	Conducted Webinar on **"Digital Manufacturing, Zero Defects and Six Sigma"** Mr. Khadar Basha Abdul, Technology Program Manager for Element Materials Technology, Overseeing Operations across the UK, Europe and East Asia regions, conducted by Smart Manufacturing Cohort	26-09-2024	Digital Manufacturing, Zero Defects and Six Sigma
5	ME	Conducted Industry Expert Guest Lecture on **"Technology**	28-09-2024	

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HOD-Mechanical Engineering
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		familiarization on Additive Manufacturing, 3D Scanning, Reverse Engineering and the future with Industry 4.0" by Mr. P Srimannarayana Raju, Engineer – Design and Development, Intech Additive Solutions Pvt. Ltd., Bangalore, conducted by Smart Manufacturing Cohort		Technology familiarization on Additive Manufacturing, 3D Scanning, Reverse Engineering and the future with Industry 4.0
6	ME	Conducted Alumni Guest Lecture on **"From Intern To Full-Time: Your Path To Success"** by **Mr. Daniel Parmar (2201120001), Product Engineer, Cummins India Ltd, Pune of 2022-2024** batch of M.Tech (Thermal Engineering), conducted by Smart Manufacturing Cohort	26-10-2024	From Intern To Full-Time: Your Path To Success
7	ME	Conducted Alumni Guest Lecture on **"Optimization and Digital Transformation in Warehousing and Supply Chains"** by Mr. P. Ratna Prasad (Y1-Batch, Y1IP258), Process Development Engineer, AGCO Corp., Batavia, IL State, U.S.A., conducted by Smart Manufacturing Cohort	28-02-2025	Optimization and Digital Transformation in Warehousing and Supply Chains
8	ME	Conducted Webinar on **"AI for Mechanical Engineers"** Mr. N. Chandra Sai Kamal, Product Manager, Trinnovate Synergy Technology Pvt. Ltd., Gujarat, India, conducted by Smart Manufacturing Cohort	22-03-2025	AI for Mechanical Engineers
9	ME	Conducted **Industry Expert Guest Lecture (Online)** on **" Enhancing Skills in Air Conditioning Technology"** by Mr. Ashok Yalala, South Region Trainer, Daikin Air Conditioning India, Hyderabad conducted by Smart Manufacturing Cohort	27-03-2025	Enhancing Skills in Air Conditioning Technology
10	ME	Conducted Alumni Guest Lecture on **"Digitalization in Manufacturing"** by **Mr. Krushna Sai Kumar Reddy (13007254),** Head of Project Management-Digitalization, Continental Automotive Technologies GMBH, Babenhausen, Germany., conducted by Smart Manufacturing Cohort	28-03-2025	Digitalization in Manufacturing

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5.2	**Guest Lectures / Keynote sessions Delivered by our Faculty in other Colleges / Universities**

S. No.	Dept.	Name	At	Date	On Topic
1	ME	Dr. G. Murali, a distinguished professor of Mechanical Engineering and Alternate HOD of IRD at KL University, was invited to deliver a guest lecture at Aditya University, Surampalem, Kakinada, Andhra Pradesh. On 12-08-2024, he addressed the mechanical engineering students on the topic " An Overview of E-Vehicle Battery Cooling and Heating Technology"	Aditya University, Surampalem, Kakinada, Andhra Pradesh	12-08-2024	An Overview of E-Vehicle Battery Cooling and Heating Technology
2	ME	Dr. V.L. Mangesh (Invited Speaker for 16th International Conference on Advancements in Polymeric Materials-2025 at IPT Lucknow)	Organised by CIPET: SARP-APDDRL and supported by Department of chemicals, Ministry of chemicals and fertilizers, Government of India	08-03-2025	Hydroprocessing of waste plastics to petroleum products utilizing ionic liquid catalyst at reduced process temperatures

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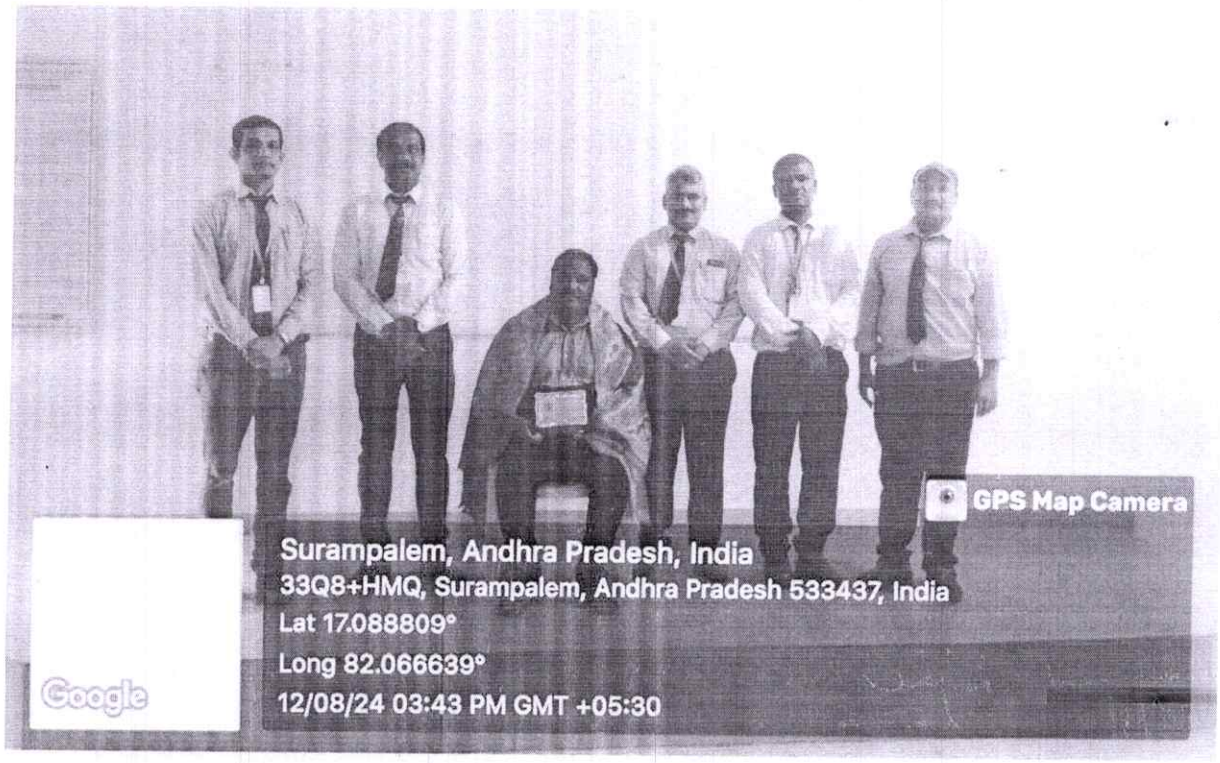

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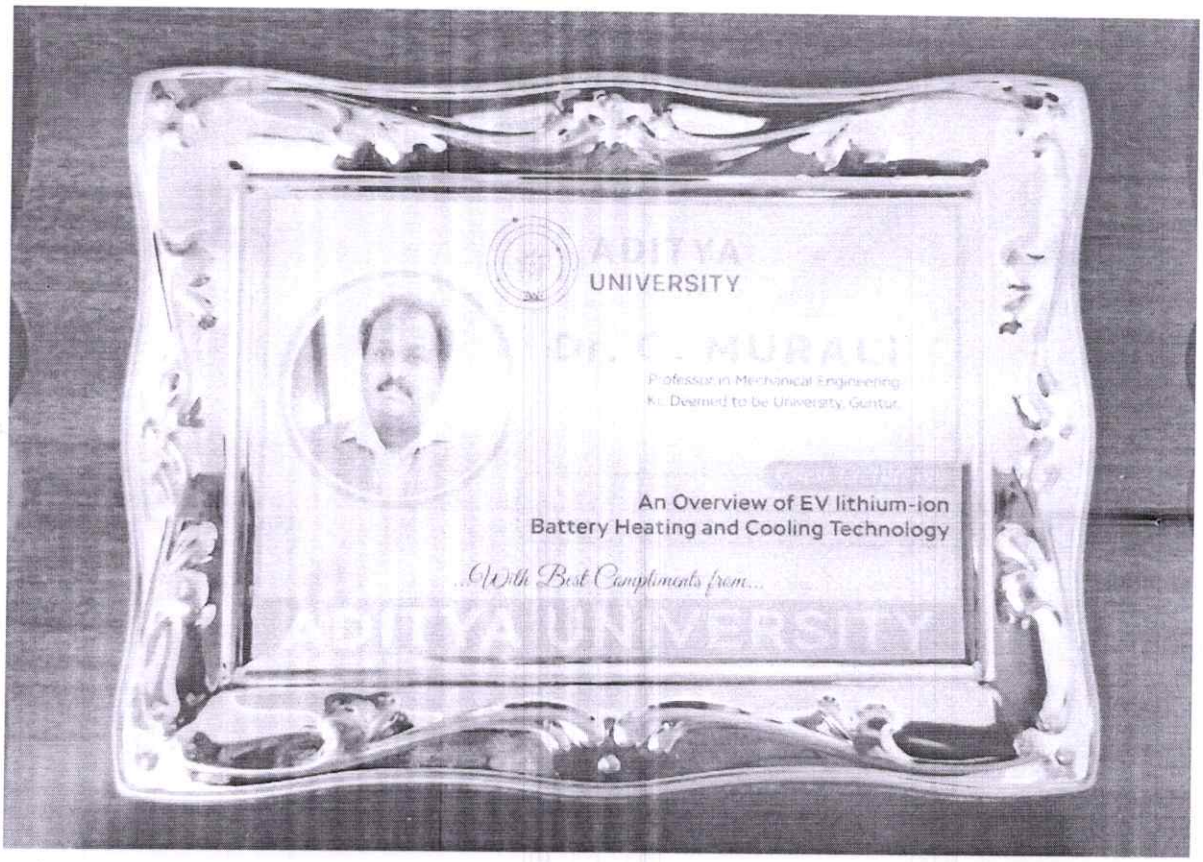

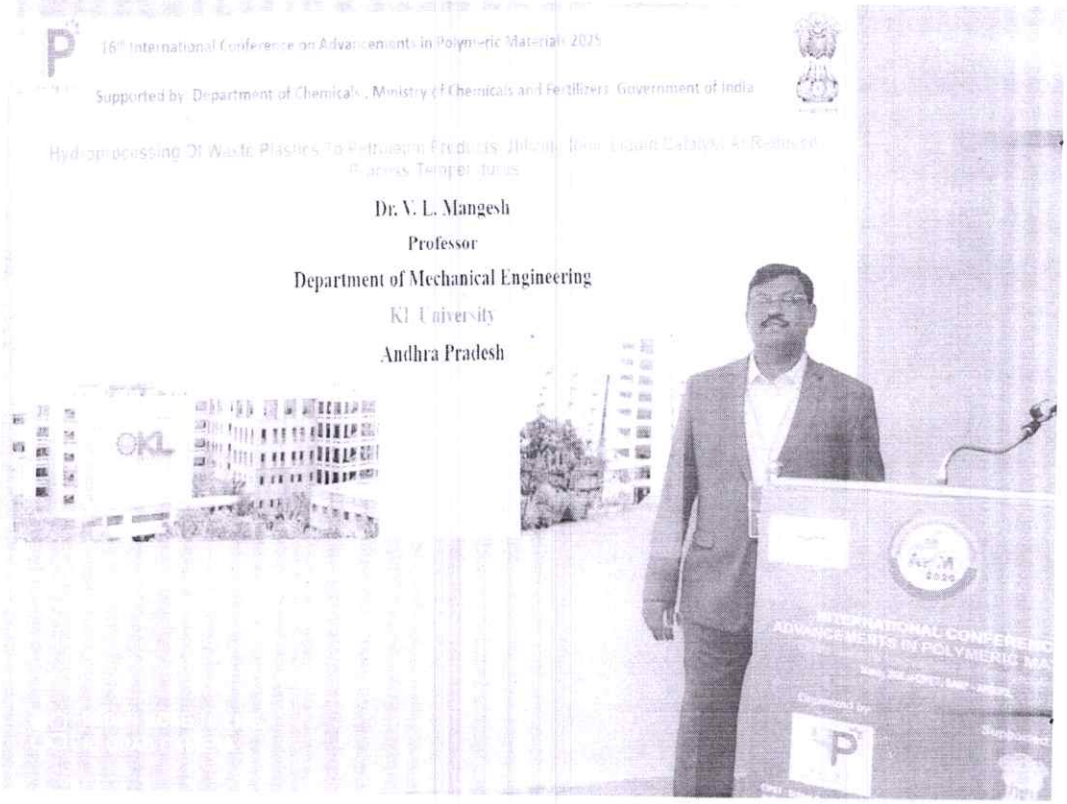

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6.0	NSS Activities conducted through Virtual Mode

S. No.	Dept.	Details of NSS Activities	Conducted On
1	ME	Independence Day Celebrations	15-08-2024
2	ME	Gandhi Jayanthi and Koneru Lakshmaiah gari vardhanthi, RSS events	02-10-2024
3	ME	Swachh Bharath Program was conducted at Dr. Y.S.R Veternary Dispensary in Nutakki village by II and III Year B.Tech Mechanical Engineering students	13-11-2024

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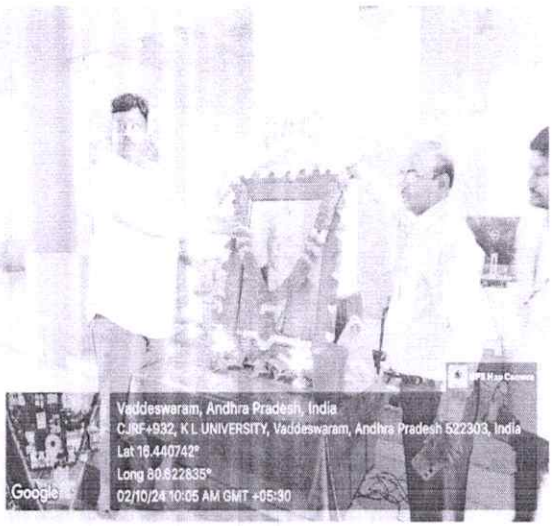

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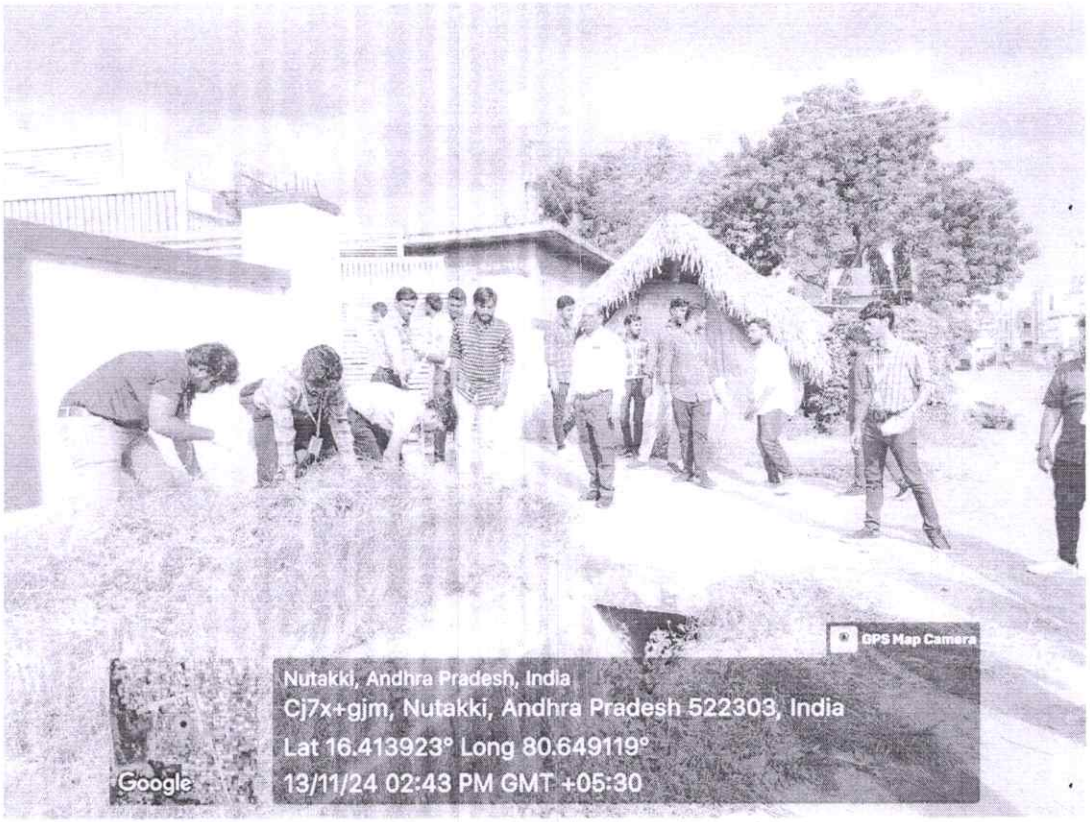

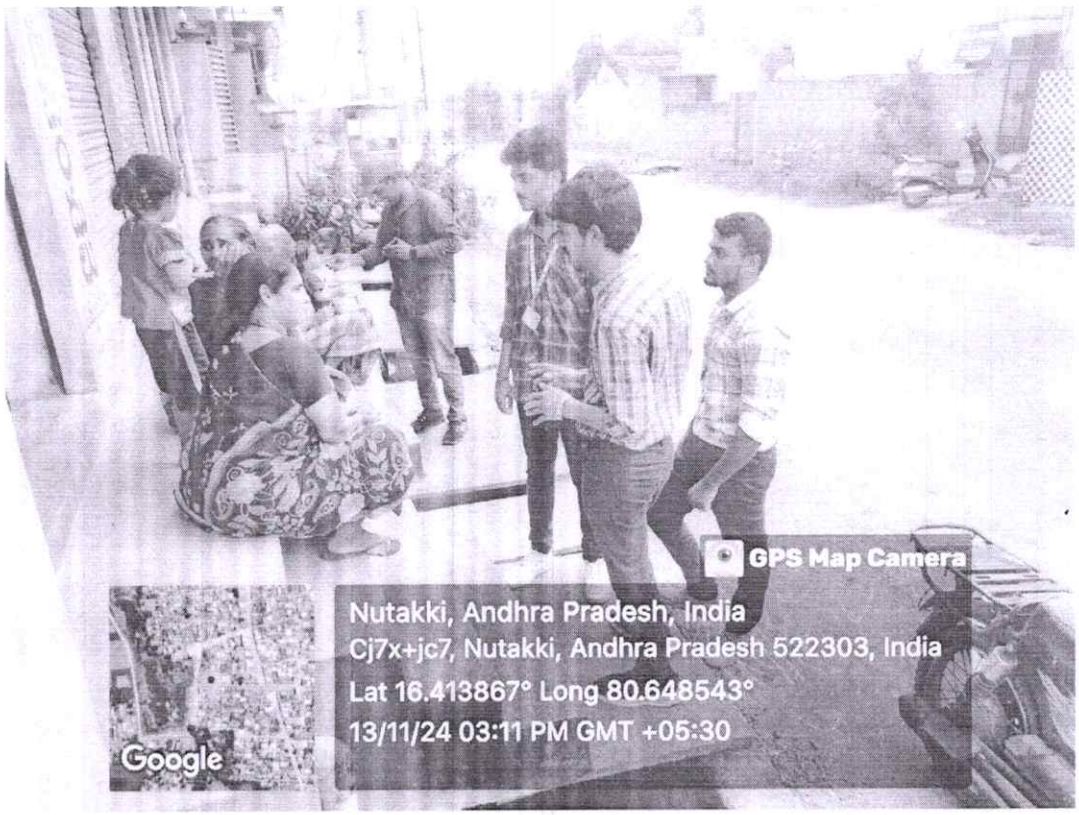

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KLEF

DEPARTMENT OF MECHANICAL ENGINEERING

MINUTES OF DEPARTMENT ACADEMIC COMMITTEE (DAC)

Date: 04-07-2025

The 28th Department Academic Committee (DAC) Meeting was conducted at 11:00 A.M. on 04/07/2025 in M118 (HOD Cabin).

Agenda of the Meeting

1. To discuss on the feedback given by the stakeholders
2. To discuss on the structure and curriculum of Y24 and Y25 B.Tech (Mechanical Engineering) admitted batch
3. To discuss on the structure and curriculum of Y25 M.Tech (Machine Design, Thermal Engineering and Mechanical Engineering) admitted batch.
4. To discuss result analysis, OBE and gap analysis of 2024-25 odd & Even semester courses.
5. To discuss on Value added courses to be offered to Y23, Y24 and Y25 admitted batch students.
6. Any other points with the permission of the chair

The following members were present:

1. Dr. T. Vijaya Kumar, Chair Person/HOD
2. Dr.K.V.Durga Rajesh, Dept.IQAC Incharge /Deputy HOD
3. Dr.S.N.Padhi, Faculty Representative/Cohort Professor I/C (Engineering Design)
4. Dr.S.S.Rao, Faculty Representative/Cohort Professor I/C(Smart Manufacturing)
5. Dr.V.L.Mangesh, Faculty Representative/Project Professor I/C
6. Dr.T.Kanthimathi, Academics Professor I/C & UG Programme Coordiantor
7. Dr.P.Kasi V Rao, Faculty Representative/Associate Dean Academics
8. Dr. K.Sai Sarath, Faculty Representative/Professor I/C Counselling
9. Dr. Priyaranjan Samal, Faculty Representative/Professor I/C OBE
10. Mr.P.Revanth-III/IV Student Representative (2300070009)
11. Mr.P.Abhiram-III/IV Student Representative (2300070010)
12. Mr.N.Sai Ananth-III/IV Student Representative (2300070011)
13. Mr.J.Sravan Kumar-III/IV Student Representative (2300070012)
14. Ms.K.Eesha-III/IV Student Representative (2300079018)

DAC Chairman welcomed all the members and delivered the agenda points to the members.

11/7/25
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Following are the deliberations in the meeting

Agenda-1: To discuss on the feedback given by stake holders	Resolution: It is resolved to approve the feedback given by stake holders and to put forth the same in the coming BOS.

- Based on the feedback given by Y23 admitted batch students to reduce the no. of contact hours so that they can carry out preparations for competitive exams, following modifications were proposed in the curriculum of Y24 & Y25 B.Tech admitted batch students
  1. The L-T-P-S of skill development courses is changed to 1-0-0-4 instead of 0-0-2-4
  2. The L-T-P-S of PE-1 course is changed to 3-0-2-0 instead of 3-0-2-4
  3. The L-T-P-S of PE-3 Course is changed to 3-0-0-2 instead of 3-0-2-4
  4. The no. of SIL courses is reduced to 2 instead of 3 with an L-T-P-S of 0-0-2-0
- Ms.Eesha (2300079018) III year student requested to offer the coding courses to Lateral entry students also, since these courses were taught to regular students in I year. Dr.K.V.D.Rajesh, replied that these courses are offered to lateral entry students as bridge courses during II/I and II/II semesters so that they will be made ready for CRT training starting in III year.
- Dr.T.Kanthimathi, suggested to add pure substances and vapour power cycles concepts to thermodynamics course and remove Psychometric concepts. She also suggested to include the concepts of steam turbines, compressors and optimization in "Thermal Systems Engineering" course.
  It is resolved to approve the modifications proposed for Thermodynamics course and to propose new course titled " Design of Thermal Systems" with an with an L-T-P-S of 3-1-0-4 in place of " Thermal Systems Engineering" including the concepts of Steam turbines, compressors and optimization techniques.
- Dr.M.Nageswara Rao, faculty member, suggested to add CAD modelling to Engineering Graphics course to enable I year students gain knowledge modelling software.
  It is resolved to add CAD modelling using Fusion 360 topic to Engineering Graphics course for Y25 admitted batch students.
- Mr. M.Prasad Rao parent of M.Sai Nagendhar(ID No.2300070013) requested to solve more examples for problem based courses. Chairman DAC explained that it is possible to solve one problem per model in the class hours, so to make students practise more problems assignments were given where they can practice and contact faculty for clarification of doubts.

The detailed analysis of stake holder's feedback and the action taken report is given in **Annexure-1**.

Vijaya Kumar 4/7/25

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Agenda-2: To discuss on the structure and curriculum of Y24 & Y25 admitted batch students	Resolution: It is resolved to approve the structure and curriculum of Y24 & Y25 B.Tech admitted batch and to put forth the same in the coming BOS.

- Dr.B.Nageswar Rao, faculty member, suggested to include the concepts of numerical methods, Probability and statistics in the curriculum, as these concepts are necessary for students to get employability in software related jobs.
  It is resolved to offer new maths course " Mathematical modelling & Numerical Methods" and" Probability and Statistics" in place of Computations in Mechanics and Statistics course for Y24 & Y25 admitted batch with an L-T-P-S of 2-0-2-0 .
- Dr.S.Ramesh Kumar, faculty member, Suggested to include Python programming in curriculum as this language is in demand for Mechanical engineers in all sectors.
  It is resolved to offer "Python programming" as ESC course for Y25 admitted batch with an L-T-P-S of 2-0-2-0.
- Dr. Lakshmi Narayana, alumni, suggested to include Optimization as maths course, since optimization concepts are needed in courses related to designing in Mechanical engineering.
  It is resolved to offer "Mathematical Optimization" as new course in place of Optimization techniques to Y24 & Y25 admitted batch L-T-P-S of 2-2-0-0.
- Dr G Rudra Narsimha Rao, Academic Peer, suggested to add machining concepts in Workshop Practices course to make students more interested towards mechanical courses
  It is resolved to include Machining concepts in Workshop Practices for Engineers course for Y25 admitted batch.
- Dr.S.V.S.Narayana Murthy, Industry person, recommended to include topics on Factory automation, Simulation, Inspection and Cyber security in core manufacturing courses to make students understand the latest manufacturing technology.
  It is resolved to offer a new course titled " Automated Manufacturing" by including the suggested concepts. It is also resolved to revise the Manufacturing processes course and rename it as "Manufacturing Processes and Technology" by including topics on Metal cutting, Unconventional Machining and GD & T for Y24 & Y25 admitted batch.
- Dr.S.N.Padhi, faculty member, suggested to include mechanical Vibrations topic in Kinematics & Dynamics course, as more opportunities are emerging in this field in the industries.
  It is resolved to include Mechanical Vibrations topic to Kinematics & Dynamics course for Y24 & Y25 admitted batch.
- Mr.Vamsi Subhash Lanka, industry person, recommended to include latest concepts in automobiles like hydrogen engines, battery vehicle, pollution control, vehicle operation and control, automated tracks etc. to enable students understand the latest technology in automobiles to make them industry ready.
  It is resolved to offer new Flexi core course titled " Modern Vehicle Technology" in place of Electric vehicle technology by including all the suggested topics to Y24 & Y25 admitted batch L-T-P-S of 2-0-2-0.
- Dr.S.S.Rao, faculty member, suggested to include concepts of mechatronics to Y24 & Y25 admitted batch as it is necessary for the present day industry.

Vijay Kumar 4/7/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302

It is resolved to offer new course "Robotics & Mechatronics" as Flexi core course to Y24 & Y25 admitted batch with an L-T-P-S of 2-0-2-0.

- Dr.D.V.A.RamaSastry, faculty member, suggested to add Hypermesh tool to skill development courses as it is the requirement of companies visiting the campus for placement drives.
  It is resolved to include Hypermesh tool in "Finite Element Analysis" course for Y24 & Y25 admitted batch with an L-T-P-S of 1-0-0-4.
- Dr. Jeswin JayaSingh, Industry person, suggested to include concepts on CAPP, tool path generation, NC code verification in the courses, to make students learn the latest simulation tools in manufacturing.
  It is resolved to include the said topics in SDC course "Computer Integrated Manufacturing" course for Y25 & Y25 admitted batch with an L-T-P-S of 1-0-0-4.
- Dr.Satish Ben, academic peer, Suggested to include latest skill related concepts like concurrent engineering, product development, Generative Design , Design for manufacturing and assembly to enhance the skills sets of students.
  It is resolved to offer a new skill development course titled "Applied Mechanical Design Practise" with an L-T-P-S of 1-0-0-4 for Y24 and Y25 admitted batch.
- Mr.G.Naga Sai Ram alumni, recommended to include a course on Refrigeration and Air conditioning as it is one of the emerging area in the present job market.
  It is resolved to offer " Refrigeration and Air conditioning" as professional elective-2 with an L-T-P-S of 3-0-0-0 in Automotive and Energy Engineering specialization".
- Dr.G.Murali, faculty member, recommended to add skilling component to thermal management course to make students understand the battery management systems through simulation.
  It is resolved to revise the course "Thermal Management of Electric and electronic systems" by adding skilling component and to offer it as professional elective-3 with an L-T-P-S of 3-0-0-2.
- Dr.S.N.Padhi, faculty member, Recommended to add lab component to Advanced Strength of materials course and only skill component to Modelling analysis and design of Robotics systems course to enhance the practical exposure of students in ASM course and to reduce the class hours in MADRS course
  It is resolved to offer "Advanced Strength of Materials" course as PE-1 with an L-T-P-S of 3-0-2-0 and "Modelling analysis and Design of Robotic systems" course as PE-3 with a L-T-P-S of 3-0-0-2 in Engineering Design specialization for Y24 and Y25 admitted batch.
- Smart manufacturing research group head Dr.S.S.Rao, as per the discussions in their group meetings recommended to offer the following new courses under Smart manufacturing specialization for Y24 & Y25 admitted batch to make students learn the latest technology in manufacturing industries and make them industry ready.
  1. AI and IOT in Manufacturing-PE-1 (L-T-P-S:3-0-2-0) in place of Reverse Engineering and Rapid Prototyping course
  2. Precision and Micro manufacturing-PE-2 (L-T-P-S:3-0-0-0) in place of Modern Manufacturing Course
  3. Additive and Hybrid Manufacturing-PE-3 (L-T-P-S: 3-0-0-2)in place of Sustainable Design and Social Innovation in smart Manufacturing course
  4. Digital Manufacturing-PE-4(L-T-P-S: 3-0-0-0) in place of Robotics & Industrial Automation Course

Vijay Kumar 4/7/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 30

5. Precision Innovation & Entrepreneurship-PE-4(L-T-P-S:3-0-0-0) in place of Mechanical Measurements and Metrology course
6. Sustainable Manufacturing-PE-5(L-T-P-S:3-0-0-0) in place of Advanced Materials manufacturing & Testing Course.
7. Syllabus of Flexible Manufacturing Systems course is revised by adding the topics on applications in FMS and to offer it as PE-2 with and L-T-P-S of 3-0-0-

It is resolved to offer the new courses under smart manufacturing specialization and also to revise the syllabus of Flexible Manufacturing course.

The Course Structure of Y24 & Y25 B.Tech admitted students is given in **Annexure-2 & 3.**

Agenda-3: To discuss on the Curriculum of Y25 admitted batch M.Tech programs	Resolution: It is resolved to approve the curriculum of Y25 admitted batch M.Tech programs and to put forth the same in the coming BOS.

Based on the feedback given by the PG coordinator following modifications were made to the structure of M.Tech-Thermal Engineering, M.Tech-Machine Design & M.Tech-Mechanical Engineering programs of Y25 admitted batch.

1. No. of Professional electives are reduced to 3 instead of 5
2. No. of professional core courses is increased to 6 instead of 5
3. No. of Audit courses are reduced to 1 instead of 2
4. L-T-P-S of Professional core course is 3-0-2-4

It is resolved to propose the modifications in M.Tech structures in the upcoming BOS.

The Course Structure of Y25 M.Tech admitted students is given in **Annexure-4, 5 & 6.**

Agenda-4: To discuss on the result analysis, OBE and gap analysis of 2024-25 odd & Even semester courses	Resolution: It is resolved to approve the OBE and gap analysis done for 2024-25 odd and even sem courses.

Chairman DAC presented the OBE analysis for the courses offered in 2024-25 Odd and Even Sem courses. It is resolved to the approve the OBE analysis of the courses.

Agenda-4: To discuss on Value added courses to be offered for Y24 & Y25 admitted batch B.Tech and Y25 Admitted batch M.Tech students	Resolution: It is resolved to approve the value added courses offered to Y24 &Y25 B.Tech and Y25 M.Tech admitted batch students and to propose the in the upcoming BOS.

Chairman DAC proposed the following value added courses to Y24 & Y25 B.Tech admitted batch students.

1. 25CC3001- 3D Modelling using CATIA(L-T-P-S: 0-0-0-8)
2. 25CC3008- AUTOCAD (L-T-P-S: 0-0-0-8)
3. 25CC3009-Autodesk Fusion 360 (L-T-P-S: 0-0-0-8)
4. 25CC3071- Programming Using Python (L-T-P-S: 0-0-0-8)
5. 25CC3084- Static analysis using ANSYS (L-T-P-S: 0-0-0-8)

Vijay Kumar 4/7/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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(Deemed to be University)
Green Fields, VADDESWARAM

6. 25CC3085- Static and dynamic analysis using ALTAIR HYPERWORKS (L-T-P-S: 0-0-0-8).

Chairman DAC proposed the following value added courses to Y25 M .Tech admitted batch students.

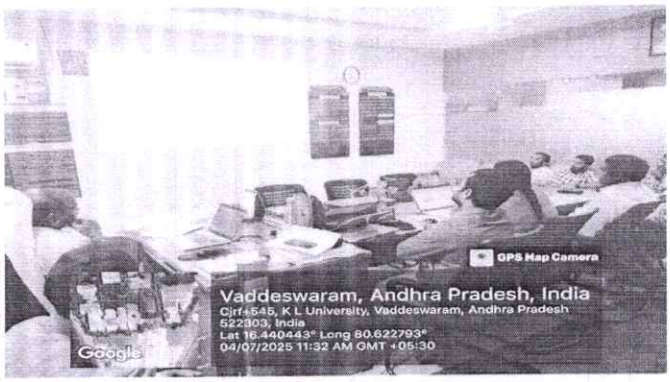
M.Tech-Machine Design & M.Tech- Mechanical Engineering

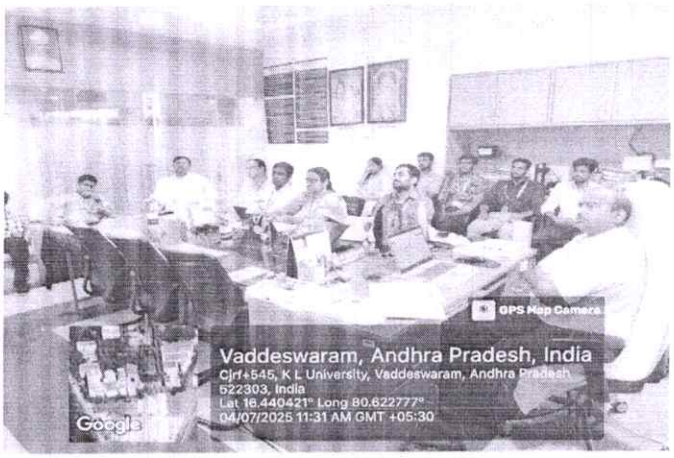
1. 25CC3071-Programming Using Python (L-T-P-S: 0-0-0-8)
2. 25CC3085- Static and dynamic analysis using ALTAIR HYPERWORKS (L-T-P-S: 0-0-0-8)

M.Tech-Thermal Engineering

1. 25CC3071-Programming Using Python (L-T-P-S: 0-0-0-8)
2. 25CC3114-Static and Dynamic Analysis using ANSYS CFD (L-T-P-S: 0-0-0-8)

It is resolved to propose the value added courses offered to Y24 & Y25 B.Tech and Y25 M.Tech admitted batches in the upcoming BOS.





Professor I/C Academics

Chairman-DAC
HOD-ME

4/7/25

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DEPARTMENT OF MECHANICAL ENGINEEEINRG

Stake Holder Feedback Analysis and Action Taken Report

Academic Year: 2025-26 Odd Sem

S.No	Stake Holders	Count
1	Academic Peers	18
2	Alumni	15
3	Faculty	13
4	Industry personnel	10
5	Parents	9
6	Students	92
	Total	**157**

Academic Peers

Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No.	BOS PgNo.	BOS Date
1	ME	B.Tech	Dr G Rudra Narsimha rao, Director, The Energy and Resources Institute (TERI), India	Suggested to add machining concepts in Workshop Practices course to make students more interested towards mechanical courses	Machining concepts in I year course will make students more interested in the mechanical courses	It is resolved to include Machining concepts in Workshop Practices for Engineers course for Y25 admitted batch	28	2	04-07-2025	29	8	11-08-2025
2	ME	B,Tech	Dr.Satish Ben, Professor, NIT Warangal	Suggested to include latest skill related concepts like concurrent engineering, product development, Generative Design, Design for manufacturing and assembly	The latest concepts in designing fiels is necessary to students to enhance their designing skils	It is resolved to offer a new skill development course titled "Applied Mechanical Design Pracitise" with an L-T-P-S of 1-0-0-4 fro Y24 and Y25 admitted batch	28	3	04-07-2025	29	5	11-08-2025
3	ME	B.Tech & M.Tech	Dr. A. Venu Gopal, Professor & Dean Academics, NIT Warangal, BOS Chairman	Appreciated the efforts taken by the management and department faculty in shaping the curriculum as per the present industry requirements	Curriculum is developed by considering the insights of the requirements of the industry	BOS chairman thanked the stake holder, and explained that multi disciplinary approach is adopted in framing the curriculum to make students industry ready and self sustained.				29	12	11-08-2025

Alumni

Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No.	BOS PgNo.	BOS Date
1	ME	B.Tech	Dr. Lakshmi Narayana, Professor, Bahrain Polytechnic, bahrain	Suggested to include Optimization as maths course	Optimization concepts are needed in courses related to designing in Mechancial engineering	It is resolved to offer "Mathematical Optimization" as new course in place of Optimization techniques to Y24 & Y25 admitted batch	28	2	04-07-2025	29	5	11-08-2025

11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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2	ME	B.Tech	Mr.G.Naga Sai Ram, Technical Support, ANSYS, Pune	Recommended to include a course on Refrigeration and Air conditioning as it is one of the emerging area in the present job market	Refrigeration and air conditioning with latest technological development has emerged as one of the job seeking field	It is resolved to offer " Refrigeration and air conditioning as professional elective-2 in Automotive Energy Engineering specialization"	28	4	04-07-2025	29	6	11-08-2025
3	ME	B.Tech &M.Tech	Dr.Ravi Teja, Manager Hyundai , R & D Division-BOS External member	Appreciated the efforts taken by the management and department faculty in shaping the curriculum as per the present industry requirements	Curriculum is developed by considering the insights of the requirements of the industry	BOS chairman thanked the stake holder, and explained that multi disciplinary approach is adopted in framing the curriculum to make students industry ready and self sustained.				29	12	11-08-2025

Faculty

Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No.	BOS PgNo.	BOS Date
1	ME	B.Tech	Dr.T.Kanthimathi, Assistant Professor	Include Pure susbstances and vapour power cycles in TD and remove Psychrometry from TD course and include topics on steam turbines, compressors and optimization techniques in TSE course	The topics were repeated in DTS course so the modification is required	It is resolved to approve the modifications for TD course and to propose new course titled "Design of thermal Systems" in place of Thermal Systems Engineering with the concepts of Steam turbines, compressors, Psychrometry, refrigeration basics and optimization techniques for Y24 & Y25 admitted batch	28	2	04-07-2025	29	4	11-08-2025
2	ME	B.Tech	Dr.M.Nageswara Rao, Associate Professor	Include CAD modelling concepts to Engineering Graphics course to enable students gain the knowledge of modelling from I year	Modelling is required in various courses from II year onwards	It is resolved to add CAD modelling using Fusion 360 to Engineering graphics course for Y25 admitted batch	28	2	04-07-2025	29	4	11-08-2025
3	ME	B.Tech	Dr.B.Nageswar Rao, Professor	Include the concepts of numerical methods, Probability and staistics in the curriculum	These concepts are necessary for students to get employability in software related jobs	It is resolved to offer new maths course " Mathematical modelling & Numerical Methods" and" Probability and Staistics" in place of Computations in Mechanics and Statistics course for Y24 & Y25 admitted batch	28	2	04-07-2025	29	5	11-08-2025
4	ME	B.Tech	Mr.S.Ramesh Kumar, Assistant Professor	Suggested to include Python programming in curriculum as this language is in demand for Mechancial engineers in all sectors	Python programming is essential for Mechanical engineers	It is resolved to offer "Python programming" as ESC course for Y25 admitted batch	28	2	04-07-2025	29	5	11-08-2025

11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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5	ME	B.Tech	Dr.K.V.Narsimha Rao, Professor	Recommended to offer course on Sustainable development Goals to make students understand the importance of sustainable development	Sustainable development goals need to be understood by the students to incorporate in their future projects	It is resolved to offer new audit course Insights of Sustainable development Goals to make students understand the importance of sustainable development with an L-T-P-S of 2-0-0-0.	28	2	04-07-2025	29	5	11-08-2025
5	ME	B.Tech	Dr.S.N.Padhi, Professor	Suggested to include Mechanical Vibrations topic in KDOM Course, since more oppurtunities are emerging in this field	Vibrations is an emerging field in automobile and machining industries	It is resolved to add vibrations topic in Kinematics & Dynamics of Machines Course	28	3	04-07-2025	29	8	11-08-2025
6	ME	B.Tech	Dr.S.S. Rao, Professor	Suggested to include concepts of mechatronics to Y24 & Y25 admitted batch as it is necessary for the present day industry	Mechatronics concept is necessary for meachanical end electronics related industries	It is resolved to offer new course "Robotics & Mechatronics" as Flexi core course to Y24 & Y25 admitted batch.	28	3	04-07-2025	29	5	11-08-2025
7	ME	B.Tech	Dr.D.V.A Rama Sastry, Associate Professor	Suggested to add Hypermesh tool to skill development courses as it is the requirement of companies visiting the campus for placement drives.	Hypermesh is the requirement of the industries related to desiging	It is resolved to include Hypermesh tool in "Finite Element Analysis" course fro Y24 & Y25 admitted batch with an L-T-P-S of 1-0-0-4.	28	3	04-07-2025	29	8	11-08-2025
8	ME	B.Tech	Dr.G.Murali, Professor	Recommended to add skilling component to thermal management course to make students understand the battery management systems through simulation	Present technological advancement demand simulation results for the battery mangement systems	It is resolved to revise the course "Thermal mangement of Electric and electronic systems" by adding skilling component and to offer it as professional elective-3 with an L-T-P-S of 3-0-0-2.	28	4	04-07-2025	29	8	11-08-2025
9	ME	B.Tech	Dr.S.N.Padhi, Professor	Recommended to add lab component to Advanced Strength of materials course and only skill component to Modelling analysis and design of Robotics systems course to enhance the practical exposure of students in ASM course and to reduce the class hours in MADRS course	TO enhance the pratical exposure of students lab and skill components are needed	It is resolved to offer "Advanced Strength of Materials" course as PE-1 with an L-T-P-S of 3-0-2-0 and "Modelling analysis and Design of Robotic systems" course as PE-3 with a L-T-P-S of 3-0-0-2 in Engineering Design specialization for Y24 and Y25 admitted batch	28	4	04-07-2025	29	8	11-08-2025

11/8/25

Dr. T. VIJAYA KUMAR
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10	ME	B.Tech	Dr.S.S.Rao, Smart Manufacturing Group Head & Professor	Recommended to offer the following new courses under Smart manufacturing specialization for Y24 & Y25 admitted batch to make students learn the latest technology in manufacturing industries and make them industry ready. 1. AI and IOT in Manufacturing-PE-1 (L-T-P-S:3-0-2-0) in place of Reverse Engineering and Rapid Prototyping course 2. Precision and Micro manufacturing-PE-2 (L-T-P-S:3-0-0-0) in place of Modern Manufacturing Course 3. Additive and Hybrid Manufacturing-PE-3 (L-T-P-S: 3-0-0-2)in place of Sustainable Design and Social Innovation in smart Manufacturing course 4. Digital Manufacturing-PE-4(L-T-P-S: 3-0-0-0) in place of Robotics & Industrial Automation Course 5. Precision Innovation & Entrepreneurship-PE-4(L-T-P-S:3-0-0-0) in place of Mechanical Measurements and Metrology course 6. Sustainable Manufacturing-PE-5(L-T-P-S:3-0-0-0) in place of Advanced Materials manufacturing & Testing Course. It is also recommended by the research group to revise the syllabus of Flexible Manufacturing Systems course by adding the topics on applications in FMS	New technology related courses will make studetns industry ready	It is resolved to offer the new courses under smart manufacturing specialization and also to revise the syllabus of Flexible Manufacturing course and to offer it as PE-2 with an L-T-P-S of 3-0-0-0.	28	4	04-07-2025	29	6	11-08-2025

Industry Personnel

Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No.	BOS PgNo.	BOS Date
1	ME	B.Tech	Dr.S.V.S.Narayana Murthy, Retd. Engineer at VSSC	Recommended to include topics on Factory automation, Simulation, Inspection and Cyber security in core manufacturing courses to make students understand the latest manufacturing technology	The suggested concepts are the latest technologies in manufacturing sector	It is resolved to offer a new course titled " Automated manufacturing" by including the suggested concepts. It is also resolved to revise the Manufacturing processes course and rename it as "Manufacturing Processes and Technology" by including topics on Metal cutting, Unconventional Machining and GD & T for Y24 & Y25 admitted batch	28	3	04-07-2025	29	5	11-08-2025
2	ME	B.Tech	Mr.Vamsi Subhash Lanka, Program Management, Electric Vehicles, Ashok Leyland, Taminadu	Recommended to include latest concepts in automobiles like hydrogen engines, battery vehicle, pollution control, vehicle operation and control, automated tracks etc. to enable students understand the latest technology in automobiles.	latest trends in automobile sector will enable students industry ready	It is resolved to offer new Flexi core course titled " Modern Vehicle Technology" in place of Electric vehicle technology by including all the suggested topics for Y24 & Y25 admitted batch	28	3	04-07-2025	29	5	11-08-2025

Vijay Kumar 11/8/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

3	ME	B.Tech	Dr. Jeswin JayaSingh, Retd General Manager, VSSC, Thiruvunanthapuram	Suggested to include concepts on CAPP, tool path generation, NC code verification in the courses, to make students learn the latest simulation tools in manufacturing.	Latest simulation tools in manufacturing are necessary for studetns to make them industry ready	It is resolved to include the said topics in SDC course "Computer Integrated Manufacturing" course for Y24 & Y25 admitted batch with an L-T-P-S of 1-0-0-4	28	3	04-07-2025	29	8	11-08-2025
4	ME	B.Tech & M.Tech	Dr.P.Srinivasa Rao, Global Training Head, Cyient Technologies, Hyderabad, BOS member	Appreciated the efforts taken by the management and department faculty in shaping the curriculum as per the present industry requirements	Curriculum is developed by considering the insights of the requirements of the industry	BOS chairman thanked the stake holder, and explained that multi disciplinary approach is adopted in framing the curriculum to make students industry ready and self sustained.				29	12	11-08-2025

Parent

Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No.	BOS PgNo.	BOS Date
1	ME	B.Tech	Mr.Prasada Rao, Parent of M.Sai Nagendhar(2300070013)	Appreciated the curriculum and requested to give more examples for solving in problem bases courses	More examles for problem based courses will make the student understand the concept more clearly	Chairman DAC explained that it is possible to solve one problem per model in the class hours, so to make students practise mor problems assignment were given where they can practice and contact faculty for doubt clarification	28	2	04-07-2025	29	12	11-08-2025

Student

Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No.	BOS PgNo.	BOS Date
1	ME	B.Tech	2200070019, Mr.Jagadeesh Kumar, 220070017-Y.Devesh, 2300079018-Ms.Eesha, 2300079018-Ms.Eshita Reddy	Requested to reduce the n. of class hours to enavle students to concentrate on other aciivities like preparing for competitve exams and pariticipaing sports etc.	Students should be given free time to utilize for other activities	It is resolved to propose following modifications to Y24 & Y25 admitted batch students 1. LTPS of SDC courses is changed to 1-0-0-4 instead of 0-0-2-4 2. LTPS of PE-1 is changed to 3-0-2-0 instead of 3-0-2-4 3. LTPS of PE-3 changed to 3-0-0-2 instead of 3-0-2-4 4. No. of SIL courses reduced to 2 instead of 3 with an LTPS of 0-0-2-0	28	2	04-07-2025	29	4	11-08-2025

Vijai Kumar 11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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2	ME	B.Tech	2300079034-S.Praveen	Requested to provide Unversity placements	Students need placements at the end of their Degree	Chairman DAC explained about the procedure of campus placements and CRT training	28	4	04-07-2025	29	4	11-08-2025
3	ME	B.Tech	2300079022-B.Dharma Teja	Requested to provide practical knowledge for the core subjects	Practical knowledge gives more exposure to industries	Chairman DAC explained to studetns that each core course in the curriculum is having lab in additon to this 4 exclusive skill development courses are offered and also 2 elective courses are offered with lab and skill component ot enhance the practical and skilling knowledge of students	28	4	04-07-2025	29	4	11-08-2025
4	ME	B.Tech	2300079014-L.Aarush Prince, 2300079007-D.Srininvasa Gowtham, 2100079061-Manesh, 2300070026-K.Gowrav Hruthik	Requested to reduce the no.of class hours and also requested to provide few leisure periods and allow time to change class rooms	Students are feeling hectic with the no. of class hours	It is resolved to reduce the no. of contact hours by modifying the LTPS and reducing the no.of courses	28	2	04-07-2025	29	4	11-08-2025

Professor I/C Academics

HOD-ME 11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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DEPARTMENT OF MECHANICAL ENGINEERING

Y25 REGULATION COURSE STRUCTURE

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision proposed By	Justification for the revision
1	1	25UC0017	VEDIC MATHEMATICS		AUC	2	0	0	0	0	2	Nil		Retained			
2	7	25UC0008	INDIAN CONSTITUTION		AUC	2	0	0	0	0	2	Nil		Retained			
3	7	25UC0032	INSIGHTS OF SUSTAINABLE DEVELOPMENT GOALS		AUC	2	0	0	0	0	2	Nil	Entrepreneurship	New	100%	Faculty member	Based on the recommendations of faculty member this course is introduced to make students understand and apply the SDG goals in their leanings
4	8	25UC0009	ECOLOGY & ENVIRONMENT		AUC	2	0	0	0	0	2	Nil		Retained			
TOTAL						**8**	**0**	**0**	**0**	**0**	**8**						
5	1	25UC1102	LANGUAGE SKILLS FOR ENGINEERS		HAS	0	0	4	0	2	4	Nil		Retained			
6	2	25UC1204	COMMUNICATION SKILLS FOR ENGINEERS		HAS	0	0	4	0	2	4	Nil		Retained			
7	8	25UC0026	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS		HAS	2	0	0	0	2	2	Nil		Retained			
8	1	25UC1203	DESIGN THINKING AND INNOVATION		HAS	0	0	4	0	2	4	Nil	Entrepreneurship	Retained			
9	6	25FLXXXX	FOREIGN LANGUAGE		HAS	3	0	0	0	3	3	Nil		Retained			
10	8	25MB4067	INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING		HAS	3	0	0	0	3	3	Nil	Entrepreneurship	Retained			
11	3	25UC0021	SOCIAL IMMERSIVE LEARNING-1		HAS	0	0	2	0	1	2	Nil	Skill Development	Retained			
12	5	25UC0022	SOCIAL IMMERSIVE LEARNING - 2		HAS	0	0	2	0	1	2	Nil	Skill Development	Retained			
TOTAL						**8**	**0**	**16**	**0**	**16**	**24**						

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Green Fields, VADDESWARAM-522 302.

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision proposed By	Justification for the revision
13	1	25MT1001	LINEAR ALGEBRA AND CALCULUS FOR ENGINEERS		BSC	2	2	0	0	4	4	Nil		Retained			
14	2	25MT2019	PROBABILITY & STATISTICS		BSC	2	2	0	0	4	4	NIL		New	100%	Faculty member	Based on the suggestion of faculty member this course is introduced by including the concepts of Probability & Statistics
15	4	25MT2004	MATHEMATICAL OPTIMIZATION		BSC	2	2	0	0	4	4	NIL		New	100%	Alumni	As per the recommendation of alumni, this course is introduced to include optimization concepts in place of Optimization Techniques course
16	5	25MT2003	MATHEMATICAL MODELLING & NUMERICAL METHOD		BSC	2	2	0	0	4	4	Nil		New	100%	Faculty member	Based on the suggestion of faculty member this course is introduced by including the concepts of numerical methods in place of Computations in Applied Mechanics and Statistics
17	1	25CY1001	ENGINEERING CHEMISTRY		BSC	3	0	2	0	4	5	Nil		Retained			
18	2	25ME2105	MATERIAL SCIENCE & METALLURGY		BSC	3	0	2	0	4	5	Nil	Employability	Retained			
TOTAL						**14**	**8**	**4**	**0**	**24**	**26**						
19	1	25ME1001	ENGINEERING MECHANICS		ESC	3	0	0	0	3	3	Nil	Employability	Retained			
20	1	25ME1002	ENGINEERING GRAPHICS	AUTOCAD & FUSION 360	ESC	0	0	4	0	2	4	Nil	Skill Development	Revised	25%	Faculty member	As per the feedback of faculty to enable students gain the knowledge on modelling from 1 year itself CAD modelling concepts are added to Engineering Graphics course
21	1	25SC1101	PROBLEM SOLVING THROUGH C		ESC	3	0	2	4	5	9	Nil	Skill Development	Retained			

11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 [illegible]

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision proposed By	Justification for the revision
22	3	25ME2109	THERMODYNAMICS		ESC	3	1	0	0	4	4	NIL	Employability	Revised	25%	Faculty member	Based on the feedback of faculty member to avoid repetition of the topics in DTS course, the modification were made
23	2	25ME1004	WORKSHOP PRACTICES FOR ENGINEERS		ESC	0	0	4	0	2	4	Nil	Skill Development	Revised	50%	Academic Peer	As per the feedback of academic peer, machining concepts are included in the course, to make the students aware of various machining operations in manufacturing
24	2	25EC1101	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS		ESC	3	0	2	0	4	5	Nil	Skill Development	Retained			
25	2	25SC1203	DATA STRUCTURES		ESC	3	0	2	4	5	9	Nil	Skill Development	Retained			
26	2	25ME1103	DESIGN TOOL WORKSHOP	Power BI/MS Office/Latex/H	ESC	0	0	4	0	2	4	Nil	Skill Development	Retained			
27	3	25SC2007	PYTHON PROGRAMMING		ESC	2	0	2	0	3	4	CTP	Skill Development	New	100%	Faculty member	As per the recommendation of faculty member this course is introduced to make mechanical students learn Python language.
TOTAL						**17**	**1**	**20**	**8**	**30**	**46**						
28	3	25ME2106	FLUID MECHANICS & HYDRAULIC MACI	CFD	PCC	3	0	2	0	4	5	NIL	Employability	Retained			
29	3	25ME2107	MECHANICS OF SOLIDS	SOLID WORKS/ANSYS	PCC	3	0	2	0	4	5	EM	Employability	Retained			
30	3	25ME2108	MANUFACTURING PROCESS & TECHNOLOGY		PCC	3	0	2	0	4	5	NIL	Employability	Revised	75%	Industry Person	As per the feedback of industry person to include latest topics in core manufacturing courses a new course was included and this course is revised by including the concepts of metal cutting, unconventional machining and GD & T
31	4	25AD2002	ARTIFICIAL INTELLIGENCE & MACHINE LEARNING		PCC	3	0	2	0	4	5	NIL	Skill Development	Retained			

11/8/25

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Green Fields, VADDESWARAM-522 302.

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision proposed By	Justification for the revision
32	4	25ME2210	AUTOMATED MANUFACTURING	Fusion 360/Visu	PCC	3	0	2	0	4	5	MPT	Skill Development	New	100%	Industry Person	Based on the recommendation of industry person to include latest concepts of automation this course is introduced in place of Manufacturing Technology
33	4	25ME2211	KINEMATICS & DYNAMICS OF MACHINE	ADAMS	PCC	3	1	2	0	5	6	EM	Skill Development	Revised	15%	Faculty member	Based on the feedback of faculty member, mechanical vibrations topic is added as more opportunities are emerging in this field
34	5	25ME3112	HEAT TRANSFER	CFD	PCC	3	0	2	0	4	5	TD	Employability	Retained			
35	6	25ME3212	MACHINE DESIGN	ANSYS	PCC	3	1	0	2	4.5	6	MOS	Skill Development	Retained			
36	6	25ME3214	DESIGN OF THERMAL SYSTEMS	EES	PCC	3	1	0	4	5	8	TD	Skill Development	New	100%	Faculty member	Based on the recommendations of faculty member this course offered in place of Thermal Systems Engineering
TOTAL						**27**	**3**	**14**	**6**	**38.5**	**50**						
37	4	25ME2221F	MODERN VEHICLE TECHNOLOGY		FCC	2	0	2	0	3	4	NIL	Employability	New	100%	Industry Person	By considering the recommendations of industry person this course is introduced by including latest concepts on Vehicle technology
38	5	25ME3122F	ROBOTICS & MECHATRONICS		FCC	2	0	2	0	3	4	NIL	Employability	New	100%	Faculty member	Based on the suggestion of faculty member this course is introduced by including the concepts of Mechatronics
TOTAL						**4**	**0**	**4**	**0**	**6**	**8**						

11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
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Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision proposed By	Justification for the revision
39	5		PROFESSIONAL ELECTIVE-1		PEC	3	0	2	0	4	5						
40	6		PROFESSIONAL ELECTIVE-2		PEC	3	0	0	0	3	3						
41	6		PROFESSIONAL ELECTIVE-3		PEC	3	0	0	2	3.5	5						
42	7		PROFESSIONAL ELECTIVE-4		PEC	3	0	0	0	3	3						
43	7		PROFESSIONAL ELECTIVE-5		PEC	3	0	0	0	3	3						
TOTAL						**15**	**0**	**2**	**2**	**16.5**	**19**						
44	3	SDC-1	SKILL DEVELOPMENT COURSE-1		SDC	1	0	0	4	2	5	NIL					
45	4	SDC-2.	SKILL DEVELOPMENT COURSE-2		SDC	1	0	0	4	2	5	NIL					
46	5	SDC-3	SKILL DEVELOPMENT COURSE-3		SDC	1	0	0	4	2	5	NIL					
47	6	SDC-4	SKILL DEVELOPMENT COURSE-4		SDC	1	0	0	4	2	5						
TOTAL						**4**	**0**	**0**	**16**	**8**	**20**						
48	SB-1	25IE2040	SOCIAL INTERNSHIP		PRI	0	0	0	4	0	4	Nil	Skill Development	Retained			
49	SB-2	25IE3041	TECHNICAL INTERNSHIP		PRI	0	0	0	4	0	4	Nil	Skill Development	Retained			
50	7	25IE4053	ENGINEERING CAPSTONE PROJECT - 1/PRACTICE SCHOOL/INTERNSHIP-I		PRI	0	0	8	16	8	12	Nil	Skill Development	Retained			
51	8	25IE4054	ENGINEERING CAPSTONE PROJECT - 2/PRACTICE SCHOOL/INTERNSHIP-II		PRI	0	0	8	16	8	12	Nil	Skill Development	Retained			
TOTAL						**0**	**0**	**16**	**40**	**16**	**32**						
52	7		OPEN ELECTIVE - 1		OEC	3	0	0	0	3	3		Employability				
53	7		OPEN ELECTIVE - 2		OEC	3	0	0	0	3	3		Employability				
54	8		OPEN ELECTIVE - 3		OEC	3	0	0	0	3	3		Employability				
TOTAL						**9**	**0**	**0**	**0**	**9**	**9**						
55	4		VALUE ADDED COURSE -1		VAC	0	0	0	2	0	2	Nil	Skill Development	Retained			
56	5		VALUE ADDED COURSE -2		VAC	0	0	0	2	0	2	Nil	Skill Development	Retained			
57	6		VALUE ADDED COURSE -3		VAC	0	0	0	2	0	2	Nil	Skill Development	Retained			

Dr. T. VIJAYA KUMAR 18/8/25
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
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Green Fields, VADDESWARAM-522 502.

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision proposed By	Justification for the revision
58	4		SPORTS/VALUE ADDED COURSE-4		VAC	0	0	0	2	0	2	Nil	Skill Development	Retained			
			TOTAL			**0**	**0**	**0**	**8**	**0**	**8**						
			GRAND TOTAL			106	12	76	80	164	250						

11/8/25

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List of Skil Development courses offered to Y25 & Y24 admitted batch

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision Proposed by	Justification for the revision
1	3	25SDME01R	FINITE ELEMENT ANALYSIS	HYPERWORKS/ANSYS	R	1	0	0	4	2	5	NIL	Skill Development	Revised	25%	Faculty member	As per the feedback of faculty member, Hypermesh tool is added the curriculum as it is being the requirement in many
2	4	25SDME02R	COMPUTER INTEGRATED MANUFACTURING	CNC Train	R	1	0	0	4	2	5	NIL	Skill Development	Revised	30%	Industry Person	As per the feedback of industry person, concepts on CAPP, tool path generation, NC code verification in Computer Integrated Manufacturing course
3	5	25SDME03R	APPLIED MECHANICAL DESIGN PRACTICE	CATIA	R	1	0	0	4	2	5	NIL	Skill Development	New	100%	Academic Peer	By considering the recommendation of academic peer, this course is introduced by including the latest skill related design concepts
4	6	25SDME04A	ANALYSIS OF ENERGY SYSTEMS(Ansys Fluent)	CFD	A	2	0	2	4	4	8	TD	Skill Development	Retained			
5	6	25SDME04E	ANALYSIS OF ENERGY SYSTEMS(Ansys Fluent)	CFD	E	2	0	2	4	4	8	TD	Skill Development	Retained			
6	6	25SDME04R	ANALYSIS OF ENERGY SYSTEMS(Ansys Fluent)	CFD	R	1	0	0	4	2	5	TD	Skill Development	Retained			

Sl No	Sem	Course Code	Course Title	Specialization	Type	L	T	P	S	Cr	CH	Pre-Req.	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %	Revision Proposed by	Justification for the revision
1	5	25AEE3101	AUTOMOBILE ENGINEERING	Automotive Energy Engineering	R	3	0	2	0	4	5	TD	Employaility	Retained			
2	5	25AEE3101A	AUTOMOBILE ENGINEERING		A	4	1	2	0	6	7	TD	Employaility				
3	6	25AEE3202	AUTOTRONICS & SAFETY		R	3	0	0	0	3	3	TD	Employaility	Retained			
4	6	25AEE3203	REFRIGERATION & AIR CONDITIONING		R	3	0	0	0	3	3	NIL	Skill Development	New	100%	Aumni	By considering the recommendation of alumni this course is introduced by including the modern cooling
5	6	25AEE3304	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONIC SYSTEMS		R	3	0	0	2	3.5	5	NIL	Skill Development	Revised	25%	Faculty member	As per the recommendation of faculty member the L-T-P-S of the course is changed to 3-0-0-2. Skill component is added to make students learn the simulation of
6	6	25AEE3304A	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONIC SYSTEMS		A	4	1	0	2	5.5	7	NIL	Employaility				
7	7	25AEE3405	SPECIAL PURPOSE VEHICLES		R	3	0	0	0	3	3	NIL	Employaility	Retained			
8	7	25AEE3406	VEHICLE DYNAMICS		R	3	0	0	0	3	3	NIL	Employaility	Retained			
9	7	25AEE3507	AUTONOMOUS VEHICLES		R	3	0	0	0	3	3	TD	Employaility	Retained			
10	7	25AEE3508	ALTERNATE ENERGY SOURCES FOR AUTOMOBILES		R	3	0	0	0	3	3	NIL	Employaility	Retained			

11/8/25

Dr. T. VIJAYA KUMAR
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25	6	25SMF3304	ADDITIVE AND HYBRID MANUFACTURING	mart Manufacturir	R	3	0	0	2	3.5	5	MSM	Skill Development	New	100%	Faculty member	By considering the recommendation of group head this course is introduced in place of Sustainable Design and Social Innovation in Smart manufacturing course
26	6	25SMF3304A	ADDITIVE AND HYBRID MANUFACTURING		A	4	1	0	2	5.5	7	MSM	Skill Development				
27	7	25SMF3405	DIGITAL MANUFACTURING		R	3	0	0	0	3	3	MSM	Employaility	New	100%	Faculty member	By considering the recommendation of group head this course is introduced in place of Robotics and Industrial Automation course
28	7	25SMF3406	PRECISION INNOVATION & ENTREPRENEURSHIP		R	3	0	0	0	3	3	MSM	Employaility	New	100%	Faculty member	By considering the recommendation of group head this course is introduced in place of Mechanical Measurements and Metrology course
29	7	25SMF3507	SUSTAINABLE MANUFACTURING		R	3	0	0	0	3	3	MSM	Employaility	New	100%	Faculty member	By considering the recommendation of group head this course is introduced in place of Advanced Materials Manufacturing & Testing course
30	7	25SMF3508	MACHINE TO MACHINE COMMUNICATION		R	3	0	0	0	3	3	MSM	Employaility	Retained			

List of Honors courses offered to Y25 & Y24 admitted batch

Sl No	CATEGORY	Y25 CODE	Course Title	ACRONYM	Mode	L	T	P	S	Cr	CH	PRE-REQUISITE	Employability / Entrepreneuship / Skill Development	New / Retained / Revised	Revision %		Justification
1	HTI	25DT01IF	ENTREPRENEURAL TECHNOLOGY DEVELOPMENT AND PROTOTYPING	ETDP	E	2	0	2	0	3	4	NIL	Entrepreneurship	Retained	0		
2	HTI	25DT02IF	PROBLEM DEFINITION AND VALIDATION	PDV	E	2	0	2	0	3	4		Entrepreneurship	Retained	0		
3	HTI	25DT03IF	PRODUCT DESIGN AND PROTOTYPE VALIDATION	PDPV	E	2	0	2	0	3	4		Entrepreneurship	Retained	0		
4	HTI	25DT04IF	SCALABLE SOLUTION DEVELOPMENT	SSD	E	2	0	2	0	3	4	NIL	Employability	Retained	0		
5	HTR	25IE01RF	INDEPENDENT STUDY & RESEARCH	ISR	R	2	0	2	0	3	4	NIL	Employability	Retained	0		
6	HTR	25IE02RF	RESEARCH METHODOLOGY, ETHICS & SCIENTIFIC WRITING	RMESW	R	2	0	2	0	3	4	NIL	Employability	Retained	0		
7	HTR	25IE03RF	RESEARCH SEMINAR	RS	R	2	0	2	0	3	4	NIL	Employability	Retained	0		
8	HTR	25IE04RF	TERM PAPER	TP	R	2	0	2	0	3	4	NIL	Employability	Retained	0		
9	HFC	25ME01HF	RENEWABLE ENERGY SYSTEMS	RES	R	3	0	2	0	4	5	NIL	Skill Development	Retained	0		

11/8/25

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10	HFC	25ME02HF	ROBOTICS AND CONTROL : THEORY AND PRACTICE	R&CTP	R	3	0	2	0	4	5	NIL	Skill Development	Retained	0		
11	HFC	25ME03HF	ADVANCED MANUFACTURING TECHNOLOGIES	AMT	R	3	0	2	0	4	5	MP	Skill Development	Retained	0		
12	HFC	25ME04HF	ADVANCED FINITE ELEMENT ANALYSIS	AFEA	R	3	0	2	0	4	5	FEA	Skill Development	Retained	0		
13	HFC	25ME05HF	MULTIDISCIPLINARY DESIGN OPTIMIZATION	MDO	R	3	0	2	0	4	5		Skill Development	Retained	0		
14	HTE	25ME01EF	ENERGY STORAGE SYSTEMS AND TECHNOLOGIES	ESST	R	3	0	2	0	4	5	TD	Skill Development	Retained	0		
15	HTE	25ME02EF	MECHANICAL SYSTEMS DESIGN	MSD	R	3	0	2	0	4	5	MD	Skill Development	Retained	0		
16	HTE	25ME03EF	ADVANCED MANUFACTURING PROCESSES	AMP	R	3	0	2	0	4	5	MP	Skill Development	Retained	0		
17	HTE	25ME04EF	MECHATRONICS AND ROBOTICS	M&R	R	3	0	2	0	4	5	KDOM	Skill Development	Retained	0		
18	HTE	25ME05EF	TECHNOLOGIES FOR CLEAN AND RENEWABLE ENERGY PRODUCTION	TFCREP	R	3	0	2	0	4	5	NIL	Skill Development	Retained	0		

No.Of New Courses:A	17
No.of Courses revised:B	11
Total No.of courses:C	97
% of syllabus revision:(A+B)*100/C	28.87
% of Courses focussing on Employability	40.21
% of Courses focussing on Entrepreneurship	7.22
% of Courses focussing on Skill Development	44.33

Professor I/C Academics

HOD-ME 11/8/25

Dr. T. VIJAYA KUMAR
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Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302

KLEF
Department of Mechanical Engineering
B.Tech 2024-25 Admitted Batch Category wise Course Structure

S.No.	Category	Sub-Cat	Cohort	SEM	Course Code	Course Name	Short Name	Mode	L	T	p	S	Cr	CH	Pre-requisite
1	HAS	HAS-CORE	777	1	23UC0026	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS	HGP	R	2	0	0	0	2	2	NIL
2	HAS	HAS-CORE	999	1	24UC1203	DESIGN THINKING AND INNOVATION	DTI	R	2	0	2	0	3	4	NIL
3	HAS	HAS-CORE	M51	1	24UC1102	LANGUAGE SKILLS FOR ENGINEERS	LSE	R	0	0	4	0	2	4	NIL
4	HAS	HAS-CORE	M51	2	24UC1204	COMMUNICATION SKILLS FOR ENGINEERS	CSFE	R	0	0	4	0	2	4	NIL
5	HAS	HAS-FLE	M51	6	24FLXXXX	FOREIGN LANGUAGE	FL	R	3	0	0	0	3	3	NIL
6	HAS	HAS-MGE	E25	8	24MB4067	INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING	IMPP	R	3	0	0	0	3	3	NIL
7	HAS	HAS	666	2	22UC0021	SOCIAL IMMERSIVE LEARNING	SIL-1	R	0	0	0	4	1	4	NIL
8	HAS	HAS	666	3	24UC0022	SOCIAL IMMERSIVE LEARNING	SIL-2	R	0	0	2	0	1	2	NIL
TOTAL									**10**	**0**	**12**	**4**	**17**	**26**	
9	BSC	BSC-CORE	M41	1	23MT1001	LINEAR ALGEBRA AND CALCULUS FOR ENGINEERS	LACE	R	2	2	0	0	4	4	NIL
10	BSC	BSC-ME-1	E14	3	23MT2003	MATHEMATICAL MODELLING & NUMERICAL METHODS	MMNM	R	2	2	0	0	4	4	NIL
11	BSC	BSC		4	24MT2019	PROBABILITY & STATISTICS	P&S	R	2	2	0	0	4	4	NIL
12	BSC	BSC-ME-2	E25	5	23MT2004	MATHEMATICAL OPTIMIZATION	MOT	R	2	2	0	0	4	4	NIL
13	BSC	BSC-SE-2	E25	2	23ME1005	MATERIAL SCIENCE & METALLURGY	MSM	R	3	0	2	0	4	5	NIL
14	BSC	BSC-SE-2	M50	4	23CY1001	ENGINEERING CHEMISTRY	ECY	R	3	0	2	0	4	5	NIL
TOTAL									**14**	**8**	**4**	**0**	**24**	**26**	
15	ESC	ESC-CORE	E06	1	24SC1102	COMPUTATIONAL THINKING FOR PROBLEM SOLVING	CTP	R	3	0	2	4	5	9	NIL
16	ESC	ESC-CORE	E06	2	24SC1204	DATA STRUCTURES USING PYTHON	DSP	R	3	0	2	4	5	9	CTP
17	PCC	PCC-CORE	E14	3	24ME2109	THERMODYNAMICS	TD	R	3	1	0	0	4	4	NIL
18	ESC	ESC-CORE	E15	1	23ME1001	ENGINEERING MECHANICS	EM	R	3	0	0	0	3	3	NIL

Dr. T. VIJAYA KUMAR 11/8/25
HOD-Mechanical Engineering
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S.No.	Category	Sub-Cat	Cohort	SEM	Course Code	Course Name	Short Name	Mode	L	T	p	S	Cr	CH	Pre-requisite
19	ESC	ESC-CORE	E15	1	23ME1002	ENGINEERING GRAPHICS	EG	R	0	0	4	0	2	4	NIL
20	ESC	ESC-CORE	E15	2	23ME1103	DESIGN TOOL WORKSHOP	DTW	R	0	0	4	0	2	4	NIL
21	ESC	ESC-CORE	E25	2	23ME1004	WORKSHOP PRACTICES FOR ENGINEERS	WPE	R	0	0	4	0	2	4	NIL
22	ESC	ESC-CORE	E29	2	23EC1203	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS	BEEC	R	2	0	0	0	2	2	NIL
TOTAL									**14**	**1**	**16**	**8**	**25**	**39**	
23	PCC	ESC-CORE	E02	4	24AD2002R	ARTIFICIAL INTELLIGENCE & MACHINE LEARNING	AIML	R	3	0	2	0	4	5	NIL
24	PCC	PCC-CORE	E14	3	24ME2106	FLUID MECHANICS & HYDRAULIC MACHINES	FMHM	R	3	0	2	0	4	5	NIL
25	PCC	PCC-CORE	E14	5	24ME3112R	HEAT TRANSFER	HT	R	3	0	2	0	4	5	TD
26	PCC	PCC-CORE	E14	6	24ME3214	DESIGN OF THERMAL SYSTEMS	DTS	R	3	1	0	4	5	8	TD
27	PCC	PCC-CORE	E15	3	24ME2107R	MECHANICS OF SOLIDS	MOS	R	3	0	2	0	4	5	EM
28	PCC	PCC-CORE	E15	4	24ME2211	KINEMATICS & DYNAMICS OF MACHINES	KDOM	R	3	1	2	0	5	6	EM
29	PCC	PCC-CORE	E15	6	24ME3213R	MACHINE DESIGN	MD	R	3	1	0	2	4.5	6	MOS
30	PCC	PCC-CORE	E25	3	24ME2108	MANUFACTURING PROCESS & TECHNOLOGY	MPT	R	3	0	2	0	4	5	WPE
31	PCC	PCC-CORE	E25	4	24ME2210R	AUTOMATED MANUFACTURING	AM	R	3	0	2	0	4	5	MPT
TOTAL									**27**	**3**	**14**	**6**	**38.5**	**50**	
32	FCC	FC-1	E25	4	24ME2221F	MODERN VEHICLE TECHNOLOGY	MVT	F	2	0	2	0	3	4	NIL
33	FCC	FC-2	E25	5	24ME3122F	ROBOTICS & MECHATRONICS	R&M	R	2	0	2	0	3	4	KDOM
TOTAL									**4**	**0**	**4**	**0**	**6**	**8**	
34	SDC	SDP-1		3	24SDME01R	FINITE ELEMENT ANALYSIS	SDC-1	R	1	0	0	4	2	5	A.E
35	SDC	SDP-2		4	24SDME02R	COMPUTER INTEGRATED MANUFACTURING	SDC-2	R	1	0	0	4	2	5	A.E
36	SDC	SDP-3		5	24SDME03R	APPLIED MECHANICAL DESIGN PRACTICE	SDC-3	R	1	0	0	4	2	5	A.E
37	SDC	SDP-4		6	24SDME04R	ANALYSIS OF ENERGY SYSTEMS	SDC-4	R	1	0	0	4	2	5	
TOTAL									**4**	**0**	**0**	**16**	**8**	**20**	

Dr. T. VIJAYA KUMAR 11/8/25
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

S.No.	Category	Sub-Cat	Cohort	SEM	Course Code	Course Name	Short Name	Mode	L	T	p	S	Cr	CH	Pre-requisite
38	PE	PE-1		5		PROFESSIONAL ELECTIVE-1	PE-1	R	3	0	2	0	4	5	
39	PE	PE-2		6		PROFESSIONAL ELECTIVE-2	PE-2	R	3	0	0	0	3	3	
40	PE	PE-3		6		PROFESSIONAL ELECTIVE-3	PE-3	R	3	0	0	2	3.5	5	
41	PE	PE-4		7		PROFESSIONAL ELECTIVE-4	PE-4	M	3	0	0	0	3	3	
42	PE	PE-5		7		PROFESSIONAL ELECTIVE-5	PE-5	R	3	0	0	0	3	3	
TOTAL									**15**	**0**	**2**	**2**	**16.5**	**19**	
43	PRI	PRI-CORE	555	SB-1	24IE2040	SOCIAL INTERNSHIP	SIP	R	0	0	0	4	0	4	NIL
44	PRI	PRI-CORE	555	SB-2	24IE3041	TECHNICAL INTERNSHIP	TIP	R	0	0	0	4	0	4	NIL
45	PRI	PRI-CORE	555	7	24IE4053R	CAPSTONE PROJECT - 1	CP-1	R	0	0	8	16	8	12	NIL
46	PRI	PRI-CORE	555	8	24IE4054R	CAPSTONE PROJECT - 2	CP-2	R	0	0	8	16	8	12	NIL
47									**0**	**0**	**16**	**40**	**16**	**32**	
47		OE		7		OPEN ELECTIVE-1	OE-1	R	3	0	0	0	3	3	NIL
48		OE		7		OPEN ELECTIVE-2	OE-2	R	3	0	0	0	3	3	NIL
49		OE		8		OPEN ELECTIVE-3	OE-3	R	3	0	0	0	3	3	NIL
TOTAL									**9**	**0**	**0**	**0**	**9**	**9**	
50		VAC		3		VAC-SPORTS	SPORTS	R	0	0	0	2	0	2	NIL
51		VAC		4		VAC-CERT-1	VAC-CERT	R	0	0	0	2	0	2	NIL
52		VAC		5		VAC-CERT-2	VAC-CERT	R	0	0	0	2	0	2	NIL
53		VAC		6		VAC-CERT-3	VAC-CERT	R	0	0	0	2	0	2	NIL
TOTAL									**0**	**0**	**0**	**8**	**0**	**8**	
54	AUC	AUC-CORE	M12	2	24UC0008	INDIAN CONSTITUTION	IC	R	2	0	0	0	0	2	NIL
55	AUC	AUC-CORE	M44	1	24UC0017	INDIAN KNOWLEDGE SYSTEMS: VEDIC MATHEMATICS	IKSVM	R	2	0	0	0	0	2	NIL
56				7	24UC0032	INSIGHTS OF SUSTAINABLE DEVELOPMENT GOALS	AUC	R	2	0	0	0	0	2	NIL
57	AUC	AUC-CORE	M49	8	24UC0009	ECOLOGY AND ENVIRONMENT	E&E	R	2	0	0	0	0	2	NIL
TOTAL									**8**	**0**	**0**	**0**	**0**	**8**	
GRAND TOTAL									**105**	**12**	**68**	**84**	**160**	**245**	

11/8/25

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DEPARTMENT OF MECHANICAL ENGINEERING

Y25 REGULATION COURSE STRUCTURE

Sl No	Sem	Course Code	Course Title	Tools Used	Type	L	T	P	S	Cr	CH	Pre-Req.
1	1	25UC0017	VEDIC MATHEMATICS		AUC	2	0	0	0	0	2	Nil
2	7	25UC0008	INDIAN CONSTITUTION		AUC	2	0	0	0	0	2	Nil
3	7	25UC0032	INSIGHTS OF SUSTAINABLE DEVELOPMENT GOALS		AUC	2	0	0	0	0	2	Nil
4	8	25UC0009	ECOLOGY & ENVIRONMENT		AUC	2	0	0	0	0	2	Nil
TOTAL						8	0	0	0	0	8	
5	1	25UC1102	LANGUAGE SKILLS FOR ENGINEERS		HAS	0	0	4	0	2	4	Nil
6	2	25UC1204	COMMUNICATION SKILLS FOR ENGINEERS		HAS	0	0	4	0	2	4	Nil
7	8	25UC0026	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS		HAS	2	0	0	0	2	2	Nil
8	1	25UC1203	DESIGN THINKING AND INNOVATION		HAS	0	0	4	0	2	4	Nil
9	6	26FLXXXX	FOREIGN LANGUAGE		HAS	3	0	0	0	3	3	Nil
10	8	25MB4067	INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING		HAS	3	0	0	0	3	3	Nil
11	3	25UC0021	SOCIAL IMMERSIVE LEARNING-I		HAS	0	0	2	0	1	2	Nil
12	5	25UC0022	SOCIAL IMMERSIVE LEARNING - 2		HAS	0	0	2	0	1	2	Nil
TOTAL						8	0	16	0	16	24	
13	1	25MT1001	LINEAR ALGEBRA AND CALCULUS FOR ENGINEERS		BSC	2	2	0	0	4	4	Nil
14	2	25MT2019	PROBABILITY & STATISTICS		BSC	2	2	0	0	4	4	NIL
15	4	25MT2004	MATHEMATICAL OPTIMIZATION		BSC	2	2	0	0	4	4	NIL
16	5	25MT2003	MATHEMATICAL MODELLING & NUMERICAL METHODS		BSC	2	2	0	0	4	4	Nil
17	1	25CY1001	ENGINEERING CHEMISTRY		BSC	3	0	2	0	4	5	Nil
18	2	25ME2105	MATERIAL SCIENCE & METALLURGY		BSC	3	0	2	0	4	5	Nil
TOTAL						14	8	4	0	24	26	
19	1	25ME1001	ENGINEERING MECHANICS		ESC	3	0	0	0	3	3	Nil
20	1	25ME1002	ENGINEERING GRAPHICS	AUTOCAD & FUSION 360	ESC	0	0	4	0	2	4	Nil

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)

11/8/25

21	1	25SC1101	PROBLEM SOLVING THROUGH C		ESC	3	0	2	4	5	9	Nil
22	3	25ME2109	THERMODYNAMICS		ESC	3	1	0	0	4	4	NIL
23	2	25ME1004	WORKSHOP PRACTICES FOR ENGINEERS		ESC	0	0	4	0	2	4	Nil
24	2	25EC1101	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS		ESC	3	0	2	0	4	5	Nil
25	2	25SC1203	DATA STRUCTURES		ESC	3	0	2	4	5	9	Nil
26	2	25ME1103	DESIGN TOOL WORKSHOP		ESC	0	0	4	0	2	4	Nil
27	3	25SC2007	PYTHON PROGRAMMING		ESC	2	0	2	0	3	4	CTP
TOTAL						17	1	20	8	30	46	
28	3	25ME2106	FLUID MECHANICS & HYDRAULIC MACHINES	CFD	PCC	3	0	2	0	4	5	NIL
29	3	25ME2107R	MECHANICS OF SOLIDS	SOLID WORKS/ANSYS	PCC	3	0	2	0	4	5	EM
30	3	25ME2108	MANUFACTURING PROCESS & TECHNOLOGY		PCC	3	0	2	0	4	5	NIL
31	4	25AD2002	ARTIFICIAL INTELLIGENCE & MACHINE LEARNING		PCC	3	0	2	0	4	5	NIL
32	4	25ME2210R	AUTOMATED MANUFACTURING	CNC TRAIN	PCC	3	0	2	0	4	5	MPT
33	4	25ME2211	KINEMATICS & DYNAMICS OF MACHINES	ADAMS	PCC	3	1	2	0	5	6	EM
34	5	25ME3112R	HEAT TRANSFER	CFD	PCC	3	0	2	0	4	5	TD
35	6	25ME3212R	MACHINE DESIGN	ANSYS	PCC	3	1	0	2	4.5	6	MOS
36	6	25ME3214	DESIGN OF THERMAL SYSTEMS	EES	PCC	3	1	0	4	5	8	TD
TOTAL						27	3	14	6	38.5	50	
37	4	25ME2221F	MODERN VEHICLE TECHNOLOGY		FCC	2	0	2	0	3	4	NIL
38	5	25ME3122F	ROBOTICS & MECHATRONICS		FCC	2	0	2	0	3	4	NIL
TOTAL						4	0	4	0	6	8	
39	5		PROFESSIONAL ELECTIVE-1		PEC	3	0	2	0	4	5	
40	6		PROFESSIONAL ELECTIVE-2		PEC	3	0	0	0	3	3	
41	6		PROFESSIONAL ELECTIVE-3		PEC	3	0	0	2	3.5	5	
42	7		PROFESSIONAL ELECTIVE-4		PEC	3	0	0	0	3	3	
43	7		PROFESSIONAL ELECTIVE-5		PEC	3	0	0	0	3	3	
TOTAL						15	0	2	2	16.5	19	

Dr. T. VIJAYA KUMAR
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(Deemed to be University)

11/8/25

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University established u/s 3 of the UGC Act, 1956)

44	3	25SDME01R	FINITE ELEMENT ANALYSIS	HYPERWORKS/ ANSYS	SDC	1	0	0	4	2	5	NIL
45	4	25SDME02R	COMPUTER INTEGRATED MANUFACTURING	DIGITAL MANUFACTURING & SMART FACTORIES- TALENT SPRINT	SDC	1	0	0	4	2	5	NIL
46	5	25SDME03R	APPLIED MECHANICAL DESIGN PRACTICE	CATIA	SDC	1	0	0	4	2	5	NIL
47	6	25SDME04R	ANALYSIS OF ENERGY SYSTEMS		SDC	1	0	0	4	2	5	
			TOTAL			4	0	0	16	8	20	
48	SB-1	25IE2040	SOCIAL INTERNSHIP		PRI	0	0	0	4	0	4	Nil
49	SB-2	25IE3041	TECHNICAL INTERNSHIP		PRI	0	0	0	4	0	4	
50	7	25IE4053R	ENGINEERING CAPSTONE PROJECT - 1/PRACTICE SCHOOL/INTERNSHIP-I		PRI	0	0	8	16	8	12	
51	8	25IE4054R	ENGINEERING CAPSTONE PROJECT - 2/PRACTICE SCHOOL/INTERNSHIP-II		PRI	0	0	8	16	8	12	
			TOTAL			0	0	16	40	16	32	
52	7		OPEN ELECTIVE - 1		OEC	3	0	0	0	3	3	
53	7		OPEN ELECTIVE - 2		OEC	3	0	0	0	3	3	
54	8		OPEN ELECTIVE - 3		OEC	3	0	0	0	3	3	
			TOTAL			9	0	0	0	9	9	
55	4		VALUE ADDED COURSE -1		VAC	0	0	0	2	0	2	
56	5		VALUE ADDED COURSE -2		VAC	0	0	0	2	0	2	
57	6		VALUE ADDED COURSE -3		VAC	0	0	0	2	0	2	
58	4		SPORTS/VALUE ADDED COURSE-4		VAC	0	0	0	2	0	2	
			TOTAL			0	0	0	8	0	8	
			GRAND TOTAL			106	12	76	80	164	250	

17/8/25

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COURSE CODE	25UC0032	COURSE CATEGORY					
COURSE TITLE	Insights of Sustainable Development Goals	L	T	P	S	Cr	CH
		2	0	0	0	0	2
Pre-Requisite Course(s)	NIL	Course Offering Department					

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Understand the history and need for Sustainable Development Goals.	PO1-2, PO6-2, PO7-3	2
CO-2	Apply the knowledge of 17 SDGs and their role in addressing global challenges.	PO1-2, PO6-2, PO7-3	3
CO-3	Analyze the case studies of how SDGs are implemented in India and other countries.	PO1-2, PO6-2, PO7-3	4
CO-4	Analyze the practical solutions at the individual and community level for selected SDGs.	PO1-2, PO6-2, PO7-3	4

SYLLABUS:

CO-1	**Introduction to Sustainable Development Goals:** Meaning of sustainability and sustainable development-Historical background: From Millennium development Goals (MDGs) to SDGs-Overview of 17 SDGs and the UN 2030 Agenda-Importance of SDGs for engineers and society.
CO-2	**Social and Economic Dimensions:** Key SDGs: No Poverty, Zero Hunger, Good Health, Quality Education, Gender Equality-Decent Work & Economic Growth, Reduced Inequalities-Role of governments, NGOs, and citizens in achieving social goals-Case examples from India (e.g., Swachh Bharat, Beti Bachao Beti Padhao)
CO-3	**Environmental Dimensions:** Affordable & Clean Energy, Climate Action, Life Below Water, Life on Land, Sustainable Cities-Basic concepts of renewable energy, waste management, and biodiversity-Role of technology and engineering in environmental protection-Examples of green innovations.
CO-4	**Implementation and Local Action**: National monitoring: NITI Aayog's SDG Index-Success stories from India and other countries-Challenges in achieving SDGs-Student projects: Designing simple community-level SDG initiatives.

TEXTBOOKS:

1	**United Nations** – *The Sustainable Development Goals Report* – UN Publications (latest edition).
2	**Sachs, Jeffrey D.** – *The Age of Sustainable Development* – Columbia University Press.
3	**NITI Aayog** – *SDG India Index and Dashboard* – Government of India.
4	**Le Blanc, David** – *Sustainable Development Goals: An Integrated Approach* – UN DESA.

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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Green Fields, VADDESWARAM-522

COURSE CODE	24MT2019	COURSE CATEGORY			BSC		
		L	T	P	S	Cr	CH
COURSE TITLE	Probability and Statistics	2	2	0	0	4	4
Pre-Requisite Course(s)	NIL	Course Offering Department			AI&DS		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Summarize the data using frequency distributions, diagrams, and compute central tendency and dispersion measures including coefficient of variation.	PO-1/PSO-1	3
CO-2	Analyze the relationships using correlation and regression methods for grouped, ungrouped, and rank data, and apply linear/non-linear regression models.	PO-1/PSO-1	3
CO-3	Apply probability theory, theorems, and standard discrete and continuous distributions (binomial, Poisson, normal) to solve real world problems.	PO-1/PSO-1	3
CO-4	Perform hypothesis testing by applying large and small sample tests, t-tests, Chi-square tests, and ANOVA for statistical inference.	PO-1/PSO-1	3

SYLLABUS:

CO-1	Descriptive Statistics: Introduction to statistics, construction of Frequency distribution, diagrammatical and graphical presentation of data, Measures of central tendency and dispersion measures, Coefficient of variation.
CO-2	Correlation and Regression: Correlation coefficient for grouped and ungrouped data, Rank correlation for tied and untied observations, simple correlation and regression of their properties and relations. Applications on linear regression and non-linear regression models.
CO-3	Probability: Basics on probability theory and definition of probability, addition and multiplication theorems, conditional probability and Baye's theorem. Discrete and continuous random variables; Standard Univariate Distributions: Standard Univariate Discrete and continuous distributions, i.e., binomial; Poisson; normal distribution and their inter relations and applications.
CO-4	Inferential Statistics: Basic on statistical inference. Large sample tests: Test for an assumed mean and equality of two population means (with known and unknown S.D) and tests for proportions. Exact sampling tests: t-test for an assumed mean and equality of means of two populations, variance ratiotest, Chi-square test-goodness of fit and independence of attributes. Analysis of variance tests - one factor and two factor ANOVA.

TEXTBOOKS:

1	Ronald E. Walpole, Sharon L. Myers and Keying Ye, "Probability and Statistics for Engineers and Scientists", 9th Edition, Pearson Pub.
2	Richard A Johnson, Miller& Freund's Probability and Statistics for Engineers, PHI, New Delhi, 11th Edition (2011).
3	Advanced Engineering Mathematics by Erwin Kreyszig, John Wiley & Son's, 10th Edition.
4	B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, India

11/8/25
Dr. T. VIJAYA KUMAR
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COURSE CODE	25MT2004	COURSE CATEGORY			BSC		
COURSE TITLE	MATHEMATICAL OPTIMIZATION	L	T	P	S	Cr	CH
		2	2	0	0	4	4
Pre-Requisite Course(s)	Linear algebra	Course Offering Department			CSE		

COURSE OUTCOMES:

CO NO.	COURSE OUTCOME (CO)	PO/PSO	BTL
CO-1	Apply various methods for finding the optimal solution of Linear Programming Problem	PO1,PSO1	3
CO-2	Apply Integer Programming and Gradient methods for solving optimization problems	PO1,PO2,PSO1	3
CO-3	Express a practical problem, such as an engineering analysis or design problem and to optimize a multivariate quadratic function subject to linear constraints on the variables.	PO2,PSO2 PO3	3
CO-4	Apply and understand the search and optimization methodologies applicable to the resolution of multi disciplinary decision problems, under a decision support framework.	PO2,PO3,PSO2	3

SYLLABUS:

CO-1	Introduction to Optimization: Types of optimization problems, Applications across disciplines. Linear Programming: Formulation of LP Problem (LPP), Graphical method, Simplex method.(maximization and minimization) Duality concept in LPP. Transportation problem, Assignment method.
CO-2	Integer Programming, Branch & bound algorithms, valid inequalities & cut plane method. Constrained optimization: Gradient descent Newton's method Conjugate gradient method.
CO-3	Non-Linear Programming: Quadratic programs – Constrained quadratic programming problems, Beale's method, Wolfe method, Karush-Kuhn Tucker (KKT) Conditions. Geometric Programming: Problems with one-degree of difficulty with positive coefficients, Geometric programming with constraints, Problems with positive and negative coefficients.
CO-4	Infinite Dimensional Optimization : Heuristic and Meta heuristics, Single solution vs. population-based, Evolutionary algorithms Genetic Algorithm, Trajectory algorithms- Simulated annealing, Tabu search. Nature- inspired metaheuristics-Ant-colony optimization, Particle swarm optimization

TEXTBOOKS:

1	Introduction to Operations Research by Frederick S. Hillier & Gerald J. Lieberman , **McGraw Hill,2024**
2	Convex Optimization by Stephen Boyd & Lieven Vandenberghe **Cambridge University Press.** First released in **2004**
3	Linear Programming by Vasek Chvátal, W. H. Freeman 1983

Dr. T. VIJAYA KUMAR 11/8/25
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Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University u/s 3 of the UGC Act, 1956)

COURSE CODE	25MT2003	COURSE CATEGORY					
COURSE TITLE	**Mathematical Modelling and Numerical Methods**	L	T	P	S	Cr	CH
		2	2	0	0.	4.5	7
Pre-Requisite Course(s)	NA	Course Offering Department			CE, EEE		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Modeling and solution of algebraic and transcendental equations	PO1	3
CO-2	Apply different numerical techniques for solving first-order ordinary differential equations.	PO1	3
CO-3	Apply Lagrange's method to solve the linear partial differential equations..	PO1	3
CO-4	Apply the method of separation of variables to solve the applications of partial differential equations	PO1	3

SYLLABUS:

CO-1	**Numerical Methods:**Solution of algebraic and transcendental equations: Bisection method and Newton –Raphson method. Finite differences: Forward, Backward, Shift operators, average operator and relations between the difference operators
CO-2	**Interpolation**: Lagrange's and Newton's divided difference formulas.**Numerical solutions of first order ordinary differential equations:** Taylor's, Eulers, Modified Eulers's and Runge-Kutta method of fourth order.
CO-3	**Numerical solutions of system of linear equations**: Models of system of linear equations- Jacobi and Gauss-Seidel methods
CO-4	**Partial differential equations:** Formation of partial differential equations, solutions of first order linear and nonlinear PDE–Lagrange's and Charpit's methods

TEXTBOOKS:

1	Advanced Engineering Mathematics, Erwin Kreyszig. John Wiley & Sons, Inc. 10 th Edition
2	Numerical methods for scientific and engineering computation by M.K. Jain, S.R.K.Iyengar and R.K.Jain, New Age International Publishers (Fifth edition), New Delhi.
3	Steven C, Chapra, Applied Numerical methods with MATLAB for Engineers and Scientists. Third edition. Tata McGraw-Hill edition, 2012
4	Higher Engineering Mathematics, BS Grewal. Publisher: Khanna, New Delhi.
5	Advanced Numerical Methods with MATLAB, SC Chapra, Tata McGraw-Hill. R3

Vijay Kumar 11/8/25

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Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University under Sec. 3 of the UGC Act, 1956)

COURSE CODE	25SC2007	COURSE CATEGORY			ESC		
		L	T	P	S	Cr	CH
COURSE TITLE	PYTHON PROGRAMMING	2	0	2	0	4.5	7
Pre-Requisite Course(s)	Basic Computer Knowledge. Basic Mathematics, Logic and Problem-Solving Skills	Course Offering Department			AI&DS		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply the concepts of Basic Data types, Operators, Decision and Looping Control Statements, String	PO1, PO2, PO3, PO5	3
CO-2	Apply the concepts of Lists, Tuples, Dictionaries. Functions, Modules, Class, Object, OOPS principles.	PO1, PO2, PO3, PO5	3
CO-3	Apply Concepts of OOP principles, classes and objects, Call by value vs. Call by reference, recursion, and Nested classes	PO1, PO2, PO3, PO5	3
CO-4	Apply Concepts of Files, Interfaces, Packages, Threads	PO1, PO2, PO3, PO5	3
CO-5	Design, implement, and evaluate Python programs using basic data types, variables, expressions, conditional statements, loops, functions, built-in data structures, object-oriented programming concepts, Python libraries and modules, debugging techniques, and file I/O to solve programming problems.	PO1, PO2, PO3, PO5, PO9, PO11	4

SYLLABUS:

CO-1	Python interpreter and interactive mode; values and types: int, float, Boolean, string, and list, variables, expressions, statements, tuple assignment, precedence of operators, comments, Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Strings: string slices, immutability, string functions and methods, string module
CO-2	Fruitful functions: functions, function definition and use, flow of execution, parameters and arguments return values, parameters, local and global scope; List, Tuples, Set, Dictionary data types, Classes, Object: command line arguments, Class, object, methods, constructors, OOP's principles.
CO-3	Polymorphism: Static and Dynamic Polymorphism (Overloading, Overriding), Inheritance – Super classes- sub classes –Protected members – constructors in sub classes, Super keyword, Encapsulation: Data Encapsulation and Data Abstraction, Object as argument and return value: Call by value vs. Call by reference, recursion, and Nested classes
CO-4	Files, Interfaces, Packages, and Threads: Introduction to files: Create, Read Write, Append, Delete Interfaces – defining an interface, implementing & Applying interface, differences between classes and interfaces and extending interfaces, Packages, importing packages. Exception Exceptions – exception hierarchy – throwing and catching exceptions – built-in exceptions, creating own exceptions fundamentals, Threads: Difference between multi- threading and Multitasking, Different Thread objects

TEXTBOOKS:

1	Allen B. Downey, Think Python: How to Think like a Computer Scientist, 2nd Edition, O'Reilly Publishers, 2016
2	Paul Deitel and Harvey Deitel, Python for Programmers, 1st Edition, 2021, Pearson Education
3	Dusty Phillips, Python 3 Object-oriented Programming, 2nd Edition, Packt Publishing

11/8/25

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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COURSE CODE	25ME2210R	COURSE CATEGORY			PCC		
COURSE TITLE	AUTOMATED MANUFACTURING	L	T	P	S	Cr	CH
		3	0	2	0	4	5
Pre-Requisite Course(s)	MP&T	Course Offering Department			MECHANICAL		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply advanced automation techniques to design and optimize smart production systems.	PO2, PO5 & PSO1	3
CO-2	Interpret and apply the concepts of Industry 4.0 and Cyber-Physical Systems (CPS)	PO3, PO5 & PSO2	4
CO-3	Apply the concepts of inspection methods to inspect the end products	PO2, PO3 & PSO1	3
CO-4	Design and implement Digital twins technologies to monitor real-time system in Manufacturing	PO2, PO3 & PSO2	3
CO-5	Develop, integrate, and evaluate smart manufacturing systems	PO2, PO3 & PSO2	3

SYLLABUS:

CO-1	Factory Automation: Automation scalability (fixed, programmable, flexible and reconfigurable); Design and analysis of automated flow lines; Average production time, production rate, line efficiency; Analysis of transfer lines without storage; Partial and full automation.
CO-2	Cyber-Physical Systems and Cyber-Security in Manufacturing: Introduction, key aspects of CPS, role of cyber-physical systems in smart factories, challenges of implementing CPS in factories, future trends of CPS. Cyber-security in manufacturing: Historic development, strategies and risks, integration of CPS and Cyber security. Case studies on real world cyber security threats and solutions.
CO-3	Inspection Technologies in Manufacturing: Conventional measuring and gauging techniques, co-ordinate measuring machines, surface measurement, optical inspections methods, non-contact non-optical inspection techniques, machine vision. Quantum technologies in Manufacturing.
CO-4	Digital Twins and Simulation in Smart Manufacturing: Concepts, features, architecture of DT, characteristics, types of digital twins, applications and challenges in implementing digital twins. Simulation tools and real-time system monitoring using digital twins.

TEXTBOOKS:

1	Automation, Production Systems, and Computer-Integrated Manufacturing, Mikell P. Groover, Pearson Education, 4th Edition, 2014.
2	Digital Twin Driven Smart Manufacturing, Fei Tao, Ang Liu, Tianliang Hu, A. Y. C. Nee, Academic Press (Elsevier), 1st Edition, 2019.
3	Introduction to Mechatronics and Measurement Systems, David G. Alciatore, Michael B. Histand, McGraw-Hill Education, 5th Edition, 2020.
4	Internet of Things: A Hands-On-Approach by Arshdeep Bahga and Vijay Madisetti
5	Industrial Cloud-Based Cyber-Physical Systems: The IMC-AESOP Approach by Armando W. Colombo and Thomas Bangemann

11/8/25

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COURSE CODE	25ME3214	COURSE CATEGORY			PCC		
		L	T	P	S	Cr	CH
COURSE TITLE	DESIGN OF THERMAL SYSTEMS	3	1	0	4	5	8
Pre-Requisite Course(s)	TD	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply the concepts of vapour power cycles to analyze steam turbines and nozzles to determine flow parameters and discharge conditions.	PO1, PO2	3
CO-2	Apply the principles of thermodynamics to determine the performance of single and multistage compressors	PO1, PO2	3
CO-3	Apply the concepts of Psychrometry to analyze the simple and vapour compression refrigeration processes.	PO1, PO2	3
CO-4	Design and optimization of various thermal energy systems such as heat exchangers and engines.	PO4	4
CO-5	Conduct parametric study to design thermal systems such as steam turbines, nozzles and compressors using equation solver.	PO4	4

SYLLABUS:

CO-1	STEAM TURBINES: Classifications, construction details, compounding, velocity diagrams, governing, losses in steam turbines. STEAM NOZZLES: Types of nozzles, isentropic flow through nozzles, effect of friction, nozzle efficiency, condition for maximum discharge, throat and exit areas using Mollier diagram.
CO-2	RECIPROCATING AIR COMPRESSORS: Reciprocating Air Compressor - Single and Multistage, computation of work done, isothermal efficiency, effect of clearance volume, volumetric efficiency, Free air delivery, Theoretical and actual indicator diagram. ROTARY COMPRESSOR: Introduction, Classification, Displacement Compressors, Steady Flow Compressors.
CO-3	PSYCHROMETRY: Properties of atmospheric air - Gibbs and Dalton's law-humidity - degree of saturation - dry and wet bulb temperatures - psychometric chart. Psychometric processes: mixing of two streams-sensible heating - sensible cooling, cooling and dehumidification -cooling and humidification - heating and humidification-heating and dehumidification REFRIGERATION: Introduction to refrigeration - COP - ideal cycles - Simple refrigeration cycle, Vapour Compression cycle: p-h and T-s diagrams.
CO-4	MODELLING OF THERMAL SYSTEMS: Types of Models, Design of thermal system for different application areas. Optimization of thermal systems, constrained and unconstrained optimization problems applicable to thermal systems. Modelling of thermal equipment.

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TEXTBOOKS:

1	Applied Thermodynaics for Engineering Technologies, T.D Eastop, , 5th edition: 1993, Wiley.
2	Engineering Thermodynamics , P.K.Nag, 6th edition:1982, Tata McGraw Hill .
3	Thermal Engineering, Er.R.K.Rajput, 2005, Laxmi Publications
4	Refrigeration and Air Conditioning, C.P.Arora, 7th edition, Tata McGraw Hill.

11/8/25

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COURSE CODE	25ME2221F	COURSE CATEGORY			FCC		
COURSE TITLE	Modern Vehicle Technology	L	T	P	S	Cr	CH
		2	0	2	0	3	4
Pre-Requisite Course(s)	TD	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply the concepts of Thermodynamics to understand the working of hydrogen and electric vehicles	PO1, PO2	3
CO-2	Analyse the working of various vehicle suspension, safety and pollution	PO1, PO2	3
CO-3	Analyse the advanced control systems for speed and pollution of vehicles	PO1, PO2	3
CO-4	Investigate the vehicle automated tracks for proper road maintenance and national highway network	PO4	4
CO-5	Conduct experiments using software to analyse the performance of different vehicular systems	PO4	4

SYLLABUS:

CO-1	Trends in Automotive Power Plants: Hybrid Vehicles – Stratified charged / lean burn engines – Hydrogen Engines-battery vehicles – Electric propulsion with cables – Magnetic track vehicles.
CO-2	Suspension Brakes and Safety: Air suspension-Closed loop suspension-antiskid braking system, Retarders, Regenerative braking safety cage air bags-crash resistance – Passenger comfort noise & Pollution: Reduction of noise – Internal & external pollution control through alternate fuels/ power plants-Catalytic converters and filters for particular emission.
CO-3	Vehicle Operation and Control: Computer Control for pollution and noise control and for fuel economy-Transducers and operation of the vehicle like optimum speed and direction.
CO-4	Vehicle Automated Tracks: Preparation and maintenance of proper road network-National highway network with automated roads and vehicles-Satellite control of vehicle operation for safe and fast travel.

TEXTBOOKS:

1	Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives, Chris Mi, M. Abul Masrur, 2, 2017, Wiley
2	Electric Vehicle Technology Explained, James Larminie, John Lowry, 2, 2012, Wiley
3	Automotive Engineering: Powertrain, Chassis System and Vehicl, e Body, David Crolla, 2009, Butterworth-Heinemann
4	Automotive Control Systems, Uwe Kiencke, Lars Nielsen, 1, 2005, Springer

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COURSE CODE	25ME3122F	COURSE CATEGORY			FCC		
		L	T	P	S	Cr	CH
COURSE TITLE	ROBOTICS & MECHATRONICS	2	0	2	0	3	4
Pre-Requisite Course(s)	BEEC	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Understand the fundamentals of Robotics and Mechatronics	PO1, PO2, PS01	2
CO-2	Analyze different types of sensors, transducers, and actuators used in robotic and mechatronics systems.	PO1, PO2, PS01	3
CO-3	Apply transformations, Denavit-Hartenberg (DH) representation, kinematics and dynamics for Robotic devices	PO1, PO3, PS01	3
CO-4	Develop control systems, model mechanical and electrical systems, and basic PLC programs.	PO1, PO3, PS01	3
CO-5	Perform computational simulations for kinematics, dynamics, and control systems using Software tools	PO5, PS01	4

SYLLABUS:

CO-1	Introduction to Robotics and Mechatronics: Definition and Scope, History, Major components, Applications. Classification of Robots: Classification by coordinate system and by control method. End-Effectors: Introduction, types of End effectors: grippers and tools, considerations in the selection and design of end-effector.
CO-2	Sensors and Transducers: Introduction, Classification, Position and Displacement, Proximity, Force and Pressure, Velocity, Temperature, Vision sensors, Touch & Slip. Selection of Sensors. Actuators: Pneumatic and hydraulic actuators systems, Electrical actuators.
CO-3	Positions and orientations, Transformations, Homogeneous Transformation matrix. Robot Kinematics: Introduction, kinematic parameters, Link Description, Denavit-Hartenberg (DH) representation, Concept of forward and inverse kinematics. Robot Dynamics: Forward dynamics: Lagrangian (Lagrange-Euler) and Newton-Eurler formulations, Inverse dynamics.
CO-4	Control System: Open and closed loop control system, PID control system. System modeling: Modelling of one and two order Mechanical and Electrical Systems, Transfer function of Mechanical and Electrical Systems. PLC: Introduction, basic structure, programming of PLC, selection of a PLC. CASE STUDY: pick and place Robot, CNC Machine, etc.
CO-5	Computational exercises using Python for Transformations, Denavit- Hartenberg (DH) representation, Kinematics. Simulations of Kinematic and Dynamic models using Robo Analyzer. Transfer function of Mechanical and Electrical Systems using Octave PLC Programming using OpenPLC Editor.

TEXTBOOKS:

1	John J. Craig, " Introduction To Robotics: Mechanics and Control", Pearson Education, 2009

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2	Mark W. Spong, Seth Hutchinson, M. Vidyasagar, "Robot Modeling and Control" Wiley, 2005.
3	William Bolton, "Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering", Pearson Education, 2008.

REFERENCE BOOKS:

1	King Sun Fu, Rafael C. Gonzalez, C. S. George Lee "Robotics: Control, Sensing, Vision, and Intelligence" McGraw-Hill, 1987.
2	Mikell P. Groover, "Industrial Robotics: Technology, Programming, and Applications", McGraw-Hill, 1986.
3	Mahalik, "Mechatronics: Principles, Concepts and Applications", Tata McGraw-Hill, 2003.

11/8/25

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COURSE CODE	25SDME03	COURSE CATEGORY			SDC		
COURSE TITLE	APPLIED MECHANICAL DESIGN PRATICSE	L	T	P	S	Cr	CH
		1	0	0	4	2	5
Pre-Requisite Course(s)	NIL	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply design philosophy to develop any new product	PO2, PSO2	3
CO-2	Apply material selection strategy to do design with materials	PO2, PSO2	3
CO-3	Apply generative design and Design for X principles to develop a product	PO2,PO3	3
CO-4	Analyse developed product for static and fatigue strength	PO2,PO3	4
CO-5	Evaluate product for its performance and functionality	PO2,PO3	5

SYLLABUS:

MODULE - 1	Design Philosophy, Generic Phases of the Design, concurrent Engineering, Product development Methodology.
MODULE - 2	Mechanical behaviour of Materials, Material selection in Engineering Design, Design with Materials.
MODULE - 3	Computer aided generative design, Design for sustainability, Ergonomics in product design, Design for X.
MODULE - 4	Design for static strength: Theories of failures, Design for fluctuating stresses: Goodman line and Soderberg line
MODULE - 5	Prototyping robust design, Design for Manufacturing and assembly (DFMA) guidelines, product evaluation for performance, patents and intellectual property

TEXT BOOKS:

1	Karl T. Ulrich and Steven D. Eppinger, Production Design and Development, Tata McGraw Hill, 2007.
2	George E. Dieter, Engineering Design, McGraw Hill, 2000.
3	David G. Ullman, The Mechanical Design Process, McGraw Hill, 2003.
4	Materials selection in Mechanical Design, Michael F. Ashby, 11th;2020, Elsevier Butterworth-Heinemann.

Vijai Kumar 11/8/25
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5	Design of machine elements, V. B. Bhandari, 5th;2020, McGraw-Hill International.

COURSE CODE	25AEE3203	COURSE CATEGORY			PE		
		L	T	P	S	Cr	CH
COURSE TITLE	Refrigeration & Air Conditioning	3	0	0	0	3	3
Pre-Requisite Course(s)	TD	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply the principles of basic refrigeration cycles to estimate and enhance the performance of vapour compression refrigeration systems	PO1,PSO1	3
CO-2	Analyse various vapour absorption systems and investigate the effect of refrigerants on the performance of refrigeration cycles	PO2,PSO1	4
CO-3	Analyze the working and performance of Low temperature refrigeration and steam jet refrigeration systems	PO2,PSO1	4
CO-4	Estimate the effect various air conditioning systems on human comfort and perform cooling load calculations	PO2, PSO1	4

SYLLABUS:

CO-1	**Basics of Refrigeration:** Air refrigeration cycle-working-methods-merits and demerits-simple air evaporative cooling-Bootstrap air cooling systems-comparison of various air cooling systems used in aircraft. **Vapour Compression Refrigeration cycle:** Working, Theoretical and actual cycles, Effect of suction and discharge pressures, performance enhancement of vapour compression cycle, Compound vapour refrigeration systems: Intercooler, subcooler.
CO-2	**Vapour Absorption refrigeration systems:** Ideal and practical Vapour absorption cycle, Refrigerant-Absorbent requirements, COP, Domestic Electrolux, Lithium Bromide vapour absorption system. **Refrigerants:** Classification, properties of ideal refrigerant, Hydro-carbon and inorganic refrigerants, Designation of refrigerants, secondary refrigerants-Brines.
CO-3	**Low temperature refrigeration (Cryogenics):** Limitations of VCR for low temperature production, Cascade Refrigeration, COP of two stage cascade system, Manufacture of solid and dry ice, Liquefication of hydrogen and helium, Claude system of liquification of air. **Steam jet Refrigeration:** Principle and working of steam jet refrigeration, Steam Ejector, Analysis and efficiencies of steam jet refrigeration.
CO-4	**Air conditioning Systems:** Psychrometric processes & relations, Factors effecting human comfort, Modified comfort chart, Classification of air conditioning systems, Comfort, industrial, winter, summer, year round, unitary and central air conditioning systems. **Cooling Load Estimations:** Components of cooling load, Heat gain due to-infiltration, ventilation, Occupants, appliances, products, lighting equipment, power systems and ducts.

TEXTBOOKS:

1	Refrigeration and Air Conditioning, C.P.Arora,4,2021, Mc Graw Hill
2	Principles of Refrigeration, Roy J.Dossat, Thomas J. Horan, 5, 2016, Pearson Education.
3	Refrigeration and Air Conditioning Technology, William C. Whitman, William M. Johnson, John A. Tomczyk, 8, 2020, Cengage Education.

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4	Refrigeration and Air Conditioning, R.S. Khurmi, J.K. Gupta, 2, 2018, S.Chand Publishing House.

COURSE CODE	25SMF3101R	COURSE CATEGORY					
COURSE TITLE	AI AND IOT IN MANUFACTURING	L	T	P	S	Cr	CH
		3	0	2	0	4	5
Pre-Requisite Course(s)		Course Offering Department			MECHANICAL		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Apply AI algorithms for optimizing manufacturing processes and improving operational efficiency.	PO1, PO2, PSO1	3
CO-2	Develop machine learning models for predictive maintenance in industrial equipment.	PO1, PO2, PSO1	2
CO-3	Integrate IoT devices for real-time monitoring and control of manufacturing systems.	PO3, PO5, PSO2	2
CO-4	Use data acquisition systems and cloud platforms to enable data-driven decision-making in smart factories.	PO2, PO5, PSO1	3
CO-5	Analyze and evaluate real-world experiments/case studies implementing AI and IoT in digital manufacturing environments.	PO2, PSO1	4

SYLLABUS:

CO-1	AI Algorithms for Process Optimization – Overview of AI in manufacturing, neural networks, fuzzy logic, genetic algorithms. Optimization of production scheduling, quality control, and material flow.
CO-2	Machine Learning for Predictive Maintenance – Supervised and unsupervised learning techniques. Predictive analytics, failure prediction, and anomaly detection in machinery using sensor data.
CO-3	IoT for Real-Time Monitoring – IoT architecture, sensors, actuators, microcontrollers. Industrial protocols (MQTT, Modbus), edge computing, and real-time status dashboards.
CO-4	Data Acquisition and Cloud Platforms – Data collection methods, interfacing sensors, use of cloud services (AWS, Azure, Google Cloud), data storage, analytics, and visualization tools.
CO-5	Case Studies in Smart Factories – Application of AI-IoT integration in smart factories. Case studies on digital twins, adaptive control, and intelligent automation systems.

TEXTBOOKS:

1	A. Bahga & V. Madisetti, Internet of Things: A Hands-On Approach, VPT.
2	Jay Lee, Behrad Bagheri, Hung-An Kao, Industrial AI, Springer.
3	Al Naqvi, Artificial Intelligence for Business: A Roadmap for Getting Started with AI, Productivity Press.
4	Rajkumar Buyya, Fog and Edge Computing: Principles and Paradigms, Wiley.
5	Manuals and documentation for AWS IoT, Google Cloud IoT, or Azure IoT Suite.

11/8/25

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Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s 3 of the UGC Act, 1956)

COURSE CODE	25SMF3203	COURSE CATEGORY					
COURSE TITLE	PRECISION AND MICRO-MANUFACTURING	L	T	P	S	Cr	CH
		3	0	0	0	3	3
Pre-Requisite Course(s)	Nil	Course Offering Department			Mechanical		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Explain the working principles of precision machining tools and techniques.	PO1, PS01	2
CO-2	Discuss the operations and applications of micro-EDM, micro-milling, and laser-based processes.	PO1, PS01	2
CO-3	Describe various measurement methods and quality assurance techniques used in micro-manufacturing.	PO1, PO5, PS01	2
CO-4	Summarize nano-finishing techniques and their applications in electronics and medical devices.	PO1, PS01	2

SYLLABUS:

CO-1	Introduction to Precision Manufacturing - Overview and need for precision; Principles and types of precision machining tools; Accuracy, repeatability, and resolution of precision tools.
CO-2	Fundamentals of Micro-Manufacturing - Working principles, setup, and process parameters of Micro-EDM, Micro-Milling; Introduction to Laser-Based Processing for micro-features.
CO-3	Measurement and Quality Assurance - Types of precision measurement tools; Contact and non-contact measurement techniques; Surface roughness, form, and dimensional accuracy; Quality control methods.
CO-4	Nano-Finishing and Applications - Introduction to nano-finishing techniques like MAF, AFM, and CMP; Applications of precision and micro-manufacturing in electronics and medical devices.

TEXTBOOKS:

1	Madou, M. J., Fundamentals of Microfabrication: The Science of Miniaturization, CRC Press (2002).
2	Jain, V. K., Introduction to Micromachining, Narosa Publishing House (2010).
3	McGeough, J. A., Micromachining of Engineering Materials, CRC Press (2001).
4	Klocke, F., Manufacturing Processes 2: Grinding, Honing, Lapping, Springer (2009).
5	Dornfeld, D., and Min, S., Introduction to Precision Machine Design and Error Assessment, Springer (2012).
6	Rajurkar, K. P., Nontraditional Machining Processes, Society of Manufacturing Engineers (2003).

11/8/25

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COURSE CODE	25SMF3304	COURSE CATEGORY			Professional Elective		
COURSE TITLE	Hybrid and Additive Manufacturing	L	T	P	S	Cr	CH
		3	0	0	2	3.5	5
Pre-Requisite Course(s)	Nil	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/ PSO	BTL
CO-1	Understand reverse engineering and rapid prototyping concepts, processes and associated technologies	2	PO1, PSO1
CO-2	Apply knowledge of liquid and solid-based RP techniques to select suitable processes for specific applications	3	PO1,PSO2
CO-3	Apply powder-based RP techniques and rapid tooling methods to real-world industrial applications through case studies	3	PO5, PSO2
CO-4	Apply principles of hybrid manufacturing processes to analyze applications, industry trends, and future technological developments	3	PO5, PSO2
CO-5	Apply the theoretical concepts of Reverse Engineering to develop 3D model and analyze	3	PO9, PSO2

SYLLABUS:

CO-1	Reverse Engineering: Introduction, benefits, and applications of reverse engineering. Steps involved in the reverse engineering process. Overview of the 3D scanning process and hardware used in the reverse engineering process. Rapid Prototyping: Definition and types of prototypes, the role of prototypes in product development, evaluation of rapid prototyping methods, Classification of rapid prototyping systems. Fundamentals of rapid prototyping, including the advantages and disadvantages
CO-2	Liquid-based RP techniques: Principles of operation, machine details, materials, and process details of SLA, SGC, SCS, SOUP, Two-laser beams, as well as their applications. Solid-based rapid prototyping techniques: Principles of operation, machine details, materials, and process details of LOM, FDM, PLT, MJM, MEM, along with their applications
CO-3	Powder-based RP techniques: Principles of operation, machine details, materials, and process details of SLS, 3DP, LENS, DSPC, MJS, EBM, and their applications. Rapid tooling and RP case studies: Introduction, types of rapid tooling, direct and indirect tooling techniques used in aerospace industries, automotive industries, and biomedical applications, Case Studies: Wind Tunnel Testing with Rapid Prototyped Models, RP applied to investment casting, Integration of Reverse Engineering and Rapid Prototyping
CO-4	Definition and benefits of hybrid manufacturing, Overview of different hybrid manufacturing processes, Applications and industry trends, Hybrid additive-subtractive manufacturing processes, Principles of welding-based additive manufacturing, Hybrid Machining, Applications of Hybrid Manufacturing, Future Trends and Developments
CO-5	Apply Reverse Engineering steps to develop a 3D object using Fusion 360/ Solid Works software for modelling and various manufacturing processes and Analyze the developed 3D model for its functionality

TEXTBOOKS:

1	Chua Chee Kai, Leong Kah Fai, Lim Chu Sing, "Rapid Prototyping: Principles and Applications", World Scientific Publishing, 5th edition, 2019.
2	W. Eric Boothroyd, Alok N. Choudhury, "Reverse Engineering: Technology of Reinvention", CRC Press, 2nd edition, 2011.
3	Ian Gibson, David Rosen, Brent Stucker, "Additive Manufacturing Technologies: 3D Printing, Rapid Prototyping, and Direct Digital Manufacturing", Springer, 2nd edition, 2015.
4	Ali K. Kamrani, Emad Abouel Nasr, "Rapid Prototyping: Theory and Practice", Springer, 1st edition, 2006.

11/8/25

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COURSE CODE	25SMF3405	COURSE CATEGORY			PEC		
		L	T	P	S	Cr	CH
COURSE TITLE	DIGITAL MANUFACTURING & SIMULATION	3	0	0	0	3	3
Pre-Requisite Course(s)	MSM	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Understand the DM Model and the possibility to extend to the industry	PO1, PSO1	2
CO-2	Identify the technological change and future of Industry 4.0	PO3, PSO1	3
CO-3	Apply the Various technology models to Implementing Digital Manufacturing	PO3, PSO1	3
CO-4	Identify the supply chain, challenges in digital transformation, and business models in the industry	PO2, PSO1	3

SYLLABUS:

CO-1	Introduction to Digital Manufacturing Science, Definition, benefits, Operation mode and architecture, Operation reference model, System Architecture, Computation in Digital Manufacturing, PLM- Elements in PLM and System Architecture, Digital Product Life Cycle, PLM Platform-Overview, Integration of Computer-aided technologies in PLM, Connectivity of ERP and PLM
CO-2	The pace of technological change. Industry 4.0 - definitions, components, characteristics, design principles, the building blocks of the fourth industrial revolution, value chain, today's factory Vs Industry 4.0. Government initiatives.
CO-3	Emerging technologies and trends in the industry - Additive manufacturing technologies for on demand production of personalized goods. Self-configuration and self-diagnosis methods based on Internet of Things technologies. Machine Learning and Artificial Intelligence for manufacturing processes. Big Data analytics for reconfigurable manufacturing systems, augmented reality, virtual reality and collaborative robots, and their role in production, design, and logistics.
CO-4	Smart and future supply chains - Control algorithms for smart part logistic. Digital transformation challenges. New and successful business models in the industry. Additional resources and external organizations that can support on digital manufacturing needs.

TEXTBOOKS:

1	Zude Zhou. Shane (Shengquan) Xie. Dejun Chen. Fundamentals of Digital Manufacturing Science. Springer-Vorlag London Limited. 2012.
2	Christoph Haag, Torsten Niochoj, Digital Manufacturing: Prospects and Challenges, Metropolis Veriag, 2016.
3	Kaushik Kumar. Divya Zindani. J. Paulo Davim. Digital Manufacturing and Assembly Systems in Industry 4.0. CRC Press. 2019.
4	Asterios Agkathidis. Digital Manufacturing in design and architecture. BIS PubSshers, 2011.
5	Wang, Lihui.Neo, Andrew Yeh Ching (Eds.), Collaborative Design and Planning for Digital Manufacturing, Springer, 2009.
6	Alp Ustundag, Emre Cevikcan. Industry 4.0: Managing the Digital Transformation. Springer Series in Advanced Manufacturing. Springer, 2018.

11/8/25

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COURSE CODE	25SMF3406M	COURSE CATEGORY			R		
COURSE TITLE	PRODUCT INNOVATION & ENTREPRENEURSHIP	L	T	P	S	Cr	CH
		3	0	0	0	3	3
Pre-Requisite Course(s)	Nil	Course Offering Department			ME		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Understand how to identify an unmet need through market research	PO1,PS01	2
CO-2	Apply the DTI concepts for Product testing & Quality	PO3, Ps01	3
CO-3	Understand the various funding schemes related to start-up incubation.	Po4, PSO1	2
CO-4	Understand the various responsibilities related to business pathways and social responsibilities on Stat-up- incubation	PO6, PSO1	2

SYLLABUS:

CO-1	Role of entrepreneurship in economic development; Entrepreneurial mindset, motivation and competencies; Market pull and technology push factors; New product development lifecycle; Technology readiness levels; Product-market fit validation; Commercialization pathways; Business vision & leadership; Team composition & management.
CO-2	Opportunity scanning, market survey, need identification and problem definition; Creative design thinking for concept generation; Detailed design & prototyping; Functionality & manufacturability; Bill of materials & components supply chain; Manufacturing & assembly plan; Product testing & quality assurance; Intellectual property rights management.
CO-3	Market segmentation & market sizing; Customer persona & value proposition; Marketing (Go-to-market) strategy; Distribution channels and sales network; Funding requirement (based on stage); Source of funding for startup ventures; Financial projections and accounting; Startup to scale up financing.
CO-4	Sustainable business options & pathways; Business model & business canvas; Startup team & business partners; Startup ecosystem and stakeholders; Technology business incubators & parks; Proposal pitching & agreements; Startup company incorporation; Social impact & responsibility

TEXTBOOKS:

1	Bill Aulet, "Technology Entrepreneurship", 4th ed., Tata McGraw Hill, 2014.
2	Peter F. Drucker, "Innovation and Entrepreneurship", 1st ed., Harper Business, 2006.
3	Chelat Bhuvanachandran, Innovision, Khanna Book Publishing, 2022.
4	Byers, Dorf, and Nelson, Technology Ventures: From Ideas to Enterprise, McGraw Hill, 2010
5	Steve Blank, "The Startup Owner's Manual"
6	T.V. Rao, "Entrepreneurship - A South Asian Perspective"

Vijay Kumar 11/8/25

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COURSE CODE	25SMF3507	COURSE CATEGORY					
COURSE TITLE	SUSTAINABLE MANUFACTURING	L	T	P	S	Cr	CH
		3	0	0	0	3	3
Pre-Requisite Course(s)	Nil	Course Offering Department			Mechanical		

COURSE OUTCOMES:

CO NO.	COURSE COUTCOME (CO)	PO/PSO	BTL
CO-1	Explain the fundamental concepts of sustainability and principles of green design in manufacturing.	PO1, PO6, PS01	2
CO-2	Describe the stages and significance of Life Cycle Assessment (LCA) in evaluating environmental impact.	PO1, PO6, PS01	2
CO-3	Discuss the approaches for waste minimization and cleaner production practices.	PO1, PO6, PS01	2
CO-4	Summarize energy-efficient manufacturing methods and the role of ISO standards and circular economy.	PO1, PO11, PS01	2

SYLLABUS:

CO-1	Sustainability Concepts and Green Design: Introduction to sustainable development - principles of sustainability - basics of green design and eco-friendly products.
CO-2	Life Cycle Assessment and Waste Minimization: Definition and stages of Life Cycle Assessment (LCA) - environmental impact assessment - waste minimization methods - cleaner production strategies.
CO-3	Energy-Efficient Manufacturing: Basics of energy consumption in manufacturing - energy-saving techniques - role of automation and smart manufacturing in energy efficiency.
CO-4	ISO Standards and Circular Economy: Overview of ISO 14000 standards - environmental management systems - fundamentals of circular economy - sustainable material reuse and product life extension.

TEXTBOOKS:

1	Jawahir, I. S., and O. W. Dillon Jr., Sustainable Manufacturing: Processes, Systems and Metrics, SME (2012)
2	Dornfeld, D. A., Green Manufacturing: Fundamentals and Applications, Springer (2013)
3	Gupta, S. M., and A. Gunasekaran, Sustainable Manufacturing, Momentum Press (2013)
4	Hauschild, M. Z., R. K. Rosenbaum, and S. I. Olsen, Life Cycle Assessment: Theory and Practice, Springer (2018)
5	Kutz, M., Environmentally Conscious Manufacturing, Wiley (2007)
6	Duflou, J. R., Energy and Resource Efficiency in Manufacturing Systems, CIRP Encyclopedia of Production Engineering, Springer (2014)

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Annexure-4

Course wise Revision as per the course Structure of 2025-26 Admitted Batch Students

Course Code	Course Name	Course Category	Existing Syllabus (as per Annexure-3)	New Syllabus	Topics Added/Removed/Replaced	Change in Outcome	Justification for the Modification	*Overall Revision Percentage
25ME2109	Thermodynamics	ESC	Syllabus :Fundamental Concepts and Definitions: Thermodynamic system and control volume, macroscopic and microscopic points of view, thermodynamic properties, processes, state, path, cycle, thermodynamic equilibrium and quasi-static process. Reversible and irreversible processes, zeroth law, concept of temperature. Work and Heat: Definition of work, units, work done at the moving boundary of system, work done in various non-flow processes, definition of heat, units, comparison of heat and work. First Law of Thermodynamics for Non-Flow Systems: First law of thermodynamics for a closed system undergoing a cycle and for a change of state: energy - a property of system, internal energy and enthalpy. Specific heat at constant volume and constant pressure. First Law of Thermodynamics for Flow Systems: Control mass, control volume, first law of thermodynamics for a control volume, steady flow energy equation and applications to engineering equipment and PMM-1. Second Law of Thermodynamics: Thermal reservoirs, Kelvin-Plank and Clausius statements of	Fundamental Concepts and Definitions: Thermodynamic system, processes, thermodynamic equilibrium and quasi-static process, Reversible and irreversible processes. Zeroth law, Work and Heat in flow and non-flow processes First Law of Thermodynamics for Non-Flow Systems: First law of thermodynamics for flow and non-flow processes, PMM-1. Second Law of Thermodynamics: Thermal reservoirs, Kelvin-Plank and Clausius statements of second law of thermodynamics; Equivalence of Kelvin-Plank and Clausius statements, PMM-2: Carnot cycle, Carnot engine. Entropy: Definition of entropy, Clausius theorem, inequality of Clausius, entropy change in an irreversible process, principle of increase of entropy, availability and irreversibility, Maxwell's and Tds relations. PURE SUBSTANCE: Vapour-liquid-solid phase equilibrium, independent properties, Equations of state, Tables of thermodynamic properties. VAPOUR POWER CYCLES: Rankine cycle, Effect of pressure and temperature, Reheat & Regenerative cycle, Binary vapour cycle, Air standard cycles: Assumptions, P-v & T-s diagrams of Otto, diesel, dual and Brayton cycle. Mean effective pressure, efficiency and performance comparison of the cycles.	Topics Added; PURE SUBSTANCE: Vapour-liquid-solid phase equilibrium, independent properties, Equations of state, Tables of thermodynamic properties. VAPOUR POWER CYCLES: Rankine cycle, Effect of pressure and temperature, Reheat & Regenerative cycle, Binary vapour cycle Topics removed: Psychometry	CO3	Based on the feedback of Dr.T.Kanthimathi to avoid repetition of the topics in DTS course, the modification were made	25%

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			second law of thermodynamics; Equivalence of Kelvin-Plank and Clausius statements, PMM-2; Carnot cycle, Carnot engine, corollary of Carnot's theorem, absolute thermodynamic temperature scale. Entropy: Definition of entropy, Clausius theorem, entropy change in reversible process temperature-entropy plot, inequality of Clausius, entropy change in an irreversible process, principle of increase of entropy, applications of entropy principle, entropy change of anideal gas; availability and irreversibility. Air standard cycles: Performance analysis of Otto ,Diesel,Dual,andB rayton cycles. Psychometric					
25ME1002	Engineering Graphics	ESC	Introduction to Engineering Drawing: Principles of Engineering Graphics and their significance – Drawing Instruments and their Use- Conventions in Drawing – Lettering – Conic Sections: Ellipse, Parabola, Hyperbola and Rectangular Hyperbola – oblong, concentric method. Special Curves: Cycloid, Epicycloids, Hypocycloid, and Involutes. Scales: Plain and Vernier scales. Projection of Lines, points and Projections of Planes: First and Third Angle Projections of Points and Lines inclined to planes, True lengths, traces. Constructions, Projections of regular planes inclined to both planes. Projections of Solids and Developments of surfaces: Projections of Regular solids	**Orthographic Projections & Sectional Views** Principles of Orthographic Projections, Projection of points, lines, planes, solids. Full and half sectional views for complex objects. **Pictorial Representation** Isometric projections and drawings, Perspective views and basic rendering concepts, Visualization of complex parts from given views **CAD Modelling using Fusion 360** Sketching constraints and dimensions, 3D part modeling: extrude, revolve, sweep, loft, Boolean operations and parametric constraints	**Topics Added:** **CAD Modelling using Fusion 360** Sketching constraints and dimensions, 3D part modeling: extrude, revolve, sweep, loft, Boolean operations and parametric constraints	CO-2	As per the feedback of faculty to enable students gain the knowledge on modelling from I year itself CAD modelling concepts are added to Engineering Graphics course	25%

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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			inclined to one plane. Sections and Sectional Views: Right Regular Solids - Prism, Cylinder, Pyramid, Cone.Surface development of right regular solids – Prisms. Cylinder. Pyramid cone and their parts. Orthographic Projection in First Angle Projection and Isometric Projections: Principles of Orthographic Projections- conventions - Principles of Isometric Projection- Isometric Scale- Isometric view conventions- Isometric View of Lines, Plane Figures, and simple problems. Transformation of Projections: Conversion of Isometric Views to Orthographic Views – Conventions					
25ME1004	WORKSHOP PRACTICES FOR ENGINEERS	ESC	Carpentry (simple exercise in wood working, pattern making). Fitting operations & power tools. Electrical &Electronics. Sheet metal working. Welding (arc welding & gas welding and gas cutting), brazing. Plastic moulding. glass cutting. Manufacturing Methods: casting, forming, machining, joining, advanced manufacturing Methods. CNC machining. Additive manufacturing.	Introduction to Casting Process. Pattern Making. Molding. Metal Melting and Pouring. Casting Defects. Foundry Safety. Arc Welding: Principle of operation. electrode types, straight vs reverse polarity. bead formation. Gas Welding (Oxy-Acetylene): Flame types. filler materials. precautions. Turning and Facing: Introduction to lathe. cutting tool geometry. turning and facing operations. speeds and feeds. chip formation. Drilling: Types of drill machines. drilling operations. Milling: Types of milling machines. up and down milling. slotting and face milling operations.	**Topics added:** Turning and Facing: Introduction to lathe. cutting tool geometry. turning and facing operations. speeds and feeds. chip formation. Drilling: Types of drill machines. drilling operations. Milling: Types of milling machines. up and down milling. slotting and face milling operations. **Topics removed**: Carpentry. advanced manufacturing Methods. CNC machining. Additive manufacturing	CO-1 CO-2	As per the feedback of academic peer. machining concepts are included in the course. to make the students aware of various machining operations in manufacturing.	50%
25ME2108	MANUFACTURING		Casting - Patterns and Pattern making. Allowances. Moulding methods and	Pattern design considerations: Gating system design. Special casting processes. Advanced	**Topics Added:** Mechanics of metal	CO2. CO3. CO4	As per the feedback of industry person to	75%

Dr. T. VIJAYA KUMAR 11/8/25
HOD-Mechanical Engineering
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	PROCESSES & TECHNOLOGY		processes. Design considerations in casting, Riser and gating design, Different castings - Sand castings, pressure die casting, permanent mould casting, centrifugal casting, precision investment casting, shell Moulding, continuous casting-squeeze casting, electro slag casting, casting defects and Inspection of castings. Joining Processes - Types of welding - Arc welding, Shielded metal arc welding, GTAW, GMAW, SAW, Resistance welding, Thermit welding, Gas welding, Soldering, brazing, Electron beam and Laser welding, weld stress-calculations, design of weld size, estimation of weld dilution, heat input, effect of welding parameters, Inspection of welds, Defects in welding, causes and remedies. Metal Forming - Hot/Cold forming processes, Metallurgical aspects of metal forming, Forging and rolling processes: Forging principle, parameters and calculation of forces and power requirements during forging, Rolling processes, calculation of forces and geometrical relationship in rolling, analysis of rolling load, torque and power. Rolling and forging defects, causes and remedies. Types of Extrusion processes and drawing processes, Problems on extrusion and drawing. Sheet metal forming processes - Sheet metal / Press working operations, Types of presses and	welding techniques. Concepts of hot and cold working processes. Mechanics of metal cutting, tool geometry, tool wear and life, Grinding operations, reciprocating machine tools. Machining time calculations and power required on conventional machine tools. Unconventional Machining Processes: Wire Electric Discharge Machining, Plasma cutting machine, CO_2 Laser machine, Abrasive jet machining, Ultra sonic Machining, Electrochemical Machining. Introduction to GD & T, Limits , Fits and Tolerances, Hole and shaft basis system, Gauges, Taylor's Principle, Linear and angular measurements.	cutting, tool geometry, tool wear and life, Grinding operations, reciprocating machine tools. Machining time calculations and power required on conventional machine tools. Unconventional Machining Processes: Wire Electric Discharge Machining, Plasma cutting machine, CO_2 Laser machine, Abrasive jet machining, Ultra sonic Machining, Electrochemical Machining. Introduction to GD & T, Limits , Fits and Tolerances, Hole and shaft basis system, Gauges, Taylor's Principle, Linear and angular measurements.		include latest topics in core manufacturing courses a new course was included and this course is revised by including the concepts of metal cutting, unconventional machining and GD & T	

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
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11/8/25

			selection of presses. HERF processes - Electro hydraulic forming, Magnetic pulse forming.					
25ME2211	KINEMATICS & DYNAMICS OF MACHINES	PCC	Mechanisms and Machines: Introduction to Plane and Space Mechanisms. Kinematic Pairs. Kinematic Chains and their Inversions. Mobility and range of movement - Kutzbach and Grubler's criterion. Grashof's criterion. Velocity analysis: Velocity analysis using IC and relative velocity method. Acceleration analysis. Cams: cam profiles of knife edge, roller and offset followers of reciprocating motion. Gears and Gear trains: Gears – terminology, fundamental law of gearing, involute profile. Interference and undercutting.Gear Trains – simple, compound and epicyclic gear trains. Balancing: Introduction. Static balancing, dynamic balancing, transferring of a Force from one plane to another. Balancing of Several Masses in Different planes. Balancing of Reciprocating Mass. Secondary Balancing. Dynamic force analysis: Force analysis of Slider crank mechanism. Gyroscopes: Gyroscopic Effect on Naval Ships. Stability of an Automobile. Stability of a Two-Wheel vehicle, Four-Wheeler.	Introduction to Kinematics and Dynamics of Machines: Basic concepts and definitions, Types of motion, Degrees of freedom, Kinematics of Mechanisms: Linkages and mechanisms. Velocity and acceleration analysis of Mechanisms by IC and relative velocity method. Cams: classification, knife-edge, roller followers; Gears: terminology, fundamental law, contact lengths, interference, gear trains: simple, compound, reverted, epicyclic. Balancing by static and dynamic methods, force transfer between planes, balancing reciprocating masses, and gyroscope effects on vehicles. Machine vibrations, free/forced vibrations, critical speeds, and isolation	**Topics Added:** Machine vibrations, free/forced vibrations, critical speeds, and isolation	CO4	Based on the feedback of faculty member, Dr.S.N Padhi, mechanical vibrations topic is added as more opportunities are emerging in this field	15%
25SDME01	FINITE ELEMEN	SDC	Introduction to Ansys workbench, Adding material properties, meshing	Introduction to Ansys workbench, Adding material properties, meshing methods and mesh	**Topics Added:** Hypermesh overview:	CO3	As per the feedback of faculty member,	25%

Dr. T. VIJAYA KUMAR 11/8/25
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	T ANALYSIS		methods and mesh controls. basic analysis procedure. Structural analysis of a block. Linear and Non linear Structural analysis. Parameter management for efficient design exploration. applying remote boundary conditions to simulate real-world scenarios. performing dynamic analyses such as modal, harmonic analysis and performing steady state thermal analysis.	controls. basic analysis procedure. Structural analysis of a block. Linear and Non linear Structural analysis. parameter management for efficient design exploration. applying remote boundary conditions to simulate real-world scenarios. and performing dynamic analyses such as modal. harmonic. and fatigue analysis. Hypermesh overview: Generating mid surface and analysing. To prepare a model from concept and analyse further to improve the design	Generating mid surface and analyzing. To prepare a model from concept and analyze further to improve the design		Hypermesh tool is added the curriculum as it is being the requirement in many placement drives	
25SDME02	COMPUTER INTEGRATED MANUFACTURING	SDC	Basic concepts of CAD / CAM and their integration tools/software's. Basic concepts concepts and working principles of NC Machines and CNC Programming in machining CNC Part programming for Turning. Milling and Drilling operations and simulation on CNC Train Software	Introduction to CIM. Evolution of manufacturing systems. Computer-aided functions: CAD. CAM. CAE. CAPP. CAQC. Hierarchical structure of CIM. Role of CAPP in CIM. Types of CAPP systems: Retrieval and Generative. Introduction to CNC Technology. Evolution of NC. CNC. and DNC. Structure of CNC system. Constructional features of CNC lathes. CNC milling. and CNC drilling machines. Axis nomenclature and machine configurations (3-axis. 5-axis). Spindle drives and feed drives. CNC Part Programming-Manual Programming. Coordinate systems: Absolute and incremental. G-code and M-code structure. Programming for: Facing. Turning. Taper turning. Thread cutting (CNC Lathe). Slot milling. Pocket milling. Drilling. Contouring (CNC Milling). Subprograms and cycles (canned cycles) Computer-Aided CNC Programming. Role of CAD/CAM in CNC programming. Toolpath generation using software (e.g.. Mastercam. Fusion 360). Post-processing and NC code generation. Simulation and verification of	**Topics Added:** Role of CAPP in CIM.Types of CAPP systems: Retrieval and Generative. Computer-Aided CNC Programming. Role of CAD/CAM in CNC programming. Toolpath generation using software (e.g.. Mastercam. Fusion 360). Post-processing and NC code generation. Simulation and verification of toolpaths	CO1, CO4	As per the feedback of industry person. concepts on CAPP. tool path generation. NC code verification in Computer Integrated Manufacturing course to make students learn the latest simulation tools in manufacturing	30%

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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				toolpaths				
25AEE3304	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONIC SYSTEMS	PE-3	Introduction to Thermal Management in Electronics -heat transfer modes, electronics packaging, contact and spreading resistances, heat sink design, thermal interface material (TIM). Cooling Technologies- thermal interface and phase change materials, active, passive and novel air-cooling approaches, microchannels, jet impingement, immersion cooling, heat pipes and vapor chambers, thermoelectric, Hybrid Thermal Management system, Air cooled combine with Phase change material, Liquid cooled combine with phase change material, Heat pipe combine with phase change material. Applications of thermal management: avionics, data centers, mobile, internet of things, high-performance omputing, automotive, etc Lithium-ion battery configuration and operation. Sources of heat in Lithium-ion battery, Lithium Ion- cell temperature ranges. Battery Thermal Management System (BTMS): Need of BTMS, Technologies of BTMS, Battery pack design, Lithium ion chemistries, challenges of the battery pack.	Introduction to Thermal Management in Electronics -heat transfer modes, electronics packaging, contact and spreading resistances, heat sink design, thermal interface material (TIM). Cooling Technologies- thermal interface and phase change materials, active, passive and novel air-cooling approaches, microchannels, jet impingement, immersion cooling, heat pipes and vapor chambers, thermoelectric, Hybrid Thermal Management system, Air cooled combine with Phase change material, Liquid cooled combine with phase change material, Heat pipe combine with phase change material. Applications of thermal management: avionics, data centers, mobile, internet of things, high-performance computing, automotive, etc Lithium-ion battery configuration and operation. Sources of heat in Lithium-ion battery, Lithium Ion- cell temperature ranges. Battery Thermal Management System (BTMS): Need of BTMS, Technologies of BTMS, Battery pack design, Lithium ion chemistries, challenges of the battery pack. Simulate Various battery management systems using Ansys Fluent	**Topics Added:** Simulate Various battery management systems using Ansys Fluent. Skilling component is added	CO5	As per the recommendation of faculty member the L-T-P-S of the course is changed to 3-0-0-2. Skill component is added to make students learn the simulation of battery management systems	25%
25EGD3101	Advanced Strength of Materials	PE-1	Statically Indeterminate Beams: Introduction to Statically indeterminate Beams, apply the Moment Area Method to analyze the fixed beams. Introduction to Continuous beams, apply Clapeyrons theorem of three moments to analyse continuous beams.	**Statically Indeterminate Beams**: Introduction to Statically indeterminate Beams, apply the Moment Area Method to analyze the fixed beams. Introduction to Continuous beams, apply Clapeyrons theorem of three moments to analyze continuous beams.	**Topics added:** simulations to determine the behaviour of different beams under different loading	CO5	As per the recommendation of faculty member, the course is offered as PE-1 with an L-T-P-S of 3-0-2-0. Lab component is added	25%

Vijay Kumar 11/8/25
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
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			Curved Beams: Stresses in Beams of small and large initial curvature, Winkler-Bach theory, Stresses in Crane Hook and C-Clamp with Rectangular, Circular and Trapezoidal cross-sections. Shear Center: Importance of Shear Centre, Locate the shear center for different cross-sections. Energy Methods: Introduction, Principles of virtual work, Apply Unit load Method to determine displacements and slope in Beams and to analyze simple structures and trusses. Centrifugal Stresses: Introduction, Stresses in Rotating Ring, Disc of uniform thickness. Thick Cylinders: Stresses in Thick cylinders, Apply Lames theory to determine radial and circumferential stresses in thick cylinders. Stresses in Compound Cylinders.	**Curved Beams:** Stresses in Beams of small and large initial curvature, Winkler-Bach theory, Stresses in Crane Hook and C-Clamp with Rectangular, Circular and Trapezoidal cross-sections. **Shear Center:** Importance of Shear Centre. Locate the shear center for different cross-sections. **Energy Methods:** Introduction, Principles of virtual work, Apply Unit load Method to determine displacements and slope in Beams and to analyze simple structures and trusses. **Centrifugal Stresses:** Introduction, Stresses in Rotating Ring, Disc of uniform thickness. **Thick Cylinders:** Stresses in Thick cylinders, Apply Lames theory to determine radial and circumferential stresses in thick cylinders. Stresses in Compound Cylinders. Conduct simulations to determine the behaviour of different beams under different loading			to give practical exposure to students	
25EGD3304	MODELLING ANALYSIS & DESIGN OF ROBOTIC SYSTEMS	PE-3	INTRODUCTION TO ROBOTICS Major components of a Robot, Robotic-like devices, Classification of Robots Classification by coordinate system and by control method. ROBOT END EFFECTORS Introduction, End effectors, interfacing, types of End effectors, grippers and tools. Considerations in the selection and design of remote cantered devices.ROBOTIC SENSORY DEVICES NonOptical position sensors Potentiometers, Synchros, inductosyn, optical position sensors opto interrupters, Optical encoders absolute and incremental. PROXIMITY SENSORS Contact type, noncontact type Reflected	**Introduction to Robotics :** Definition and scope of robotics, evolution and history, Types of, Coordinate frames and classification based on geometry and motion, Introduction to robot anatomy: links, joints, actuators, and end effectors **Kinematics of Robots :** Coordinate transformations using homogeneous transformation matrices, Forward and inverse kinematics using Denavit-Hartenberg (D-H) parameters, Example: 2R and 3R manipulators: Planar vs. spatial kinematics **Sensors and Actuators:** Introduction to joint sensors: potentiometers, encoders, proximity sensors, End effector sensors: force, torque, tactile, Actuators: electrical (DC, servo),	**Topics Added;** Simulating pick and place operations and basic motion plans, Case studies: spot welding, painting, assembly. Design a pick-and-place task using ABB RobotStudio or any open-source platform (V-REP, Webots)	CO5	As per the recommendation of faculty member, the course is offered as PE-3 with an L-T-P-S of 3-0-0-2. No. of class hours is reduced on the request of studetns. Previously the course L-T-P-S is 3-0-2-4	25%

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			light, scanning laser sensors. TOUCH and SLIP SENSORS Touch sensors proximity Rod and Photo detector sensors, Slip sensors Forced oscillation slip sensor, interrupted type slip sensors, force and torque sensors. TRANSFORMATIONS AND KINEMATICS Objectives, homogeneous coordinates, basic transformation operations, forward solution Denavit Hartenberg procedure. Simple problems involving planar manipulators, inverse or backward solution problems involved, techniques. INTRODUCTION TO ROBOT CONTROL Introduction Need and types of control schemes for robots joint space control schemes with an example task space control schemes with an example. ROBOT APPLICATIONS Industrial Applications Material Transfer, material handling, Loading and unloading, processing, spot and continuous arc welding, spray painting, grinding, Assembly and Inspection and Non Industrial Applications. Kinematic modeling and analysis of ABB IRB 1600 industrial robot with the help of ABB RobotStudio software. Develop a robot system for a pick and place operation	pneumatic, hydraulic. **Robot Control and Trajectory Planning:** Basics of feedback and open-loop control, Joint space and task space trajectory planning, Control system examples (PD/PI control, velocity control). **APPLICATIONS:** Industrial Applications: Material Transfer, material handling, Loading and unloading, processing, spot and continuous arc welding, spray painting, grinding, Assembly and Inspection and Non Industrial Applications. **Robot Simulation and Application :** Introduction to ABB IRB 1600 industrial robot configuration, Programming in ABB RobotStudio or MATLAB Robotics Toolbox, Simulating pick and place operations and basic motion plans. Case studies: spot welding, painting, assembly. Design a pick-and-place task using ABB RobotStudio or any open-source platform (V-REP, Webots)				
25SMF3202	Flexible Manufacturing Systems	PE-2	Production systems: Types of production-Job Shop production, Batch production and Mass production – Functions in manufacturing - Organization and information processing in manufacturing - Plant layouts: Inline Layout, Loop Layout, Rectangular Layout, Ladder Layout and	FMS INTRODUCTION AND DESCRIPTION Need for FMS, Types of flexibility in manufacturing, Types and Basic components of FMS, General Layout and Configuration of FMS, Principal Objectives, Advantages and limitations of FMS, Various Hardware and Software required for an FMS.	**Topics Added;** APPLICATIONS OF FMS AND FACTORY OF THE FUTURE FMS application in machining, sheet metal fabrication, prismatic	CO4	As per the recommendation of smart manufacturing research group to revise the syllabus of Flexible Manufacturing	25%

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			Open Field Layout, - Work in progress inventory - Scheduling using Hollier Method-1 and Hollier method-2, problems Group technology: Formation of part families - Part classification and Coding system - Opitz system, Multi Class system, Production flow analysis - Machine cell design - Clustering methods, Rank order clustering methods: problems – Modern algorithms - Benefits - System planning - Objective, guide line, system definition and sizing - Human resources - Objective, staffing, supervisor role Flexible manufacturing systems: Flexible manufacturing systems - Introduction - Types of flexibility - Evolution - Definition - Need - Economic justification, Application - Machine tool Selection and Layout - Computer control system - Data files - Reports - Planning the Flexible manufacturing systems - Analysis Methods for Flexible manufacturing systems - Benefits and limitations of Flexible manufacturing systems. Flexible manufacturing cells: Introduction , Cell description and classifications , Unattended machining concept, benefits of Unattended machining, Component handling and storage system, Cellular versus Flexible Manufacturing systems, Hardware configuration, Controllers, Communication networks: Local Area Networks, Wide Area Networks, Metropolitan Area Networks, Lean production and agile manufacturing	Data communication and networking in FMS, Scheduling in FMS. GROUP TECHNOLOGY AND MANUFACTURING CELLS Group Technology, Part classification and coding, Production flow analysis, Design and layout of manufacturing cells, Benefits and limitations of GT and CM, Cellular Manufacturing, Rank order clustering, Description and Classifications of Cell, Unattended Machining, Cellular versus Flexible Manufacturing. FACTORY AUTOMATION AND CONTINUOUS IMPROVEMENT Automated Guided Vehicles (AGVs), Robots in FMS, Automated Storage and Retrieval Systems (AS/RS), Material handling systems and devices used in FMS, Automatic parts identification systems and data capture, Shop floor control systems, Total Preventive maintenance, Kanban system, value engineering, JIT, lean manufacturing, Six sigma. APPLICATIONS OF FMS AND FACTORY OF THE FUTURE FMS application in machining, sheet metal fabrication, prismatic component production, aerospace application – Case studies. FMS development towards factories of the future, artificial intelligence and expert systems in FMS. FMS simulation tools and techniques. Performance measures in FMS. Recent trends in Flexible Manufacturing	component production, aerospace application – Case studies. FMS development towards factories of the future, artificial intelligence and expert systems in FMS. FMS simulation tools and techniques. Performance measures in FMS. Recent trends in Flexible Manufacturing		Systems course by adding the topics on applications in FMS	

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DEPARTMENT OF MECHNAICAL ENGINEERING

2025-26 M.Tech-Thermal Engineering Course Structure

SEM	Sl No	Course	COURSE CODE	COURSE NAME	Mode	L	T	P	S	Cr	CH
2	1	AUC	25UC5201	PROFESSIONAL COMMUNICATION SKILLS	R/M	0	0	4	0	0	4
Total						**0**	**0**	**4**	**0**	**0**	**4**
1	2	ESC	25MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4
Total						**2**	**2**	**0**	**0**	**4**	**4**
1	3	PCC	25TE5102	DESIGN AND OPTIMIZATION OF ENERGY SYSTEMS	R	2	0	2	4	4	8
1	4	PCC	25TE5103	ADVANCED THERMODYNAMICS	R	3	0	2	0	4	5
1	5	PCC	25TE5104	COMPUTATIONAL FLUID DYNAMICS	R	3	0	2	0	4	5
2	6	PCC	25TE5205	ADVANCED HEAT AND MASS TRANSFER	R	3	0	2	0	4	5
2	7	PCC	25TE5206	MEASUREMENTS IN THERMAL ENGINEERING	R	2	0	2	0	3	4
2	8	PCC	25TE5207	BATTERY AND THERMAL MANAGEMENT SYSTEMS	R	3	0	2	4	5	9
Total						**16**	**0**	**12**	**8**	**24**	**36**
1	9	PE-1		PROFESSIONAL ELECTIVE-1	R	3	0	2	0	4	5
2	10	PE2		PROFESSIONAL ELECTIVE-2	R	2	0	2	0	3	4
2	11	PE3		PROFESSIONAL ELECTIVE-3	R	3	0	2	0	4	5
Total						**8**	**0**	**6**	**0**	**11**	**14**
1	12	PRI	25IE5201	ESSENTIALS OF RESEARCH DESIGN	R	1	1	0	0	2	2
2	13	PRI	25IE5149	TERM PAPER	R	0	0	8	0	4	8
3	14	PRI	25IE6150	DISSERTATION-1	R	0	0	32	0	16	24
3	15	PRI		INTERNSHIP-1		0	0	32	0	16	24
4	16	PRI	25IE62502	DISSERTATION-2	R	0	0	32	0	16	24
4	17	PRI		INTERNSHIP-2		0	0	32	0	16	24
Total						**1**	**1**	**72**	**0**	**38**	**58**
3	18	VAC	25CC3071	PROGRAMMING USING PYTHON	R/M	0	0	0	4	0	4
3	19	VAC	25CC3114	STATIC AND FLOW ANALYSIS USING ANSYS CFD	R/M	0	0	0	4	0	4
Total						**0**	**0**	**0**	**8**	**0**	**8**
3	20	OE	25OEIN01	FUNDAMENTALS OF IOT	R	3	0	0	0	3	0
3	21	OE	25OEBT01	IPR AND PATENT LAWS	R	3	0	0	0	3	3
Total						**3**	**0**	**0**	**0**	**3**	**0**
GRAND TOTAL						**30**	**3**	**94**	**16**	**80**	**124**

		LIST OF PROFESSIONAL ELECTIVES	L	T	P	S
PE-1	25TE51A1	GAS TURBINE ENGINEERING	3	0	2	0
	25TE51A2	ELECTRIC VEHICLE ENGINEERING	3	0	2	0
	25TE51A3	ENERGY CONSERVATION & AUDIT	3	0	2	0
PE-2	25TE52B1	ADVANCED ENERGY STORAGE TECHNOLOGIES	2	0	2	0
	25TE52B2	FOOD PROCESSING, PRESERVATION AND TRANSPORT	2	0	2	0
	25TE52B3	CONVECTION AND TWO-PHASE FLOW	2	0	2	0
PE-3	25TE52C1	RENEWABLE ENERGY SOURCES & TECHNOLOGY	3	0	2	0
	25TE52C2	PRINCIPLES OF TURBO MACHINERY	3	0	2	0
	25TE52C3	HEAT EXCHANGER DESIGN	3	0	2	0

11/8/25

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KLEF

DEPARTMENT OF MECHNAICAL ENGINEERING

2025-26 M.Tech-Machine Design Sem wise Course Structure

SEM	Sl No	Course	COURSE CO	COURSE NAME	Mode	L	T	P	S	Cr	CH
1	1	ESC	25MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4
1	2	PCC	25ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS	R	2	0	2	4	4	8
1	3	PCC	25MD5102	ROBOTICS MANIPULATOR DESIGN AND ANALYSIS	R	3	0	2	0	4	5
1	4	PCC	25MD5103	MECHANICAL BEHAVIOUR OF MATERIALS	R	3	1	0	0	4	4
1	5	PE-1	PE-1	PROFESSIONAL ELECTIVE-1	R	3	0	2	0	4	5
1	6	PRI	25IE5201	ESSENTIALS OF RESEARCH DESIGN	R	1	1	0	0	2	2
TOTAL CREDITS FOR SEM 1						**14**	**4**	**6**	**4**	**22**	**28**
2	7	PCC	25MD5204	ADVANCED STRENGTH OF MATERIALS	R	3	0	2	0	4.	5
2	8	PCC	25MD5205	MECHANICAL VIBRATIONS	R	2	0	2	0	3	4
2	9	PCC	25MD5206	DESIGN OF PRESSURE VESSELS AND PLATES	R	3	0	2	4	5	9
2	10	PE-2	PE-2	PROFESSIONAL ELECTIVE-2	R	2	0	2	0	3	4
2	11	PE-3	PE-3	PROFESSIONAL ELECTIVE-3	R	3	0	2	0	4	5
1	12	AUC	25UC5201	PROFESSIONAL COMMUNICATION SKILLS	R	0	0	4	0	0	4
2	13	PRI	25IE5149	TERM PAPER	R	0	0	8	0	4	8
TOTAL CREDITS FOR SEM 2						**13**	**0**	**22**	**4**	**23**	**39**
3	14	PRI	25IE6150	DISSERTATION-1	R	0	0	32	0	16	24
3	15	PRI		INTERNSHIP-1		0	0	32	0	16	24
3	16	VAC	25CC3071	PROGRAMMING USING PYTHON	R/M	0	0	0	8	0	4
3	17	VAC	25CC3085	STATIC AND DYNAMIC ANALYSIS USING ALTAIR HYPERWORKS	R/M	0	0	0	8	0	4
3	18	OE		OPEN ELECTIVE	M	3	0	0	0	3	0
TOTAL CREDITS FOR SEM 3						**3**	**0**	**32**	**16**	**19**	**32**
4	18	PRI	25IE6250	DISSERTATION-2	R	0	0	32	0	16	24
4	19	PRI		INTERNSHIP-2	R	0	0	32	0	16	24
TOTAL CREDITS FOR SEM 4						**0**	**0**	**32**	**0**	**16**	**24**
GRAND TOTAL						**30**	**4**	**92**	**24**	**80**	**123**

		LIST OF PROFESSIONAL ELECTIVES	L	T	P	S
PE-1	25MD51A1	LEAN MANUFACTURING	3	0	2	0
	25MD51A2	PRECISION AND QUALITY ENGINEERING	3	0	2	0
	25MD51A3	MECHANICS OF COMPOSITE MATERIALS	3	0	2	0
PE-2	25MD52C1	DESIGN FOR MANUFACTURING	2	0	2	0
	25MD52B2	DESIGN FOR SUSTAINABILITY	2	0	2	0
	25MD52B3	CONCURRENT MANUFACTURING	2	0	2	0
PE-3	25MD52B1	FINITE ELEMENT ANALYSIS	3	0	2	0
	25MD52C2	FRACTURE MECHANICS	3	0	2	0
	25MD52C3	TRIBOLOGICAL SYSTEM DESIGN	3	0	2	0

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KLEF

DEPARTMENT OF MECHNAICAL ENGINEERING

2025-26 M.Tech-Thermal Engineering Sem wise Course Structure

SEM	Sl No	Course	COURSE CO	COURSE NAME	Mode	L	T	P	S	Cr	CH
1	1	ESC	25MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4
1	2	PCC	25ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS	R	2	0	2	4	4	8
1	3	PCC	25ME5103	DIGITAL MANUFACTURING	R	3	0	2	0	4	5
1	4	PCC	25ME5104	PROJECT MANAGEMENT FOR ENGINEERS	R	3	0	2	0	4	5
1	5	PE-1	PE-1	PROFESSIONAL ELECTIVE-1	R	3	0	2	0	4	5
1	6	PRI	25IE5201	ESSENTIALS OF RESEARCH DESIGN	R	1	1	0	0	2	2
TOTAL CREDITS FOR SEM 1						**14**	**3**	**8**	**4**	**22**	**29**
2	7	PCC	25ME5205	WEB AND NETWORKING TECHNOLOGIES	R	3	0	2	0	4	5
2	8	PCC	25ME5206	LOGISTICS AND SUPPLY CHAIN	R	2	0	2	0	3	4
2	9	PCC	25ME5207	PRECISION AND QUALITY ENGINEERING	R	3	0	2	4	5	9
2	10	PE-2	PE-2	PROFESSIONAL ELECTIVE-2	R	2	0	2	0	3	4
2	11	PE-3	PE-3	PROFESSIONAL ELECTIVE-3	R	3	0	2	0	4	5
1	12	AUC	25UC5201	PROFESSIONAL COMMUNICATION SKILLS	R	0	0	4	0	0	4
2	13	PRI	25IE5149	TERM PAPER	R	0	0	8	0	4	8
TOTAL CREDITS FOR SEM 2						**13**	**0**	**22**	**4**	**23**	**39**
3	14	PRI		DISSERTATION-1	R	0	0	32	0	16	24
3	15	PRI		INTERNSHIP-1		0	0	32	0	16	24
3	16	VAC		PYTHON PROGRAMMING CERTIFIED BY IBM	R/M	0	0	0	4	0	4
3	17	VAC			R/M	0	0	0	4	0	4
3	18	OE		OPEN ELECTIVE	M	3	0	0	0	3	0
TOTAL CREDITS FOR SEM 3						**3**	**0**	**32**	**8**	**19**	**32**
4	18	PRI		DISSERTATION-2	R	0	0	32	0	16	24
4	19	PRI		INTERNSHIP-2	R	0	0	32	0	16	24
TOTAL CREDITS FOR SEM 4						**0**	**0**	**32**	**0**	**16**	**24**
GRAND TOTAL						**30**	**3**	**94**	**16**	**80**	**124**

		LIST OF PROFESSIONAL ELECTIVES	L	T	P	S
PE-1	25ME51A1	PROGRAMMING AND DATA MANAGEMENT	3	0	2	0
	25ME51A2	OPERATIONS RESEARCH FOR ENGINEERS	3	0	2	0
	25ME51A3	MATERIALS AND PROCESS SELECTION FOR DESIGN	3	0	2	0
PE-2	25ME52B1	PLM ADVANCED CONCEPTS	2	0	2	0
	25ME52B2	MACHINE TOOL DESIGN	2	0	2	0
	25ME52B3	RELIABILITY AND LIFE TESTING	2	0	2	0
PE-3	25ME52C1	DESIGN FOR MANUFACTURING	3	0	2	0
	25ME52C2	LEAN MANUFACTURING	3	0	2	0
	25ME52C3	DIMENSIONAL MANAGEMENT	3	0	2	0

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To HOD, MS
to include this case from BOS to Academic council as special issue.
25/4/25

Outlook

(No subject)

From Ajit singh k <aksingh242837@gmail.com>
Date Tue 4/22/2025 12:43 PM
To Student Progression <students.progression@kluniversity.in>

You don't often get email from aksingh242837@gmail.com. Learn why this is important

Respected sir,
My Name. Ajit Singh
ID.N. 160070408

I am student of 2016 batch.Due to some financial issue I have not taken my degree upto now and 2 subject are still pending to complete.

16ME2207 Machine Drawing
15CS30A6 CC course

Is there any possibility so that I can complete my course. In this summer term.so that I can go abroad in upcoming month.

Hoping for your kind consideration
Thank you sir,
Yours sincerely.

Student has due of Rs. 87,500/-.
Sr. Visal.
25/04/25
ACC...
KL UNIVERSITY

AJIT SINGH
SAY NO TO PLASTIC
Mobile No: 7571040994

To,
Dean Academics
Recieved the request by email
→ Provided student ... tuition fee due ...
→ AC permits to give ... 6 months ... he may be allowed to ... due course in accordance ... approved
→ Kindly put up to Hon'ble ...

Dr. A. SRINATH
Dean, Skill Development & Student - Progressio
Koneru Lakshmaiah Education Foundatio
VADDESWARAM-522 302, Guntur D

Vijay Kumar 11/8/25
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Green Fi...

RESEARCH METHODOLOGY 25 RM ENGG 101

[COMMON TO ALL ENGINEERING STREAMS]

UNIT I

Introduction: Definition and objectives of research – Types of research (basic, applied, experimental, simulation-based, and computational) – Steps in the engineering research process – Mathematical and computational tools for analysis – Formulating a research problem – Literature survey using engineering databases (IEEE Xplore, ScienceDirect, Springer, etc.) – Synthesizing and critically reviewing technical literature – Defining research scope and objectives – Ethical issues in engineering research – IEEE and APA ethics codes.

UNIT II

Quantitative Methods for Problem Solving: Statistical modeling and analysis in engineering – Time series analysis for process and system data – Probability distributions in quality control and reliability – Fundamentals of statistical inference – Multivariate analysis for engineering experiments – Correlation and regression techniques in design validation – Error analysis in measurements – Spectral analysis for signal and vibration data – Applications in structural health monitoring, communication systems, and manufacturing processes.

UNIT III

Tabular and Graphical Description of Data: Tables and graphs for engineering experiment data – Comparative analysis of multi-variable datasets – Graphical methods for process monitoring (control charts, scatter plots, Pareto diagrams) – Visualization of simulation and computational results – Preparing datasets for engineering model development.

UNIT IV

Soft Computing in Engineering Research: Role of computers and engineering software in research – Application of statistical tools (SPSS, MATLAB, R, GRETL) – Introduction to evolutionary algorithms – Fundamentals of genetic algorithms for design optimization – Simulated annealing in resource allocation and scheduling – Neural network–based optimization in control and fault detection – Fuzzy systems in automation and decision-making.

UNIT V

Research Report Writing in Engineering: Structure and components of a technical research report – Types of engineering reports (experimental, simulation, feasibility, project, and design reports) – Layout and formatting as per IEEE/APA guidelines – Writing technical papers for conferences and journals – Citation management tools (Mendeley, Zotero, EndNote) – Presenting results with clarity and reproducibility – Referencing in academic and industry research.

Text Books

1. C.R. Kothari, *Research Methodology: Methods and Techniques*, 2/e, Vishwa Prakashan, 2006
2. Ranjit Kumar, *Research Methodology: A Step-by-Step Guide for Beginners*, 4th Edition, SAGE Publications, 2014

Reference Books

1. Donald R. Cooper & Pamela S. Schindler, *Business Research Methods*, 8/e, Tata McGraw-Hill, 2006
2. Timothy J. Ross, *Fuzzy Logic with Engineering Applications*, 2nd Edition, Wiley Publications
3. P.J. van Laarhoven & E.H. Aarts, *Simulated Annealing: Theory and Applications*, Mathematics and Its Applications Series
4. David E. Goldberg, *Genetic Algorithms in Search, Optimization, and Machine Learning*, Addison-Wesley

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