Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd u/s 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ✦ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200, www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph: +91 - 866 - 3500122, 2577115, 2576129

To
The Dean -Academics
K L Deemed University
Vaddeswaram

Dear Sir,

Sub: Minutes of the 24th BOS meeting-Mechanical Department held on 25-03-2023in online mode in room no.M118(HOD Chamber).,

The 24th BOS of Mechanical Department for 2023-24Odd Sem is conducted on 25-03-2023 in online mode from 11:00 AM to 12:30 PM in room no.M118. The details of minutes and annexures of BOS conducted is attached below.

Thanking You.

Yours sincerely

Dr.T.Vijaya Kumar 25/3/23
Chairman BOS -ME

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

Minutes of the 24thBOS meeting, Mechanical Department held on March25th2023in online mode form 11:00 AM to 12:30 PM through the following link

https://kluniversity.webex.com/kluniversity/j.php?MTID=m7d5f984d03aed5bf8e6a1f48226ea57d

AGENDA ITEMS

1. To present significant events of the department for the academic year:2022-23,Even Sem
2. To consider and approve the resolutions made by DAC which was conducted on 17-03-2023 and recommend the same to the Academic Council for further approval
3. To consider and approve the curriculum and syllabus of B.Tech, Y22 & Y23 admitted batch and to recommend the same to the Academic Council for further approval.
4. To consider and approve the curriculum and syllabus of new program M.Tech, Mechanical Engineering and to recommend the same to the Academic council for further approval
5. To consider and approve the curriculum of Y23 admitted batch M.Tech-Machine Design and M.Tech-Thermal Engineering programs and recommend the same to the Academic council for further approval.
6. To consider and approve the Value added courses of B.tech and M.tech programs and recommend the same to the academic council for further approval.
7. Any other points with the permission of chair.

Members Present

SL. NO	FULL NAME	DESIGNATION	ORGANIZATION	POSITIONIN THE MEETING
1	Dr.T.Vijaya Kumar	HOD-ME and Chairman-BOS	KLEF	Internal member
2	Dr.A.Venu Gopal	Professor	NIT Warangal	External member
3	Dr.R.Vijay Kumar	Senior Manager, R& D	HAL Bangalore	External member
4	Dr.K.Raviteja	Manager	Hyundai R& D Division, Hyderabad	External member
5	Dr. TK Rama Krishna	Principal, College of Engineering	KLEF	Internal member
6	Dr. K. Rama Krishna	Professor,Dean Quality	KLEF	Internal member
7	Dr.A.Srinath	Professor, Dean Skill Development & progression	KLEF	Internal member
8	Dr.B.Nageswara Rao	Professor	KLEF	Internal member

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

9	Dr.D.V.A Rama Sastry	Associate Professor, Special Office-Exams	KLEF	Internal member
10	Dr.P.Kasi V rao	Associate professor, Associate Dean Academics	KLEF	Co-opted member
11	Dr.S.N.Padhi	Professor, Group Head, Design & manufacturing	KLEF	Internal member
12	Dr.S.S. Rao	Professor, Group Head, Robotics &Mechatrinics	KLEF	Internal member
13	Dr.G.Murali	Professor& Group Head, Energy & CFD	KLEF	Internal member
14	Dr.V.L.Mangesh	Professor	KLEF	Internal member
15	Dr.G.Yedukondalu	Associate Professor, Associate Dean Skilling	KLEF	Internal member
16	Dr.K.V.Durga Rajesh	Associate Professor	KLEF	Internal member
17	Mrs. T.Kanthimathi	Assistant professor, Professor I/C Academics	KLEF	Internal Member

Chairman-BOS welcomed all the members and presented the agenda items of the BOS

AGENDA and RESOLUTIONS

AGENDA ITEM-1

Department Achievements for the A.Y.2022-23 Even Sem	Resolution Passed : BOS appreciated the achievements of the department

Honours received by Faculty

- Dr.B.Nageswara Rao, Professor is recognized as Top Ranked Researchers in World 2% Researchers Category 2022 by Elsevier
- Dr.A.Srinath, Dean Skill Development and progression, received Dean Excellence Award – 2022 on 23-12-2022 FROMEduSkillsCenter of Excellence (CoE), Next GEN Skill Conclave, New Delhi

Placements

- 107 Placement offers were received by from 27 companies.
- The maximum package offered was 12 lakh and minimum of 3.2 lakhs with an average package of 5.5 lakhs per annum.

Ph.D Awards

- Mr. Vinay Atgur, scholar of Dr. G. Manavendra was awarded Ph.D in the month of Jan'2023.

Publications & Conference presesntations

100+ papers were published in various International Journals in the 2022 and 20+ papers were published in the year 2023 till date. BoS Chairman Congratulated all the award winners and achievers of the department.

25/3/23

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

BOS appreciated all the achievers of the department both faculty and students and congratulated the department faculty and staff who helped students to achieve their goals. The detailed list of events in given in **Annexure-1**.

AGENDA ITEM-2

Resolutions of DAC	Resolution Passed:The DAC minutes are approved and recommended the same to the academic council

BY considering the feedback given by the stake holders following are the resolutions passed in DAC.

- To give guidance to students on paper writing skills to publish papers in Journals.
- To include M.Tech students for industrial visits and to give interdisciplinary assignments and requested to suggest project titles.
  - Dr.A. Srinath, internal member suggested to allot two guides in case of interdisciplinary projects, one from the department and the other from the other department to which the project is related.
- To propose the following courses for Y22 & Y23 admitted batch students
  i. Mathematical Modelling and Numerical Methods course is proposed for Y23 admitted batch students with an L-T-P-S of 2-2-0-0 to be applicable for mechanical engineers in place of Mathematics for Computing course
  ii. Linear Algebra & Calculus for Engineers course is proposed for Y23 admitted batch students with an L-T-P-S of 2-2-0-0 in place of mathematics for Engineers course.
  iii. Kinematics of machines and Dynamics of Machines are combined as Kinematics and Dynamics of Machines with an L-T-P-S:2-0-2-0.
  iv. Robotics Course is renamed as Digital Manufacturing and Robotics (2-0-0-0)

. It is resolved to approve the resolution made in DAC -**Annexure-2, DAC minutes**

It is resolved to consider and approve the feedback of the stake holders and to allot two guides for interdisciplinary projects.

The detailed analysis on feedback and action taken report are presented in **Annexure-3. (Stake Holders Feedback).**

.AGENDA ITEM-3

Curriculum of B.Techfor Y22 & Y23 admitted batch students	Resolution Passed: The recommendations of BOS are forwarded to Academic Council

- Dr,K.Ravi Teja, external member suggested to offer courses on electric vehicle as compulsory rather than electives. It is resolved to offer Electric vehicle technology as Flexi core to Y22 & Y23 admitted batch studentswith an L-T-P-S of 3-0-0-0.
- Prof. A. Venu Gopal, external member enquired whether the courses introduced for Y22 and Y23 batch admitted students were there for previous batch students or not. Dr. A. Srinath,

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

explained that the mathematical courses and the KDOM course were split into two courses for previous batch students, but are now offered as one course for Y22 and Y23 admitted batch students.

- Dr.A.Srinath, suggested to include Artificial Intelligence, Machine Learning and Python into the curriculum which was also emphasized by Dr. Ravi Teja. Dr.Vijay Kumar, external member suggested to include Python as an application oriented course and suggested to add one unit on Python for mathematical courses. It is resolved to approve the suggestion of the members and the following courses were approved to offer for Y22 & Y23 batch admitted students
  1. Mathematical Modelling and Numerical Methods
  2. Linear Algebra and Calculus for Engineers

  2. Artificial Intelligence & Machine Learning to be offered as Engineering Science Course with an L-T-P-S of 3-0-2-0.
- Chairman BOS explained the members that to impart flexibility for advanced learners following core courses are proposed to offer in 3 modes namely Advanced-A, Experiential-E and Regular-R for Y22 and Y23 admitted batch students
  a. Mechanics of Solids (L-T-P-S :4-0-4-0 for A & E modes, 3-0-2-0 for R mode)
  b. Manufacturing Technology (L-T-P-S :3-0-4-0 for A & E modes, 2-0-2-0 for R mode)
  c. Kinematics and Dynamics of Machines (L-T-P-S :4-1-4-0 for A & E modes, 3-1-2-0 for R mode)
  d. Heat Transfer (L-T-P-S :4-0-4-0 for A & E modes, 3-0-2-0 for R mode)
  e. Mechanical Engineering Design (L-T-P-S :4-1-4-0 for A & E modes, 3-0-0-0 for R mode)
  f. Machine Design (L-T-P-S :4-0-4-0 for A & E modes, 3-0-2-0 for R mode)

  It is resolved to approve the 3 modes of Professional core courses proposed for Y22 & Y23 admitted batch students.

- Group Heads suggested to include following courses for Y22 & Y23 admitted batch students in order to attain the skill sets of the respective cohorts
  1. Supply Chain & Quality Management (3-0-0-0)-Flexi Core for Y22 & Y23 admitted batch students
  2. Industrial Internet of Things (2-0-2-0)-Flexi core for Y22 admitted batch students
  3. Electric Vehicle Technology(3-0-0-0)-Flexi Core for Y22 admitted batch students
  4. Industrial Management & Production Planning (4-0-0-0) Management Elective for Y23 admitted batch students
  5. Refrigeration & Air Conditioning (3-0-0-0)- Professional Elective(Energy & CFD specialization)
  6. Advanced Vibrations (2-0-2-0)-professional Elective (Engineering Design specialization)
  7. Battery State Estimation for Electric Vehicle(2-0-2-0) (e-mobility specialization offered by EEE department)
  8. Advanced Materials Manufacturing & testing (3-0-0-0) (Smart manufacturing)
  9. Automotive Electronics Specialization courses (offered by ECE Department)

Vijay Kumar 25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302

a. Automotive Sensor and Applications
b. Autotronics
c. Automotive Pollution and its Control
d. Alternate Drives, Traction and Controls
e. Vehicle Control Systems
f. Automotive Electrical and Electronics Systems
g. Soft Computing Techniques for Automotive Applications
h. Automotive Networking and Protocols

To accommodate students with advanced, experiential and self learningmode it is proposed to offer PE-1, PE-3 in Advanced-A(L-T-P-S;3-0-4-4), Experiential-E (L-T-P-S;3-0-4-4) and Regular-R (L-T-P-S: 2-0-2-4) modes and PE-4 in MOOC's mode (with L-T-P-S:3-0-0-0 for M mode and 4-0-0-0 for MA(MOOC's Advanced) mode

It is resolved to approve the new Flexi Core, Management elective and Professional Electives courses to be offered to Y22 & Y23 admitted batch students

- Group Heads suggested to include following courses skill development courses for Y22 & Y23 admitted batch students to impart the modelling and analysis skills to the students
  a. SDC-1:Visualization and Modelling for Engineering Design
  b. SDC-2: Computer Integrated Manufacturing
  c. SDC-3: Finite Element Analysis

  Specialization Based-SDC-4

  d. Analysis of Energy Systems (Energy & CFD)
  e. 3D Modelling and Digital Prototyping (Engineering Design)
  f. Geometric Dimensioning and Tolerancing (Smart Manufacturing)

  To accommodate students with advanced and experiential mode of learning, SDC Courses are proposed to be offered in Advanced(A), Experiential (E) and Regular(R) modes with an L-T-P-S of 0-0-6-4 for A mode, 0-0-6-4 for E mode and 0-0-2-4 for R mode

  It is resolved to approve the Skill Development Courses to be offered to Y22 and Y23 admitted batch Students

- Chairman BOS presented the proposals received from other departments to be included in Y22 & Y23 admitted batch students curriculum to enrich the students with leadership, vedicmaths and coding skills. Following courses are proposed
  a. Leadership and Management Skills (English Dept.) only for Y23 admitted batch students
  b. Social Immersive learning-1(Y22 & Y23)
  c. Social Immersive Learning-2(Y22 & Y23)
  d. Social Immersive learning-3 (Y22 & Y23)
  e. Social Immersive Learning-4 (Y22)
  f. Indian Knowledge system-Vedic Mathematics(Maths Dept.) (Y22 & Y23)

Vijay Kumar 25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

g. Global Logic Building Practicum-1(Placement Dept.) (Y22 & Y23)
h. Global Logic Building practicum-2 (Placement Dept.) (Y22 & Y23)
i. Innovation Management(Y22)

It is resolved to include the courses proposed by other departments

- Dr. A. Srinath, enquired whether NEP-2020 is considered for design of curriculum which is stating to have 12 credits in summer internship and about multiple entry and multiple exit policy.
  It is recommended to identify and frame the exit requirements as suggested by NEP-2020.
- Prof. A.Venu Gopal, external member suggested to have 40 credits per year as per NEP-2020. Chairman-BOS clarified that the credits for each year is more than 40.
- Prof. A. Venu Gopal suggested to offer mathematics courses before 3rd year. Dr.D.V.A Rama Sastry, internal member informed that all the mathematics courses will be studied by the students before 3rd year.
- Chairman-BoS explained the members that, as per the NEP policy and to offer flexibility to the students, it is proposed that students of Mechanical Engineering can opt for any specialization across the engineering departments upon satisfying the pre-requisites as per the course.
  It is resolved to approve the flexibilities offered to the students to opt for any specialization offered across engineering branches.

Courses Introduced to Y22 and Y23 admitted batch B.Tech students

S.No.	Regulation	Course Code	Course name	Course Category	Remarks
1	Y23	23MT1001	Linear Algebra and Calculus for Engineers	BSC	Based on the feedback received this course is introduced in place of Mathematics for Engineers course
2	Y23	23MT2003	Mathematical Modelling and Numerical methods	BSC	Based on the feedback received this course is introduced in place of Mathematics for Computing course
3	Y23	23AD2001R	Artificial Intelligence and machine learning	ESC	Based on the feedback received this course is introduced in place of Data Driven Artificial Intelligent Systems course
4	Y23	23UC0027	Leadership and Management Skills	HAS	Based on the feedback received this course is introduced in place of Data Essential Skills for Employability course
5	Y23 & Y22	22UC0021	Social Immersive Learning-1	SIL	Based on the feedback received this course is

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

					introduced to involve students in various clubs
6	Y23 & Y22	22UC0022	Social Immersive Learning-2	SIL	Based on the feedback received this course is introduced to involve students in various clubs
7	Y23 & Y22	22UC0023	Social Immersive Learning-3	SIL	Based on the feedback received this course is introduced to involve students in various clubs
8	Y22	22UC0024	Social Immersive Learning-4	SIL	Based on the feedback received this course is introduced to involve students in various clubs
9	Y22 & Y23	23UC0013	Global Logic Building practicum-1	AUC	Based on the feedback received this course is introduced to train students in coding
10	Y22 & Y23	23UC0014	Global Logic Building Practicum-2	AUC	Based on the feedback received this course is introduced to train students in coding
11	Y22 & Y23	23SDME01	Visualization & modelling for Engineering Design	SDC-1	Based on the feedback received this course is introduced to impart design skills to students
12	Y22 & Y23	23SDME02	Computer Integrated Manufacturing	SDC-2	Based on the feedback received this course is introduced to impart latest manufacturing techniques to students
13	Y22 & Y23	23SDME03	Finite Element Analysis	SDC-3	Based on the feedback received this course is introduced to impart modelling techniques to students
14	Y22 & Y23	23SDME04	Analysis of Energy Systems	SDC-4	Based on the feedback received this course is introduced to analyze energy systems
15	Y22 & Y23	23SDME05	3D Modelling and Digital Prototyping	SDC-4	Based on the feedback received this course is introduced to impart 3D modelling to students
16	Y22 & Y23	23SDME06	Geometric Dimensioning and Tolerancing	SDC-4	Based on the feedback received this course is introduced to impart dimensioning knowledge to students

25/3/23

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

17	Y22 & Y23	23ME2221F	Supply Chain and Quality Management	FC	Based on the feedback received this course is introduced to impart Quality management concepts to students
18	Y22 & Y23	23ME2222F	Industrial Internet of Things	FC	Based on the feedback received this course is introduced to impart internet of things concepts in industries to students
19	Y22 & Y23	23ME2223F	Electric Vehicle Technology	FC	Based on the feedback received this course is introduced to impart electric vehicle concepts to students
20	Y22 & Y23	23MB4067	Industrial Management & production Planning	Management Elective	Based on the feedback received this course is introduced to cover the concepts of scheduling inventory
21	Y22 & Y23	22ECF3406	Refrigeration and Air Conditioning	Elective	Based on the feedback received this course is introduced to meet the needs of HVAC industry
22	Y22 & Y23	23EGD3405	Advanced Vibrations	Elective	Based on the feedback received this course is introduced to enable students understand the various techniques to arrest vibrations
23	Y22 & Y23	23SMF3202	Advanced Materials for Manufacturing & Testing	Elective	As per the feedback received from stake holders this course is introduced to make students understand the importance of advanced materials in manufacturing
24	Y22 & Y23	23UC0017	Indian Knowledge Systems-Vedic Mathematics	Elective	Based on the feedback received from stake holders this course is introduced to improve the logical thinking of students through Vedic maths.

AGENDA ITEM-4

Curriculum of New program M.Tech-Mechanical Engineering	Resolution Passed: It is resolved to approve the curriculum of M.Tech- Mechanical Engineering program and recommended the same to Academic council for further approval

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

- Chairman BOS presented the curriculum of M.Tech-Mechanical Engineering to Y23 admitted batch students to the members.
- Dr.Ravi Teja enquired that whether the certificate courses for M.tech students is restricted domain specific or not. Dr.K Rama Krishna, internal member replied that the certificate courses for mechanical students need to be domain specific and they can online or MOOC's courses.
- Dr. Vijay Kumar suggested, to change the title of elective course Design of pressure Vessels and Plates to Design of Plates and Shells. Chairman BoS said that the title will be rechecked

It is resolved to approve the curriculum of newM.Tech-Mechanical Engineering program for Y23 admitted batch students. Detailed curriculum of M.Tech Mechanical Engineering is given in **Annexure-6.**

AGENDA ITEM-5

Y23 Admitted Batch M.Tech-MD &M.Tech-TE Programs curriculum	Resolution Passed: it is resolved to approve the curriculum of M.Tech-MD &M.Tech-TE and recommend the same to academic council for further approval

- Based on the discussions of Design& Thermal group cohorts the M.Tech-MD &M.Tech-TE curriculum is enriched with 5 elective courses, 1 maths course, 1 audit course, 2 Value added courses, 1 project course and 1 open elective in addition to the Professional coure course and dissertation.

Following are the new courses proposed for M.Tech-MD program

1. Professional Communication Skills-HAS (0-0-4-0)
2. Design of Experiments-Audit Course (0-0-4-0)
3. Essentials of Research Design-PRI (1-1-0-0)
4. Design of Hybrid Vehicles (3-0-0-0)
5. Industrial Internet of Things (3-0-0-0)
6. Enterprise Resource Planning-PE5(3-0-0-0)

Following are the new courses proposed for M.Tech-TE program

1. Professional Communication Skills-HAS (0-0-4-0)
2. Simulation of Energy Management Systems-Audit Course (0-0-4-0)
3. Essentials of Research Design-PRI (1-1-0-0)
4. Air Craft& jet propulsion Engineering (3-0-0-0)
5. Battery and Thermal Management Systems (3-0-0-0)
6. Enterprise Resource Planning-PE5(3-0-0-0)

It is resolved to approve & the new courses proposed for M.Tech-MD &M.Tech-TE program. The detailed structure of M.Tech-MD is given in **Annexure-7** and M.Tech-TE in **Annexure-8.**

AGENDA ITEM-6

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

Value Added Courses: B.Tech&M.Tech	Resolution Passed: It is resolved to approve the value added courses for B.Tech&M.Tech programs

- Chairman BOS presented the value added courses offered by the department for Y22 & Y23 admitted batch B.Tech and Y23 admitted batch M.Tech Students students.
  - Dr. Ravi Teja, suggested change the name of the course Altair CFD as CFD.
  - Dr. Vijay Kumar, external member suggested to include PDM & PLM software for manufacturing specializations. Chairman BOS replied that the suggestions made by the members will be considered.

  It is resolved to approve the Value added courses t offered to Y22 & Y23 admitted batch B.Tech and Y23 admitted batch M.Tech-MD, M.Tech-ME and M.Tech-TE programs. The details of Value added courses are given in **Annerxure-9.**

AGENDA ITEM-7

Other Points	Resolution Passed: BOS thanked the external member

Chairman BOS presented the minor degree programs for Y23 & Y22 admitted batch students. Followingare the Minor degree programs offered by the department

1. Computational Fluid Dynamics
2. Industrial Design
3. Mechatronics
4. Product Design

It is resolved to approve the minor degree programs offered by the department

It is resolved to approve the curriculum for B.Tech Y23 & Y22 admitted batch students which is given in **Annexure-10.**

Dr. Venu Gopal appreciated the curriculum of B.Tech&M.Tech proposed by the department. Chairman BOS thanked the external member.

25/3/23

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

Koneru Lakshmaiah Education Foundation

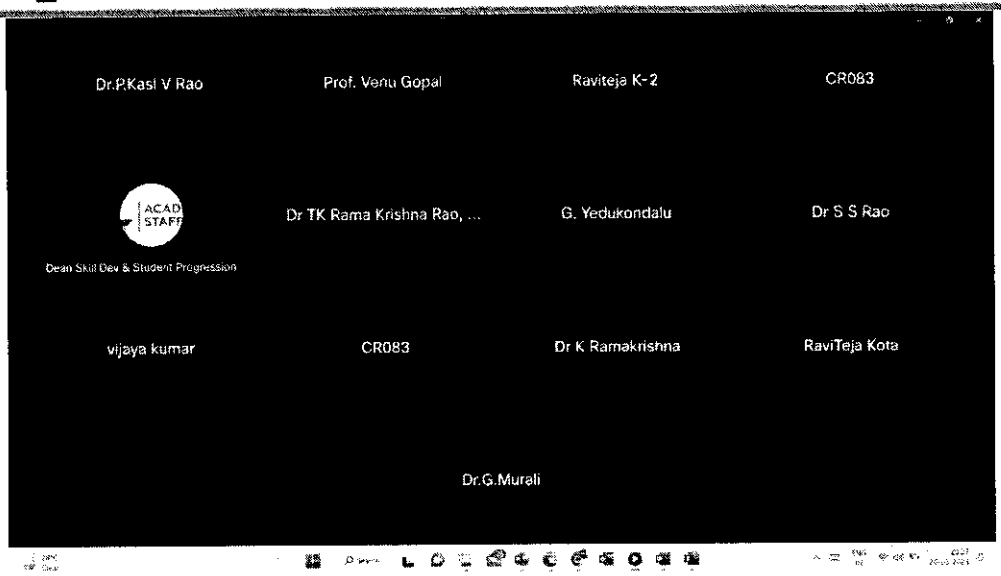
(Category -1, Deemed to be University estd. u/s 3 of the UGC Act, 1956)

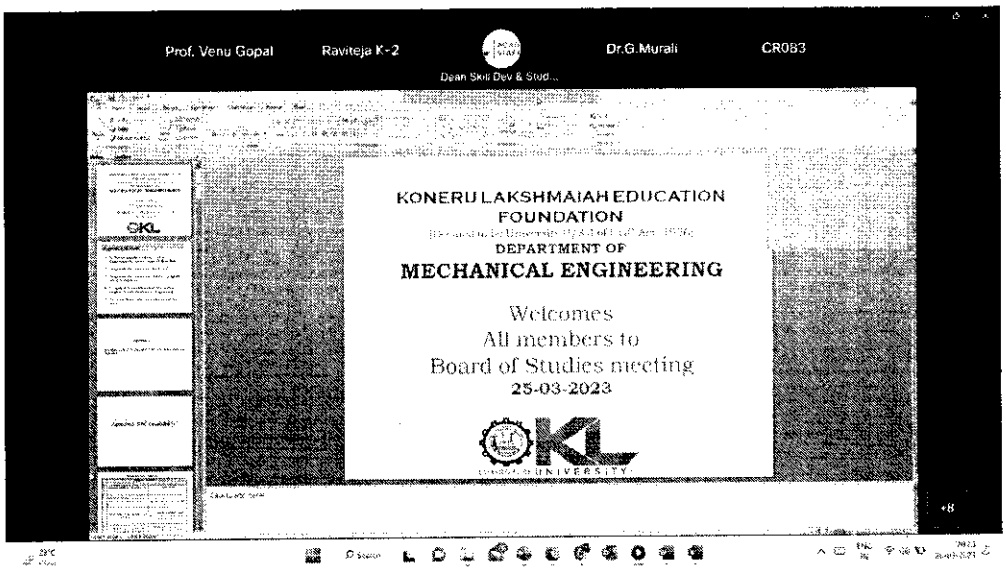
Accredited by **NAAC** as '**A++**' ❖Approved by AICTE ❖ ISO 9001-2015 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in, www.kluniversity.in

Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

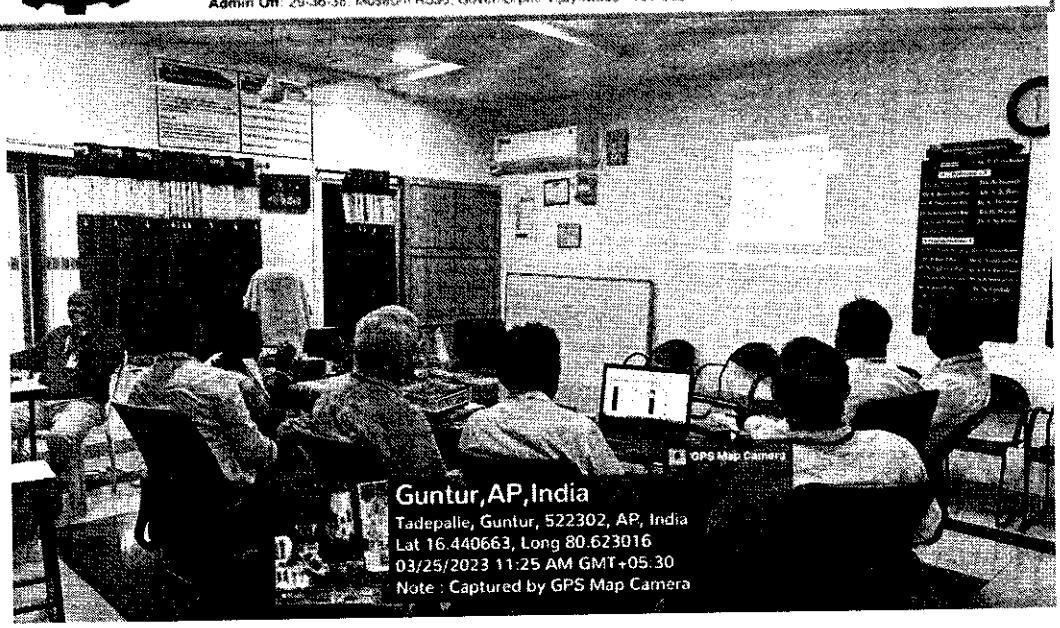




25/3/23

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as '**A++**' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2578129.



Vijaya Kumar 25/3/23

Dr.T. Vijaya Kumar

HOD-ME, Chairman BOS

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

K L E F
Department of Mechanical Engineering

Significant Events happened in the Department from December-2022 to till date

1.0 Honours Received

1.1 Honours received by Faculty

Dept.	Name of the Faculty	Details of Honours	By
ME	Dr. B. Nageswara Rao	Top Ranked Researchers in World 2% Researchers Category 2022	Elsevier
ME	Dr. A. Srinath	Dean Excellence Award – 2022 on 23-12-2022	EduSkills Center of Excellence (CoE), Next GEN Skill Conclave, New Delhi

1.2 Placements Details

Sl. No.	Company Name	No. of students selected	Package (in Lakhs)	Company profile
1	TCS Ninja	12	3.86 LPA	
2	TCS Digital	1	7 LPA	
3	Nokia	1	6 LPA	
4	Infosys through InfyTQ	2	3.6 LPA + Benefits	
5	GA Morgan Dynamics	1	3.6 LPA	
6	EPAM	1	12 LPA	
7	Deloitte	3	7.6 LPA	
8	MU Sigma	7	5 LPA	
9	Hyundai Mobis	4	5.5 LPA + Benefits	
10	CTS GENC	6	4 LPA	
11	LTTS	5	4 LPA	
12	NSL Hub	2	5 LPA	
13	Mindtree	7	4 LPA	
14	Accenture	3	4.5 LPA	
15	KPIT	2	4.5 LPA	
16	Geekbull	1	4.5 LPA	
17	Amzur infotech	2	4 LPA	
18	Media Mint	4	3.2 LPA	
19	Savantis	11	3.2 LPA + Stipend 15K	
20	Hitachi Energy	2	6.5 LPA	
21	Tetrahedron Manufacturing PVT Ltd.	10	3.2 to 4 LPA + Stipend 10k	

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation

22	Databeat for the profile of Ads-Ops Associate Role	1	4 LPA + 15k stipend	
23	AG&P	2	5.5	
24	Programmer Analyst at Cognizant	1	5.4	
25	PCS Solutions	8	3.76	
26	Pie Infocomm	3	4.5	
27	U learn	5	3.5 to 4.0	

All Placement registered students placed and department placement success meet conducted on 13-02-2023

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

1.3 Ph.D. awarded

S. No.	Dept.	Name of the Faculty/Scholar	Name of the Supervisor	Month and Year
1	ME	Mr. Vinay Atgur	Dr. G. Manavendra	January-2023

1.4 Ph.D. Thesis submitted

S. No.	Dept.	Name of the Faculty/Scholar	Name of the Supervisor	Submitted on	Submitted to
1	ME	Mr. K. Sai Sarath		December-2022	VIT

2.0 Research Publications

2.1 Number of Papers Published by Faculty

S. No	Dept.	National Journals	International Journals
1	ME	-	100 + (for Calendar year 2022) 20 + (for calendar year 2023 till date)

3.0 Guest Lectures/Webinar

3.1 Guest Lectures/Webinar Arranged through Virtual/Offline Mode

S. No.	Dept.	Name of the Event	Date	On Topic
1	ME	**Conducted Alumni Guest Lecture** on **"Present Scenario in AL and ML"** by Mr.M.V.N. Bharath Kumar, System Engineer, Infosys, Hyderabad by R&M Group	24-12-2022	**"Present Scenario in AL and ML"**
2	ME	**Conducted Industry Guest Lecture** on **" Latest trends in Simulation and it's applications"** by Mr. C. Navin Kumar, Sr. Lead Engineer, Tata Consultancy Services, Bangalore by Energy & CFD Group	30-12-2022	**"Latest trends in Simulation and it's applications"**
3	ME	**Conducted Industry Guest Lecture** on **" Problem Solving Techniques - Symptoms vs. Roots "** by Mr. Y. Sri Singari Reddaiah, Scientist F, SHAR ISRO by D&M Group	31-12-2022	**"Problem Solving Techniques -Symptoms vs. Roots"**
4	ME	**Conducted Industry Guest Lecture** on "Career Planning in Core Design Engineering" by Mr. Ashok Sanmani, Founder- a School of Industry Oriented Engg. & Solutions by D&M Group	07-01-2023	"Career Planning in Core Design Engineering"

Dr. T. VIJAYAKUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation

5	ME	**Conducted Alumni Guest Lecture** on **"Attaining admission to US universities and photocatalysis research"** by Dr. Anveeksh Koneru, Assistant Professor, Mechanical Engineering, The University of Texas Permian Basin	21-01-2023	"Attaining admission to US universities and photocatalysis research"
6	ME	**Conducted Alumni Guest Lecture** on **"Design Phases of Automotive Vehicles"** by Mr. Uppala Gopala Rao, Chief Technology Officer, eTrio Automobiles, India	27-01-2023	"Design Phases of Automotive Vehicles"
7	ME	**Conducted Alumni Guest Lecture** on **"Entrepreneurship"** by Mr. R S V Badrinath (1980-1984 Batch), MSIS, Senior Govt. Employee, Retd. Prohibition and Excise Department, Hyderabad, Telangana, India.	10-02-2023	"Entrepreneurship"
8	ME	**Conducted Industry Expert Lecture** on **"Rapid prototyping techniques and industry experience of MIM"** by Mr. B. Ravi, General Manager – Operations, Indo-MIM Pvt. Ltd., Bangalore	14-03-2023	Rapid prototyping techniques and industry experience of MIM

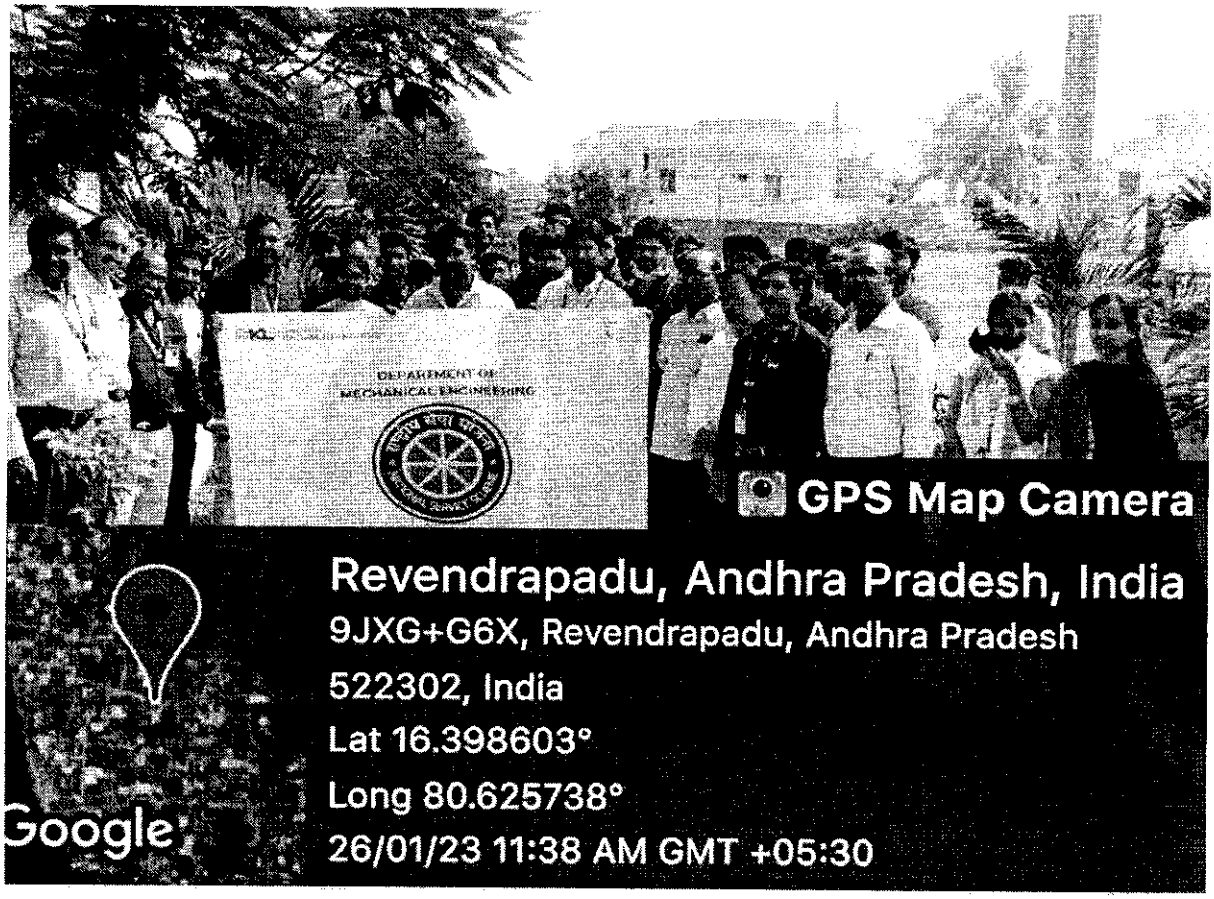
3.2	**Guest Lectures Delivered by our Faculty in other Colleges / Universities through Virtual Mode**

S. No.	Dept.	Name	At	Date	On Topic
1	ME	Dr. D.V.A Rama Sastry	QIS College of Engineering and Technology, Ongole	8-12-2022	1 Day Workshop on **"Outcome Based Education"**

Dr. T. VIJAYA KUMAR 24/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 302

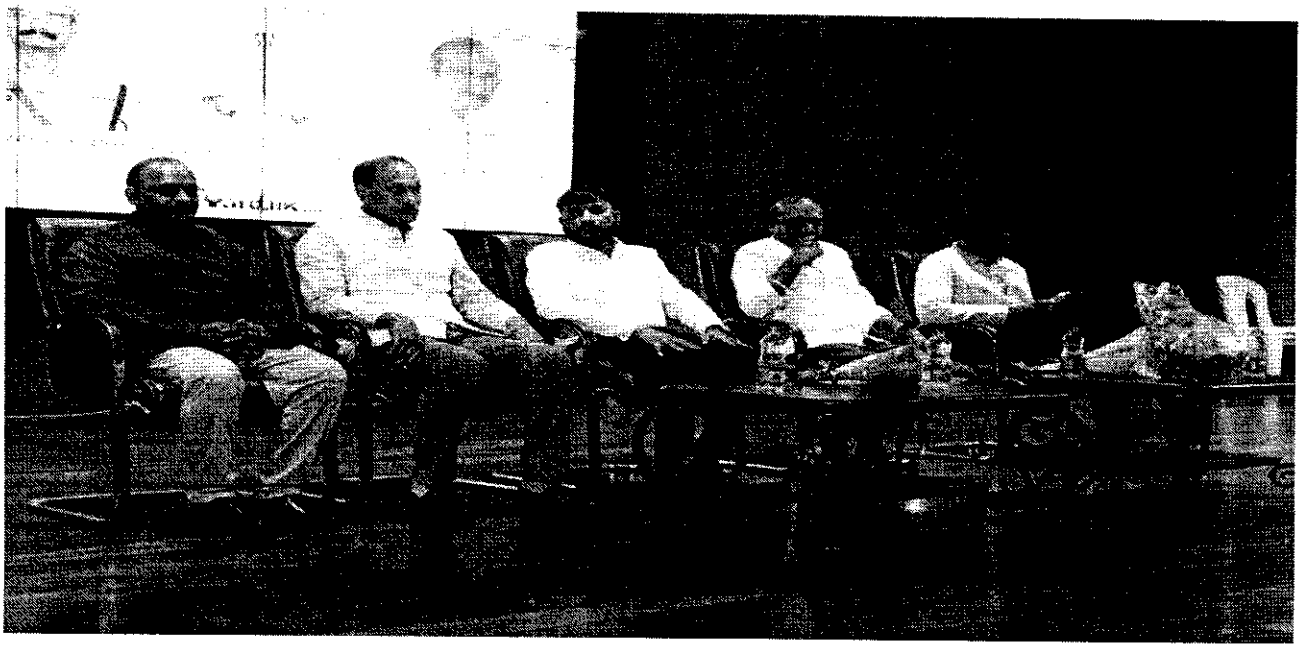
4.0	NSS Activities conducted through Virtual Mode

S. No.	Dept.	Details of NSS Activities	Conducted On
1	ME	Conducted plantation of plants and the awareness camp about the importance of celebrating REPUBLIC DAY to the villagers at Revendrapadu village, organised by Mechanical Engineering Department along with NSS unit-3 on 26-01-2023	26-01-2023



Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Found...
(Deemed to be University)
Green Fields, VADDESWARAM-522...

Yantrik – Department fest conducted on 27th and 28th February 2023



HoD-ME 25/1/23

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

CIRCULAR
DAC-2 Meeting

DAC-2 meeting on 17-03-2023 at 3:45 PM

T. KANTHIMATHI
To: KLU ME Faculty

Respected Sir,
As per the instructions of HOD Sir, DAC-2 meeting is scheduled on 17-03-2023 at 3:45 pm in HOD cabin. Following are the agenda points to be discussed in the meeting

1. To consider the feedback given by all stakeholders
2. To discuss the and approve the curriculum of B.Tech Y23 admitted batch students.
3. To consider and approve the changes proposed for Y22 admitted batch students curriculum
4. To consider and approve the new M.Tech program, M.Tech-Mechanical Engineering
5. To consider any other point with the permission of the chair

Following members are requested to attend the meeting without fail

1. Dr. T. Vijaya Kumar, Associate Professor & HOD,
2. Dr. S. S. Rao, Professor & R&M Group Head,
3. Dr. G. Murali, Professor & CFD Group Head,
4. Dr. S. N. Padhi, Professor & D&M Group Head,
5. Mr. Karimulla Syed and Mrs. T. Kanthimathi, Asst. Professor & IV Year Coordinator,
6. Dr. K. V. Durga Rajesh, Associate Professor & III Year Coordinator,
7. Mr. K. Sai Sarath, Assistant Professor & II Year Coordinator,
8. Dr. G. Yedukondalu, Associate Professor,
9. Dr. D.V.A Rama Sastry, Associate Professor,
10. Dr. B. Nageswara Rao, Professor
11. **Mrs. T. Kanthimathi, Assistant Professor & Prof. I/C Academics,**
12. Dr. P Kasi V Rao, Associate Professor, Associate Dean Academics
13. Dr. VL Mangesh, Professor,
14. Dr. Priyaranjan Sharma, Professor.

T.Kanthimathi
Assistant Professor
Department of Mechanical Engineering
K L University

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200, www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph. +91 - 866 - 3500122, 2577715, 2576129

K L E F
DEPARTMENT OF MECHANICAL ENGINEERING
MINUTES OF DEPARTMENT ACADEMIC COMMITTEE (DAC)

KLEF/ ME/ IQAC - ACAD/AQ.5/ DCMs **Date: 17-03-2023**

The 23rd Department Academic Committee (DAC) Meeting was conducted at 3:45 P.M. on 17/03/2023 in HOD Cabin.

Agenda of the Meeting:

1. To consider the feedback given by all stakeholders
2. To discuss the and approve the curriculum of B.Tech Y23 admitted batch students.
3. To consider and approve the changes proposed for Y22 admitted batch students curriculum
4. To consider and approve the new M.Tech program, M.Tech-Mechanical Engineering
5. To consider any other point with the permission of the chair

The following members were present:

1. Dr. T. Vijaya Kumar, Associate Professor & HOD,
2. Dr. S. S. Rao, Professor & R&M Group Head,
3. Dr. S. N. Padhi, Professor & D&M Group Head,
4. Mr. Karimulla Syed, Asst. Professor & IV Year Coordinator,
5. Dr. K. V. Durga Rajesh, Associate Professor & III Year Coordinator,
6. Mr. K. Sai Sarath, Assistant Professor & II Year Coordinator,
7. Dr. D.V.A Rama Sastry, Associate Professor,
8. Dr. B. Nageswara Rao, Professor
9. **Mrs. T. Kanthimathi, Assistant Professor & Prof. I/C Academics,**
10. Dr. P Kasi V Rao, Associate Professor, Associate Dean Academics
11. Dr. Priyaranjan Sharma, Professor.

Minutes:

HOD welcomed all the members to the meeting and presented the agenda items before the members

Agenda-1:

1. Feedback from the stake holders is collected through online mode and the recommendations were discussed in the meeting.
   A. Following are the recommendations from the students on the curriculum

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

a. B.Divakar (2000079045) student of III year II sem requested to provide extra time for extracurricular activities.

   Chairman DAC replied that, in the timetable extra classes were included for Yoga/Sports.

b. G.Prudhvi Teja (2000079050), student of III year II Sem requested to distribute the professional electives among 2 to 3 semesters.

   Chaiman DAC, explained students that the semester wise courses will be distributed among 2 to 3 semesters.

c. Duncan (2000070089), student of III year II sem requested to provide guidance on paper writing so that they can write the papers in the project courses effectively.

   It is resolved to conduct a guest lecture to all II, III, IV and M.Tech students on paper writing which was suggested by Dr.S.N.Padhi, Design Group Head .

d. Daniel Parmer (2201120001) Student of M.Tech I year II sem requested to give interdisciplinary assignments so that they can have the knowledge of other branch courses and also requested to involve M.Tech students for industrial visits.

   It is explained to students by groups heads that projects in various courses under skilling can be taken as interdisciplinary projects by which students can gain the knowledge of other branch courses. It is also resolved to consider M.Tech students for industrial visits.

B. Dr.P.Srinivasa Rao, Director, Technical training, Cyient technologies suggested to include courses on Electric vehicles and related technologies.

It is resolved to offer specializations on electric vehicle and related technologies namely Automotive Electronics for Y22 and Y23 admitted batch students.

Agenda-2 & 3

Based on the present industry needs, Group Heads and DAC members recommended the following courses to be offered to Y22 and Y23 admitted batch students

i. Mathematical Modelling & Numerical methods (L-T-P-S:2-2-0-0)
ii. Linear Algebra & Calculus for Engineers (L-T-P-S:2-2-0-0)
iii. Skill Development Project-1 (Visualization & Modelling of Machine Components) (0-0-2-4)
iv. Kinematics and Dynamics of Machines (L-T-P-S:2-0-2-0)
v. Industrial Internet of Things (L-T-P-S:2-0-2-0)
vi. Skill Development Project - 2 (Computer Integrted Manufacturing)-(0-0-2-4)
vii. Skill Development-3(Finite Element Analysis) (L-T-P-S:0-0-2-4)
viii. Advanced Vibrations (Professional Elective)(L-T-P-S:3-0-0-0)
ix. Automotive Electronics Specialization

Following are the recommendations made by the course coordinators

Vijai Kumar
25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

i. Dr,K.V,Durga Rajesh requested to change the Co statements of production Technology course. It is resolved to approve the changes in CO statements and recommend the same to the BOS.

ii. Dr.T.Kanthimathi requested to change the syllabus of Co-1 And Co-4 of Heat power engineering course to avoid duplication. She also recommended to change the L-T-P-S of Thermal Systems Engineering course offered to Y22 admitted batch in III year even sem from 3-0-0-4 to 3-0-2-0 to make students learn the Ansys software before using it for projects. It is resolved to approve the changes proposed for Heat Power Engineering and Thermal Systems Engineering Course and recommend the same to the BOS.

It is resolved to approve the modifications proposed by the faculty for Y22 and Y23 admitted batch students .

Agenda-4

i. Based on the suggestions and recommendations of the stake holders and the DAC members, it is resolved to propose new program M.Tech-Mechanical Engineering for 2023-24 admitted M.Tech batch students.

ii. Following are the new courses proposed for M.Tech-MD program for Y23 admitted batch students to make PG students ready for placement drives and higher studies.
   a. Professional Communication Skills-HAS (0-0-4-0)
   b. Design of Experiments-Audit Course (0-0-4-0)
   c. Essentials of Research Design-PRI (1-1-0-0)
   d. Machine learning with Python-VAC(2-0-0-0)
   e. Static and Dynamic Analysis using Hypermesh-VAC(2-0-0-0)
   f. Enterprise Resource Planning-PE5(3-0-0-0)

iii. Following are the new courses proposed for M.Tech-TE program for Y23 admitted batch students to make PG students ready for placement drives and higher studies.
   a. Professional Communication Skills-HAS (0-0-4-0)
   b. Simulation of Energy Management Systems-Audit Course (0-0-4-0)
   c. Essentials of Research Design-PRI (1-1-0-0)
   d. Machine learning with Python-VAC(2-0-0-0)
   e. Flow Analysis using CFD-VAC (2-0-0-0)
   f. Enterprise Resource Planning-PE5(3-0-0-0)

It is resolved to approve the new courses proposed for Y23 admiited batch M.Tech-MD and M.Tech-TE programs

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph. +91 - 866 - 3500122, 2577715, 2576129

Prof I/C Academics
T. Kanthimathi

CHAIRMAN- DAC 25/3/23

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

Department of Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(K L Deemed to be University)

Stake Holder Feedback Analysis and Action Taken Report
Academic Year: 2023-24

S.No	Stake Holders	Count
1	Academic Peers	35
2	Alumni	40
3	Faculty	10
4	Industry personnel	30
5	Parents	10
6	Students	100
	Total	**225**

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. Proof	Pg No.	Date
1	ME	B.TECH	Dr.G.Naga Srinivasulu, Professor, NIT Warangal	Suggested to implement NEP policy in the curriculum of Y22 and Y23 admitted batch students	To enable students to choose the flexibility of his choice during his course of study	It is approved to offer flexibilitis to students in the form of degree programs an specializations offerd by the department	24	3	28-06-2023	25	4	29-03-2023
2	ME	B.Tech	Dr. A.Venu Gopal	Suggested to offer mathematics courses before 3rd year	Offering maths courses before 3rd year facilitates students to understand design and analysis courses	It is approved to offer all maths courses before 2nd year 2nd sem	23	3	17-03-2023	24	4	25-03-2023

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. Proof	Pg No.	Date
1	ME	B.Tech	Dr. Ravi Teja	Suggested to include Electric vehicle as a compulsory course fo alll mechanical students	Due to the current shift of automobile industry towards Electric Vehicles there is a necessity to gain knowledge in this area	A Flexi core course on Electric Vehicle technology with an L-T-P-S of 3-0-0-0 is proposed to Y22 & y23 admitted batch students and specializations such as e-Mobility and Automotive Electronics are introduced for Y22 and Y23 admitted batch students to focus on Electric vehicle technology	23	3	17-03-2023	24	3	25-03-2023

Faculty

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

Department of Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(K L Deemed to be University)

Stake Holder Feedback Analysis and Action Taken Report
Academic Year: 2023-24

S.No	Stake Holders	Count
1	Academic Peers	35
2	Alumni	40
3	Faculty	10
4	Industry personnel	30
5	Parents	10
6	Students	100
	Total	**225**

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. Proof	Pg No.	Date
1	ME	B.TECH	Dr.G.Naga Srinivasulu, Professor, NIT Warangal	Suggested to implement NEP policy in the curriculum of Y22 and Y23 admitted batch students	To enable students to choose the flexibility of his choice during his course of study	It is approved to offer flexibilitis to students in the form of degree programs an specializations offerd by the department	24	3	28-06-2023	25	4	29-03-2023
2	ME	B.Tech	Dr. A.Venu Gopal	Suggested to offer mathematics courses before 3rd year	Offering maths courses before 3rd year facilitates students to understand design and analysis courses	It is approved to offer all maths courses before 2nd year 2nd sem	23	3	17-03-2023	24	4	25-03-2023

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. Proof	Pg No.	Date
1	ME	B.Tech	Dr. Ravi Teja	Suggested to include Electric vehicle as a compulsory course fo alll mechanical students	Due to the current shift of automobile industry towards Electric Vehicles there is a necessity to gain knowledge in this area	A Flexi core course on Electric Vehicle technology with an L-T-P-S of 3-0-0-0 is proposed to Y22 & y23 admitted batch students and specializations such as e-Mobility and Automotive Electronics are introduced for Y22 and Y23 admitted batch students to focus on Electric vehicle technology	23	3	17-03-2023	24	3	25-03-2023

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

Faculty

Sl.No.	Depart ment	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No. Proof	Pg No.	Date
1	ME	B.Tech	Dr.B.Nageswa ra Rao, professor, KLEf	Include mathematical courses related to Mechanical Engineering	Mathematical coursesrelated to mechanical enginnering facilitates students to understand the concepts in thermal, design and Robotics	It is proposed to include two mathematis courses related to mechanical engineering. 1. Mathematical Modelling & Numerical methods(2-2-0-0). 2.Linear Algebra na dCalculus for Engineers(2-2-0-0)	23	3	17-03-2023	24	3	25-03-2023
2	ME	B.Tech	Dr.S.N.Padhi, professor, group Head, KLEF	Courses Kinematics of Machines and Dynamics of machines can be combined	Inorder to have continuation of the course combining the two courses facilitates studetns to understand more clearly	It is proposed to combine the courses Kinematic of Machines and Dynamics of Machines and offer to Y22 and Y23 admitted batch students as Kinematics and Dynamics of Machines	23	3	17-03-2023	24	3	25-03-2023
3	ME	B.Tech	Dr. S. S.Rao, Dr.S.N.Padhi, Dr. G.Murali Professors, group Heads, KLEF	Include exclusive skill development courses leading to projects on machine drawing, 3D modelling, finite element analysis, computer integrated manufacturing, Energy system analysis and Dimensioning and Tolerancing	Skill development courses leading to projects will enable studetnts to learn with more enthusiasm	Ir is proposed to include Skill development based courses with an L-T-P-S of 0-0-2-4 for Y22 & Y23 admitted batch studetns a. Visualization and Modelling fro Engineering Design b. Computer integrated Manufacturing c. Finite Element Analysis d. Analysis of Energy Systems e. 3D Modelling and digital prototyping f. Geometric Dimensioning and Tolerancing	23	3	17-03-2023	24	3	25-03-2023
4	ME	B.Tech	Dr. S. S.Rao, Dr.S.N.Padhi, Dr. G.Murali Professors, group Heads, KLEF	Suggested to include few courses for the repective specializations	Based on the requirements of the industry new courses are needed in the specializations	it is resolved to include the following courses in specializations offerd to Y22 & Y23 admitted batch students a. Refrigeration and Air Conditioning (ECFD)-PE-4 b. Advanced Vibrations (ED)-PE-4 c. Advanced Materials for Manufacturing & Testing (SM)-PE-2	23	3	17-03-2023	24	5	25-03-2023

Dr T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 302.

5	ME	B.Tech	Dr,T,Vijaya Kumar, HOD-ME	Recommended to include courses on Leadership, societal activities and coding skills for the allround development of the students. This recommendation was received from English Maths and placements departments	To encourage the allround development of studetns inclusion of these courses in the curriculum is necessary	It is resolved to include the following courses for Y22 & y23 admitted batch students a. Leadership & management Skills b. A series of courses on Social Immersive Learning (3 courses fro Y23 and 4 Courses for Y22 batch students) c. Global Logic Building Practicum-I d. Global Logic Building Practicum-II e. Indian Knowledge System-Vedic Mathematics f. Innovation Management(for Y22 Batch)	23	3	17-03-2023	24	5	25-03-2023
6	ME	B.Tech	Dr. S. S.Rao, Dr.S.N.Padhi, Dr. G.Murali Professors, group Heads, KLEF	Based on the discussions of the specific cohorts group heads suggested to include the Flexi core courses & management Elective for Y22 & Y23 admitted batch studetns	To enable students understand the basics of different specializations Flexi core courses & management Elective are designed	It is proposed to include the following Flexi core courses for Y22 & Y23 admitted batch students a. Supply Chain & Quality management (L-T-P-S:3-0-0-0) b. Industrial Internet of Things (L-T-P-S: 2-0-2-0) c. Electric Vehicle Technology (L-T-P-S: 3-0-0-0) d. Industrial Management & production Planning-Management Elective (L-T-P-S: 4-0-0-0)-for Y23 students	23	3	17-03-2023	24	3	25-03-2023
7	ME	B.Tech	Dr.A.Srinath, Professor, KLEF	Suggested to include Artificial Intelligence and Machine Learning Course	This course is the need of the present industry	it is resolved to offer Artificial Intelligence & Machine Learning Course with an L-T-P-S of 3-0-2-0 as Engineering Science course	23	3	17-03-2023	24	3	25-03-2023
8	ME	B.Tech	Mr.S.Ramesh Kumar, Assitant professor, KLEF	Students need basic coding/programming skills	Codicng skills are necessary for present job market	Technical Skilling courses are offered to Y22 & Y23 batch Studetns	23	3	17-03-2023	24	3	25-03-2023
9	ME	M.Tech-MD	Dr.G.Diwakar, PG Coordinator	Based on the discussions of Design group cohorts the M.Tech-MD curriculum is enriched with 5 elective courses, 1 maths course, 1 audit course, 2 Value added courses, 1 project course and 1 open elective in addition to the Professional coure course and dissertation	This addition of new courses to M.Tech-MD curriculum will enhance the oppurtunities of PG students in placements and also to pursue higher studies	It is resolved to include the folowing new courses in Y23 admitted batch M.Tech -Machine Design curriculum a.Professional Communication Skills-HAS (0-0-4-0) b.Design of Experiments-Audit Course (0-0-4-0) c.Essentials of Research Design-PRI (1-1-0-0) d. Design of Hybrid Vehicles (3-0-0-0) e. Industrial Internet of Things (3-0-0-0) f.Enterprise Resource Planning-PE5(3-0-0-0)	23	3	17-03-2023	24	9	25-03-2023

Dr. T. VIJAYA KUMAR
HOD-Mechanical
Koneru Lakshmaiah Education
(Deemed to be University)
Green Fields, Vaddeswaram - 522 302.
23/3/23

10	ME	M.Tech-TE	Dr.G.Diwakar, PG Coordinator	Based on the discussions of Design group cohorts the M.Tech-TE curriculum is enriched with 5 elective courses, 1 maths course, 1 audit course, 2 Value added courses, 1 project course and 1 open elective in addition to the Professional coure course and dissertation	This addition of new courses to M.Tech-TE curriculum will enhance the oppurtunities of PG students in placements and also to pursue higher studies	It is resolved to include the folowing new courses in Y23 admitted batch M.Tech -Thermal Engineering curriculum a.Professional Communication Skills-HAS (0-0-4-0) b.Simulation of Energy management Systems (0-0-4-0) c.Essentials of Research Design-PRI (1-1-0-0) d. Battery and Thermal management Systems (3-0-0-0) e. Air craft & jet propulsion Systems (3-0-0-0) f.Enterprise Resource Planning-PE5(3-0-0-0)	23	3	17-03-2023	24	9	25-03-2023
11	ME	M.Tech-ME	Dr.D.V.A. Rama Sastry, Associate professor	Suggested to introduce new M.Tech program M.Tech-Mechanical Engineering focussing on the courses related to product life cycle management	As per the industrial requirement this program focusses on the management of product life cycle	It is resolved to introduce the new PG program M.Tech-Mechanical Engineering fro Y23 admitted batch students	23	3	17-03-2023	24	9	25-03-2023

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. Proof	Pg No.	Date
1	ME	B.Tech	Srinivasa Rao Peerla, Director, Technical training,Cyient India	We can focus more on Electric Vehicles and related technologies. Thanks.	Due to the current shift of automobile industry towards Electric Vehicles there is a necessity to gain knowledge in this area	Specializations such as e-Mobility and Automotive Electronics are introduced for Y22 and Y23 admitted batch students to focus on Electric vehicle technology	23	3	17-03-2023	24	3	25-03-2023
2	ME	B.Tech	Dr.Vijay Kumar, Director HAL	Suggested to include Python based mathematics course	Since Python tool for many skills it is necessary to study Python programming in mathematics course	It is proposed to offer Mathematical Modelling & Numerical methods course using Python	23	3	17-03-2023	24	3	25-03-2023

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. Proof	Pg No.	Date
1	ME	B.Tech		-	-	-	-		-			

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

Student

Sl.No.	Depart ment	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	DAC No.	Pg No.	Date	BOS No. Proof	Pg No.	Date
1	ME	B.Tech	2000079045, B.Divakar	Requested to provide extra time for extra curricular activites	Extra curricular activites refresh the minds and body	It is included in the curriculum Yoga/sports courses as extra curricular activites	23	2	17-03-2023	24	3	25-03-2023
2	ME	B.Tech	2000079050, G.Prudhvi Teja	The all professional electives are given in one semester only so the subjects in this sem is are more it is getting difficult to perform in each and every subject	As per the curriculum in theis semester all 5 PE's were offered	It is proposed to change the sem wise structure for the next batch so that PE's are distributed to 2 or 3 semesters	23	3	17-03-2023	24	3	25-03-2023
3	ME	B.TECh	2000070089, Duncan	Requested to give guidance on paper writing	Since some of the PE's offered to III year studetns in the present semster require project work and publishing of the papers	It is proposed to schedule a guest lecture on paper writing techniques to all III , IV year & M.Tech students	23	3	17-03-2023	24	3	25-03-2023
4	ME	M.Tech	2201120001, Daniel Parmer, M.tech-TE	Requested to give assignments as interdisciplinary and to suggest the project titles. Also requested to consider M.ech students for industrial visits	It is necessary to have interdisciplinary projects so that students can benefit out of their project work	It is recommended to arrange industrial visits for M.Tech students also and to offer interdisciplinary projects to the students	23	3	17-03-2023	24	3	25-03-2023

HOD-ME

25/3/23

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

Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as "A++" ✤ Approved by AICTE ✤ ISO 9001:2015 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

Phone No. 08645 - 350200; www.klef.ac.in; www.kledu.in; www.kluniversity.in

Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph: +91 - 866 - 3500122, 2577715, 2576129.

KLEF

Department of Mechanical Engineering

B.Tech 2023-24 Admitted Batch Category wise Course Structure

Sl No	CAT	SEM	COURSE CODE	Course Title	Short Name	MODE	L	T	P	S	Cr	CH	Pre-Requisites	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback given by	Justification
1	HAS	1	23UC1101	INTEGRATED PROFESSIONAL ENGLISH	IPE	R	0	0	4	0	2	4	NIL	Employability	Retained		
2	HAS	1	22UC1203	DESIGN THINKING FOR INNOVATION	DTI	R	0	0	4	0	2	4	NIL	Entrepreneurship	Retained		
3	HAS	2	23UC1202	ENGLISH PROFICIENCY	EP	R	0	0	4	0	2	4	NIL	Employability	Retained		
6	HAS	7	22UC0010	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS	HVGEPE	R/M	2	0	0	0	2	2	NIL		Retained		
	HAS	3	23UC0027	LEADERSHIP AND MANAGEMENT SKILLS	LAMS	R	0	0	4	0	2	4	NIL	Employability	New Course	English Dept.	To impart Leaderhsip skills to studetns
7	HAS	7	22MB4067	MANAGEMENT ELECTIVE(INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING)	FLE	R/M	4	0	0	0	4	4	NIL	Entrepreneurship	New Course	Group Head	Sudents should be given knowledge on shop floor production process
8	HAS	7	22FLXXXX	FOREIGN LANGUAGE ELECTIVE	FLE	R/M	3	0	0	0	3	3	NIL		Retained		
				Total			**9**	**0**	**16**	**0**	**17**	**25**					
9	SIL	1	22UC0021	SOCIAL IMMERSIVE LEARNING-1	SIL-1	R	0	0	0	4	1	4	NIL	Skill Development	New Course	Student Activity Center	To make students to participate in various technical, societal and environmental activities these courses are introduced
10	SIL	2	22UC0022	SOCIAL IMMERSIVE LEARNING-2	SIL-2	R	0	0	0	4	1	4	NIL	Skill Development	New Course	Student Activity Center	To make students to participate in various technical, societal and environmental activities these courses are introduced
11	SIL	3	22UC0023	SOCIAL IMMERSIVE LEARNING-3	SIL-3	R	0	0	0	4	1	4	NIL	Skill Development	New Course	Student Activity Center	To make students to participate in various technical, societal and environmental activities these courses are introduced
				Total			**0**	**0**	**0**	**12**	**3**	**12**					
12	AUC		23UC0017	INDIAN KNOWLEDGE SYSTEMS-VEDIC MATHEMATICS	IKS-VM	R	0	0	0	2	0	2	NIL		New Course	Maths Dept.	Knowledge on Vedic maths enhances the logical thinking of students
13	AUC	6	22UC0008	AUDIT COURSE - 3 (INDIAN CONSTITUTION)	IC	R	2	0	0	0	0	2	NIL		Retained		
14	AUC	7	22UC009	AUDIT COURSE - 4 (ECOLOGY & ENVIRONMENT)	E&E	R	2	0	0	0	0	2	NIL		Retained		

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

Sl No	CAT	SEM	COURSE CODE	Course Title	Short Name	MODE	L	T	P	S	Cr	CH	Pre-Requisites	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback given by	Justification
15	AUC		23UC0013	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 1	GC1	R	0	0	0	2	0	2	NIL	Skill Development	New Course	Computer Science Dept.	Coding skills enables students to be placement ready
16	AUC		23UC0014	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 2	GC2	R	0	0	0	2	0	2	NIL	Skill Development	New Course	Computer Science Dept.	Coding skills enables students to be placement ready
				Total			**4**	**0**	**0**	**6**	**0**	**10**					
17	BSC	1	23MT1001	MATHEMATICS ELECTIVE - 1(LINEAR ALGEBRA & CALCULUS FOR ENGINEERS)	LACE	R	2	2	0	0	4	4	NIL		New Course	Group Heads	Mathematics for Engineers course is replaced and this course is introduced with tutorial component to give more practise to students
18	BSC	1	23ME1005	PHYSICS ELECTIVE (MATERIAL SCIENCE & METALLURGY)	MSM	R	3	0	2	0	4	5	NIL	Employability	Retained		
19	BSC	2	22MT2003	MATHEMATICS ELECTIVE - 2 (MATHEMATICAL MODELLING AND NUMERICAL METHODS)	MMNM	R	2	2	0	0	4	4	NIL		New Course	Group Heads	Mathematics for computing is replaced with this course to enable students to learn numerical methods to solve complex simulation problems
20	BSC	2	22CY1001	ENGINEERING CHEMISTRY	EC	R	3	0	2	0	4	5	NIL		Retained		
21	BSC	3	23MT2011	MATHEMATICS ELECTIVE - 3(OPTIMIZATION TECHNIQUES)	OT	R	2	2	0	0	4	4	NIL	Employability	Retained		
22	BSC	4	23MT2010	MATHEMATICS ELECTIVE - 4 (COMPUTATIONS IN APPLIED MECHANICS & STATISTICS)	CAMS	R	2	2	0	0	4	4	NIL	Employability	Retained		
				Total			**14**	**8**	**4**	**0**	**24**	**26**					
21	ESC	1	23SC1101	COMPUTATIONAL THINKING FOR STRUCTURED DESIGN	CTSD	R	3	0	2	4	5	9	NIL	Skill Development	Retained		
22	ESC	1	23ME1103	DESIGN TOOLS WORKSHOP	DTW	R	0	0	4	0	2	4	NIL	Skill Development	Retained		
23	ESC	1	23ME1002	ENGINEERING GRAPHICS	EG	R	0	0	4	0	2	4	NIL	Skill Development	Retained		
24	ESC	2	23SC1202	DATA STRUCTURES	DS	R	2	0	2	4	4	8	CTSD		Retained		
25	ESC	2	23ME1004	WORKSHOP PRACTICES FOR ENGINEERS	WPE	R	0	0	4	0	2	4	NIL	Skill Development	Retained		
26	ESC	2	23CS1201	OBJECT ORIENTED PROGRAMMING	OOP	R	2	0	2	0	3	4	CTSD		Retained		
27	ESC	2	23EC1203	BASIC ELECTRICAL & ELECTRONIC CIRCUITS	BEEC	R	2	0	0	0	2	2	NIL		Retained		
28	ESC	2	23ME1001	ENGINEERING MECHANICS	EM	R	3	0	0	0	3	3	NIL		Retained		
29	ESC		23AD2001O	ARTIFICIAL INTELLIGENCE & MACHINE LEARNING	AML	R	3	0	2	0	4	5	LCE	Employability	New Course	Dr.A.Srinath	AI & ML is the current requirement of the industry and hece tis course is introduced as mandatory to the students
				Total			**12**	**0**	**18**	**8**	**27**	**38**					
30	PCC	3	23ME2116	FLUID MECHANICS & HYDRAULIC MACHINES	FMHM	R	3	0	2	0	4	5	NIL	Employability	Retained		
31	PCC	3	23ME2106R	MECHANICS OF SOLIDS	SM	R	3	0	2	0	4	5	EM	Employability	Retained		

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

Sl No	CAT	SEM	COURSE CODE	Course Title	Short Name	MOOL	L	T	P	S	Cr	CH	Pre-Requisites	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback given by	Justification
32	PCC	3	23ME2106A	MECHANICS OF SOLIDS	SM	A	4	0	4	0	6	7	EM		Retained		
33	PCC	3	23ME2106E	MECHANICS OF SOLIDS	SM	P	4	0	4	0	6	7	EM		Retained		
34	PCC	3	23ME2208	MANUFACTURING PROCESSES	MP	R	3	0	2	0	4	5	WPE	Employability	Retained		
35	PCC	3	23ME2107	ENGINEERING THERMODYNAMICS	TD	R	3	0	0	0	3	3	NIL		Retained		
36	PCC	4	23ME3113R	MANUFACTURING TECHNOLOGY	MT	R	2	0	2	0	3	4	MP	Employability	Retained		
37	PCC	4	23ME3113A	MANUFACTURING TECHNOLOGY	MT	A	3	0	4	0	5	7	MP		Retained		
38	PCC	4	23ME3113P	MANUFACTURING TECHNOLOGY	MT	P	3	0	4	0	5	7	MP		Retained		
39	PCC	4	23ME2209R	KINEMATICS & DYNAMICS OF MACHINES	KDOM	R	3	1	2	0	5	6	EM	Employability	Retained		
40	PCC	4	23ME2209A	KINEMATICS & DYNAMICS OF MACHINES	KDOM	A	4	1	4	0	7	9	EM		Retained		
41	PCC	4	23ME2209P	KINEMATICS & DYNAMICS OF MACHINES	KDOM	P	4	1	4	0	7	9	EM		Retained		
42	PCC	4	23ME3112	THERMAL SYSTEMS ENGINEERING	TES	R	2	1	0	4	4	7	TD	Skill Development	Retained		
43	PCC	5	23ME3215	DIGITAL MANUFACTURING & ROBOTICS	DMR	R	3	0	0	0	3	3	KDOM	Employability	Retained		
44	PCC	5	23ME3110R	HEAT TRANSFER	HT	R	3	0	2	0	4	5	TD	Employability	Retained		
45	PCC	5	23ME3110A	HEAT TRANSFER	HT	A	4	0	4	0	6	8	TD		Retained		
46	PCC	5	23ME3110P	HEAT TRANSFER	HT	P	4	0	4	0	6	8	TD		Retained		
47	PCC	5	23ME3111R	MECHANICAL ENGINEERING DESIGN	MED	R	3	0	0	0	3	3	SM	Employability	Retained		
48	PCC	5	23ME3111A	MECHANICAL ENGINEERING DESIGN	MED	A	4	1	0	0	5	5	SM		Retained		
49	PCC	5	23ME3111P	MECHANICAL ENGINEERING DESIGN	MED	P	4	1	0	0	5	5	SM		Retained		
50	PCC	6	23ME3214R	MACHINE DESIGN	MD	R	3	0	2	0	4	5	MED	Skill Development	Retained		
51	PCC	6	23ME3214A	MACHINE DESIGN	MD	A	4	0	4	0	6	8	MED		Retained		
52	PCC	6	23ME3214P	MACHINE DESIGN	MD	P	4	0	4	0	6	8	MED		Retained		
53	FCC	4		FLEXI-CORE	FC	R	2	0	2	0	3	4	RELEVANT COURSE				
				Total			**33**	**2**	**16**	**4**	**41**	**55**					
54	PEC	5		PROFESSIONAL ELECTIVE - 1	PE-1	R	3	0	2	4	5	9	RELEVANT				
55	PEC	5		PROFESSIONAL ELECTIVE - 2	PE-2	R	3	0	0	0	3	3	RELEVANT				
56	PEC	6		PROFESSIONAL ELECTIVE - 3	PE-3	R	3	0	2	4	5	9	RELEVANT				
57	PEC	6		PROFESSIONAL ELECTIVE - 4	PE-4	M	3	0	0	0	3	3	RELEVANT				
58	PEC	6		PROFESSIONAL ELECTIVE - 5		R	3	0	0	0	3	3	RELEVANT				
				Total			**15**	**0**	**4**	**8**	**19**	**27**					

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering

Sl No	CAT	SEM	COURSE CODE	Course Title	Short Name	MODI	L	T	P	S	Cr	CH	Pre-Requisites	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback given by	Justification
59	SDC	3		SDP1		R	0	0	2	4	2	6	RELEVANT				
60	SDC	4		SDP2		R	0	0	2	4	2	6	RELEVANT				
61	SDC	5		SDP3		R	0	0	2	4	2	6	RELEVANT				
62	SDC	6		SDP4(SPECIALIZATION WISE)			0	0	2	4	2	6	RELEVANT				
				Total			**0**	**0**	**8**	**16**	**8**	**24**					
63	OEC	8		OPEN ELECTIVE - 1		R/M	4	0	0	0	4	4	NIL				
64	OEC	8		OPEN ELECTIVE - 2		R/M	4	0	0	0	4	4	NIL				
65	OEC	8		OPEN ELECTIVE - 3		R/M	4	0	0	0	4	4	NIL				
				Total			**12**	**0**	**0**	**0**	**12**	**12**					
66	PRI	1S	22IE2040	SOCIAL INTERNSHIP		R	0	0	0	4	0	4	DTI	Skill Development	Retained		
67	PRI	2S	22IE3041	TECHNICAL INTERNSHIP		R	0	0	0	4	0	4	NIL	Skill Development	Retained		
68	PRI	7	22IE4053R	ENGINEERING CAPSTONE PROJECT - PHASE 1		R	0	0	8	16	8	24	RELEVANT	Skill Development	Retained		
69	PRI	8	22IE4054R	ENGINEERING CAPSTONE PROJECT - PHASE 2		R	0	0	8	16	8	24	RELEVANT	Skill Development	Retained		
				Total			**0**	**0**	**16**	**40**	**16**	**56**					
				Grand Total			**99**	**10**	**82**	**94**	**170**	**285**					

Toatal no. of Course:	96
Total no.of new courses	23
Total No.of revised courses	0
% of Syllabus Revision	23.96
% of Courses focussing on Employability	41.67
% of Courses Focussing on Skill Development	45.83
% of Courses Focussing on Entrepreneurship	2.08

Dr. T. VIJAYA KUMAR 27/3/23
HOD-Mechanical Engineering
Konaru Lakshmaiah Education Foundation
Green Fields, Vaddeswaram-522 302.

List of Skill Development Courses for Y23 admitted batch Students

SPECIALIZATION	PE#	Course Code	Course Title	SHOT NAME	L	T	P	S	Cr	CH	re-requisit	Employability/Entrepreneurship/ Skill Deelopment	New/Retained/Revised Course	Feedback given by	Justification
ENGINEERING DESIGN	SDP-1	23SDME01A	VISUALIZATION & MODELLING FOR ENGINEERING DESIGN	VMED	0	0	6	4	4	10	EG	Skill Developmen	New Course	Gropu Heads	To enable studetns learn the skill of machine Drawing
ENGINEERING DESIGN	SDP-1	23SDME01E	VISUALIZATION & MODELLING FOR ENGINEERING DESIGN	VMED	0	0	6	4	4	10	EG				
ENGINEERING DESIGN	SDP-1	23SDME01R	VISUALIZATION & MODELLING FOR ENGINEERING DESIGN	VMED	0	0	2	4	2	6	EG				
SMART MANUFACTURING	SDP-2	23SDME02A	COMPUTER INTEGRATED MANUFACTURING	CIM	0	0	6	4	4	10	MP	Skill Developmen	New Course	Gropu Heads	To enable studetns learn the skill of manufacturing using Computer
SMART MANUFACTURING	SDP-2	23SDME02E	COMPUTER INTEGRATED MANUFACTURING	CIM	0	0	6	4	4	10	MP				
SMART MANUFACTURING	SDP-2	23SDME02R	COMPUTER INTEGRATED MANUFACTURING	CIM	0	0	2	4	2	6	MP				
ENGINEERING DESIGN	SDP-3	23SDME03A	FINITE ELEMENT ANALYSIS	FEA	0	0	6	4	4	10	SM	Skill Developmen	New Course	Group Heads	This course imparts the skill of modelling and simulation necessary for mechanical design
ENGINEERING DESIGN	SDP-3	23SDME03E	FINITE ELEMENT ANALYSIS	FEA	0	0	6	4	4	10	SM				
ENGINEERING DESIGN	SDP-3	23SDME03R	FINITE ELEMENT ANALYSIS	FEA	0	0	2	4	2	6	SM				
ENERGY ENGINEERING & CFD	SDP-4	23SDME04A	ANALYSIS OF ENERGY SYSTEMS	AES	0	0	6	4	4	10	TD	Skill Developmen	New Course	Group Heads	This course enhances the students ability to understand the the thermal behaviour of systems using simulation
ENERGY ENGINEERING & CFD	SDP-4	23SDME04E	ANALYSIS OF ENERGY SYSTEMS	AES	0	0	6	4	4	10	TD				
ENERGY ENGINEERING & CFD	SDP-4	23SDME04R	ANALYSIS OF ENERGY SYSTEMS	AES	0	0	2	4	2	6	TD				
ENGINEERING DESIGN	SDP-4	23SDME05A	3D MODELLING AND DIGITAL PROTOTYPING	3DMDP	0	0	6	4	4	10	MP	Skill Developmen	New Course	Group Heads	This course enables the students to enhance their modelling skills using simulation software
ENGINEERING DESIGN	SDP-4	23SDME05E	3D MODELLING AND DIGITAL PROTOTYPING	3DMDP	0	0	6	4	4	10	MP				
ENGINEERING DESIGN	SDP-4	23SDME05R	3D MODELLING AND DIGITAL PROTOTYPING	3DMDP	0	0	2	4	2	6	MP				
SMART MANUFACTURING	SDP-4	23SDME06A	GEOMETRIC DIMENSIONING AND TOLERANCING	GD&T	0	0	6	4	4	10	MT	Skill Developmen	New Course	Group Heads	This course enables the students to understand the importance of dimensioning and tolerancing
SMART MANUFACTURING	SDP-4	23SDME06E	GEOMETRIC DIMENSIONING AND TOLERANCING	GD&T	0	0	6	4	4	10	MT				
SMART MANUFACTURING	SDP-4	23SDME06R	GEOMETRIC DIMENSIONING AND TOLERANCING	GD&T	0	0	2	4	2	6	MT				

Vijay Kumar 28/3/23

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah [illegible]
[illegible]
[illegible]

List of Professional Electives for 2023-24 admitted batch of B.Tech ME

Sl No	Course Code	Code	Course Title	Specialization	L	T	P	S	Cr	CH	Pre-requisite	Employability/Entrepreneurship/Skill Developmnet	New/Retained/Revised Course	Feedback given by	Justification
1	PE-1	22ECF3101R	SOLAR ENERGY TECHNOLOGIES	ENERGY AND CFD	2	0	2	4	4	8	TD	Skill Development			
2	PE-1	22ECF3101A	SOLAR ENERGY TECHNOLOGIES	ENERGY AND CFD	3	0	4	4	6	11	TD				
3	PE-1	22ECF3101P	SOLAR ENERGY TECHNOLOGIES	ENERGY AND CFD	3	0	4	4	6	11	TD				
4	PE-2	22ECF3202	ADVANCED ENERGY STORAGE SYSTEMS	ENERGY AND CFD	2	0	2	0	3	4	TD	Skill Development			
5	PE-2	22ECF3203	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONIC SYSTEMS	ENERGY AND CFD	3	0	0	0	3	3	TD	Employability			
6	PE-3	22ECF3304R	COMPUTATIONAL FLUID FLOW AND HEAT TRANSFER-FDM APPROACH	ENERGY AND CFD	2	0	2	4	3	4	TD	Skill Development			
7	PE-3	22ECF3304A	COMPUTATIONAL FLUID FLOW AND HEAT TRANSFER-FDM APPROACH	ENERGY AND CFD	3	0	4	4	8	11	TD				
8	PE-3	22ECF3304P	COMPUTATIONAL FLUID FLOW AND HEAT TRANSFER-FDM APPROACH	ENERGY AND CFD	3	0	4	4	8	11	TD				
9	PE-4	22ECF3405M	ENERGY AUDITS AND ENERGY MANAGEMENT SYSTEMS	ENERGY AND CFD	3	0	0	0	3	3	TD	Employability			
10	PE-4	22ECF3405MA	ENERGY AUDITS AND ENERGY MANAGEMENT SYSTEMS	ENERGY AND CFD	4	0	0	0	4	4	TD				
11	PE-4	22ECF3406M	REFRIGERATION AND AIR CONDITIONING	ENERGY AND CFD	3	0	0	0	3	3	TD	Employability	New Course	Group Head-Dr.G.Murali	As per the requiremetn of HVAC industry this course enables the studetns to understand the R & AC systems
12	PE-4	22ECF3406MA	REFRIGERATION AND AIR CONDITIONING	ENERGY AND CFD	4	0	0	0	4	4	TD				
13	PE-5	22ECF3507	CFD FOR COMPRESSIBLE AND INCOMPRESSIBLE FLOWS	ENERGY AND CFD	2	0	2	0	3	4	TD	Employability			
14	PE-5	22ECF3508	HYDROGEN AND FUEL CELL TECHNOLOGIES	ENERGY AND CFD	2	0	2	0	3	4	TD	Employability			
15	PE-1	23EGD3101R	MODELING ANALYSIS & DESIGN OF ROBOTIC SYSTEMS	ENGINEERING DESIGN	2	0	2	4	4	8	KDOM	Skill Development			
16	PE-1	23EGD3101A	MODELING ANALYSIS & DESIGN OF ROBOTIC SYSTEMS	ENGINEERING DESIGN	3	0	4	4	6	11	KDOM				
17	PE-1	23EGD3101P	MODELING ANALYSIS & DESIGN OF ROBOTIC SYSTEMS	ENGINEERING DESIGN	3	0	4	4	6	11	KDOM				
18	PE-2	23EGD3202	CREEP, FATIGUE AND FRACTURE MECHANICS	ENGINEERING DESIGN	3	0	0	0	3	3	SM	Employability			
19	PE-2	23EGD3203	THEORY OF ELASTICITY AND PLASTICITY	ENGINEERING DESIGN	3	0	0	0	3	3	SM				
20	PE-3	23EGD3304R	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN ENGINEERING DESIGN	ENGINEERING DESIGN	2	0	2	4	4	8	MED	Skill Development			
21	PE-3	23EGD3304A	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN ENGINEERING DESIGN	ENGINEERING DESIGN	3	0	4	4	6	11	MED				
22	PE-3	23EGD3304P	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN ENGINEERING DESIGN	ENGINEERING DESIGN	3	0	4	4	6	11	MED				
23	PE-4	23EGD3405M	ADVANCED VIBRATIONS	ENGINEERING DESIGN	3	0	0	0	3	3	KDOM	Employability	New Course	Group Head-Dr.S.N.Padhi	A student specialized in Enginnering Design needs the knowledge of advanced vibrations for the present industry
24	PE-4	23EGD3405MA	ADVANCED VIBRATIONS	ENGINEERING DESIGN	4	0	0	0	4	4	KDOM				
25	PE-4	232EGD3406M	MECHANICS OF COMPOSITE MATERIALS	ENGINEERING DESIGN	3	0	0	0	3	3	MED	Employability			
26	PE-4	23EGD3406MA	MECHANICS OF COMPOSITE MATERIALS	ENGINEERING DESIGN	4	0	0	0	4	4	MED				
27	PE-5	23EGD3507	ADVANCED STRENGTH OF MATERIALS	ENGINEERING DESIGN	2	0	2	0	3	4	SM	Skill Development			
28	PE-5	23EGD3508	HYBRID AND ELECTRIC VEHICLE DESIGN	ENGINEERING DESIGN	2	0	2	0	3	4	SM				
29	PE-1	23SMF3101R	REVERSE ENGINEERING & RAPID PROTOTYPING	SMART MANUFACTURING	2	0	2	4	4	8	MP	Skill Development			
30	PE-1	23SMF3101A	REVERSE ENGINEERING & RAPID PROTOTYPING	SMART MANUFACTURING	3	0	4	4	6	11	MP				
31	PE-1	23SMF3101P	REVERSE ENGINEERING & RAPID PROTOTYPING	SMART MANUFACTURING	3	0	4	4	6	11	MP				

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Kone[illegible]
(Autonomous)
Green Fields, VADDESWARAM-522 502.

32	PE-2	23SMF3202	ADVANCED MATERIALS MANUFACTURING & TESTING	SMART MANUFACTURING	3	0	0	0	3	3	MP	Employability	New Course	Group Head- Dr.S.S.Rao	For a studetns with smart manufacturing specializaion it is necessary to have knowledge on advanced manufacturing and testing methods
33	PE-2	23SMF3203	MODERN MANUFACTURING PROCESSES	SMART MANUFACTURING	3	0	0	0	0	3	MP				
34	PE-3	23SMF3304R	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN SMART MANUFACTURING	SMART MANUFACTURING	2	0	2	4	4	8	MP	Skill Development			
35	PE-3	23SMF3304A	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN SMART MANUFACTURING	SMART MANUFACTURING	3	0	4	4	8	11	MP				
36	PE-3	23SMF3304P	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN SMART MANUFACTURING	SMART MANUFACTURING	3	0	4	4	8	11	MP				
37	PE-4	23SMF3405M	ROBOTICS & INDUSTRIAL AUTOMATION	SMART MANUFACTURING	3	0	0	0	3	3	MP	Employability			
38	PE-4	23SMF3405MA	ROBOTICS & INDUSTRIAL AUTOMATION	SMART MANUFACTURING	4	0	0	0	4	4	MP				
39	PE-4	23SMF3406M	MEASUREMENT & INSTRUMENTATION	SMART MANUFACTURING	3	0	0	0	3	3	MP	Employability			
40	PE-4	23SMF3406MA	MEASUREMENT & INSTRUMENTATION	SMART MANUFACTURING	4	0	0	0	4	4	MP				
41	PE-5	23SMF3507	MACHINE TO MACHINE COMMUNICATION	SMART MANUFACTURING	3	0	0	0	3	3	MP	Employability			
42	PE-5	23SMF3508	FLEXIBLE MANUFACTURING SYSTEMS	SMART MANUFACTURING	2	0	2	0	3	4	MP	Skill Development			

25/3/23

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

List of Flexi Core courses offered to Y23 Admitted Batch Students

Sl No	Code	Course Code	Course Title		L	T	P	S	Cr	CH	Pre-requisite	Employability/ Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback given by	Justification
1	23ME2221F	FC	SUPPLY CHAIN & QUALITY MANAGEMENT	SCQM	3	0	0	0	3	3	MP	Employability	New Course	Group Head-Dr.S.S.Rao	This course is necessary for mechanical engineers to understand the industry shop floor Quality control and supply chain systems
2	23ME2225F	FC	MATERIAL SCIENCE	MS	2	0	2	0	3	4	Nil				
3	22ME2223	FC	MANUFACTURING PROCESSES	MP	2	0	2	0	3	4	Nil				
4	22ME2224	FC	MANUFACTURING TECHNOLOGY	MT	2	0	2	0	3	4	Nil				
5	23ME2222F	FC	INDUSTRIAL INTERNET OF THINGS	IIOT	2	0	2	0	3	4	Nil	Employability	New Course	Group Heads-Dr.S.S.Rao	As per the recommendations of Group Head it is resolved to include to this course to enable students learn the inernet of things concepts
6	23ME2223F	FC	ELECTRIC VEHICLE TECHNOLOGY	EVT	3	0	0	0	3	3	TD	Employability	New Course	Group Heads-Dr.G.Murali	As per the recommendations of Group Head it is resolved to include to this course to enable students learn the electric vehicle concepts
7	22ME2227	FC	THERMODYNAMICS	TD	3	0	0	0	3	3	NIL				
8	22ME2228	FC	FLUID MECHANICS	FM	2	0	2	0	3	4	NIL				
9	22ME2229	FC	ELEMENTS OF HEAT TRANSFER	EHT	2	0	2	0	3	4	Nil				
10	22ME2231	FC	MECHANICS OF SOLIDS	MOS	2	0	2	0	3	4	EM				
11	22ME2232	FC	MECHANICAL ENGINEERING DESIGN	MED	3	0	0	0	3	3	Nil				
12	22ME2230	FC	ENGINEERING MECHANICS	EM	3	0	0	0	3	3	NIL				

Vijaya Kumari 25/3/23

Dr. T. VIJAYA KU
HOD-Mech[illegible]
Kanaru [illegible]
[illegible]
[illegible] 2302.

23UC0027 - LEADERSHIP AND MANAGEMENT SKILLS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23UC0027	LEADERSHIP AND MANAGEMENT SKILLS	LAMS	R	0	0	4	0	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand basic leadership, skills and perspectives and leadership styles	2	PO9
CO2	Understand different managerial skills and apply them to develop high performance teams	3	PO11
CO3	Analyse effective communicative strategies and apply them in team tasks	3	PO10
CO4	Apply strategic planning fundamentals and decision-making techniques, through exercises and case studies	3	PO11

Syllabus

Fundamentals of Leadership Skills Understanding Leadership and its Importance, Traits and Models/styles of Leadership, Perspectives on Leadership: Bipolarity-Unidimensionality - Bidimensionality-Hierarchical: Management within Leadership - Hierarchical: Leadership within Management, Basic Leadership Skills: Motivation, Teamwork, Negotiation & Networking, Emotional intelligence.

Managerial Skills - Basic Managerial Skills - Planning for effective management, Recruiting and Retaining Talent - Delegation of tasks - Learn to Coordinate, Organising, Building and Leading high-performance Teams

Effective Communication Strategies for Leaders and Managers - Self-Management Skills: Understanding Self-Concept - Developing Self-Awareness -Self-Examination - Self-Regulation, Active Listening and Feedback Techniques, Conflict Management & Conflict Resolution - Negotiation skills, Role-playing and Group activities

Strategic Planning and Decision-Making - Fundamentals of Strategic Planning and Decision-Making - Setting Goals & Objectives for the Organization, Strategic Tools: SWOT, PEST, FORCE FIELD, SCENARIO PLANNING and SIX THINKING HATS, etc., Simulation Exercises and Strategic Planning Case Studies

Reference Books

1. , The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership, Caruso, D. R. and Salovey P, First edition, 2004, JohnWiley & Sons.
2. Training in Interpersonal Skills:Tips for Managing People at work, Stephen P. Robbins, Phillip L. Hunsaker, 6 edition, 2015, Pearson Education.
3. Learning to Lead: A Workbook on Becoming a Leader, Bennis, W.and Goldsmith, J, 4 edition, 2010, Reading, Mass. : Addison-Wesley.
4. Strategic Management: Concepts and Cases, Fred R. David and Forest R. David, 17th Edition, 2017, Pearson.
5. Interpersonal Skills in Organizations, Suzanne de Janasz, Karen Dowd, and Beth Schneider, 6th Edition, 2018, McGraw-Hill Education.
6. Human Resource Management", Gary Dessler and Biju Varkkey, 15th Edition, 2020, Pearson Education.
7. "Leadership: Theory and Practice", Peter G. Northouse, 8th Edition, 2021, SAGE Publications.
8. Case Studies in Strategic Management: A Practical Approach", Sanjay Mohapatra and R. Sridhar, 1st Edition (2012), Pearson Education.
9. Active Listening: Improve Your Ability to Listen and Lead, Center for Creative Leadership , 1st Edition (2012), Center for Creative Leadership.

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

25/3/23

23MB4067 - INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MB4067	INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING	IMPP	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the basic management concepts along with an insight into production and control	2	PO11, PSO2
CO2	Select best forecasting models to predict future demand	3	PO1, PSO2
CO3	Solve various production scheduling problems to optimize productivity	3	PO4, PSO1
CO4	Understand concept of Inventory control, Method study and time study	2	PO11, PSO2

Syllabus

Management Concept, Scope and functions of Management, Levels of Management: Low level, Middle level, High level, Importance of management, Scientific Management, Frederick W Taylors contributions, Contribution by Henry L Gantt, Contribution by Frank Lillian Gilberth, Objectives and benefits of planning and control, Functions of production control, Types of production - Job Order, Batch and Mass Production Systems

Forecasting models, Approaches and Types, Qualitative Approach: Judgmental Methods, Quantitative Approach: Time Series techniques, Regression techniques, Forecasting Error Estimation Techniques, Aggregate production planning, Benefits of Aggregate Production Planning, computer integrated production planning systems, elements of Just In Time Systems, Fundamentals of MRP II and Enterprise Resource Planning

Scheduling of Batch Production, Scheduling of Job Order production, Loading, Concept of Assembly line balancing, Sequencing: Definition, Sequencing of n jobs through one machine, n jobs through two machines (Johnsons algorithm), n jobs through three machines, n jobs through m machines, Materials Requirement Planning (MRP): Structure, Inputs, Outputs of MRP, Lean manufacturing, Seven Forms of Waste in Manufacturing

Inventory control: Purpose of holding stock, Effect of demand on inventories. Determination of Economic order quantity and economic lot size, Problems on Economic order quantity, Method study, basic procedure, Recording of process, Critical analysis, work measurement and Techniques of work measurement, Time study, techniques for time study, Production study, Work sampling methods

Reference Books

1 Principles of Management, Stoner, Freeman, Gilbert , 1: 1995, Pearson.

2 Operations management: Design, Planning and Control for manufacturing and services, James. B. Dilworth, 3: 1993, Mcgraw Hill International .

3 Production and Operations Management, R. Pannerselvam, 3: 2012, PHI Learning Pvt. Ltd.

4 Operations Management, Roberta S. Russell and Bernard W. Taylor, 4: 2003, Prentice Hall.

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 302.

23UC0013 - GLOBAL LOGIC BUILDING CONTEST PRACTICUM (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23UC0013	GLOBAL LOGIC BUILDING CONTEST PRACTICUM	GLBCP	R	0	0	0	2	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Demonstrate proficiency in identifying, analyzing, and solving problems using logical reasoning.	2	PO1, PO2, PO3, PSO1
CO2	Apply logical reasoning to global issues, considering multiple perspectives and potential solutions.	3	PO1, PO2, PO3, PSO1
CO3	Identify logical principles to assess ethical dilemmas and develop reasoned solutions.	3	PO1, PO2, PO3, PSO1
CO4	Inspect the ability to apply learned logical skills to new and unfamiliar challenges.	4	PO1, PO2, PO3, PSO1

Syllabus

Critical thinking skills necessary to identify, analyze, and solve problems effectively using logical reasoning through interactive exercises and practical applications.

Thinking Through Universal Challenges: Logical reasoning by exploring the challenges from multiple viewpoints and analyze potential solutions.

Explore principles like considering consequences, respecting rights, and upholding fairness to identify the core values in conflict. By applying these principles, Systematically analyze dilemmas, weigh options, and develop reasoned solutions that prioritize ethical conduct.

Logical reasoning skills honed can be applied beyond familiar situations, equipping you to tackle new and unexpected challenges by breaking them down, analyzing information effectively, and crafting sound solutions.

Reference Books

1 The art of thinking : a guide to critical and creative thought, Ruggiero, Vincent Ryan, 2012, Boston : Pearson Learning Solutions.

2 Thinking, Fast and Slow, Daniel Kahneman , 2015, PENGUIN UK.

3 Putnam and Beyond, Razvan Gelca , Titu Andreescu, 2007, Springer.

4 Problem Solving 101: A Simple Book for Smart People, Ken Watanabe, 2009, Portfolio.

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

23UC0014 - GLOBAL LOGIC BUILDING CONTEST PRACTICUM (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23UC0014	GLOBAL LOGIC BUILDING CONTEST PRACTICUM	GLBCP	R	0	0	0	2	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Demonstrate proficiency in identifying, analyzing, and solving problems using logical reasoning.	2	PO1, PO2, PO3, PSO1
CO2	Apply logical reasoning to global issues, considering multiple perspectives and potential solutions	3	PO1, PO2, PO3, PSO1
CO3	Identify logical principles to assess ethical dilemmas and develop reasoned solutions	3	PO1, PO2, PO3, PSO1
CO4	Inspect the ability to apply learned logical skills to new and unfamiliar challenges	4	PO1, PO2, PO3, PSO1

Syllabus

Critical thinking skills necessary to identify, analyze, and solve problems effectively using logical reasoning through interactive exercises and practical applications.

Thinking Through Universal Challenges: Logical reasoning by exploring the challenges from multiple viewpoints and analyze potential solutions

Explore principles like considering consequences, respecting rights, and upholding fairness to identify the core values in conflict. By applying these principles, Systematically analyze dilemmas, weigh options, and develop reasoned solutions that prioritize ethical conduct.

Logical reasoning skills honed can be applied beyond familiar situations, equipping you to tackle new and unexpected challenges by breaking them down, analyzing information effectively, and crafting sound solutions

Reference Books

1 The art of thinking : a guide to critical and creative thought, Ruggiero, Vincent Ryan, 2012, Boston : Pearson Learning Solutions.

2 Thinking, Fast and Slow, Daniel Kahneman , 2015, PENGUIN UK.

3 Putnam and Beyond, Razvan Gelca , Titu Andreescu, 2007, Springer.

4 Problem Solving 101: A Simple Book for Smart People, Ken Watanabe, 2009, Portfolio.

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

23UC0017 - INDIAN KNOWLEDGE SYSTEMS: VEDIC MATHEMATICS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23UC0017	INDIAN KNOWLEDGE SYSTEMS: VEDIC MATHEMATICS	IKSVM	R	0	0	0	2	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	List all the 16 sutras in Vedic Mathematics, Using Vedic mathematics sutras to perform basic arithmetic operations	2	PO1
CO2	Develop the critical thinking skills to solve Shakuntala Devi Puzzles .	3	PO1

Syllabus

Introduction to Indian knowledge system, Indian mathematicians and their contribution to the world, Vedic Mathematics: origin of Vedic mathematics, 16 sutras of Vedic Mathematics by swami Bharti Krishna Tirthji Maharaj, Ekadhiken Purvena, Nikhilam Navatacharamam Dasatah, Antyayoradaskaepi, Base method for multiplication (with base 10,100,1000,1000),Base method for multiplication (with base 50) Urdhva-tiryagbhyam ,Basic arithmetic operation by Vedic sutras by addition by subtraction, Puranapuranabhyam Antyayoradaskaepi, Yavadunam, , Paravartya Yojayet, Nikhilam method.

Numbers, Ratio, Proportion, Variation, Averages, Percentages, Profit and loss, Time and Distance, Time and Work, Sets and Venn diagrams,logical connectives, Blood Relations and related Shakuntala Devi Puzzles. Deductions, Linear and circular arrangements. Clocks, Calendars, Cubes, Number and letter series, Coding and Decoding, Symbolic representations of given data, Binary Logic, Logical connectives, logical deductions,Non-Verbal reasoning and related Shakuntala Devi Puzzles.

Reference Books

1 .Math Sutras:The art of Vedic Speed calculations,, Gaurav Tekariwal, 2023, Penguin Group.

2 Vedic Mathematics or Sixteen simple Mathematical Formulae from the Vedas, SWAMI SRI BHARATI KRSNA TIRTHAJI MAHARAJA, , -, Motilal Banarasi Das Press,.

3 R. S. Agarwal, A Modern Approach to Verbal and Non-verbal Reasoning, , s chand, 2022, s chand publication.

4 Shakuntala Devi Puzzles, , Shakuntala Devi , -, -.

5 .Indian Knowledge System, Vol-1&2,, Kapil Kapoor and Avadhesh Kumar Singh,D. K, -, print world press.

Vijaya Kumar 25/3/23

Dr. T. VIJAYA K
HOD-Mechanical Engineering
Koneru Lakshmaiah Education
[illegible]
[illegible] 302.

23ME2221F - SUPPLY CHAIN & QUALITY MANAGEMENT (F)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME2221F	SUPPLY CHAIN & QUALITY MANAGEMENT	SCQM	F	3	0	0	0	3

Prerequisite

S#	Course Title	Acronym	Rule
1	SUPPLY CHAIN & QUALITY MANAGEMENT	SCQM	-

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand supply chain management concepts, strategies, performance measures, and network design.	2	PO1
CO2	Understand demand management, forecasting methods, and lean/agile manufacturing systems.	2	PO1
CO3	Understand procurement, inventory models, logistics management, and distribution strategies.	2	PO1
CO4	Understand quality control, SQC, six sigma, TQM, and construct control charts.	3	PO1, PO2

Syllabus

Introduction to supply chain management, process view of supply chain, supply chain strategies& challenges, financial measures of performance, drivers of supply chain performance, distribution networkdesigns, factors influencing network design, globalization on supply chain networks.

Demand managementin supply chain, types of demand, forecasting methods. Operations management in supply chain, lean, agilemanufacturing systems, lean and SCM, elements & benefits of lean manufacturing.

Procurementmanagement in supply chain, inventory models, EOQ, safety stock, fixed order interval system, fixed orderquantity system, MRP and JIT concepts. Logistics management, elements, distribution management,distribution strategies, warehouse management.

Introduction to quality, quality control, SQC, control chartsfor variables & attributes, approaches for six sigma-DMAIC, DMADV, types of six sigma belts, benefits ofsix sigma, TQM.

Reference Books

1 Supply Chain Management: Strategy, Planning, and Operation, Sunil Chopra,Peter Meindl and D.V.Kalra, 2016, Pearson Education.

2 Supply Chain Management: Concepts andCases, Rahul V. Altekar, 2005, PHI.

3 Logistics and Supply Chain Management, MartinChristopher, 2023, Pearson Education.

4 Production and Operations Management, R.Panneerselvam, 2012, Pearson Education.

Vijay Kumar 25/3/23

Dr. T. VIJAYA K...
HOD-Mechanical E...
Koneru Lakshmaiah ...
Green Fields, VAD... 502.

23ME2222F - INDUSTRIAL INTERNET OF THINGS (F)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME2222F	INDUSTRIAL INTERNET OF THINGS	IIOT	F	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the evolution and impact of Industry 4.0, including its globalization aspects, from the first to the fourth industrial revolution	2	PO1, PSO1
CO2	Apply core components, benefits, challenges, and applications of Industrial IIoT, including sensing, actuation, processing, networking, and security within industrial environments	3	PO2
CO3	Apply Big Data analytics, Software Defined Networks, and fog computing techniques in Industrial IIoT for enhanced computing and security solutions	3	PO5, PSO2
CO4	Apply diverse applications of Industrial IIoT, integrating Big Data analytics, Software Defined Networks, and fog computing for comprehensive industrial solutions	3	PO2
CO5	Conduct hands-on lab experiments integrating Industry 4.0, IIoT principles, sensing, actuation, Big Data analytics, SDN, and security protocols.	5	

Syllabus

Industry 4.0- Globalization: From the first to the fourth industrial revolution, LEAN Production Systems Principles and objectives of LEAN production, Implementation of LEAN practices in Industry 4.0, Benefits and challenges of LEAN systems in the digital age, Sensing & actuation, Communication, Networking types.Cyber Physical Systems and Next Generation Sensors: Collaborative Platform and Product Lifecycle Management.

Basics of Industrial IIOT: focusing on its core components, benefits, challenges, and applications within industrial environments., Industrial Processes Industrial Sensing & Actuation, Industrial IIOT: Business Model and Reference Architecture, Industrial IIOT- Layers: IIIOT Sensing-Part I, Part II, IIIOT Processing, IIIOT Networking, communication protocols, network architectures, and security considerations

Industrial IIOT Computing: Big Data Analytics and Software Defined Networks, Definition and importance of Big Data, Characteristics of Big Data: Volume, Variety, Velocity, and Veracity, Big Data processing frameworks: Hadoop, Spark, and others, Data Center Networks, Industrial IIOT: Security and Fog Computing - Fog Computing in IIIOT, Security in

Industrial IIOT Application Domains: Healthcare, Power Systems, Oil, chemical and pharmaceutical industry, Applications of UAVs in Industries, Real case studies, Case studies of smart factories, Case studies on smart energy systems, Case studies on logistics and transportation efficiency, Key components and technologies driving IIoT applications,

Reference Books

1 Industry 4.0: The Industrial Internet of Things, Alasdair Gilchrist, 1st; 2016, CRC press.

2 Introduction to Industrial Automation, Stamatios Manesis George Nikolakopoulos, 2nd; 2021, CRC press T&F.

3 Industry 4.0: Managing The Digital Transformation, Alp Ustundag, Emre Cevikcan, 1st; 2017, Springer.

4 The Industrial Internet of Things: Concept, Solutions, and Applications, Anand Iyer, 1st; 2017, Wiley.

5 Industrial IoT (IIoT): Concepts and Applications, Ismail Butun (Editor), 1st;2021, Springer.

DR. T. VIJAYAKUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 302.

23ME2223F - ELECTRIC VEHICLE TECHNOLOGY (F)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME2223F	ELECTRIC VEHICLE TECHNOLOGY	EVT	F	2	0	2	0	3

Prerequisite

S#	Course Title	Acronym	Rule
1	THERMODYNAMICS	TD	-

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the subsystems and components used in electric vehicles and Differentiate electric and hybrid vehicles	2	PO1, PO2, PSO1
CO2	Analyze & select the suitable charging methods for electric vehicles	4	PO1, PO2, PSO1
CO3	Understand the drive trains used in different configurations of electric vehicles	2	PO1, PO2, PSO1
CO4	Apply design considerations for electric vehicles	3	PO1, PO2, PSO2
CO5	Analyse and modelling of Electric Vehicle Technology using ANSYS and COMSOL software	4	PO1, PO5, PSO2

Syllabus

NEED FOR ELECTRIC VEHICLES: Need of electric vehicles comparative study of diesel, petrol, and pure electric vehicles. Limitations of electric vehicles, Layout of an electric vehicle, advantage and limitations, specifications, system components, electronic control system, Classification - according to the source of power and the drive arrangement, Configuration of electric vehicles, Performance of electric vehicles.

ENERGY SOURCES AND CHARGING: Requirements of energy sources in electric vehicles, Battery based energy storage and its analysis, Fuel Cell based energy storage and its analysis, Super Capacitor based energy storage and its analysis, Flywheel based energy storage and its analysis, Hybridization of different energy storage devices. Charging of electric vehicles-home charging, public charging, swap station, inductive charging. Locations and type of chargers

ELECTRIC DRIVE TRAINS: Basic concept of electric traction, introduction to various electric drive-train topologies, power flow control in electric drive-train topologies, fuel efficiency analysis. Steering system for electric vehicles, Suspension for electric vehicles, Brake system for electric vehicles

DESIGN CONSIDERATIONS FOR ELECTRIC VEHICLES: Aerodynamic-Rolling resistance- Transmission efficiency- Vehicle mass- Electric vehicle chassis and Body design considerations- Heating and cooling systems- Controllers- Power steering- Tyre choiceWing Mirror, Aerials and Luggage racks. Case Studies: Design of a Battery Electric Vehicle (BEV).

Modeling of EVs - BEV (Battery Electric Vehicles): Principles of BEV operation, key components, and energy management. Techniques for modeling and simulating BEV performance and efficiency. Modeling of HEV (Hybrid Electric Vehicles) - Series and Parallel: Architecture and operation of series and parallel hybrid systems. Methods for modeling and analyzing hybrid powertrain configurations and energy flow.

Reference Books

1 Vehicular Electric Power Systems , Ali Emadi et al , 2004, Marcel Dekker, Inc, 2004 .

2 Modern Electric Vehicle Technology , C.C. Chan and K.T. Chau , 2001, Oxford University Press.

3 Electric Vehicle Technology Explained , James Larminie and John Lowry , 2003, John Wiley & Sons.

23SDME01R - VISUALIZATION AND MODELLING FOR ENGINEERING DESIGN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SDME01R	VISUALIZATION AND MODELLING FOR ENGINEERING DESIGN	VMED	R	0	0	2	4	2

Prerequisite

S#	Course Title	Acronym	Rule
1	ENGINEERING GRAPHICS	EG	-

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply the concepts of Orthographic projection to Generate the views and sectioning.	3	PO1, PO3, PO5, PSO2
CO2	Prepare the assembly drawing of engine parts, machine Components both in conventional form and then by using software.	3	PO1, PO3, PO5, PSO2
CO3	Generate detail drawings of individual parts of an assembled machine Component both in conventional form and then by using software	3	PO1, PO3, PO5, PSO2
CO4	Generate Production Drawings by considering Limits, tolerances and fits, Surface roughness	3	PO1, PO3, PO5, PSO2

Syllabus

Review: Orthographic projection, missing lines, Interpolation of views and sectioning Specification of materials: Engineering materials, code designation of steels, copper, and aluminium and its alloys.

ASSEMBLY DRAWINGS: Introduction, stuffing box, screw jack, Lathe tailstock, gate valve, steam engine cross head etc

PART DRAWINGS: I C Engine connecting rod, Single Tool Post, spark plug, safety Valves etc Production drawing: Introduction to developing and reading of production drawing of simple machine elements like helical gear, bevel gear, flange, pinion shaft, connecting rod, crank shaft, belt pulley, piston details etc, idea about tool drawing.

Limits, tolerances and fits: Introduction, limit systems, tolerance, fits drawing exercises. Surface roughness: Introduction, surface roughness, machining symbols, identification of surface roughness drawing exercises. Computer aided drawing: Introduction, input, output devices, introduction to drafting software like Creo/ Solidworks, basic commands and development of simple 2D and 3D drawings.

Reference Books

1 Machine Drawing , K L Narayana, P Kannaiah & K Venkat Reddy , 3rd Edition June 2009, New Age .

2 Machine Drawing , N D Bhatt , 51th Edition 2023, Charotar .

3 Production Drawing , K L Narayana, P Kannaiah & K Venkat Reddy , 3rd Edition 2014, New Age.

4 Machine Drawing , Siddeswar, Kannaiah and V V S Sastry, 1st Edition 2017, TMH.

5 Autodesk Fusion 360: A Power Guide for Beginners and Intermediate Users, John Willis (Author), Sandeep Dogra (Author), Cadartifex (Author), 1st Edition 2018, CAD Arti flex.

DR. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram, A.P. 522 302.

23SDME02R - COMPUTER INTEGRATED MANUFACTURING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SDME02R	COMPUTER INTEGRATED MANUFACTURING	CIDM	R	0	0	2	4	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Model paths with basic fundamentals of computer aided design and manufacturing	3	PO1, PO2, PSO2
CO2	Prepare CNC Part Programs for machining	3	PO1, PO2, PSO2
CO3	Implement NC Part Programming in Part Production	3	PO1, PO4, PSO2

Syllabus

Basic concepts of CAD / CAM and their integration tools/softwares

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

Reference Books

1 Automation Production Systems & Computer Integrated manufacturing , Mikell P. Groover , 3rd, Prentice Hall of India, New Delhi .

2 CNC Programming Basics & Tutorial Textbook , Michael J. Peterson , 2nd, CreateSpace Independent Publishing Platform .

3 CNC Programming for Machining , Kaushik kumar, Chikesh Ranjan, J Paulo Davim , 1st, Springer .

4 Computer Integrated Manufacturing, A. Alavudeen, N. Venkateshwaran, 2nd , PHI Learning.

5 Qualification for Computer Integrated Manufacturing, Felix Rauner, 4th , Springer.

Dr. T. VIJAYA KUMAR 25/12/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 502

23SDME03R - FINITE ELEMENT ANALYSIS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SDME03R	FINITE ELEMENT ANALYSIS	FEA	R	0	0	2	4	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Perform basic and advanced structural analysis of engineering components	4	PO2, PO5, PSO2
CO2	Explore advanced analysis methods in engineering design.	4	PO2, PO5, PSO2
CO3	Design a finite element analysis project demonstrating advanced mechanical engineering skills	5	PO2, PO5, PSO2

Syllabus

Introduction to Ansys workbench, Adding material properties, meshing methods and mesh controls, basic analysis procedure, Structural analysis of a block, Linear and Non linear Structural analysis ANSYS Workbench is a comprehensive simulation platform for engineering analysis. It integrates various modules for structural, thermal, and fluid dynamics simulations. Users can create models, define material properties, set up boundary conditions, and run simulations within a unified environment. The platform supports linear and nonlinear analysis, dynamic simulations, and design optimization. The intuitive interface simplifies model setup and result interpretation.

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

Reference Books

1 Building better products with FEA , Vince Adams and Abraham , 1st Edition, Onword press .

2 Finite Element Analysis , S S Bhavikatti , 3rd Edition, New Age International .

3 Machine Design , Robert L. Norton , 4th Edition, Pearson.

4 Mechanical Engineering Design , Richard G Budynas; J Keith Nisbett , 9th Edition, McGraw-Hill International .

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522502

23SDME04R - ANALYSIS OF ENERGY SYSTEMS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SDME04R	ANALYSIS OF ENERGY SYSTEMS	AES	R	0	0	2	4	2

Prerequisite

S#	Course Title	Acronym	Rule
1	THERMODYNAMICS	TD	-

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Simulate and Analyze the performance of various types of heat exchangers	4	PO1, PO5, PO10, PO11
CO2	Analyze the performance of various thermal energy storage devices	4	PO1, PO5, PO10, PO11
CO3	Model and simulation of thermal management of electronic components	4	PO1, PO5, PO10, PO11
CO4	Simulate multi-phase flows	4	PO1, PO5, PO10, PO11

Syllabus

Tube in Tube, Shell and tube, Plate type heat exchangers. Nao fluids, heat transfer enhancement mechanisms in heat exchangers

Sensible heat storage, Latent heat storage devices. Simulation of melting and solidification of PCMs

Battery cooling techniques: Air cooling, liquid cooling and cooling through phase change

Liquid liquid, Gas- liquid, liquid-solid flows

Reference Books

1 Numerical Heat Transfer and Fluid Flow, S. V. Patankar, 4,2018, Hemisphere.

2 Thermal Energy Storage Systems and Applications , Ibrahim Dincer and Mark A. Rosen, 1, 2022 , John Wiley & Sons.

3 Energy Storage Systems: Fundamentals, Classification and a Technical Comparative, Jos? Manuel And?jar M?rquez , Francisca Segura Manzano , Jes?s Rey Luengo , 1,2023, Springer.

4 Energy Storage Systems: An Introduction , Satyender Singh , 2,2021 , Nova Science Publishers Inc.

23SDME05R - 3D MODELLING AND DIGITAL PROTOTYPING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SDME05R	3D MODELLING AND DIGITAL PROTOTYPING	3DMDP	R	0	0	2	4	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Perform 3D modelling of engineering components	4	PO2, PO5, PSO1
CO2	Perform analysis and simulation of a finite element model	4	PO2, PO5, PSO1
CO3	Design and execute a fully functional prototype	5	PO2, PO5, PSO1

Syllabus

3D modeling of engineering components involves creating a digital representation of physical objects using three-dimensional geometry. This process is essential for designing, analyzing, and manufacturing components across various industries, including automotive, aerospace, civil engineering, and consumer products. 3D models provide a detailed and accurate depiction of components, facilitating simulations, prototyping, and production

Converting a geometric model to a finite element model (FEM) involves several steps to prepare the model for numerical analysis. The finite element method (FEM) is used to analyze complex structures by dividing them into smaller, simpler elements

Preparing a model from concept, analyzing it to improve the design, and developing a functional prototype involves a systematic approach that includes conceptual design, geometry preparation, finite element modeling, simulation, and prototype development. By iterating through design and analysis, engineers can refine their models, address issues, and optimize performance. Developing a functional prototype provides a tangible representation of the design, allowing for real-world testing and validation before full-scale production

Reference Books

1 ANSYS Tutorial Release 2022 , Kent L. Lawrence , 2022, SDC publications .

2 Design Workbook Using SOLIDWORKS 2021 , Ronald E. Barr, Davor Juricic, Thomas J. Krueger, Alejandro Reyes , 2021, SDC publications .

3 Building better products with FEA , Vince Adams and Abraham , 1999, Onword press .

4 Finite Element Analysis , S S Bhavikatti , 2005, New Age International .

Dr. T. VIJAYA KUMAR 25/3/2

23SDME06R - GEOMETRIC DIMENSIONING AND TOLERANCING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SDME06R	GEOMETRIC DIMENSIONING AND TOLERANCING	GDAT	R	0	0	2	4	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand GD&T applications, benefits, key terms, and practical advantages in engineering and manufacturing.	2	PO1, PO3, PSO1
CO2	Practice creating industrial drawings to develop skills for interpreting technical specifications in manufacturing and design.	3	PO1, PO3, PSO1
CO3	Calculating tolerance values ensures precision in generating industrial drawings for manufacturing and design.	3	PO1, PO3, PSO1

Syllabus

Calculation involves determining the limits and fits of tolerances specified in standards, ensuring components fit and function correctly within defined parameters.

Interpretation involves understanding and applying GD&T symbols within industrial drawings, ensuring precise communication of design requirements for manufacturing and assembly processes.

Calculation involves deriving various tolerance values from GD&T drawings and using specialized software to create industrial drawings incorporating GD&T symbols accurately.

Reference Books

1 Geometric Dimensioning and Tolerancing: Applications, Analysis & Measurement , James D Meadows , 2004 , ASME Press .

2 Dimensioning and Tolerancing Handbook , Paul J. Drake , 1999 , New York: McGraw-Hill .

3 Geometric Dimensioning and Tolerancing: Workbook and Answer Book , Alex Krulikowski , 2017 , Effective Training Inc .

4 GD&T: Application and Interpretation , Bruce A. Wilson , 2011 , Delmar Cengage Learning .

5 Geometric Dimensioning and Tolerancing for Mechanical Design , Gene R. Cogorno , 2010 , McGraw-Hill Education .

23EGD3405M - ADVANCED VIBRATIONS (M)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23EGD3405M	ADVANCED VIBRATIONS	AV	M	3	0	0	0	3

Prerequisite

S#	Course Title	Acronym	Rule
1	ENGINEERING MECHANICS	EM	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the basic concepts of vibrations and the types of systems.	2	PO1, PSO1
CO2	Model vibrating systems and analyze their behavior under harmonic and transient excitations.	3	PO1, PSO1
CO3	Analyze vibrations of continuous systems and apply vibration control techniques.	4	PO1, PSO1
CO4	Apply vibration analysis techniques to real-world problems in engineering.	3	PO1, PSO1

Syllabus

Introduction to Vibrations: Single-degree-of-freedom systems, Multi-degree-of-freedom, systems, Free and forced vibrations .:Single degree of freedom system: Differential equation, complex exponential method of solution, energy method, power relations, phase relations, Nyquist diagram.

Modeling of Vibrating Systems: :Damping and modal analysis: Damping mechanisms, characterization and behavior of typical damping materials, structural response of multi-degree of freedom (MDOF) damped structures, proportional damping, modal testing, MDOF formulation using Finite Element Method (FEM), application of modal analysis in vibration reduction.

Continuous systems, Vibrations of plates and beams :Vibration of beams: Differential equation from Newton"s law and Lagrange equation, boundary conditions, natural frequency and mode shapes, force excitation, dynamic stresses in beams.

Vibration Control and applications : Vibration measurement: Accelerometers, force gages, instrumented hammers, Fast Fourier transform analyzers and digital filters, applications in vibration measurement.

Reference Books

1 Mechanical Vibrations , Singiresu S. Rao , Pearson Education India , 2019.

2 Fundamentals of Mechanical Vibrations , S. Graham Kelly , McGraw-Hill Education, 2000.

3 Mechanical Vibrations: Theory and Applications , S. Graham Kelly, Cengage Learning, 2011.

4 Vibration Analysis and Control - New Trends and Developments , Francisco Beltran-Carbajal, Intech Open, 2018.

5 Random Vibrations: Theory and Practice , Paul H. Wirsching, Thomas L. Paez, and James P. Noone, John Wiley & Sons, , 2015.

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

23SMF3202A - ADVANCED MATERIALS MANUFACTURING & TESTING (A)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23SMF3202A	ADVANCED MATERIALS MANUFACTURING & TESTING	AMMT	A	5	0	0	0	5

Prerequisite

S#	Course Title	Acronym	Rule
1	MATERIAL SCIENCE & METALLURGY	MSM	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand various types of materials involved in manufacturing Composites.	2	PO2, PO5, PSO1
CO2	Understand the principles of Bio, Smart and microelectronic materials to societal needs.	2	PO3, PO6, PSO2
CO3	Understand the Functionally graded materials for industrial needs.	2	PO3, PO5, PSO2
CO4	Apply various fabrication methods of nanomaterial and study of characterisation techniques.	3	PO2, PO5, PSO1
CO5	Develop expertise in analyzing properties and applications of functionally graded materials in engineering.	6	PO2, PO6, PSO1

Syllabus

Introduction to Engineering Materials covers composite materials, their types (polymer, metal, ceramic, carbon), manufacturing (hand layup, pultrusion) and testing methods (spray-up, RTM).

Introduction to Biomaterials includes properties, applications, biocompatibility, and classification. Smart Materials cover shape memory effect, alloys, properties, and applications. Microelectronic Materials include Silicon properties, production, and lithography techniques.

Functionally Graded Materials overview includes types, classification, preparation, properties, and applications. Nano Materials discuss properties, advantages, disadvantages, and applications compared to bulk materials.

Nanoscience and Nanotechnology fundamentals encompass nanomaterial synthesis, nanostructure fabrication, and characterization techniques like SEM, TEM, and AFM principles. Materials Characterization involves X-ray, neutron, and electron diffraction, along with spectroscopic and thermal analysis methods.

Develop expertise in analyzing properties, preparation methods, and applications of functionally graded materials in engineering, focusing on thermal stability, mechanical strength, and material gradients

Reference Books

1 Materials science and Engineering, V. Raghavan, 2009, Prentice-Hall of India.

2 Engineering Metallurgy, R.A.Higgins, 2016, Butterworth-Heinemann.

3 Engineering Physical Metallurgy , Y. Lakhtin, , 1998, Univ Pr of the Pacific.

4 Advanced Materials and Processes: Properties, Design, Applications , Gwyneth Owen-Jones , 2012, CRC Press.

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

23MT1001 - LINEAR ALGEBRA AND CALCULUS FOR ENGINEERS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MT1001	LINEAR ALGEBRA AND CALCULUS FOR ENGINEERS	LACE	R	2	2	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply matrix algebra to the real-world applications in engineering, physical and biological sciences, computer science, finance, economics and solving the system of equations.	3	PO1
CO2	Apply multivariate differential calculus to find maxima & minima of functions and understand the concepts of second order differential equations and its applications.	3	PO1
CO3	Apply beta and gamma functions to evaluate improper integrals. Evaluate double and triple integrals techniques over a region in two dimensional and three-dimensional geometry.	3	PO1
CO4	interpret the physical meaning of different operators such as gradient, curl and compute the line integrals of vector functions and learn their applications.	3	PO1

Syllabus

Introduction to Matrix theory: Row echelon form and rank of a matrix, Systems of linear equations, Solution by Gauss elimination, LU-Decomposition, Eigen values and eigen vectors. Diagonalization of matrices, quadratic forms and their canonical forms.

Multivariate differentiation calculus, partial differential calculus, Jacobian, total differentiation and their applications, chain rule, Taylor\'s series for fundation of two variables, maxima and minima functions of two variables, Lagranges method of undermined multipliers, differntial equations : mathematical models used in differential equations. second and higher order differential equations, along with methods of solutions and their applications

Multivariate Integral Calculus: Improper integrals, Beta, Gamma functions and their relationship. Line integrals- length of the arc, double and triple integrals and applications to area, volume, mass & moment of inertia. Change of order of integration, change of variables in polar, cylindrical and spherical polar coordinates.

Vector calculus - scalar and vector point functions, gradient, directional derivatives, divergence and curl, evaluation of line integrals, introduction to Greens and Stokes theorem and their applications.

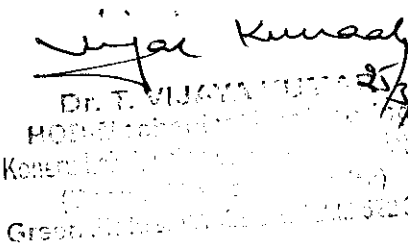
Reference Books

1 Advanced Engineering Mathematics, , Erwin Kreyszig, , 10, John Willey & Sons, 2010, New Delhi, India. .

2 Higher Engineering Mathematics, , Dr. B.S. Grewal. , 44, Publisher: Khanna, New Delhi. .

3 Linear Algebra and Its Applications , David C. Lay , 5, Pearson; .

4 Advanced Engineering Mathematic , Dennis G. Zill , 10, Pearson Education India .



23MT2003 - MATHEMATICAL MODELLING & NUMERICAL METHODS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MT2003	MATHEMATICAL MODELLING & NUMERICAL METHODS	MMNM	R	2	2	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Modeling and solution of algrebraic and transcendental equations.	3	PO1, PO2, PSO1
CO2	Applying numerical methods to solve ordinary differential equations.	3	PO1, PO2, PSO1
CO3	Solving of Linear and non-linear Partial Differential Equations.	3	PO1, PO2, PSO1
CO4	Applications of Partial Differential Equations.	3	PO1, PO2, PSO1

Syllabus

Bisection method and Newton Raphson method Finite differences Forward, Backward, Shift operators, average operator and relations between the difference operators.

Lagranges and Newtons divided difference formulas and Numerical solution of ordinary differential equations

Models of system of linear equations Jacobi and Gauss Seidel methods Formation of partial differential equations

one dimensional wave and heat equations and Laplace equation in two dimensions

Reference Books

1 Advanced Engineering Mathematics , Erwin Kreyszig, Edn 10, 2010, John Wiley & Sons.

2 Numerical methods for scientific and engineering computation, M.K.Jain, S. R. K. Iyengar and R.K.Jain,, 5th edn ,2015, New age international publishers, New Delhi.

3 Higher Engineering Mathematics , BS Grewal. Publisher, 40th edn,2012, Khanna Publishers.

4 Numerical Methods for Engineers, Steven Chapra and Raymond Canale, 8 Edition, 2009, McGraw Hill.

25/3/2

Dr. T. VIJAYA KUMAR
HOD-Mechanical
Koneru Lakshmaiah
Green Fields, Vaddeswaram-522 502.

23AD20010 - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING (O)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23AD20010	ARTIFICIAL INTELLIGENCE & MACHINE LEARNING	AIML	O	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply a variety of artificial intelligence algorithms and techniques to effectively solve complex problems in diverse real-world environments	3	PO2, PO3, PO4, PSO1
CO2	Solve constraint satisfaction problems, employ knowledge engineering principles to perform inferencing, reasoning and probability theory.	3	PO2, PO3, PO4, PSO1
CO3	Apply various machine learning techniques to analyze and solve real-world problems	3	PO2, PO3, PO4, PSO1
CO4	solve complex real-world problems using advanced supervised and unsupervised learning techniques.	3	PO2, PO3, PO4, PSO1
CO5	Evaluate solutions for various AI & ML related problems.	5	PO3, PO4, PO5, PSO1

Syllabus

Introduction to Artificial Intelligence: Overview of AI, history, and applications; Agents and Environments; Problem Solving through search: Uninformed Search Algorithms: Breadth-first search, Depth-first search, Iterative deepening search, Depth Limit Iterative deepening search Bi-Directional Search; Informed Search: Heuristic search, Best First Search, A* algorithm, Local Search algorithms: Hill Climbing Algorithm, Simulated Annealing, Adversarial Search: Minimax algorithm, Alpha-beta pruning;

Constraint Satisfaction: Problem formulation, Constraint propagation, Backtracking algorithms, Knowledge Engineering: propositional Logic, Predicate Logic, Inferencing through propositional and Predicate Logic: Introduction, Inferencing rules, Inferencing Mechanisms: Entitlement, Resolution, Lifting, Reasoning, Implementing inferencing: Forward Checking and Backward Chaining; Introduction to probability theory, Introduction to uncertainty Bayes Theorem;

Machine Learning: Introduction to Machine Learning, Types of Machine Learning; Introduction to Data Preprocessing: Data Cleaning, Data Splitting, Data Normalization, Data Batching, Data Shuffling, Overfitting and Underfitting; Performance metrics: Confusion matrix, Accuracy, F-score, Precession and Recall, Cross Validations; Supervised learning: Linear regression, Logistic Regression, Naive Bayes Classification, Bayesian Belief Networks; Decision Trees, KNN; Support Vector Machines (SVM), Introduction to Ensemble methods.

Ensemble methods: Bagging: Random Forest, Boosting: XG Boosting, Ada-Boosting, Unsupervised learning algorithms: K-Means clustering, Hierarchical Clustering Artificial Neural Networks (ANN): Introduction to ANN: Weights and Bios, Bios Vs Variance, McCulloch Pits, Perceptron, Applications of ANN, Types of ANN: Single-Layer Perceptron, Multi-Layer Perceptron, Feedforward and Backwards ANNs, Recurring RNN, Basics of ANN: Structure of ANN, Functionality of ANN, Learning ANNs, ANN techniques: Activation functions, Error computation (Loss Functions), Error distribution(Optimization), and Prediction using ANN.

Reference Books

1 Artificial Intelligence , Russel and Norvig , 2015, Pearson Education, PHI .

2 Machine Learning , Tom M.Mitchell , 2017, Tata McGraw-Hill Edition .

3 Artificial Intelligence , Elaine Rich & Kevin Knight , 2017, Tata McGraw-Hill Edition .

4 Machine Learning an Algorithmic Perspective , Stephen Marsland , 2014, CRC Press .

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering

22UC0021 - SOCIAL IMMERSIVE LEARNING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
22UC0021	SOCIAL IMMERSIVE LEARNING	SIL-1	R	0	0	0	4	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply effective communication and collaboration skills to work with diverse populations in addressing social issues within the community.	3	PO8, PO9, PSO1
CO2	Build technological solutions to real-world problems or challenges with peers to achieve common goals.	3	PO8, PO9, PSO1
CO3	Plan effectively to communicate ideas and collaborate with others to achieve artistic or recreational goals.	3	PO4, PSO1
CO4	Develop innovative solutions by thinking critically and creatively within a collaborative social immersive learning environment.	3	PO4, PSO1
CO5	Identify the strategies to promote personal well-being for healthy living through social interaction and shared experiences.	3	PO6, PSO1

Syllabus

Extension Activities and Social Outreach activities (ESO)

Technology Clubs (TEC)

Liberal arts, creative arts and hobby clubs (LCH)

Innovation, Incubation & Entrepreneurship (IIE)

Health & Well Being (HWB)

Reference Books

1 The Innovators Mindset Empower Learning, Unleash Talent and Lead a Culture of Creativity, George Couros, 1, georgecouros.com.

2 Reality+: Virtual Worlds and the Problems of Philosophy, Douglas Thomas and John Seely Brown, 2022, W. W. Norton & Company.

3 Immersive Education Designing for Learning, Paula MacDowell, Jennifer Lock, 2022, Springer.

4 A New Culture of Learning, John Seely Brown, Douglas Thomas, 2011, CreateSpace Independent Publishing.

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

22UC0022 - SOCIAL IMMERSIVE LEARNING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
22UC0022	SOCIAL IMMERSIVE LEARNING	SIL-2	R	0	0	0	4	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply effective communication and collaboration skills to work with diverse populations in addressing social issues within the community.	3	PO8, PO9
CO2	Build technological solutions to real-world problems or challenges with peers to achieve common goals.	3	PO8, PO9
CO3	Plan effectively to communicate ideas and collaborate with others to achieve artistic or recreational goals.	3	PO3, PO8, PO9
CO4	Develop innovative solutions by thinking critically and creatively within a collaborative social immersive learning environment.	3	PO3, PO8, PO9, PSO1
CO5	Identify the strategies to promote personal well-being for healthy living through social interaction and shared experiences.	3	PO6, PO8, PO9

Syllabus

Extension Activities and Social Outreach activities (ESO)

Technology Clubs (TEC)

Liberal arts, creative arts and hobby clubs (LCH)

Innovation, Incubation & Entrepreneurship (IIE)

Health & Well Being (HWB)

Reference Books

1 The Innovators Mindset Empower Learning, Unleash Talent and Lead a Culture of Creativity, George Couros, 1, georgecouros.com.

2 Immersive Education Designing for Learning, Paula MacDowell, Jennifer Lock, 2022, Springer.

3 Reality+: Virtual Worlds and the Problems of Philosophy, Douglas Thomas and John Seely Brown, 2022, W. W. Norton & Company.

4 A New Culture of Learning, John Seely Brown, Douglas Thomas, 2011, CreateSpace Independent Publishing.

Dr. T. VIJAYA
HOD-Mechanical
Koneru Lakshmaiah
Green Fields,

22UC0023 - SOCIAL IMMERSIVE LEARNING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
22UC0023	SOCIAL IMMERSIVE LEARNING	SIL-3	R	0	0	0	4	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply effective communication and collaboration skills to work with diverse populations in addressing social issues within the community.	3	PO8, PO9
CO2	Build technological solutions to real-world problems or challenges with peers to achieve common goals.	3	PO8, PO9
CO3	Plan effectively to communicate ideas and collaborate with others to achieve artistic or recreational goals.	3	PO3, PO9, PSO1
CO4	Develop innovative solutions by thinking critically and creatively within a collaborative social immersive learning environment.	3	PO3, PO9, PSO1
CO5	Identify the strategies to promote personal well-being for healthy living through social interaction and shared experiences.	3	PO3, PO6, PO9

Syllabus

Extension Activities and Social Outreach activities (ESO)

Technology Clubs (TEC)

Liberal arts, creative arts and hobby clubs (LCH)

Innovation, Incubation & Entrepreneurship (IIE)

Health & Well Being (HWB)

Reference Books

1 The Innovators Mindset Empower Learning, Unleash Talent and Lead a Culture of Creativity, George Couros, 1, georgecouros.com.

2 Immersive Education Designing for Learning, Paula MacDowell, Jennifer Lock, 2022, Springer.

3 Reality+: Virtual Worlds and the Problems of Philosophy, Douglas Thomas and John Seely Brown, 2022, W. W. Norton & Company.

4 A New Culture of Learning, John Seely Brown, Douglas Thomas, 2011, CreateSpace Independent Publishing.

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education
Green Fields, Vaddeswaram-522502.

REFRIGERATION & AIR CONDITIONING (RAC)

COURSE CODE	22ECF3406M	MODE	M	LTPS	3-0-0-0	PRE-REQUISITE	TD

Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Apply the concepts of psychrometry and select appropriate refrigerant for a HVAC system	3	PO1, PO2, PSO1
CO2	Apply appropriate psychrometric processes and arrive at the heat load for a system	3	PO1, PO2, PSO1
CO3	Analyse types of air-conditioning system and air distribution configurations	4	PO1, PO2, PSO1
CO4	Analyse various non-conventional refrigeration systems, and adopt suitable instrumentation control, safety in HVAC systems	4	PO1, PO2, PSO1

Syllabus

Module 1	Applications of air-conditioning and refrigeration, vapour compression cycle,. Designation of refrigerants, Selection of refrigerants, Ozone Depletion Potential (ODP) and Global Warming (GW), alternative to existing CFC and HCFC refrigerants
Module 2	. P-h and T-s diagrams, thermodynamic analysis, effect of inter cooling, sub-cooling and super heating, Cascade refrigeration. Introduction to evaporative cooling and cooling towers.
Module 3	Thermodynamic analysis. Heating and Cooling Load Estimation : Components of cooling/heat load, Room sensible heat factor (RSHF), Grand sensible Heat factor (GSHF), Heating and cooling load estimation of a typical office / domestic building, Concept of diversity.
Module 4	Fundamentals of duct design, pressure loss and AHU calculations, types of terminal units, advanced air distribution: VAV, UFAD systems; concept of heat recovery systems. vapor absorption, vapor adsorption systems, reversed Brayton cycle - air based refrigeration. Introduction to Building Management System. safety in RAC systems.

Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Basic Refrigeration and Air Conditioning	Anantanarayanan P.N	Tata McGraw Hill.	1982
2	Refrigeration and Air Conditioning,	Arora R.C,	John Wiley and Sons.	2012
3	Fundamentals, Refrigeration, Systems and Equipments and HVAC Applications	P. K. Sarma and K. Ramakrishna	New Age International Publishers	1994
4	Modern Refrigeration and air Conditioning	Andrew D. Althouse, Carl H. Turnquist, A.F. Bracciano, D.C. Bracciano, and G.M. Bracciano	Goodheart-Wilkox Publisher	2019
5	Refrigeration and Air Conditioning technology	John Tomczyk , Eugene Silberstein, Bill Whitman , Bill Johnson	Cengage learning, 2016	2012

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522502.

KLEF
Department of Mechanical Engineering
B.Tech 2022-23 Admitted Batch Category wise Course Structure

Sl No	Category	Course Code	Course Title	Short Name	Mode	L	T	P	S	Cr	CH	Pre-requisite
1	HAS	22UC1101	Integrated Professional English	IPE	R	0	0	4	0	2	4	Nil
2	HAS	22UC1202	English Proficiency	EP	R	0	0	4	0	2	4	Nil
3	HAS	22UC2103	Essential Skills for Employability	ESE	R	0	0	4	0	2	4	Nil
4	HAS	22UC2204	Corporate Readiness Skills	CRS	R	0	0	4	0	2	4	Nil
5	HAS	22UC0010	Universal Human Values & Professional Ethics	UHV&PE	R	2	0	0	0	2	2	Nil
6	HAS	22UC0021	Social Immersive Learning-1	SIL-1	R	0	0	0	4	1	4	Nil
7	HAS	22UC0022	Social Immersive Learning-2	SIL-2	R	0	0	0	4	1	4	Nil
8	HAS	22UC0023	Social Immersive Learning-3	SIL-3	R	0	0	0	4	1	4	Nil
9	HAS	22UC0024	Social Immersive Learning-4	SIL-4	R	0	0	0	4	1	4	Nil
10	HAS	22UC1203	Design Thinking and Innovation	DTI	R	0	0	4	0	2	4	Nil
11	HAS	22UC0012	Innovation Management	IM	R	0	0	4	0	2	4	Nil
12	HAS	22MB0002	Management Elective(Paradigms in Management Thought	ME	R	2	0	0	0	2	2	Nil
13	HAS	22FLXXXX	Foreign language Elective(OE-5)	FLE	R	2	0	0	0	2	2	Nil
			TOTAL			**6**	**0**	**24**	**16**	**22**	**46**	
14	AUC	22UC0007	Indian Knowledge Systems-Engineering Elective	IKS	R	2	0	0	0	0	2	Nil
15	AUC	22UC0008	Indian Constitution	IC	R	2	0	0	0	0	2	Nil
16	AUC	22UC0009	Ecology & Environment	e&e	R	2	0	0	0	0	2	Nil
17	AUC	22UC0016	Gender & Social Equality	GSE	R	2	0	0	0	0	2	Nil
18	AUC	22UC0019	Essence of Indian knowledge Tradition	EIKT	R	2	0	0	0	0	2	Nil
			TOTAL			**10**	**0**	**0**	**0**	**0**	**10**	
19	BSC	22MT1101	M-1(Mathematics for Computing)	MFC	R	2	2	0	2	4.5	6	Nil
20	BSC	22MT2102	M-2(Mathematics for Engineers)	MFE	R	2	1	0	0	3	3	Nil
21	BSC	22MT2209	Mathematics-4(Computations in Applied Mechanics and S	CAMS	R	2	2	0	0	4	4	Nil
22	BSC	22MT2011	Mathematics Elective-3(Optimization Techniques)	OT	R	2	2	0	0	4	4	Nil
23	BSC	22PH1010	Mechanics (Science Elective - 1)	MEC	R	3	1	0	0	4	4	Nil
24	BSC	22CY1001	Engineering Chemistry (Science Elective - 2)	EC	R	3	0	2	0	4	5	Nil
			TOTAL			**14**	**8**	**2**	**2**	**23.5**	**26**	
25	ESC	22UC3108	Problem Solving & Reasoning Skills-I	PSRS-1	R	0	0	0	4	1	4	Nil
26	ESC	22UC3209	Problem Solving & Reasoning Skills-II	PSRS-2	R	0	0	0	4	1	4	Nil
27	ESC	22SC1101	Computational Thinking for Structured Design	CTSD	R	3	0	2	6	5.5	11	Nil
28	ESC	22ME1103	Design Tool Workshop	DTW	R	0	0	4	0	2	4	Nil
29	ESC	22SC1209	IOT Workshop	IOTW	R	0	0	4	0	2	4	Nil
30	ESC	22SC1202	Data Structures	DST	R	3	0	2	4	5	9	CTSD
31	ESC	22ME1002	Engineering Graphics & 2D Modelling	EGM	R	1	0	4	0	3	5	Nil

Dr. P. Vijaya Kumar
HOD - Mechanical Engineering
Koneru Lakshmaiah Education Foundation
25/7/23

Sl No	Category	Course Code	Course Title	Short Name	Mode	L	T	P	S	Cr	CH	Pre-requisite
32	ESC	22ME2204	Workshop Practices for Engineers	WPE	R	0	0	4	0	2	4	Nil
33	ESC	22EE2105	Basic Electrical and Electronic Circuits	BEEE	R	2	0	0	0	2	2	Nil
34	ESC	22CS1201	Object Oriented Programming	OOP	R	2	0	2	0	3	4	CTSD
35	ESC	22CE2102	Fluid Mechanics & Hydraulic machines	FMHM	R	3	0	2	0	4	5	Nil
			TOTAL			**14**	**0**	**24**	**18**	**30.5**	**56**	
36	PCC	22ME2107	Thermodynamics	TD	R	3	0	0	0	3	3	Nil
37	PCC	22ME2105	Material Science & Metallurgy	MSM	R	2	0	2	0	3	4	Nil
38	PCC	22AD2001R	Data Driven Artificial Intelligent Systems	DDAIS	R	2	0	2	0	3	4	CTSD
	PCC	22AD2001A	Data Driven Artificial Intelligent Systems	DDAIS	A	3	0	4	0	5	7	CTSD
	PCC	22AD2001P	Data Driven Artificial Intelligent Systems	DDAIS	P	3	0	4	0	5	7	CTSD
39	PCC	22ME3215	Digital Manufacturing & Robotics	DMR	R	3	0	0	0	3	3	KDOM
40	PCC	22ME3112	Thermal Systems Engineering	TSE	R	3	0	2	0	4	5	TD
41	PCC	22ME3110R	Heat Transfer	HT	R	3	0	2	0	4	5	TD
	PCC	22ME3110A	Heat Transfer	HT	A	4	0	4	0	6	8	TD
	PCC	22ME3110P	Heat Transfer	HT	P	4	0	4	0	6	8	TD
42	PCC	22ME2106R	Solid Mechanics	SM	R	3	0	2	0	4	5	MEC
	PCC	22ME2106A	Solid Mechanics	SM	A	4	0	4	0	6	8	MEC
	PCC	22ME2106P	Solid Mechanics	SM	P	4	0	4	0	6	8	MEC
43	PCC	22ME3111R	Mechanical Engineering Design	MED	R	3	0	0	0	3	3	SM
	PCC	22ME3111A	Mechanical Engineering Design	MED	A	4	1	0	0	5	5	SM
	PCC	22ME3111P	Mechanical Engineering Design	MED	P	4	1	0	0	5	5	SM
44	PCC	22ME2209R	Kinematics & Dynamics OF Machines (with Adams s/w)	KDOM	R	2	1	2	0	4	5	MEC
	PCC	22ME2209A	Kinematics & Dynamics OF Machines (with Adams s/w)	KDOM	A	3	1	4	0	6	8	MEC
	PCC	22ME2209P	Kinematics & Dynamics OF Machines (with Adams s/w)	KDOM	P	3	1	4	0	6	8	MEC
45	PCC	22ME3214R	Machine Design (Linked to Project)	MD	R	2	0	0	4	3	6	MED
	PCC	22ME3214A	Machine Design (Linked to Project)	MD	A	3	1	0	4	5	8	MED
	PCC	22ME3214P	Machine Design (Linked to Project)	MD	P	3	1	0	4	5	8	MED
46	PCC	22ME2208	Manufacturing Processes	MP	R	2	0	2	0	3	4	WPE
47	PCC	22ME3113R	Manufacturing Technology (Linked to Project)	MT	R	2	0	2	0	3	4	MP
	PCC	22ME3113A	Manufacturing Technology (Linked to Project)	MT	A	3	0	4	0	5	7	MP
	PCC	22ME3113P	Manufacturing Technology (Linked to Project)	MT	P	3	0	4	0	5	7	MP
48	FC		Flexi Core-1			2	0	2	0	3	4	
49	FC		Flexi Core-2			2	0	2	0	3	4	
50	FC		Flexi Core-3			3	0	0	0	3	3	
			TOTAL			**37**	**1**	**20**	**4**	**49**	**62**	
51	SDP		Skill Development project-1			0	0	2	4	2	6	Nil
52	SDP		Skill Development Project-2			0	0	2	4	2	6	Nil
53	SDP		Skill Development Porject-3			0	0	2	4	2	6	Nil

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

Sl No	Category	Course Code	Course Title	Short Name	Mode	L	T	P	S	Cr	CH	Pre-requisite
54	SDP		Skill Development Project-4			0	0	2	4	2	6	
55			**TOTAL**			**0**	**0**	**8**	**16**	**8**	**24**	
56	PE	PE-1	Professional Elective – 1			2	0	2	4	4	8	
57	PE	PE-2	Professional Elective – 2			2	0	2	0	3	4	
58	PE	PE-3	Professional Elective – 3			2	0	2	4	4	8	
59	PE	PE-4	Professional Elective – 4			4	0	0	0	4	4	
60	PE	PE-5	Professional Elective – 5			3	0	0	0	3	3	
			TOTAL			**13**	**0**	**6**	**8**	**18**	**27**	
61	OE	OE	Open Elective – 1			3	0	0	0	3	3	Nil
62	OE	OE	Open Elective – 2			3	0	0	0	3	3	Nil
63	OE	OE	Open Elective – 3			3	0	0	0	3	3	Nil
			TOTAL			**9**	**0**	**0**	**0**	**9**	**9**	
64	PR	22IE2040	Social Internship			0	0	0	4	0	4	Nil
65	PR	22IE3041	Technical Internship			0	0	0	8	0	8	Nil
66	PR	22IE4042	Term paper			0	0	4	0	2	4	Nil
67	PR	CC	Sports			0	0	0	4	0	4	Nil
68	PR	22IE3044	Engineering capstone project-Phase1			0	0	6	12	6	18	Relavant Course
69	PR	22IE3045	Engineering capstone project-Phase2			0	0	6	12	6	18	Relavant Course
			TOTAL			**0**	**0**	**16**	**40**	**14**	**56**	
			GRAND TOTAL			**103**	**9**	**100**	**104**	**174**	**316**	

25/3/23

DR T. VIJAYA KUMAR
HOD-Mechanical Engineering
Kerala Lakshmi Academy Foundation
(Deemed to be University)
Chavara Hills, Kollam-691302.

KLEF

DEPARTMENT OF MECHNAICAL ENGINEERING

2023-24 M.Tech-Mechanical Engineering Course Structure

SEM	Sl No	Course	COURSE CODE	COURSE NAME	Mode	L	T	P	S	Cr	CH	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback Given by	Justification
1	1	AUC	23UC5201	PROFESSIONAL COMMUNICATION SKILLS	R	0	0	4	0	0	4	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
2	2	AUC	23MD5101	NEW PRODUCT DESIGN	R	0	0	4	0	0	4	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
Total						**0**	**0**	**8**	**0**	**0**	**8**				
1	3	ESC	23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
Total						**2**	**2**	**0**	**0**	**4**	**4**				
1	4	PCC	23ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS	R	2	0	2	4	4	8	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed

25/3/23

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

1	5	PCC	23ME5103	DIGITAL MANUFACGURING	R	3	0	2	0	4	5	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
1	6	PCC	23ME5104	PROJECT MANAGEMENT FOR ENGINEERS	R	3	0	2	0	4	5	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
2	7	PCC	23ME5205	WEB AND NETWORKING TECHNOLOGIES	R	3	0	2	0	4	5	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
2	8	PCC	23ME5206	LOGISTICS AND SUPPLY CHAIN	R	2	0	2	0	3	4	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
Total						**13**	**0**	**10**	**4**	**19**	**27**				
1	9	PE-1		PROFESSIONAL ELECTIVE-1	R	2	0	2	0	3	4				
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				
2	12	PE4		PROFESSIONAL ELECTIVE-4	R/M	3	0	0	0	3	3				
3	13	PE5		PROFESSIONAL ELECTIVE-5	M	3	0	0	0	3	0				
Total						**13**	**0**	**6**	**0**	**16**	**16**				
1	14	PRI	23IE5201	ESSENTIALS OF RESEARCH DESIGN	R	1	1	0	0	2	2	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed

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

2	15	PRI	23IE5149	TERM PAPER	R	0	0	8	0	4	8	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
3	16	PRI	23IE6150	DISSERTATION (PART-I)	R	0	0	32	0	16	24	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
4	17	PRI	23IE6250	DISSERTATION (PAT-2)	R	0	0	32	0	16	24	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
Total						**1**	**1**	**72**	**0**	**38**	**58**				
4	18	OE		OPEN ELECTIVE	M	3	0	0	0	3	0				
Total						**3**	**0**	**0**	**0**	**3**	**0**				
GRAND TOTAL						**32**	**3**	**96**	**4**	**80**	**113**				

LIST OF PROFESSIONAL ELCETIVE FOR Y23 M.TECH-ME PROGRAM

PE#	COURSE CODE	COURSE TITLE	L	T	P	S	Employability/Entreprenecurship /Skill Development	New/Retained/Revised Course	Feedback Given by	Justification
PE-1	23ME51A1	PROGRAMMING AND DATA MANAGEMENT	2	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD51A2	OPERATIONS RESEARCH FOR ENGINEERS	2	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

	23MD51A3	MATERIALS AND PROCESS SELECTION FOR DESIGN	2	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
PE-2	23MD52B1	PLM ADVANCED CONCEPTS	2	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52B2	MACHINE TOOL DESIGN	2	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52B3	RELIABILITY AND LIFE TESTING	2	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
PE-3	23MD52C1	DESIGN FOR MANUFACTURING	3	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52C2	LEAN MANUFACTURING	3	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52C3	DIMENSIONAL MANAGEMENT	3	0	2	0	Skill Development	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 302.

PE-4	23MD52D1	CUSTOMIZATION OF PLM SOFTWARE	3	0	0	0	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52D2	COMPOSITES: DESIGN AND MANUFACTURING	3	0	0	0	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52D3	PRECISION AND QUALITY ENGINEERING	3	0	0	0	Employability	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
PE-5	23MD53E1	ENTERPRISE RESOURCE PLANNING FRO MECHANICAL ENGINEERS	3	0	0	0	Entrepreneurship	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD53E2	ROBOTICS AND AUTOMATION	3	0	0	0		New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed
	23MD52E3	ENGINEERING ECONOMICS AND FINANCIAL ANALYSIS	3	0	0	0	Entrepreneurship	New Course	Group Heads	As per the feedback received new program is offered based on the suggestions of industry experts courses are framed

Total no. of courses	28
No.of new courses	28
No.of courses revised	0
% of Syllabus Revision	100.00
% of courses focussing on Employability	32.14
% of courses focussing on Entrepreneurship	3.57
% of courses focussing on Skill Development	67.86

25/2/23

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

23MT5102 - COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	CTEO	R	2	2	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the fundamental concepts of optimization, including types of problems, mathematical formulation, and programming implementation.	2	PO1, PO2
CO2	Apply mathematical optimization techniques, both unconstrained and constrained, to solve engineering problems using programming languages like Matlab/Python/R.	3	PO1, PO5
CO3	Analyze and solve multi-objective optimization problems, considering trade-offs and conflicting objectives, using appropriate algorithms and methodologies.	4	PO1, PO5
CO4	Apply optimization techniques to solve application-specific problems in Machine Design and Thermal Engineering domains, demonstrating domain-specific knowledge and skills.	3	PO1, PO5

Syllabus

Introduction to Engineering Optimization: Basics of optimization, mathematical formulations, and algorithms. Applications in mechanical and machine design.

Unconstrained Optimization Techniques: Newton\'s method, gradient descent, conjugate gradient. Implementation in MATLAB/Python.

Constrained Optimization Techniques: Linear and nonlinear constraints, Lagrange multipliers, penalty and barrier methods. Application in mechanical design.

Multi-objective Optimization: Pareto optimality, weighted sum, epsilon-constraint methods. Implementing multi-objective optimization using Python.

Reference Books

1. "Engineering Optimization: Methods and Applications", Ravindran, R., Ragsdell, K. M., & Reklaitis, G. V., 2006, Wiley.
2. "Introduction to Optimization", Chong, E. K. P., & Zak, S. H., 2013, Wiley.
3. "Optimization Concepts and Applications in Engineering", Belegundu, A. D., & Chandrupatla, T. R., 2011, Pearson.
4. "Optimization in Practice with MATLAB?: For Engineering Students and Professionals", Achanta, S., & Darby-Dowman, K., 2015, Cambridge University Press.
5. "Applied Optimization: Formulation and Algorithms for Engineering Systems", Ross, I. J., 1999, Cambridge University Press.

25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME5102 - MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS	MAME	R	2	0	2	4	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand various CAD tools and peripherals required to create models.	2	PO1, PO2, PO3
CO2	Represent different curves and surfaces of geometric models.	3	PO1, PO2, PO3
CO3	Represent solid models using different solid represent schemes	3	PO1, PO2, PO3
CO4	Apply various data exchange formats in geometric modeling and also will be able to apply finite element modeling and mechanical assembly concepts in design applications	3	PO1, PO2, PO3
CO5	Analyze various mechanical elements models using modeling software	4	PO1, PO2, PO3
CO6	Design and develop mechanical components for selected applications	5	PO1, PO2, PO3

Syllabus

CADTOOLS:Definition of CAD Tools, Types of System, CAD/CAM system evaluation criteria, brief treatment of input an output devices, Graphics standards, functional areas of CAD, Modeling and Viewing, Software documentation efficient use of CAD Software.GEOMETRIC MODELING:Types of Mathematical representation of curves, wire frame models, wire frame entities, parametric representation of synthetic curves hermit cubic splines, Bezier curves, B-Splines rational curves.

SURFACE MODELING:Mathematical representation surfaces, surface model, surface entities, surface representation,parametric representation of surfaces,plane surface,rule surface, surface of revolution,tabular cylinder.PARAMETRIC REPRESENTATION OF SYNTHETICSURFACES:Hermit Bi Cubic surface, Bezier curve surface, B-Spline surface, COONs, Blending Surface,Sculptured surface, Surface Manipulation- Displaying, segmentation, trimming, intersection, Transformations (2D and3D).

GEOMETRIC MODELING 3D:Solid modeling, solid representation, Boundary Representation (B-Rep), Constructive Solid Geometry. CAD/CAM DATA EXCHANGE: Evaluation of data Exchange format, IGES Data representation sand structure, STEP Architecture, Implementation, ACIS and DXF.

DESIGN APPLICATIONS: Finite Element Modeling and Analysis and Mechanical Assembly. COLLABORATIVE ENGINEERING: Collaborative Design, Principles, Approaches, tools, designs system.

Reference Books

1 CAD/CAM: Principles and Applications, P.N.Rao, 3rd Edition, Tata Mc Graw hill.

2 CAD/CAM: Theory and Practice, Ibrahim Zeid, 2nd Edition, Tata Mc Graw hill.

3 CAD/CAM: Computer Aided Design and Manufacturing, M.Groover, E.Gimmers, 3rd Edition, Pearson.

4 CAD/CAM: Concepts and Applications, Chennakeava R. Alavala, 3rd Edition, Prentice Hall India Learning Private Limited.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME5103 - DIGITAL MANUFACTURING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME5103	DIGITAL MANUFACTURING	DM	R	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Learn the basics of digital transformation in manufacturing and how it affects production, supply chains, and overall business operations.	2	PO1
CO2	Learn about IoT, AI, cloud computing, and big data in manufacturing to optimize operations and enhance efficiency through digital technologies.	2	PO1
CO3	Understand the data management, connectivity, and cybersecurity to implement digital manufacturing solutions and integrate diverse data for real-time decision-making.	2	PO1
CO4	Apply automation, robotics, and intelligent machines such as collaborative robots and autonomous systems to enhance manufacturing efficiency and improve product quality.	3	PO1
CO5	Gain hands-on experience with IoT, AI, and data analytics in labs to optimize processes, enhance quality, and drive digital transformation in manufacturing.	3	PO1

Sytlabus

Introduction to Digital Manufacturing ,Overview of digital transformation in manufacturing ,Key technologies in digital manufacturing, such as IoT, AI, cloud computing, and big data analytics ,Benefits and challenges of implementing digital manufacturing solutions ,Digital twin concept and its role in virtual modeling and simulation

Data Management and Connectivity in Digital Manufacturing ,Data collection, integration, and management for smart manufacturing systems ,Industrial communication protocols and network infrastructure ,Cybersecurity considerations in digital manufacturing environments ,Integration of data from various sources for real-time decision-making

Advanced Automation and Robotics in Digital Manufacturing ,Application of robotics and automation technologies in manufacturing processes ,Collaborative robots (cobots) and human-robot interaction ,Autonomous systems and intelligent machines in production environments ,Optimization of manufacturing operations using digital automation tools

Smart Factory and Digital Supply Chain,Concepts of smart factories and digital supply chain management ,Integration of production systems and supply chain through digital technologies ,Predictive maintenance and condition monitoring using IoT and AI ,Supply chain visibility, traceability, and optimization through digital solutions

Reference Books

1 Digital Manufacturing: Design, Innovation, and Sustainability, Luca Canetta, 2019, Luca Canetta, Wiley.

2 Digital Manufacturing and Design: Concepts, Practices, and Perspectives, Ben Wang and Vimal Dhokia, 2018, Springer.

4 Additive Manufacturing Technologies: Rapid Prototyping to Direct Digital Manufacturing, Ian Gibson, David W. Rosen, and Brent Stucker, 2014, Springer.

5 Digital Manufacturing: An Introduction to Advanced Manufacturing, Tianran Wang, , 2018, Tsinghua University Press.

25/3/23

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME5104 - PROJECT MANAGEMENT FOR ENGINEERS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME5104	PROJECT MANAGEMENT FOR ENGINEERS	PMFE	R	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the fundamental concepts and principles of project management in the context of engineering	2	PO2
CO2	Apply project planning and scheduling techniques to effectively manage engineering projects	3	PO2
CO3	Develop comprehensive project plans, including scope, schedule, cost, quality, and risk management components	3	PO4
CO4	Assess project performance, monitor progress, and make necessary adjustments to achieve project goals	3	PO4
CO5	Apply project management tools and techniques through practical exercises, simulations, and case studies	3	PO3

Syllabus

Introduction to Project Management: Overview of project management principles, processes, and tools, role of a project manager, Defining project objectives and scope, Project selection methods, Definition and importance of project management, Key project management terminologies, Phases of a project: initiation, planning, execution, monitoring, and closing, Characteristics of each phase, Project management methodologies

Project Planning and Scheduling: Techniques for project planning, Developing a project plan, Components of a project plan, Estimating time and costs, scheduling, and resource management, Gantt charts, Creating a project schedule using Gantt charts and Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), Techniques for selecting projects, Human resource management in projects

Project Cost and Risk Management: Types of project risks (technical, financial, operational), Risk identification techniques (Brainstorming, SWOT analysis, Delphi technique), Strategies for managing project costs , Risk mitigation strategies, Contingency planning, Risk monitoring and control, Qualitative and quantitative risk analysis, Risk response planning, Monitoring and controlling risks

Project Execution and Control: Methods for monitoring project progress, Directing and managing project work, Managing project teams and communication, Implementing quality assurance processes, controlling changes and quality assurance, Cost estimation techniques, Cost control and earned value management, Quality planning, assurance, and control, Quality management tools, Managing vendor relationships and contract administration

Hands-on exercises and case studies to apply project management principles and tools in real-world scenarios

Reference Books

1. Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Harold Kerzner , 12: 2017, Wiley.
2. Project Management: The Managerial Process, Eric W Larson, Clifford F Gray , 6: 2003, McGraw-Hill/Irwin.
3. Project Management for Engineering, Business, and Technology, John M. Nicholas, Herman Steyn , 6: 2020, Taylor & Francis.
4. Project Management: A Managerial Approach, Jack R. Meredith, Samuel J. Mantel Jr. , 8: 2011, Wiley.

25/3/23
HOD
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23ME5205 - WEB AND NETWORKING TECHNOLOGIES (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME5205	WEB AND NETWORKING TECHNOLOGIES	WNT	R	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the fundamentals of web technologies, including HTML, CSS, and JavaScript.	2	PO1, PO2, PO4
CO2	Gain knowledge of networking concepts, protocols, and architectures, such as TCP/IP and OSI model.	2	PO1, PO2, PO3
CO3	Explore server-side programming and database integration for web applications.	3	PO1, PO2, PO3
CO4	Analyze security issues and techniques in web and network applications, including authentication methods.	3	PO1, PO2, PO4
CO5	Apply web and networking technologies to develop and deploy practical projects.	3	PO1, PO2, PO3

Syllabus

Introduction to Web Technologies: Overview of web development, HTML, CSS, and JavaScript.

Client Server Model and Networking Basics: Understanding the client server architecture, TCP/IP, DNS, HTTP, and network protocols.

Web Development Frameworks: Introduction to popular frameworks like React or Angular, and their role in building dynamic web applications.

Web Security and Performance: Concepts of web security, HTTPS, encryption, server-side optimization, and performance tuning techniques.

Practical Component: Hands-on exercises and projects involving web development, networking, and implementation of web technologies.

Reference Books

1 Web Development and Design Foundations with HTML5, Terry Felke-Morris, 9th, Pearson.

2 HTML and CSS: Design and Build Websites, Jon Duckett, 2011, John Wiley & Sons, Inc..

3 Computer Networking: A Top-Down Approach, James Kurose and Keith Ross, 7th, NYU and NYU Shanghai.

4 Network Security Essentials: Applications and Standards, William Stallings, 4th, Prentice Hall.

Dr.T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302.

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No: 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME5206 - LOGISTICS AND SUPPLY CHAIN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME5206	LOGISTICS AND SUPPLY CHAIN	LSC	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply knowledge of supply chain management principles to analyze global logistics, types, challenges, and opportunities in the field.	2	PO1, PO2
CO2	Apply quality management methodologies and tools to enhance supply chain performance through comprehensive understanding of quality systems and continuous improvement strategies.	3	PO1, PO2
CO3	Analyze and apply principles of supplier relationship management, including selection, evaluation, performance, risk, diversity, and sustainability strategies.	3	PO1, PO5
CO4	Utilize diverse data analytics tools effectively for enhancing supply chain performance across predictive, prescriptive analytics, big data, optimization, simulation.	3	PO1, PO2
CO5	Apply theoretical logistics and supply chain knowledge in real-world scenarios, integrating predictive, prescriptive analytics, big data, optimization, simulation, and modeling.	3	PO1, PO5

Syllabus

Introduction to supply chain management, Types of supply chains, Key concepts in supply chain management, Logistics and supply chain management, Global supply chain management, Challenges and opportunities in supply chain management.

Introduction to quality management systems, Quality management methodologies, Six Sigma, Total Quality Management, Quality control and assurance, Continuous improvement in quality management

Introduction to supplier relationship management, Supplier selection and evaluation, Supplier development and partnerships, Managing supplier performance, Supplier risk management, Supplier diversity and sustainability.

Introduction to supply chain analytics, Predictive analytics in supply chain management, Prescriptive analytics in supply chain management, Big data in supply chain management, Supply chain optimization, Supply chain simulation and modelling

Reference Books

1. "Supply Chain Management: Strategy, Planning, and Operation", Sunil Chopra and Peter Meindl , 7th, 2015, Pearson Education.
2. "Quality Management for Organizational Excellence: Introduction to Total Quality", David L. Goetsch and Stanley B. Davis, 7th, 2021, Pearson Education.
3. Logistics and Supply Chain Management, Martin Christopher, 6th, 2016, Pearson Education.
4. The Supply Chain Revolution: Innovative Sourcing and Logistics for a Fiercely Competitive World, Suman Sarkar, 1st, 2017, AMACOM.
5. Essentials of Supply Chain Management, Michael H. Hugos, 4th, 2016, Wiley.

Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
Green Fields, Vaddeswaram-522 302.

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME51A1 - PROGRAMMING AND DATA MANAGEMENT (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME51A1	PROGRAMMING AND DATA MANAGEMENT	PDM	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Introduction tp programming and Exploring Advanced Programming Concepts, Algorithms for Implementing Data Structures	2	PO1, PO2, PO4
CO2	Introduction to Database Management Systems (DBMS), covering relational database design, SQL and NoSQL databases, transactions and control, and database security and integrity. Additionally, an introduction to Big Data Technologies and analytics.	2	PO1, PO4
CO3	Applications of Data Warehousing and Data Mining techniques	3	PO3, PO4
CO4	Application of Machine Learning types to generae ML models for real world problems	3	PO3, PO4
CO5	Design and implement different types Data structures, Data Managemnt and Machine Learning models for specific tasks.	3	PO1, PO3

Syllabus

Advanced Programming Concepts: Object-Oriented Programming, Functional Programming, Concurrent and Parallel Programming, Programming Languages and Paradigms. Data Structures and Algorithms: Advanced Data Structures (e.g., trees, graphs, heaps), Algorithm Design and Analysis, Complexity Theory, Computational Geometry.

Database Management Systems (DBMS): Relational Database Design, SQL and NoSQL, Databases, Transactions and Concurrency Control, Database Security and Integrity. Big Data Technologies: Introduction, Hadoop and MapReduce, Spark and In-Memory Computing, Big Data Analytics.

Data Warehousing and Data Mining: Data Warehouse Architecture, ETL (Extract, Transform, Load) Processes, Data Mining Techniques, Data Mining Algorithms (e.g., clustering, classification, association)

Machine Learning: Introduction to Machine Learning, Application, Data handling and pre processing techniques, Supervised and Unsupervised Learning, Neural Networks and Deep Learning, Natural Language Processing, AI Ethics and Bias.

Reference Books

1 Data Structures and Algorithm Analysis in C++, Mark Allen Weiss, 3rd, Pearson Education India.

2 Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th, Pearson Education.

3 Hadoop: The Definitive Guide, Tom White, 4th, O Reilly.

4 Data Mining: Concepts and Techniques, Jiawei Han, Micheline Kamber, and Jian Pei, 3rd, Morgan Kaufmann.

5 Machine Learning: A Probabilistic Perspective, Kevin P. Murphy, 3rd, MIT Press.

Vijay Kumar
25/3/23
Dr. T. VIJAYA KUMAR
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, Vaddeswaram-522 302.

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No: 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME51A2 - OPERATIONS RESEARCH FOR ENGINEERS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME51A2	OPERATIONS RESEARCH FOR ENGINEERS	ORFE	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply various methods to find optimum solutions to Linear Programming Problems	3	PO2
CO2	Apply various methods to find optimal solutions for the problems in the field of Transportation and Assignment Problems	3	PO2
CO3	Apply various methods to find solutions to Game theory, Dynamic Programming, Queuing Theory, Inventory Control	3	PO2
CO4	Apply the concept of PERT/CPM for solving various projects	3	PO2
CO5	Apply mathematical concepts and modeling techniques to formulate and solve optimization problems encountered in real-world scenarios	3	PO2, PO3

Syllabus

Introduction, Modeling in Operations Research, Phases of OR study, Scope and application of OR. Linear Programming and its Applications: Linear Programming Problem Graphical solution of LP Problem. Simplex method, Big M method, two phase method, multiple solution, infeasible solution, unbounded solution, degeneracy, Dual Simplex method

Transportation: Introduction Methods of basic feasible solution, Optimality test, Degeneracy in transportation problem, unbalanced transportation Problem, Assignment Problems: Hungarian method for assignment problem, Traveling salesman problem.

Theory of Games: Introduction, to solve the rectangular two-person zero sum games, solution of rectangular games in terms of mixed strategies, solution of 2x2 games without saddle point, solution of a two person zero sum 2Xn game, Graphical method for 2Xn and nX2 games. Inventory Control: Introduction EOQ with uniform rate of demand, Economic lot size with finite rate of replenishment, Quantity discounts, Deterministic model with Shortages, ABC analysis of inventory.. Queuing Theory: Introduction, single channel, Poisson arrival, exponential service time with finite population and infinite population, And Application to Inventory Control.

Project Management by PERT/CPM: Introduction, simple network techniques, construction rules of drawing, Fulkerson rule, Critical path method (CPM) floats, critical path, project duration, PERT: Introduction, different Time estimates, expected time, variance, expected project duration and probability of completion. Crashing: Introduction, crashing of network problem

Reference Books

1 Operations Research, Hamdy Taha. 2007, Pearson.

2 Introduction to Operations Research, Hiller & Lieberman, 2002, Mc Graw Hill.

3 Operations Research, S D Sharma, 2020, Kedarnath Ramnath.

4 Operations Research, A M Natarajan, 2011, Pearson.

25/3/23

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as '**A++**' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME51A3 - MATERIALS AND PROCESS SELECTION FOR DESIGN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME51A3	MATERIALS AND PROCESS SELECTION FOR DESIGN	MPSFD	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the principles and methodologies of materials and process selection for designing mechanical components and systems.	2	PO1, PO2
CO2	Analyze and evaluate the properties, advantages, and limitations of different materials and select appropriate materials for specific applications.	4	PO1, PO2, PO3
CO3	Apply testing and characterization techniques to assess the mechanical, thermal, and chemical properties of materials for design purposes.	3	PO1, PO2, PO3
CO4	Evaluate and select suitable manufacturing processes based on design requirements, considering factors such as cost, quality, and scalability.	6	PO2, PO3
CO5	Apply materials and process selection techniques practically through case studies, lab experiments, and projects to solve real-world design problems.	3	PO2, PO3

Syllabus

Introduction to Materials Selection: Overview of materials properties, selection criteria, design considerations, and performance requirements.

Materials Classification and Evaluation: Study of different material classes, their properties, processing methods, and selection techniques.

Materials Testing and Characterization: Techniques for mechanical, thermal, and chemical characterization, and analyzing material behavior.

Process Selection for Design: Analysis of manufacturing processes, including casting, machining, forming, joining, and their selection for specific applications.

Practical Component: Hands-on exercises involving material testing, selection methods, and process evaluation through lab experiments and case studies.

Reference Books

1 Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives, Chris Mi, M. Abul Masrur, 2018, Wiley.

2 Design of Alternative Energy Systems: Second Edition, Mohammad Rasul, 2016, McGraw-Hill Education.

3 Fundamentals of Electric Vehicle Drives, Saeed Book Bank, 2017, CRC Press.

4 Hybrid and Electric Vehicles: Principles and Applications, Chris Mi, 2013, CRC Press.

5 Advanced Electric Drive Vehicles, Ali Emadi, 2014, CRC Press.

25/4/23

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

Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in

Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME52B1 - PLM ADVANCED CONCEPTS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52B1	PLM ADVANCED CONCEPTS	PLMAC	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Gain thorough knowledge of advanced Product Lifecycle Management (PLM) for optimizing processes, collaboration, and change management in complex product development lifecycles.	2	PO1, PO2
CO2	Master the use of PLM tools and software to streamline product development, foster cross-functional collaboration, and maintain effective data management and version control.	2	PO2, PO3
CO3	Gain expertise in analyzing PLM data to make informed decisions, optimize product designs, and enhance product quality, while complying with regulatory requirements and industry standards.	2	PO3, PO4
CO4	Apply advanced PLM methods like simulation, virtual validation, and service lifecycle management to foster innovation, speed up time-to-market, and improve customer satisfaction via optimized product lifecycles.	3	PO3, PO4
CO5	Acquire practical experience using advanced Product Lifecycle Management (PLM) tools in labs, applying methodologies to manage lifecycles, streamline processes, enhance collaboration, and optimize designs.	3	PO1, PO4

Syllabus

Introduction to Product Lifecycle Management (PLM) Overview of PLM and its role in product development and management Key concepts of PLM, including product data management, collaboration, and integration Benefits and challenges of implementing PLM systems in organizations PLM standards and best practices

PLM Process and Workflow Management Designing and optimizing product development processes using PLM Workflow automation and task management in PLM systems Change management and configuration control in PLM Collaboration and communication tools in PLM

PLM Process and Workflow Management Designing and optimizing product development processes using PLM Workflow automation and task management in PLM systems Change management and configuration control in PLM Collaboration and communication tools in PLM

PLM Process and Workflow Management Designing and optimizing product development processes using PLM Workflow automation and task management in PLM systems Change management and configuration control in PLM Collaboration and communication tools in PLM

Reference Books

1. "Product Lifecycle Management: Paradigm for 21st Century Product Realisation" , John Stark, , 2005, Springer.
2. "Product Lifecycle Management: Driving the Next Generation of Lean Thinking" , Michael Grieves , 2006 , McGraw-Hill Education.
3. "Product Lifecycle Management: Towards Knowledge-Rich Enterprises", John Stark , 2011 , Springer.
4. 4 "Product Lifecycle Management: A Digital Journey using Industrial Internet of Things" , Amit Sharma and Abdulrahman Al-Ahmari , 2021 , Springer.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23ME52B2 - MACHINE TOOL DESIGN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52B2	MACHINE TOOL DESIGN	MTD	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand working and auxiliary motions and General requirement of machine tools	2	PO1, PO2
CO2	Understand machine tool Structures by considering static and dynamic stiffness	2	PO1, PO2
CO3	Understand Controlling systems in Machine Tools	2	PO1, PO2
CO4	Understand Vibration in Machine Tools	2	PO1, PO2
CO5	Analyze a machine tool for essential requirements such as rigidity, precision, and reliability	4	PO1, PO2

Syllabus

General classification of machine tools, working and auxiliary motions, Hydraulics transmission and its elements, Mechanical transmission and its elements, General requirement of machine tools

Machine tool Structures: Design criteria, materials, static and dynamic stiffness, Basic dynamic stiffness, Basic design procedure, design of beds and columns, Model technique in design of machine tool structures

Controlling systems in Machine Tools Classification, Control systems for changing speeds and feeds, Ergonomic considerations applied to design of control members, principles of automatic and adaptive control

Vibration in Machine Tools Forced Vibration, self-excited vibration, stick-slip vibration and its minimization, vibration isolation

Reference Books

1 Machine Tools Design, N. K. Meheta, 4th, Tata McGraw-Hil.

2 Design of Machine Tools, S. K. Basu, D. K. Pal, 5th, OIBH.

3 Principles of Machine Tools, G. C. Sen, Bhattacharya, 6th, New Central Book Agency.

4 Machining and Machine Tools, A. B.Chattopadhyay, 5th, Wiley-India Publication.

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

Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA

Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in; www.kluniversity.in

Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME52B3 - RELIABILITY AND LIFE TESTING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52B3	RELIABILITY AND LIFE TESTING	RLT	R	2	0	2	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand Reliability concepts and Reliability estimation based on failure times in various censored life tests	2	PO1, PO2
CO2	Understand Accelerated life testing, non-parametric methods, and common life distributions	2	PO1, PO2
CO3	Understand structural and reliability importance of components and bounds on system reliability	2	PO1, PO2
CO4	Understand Bayes estimator, Weibull for exponential and normal life mode	2	PO1, PO2
CO5	Analyze reliability concepts in FMCG Industries	4	PO1, PO2

Syllabus

Reliability concepts, remaining lifetime, mean time between failure (MTBF), hazard function (HF), bath shape HF, Reliability in terms of HF. Reliability estimation based on failure times in various censored life tests; stress-strength reliability and its estimation

Life distribution: reliability function; hazard rate; common life distributions Exponential, Weibull, gamma, Pareto, and lognormal distributions. Accelerated life testing, non-parametric methods

Reliability concepts and measures; components and systems; coherent systems; reliability of coherent systems; cuts and paths, modular decomposition, bounds on system reliability, structural and reliability importance of components.

Bayes estimator, for exponential, negative exponential, Weibull, and normal life model. Estimation of survival function Actuarial Estimator

Reference Books

1. Reliability and Life Testing, S.K. Sinha, 4th;2010, Wiley Eastern Ltd.
2. Reliability in Engineering Design, K.C. Kapur and L.R. Lamberson, 4th;2009, John Wiley and Sons.
3. Reliability Engineering, E Balagurusamy, 5th;2017, Tata McGraw-Hil.
4. Statistical Design and Analysis of Engineering Experiments, C. Lipson and N.J. Sheth, 4th; 2007, McGraw-Hill Kogakusha Ltd.

Dr. T. VIJAYA KUMAR

HOD

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23ME52C1 - DESIGN FOR MANUFACTURING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52C1	DESIGN FOR MANUFACTURING	DFM	R	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Identify the principles and methodologies of Design for Manufacturing (DFM) and its impact on manufacturing processes	3	PO1, PO2, PO3
CO2	Apply design techniques for optimizing part geometry, tolerances, and surface finish to improve manufacturability in machining processes	3	PO2, PO3, PO4
CO3	Develop and incorporate design considerations for casting, forging and sheet metal forming processes	3	PO2, PO3, PO4
CO4	Make use of the design constraints and opportunities of Additive Manufacturing (AM) techniques in product development	3	PO1, PO2, PO3
CO5	Apply DFM principles through case studies, hands-on exercises and software simulations to optimize manufacturing processes	3	PO2, PO4, PO5

Syllabus

Introduction to Design for Manufacturing (DFM) principles and methodologies. Understanding the impact of design decisions on manufacturing processes

Design for Machining: Optimizing part geometry, tolerances, and surface finish requirements to improve manufacturability using machining processes

Design for Casting and Forming: Considerations for designing parts for casting, forging, and sheet metal forming processes

Design for Additive Manufacturing (AM): Exploring the design constraints and opportunities for utilizing AM techniques in product development

Practical Component: Application of DFM principles through case studies, hands-on exercises, and software simulations for manufacturing process optimization

Reference Books

1 Design for Manufacturability Handbook , James G. Bralla , Revised, McGraw-Hill Education.

2 Design for Manufacturability and Statistical Design , Scott K. Johnson, 2019, CRC Press

3 Design for Manufacturing and Assembly, Geoffrey Boothroyd, Peter Dewhurst, Winston A. Knight, Revised, Marcel Dekker Inc. .

4 Design for Manufacturing: A Structured Approach, Corrado Poli , Revised, Springer.

5 Additive Manufacturing Technologies: Rapid Prototyping to Direct Digital Manufacturing, Ian Gibson, David W. Rosen, Brent Stucker, 2014, Springer.

25/3

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 2500122, 2577715, 2576129

23ME52C2 - LEAN MANUFACTURING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52C2	LEAN MANUFACTURING	LMF	R	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand Lean principles and tools for waste reduction, enhancing efficiency, and fostering a culture of continuous improvement in manufacturing environments.	2	PO1, PO2
CO2	Understand Lean methodologies like 5S, Kaizen, and Value Stream Mapping to optimize processes, reduce lead times, and improve overall productivity.	2	PO3, PO5
CO3	Understand leadership skills to champion Lean initiatives, cultivate a culture of employee engagement, and drive sustainable organizational improvement.	2	PO6
CO4	Apply practical knowledge of Lean implementation strategies to streamline operations, minimize costs, and maximize value for stakeholders and customers.	3	PO2
CO5	Apply practical skills in applying lean manufacturing principles and tools to improve efficiency, reduce waste, and optimize processes through hands-on lab activities.	3	PO1, PO2

Syllabus

An overview of Lean principles and philosophy, highlighting key concepts like waste reduction, value stream mapping, and continuous improvement. It covers strategies for boosting efficiency, optimizing processes, and fostering a culture of ongoing improvement.

Explore 5S methodology, Kaizen events, and Poka-yoke techniques. Understand Kanban systems for effective inventory management, focusing on organizational practices, continuous improvement, error-proofing processes, and visual workflow management to enhance operational efficiency.

Examine process flow, compare current and future state mapping, and apply VSM. Focus on improving process efficiency and eliminating waste through detailed analysis and strategic implementation of value stream mapping techniques.

Explore the essential role of leadership in implementing Lean methodologies, emphasizing the cultivation of a culture centered on continual improvement and the empowerment of employees to actively participate and contribute to Lean initiatives.

Reference Books

1. Lean Thinking: Banish Waste and Create Wealth in Your Corporation, James P. Womack, Daniel T. Jones , 2003, Free Press.
2. The Machine That Changed the World: The Story of Lean Production, James P. Womack, Daniel T. Jones, Daniel Roos , 1990, Free Press.
3. Lean Production Simplified: A Plain-Language Guide to the World's Most Powerful Production System, Pascal Dennis, 2015, Productivity Press.
4. Lean Thinking: Banish Waste and Create Wealth in Your Corporation , James P. Womack and Daniel T. Jones , 2003, Free Press.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖ Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME52C3 - DIMENSIONAL MANAGEMENT (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52C3	DIMENSIONAL MANAGEMENT	DM	R	3	0	2	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the Principles of Dimensional Management	2	PO2, PO3
CO2	Apply Geometric Dimensioning and Tolerancing (GD&T) Standards	3	PO2, PO3
CO3	Identify and Utilize Dimensional Measurement Techniques	3	PO2, PO3
CO4	Implement Statistical Process Control (SPC) Techniques	3	PO2, PO3
CO5	Conduct Practical Dimensional Measurements and Analysis	3	PO2, PO3

Syllabus

Fundamentals of Dimensional Management: Understand principles; importance in manufacturing and engineering processes.

GD&T Application and Interpretation: Apply GD&T; ensure accurate communication of dimensional specifications in engineering drawings.

Dimensional Measurement Tools and Techniques: Identify and use various measurement tools; ensure product quality.

SPC Implementation in Manufacturing: Implement SPC techniques; monitor processes to meet dimensional specifications and improve quality.

Reference Books

1 Fundamentals of Dimensional Management, Mark Curtis , 2018, CRC Press.

2 GD&T Application and Interpretation, Bruce A. Wilson, 2020, ASME Press.

3 Dimensional Measurement Tools and Techniques, Roger L. Barker, 2019 , Wiley-IEEE Press.

4 SPC Implementation in Manufacturing, Douglas C. Montgomery, 2016, John Wiley & Sons.

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

Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA

Phone No. 08645 - 350200 www.klef.ac.in, www.klef.edu.in; www.kluniversity.in

Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002 Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME52D1 - CUSTOMIZATION OF PLM SOFTWARE (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52D1	CUSTOMIZATION OF PLM SOFTWARE	CPLMS	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand PLM Software Customization Principles and Techniques	2	PO1, PO2, PO4
CO2	Customise CAD and CAE Software for Product Development	3	PO1, PO2, PO4
CO3	Apply Programming Concepts and Tools in PLM Software Customization	3	PO1, PO2, PO4
CO4	Integrate of PLM Software with External Systems	4	PO1, PO2, PO4

Syllabus

Introduction to Customization of PLM Software, Introduction to customization: Need and types, Basic customization concepts, Common customization tasks, Software engineering concepts ,

Customization of CAD Modeling Software, Overview of CAD modeling software customization, System development and general-purpose customization tools, Customization of a specific CAD software (e.g., NX, CATIA)

Customization of CAE Software, Overview of CAE software customization, Introduction to CAE software (e.g., ANSYS, Hypermesh, NASTRAN), Customization techniques and tools for CAE software

Customization of PLM Software, Customization of Teamcenter (TC) using BMIDE, ITK, and rich/thin clients, Understanding the architecture and POM schema of PLM software (TC), Overview of customization in other PLM software (e.g., Enovia/Smarteam, Windchill PLM, ARAS), Integration of Teamcenter with other software systems.

Reference Books

1. Cad/Cam: Principles And Applications, P. N. Rao, 1st, 2010, MC GRAW HILL INDIA.
2. Product Lifecycle Management: Driving the Next Generation of Lean Thinking, Michael Grieves, 1st Edition, 2005, McGraw-Hill Education.
3. Engineering Design with SolidWorks 2022 and Video Instruction, David Planchard, 1st, 2022 Edition, SDC Publications.
4. Finite Element Modeling and Simulation with ANSYS Workbench, Xiaolin Chen, Yijun Liu, 1, 2nd Edition, 2018, CRC Press.
5. Teamcenter Engineering and Product Lifecycle Management Basics, Stephen M. Samuel, Saeed E. Barbat, 1st Edition, 2019, Createspace Independent Publishing Platform.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No: 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME52D2 - COMPOSITES: DESIGN AND MANUFACTURING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52D2	COMPOSITES: DESIGN AND MANUFACTURING	CDM	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the concept of Composite materials, Classifications and Manufacturing Processes	2	PO2, PO6
CO2	Apply the micro-mechanics concept to study the structural behavior of composite Lamina	3	PO2, PO6
CO3	Apply the macro-mechanics concept to study the structural behavior of composite Lamina	3	PO2, PO6
CO4	Apply Failure theories to calculate stresses in composite materials	3	PO2, PO6

Syllabus

Introduction to composite materials, Geometric definitions, Classification of composites, Types of fibers, Types of the matrix, Hybrid composite, Scale of analysismicro and macro mechanics approaches, Degree of Anisotropy, Manufacturing methods of the composites, Autoclave molding, Filament winding, and Resin transfer molding.

Elastic behavior of composite lamina (Micro-mechanics), Micro-mechanics methods, Geometric aspects and elastic symmetry, Longitudinal elastic properties (Continuous fibers), Transverse elastic properties, In-plane shear properties (Continuous fibers), Longitudinal properties (short fibers)

Elastic behavior of composite lamina (Macro mechanics approach), Stress-Strain relations: General anisotropic material, Specially orthotropic material, Transversely isotropic material, Orthotropic material under plane stress, Isotropic material.

Standard sizes of the specimen for tensile and compressive, Fatigue tests, and Impact tests of uni-directional composites. Experimental methods for characterization and testing of composite materials. Failure of the composite materials: fiber failures, matrix failure, interface failure. Failure Theories: Tsai-Wu, Tsai-Hill, Puck criterion, Maximum stress, maximum strain.

Reference Books

1 Engineering Mechanics of Composite Materials, Issac Daniel & Ori Ishai, 2nd Edition July 2005, OU publisher.

2 Mechanics of Composite Materials, Autar K. Kaw, 2nd Edition NOV 2012, Taylor & Francis.

3 Mechanics of Composite Materials, R.M. Jones, 2nd July 1988, Taylor & Francis.

4 Composite Materials, N. Chawla and K.K. Chawla, 3rd Edition 2013, Springer.

5 Mechanics of Composite Materials & Structures, Madhujit Mukhopadhyay, 1st edition 2005, University Press.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as "A++" ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME52D3 - PRECISION AND QUALITY ENGINEERING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME52D3	PRECISION AND QUALITY ENGINEERING	PQE	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand how to use various measuring tools effectively on machines and instruments for accurate and precise measurements and assessments.	2	PO2, PO3
CO2	Understand the various methods and address the issues related to Quality Control to ensure consistent and reliable product standards.	2	PO2, PO3
CO3	Relate the relationship between Quality and Reliability, exploring their interplay and associated failure modes for comprehensive understanding.	2	PO2, PO3
CO4	Understand the principles of the ISO 9000 series to effectively implement total quality management practices within organizational frameworks and processes.	2	PO2, PO3

Syllabus

INTRODUCTION: Importance of Precision Engineering, Tolerance and Technology, Definition of Tolerance, Impact of specifying Tolerance. MEASUREMENT OF PRECISION: Application of displacement transducers to machines and instruments, Introduction to Precision Machine Design, Principles of Precision of Machine Design, Principle of Accuracy, Repeatability and resolution.

INTRODUCTION TO QUALITY: Quality of design, Quality of Conformance to Design, Quality of Performance, Growth of Quality Control, Process Monitoring, Acceptance Sampling, Quality of Performance Reliability, Management of Quality, Quality and Productivity.FUNDAMENTALS OF STATISTICS AND PROBABILITY IN QUALITY CONTROL

STATISTICAL QUALITY CONTROL: Variability in Materials, Machines and people, Statistical Understanding of Variability, Basic form of control chart, use of Control charts, Development of a Control Chart, Control charts for Variable and attributes. BASIC CONCEPT OF RELIABILITY: Introduction, Reliability and Quality, Failures and Failure Modes, Causes of Failures and Unreliability, maintainability and Availability, History of Reliability, Reliability literature.

TOTAL QUALITY MANAGEMENT: objectives and principles of Total Quality Management (TQM), effective management strategies, TQM implementation methods, an overview of the ISO 9000 series, its introduction, defining characteristics, and the areas it covers.

Reference Books

1 Precision Engineering in Manufacturing, Murthy R. L., 1996, New Age International (P) limited.

2 Geometric Dimensioning and Tolerancing, James D. Meadows, 1995, Marcel Dekker inc..

3 Precision Engineering, VC Venkatesh& S Izman, 2012, TMH.

4 Introduction to Statistical Quality Control, Douglas C Montgomery, 2012, John Wiley.

5 Statistical Quality Control, Grant E.L. and Leavensworth, 2000, TMH.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002 Ph: +91 - 866 - 3500122, 2577715, 2576129

23ME53E1 - ENTERPRISE RESOURCE PLANNING FOR MECHANICAL ENGINEERS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME53E1	ENTERPRISE RESOURCE PLANNING FOR MECHANICAL ENGINEERS	ERPME	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the concept of Enterprise Resource Planning (ERP) and its significance in modern organizations	2	PO1
CO2	Understand the different modules of ERP systems, including Finance, Plant Maintenance, Quality Management, and Materials Management	2	PO1
CO3	Understand ERP Implementation Lifecycle and ERP Case studies	2	PO2
CO4	Understand E-Business Architecture and the role of ERP in e governance	2	PO2

Syllabus

Introduction to ERP: Enterprise An Overview, Integrated Management Information, Business Modeling, Integrated Data Model, ERP and Related Technologies. Business Processing Reengineering(BPR), Data Warehousing, Data Mining, Online Analytical Processing (OLAP), Supply Chain Management (SCM),Customer Relationship Management(CRM), Management Information System, Decision Support System, Executive Information System

ERP Manufacturing Prospective: Material Requirement Planning, Bill Of Material, Manufacturing Resource Planning, Distributed Requirement Planning, Product Data Management ERP Modules: Finance, Plant Maintenance, Quality Management, Materials Management, Benefits of ERP Reduction of Lead Time, On time Shipment, Reduction in Cycle Time, Improved Resource Utilization, Better Customer Satisfaction, Improved Supplier Performance, Increased Flexibility, Reduced Quality Costs, Improved Information Accuracy and Design making Capability

ERP Implementation Lifecycle: Pre evaluation Screening, Package Evaluation, Project Planning Phase, Gap Analysis, Reengineering, Configuration, Implementation Team Training, Testing, Going Live, End-user Training, Post implementation (Maintenance mode) ERP Case studies: E Commerce to E business, E Business structural transformation, Flexible Business Design, Customer Experience, Create the new techo enterprise, New generation e business leaders, memo to CEO, Empower your customer, Integrate Sales and Service, Integrated Enterprise applications

E Business Architecture Enterprise resource planning the E business Backbone Enterprise architecture planning, ERP usage in Real world, ERP implementation, Future of ERP applications ,memo to CEOE Procurement, E Governance, Developing the E Business Design, Introduction to ERP tools JDEdwards, Enterprise One, Microsoft Dynamic CRM module

Reference Books

1 Concepts in Enterprise Resource Planning, Ellen F. Monk, Bret J. Wagner, 4: 2013, Course Technology Cengage Learning.

2 Enterprise Resource Planning, Bret Wagner, Ellen Monk, 5: 2008, Cengage Learning.

3 Enterprise Resource Planning Fundamentals of Design and Implementation, K. Ganesh, Sanjay Mohapatra, S. P. Anbuudayasankar, P. Sivakumar, 2: 2014, Springer International Publishing.

4 Enterprise Resource Planning Systems, Daniel E. O'Leary, 2: 2002, Cambridge University Press.

25/3/23

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as "**A++**" ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23ME53E2 - ROBOTICS AND AUTOMATION (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23ME53E2	ROBOTICS AND AUTOMATION	RAA	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Able to Apply the concepts of transfermation to check the orientation of robots	3	PO2, PO3, PO6
CO2	Able to aplly the concept of DH notation to check the robot kinematics & its feasbility	3	PO2, PO3, PO6
CO3	Able to apply the concept of design consideration to generate the Material handling cells	3	PO2, PO3, PO6
CO4	Able to understand the concept of automated production lines and FMS	2	PO2, PO3, PO6

Syllabus

Introduction: Definitions, Types of Robots, Application of Robots, Representing Position and Orientation, Representing Pose in 2-Dimensions, Representing Pose in 3-Dimensions, Representing Orientation in 3-Dimensions, Combining Translation and Orientation.

Describing a Robot Arm, Forward Kinematics, A 2-Link Robot, A 6- Axis Robot, Inverse Kinematics, Closed-Form Solution, Numerical Solution, Under-Actuated Manipulator, Redundant Manipulator, Trajectories, Joint-Space Motion, Cartesian Motion, Motion through a Singularity.

Automation in Production System, Manual Labor in production systems ,Principles and Strategies of Automation, Basic Elements of An Automated System, Levels of Automation, Material Handling systems, Design considerations in Material handling system and principles and design consideration and sample problems

Fundamentals of Automated Production Lines, Applications Of Automated production lines, System configurations, Work Part Transfer Mechanisms, Storage Buffers, Introduction to FMS, FMS Industrial Applications and its benefits, FMS components.

Reference Books

1. Automation, Production Systems and Computer Integrated Manufacturing, M. P. Groover, 2009, Pearson Education.
2. Robotics, Vision and Control: Fundamental Algorithms in MATLAB, Peter Corke, 2011, Springer Tracts in Advanced Robotics.
3. Robotics, control vision and intelligence, Fu, Lee and Gonzalez, 2007, McGraw Hill International.
4. Introduction to Robotics, John J. Craig, 2010, Addison Wesley Publishing.

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

KLEF

DEPARTMENT OF MECHNAICAL ENGINEERING

2023-24 M.Tech-Machine Design Course Structure

SEM	Sl No	Course	COURSE CODE	COURSE NAME	Mode	L	T	P	S	Cr	CH	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback Given by	Justification
1	1	AUC	23UC5201	PROFESSIONAL COMMUNICATION SKILLS	R/M	0	0	4	0	0	4	Employability	New Course	PG Coordinator-Dr.Diwakar	As per the feedback given by PG coordiantor it is resolved to offer this course to PG stiudents university wide to make them ready for the placement drives
2	2	AUC	23MD5101	DESIGN OF EXPERIMENTS	R/M	0	0	4	0	0	4	Skill Development	New Course	PG Coordinator-Dr.Diwakar	As per the feedback, this course enables students to do their projects effectively
				Total		**0**	**0**	**8**	**0**	**0**	**8**				
1	3	ESC	23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4	Employability	Retained		
				Total		**2**	**2**	**0**	**0**	**4**	**4**				
1	4	PCC	23ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS	R	2	0	2	4	4	8	Skill Development	Retained		
1	5	PCC	23MD5102	ROBOTICS MANIPULATOR DESIGN AND ANALYSIS	R	3	0	2	0	4	5	Skill Development	Retained		
1	6	PCC	23MD5103	MECHANICAL BEHAVIOUR OF MATERIALS	R	3	1	0	0	4	5	Employability	Retained		
2	7	PCC	23MD5204	ADVANCED STRENGTH OF MATERIALS	R	3	0	2	0	4	5	Skill Development	Retained		
2	8	PCC	23MD5205	MECHANICAL VIBRATIONS	R	2	0	2	0	3	4	Skill Development	Retained		
				Total		**13**	**1**	**8**	**4**	**19**	**27**				
1	9	PE-1		PROFESSIONAL ELECTIVE-I	R	2	0	2	0	3	4				
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				
2	12	PE4		PROFESSIONAL ELECTIVE-4	R/M	3	0	0	0	3	3				
3	13	PE5		PROFESSIONAL ELECTIVE-5	M	3	0	0	0	3	0				
				Total		**13**	**0**	**6**	**0**	**16**	**16**				
1	14	PRI	23IE5201	ESSENTIALS OF RESEARCH DESIGN	R	1	1	0	0	2	2	Employability	New course	PG Coordinator-Dr.Diwakar	As per the feedback received, this course enables PG students to pursue their higher studies
2	15	PRI	23IE5149	TERM PAPER	R	0	0	8	0	4	8	Skill Development	Retained		

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

3	16	PRI		DISSERTATION	R	0	0	32	0	16	24	Skill Development	Retained		
4	17	PRI		DISSERTATION	R	0	0	32	0	16	24	Skill Development	Retained		
Total						**1**	**1**	**72**	**0**	**38**	**58**				
4	18	OE		OPEN ELECTIVE	M	3	0	0	0	3	0				
Total						**3**	**0**	**0**	**0**	**3**	**0**				
GRAND TOTAL						**32**	**4**	**94**	**4**	**80**	**113**				

LIST OF PROFESSIONAL ELECTIVES FOR Y23 M.TECH-MD PROGRAM

PE#	COURE CODE	COURSE TITLE	L	T	P	S	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback Given by	Justification
PE-1	23MD51A1	LEAN MANUFACTURING	2	0	2	0	Skill Development	Retained		
	23MD51A2	PRECISION AND QUALITY ENGINEERING	2	0	2	0	Skill Development	Retained		
	23MD51A3	BEHAVIOUR OF COMPOSITE MATERIALS	2	0	2	0	Skill Development	Retained		
PE-2	23MD52B1	DESIGN FOR MANUFACTURING	2	0	2	0	Skill Development	Retained		
	23MD52B2	DESIGN FOR SUSTAINABILITY	2	0	2	0	Skill Development	Retained		
	23MD52B3	CONCURRENT MANUFACTURING	2	0	2	0	Skill Development	Retained		
	23MD52C1	ADVANCED FINITE ELEMENT ANALYSIS	3	0	2	0	Skill Development	Retained		

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

PE-3	23MD52C2	FRACTURE MECHANICS	3	0	2	0	Skill Development	Retained		
	23MD52C3	TRIBOLOGICAL SYSTEM DESIGN	3	0	2	0	Skill Development	Retained		
PE-4	23MD52D1	DESIGN OF PRESSURE VESSELS AND PLATES	3	0	0	0	Employability	Retained		
	23MD52D2	ENGINEERING FAILURE ANALYSIS AND PREVENTION	3	0	0	0	Employability	Retained		
	23MD52D3	MODELING AND SIMULATION OF MECHATRONIC SYSTEMS	3	0	0	0	Employability	Retained		
PE-5	23MD53E1	DESIGN OF HYBRID VEHICLES	3	0	0	0	Employability	New Course	PG Coordinator	As per the feedack received, this course will make students to acquire knowledge the design of hybrid vehicles
	23MD5205	ENTERPRISE RESOURCES PLANNING FOR MECHANICAL ENGINEERS	3	0	0	0	Entrepreneurship	New Course	PG Coordinator	As per the feedack received, this course enables studetns to enhance their entrepreneurship skills
	23MD52E2	INTERNET OF THINGS IN INDUSTRIES	3	0	0	0	Employability	New Course	PG Coordinator	As per the feedack received, this course will make students to acquire knowledge on internet of things in industries

Total no. of courses	28
No.of new courses	6
No.of courses revised	0
% of Syllabus Revision	21.43
% of courses focussing on Employability	32.14
% of courses focussing on Entrepreneurship	3.57
% of courses focussing on Skill Development	67.86

Dr. T. VIJAYA KUMAR 25/3
HOD-Mechanical Engineering

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No 08645 - 350200, www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002 Ph: +91 - 866 - 3500122, 2577715, 2576129

Y23 M.TECH- MACHINE DESIGN NEW COURSES SYLLABUS

23MD53E1 - DESIGN OF HYBRID VEHICLES (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MD53E1	DESIGN OF HYBRID VEHICLES	DHV	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply theoretical knowledge and engineering principles to design and analyze hybrid vehicles.	4	PO1, PO2
CO2	Demonstrate proficiency in using industry-standard software for hybrid vehicle design and simulation.	5	PO2, PO5
CO3	Develop critical thinking and problem-solving skills related to hybrid vehicle design.	6	PO5
CO4	Apply engineering ethics and sustainability principles in the design of hybrid vehicles.	3	PO5

Syllabus

Introduction to Hybrid Vehicles: Hybridization principles, hybrid vehicle architectures, energy management strategies, and the role of hybridization in sustainable transportation.

Hybrid Powertrain Technologies: Study of internal combustion engines, electric motors, batteries, power electronics, and control systems used in hybrid vehicle propulsion systems.

Hybrid Vehicle Design: Design considerations for hybrid vehicle components, including powertrain, regenerative braking systems, energy storage, and system integration.

Hybrid Vehicle Control Systems: Control strategies for hybrid vehicles, optimization techniques, energy management algorithms, and vehicle performance analysis.

Reference Books

1 "Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives", Chris Mi, M. Abul Masrur, 2018, Wiley.

2 "Design of Alternative Energy Systems: Second Edition", Mohammad Rasul, 2016, McGraw-Hill Education.

3 "Fundamentals of Electric Vehicle Drives", Saeed Book Bank, 2017, CRC Press.

4 "Hybrid and Electric Vehicles: Principles and Applications", Chris Mi, 2013, CRC Press.

5 "Advanced Electric Drive Vehicles", Ali Emadi, 2014, CRC Press.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002 Ph: +91 - 866 - 3500122, 2577715, 2576129

23MD53E2 - ENTERPRISE RESOURCE PLANNING FOR MECHANICAL ENGINEERS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MD53E2	ENTERPRISE RESOURCE PLANNING FOR MECHANICAL ENGINEERS	ERPME	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the concept of Enterprise Resource Planning (ERP) and its significance in modern organizations	2	PO3
CO2	Understand the different modules of ERP systems, including Finance, Plant Maintenance, Quality Management, and Materials Management	2	PO3
CO3	Understand ERP Implementation Lifecycle and ERP Case studies	2	PO3
CO4	Understand E-Business Architecture and the role of ERP in e governance	2	PO3

Syllabus

Introduction to ERP: Enterprise An Overview, Integrated Management Information, Business Modeling, Integrated Data Model, ERP and Related Technologies. Business Processing Reengineering(BPR), Data Warehousing, Data Mining, Online Analytical Processing (OLAP), Supply Chain Management (SCM),Customer Relationship Management(CRM), Management Information System, Decision Support System, Executive Information System

ERP Manufacturing Prospective: Material Requirement Planning, Bill Of Material, Manufacturing Resource Planning, Distributed Requirement Planning, Product Data Management ERP Modules: Finance, Plant Maintenance, Quality Management, Materials Management, Benefits of ERP Reduction of Lead Time, On time Shipment, Reduction in Cycle Time, Improved Resource Utilization, Better Customer Satisfaction, Improved Supplier Performance, Increased Flexibility, Reduced Quality Costs, Improved Information Accuracy and Design making Capability

ERP Implementation Lifecycle: Pre evaluation Screening, Package Evaluation, Project Planning Phase, Gap Analysis, Reengineering, Configuration, Implementation Team Training, Testing, Going Live, End-user Training, Post implementation (Maintenance mode) ERP Case studies: E Commerce to E business, E Business structural transformation, Flexible Business Design, Customer Experience, Create the new techo enterprise, New generation e business leaders, memo to CEO, Empower your customer, Integrate Sales and Service, Integrated Enterprise applications

E Business Architecture Enterprise resource planning the E business Backbone Enterprise architecture planning, ERP usage in Real world, ERP implementation, Future of ERP applications ,memo to CEOE Procurement, E Governance, Developing the E Business Design, Introduction to ERP tools JDEdwards, Enterprise One, Microsoft Dynamic CRM module

Reference Books

1. Concepts in Enterprise Resource Planning, Ellen F. Monk, Bret J. Wagner , 4: 2013, Course Technology Cengage Learning.
2. Enterprise Resource Planning, Bret Wagner, Ellen Monk, 5: 2008, Cengage Learning.
3. Enterprise Resource Planning Fundamentals of Design and Implementation, K. Ganesh, Sanjay Mohapatra, S. P. Anbuudayasankar, P. Sivakumar , 2: 2014, Springer International Publishing.
4. Enterprise Resource Planning Systems, Daniel E. O'Leary, 2: 2002, Cambridge University Press.

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23MD53E3 - INTERNET OF THINGS IN INDUSTRIES (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23MD53E3	INTERNET OF THINGS IN INDUSTRIES	ITOI	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand architecture of IIoT and IIoT Components	2	PO1, PO2
CO2	Understand communication Technologies of IIoT	2	PO1, PO2
CO3	Apply Visualization concepts of IIoT to design a IIoT system	3	PO1, PO2
CO4	Apply IIoT technology to design a robotic system	3	PO1, PO2

Syllabus

Introduction to IIoT, the difference between IoT and IIoT, Architecture of IIoT, IOT node, Challenges of IIOT. Fundamentals of Control System, introductions, components, closed loop and open loop system. Introduction to Sensors, Types of sensors, working principle of basic Sensors Ultrasonic Sensor, IR sensor, MQ2, Temperature and Humidity Sensors.

Communication Protocols: IEEE 802.15.4, ZigBee, Z Wave, Bluetooth, BLE, NFC, RFID. Industry standards communication technology LoRAWAN, OPC UA, MQTT, connecting into existing Modbus and Profibus technology, wireless network communication.

Front end EDGE devices, Enterprise data for IIoT, Emerging descriptive data standards for IIoT, Cloud data base, could computing, Fog or Edge computing. Extraction from Web Grabbing the content from a web page, Sending data on the web, Types of IoT interaction, Machine to Machine interaction M2M.

Programmable logic controller (PLC), Real-time control system, Supervisory Control & Data Acquisition (SCADA). HMI in an automation process, ERP & MES. Case study: Health monitoring, Iot smart city, Smart irrigation, Robot surveillance.

Reference Books

1 The Internet of Things in the Industrial Sector, Zaigham Mahmood, 1, 2019, Springer.

2 Industrial Internet of Things: Cybermanufacturing System, Sabina Jeschke, 1, 2016, Springer.

3 Industrial IoT: Challenges, Design Principles, Applications, and Security, Ismail Butun, 1, 2020, Springer.

4 INTRODUCTION TO INDUSTRIAL INTERNET OF THINGS AND INDUSTRY 4.0, Sudip Misra, 1, 2020, CRC Press.

5 Industrial Internet of Things (IIoT), R. Anandan, 1, 2022, Wiley-Scrivener.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as '**A++**' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200, www.klef.ac.in, www.klef.edu.in; www.kluniversity.in
Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23IE5201 - ESSENTIALS OF RESEARCH DESIGN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23IE5201	ESSENTIALS OF RESEARCH DESIGN	ERD	R	1	1	0	0	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Analyze existing research to identify a focused and answerable research question or develop a well-defined hypothesis	4	PO1, PO2
CO2	Evaluate different research designs based on their strengths and weaknesses in relation to the chosen research question and data needs.	4	PO2, PO7
CO3	Apply appropriate data collection methods considering the chosen research design and data characteristics.	3	PO1, PO3
CO4	Analyze and interpret data using relevant data analysis methods to address the research question	4	PO3, PO7

Syllabus

Definition and objectives of Research Types of research, Various Steps in Research process, Applied Mathematical tools for analysis, developing a research question- Choice of a problem, Literature review, Surveying, Synthesizing, critical analysis, reading materials, reviewing, rethinking, critical evaluation, interpretation, Research Purposes. Ethics in research APA Ethics code.

Literature Review (LR) Meaning and its Types-Narrative and Systematic, LR using Web of Science, Google and Google Scholar, Citations-Types, referencing in academic writing, Citation vs Referencing Vs Bibliography, Citation tools Zotero, Qualitative Research and its methods, Quantitative Research, and its Methods. Data Collection-Primary data collection using Questionnaire, Google forms, survey monkey, Testing the validity and Reliability of Questionnaire using Factor Analysis and Cronbach\'s Alpha

Diagrammatic and graphical presentation of data: Diagrams and Graphs of frequency data of one variable- histogram, bar charts simple, sub divided and multiple; line charts, Diagrams and Graphs of frequency data of two variables scatter plot, preparing data for analysis. Concepts of Correlation and Regression, Fundamentals of Time Series Analysis and Error Analysis. Analysing data using one dimensional statistics, two-dimensional statistics and multidimensional statistics.

Technical Writing and Publishing, Conference presentations, Poster Presentations, Plagiarism check and tools, Self Plagiarism. Structure and Components of Research Report, Types of Report, Layout of Research Report, Mechanism of writing a research report, Design Thinking for Contextualized Problem Solving and Empathetic Research.

Reference Books

1 Business Research Methods , Donald R.Cooper, Pamela S. Schhindler, 12th , McGraw-Hill.

2 Research Methods, Nicholas Walliman,Routledge, 3rd, The Taylor & Francis Group.

3 Essentials of Research Design and Methodology, David DeMatteo,Geoffrey R. Marczyk, 4th, wiley .

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as '**A++**' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200, www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2578129

23UC5201 - PROFESSIONAL COMMUNICATION SKILLS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23UC5201	PROFESSIONAL COMMUNICATION SKILLS	PCS	R	0	0	4	0	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Develop the skill of contextual Vocabulary and Critical Reading	3	PO7
CO2	Demonstrate different types of personal and professional skills and apply them for growth in professional zone.	3	PO7
CO3	Apply the concepts of Mathematical Principles to solve problems on Arithmetic , Algebra & Geometry to improve problem solving ability.	3	PO3
CO4	Apply the concepts and using Logical thinking to solve problems on verbal & Non-Verbal Reasoning to develop Logical thinking skills.	3	PO3

Syllabus

Vocabulary: Synonyms, Antonyms and One-word substitutes, (B)Reading comprehension, Critical reading, (C) Writing skills: Email writing, report writing and paragraph writing (D) Listening/Speaking Skills: listen & speak, Functional grammar

- A)Personal Skills: Intra & Interpersonal skills (B) Assertiveness (C) Group Discussion (D) Resume writing (E) Video resumes (F) Interview skills

Simple Equations, Ratio & Partnership, Averages, Percentages, Profit & Loss, Simple & Compound Interest, Numbers, Quadratic Equations & Inequalities, Time & Work, Time, Speed & Distance, Permutations & Combinations, Probability, Mensuration, Data Interpretation.

Syllogism, Logical Venn Diagrams, Cubes & Dice, Number& letter series, Number, letter & word Analogy, Odd Man Out, Coding & Decoding, Blood Relations, Directions, clocks, calendars, Number, ranking & Time sequence test, Seating Arrangements, Data Sufficiency.

Reference Books

1 OBJECTIVE ENGLISH FOR COMPETITIVE EXAMINATION, HARI MOHAN PRASAD AND UMA SINHA, 2017, MC GRAW HILL.

2 55 ESSENTIAL TOOL FOR EVERY WRITER, ROY PETER CLARK, 2006, LITTLE BROWN AND COMPANY.

3 QUANTTAITIVE APTITUDE, ABHJITH GUPTA, 2017, MC GRAW HILL.

4 LOGICAL REASONING , ARUN SHARMA, 2006, MC GRAW HILL.

5 LOGICAL REASONING, PIYUSH BAHRADWAJ, 2006, ARIHANT PUBLICATIONS.

Dr. T. VIJAYA KUMAR 25/3/23
HOD-Mechanical Engineering
Koneru Lakshmaiah Education Foundation
(Deemed to be University)
Green Fields, VADDESWARAM-522 302

KLEF

DEPARTMENT OF MECHNAICAL ENGINEERING

2023-24 M.Tech-Thermal Engineering Course Structure

SEM	Sl No	Course	COURSE CODE	COURSE NAME	Mode	L	T	P	S	Cr	CH	Employability/Entrepreneurship/Skill Development	New/Retained/ Revised Course	Feedback Given by	Justification
1	1	AUC	23UC5201	PROFESSIONAL COMMUNICATION SKILLS	R/M	0	0	4	0	0	4	Employability	New Course	PG Coordinator-Dr.Diwakar	As per the feedback given by PG coordiantor it is resolved to offer this course to PG stiudents university wide to make them ready for the placement drives
2	2	AUC	23TE5101	SIMULATION OF ENERGY MANAGEMENT SYSTEMS	R/M	0	0	4	0	0	4	Skill Development	New Course	PG Coordinator-Dr.Diwakar	As per the feedback, this course will enable students to learn simulation of various energy systems
				Total		**0**	**0**	**8**	**0**	**0**	**8**				
1	3	ESC	23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4	Employability	Retained		
				Total		**2**	**2**	**0**	**0**	**4**	**4**				
1	4	PCC	23TE5102	DESIGN OF THERMAL SYSTEMS	R	2	0	2	4	4	8	Skill Development	Retained		
1	5	PCC	23TE5103	ADVANCED THERMODYNAMICS	R	3	0	2	0	4	5	Skill Development	Retained		
1	6	PCC	23TE5104	COMPUTATIONAL FLUID DYNAMICS	R	3	0	2	0	4	5	Skill Development	Retained		
2	7	PCC	23TE5205	ADVANCED HEAT AND MASS TRANSFER	R	3	0	2	0	4	5	Skill Development	Retained		
2	8	PCC	23TE5206	MEASUREMENTS IN THERMAL ENGINEERING	R	2	0	2	0	3	4	Skill Development	Retained		
				Total		**13**	**0**	**10**	**4**	**19**	**27**				
1	9	PE-1		PROFESSIONAL ELECTIVE-1	R	2	0	2	0	3	4				
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				
2	12	PE4		PROFESSIONAL ELECTIVE-4	R/M	3	0	0	0	3	3				
3	13	PE5		PROFESSIONAL ELECTIVE-5	M	3	0	0	0	3	0				
				Total		**13**	**0**	**6**	**0**	**16**	**16**				
1	14	PRI	23IE5201	ESSENTIALS OF RESEARCH DESIGN	R	2	0	0	0	2	2	Employability	New course	PG Coordinator-Dr.Diwakar	As per the feedback received, this course enables PG students to pursue their higher studies
2	15	PRI	23IE5149	TERM PAPER	R	0	0	8	0	4	8	Skill Development	Retained		
3	16	PRI		DISSERTATION	R	0	0	32	0	16	24	Skill Development	Retained		
4	17	PRI		DISSERTATION	R	0	0	32	0	16	24	Skill Development	Retained		
				Total		**2**	**0**	**72**	**0**	**38**	**58**				
4	20	OE		OPEN ELECTIVE	M	3	0	0	0	3	3				
				Total		**3**	**0**	**0**	**0**	**3**	**3**				
Grand Total						**33**	**2**	**96**	**4**	**80**	**116**				

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

LIST OF PROFESSIONAL ELECTIVES FOR Y23 M.TECH-TE PROGRAM

PE3	Course Code	COURSE TITLE	L	T	P	S	Employability/Entrepreneurship/Skill Development	New/Retained/Revised Course	Feedback Given by	Justification
PE-1	23TE51A1	GAS TURBINE ENGINEERING	2	0	2	0	Skill Development	Retained		
	23TE51A2	ELECTRIC VEHICLE ENGINEERING	2	0	2	0	Skill Development	New Course	Dr.V.L.Mangesh	As per the feedback received this elective course is offered to make students aware of electric vehicle technology
	23TE51A3	ENERGY CONSERVATION & AUDIT	2	0	2	0	Skill Development	Retained		
PE-2	23TE52B1	ADVANCED ENERGY STORAGE TECHNOLOGIES	2	0	2	0	Skill Development	Retained		
	23TE52B2	FOOD PROCESSING, PRESERVATION AND TRANSPORT	2	0	2	0	Skill Development	Retained		
	23TE52B3	CONVECTION AND TWO-PHASE FLOW	2	0	2	0	Skill Development	Retained		
PE-3	23TE52C1	RENEWABLE ENERGY SOURCES & TECHNOLOGY	3	0	2	0	Skill Development	Retained		
	23TE52C2	PRINCIPLES OF TURBO MACHINERY	3	0	2	0	Skill Development	Retained		
	23TE52C3	HEAT EXCHANGER DESIGN	3	0	2	0	Skill Development	Retained		
PE-4	23TE52D1	REFRIGERATION AND CRYOGENICS	3	0	0	0	Employability	Retained		
	23TE52D2	AIR CONDITIONING SYSTEMS	3	0	0	0	Employability	Retained		
	23TE52D3	SOLAR ENERGY & SYSTEMS	3	0	0	0	Employability	Retained		
PE-5	23TE53E1	HYDROGEN AND FUEL CELLS	3	0	0	0	Employability	Retained		
	23TE53E2	AIRCRAFT & JET PROPULSION SYSTEMS	3	0	0	0	Entrepreneurship	New Course	PG Coordiantor	As per the feedack received, this course is offered to enable students understand the principles of aircraft and jet propulsion

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

	23TE53E3	BATTERY AND THERMAL MANAGEMENT SYSTEMS	3	0	0	0	Employability	New Course	PG Coordiantor	As per the feedack received, this course is offered since it is necessary to understand the battery and thermal management systems

Total no. of courses	28
No.of new courses	6
No.of courses revised	0
% of Syllabus Revision	21.43
% of courses focussing on Employability	26.67
% of courses focussing on Entrepreneurship	3.33
% of courses focussing on Skill Development	66.67

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

Y23 M.THERMAL ENGINEERING NEW COURSES SYLLABUS

23TE53E2 - AIRCRAFT AND JET PROPULSION SYSTEMS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23TE53E2	AIRCRAFT AND JET PROPULSION SYSTEMS	AJPS	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Analyze the Air craft and jet propulsion systems and its applications.	4	PO1, PO2, PO4
CO2	Applying the One Dimensional Flows and shock waves	3	PO1, PO2, PO4
CO3	Applying the Propulsive Engines For Aircraft	3	PO1, PO2, PO4
CO4	Analyze the Shaft Power and Gas Turbine Cycles	4	PO1, PO2, PO4

Syllabus

Basic Principles of Propulsion, Historical background, how the jet engines make thrust: conceptual basis; Jet engine: Turbo-jet, Turbo-fans, Turbo prop, Turbo-shaft, Ramjet, Scramjets. Combustion and Fuel Systems in Jet Engines: Principles of combustion processes in jet engines, Design and operation of fuel systems for efficient and reliable engine performance.

Compressible flow; Quasi One dimensional flow, Normal shock, Oblique shock, , Air intake, Nozzle flow, Boundary layer flow, Rayleigh flow, Fanno flow, Effect of frictional duct length in subsonic flow and supersonic flow, numerical problems in 1D flow

The Otto cycles; IC engines for aircraft application Reciprocating engine performance; Supercharging and Performance enhancement Propeller fundamentals & Theories. Engine Cooling and Lubrication Systems: Importance and methods of cooling in aircraft engines, Lubrication system design and its role in engine reliability and performance.

Reheat cycle, cycle with heat and heat exchange, Methods of accounting for components losses, stagnation properties, compressor and turbine efficiencies, isentropic and polytropic, pressure losses, heat exchanger effectiveness, Mechanical losses, bleed flows, design point calculations, comparative performance of practical cycles.

Reference Books

1 Elements of Gas Turbine Propulsion, Mattingly J.D, 2015, McGraw hill.

2 Aerothermodynamics of Aircraft Engine Components, G C Oates, 1997, AIAA.

3 Aircraft Propulsion and Gas Turbine Engines, Ahmed F. El-Sayed, 2017, CRC Press Taylor & Francis group.

4 Jet Propulsion: A Simple Guide to the Aerodynamic and Thermodynamic Design and Performance of Jet Engines, N. A. Cumpsty, 2003, Cambridge University Press.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No: 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23TE53E3 - BATTERY AND THERMAL MANAGEMENT SYSTEMS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23TE53E3	BATTERY AND THERMAL MANAGEMENT SYSTEMS	BTMS	R	3	0	0	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Select suitable battery for EV application	3	PO1
CO2	Compare the materials used for the components of the battery	4	PO2
CO3	Conduct tests on battery cells to determine various performance and operating parameters	4	PO3
CO4	Estimate heat generation inside battery and propose cooling strategy for the battery pack.	4	PO4

Syllabus

History of Battery cells, Primary Battery, Secondary Battery, Performance parameters and operating variables of Battery, Electric vehicle (EV) requirements, Battery Technologies for EV applications. Lead Acid battery, Nickel Cadmium, Nickel Metal Hydrite, Lithium-Ion Batteries: Working, chemical reactions, comparison, future battery trends and challenges, Metal-Air Batteries, fuel cells, ultra-capacitors

Introduction, Components, Functions, Cathode Materials, Anode Materials, Electrolytes: salts and solvents, separators, advantages and drawbacks, Battey cell Manufacturing: Cylindrical, prismatic and Pouch cells, recycling/disposal of batteries

Battery operating and performance parameters, Charge-discharge characteristics of batteries, Measurement of current, voltage, temperature, Estimation of SOC: Coulomb Counting method, OCV method, Estimation of SoH, Capacity, efficiency

Heat Generation inside battery, Thermal issues of Lithium-Ion Battery, impact of temperature on capacity, cycle life, Thermal Runaway, Cooling strategies: Direct/indirect cooling, Air cooling, liquid cooling, PCM based cooling, advanced colling methods

Reference Books

1 Battery Management Systems, Gregory L. Plett,, 1th edition, 2006, Artech House, London.

2 Li-I Batteries Basics and Applications, Reiner_Korthauer, 2th edition, 1990, Springer International Publication.

3 Fundamentals and Application of Lithium-ion Batteries in Electric Drive Vehicles, Jiuchun Jiang, Caiping Zhang -, 2th edition, 1996, Wiley.

4 Thermal Energy Storage Systems and Applications., Ibrahim Dincer and Mark A. Rosen, 2th edition, 2009, Wiley & Sons.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200, www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off. 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23IE5201 - ESSENTIALS OF RESEARCH DESIGN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23IE5201	ESSENTIALS OF RESEARCH DESIGN	ERD	R	1	1	0	0	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Analyze existing research to identify a focused and answerable research question or develop a well-defined hypothesis	4	PO1, PO2
CO2	Evaluate different research designs based on their strengths and weaknesses in relation to the chosen research question and data needs.	4	PO2, PO6, PO7
CO3	Apply appropriate data collection methods considering the chosen research design and data characteristics.	3	PO1, PO6
CO4	Analyze and interpret data using relevant data analysis methods to address the research question	4	PO7

Syllabus

Definition and objectives of Research Types of research, Various Steps in Research process, Applied Mathematical tools for analysis, developing a research question- Choice of a problem, Literature review, Surveying, Synthesizing, critical analysis, reading materials, reviewing, rethinking, critical evaluation, interpretation, Research Purposes, Ethics in research APA Ethics code.

Literature Review (LR) Meaning and its Types-Narrative and Systematic, LR using Web of Science, Google and Google Scholar, Citations-Types, referencing in academic writing, Citation vs Referencing Vs Bibliography, Citation tools Zotero, Qualitative Research and its methods, Quantitative Research, and its Methods. Data Collection-Primary data collection using Questionnaire, Google forms, survey monkey, Testing the validity and Reliability of Questionnaire using Factor Analysis and Cronbach\'s Alpha

Diagrammatic and graphical presentation of data: Diagrams and Graphs of frequency data of one variable- histogram, bar charts simple, sub divided and multiple; line charts, Diagrams and Graphs of frequency data of two variables scatter plot, preparing data for analysis. Concepts of Correlation and Regression, Fundamentals of Time Series Analysis and Error Analysis. Analysing data using one dimensional statistics, two-dimensional statistics and multidimensional statistics.

Technical Writing and Publishing, Conference presentations, Poster Presentations, Plagiarism check and tools, Self Plagiarism, Structure and Components of Research Report, Types of Report, Layout of Research Report, Mechanism of writing a research report, Design Thinking for Contextualized Problem Solving and Empathetic Research.

Reference Books

1 Business Research Methods , Donald R.Cooper, Pamela S. Schhindler, 12th , McGraw-Hill.

2 Research Methods, Nicholas Walliman,Routledge, 3rd, The Taylor & Francis Group.

3 Essentials of Research Design and Methodology, David DeMatteo,Geoffrey R. Marczyk, 4th, wiley .

4 Research Design: Qualitative, Quantitative, and Mixed Methods Approaches , J. David Creswell, 6th, wiley.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129.

23TE5101 - SIMULATION OF ENERGY MANAGEMENT SYSTEMS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23TE5101	SIMULATION OF ENERGY MANAGEMENT SYSTEMS	SEMS	R	0	0	4	0	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Design of renewable energy power plants by optimum sizing ofcomponents	4	PO1, PO5
CO2	Perform financial analysis of different RE technologies	3	PO1, PO5

Syllabus

Introduction to RETScreen software-Clean Energy Management-Virtual Energy Analyser- Designand sizing RET Projects-Greenhouse Gas (GHG) Emission Reduction Analysis Financial Analysis forvarious case studies listed below a. Photovoltaic Project Model for on-grid (central-grid and micro- grid PVsystems); off-grid (stand-alone (PV-battery) and hybrid (PV-battery-genset) systems; and water pumpingapplications b. Solar Water Heating Project Model for domestic hot water, industrial process heat andswimming pools, ranging in size from small residential systems to large scale commercial, institutional andindustrial systems.

Facility worksheet-Energy Audit or Feasibilty-Emission Savings-Sensitivity Analysis-Project Life-Cycle Analysis-Benchmark Analysis- Feasibility Analysis- Performance Analysis- PortfolioAnalysis- Integrated Databases-Product data- Cost data-Climate data- Hydrology data- Energy resourcemaps

Reference Books

1. Clean Energy Project Analysis: RETScreen Engineering & Cases Textbook-Photovoltaic Project Analysis, Leng, G., Meloche, N., Monarque, A., Painchaud, G., Thevenard, D., Ross, M., & Hosette, P., 8, 2004, CANMET Energy Technology Center.
2. PVSYST user's manual, Mermoud, A., & Wittmer, B., 9, 2014, Switzerland..
3. U.S. Department of Energy, EnergyPlus Documentation https://energyplus.net/documentation, 5, 2017, U.S. Department of Energy.
4. Simulation and Modeling of Systems of Energy Systems, Ashu Gupta, Rajeev Kumar, 6, 2019, Springer.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in, www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2577715, 2576129

23UC5201 - PROFESSIONAL COMMUNICATION SKILLS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
23UC5201	PROFESSIONAL COMMUNICATION SKILLS	PCS	R	0	0	4	0	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Develop the skill of contextual Vocabulary and Critical Reading	3	PO7
CO2	Demonstrate different types of personal and professional skills and apply them for growth in professional zone.	3	PO7
CO3	Apply the concepts of Mathematical Principles to solve problems on Arithmetic , Algebra & Geometry to improve problem solving ability.	3	PO3
CO4	Apply the concepts and using Logical thinking to solve problems on verbal & Non-Verbal Reasoning to develop Logical thinking skills.	3	PO3

Syllabus

Vocabulary: Synonyms, Antonyms and One-word substitutes, (B)Reading comprehension, Critical reading, (C) Writing skills: Email writing, report writing and paragraph writing (D) Listening/Speaking Skills: listen & speak, Functional grammar

- A)Personal Skills: Intra & Interpersonal skills (B) Assertiveness (C) Group Discussion (D) Resume writing (E) Video resumes (F) Interview skills

Simple Equations, Ratio & Partnership, Averages, Percentages, Profit & Loss, Simple & Compound Interest, Numbers, Quadratic Equations & Inequalities, Time & Work, Time, Speed & Distance, Permutations & Combinations, Probability, Mensuration, Data Interpretation.

Syllogism, Logical Venn Diagrams, Cubes & Dice, Number& letter series, Number, letter & word Analogy, Odd Man Out, Coding & Decoding, Blood Relations, Directions, clocks, calendars, Number, ranking & Time sequence test, Seating Arrangements, Data Sufficiency.

Reference Books

1 OBJECTIVE ENGLISH FOR COMPETITIVE EXAMINATION, HARI MOHAN PRASAD AND UMA SINHA, 2017, MC GRAW HILL.

2 55 ESSENTIAL TOOL FOR EVERY WRITER, ROY PETER CLARK, 2006, LITTLE BROWN AND COMPANY.

3 QUANTTAITIVE APTITUDE, ABHJITH GUPTA, 2017, MC GRAW HILL.

4 LOGICAL REASONING , ARUN SHARMA, 2006, MC GRAW HILL.

5 LOGICAL REASONING, PIYUSH BAHRADWAJ, 2006, ARIHANT PUBLICATIONS.

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

Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by NAAC as 'A++' ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA
Phone No. 08645 - 350200; www.klef.ac.in, www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002 Ph: +91 - 866 - 3500122, 2577715, 2576129

Department of Mechanical Engineering

Value added courses offered to Y22 & Y23 B.Tech admitted batch students

S.no	Course Code	Course name	L	T	P	S	Cr	CH	Pre-requisite
1	VAC	SPORTS	0	0	0	2	0	2	NIL
2	23CC3071	PROGRAMMING USING PYTHON	0	0	0	8	0	8	NIL
3	23CC3001	3D MODELLING USING CATIA	0	0	0	8	0	8	NIL
4	23CC3008	AUTOCAD	0	0	0	8	0	8	NIL
5	23CC3009	AUTODESK FUSION 360	0	0	0	8	0	8	NIL
6	23CC3084	STATIC ANALYSIS USING ANSYS	0	0	0	8	0	8	NIL
7	23CC3085	STATIC AND DYNAMIC ANALYSIS USING ALTAIR HYPERWORKS	0	0	0	8	0	8	NIL

Value added courses offered to Y23 M.Tech-MD & M.Tech-ME admitted batch students

S.no	Course Code	Course name	L	T	P	S	Cr	CH	Pre-requisite
1	VAC	SPORTS	0	0	0	2	0	2	NIL
2	23CC3071	PROGRAMMING USING PYTHON	0	0	0	8	0	8	NIL
3	23CC3085	STATIC AND DYNAMIC ANALYSIS USING ALTAIR HYPERWORKS	0	0	0	8	0	8	NIL

Value added courses offered to Y23 M.Tech-TE admitted batch students

S.no	Course Code	Course name	L	T	P	S	Cr	CH	Pre-requisite
1	VAC	SPORTS	0	0	0	2	0	2	NIL
2	23CC3071	PROGRAMMING USING PYTHON	0	0	0	8	0	8	NIL
3	23CC3114	FLOW ANALYSIS USING CFD	0	0	0	8	0	8	NIL

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

DEPARTMENT OF MECHANICAL ENGINEERING
MINOR DEGREE COURSES OFFERED TO Y22 AND Y23 ADMITTED BATCH STUDENTS

S.NO	Course title	Mode	L	T	P	S	Cr	CH
MINOR DEGREE in INDUSTRIAL DESIGN for All Engg Branches								
1	Introduction to Industrial Design	R	3	1	0	0	4	4
2	Product Design and Development	R	3	0	2	0	4	5
3	Materials and Manufacturing	R	3	1	0	0	4	4
4	Human Factors and Ergonomics in Design	R	3	1	0	0	4	4
	SDP-Digital Design & Visualization	A	0	0	6	4	4	10
5	**Total**		**12**	**3**	**8**	**4**	**20**	**27**
MINOR DEGREE in Computational Fluid Dynamics for All Engg Branches								
1	FLUID MECHANICS & HYDRAULIC MACHINES		3	0	2	0	4	5
2	HEAT TRANSFER		3	0	2	0	4	5
3	COMPUTAIONAL FLUID FLOW AND HEAT TRANSFER		3	0	2	0	4	5
4	DESIGN OF THERMAL SYSTEMS		3	1	0	0	4	4
5	SDP-ADVANCED ENERGY STORAGE SYSTEMS		0	0	6	4	4	10
6	**TOTAL**		**12**	**1**	**12**	**4**	**20**	**29**
MINOR DEGREE in MECHATRONICS for All Engg Branches								
1	Introduction to Mechatronics		3	1	0	0	4	4
2	Sensors and Actuators In Mechatronics		3	0	2	0	4	5
3	Control Sytems in Mechatronics		3	1	0	0	4	4
4	Robotics & Automation		3	0	2	0	4	5
	SDP-Mechatronics Design & Prototyping		0	0	6	4	4	10
5	**TOTAL**		**12**	**2**	**10**	**4**	**20**	**28**
MINOR DEGREE in PRODUCT DESIGN for All Engg Branches								
1	Introduction to Product Design		3	1	0	0	4	4
2	Visual Communication and Sketching for Product Design		3	0	2	0	4	5
3	Materials and Manufacturing Processes in Product Design		3	1	0	0	4	4
4	Interaction Design for Product Interfaces		3	0	2	0	4	5
5	SDP-Prototyping and Rapid Visualization Techniques		0	0	6	4	4	10
	Total		**12**	**2**	**10**	**4**	**20**	**28**

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