



## Koneru Lakshmaiah Education Foundation

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

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

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## Department of Mechanical Engineering

### 26<sup>th</sup> BOS meeting minutes

Minutes of the 26<sup>th</sup> BOS meeting-Mechanical Department held on 29-03-2024 in Hybrid mode in room no.M118(HOD Chamber) from 11:00AM onwards.

Following is the link for the meeting

<https://kluniversity.webex.com/kluniversity/j.php?MTID=m1d9a6cc6dc9c3c052eb26cc0f4c6a52c>

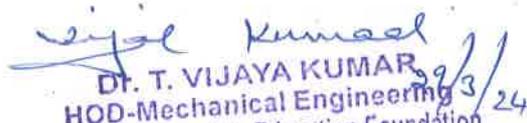
The following members were present

1. Dr.T.Vijaya Kuma, Associate Professor, HOD-ME & Chairman BOS
2. Dr.B. Nageswar Rao, Professor
3. Dr. D.V.A. Rama Sastry, Associate professor
4. Dr.S.N.Padhi, Professor, Group Head-Design & Manufacturing
5. Dr. K.V. Narasimha Rao, Professor-ME, Associate Dean Quality
6. Dr.G.Diwakar, Professor, PG Coordinator
7. Dr. V .L.Mangesh, Professor
8. Dr. P. Kasi V Rao, Associate Professor, Associate Dean Academics
9. Dr .T. Kanthimathi, Assistant Professor, Professor I/C Academics
10. Dr.P.Raj Kumar, Assistant professor
11. Dr.A.Venu Gopal, Professor & Dean Academics, NIT Warangal
12. Dr. P. Srinivasa Rao, Global Training Head, Cyient Technologies, Hyderabad
13. Dr.K.Ravi Teja, Manager, Hyundai R & D Division, Hyderabad

The following members were Absent

1. Dr. K.RamaKrishna, Dean-Quality, Professor-ME
2. Dr. A.Jagadeesh, Director-FED, Professor-ME
3. Dr. A.Srinath, Dean Skill Development & progression
4. Dr.N.B.V.Prasad, Dear Placements & International Internships
5. Dr. R.Vijay Kumar, Senior Manager, R & D, HAL Bangalore.
6. Dr. Gnana Murthy, Professor-Dept. of ME, IIT Madras

  
**Dr. T.K. RAMA KRISHNA RAO**  
PRINCIPAL  
College of Engineering  
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**Dr. T. VIJAYA KUMAR**  
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### AGENDA and RESOLUTIONS

#### AGENDA ITEM-1

Agenda: To consider the department achievements during the A.Y. 2023-24 Even Sem	Resolution Passed: The achievements made by the department is appreciated and forwarded to the academic council
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BOS chairman presented the following achievements of students & faculty of the department during 2023-24 Even sem to the BOS members

#### Honors received by Faculty:

- Dr.G.Murali & Dr. Abhshek D received International Outstanding Research awards from Asia Research Awards
- Dr.K.V.Durga Rajesh, Dr.Priyaranjan Sharma, Dr.P.Raj Kumar, Dr.K.Sai Sarath received Best teacher award from KLEF
- Dr.G.Yedukondalu, Mr.S.Ramesh Kumar, Dr.P.kasi V Rao, Dr.K.V.Durga Rajesh, Dr.P.Raj Kumar and Dr.K.Sai Sarath received Skill Excellence award from KLEF.
- Dr S.S.Rao received best teacher award by Novel Research academy.

#### Honors received by students:

- A team of 12 students from Team Gavisti received Future award LUMINOUS SIEP E-BIKE CHALLENGE 2024 with 5000/- on 28-01-2024, by Imperial Society of Innovative Engineers, India.

#### Placement Details:

- 5 students were selected by Shapoorji and Pollanji, Pune based Company in the pay package range of 4.25 to 6 LPA.
- 7 students were selected for Internship cum placement in Academor with 15K as stipend during internship and with a CTC of 4-6 LPA post internship.
- 1 student is selected in TVS motors with a pay package of 8 LPA.
- All the students registered for placement in Y20 batch have got placements. This year it was observed that the core companies have recruited most of mechanical graduates when compared to IT companies.

#### Ph.D Details:

S. No.	Dept.	Name of the Faculty/Scholar	Name of the Supervisor	Month and Year
11	ME	Yakkaluri Pratapa Reddy	Dr. K. L. Narayana	December-2023
12	ME	Kurhade Anant Sidhappa	Dr. G. Murali	January-2024
13	ME	Danthala Swetha	Dr. S. S. Rao	February-2024

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### Papers Published and papers presented by faculty:

- 90 papers were published in the calendar year 2023 and 25 papers were published till date in 2024
- 18 papers were presented in International conferences in calendar year 2023 and 2 papers were presented in 2024 till date.

### Conferences/Workshop/Seminar Conducted by the department:

- Conducted workshop on "Crafting Innovation: Navigating Patents & Designs in Mechanical Engineering" for students and faculty members of KLEF organized by Department of Mechanical Engineering, KLEF, in association with KL Intellectual Property Facilitation Centre (KLIPFC) on 26-02-2024.
- Conducted 24 hrs Learnathon from March 9<sup>th</sup> 12 Noon to 10<sup>th</sup> 12 Noon 2024.
- Conducted Two Days "5<sup>th</sup> International Conference on Innovations and Challenges in Mechanical Engineering" (ICICME-2024) on 15<sup>th</sup> and 16<sup>th</sup> March 2024.
- Conducted Workshop on 'Drone Technologies' by SAE Students Chapter in the Department of Mechanical Engineering on March 27<sup>th</sup>, 2024 (Wednesday).

BOS members congratulated the award winners and appreciated the efforts made by the department. The significant events of the 2023-24 Even Sem are given in **Annexure-1**.

### AGENDA ITEM-2

Agenda: To approve the resolutions made in DAC meeting held on 19-03-2024

Resolution Passed: The resolutions made in DAC are approved and recommended the same to the Academic Council for further approval.

Following is the feedback collected from stake holders and the resolutions made in DAC.

1. Mr.K.Thilak(2100079014) B.Tech, III year student requested to update the syllabus according to GATE curriculum and also requested to give more practise problems in software related courses.  
It is resolved that 90% of GATE syllabus is covered in all core and sciences courses and it was explained to student by Dr.S.N.Padhi, professor and member of DAC that since it is necessary to give equal importance to industry needs and students opting for Entrepreneurship, courses are framed to meet the need of all students opting for various career paths.
2. Mr. Y.Sai Teja(2100079021)B.Tech III Year student requested to provide expert guidance for competitions like e-baja.

  
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It is resolved that faculties who are expertise in such competitions are guiding students and if any further guidance is required special training program will be planned as and when required.

3. Mr.R.Srinivas(2100070002) B.Tech III year student requested to provide more practise on Ansys and Hypermesh software.

Dr.D.V.A.Rama Sastry, Associate Professor and member of DAC explained students that Hypermesh is a meshing software and Ansys is an analysis software. As per the timetable and allotted slots for the course it is not possible to cover all the components of all softwares. Class hours are planned to make students aware of the tools and the basic inputs will be given along with some practise problems. It is resolved to add more practise problems in software related courses to enable the advanced learners to explore deep into the software components.

4. Mr.Naga Malleshwara Rao,(2100079013), B.Tech III year student requested to provide hands on experience in welding operations.

It is resolved that in Manufacturing Technology course hands on welding operations are performed.

5. Mr.Maruthi Prasad(2100079020)B.Tech III year student, requested to provide core knowledge to the students.

It is resolved that all the core courses required for Mechanical Engineering are incorporated into the curriculum based on the industry needs and GATE syllabus.

6. Mr.Subhash Reddy(210079041) B.Tech II year student of Automobile specialization requested to provide automobile engineering lab.

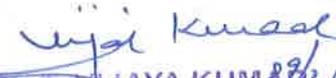
It is resolved to put forth the request in the upcoming BOS.

7. Y22 students requested to provide specializaion in automobile related courses. It is resolved to offer Automotive and Energy Engineering Specialization covering the needs of automotive industry and energy sector from Y23 admitted batch students onwards in place of Energy & CFD Specialization under Energy & CFD Cohort with the following Courses

- PE-1: Automobile Engineering(L-T-P-S:3-0-2-4)
- PE-2:Autotronics & Safety (L-T-P-S:3-0-0-0)
- PE-2: Autonomous Vehicles(L-T-P-S:3-0-0-0)
- PE-3: Hybrid & Electric Vehicle Design (L-T-P-S: 3-0-2-4)
- PE-4:Special Purpose Vehicles(L-T-P-S: 3-0-0-0)
- PE-4:Vehicle Dynamics(L-T-P-S: 3-0-0-0)
- PE-5:Thermal management of Electric and Electronic Systems(L-T-P-S:2-0-2-0)
- PE-5: Alternate Energy Sources for Automobiles(L-T-P-S:2-0-2-0)

8. Mr. Devesh(2200070017) B.Tech II Year student requested to provide hands on experience in assembly and disassembly of automobile engines and operation on machines

It is resolved to conduct a workshop on assembly and disassembly of engines and operation of machines to Y22 and Y21 admitted batch students in 2014-15 Odd Sem.

  
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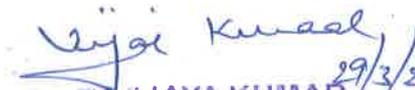
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9. Mr.Pramod Kumar(2200070011) B.Tech II year student, requested to avoid self learning mode of teaching to core mechanical courses. He also requested to divide KDOM subject into KOM and DOM to attain more knowledge.  
It is resolved that all core mechanical courses are offered in class room learning mode only. KDOM course is offered as single course covering all the concepts with an L-T-P-S :3-1-2-0 from Y23 admitted batch students due to the restriction on the no.of core courses offered per batch of students.
10. Y21 and Y22 admitted batch students brought to the notice of the chair that the equipment in C-324 (Basic electric and Electronics lab)adequate no.o f voltmeters are not available and in C-224(Workshop) 3D printing machines were not allowed to do projects.  
Chairman-DAC replied to students that the issue with C-324 lab will be taken to the notice of the concerned person and for C-224 3D printing machines students need to take prior permission from the concerned authorities to do projects.
11. Mr.Manikanta(23001130005) M.Tech-MD I year student, requested to include Finite Element analysis in the curriculum and also requested to include Fracture Mechanics lab. He also requested to include more practise sessions for Ansys.  
It is resolved that FEA is covered in B.Tech level and regarding the Fracture Mechanics lab, the request will be sent to the concerned authorities for necessary action. It is also resolved to include more practise problems in Ansys.
12. Mr.Uppal Chandra(23001120003)M.Tech-TE I year student, requested to give training on core software's like Ansys with more exercises.  
It is resolved to include more exercises in Ansys software in the relevant courses.
13. Dr.G.Diwakar, Professor, KLEF, requested to reduce the number of courses other than core courses and introduce advanced course like artificial learning machine Learning as core courses and ,digital manufacturing, Geometrical dimensions and tolerance courses, etc.  
It is resolved that the core courses of required number for Mechanical Engineering degree are incorporated in the curriculum and the courses Artificial Intelligence and machine learning are offered from Y22 admitted batch students onward as professional core course, also digital manufacturing and GD & T courses are offered as SDP Courses.
14. Dr.Ravi Teja, Sr, Manager, Hyundai R & D Division, Suggested to include exclusive specialization in automobile field.  
It is resolved to offer Automotive and Energy Engineering Specialization covering the needs of automotive industry and energy sector from Y23 admitted batch students onwards in place of Energy & CFD Specialization under Energy & CFD Cohort.
15. Dr. N.B.V.Prasad, Dean Placements & internships, KLEF suggested that during the placement drives students need to exhibit software skills on drafting softwares (AutoCAD), Modelling Softwares (CATIA/Solidworks/Fusion360/Unigraphics) and analysis software(Ansys/Hypermesh). He also suggested to provide technical training to students one week prior to the drives on the basic courses like mechanics. TD, FM, PT, MD, Metallurgy, GD &T).

  
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It is resolved that AutoCAD is taught to students in Engineering graphics course, Solid works/Fusion 360 are taught in DTW, Visualization and Modelling courses, Ansys is taught in Mechanics of solids, Mechanical Engineering Design and Innovation and Machine Design courses. Adams software is taught in Kinematics & Dynamics of Machines course. In addition to this students were offered certifications in any of the 3 softwares out of Fusion 360, Python, Ansys, Hypermesh, AutoCAD. CRT opted students will be trained in Dassault systems Lab on CATIA. Also a special technical training is offered to CRT students prior to the placement drives depending on the visit of the company.

The DAC minutes are given in **Annexure-2a**.

The detailed Feedback analysis and action taken report are given in **Annexure-2b**.

### Agenda Item-3:

Agenda: To consider and approve the introduction of New courses proposed for B.Tech Y24 & Y23 admitted batch students

Resolution Passed: It is resolved to approve the New courses proposed for Y23 and Y24 admitted batch B.Tech students and to recommend the same to academic council for further approval.

Following are the deliberations made in the meeting in the curriculum of Y24 and Y23 admitted batch

- Dr. Ravi Teja, external member suggested to use latest analysis software tools like NASTRAN, LSDYNA, ABACUS and ANSA-mesh instead of ANSYS and Hypermesh. Chairman BOS replied that the suggestion given by the member will be considered and will be implemented depending on the feasibility.
- Dr.Venu Gopal, external member suggested to include Physics elective in the curriculum. Chairman BOS replied that the Engineering Mechanics Course is offered as Physics Elective to Y23 and Y24 admitted batch students.
- Dr.Ravi Teja, external member suggested to add embedded systems to Automotive Electronics specialization. Chairman BOS replied that the suggestion given by the member will be considered and will be discussed further with the concerned cohort professor in charges.
- Based on the recommendation of group heads, it is resolved to offer "Industrial Management and Production Planning" as management Elective for Y22, Y23 and Y24 admitted batch students.
- As per the suggestions of group heads to combine Human Values and Gender Sensitization courses and to include ethics also in the course, it is resolved to offer Human Values, Gender Equality and professional Ethics as new course for Y23 and Y24 admitted batch students.
- Based on the recommendations of English department it is proposed to offer "Language Skills for Engineers (L-T-P-S:0-0-4-0)", "Communication Skills for Engineers(L-T-P-S:0-0-4-0)" in place of English Proficiency and Integrated

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Professional English and a new course “Leadership and Management Skills(L-T-P-S:0-0-4-0)” is offered to Y24 admitted batch students.

- As per the recommendations of Computer Science department it is proposed to offer “Computational Thinking for Problem Solving” in place of Computational thinking and Structured Design, “Data Structures using Python” in place of Data Structures, “Artificial Intelligence and Machine Learning” in place of Data Driven Artificial intelligence and “Computational thinking for Object oriented programming” in place of Object Oriented Programming for Y24 admitted batch students.
- As per the recommendations of Group Heads New courses were introduced for Honors programs under Honors flexi courses(HFC), Honors Research Courses(HRC), Honors Innovation Courses(HEC) and Honors Experiential Learning(HEC) categories

### Courses Introduced for B.Tech 2023-24 and 2024-25 admitted batch based on the feedback of stake holders

S.No.	Course Code	Course Title	Course Type	Remarks
1	23ECF3101R	AUTOMOBILE ENGINEERING	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
2	23ECF3202	AUTOTRONICS & SAFETY	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
3	23ECF3203	AUTONOMOUS VEHICLES	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
4	23ECF3304R	HYBRID & ELECTRIC VEHICLE DESIGN	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements

  
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5	23ECF3406 M	VEHICLE DYNAMICS	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
6	23ECF3507	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONICS SYSTEMS	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
7	23ECF3405 M	SPECIAL PURPOSE VEHICLES	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
8	23ECF3508	ALTERNATE ENERGY SOURCES FOR AUTOMOBILES	Elective	Based on the feedback of students and industry persons it is resolved to introduce new specialization Automotive & Energy Systems which includes the courses covering Automobiles and Energy requirements
9	23MB4067	INDUSTRIAL MANAGEMENT & PRODUCTION PLANNING	Management Elective	Based on the recommendations of group heads this course is resolved to be offered as management elective which covers the concepts of industrial management and production planning.
10	23UC0026	HUMAN VALUES, GENDER EQUALITY AND PROFESSIONAL ETHICS	Humanities and Sciences	Based on the recommendations of group heads it is resolved to combine Human values and Gender sensitization and offer as Human Values, Gender Sensitization and professional Ethics as new course
11	24UC1102	LANGUAGE SKILLS FOR ENGINEERS	Humanities and Sciences	Based on the recommendations of English department it is proposed to offer new course in place of English Proficiency
12	24UC1204	COMMUNICATIO N SKILLS FOR ENGINEERS	Humanities and Sciences	Based on the recommendations of English department it is proposed to

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				offer new course in place of Integrated Professional English
13	23UC0024	LEADERSHIP AND MANAGEMENT SKILLS	Humanities and Sciences	Based on the recommendations of English department it is proposed to offer new course
14	24AD2001	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	Engineering Sciences	Based on the recommendations of Computer Science department it is proposed to offer new course in place of Data Driven Artificial intelligence
15	24SC1102	COMPUTATIONAL THINKING FOR PROBLEM SOLVING	Engineering Sciences	Based on the recommendations of Computer Science department it is proposed to offer new course in place of Computational Thinking for Structured Design
16	24SC1204	DATA STRUCTURES USING PYTHON	Engineering Sciences	Based on the recommendations of Computer Science department it is proposed to offer new course in place of Data Structures
17	24SC2105	COMPUTATIONAL THINKING FOR OBJECT ORIENTED PROGRAMMING	Engineering Sciences	Based on the recommendations of Computer Science department it is proposed to offer new course in place of Object Oriented Programming
18	23ME01HF	RENEWABLE ENERGY SYSTEMS	Honors Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Flexi core Category
19	23ME02HF	ADVANCED FINITE ELEMENT ANALYSIS	Honors Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Flexi core Category
20	23ME03HF	MULTIDISCIPLINARY DESIGN OPTIMIZATION	Honors Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Flexi core Category
21	23ME04HF	ADVANCED MANUFACTURING TECHNOLOGIES	Honors Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Flexi core Category
22	23ME01RF	HEAT TRANSFER ENHANCEMENT TECHNIQUES	Honors Researc	Based On the recommendation of Group Head new course is introduced

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			h Flexi Courses	under Honors Research Courses Category
23	23ME03RF	EXPERIMENTAL METHODS AND SIMULATION MODELLING IN MECHANICAL ENGINEERING	Honors Reseearc h Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Research Courses Category
24	23ME04RF	EMERGING TRENDS IN ROBOTICS AND AUTOMATION	Honors Reseearc h Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Research Courses Category
25	23ME02RF	ADVANCED MATERIALS FOR ENGINEERING APPLICATIONS	Honors Reseearc h Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Research Courses Category
26	23ME01EF	ENERGY STORAGE SYSTEMS AND TECHNOLOGIES	Honors Experient ial Learning Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Experiential Learning Courses Category
27	23ME02EF	MECHANICAL SYSTEMS DESIGN	Honors Experient ial Learning Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Experiential Learning Courses Category
28	23ME03EF	ADVANCED MANUFACTURING PROCESSES	Honors Experient ial Learning Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Experiential Learning Courses Category
29	23ME04EF	MECHATRONICS AND ROBOTICS	Honors Experient ial Learning Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Experiential Learning Courses Category
30	23DT01IF	ENTREPRENEURIAL TECHNOLOGY	Honors Innovatio	Based On the recommendation of Group Head new course is

*Vijaya Kumar*  
23/3/24  
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Green Fields, VADDESWARAM-522 302.



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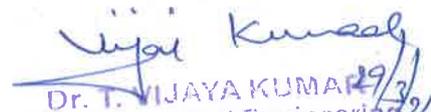
		DEVELOPMENT AND PROTOTYPING	n Flexi Courses	introduced under Honors Innovation Flexi Courses Category
31	23DT02IF	CUSTOMER DISCOVERY FOR STARTUPS	Honors Innovation Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Innovation Flexi Courses Category
32	23DT03IF	CUSTOMER VALIDATION FOR STARTUPS	Honors Innovation Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Innovation Flexi Courses Category
33	23DT04IF	CUSTOMER CREATION AND MARKETING FOR ENTREPRENEURS	Honors Innovation Flexi Courses	Based On the recommendation of Group Head new course is introduced under Honors Innovation Flexi Courses Category

#### Agenda Item-4:

Agenda: To consider and approve the B.Tech Curriculum of Y23 and Y24 admitted batch students

Resolution Passed: It is resolved to curriculum of Y23 and Y24 admitted batch B.Tech students and to recommend the same to academic council for further approval.

- Chairman BOS explained the members that based on the NEP policy framed by Govt. of India, it is accommodated in the curriculum of Y23 and Y24 admitted batch students the multiple entry and multiple exit. Students who wish to discontinue their B.Tech after completion of 2 years will be given a Diploma and after completion of 3 years students will be awarded B.Sc Degree.
- 20 Programs with Flexibilities were introduced to Y23 and Y24 admitted batch students. Following are the flexibilities offered
  - No Flexibility and No add on
  - Honors with no add on
  - Honors through research with no add-on
  - Honors through Innovation with no add-on
  - Honors through Experiential learning with no add-on
  - No Flexibility with Specialization
  - Honors with Specialization
  - Honors through research with specialization
  - Honors through Innovation with specialization
  - Honors through Experiential learning with specialization

  
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- No Flexibility with Minor
- Honors with Minor
- Honors through Research with Minor
- Honors through Innovation with Minor
- Honors through Experiential learning with Minor
- No Flexibility with Double Major
- Honors with Double Major
- Honors through Research with Double Major
- Honors through Innovation with Double Major
- Honors through Experiential learning with Double Major

The degree requirements for the above programs are given in **Annexure 3**.

The detailed course structure B.Tech Y24 admitted batch is given in **Annexure-4**. The syllabus for new Courses is given in **Annexure-5**.

The detailed Course structure of B.Tech Y23 admitted batch is given in **Annexure-6**.

The detailed Course structure for B.Sc Degree is given in **Annexure-7**.

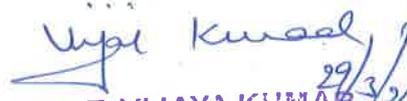
The detailed Course structure of Diploma is given in **Annexure-8**.

### Agenda Item-5:

Agenda: To approve the curriculum of M.Tech-Machine Design, and M.Tech-Thermal Engineering and M.Tech Mechanical Engineering programs of Y24 admitted batch students	Resolution Passed: It is resolved to approve the curriculum of Y24 admitted batch M.Tech-Machine Design, M.Tech Mechanical Engineering and M.Tech Thermal Engineering programs and to recommend the same to academic council for further approval.
--	--

- Dr.Ravi Teja external member, suggested to offer Advanced Vibrations course in M.Tech-MD program. He also suggested to rename the course "Machine learning using Python as "Data analytics using Python". Chairman BOS replied that the course "Mechanical Vibrations" offered to M.Tech-MD students covers all the concepts of Advanced Vibrations and it is resolved to change the title of "Machine Learning using Python" course as "Data Analytics using Python". For Y24 admitted batch students.

It is resolved to approve the Curriculum of M.Tech-Machine Design (**Annexure-9**) M.Tech Mechanical Engineering (**Annexure-10**) and M.Tech-Thermal Engineering (**Annexure-11**) for Y24 admitted batch students.

  
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### Agenda Item-6:

Agenda: To approve the recommendation made by Course Coordinators of 2024-25 Odd Sem

Resolution Passed: It is resolved to approve the recommendation made by Course Coordinators of 2024-25 Odd Sem and to recommend the same to academic council for further approval.

- Dr.S.S.Rao, Smart manufacturing Cohort professor I/C suggested offer “Reverse Engineering and Rapid Prototyping” as PE-1 and “Machine to Machine Communication” as PE-5 under smart manufacturing specialization for Y23 and Y24 admitted batch students.
- Based on the recommendation of group heads the course title of “Data Driven Artificial Intelligence” is renamed as “Artificial Intelligence and machine learning”.

### Agenda Item-7:

Agenda: To approve the Value Added Courses for Y22, Y23 and Y2 admitted batches

Resolution Passed: It is resolved to approve the Value Added Courses for Y22, Y23 and Y2 admitted batches and to recommend the same to academic council for further approval.

- Value added courses for Y22, y23 and Y24 admitted batch students is given in **Annexure-12**.

External BOS members appreciated the efforts of department members in the shaping the curriculum. Chairman-BOS thanked the members for giving their valuable inputs.

  
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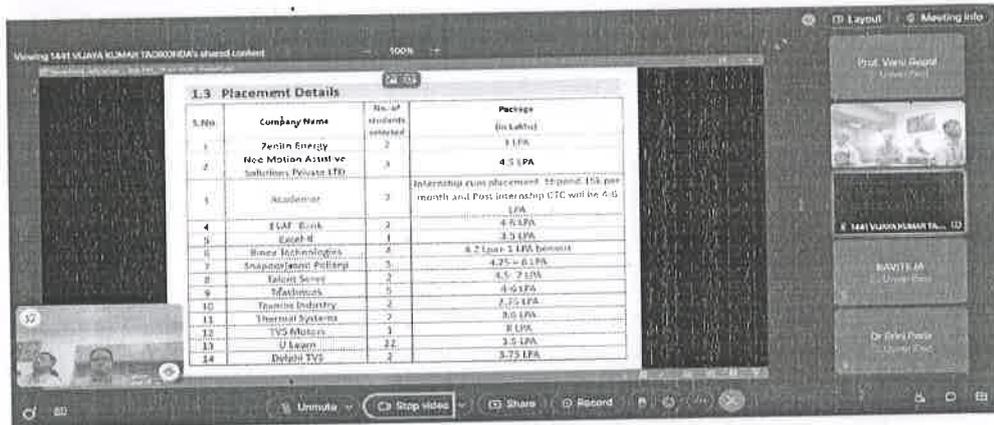
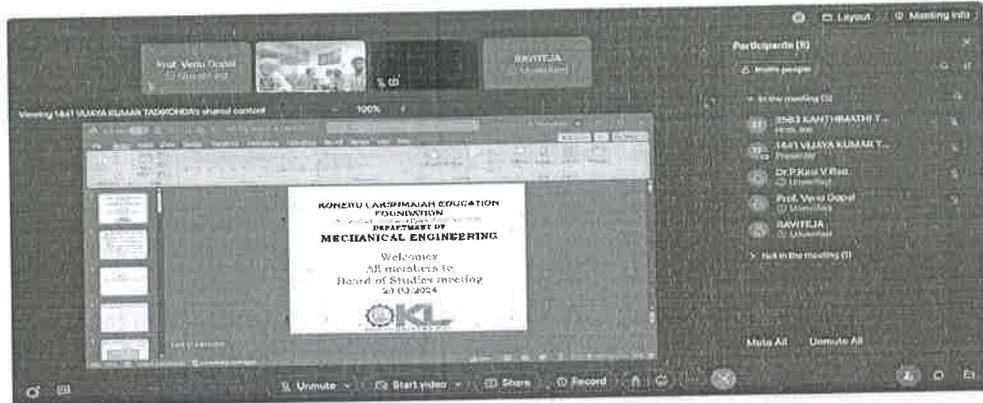


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## Meeting Photos:



  
 Professor I/C Academics

  
 Chairman-BOS 29/3/24

HOD-ME  
**Dr. T. VIJAYA KUMAR**  
 HOD-Mechanical Engineering  
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## Annexure-1

### K L E F

### Department of Mechanical Engineering

Significant Events happened in the Department from December-2023 to till date

#### 1.0 Honours Received

#### 1.1 Honours received by Faculty

Dept.	Name of the Faculty	Details of Honors	By
ME	Dr. G. Murali	International Outstanding Research Award	Asia Research Awards
ME	Dr. Abhishek Dasore	International Outstanding Research Award	Asia Research Awards
ME	Dr. K. V. Durga Rajesh	Best Teacher Award	K L E F
ME	Dr. Priyaranjan Sharma	Best Teacher Award	K L E F
ME	Dr. P. Raj Kumar	Best Teacher Award	K L E F
ME	Dr. K. Sai Sarath	Best Teacher Award	K L E F
ME	Dr. D.V.A Rama Sastry	Skill Excellence Award	K L E F
ME	Dr. G. Yedukondalu	Skill Excellence Award	K L E F
ME	Mr. S. Ramesh Kumar	Skill Excellence Award	K L E F
ME	Dr. P. Kasi V Rao	Skill Excellence Award	K L E F
ME	Dr. K. V. Durga Rajesh	Skill Excellence Award	K L E F
ME	Dr. P. Raj Kumar	Skill Excellence Award	K L E F
ME	Dr. K. Sai Sarath	Skill Excellence Award	K L E F
ME	Dr. S. S. Rao	Best Teacher Award	Novel Research Academy

#### 1.2 Honours received by Students

Dept.	Name of the Student	Details of Honors	By
ME	Team Gavisti (A team of 12 students)	Future Award LUMINOUS SIEP E-BIKE CHALLENGE 2024 with 5000/- on 28-01-2024	Imperial Society of Innovative Engineers, India

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DATE 28 01 2024  
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Rupees FIVE THOUSAND ONLY

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### 1.3 Placements Details

Sl. No.	Company Name	No. of students selected	Package (in Lakhs)	Company profile
1	Zenith Energy	2	3 LPA	
2	Neo Motion Assistive Solutions Private LTD	3	4.5 LPA	
3	Academor	7	Internship cum placement. Stipend 15k per month and Post internship CTC will be 4-6 LPA	
4	ESAF Bank	2	4-6 LPA	
5	Excel-R	1	3.5 LPA	
6	Rinex Technologies	4	4.2 Lpa+ 1 LPA bonous	
7	Shapoorji and Pollanji	5	4.25 - 6 LPA	
8	Talent Serve	2	4.5- 7 LPA	
9	Teachnook	5	4-6 LPA	
10	Texmos Industry	2	2.75 LPA	
11	Thermal Systems	7	3.6 LPA	
12	TVS Motors	1	8 LPA	
13	U Learn	22	3.6 LPA	
14	Delphi TVS	2	3.75 LPA	

*Vijaya Kumari*  
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## 1.4 Ph.D. awarded

S. No.	Dept.	Name of the Faculty/Scholar	Name of the Supervisor	Month and Year
1	ME	Yakkaluri Pratapa Reddy	Dr. K. L. Narayana	December-2023
2	ME	Kurhade Anant Sidhappa	Dr. G. Murali	January-2024
3	ME	Danthala Swetha	Dr. S. S. Rao	February-2024

## 1.5 Ph.D. Thesis submitted

S. No.	Dept.	Name of the Faculty/Scholar	Name of the Supervisor	Submitted on	Submitted to

## 2.0 Research Publications

### 2.1 Number of Papers Published by Faculty

S. No	Dept.	National Journals	International Journals
1	ME	-	90 (Calendar Year 2023) 25 (Calendar Year 2024 till date)

### 2.2 Number of Papers Presented by Faculty

S. No	Dept.	National Conferences	International Conferences
1	ME	-	18 (Calendar Year 2023) 2 (Calendar Year 2024 till date)

## 3.0 Consultancy, Patents And Citations

### 3.1 Consultancy

S. No.	No. of Faculty	Sponsoring Agency	Work
			10 faculty worth 372863/- completed upto March 1 <sup>st</sup> week

### 3.2 Patents

Patent Type	This Academic Year			Cumulative		
	Design	Utility	Plant	Design	Utility	Plant
Filed						

  
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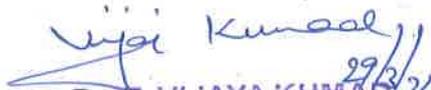
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Granted				0	1	
Licensed				0	0	
<b>Total</b>	<b>5</b>	<b>9</b>	<b>0</b>	<b>281</b>	<b>33</b>	<b>0</b>

### 3.3 Citations

- Dr. B. Nageswara Rao, Professor in ME has 389 citations in 2023 and 103 citations in 2024 till date with total citations of 4201 with h-index 30.
- Dr. K. Rama Krishna, Professor in ME has 589 citations in 2023 and 24 citations in 2024 till date with total citations of 1131 till date.
- Dr. A. Jagadeesh, Professor in ME has 216 citations in 2023 and 57 citations in 2024 till date with total citations of 872 till date.
- Dr. G. Murali, Professor in ME has 217 citations in 2023 and 95 citations in 2024 till date total citations of 707 till date.

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

S. No.	Dept.	Conference/Workshop/FDP/Seminar
1	ME	Conducted workshop on "Crafting Innovation: Navigating Patents & Designs in Mechanical Engineering" for students and faculty members of KLEF organized by Department of Mechanical Engineering, KLEF, in association with KL Intellectual Property Facilitation Centre (KLIPFC) on 26-02-2024
2	ME	Conducted 24 hrs Learnathon from March 9 <sup>th</sup> 12 Noon to 10 <sup>th</sup> 12 Noon 2024
3	ME	Conducted Two Days "5 <sup>th</sup> International Conference on Innovations and Challenges in Mechanical Engineering" (ICICME-2024) on 15 <sup>th</sup> and 16 <sup>th</sup> March 2024
4	ME	Conducted Workshop on 'Drone Technologies' by SAE Students Chapter in the Department of Mechanical Engineering on March 27 <sup>th</sup> , 2024 (Wednesday)

  
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Department of Mechanical Engineering

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## One Day Workshop on CRAFTING INNOVATION: NAVIGATING PATENTS & DESIGNS IN MECHANICAL ENGINEERING

26<sup>th</sup> February, 2024 @ 11:00 AM Venue: CAD LAB (Mechanical Block)



**Mr. Doppalapudi Ashok**  
 Founder & CEO of IPRK  
 Experts in filing intellectual properties of Tata Motors, Ford Motor, Mahindra & Mahindra and Old Electric Hybrid car



IN COLLABORATION WITH KL INTELLECTUAL PROPERTY FACILITATION CENTRE (KI-IPFC) KONERU LAKSHMAIAH EDUCATION FOUNDATION, GUNTUR

Department of Mechanical Engineering

CATEGORY 1 UNIVERSITY KL ACCREDITED BY NAAC 'A++' AICTE APPROVED ISO 9001:2015 CERTIFIED 43 YEARS OF EDUCATIONAL



## One Day Workshop on DRONE TECHNOLOGIES

27<sup>th</sup> March, 2024 @ 10AM to 5 PM Venue: M-004 (Mechanical Block)

Open for All departments



**Mr. S. S. Babu**  
 Founder & CEO of IPRK



**Mr. S. Venkatesh**  
 Founder & CEO of IPRK

### Workshop Highlights:

- Introduction to Drone and its types
- Drone components and their function.
- Working of Drone components
- Role of Flight controller in stabilizing & controlling drone
- Hands on Experience of Drone
- Assembly/Disassembly of Drone parts
- Kinematics of Drone and its impact on Drone Performance
- Building of Drone/Assembly
- Demo Flight



### 5.0 Guest Lectures/Webinar

### 5.1 Guest Lectures/Webinar Arranged through Virtual/Offline Mode

S. No.	Dept.	Name of the Event	Date	On Topic
1	ME	Conducted Alumni Guest Lecture on "Latest Trends in Marine Engineering" by Mr. K. Manikanta, (13007374) & Mr. S. Satish Babu (13007059), Engineering Officers, Buena Vista Shipping LLP, Mumbai, India, conducted by Smart Manufacturing Cohort	21-12-2023	"Latest Trends in Marine Engineering"
2	ME	Conducted Webinar on "Solving Linear Regression by using	11-01-2024	"Solving Linear Regression by using

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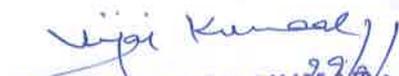
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		<b>Machine Learning Algorithms”</b> by Dr. Mooli Harish, Test Analyst, Infosys, Bangalore, India, conducted by Smart Manufacturing Cohort		<b>Machine Learning Algorithms”</b>
3	ME	Conducted Alumni Guest Lecture on <b>"Wire and arc additive manufacturing -current perspectives"</b> by A. Sirisha Bhadrakali (99IP221), 1999-2003 batch of Industrial and Production Engineering, conducted by Design Cohort	24-01- 2024	<b>"Wire and arc additive manufacturing - current perspectives "</b>
4	ME	Conducted Alumni Guest Lecture on <b>"Advancements in Industrial Sector"</b> by Mr. Mukkamala Praveen (98IP246), Estimation Manager, Polar Racking, Canada, 1998-2002 batch of Industrial and Production Engineering, conducted by Smart Manufacturing Cohort	21-02- 2024	<b>"Advancements in Industrial Sector"</b>
5	ME	Conducted Webinar on <b>"What is AI? How can it be used in Engineering"</b> by Paul Solomon who is working as CEO of <b>Solomons International</b>	25-03- 2024	<b>"What is AI? How can it be used in Engineering"</b>
6	ME	Conducted Alumni Guest Lecture on <b>" Industrial Engineering – Masters Scope &amp; Prospects "</b> by Mr. P. Ratna Prasad (Y-01 Batch – Y1IP258), Process Improvement Engineer, AGCO Parts Division, Batavia, IL, USA, conducted by Smart Manufacturing Cohort	28-03- 2024	<b>"Industrial Engineering – Masters Scope &amp; Prospects"</b>

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

S. No.	Dept.	Name .	At	Date	On Topic
1	ME	Dr. B. Kiran Kumar	NTTF, Gannavaram	01-12- 2023	Importance of strip layout in press tool design
2	ME	Dr. G. Murali	KSR College of Engineering,	21 <sup>st</sup> and 22 <sup>nd</sup>	Guest cum keynote speaker in

  
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			Tiruchengode, Tamilnadu	February 2024	International Conference on Emerging Materials and Technology on "Applications of Enhanced Phase change materials in Battery Thermal Management System"
3	ME	Dr. V. L. Mangesh	Invited Speaker Presentation at 15 <sup>th</sup> International Conference on Advancements in Polymeric Materials 2024, Institute of Advanced Petrochemical, Ministry of Chemicals, Ahmedabad, Gujarat	14 <sup>th</sup> to 16 <sup>th</sup> March 2024	Sustainable recycling: Synthesis of low carbon marine fuel from end-of-use plastics



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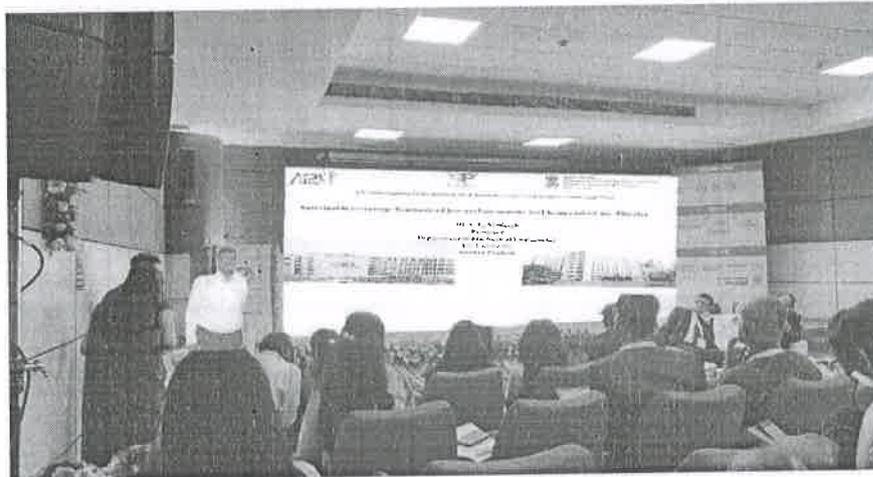
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GPS Map Camera

Gannavaram, Andhra Pradesh, India  
CRV8+M86, Gannavaram, Andhra Pradesh 521101, India  
Lat 16.544074°  
Long 80.816876°  
01/12/23 04:03 PM GMT +05:30

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*Vijaya Kumar*  
Dr. T. VIJAYA KUMAR  
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### 6.0 NSS Activities conducted through Virtual Mode

S. No.	Dept.	Details of NSS Activities	Conducted On
1	ME	Social Activities - Implementation of Swatch Bharat, wherein they diligently cleared waste and iron scrap from the area surrounding the students' bike pit	26-01-2024
2	ME		



*Vijaya Kumari*  
HOD-ME  
Dr. T. VIJAYA KUMAR  
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**Annexure-2a**

**K L E F**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**MINUTES OF DEPARTMENT ACADEMIC COMMITTEE (DAC)**

**Date: 19-03-2024**

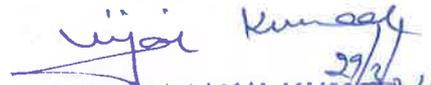
The 25<sup>th</sup> Department Academic Committee (DAC) Meeting was conducted at 3:30 P.M. on 19/03/2024 in HOD Cabin.

**Agenda of the Meeting:**

2. To discuss on the feedback given by the stakeholders on curriculum and put for the recommendations in the upcoming BOS
3. To discuss about the curriculum and syllabus of Y24 & Y23 admitted batch students and to put for the same in the upcoming BOS.
4. To discuss on the PDD document of Y24 admitted batch students and to recommend the same in the upcoming BOS.
5. To discuss on the inputs given by course coordinators of 2023-24 Odd & Even Sem.
6. To discuss result analysis, OBE and gap analysis of 2023-24 odd semester courses and Sem-in-1 result analysis of 2023-24 Even Sem courses.
7. To discuss on Value added courses to be offered to Y22, Y23 and Y24 admitted batch students.
8. To discuss on the course structure of 2024-25 admitted batch M.Tech-MD and M.Tech-TE programs
9. Any other point with the permission of the chair.

**The following members were present:**

1. Dr. T. Vijaya Kumar, Associate Professor & HoD, Chairman
2. Dr. S. N. Padhi, Professor & Cohort Professor Incharge-Engineering Design, Member
3. Dr. S.S Rao, Professor, Cohort Professor Incharge-Smart Manufacturing, Member
4. Dr. G. Murali, Professor, RPAC & Cohort Professor Incharge-Energy & CFD, Member
5. Dr. Giphin Geroge, Assistant Professor & II Year Coordinator, Member
6. Dr. G. Diwakar, Professor, PG Coordinator, Member
7. Dr. D.V.A Rama Sastry, Associate Professor, Member
8. **Dr. T. Kanthimathi, Assistant Professor & Prof. I/C Academics, Member**
9. Mr. K. Sri Manikanta (2301130005), I/II M.Tech. (MD), Member
10. Mr. Uppal Chandra Ratcha (2301120003) I/II M.Tech. (TE), Member
11. Mr. Y.Sai Teja (2100079021), III/IV B.Tech., Member
12. Mr. Rejeti Srinivas (2100070002), III/IV B.Tech., Member
13. Ms. S. Sailaja Madhusri (2100079029), III/IV B.Tech., Member

  
29/3/24  
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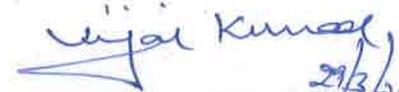
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14. Mr. K.Thilak (2100079041), III/IV B.Tech., Member
15. Mr. B.Harshith Singh (2200070006), II/IV B.Tech., Member
16. Mr.Y. Devesh (220007000), II/IV B.Tech., Member
17. Mr. P. Jagadeesh Kumar (22000700), II/IV B.Tech., Member

Agenda-1: To discuss on the feedback given by stake holders

Resolution: It is resolved to approve the given by stake holders and to put forth the same in the coming BOS.

- Mr.K.Thilak(2100079014) B.Tech, III year student requested to update the syllabus according to GATE curriculum and also requested to give more practise problems in software related courses.  
It is resolved that 90% of GATE syllabus is covered in all core and sciences courses and it was explained to student by Dr.S.N.Padhi, professor and member of DAC that since it is necessary to give equal importance to industry needs and students opting for Entrepreneurship, courses are framed to meet the need of all students opting for various career paths.
- Mr. Y.Sai Teja(2100079021)B.Tech III Year student requested to provide expert guidance for competitions like e-baja.  
It is resolved that faculties who are expertise in such competitions are guiding students and if any further guidance is required special training program will be planned as and when required.
- Mr.R.Srinivas(2100070002) B.Tech III year student requested to provide more practise on Ansys and Hypermesh software.  
Dr.D.V.A.Rama Sastry, Associate Professor and member of DAC explained students that Hypermesh is a meshing software and Ansys is an analysis software. As per the timetable and allotted slots for the course it is not possible to cover all the components of all softwares. Class hours are planned to make students aware of the tools and the basic inputs will be given along with some practise problems. It is resolved to add more practise problems in software related courses to enable the advanced learners to explore deep into the software components.
- Mr.Naga Malleshwara Rao,(2100079013), B.Tech III year student requested to provide hands on experience in welding operations.  
It is resolved that in Manufacturing Technology course hands on welding operations are performed.
- Mr.Maruthi Prasad(2100079020)B.Tech III year student, requested to provide core knowledge to the students.  
It is resolved that all the core courses required for Mechanical Engineering are incorporated into the curriculum based on the industry needs and GATE syllabus.
- Mr.Subhash Reddy(210079041) B.Tech II year student of Automobile specialization requested to provide automobile engineering lab.  
It is resolved to put forth the request in the upcoming BOS.
- Y22 students requested to provide specilaization in automobile related courses. It is resolved to offer Automotive and Energy Engineering Specialization covering the needs of automotive industry and energy sector from Y23 admitted batch students

  
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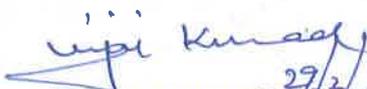
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onwards in place of Energy & CFD Specialization under Energy & CFD Cohort with the following Courses

- PE-1: Automobile Engineering(L-T-P-S:3-0-2-4)
  - PE-2:Autotronics & Safety (L-T-P-S:3-0-0-0)
  - PE-2: Autonomous Vehicles(L-T-P-S:3-0-0-0)
  - PE-3: Hybrid & Electric Vehicle Design (L-T-P-S: 3-0-2-4)
  - PE-4:Special Purpose Vehicles(L-T-P-S: 3-0-0-0)
  - PE-4:Vehicle Dynamics(L-T-P-S: 3-0-0-0)
  - PE-5:Thermal management of Electric and Electronic Systems(L-T-P-S:2-0-2-0)
  - PE-5: Alternate Energy Sources for Automobiles(L-T-P-S:2-0-2-0)
- Mr. Devesh(2200070017) B.Tech II Year student requested to provide hands on experience in assembly and disassembly of automobile engines and operation on machines  
It is resolved to conduct a workshop on assembly and disassembly of engines and operation of machines to Y22 and Y21 admitted batch students in 2014-15 Odd Sem.
  - Mr.Pramod Kumar(2200070011) B.Tech II year student, requested to avoid self learning mode of teaching to core mechanical courses. He also requested to divide KDOM subject into KOM and DOM to attain more knowledge.  
It is resolved that all core mechanical courses are offered in class room learning mode only. KDOM course is offered as single course covering all the concepts with an L-T-P-S :3-1-2-0 from Y23 admitted batch students due to the restriction on the no.of core courses offered per batch of students.
  - Y21 and Y22 admitted batch students brought to the notice of the chair that the equipment in C-324 (Basic electric and Electronics lab)adequate no.o f voltmeters are not available and in C-224(Workshop) 3D printing machines were not allowed to do projects.  
Chairman-DAC replied to students that the issue with C-324 lab will be taken to the notice of the concerned person and for C-224 3D printing machines students need to take prior permission from the concerned authorities to do projects.
  - Mr.Manikanta(23001130005) M.Tech-MD I year student, requested to include Finite Element analysis in the curriculum and also requested to include Fracture Mechanics lab. He also requested to include more practise sessions for Ansys.  
It is resolved that FEA is covered in B.Tech level and regarding the Fracture Mechanics lab, the request will be sent to the concerned authorities for necessary action. It is also resolved to include more practise problems in Ansys.
  - Mr.Uppal Chandra(23001120003)M.Tech-TE I year student, requested to give training on core software's like Ansys with more exercises.  
It is resolved to include more exercises in Ansys software in the relevant courses.
  - Dr.G.Diwakar, Professor, KLEF, requested to reduce the number of courses other than core courses and introduce advanced course like artificial learning machine Learning as core courses and ,digital manufacturing, Geometrical dimensions and tolerance courses, etc.

  
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It is resolved that the core courses of required number for Mechanical Engineering degree are incorporated in the curriculum and the courses Artificial Intelligence and machine learning are offered from Y22 admitted batch students onward as professional core course, also digital manufacturing and GD & T courses are offered as SDP Courses.

- Dr.Ravi Teja, Sr, Manager, Hyundai R & D Division, Suggested to include exclusive specialization in automobile field.

It is resolved to offer Automotive and Energy Engineering Specialization covering the needs of automotive industry and energy sector from Y23 admitted batch students onwards in place of Energy & CFD Specialization under Energy & CFD Cohort.

- Dr. N.B.V.Prasad, Dean Placements & internships, KLEF suggested that during the placement drives students need to exhibit software skills on drafting softwares (AutoCAD), Modelling Softwares (CATIA/Solidworks/Fusion360/Unigraphics) and analysis software(Ansys/Hypermesh). He also suggested to provide technical training to students one week prior to the drives on the basic courses like mechanics. TD, FM, PT, MD, Metallurgy, GD &T).

It is resolved that AutoCAD is taught to students in Engineering graphics course, Solid works/Fusion 360 are taught in DTW, Visualization and Modelling courses, Ansys is taught in Mechanics of solids, Mechanical Engineering Design and Innovation and Machine Design courses. Adams software is taught in Kinematics & Dynamics of Machines course. In addition to this students were offered certifications in any of the 3 softwares out of Fusion 360, Python, Ansys, Hypermesh, AutoCAD. CRT opted students will be trained in Dassault systems Lab on CATIA. Also a special technical training is offered to CRT students prior to the placement drives depending on the visit of the company.

Agenda-2: To discuss on the curriculum and syllabus of Y23 & Y24 admitted batch B.Tech students

Resolution: It is resolved to approve the curriculum and syllabus of Y23 & Y24 admitted batch B.Tech students and put forth the same in the upcoming BOS for further approval

- The course structure and syllabus of Y23 and Y24 admitted batch students is designed in line with the requirements of industry, societal needs. The curriculum also incorporated the feedback received from stake holders.  
It is resolved to approve the structure and curriculum of Y23 and Y24 admitted batch B.Tech students

Agenda-3: To discuss on the PDD document of Y24 admitted batch students

Resolution: It is resolved to approve PDD document of Y24 admitted batch students and put forth the same in the upcoming BOS for further approval

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- Based on the local, global, national and regional needs and the contemporary requirements of industry the program development document of Y24 admitted batch students is developed.  
It is resolved to approve the PDD of Y24 admitted batch students and put forth the same in the upcoming BOS.

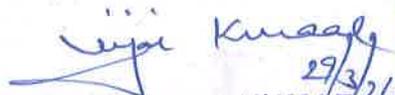
Agenda-4: To discuss on the inputs given by 2023-24 Odd Sem Course Coordinators	Resolution: It is resolved to put forth the recommendations given by course coordinators in the upcoming BOS
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- Dr.T.Kanthimathi, Course Coordinator of 21ME3115-Heat Transfer course, suggested to include one tutorial to the course so that more number of numerical can be solved.  
It is resolved that more numerical need to be given to students as home assignments rather than solving them in the class which will enhance the self learning pedagogy of students.
- Dr.S.S.Rao, Group head Smart manufacturing Cohort In charge suggested to offer Production planning and control as Management elective to Mechanical Students which is very much needed and is also a part of GATE syllabus.  
It is resolved to offer "Production Planning and Inventory Control" course as management elective for batches admitted from Y22 onwards.
- As per the discussions of Smart Manufacturing Cohort group members it is proposed to offer "Reverse Engineering and Rapid Prototyping" course as PE-1 with L-T-P-S: 3-0-2-4 and "Machine to Machine Communication" course as PE-5 with an L-T-P-S:3-0-0-0 for B.Tech students admitted from Y22 admitted batch onwards.  
It is resolved to approve the changes proposed by the Smart Manufacturing group

Agenda-5: To discuss result analysis, OBE and gap analysis of 2023-24 odd semester courses and Sem-in-1 result analysis of 2023-24 Even Sem courses.	Resolution: It is resolved to approve the discussion and forward to the upcoming BOS
--	--

- Chairman DAC presented the result analysis of 2023-4 ODD Sem (II, III, IV Year), in which almost all courses offered by the department attained pass percentage greater than 75%.
- Chairman DAC presented Sem-in-1 result analysis of 2023-24 even sem. It was observed that few courses didn't the CO attainment of 60% for which remedial classes were conducted and Make up exam is planned after Sem-in-2 exams for all eligible students.

Agenda-6: To discuss on Value added courses to be offered to Y22, Y23 and Y24 admitted batch students.	Resolution: It is resolved to approve the Value added courses to be offered to Y22, Y23 and Y24 admitted batch students and put forth the same in the upcoming BOS
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- Chairman DAC presented the value added courses to be offered to Y22, Y23 and Y24 admitted batch students.  
It is resolved to approve the value added courses and put forth the same in upcoming BOS.

Agenda-7: To discuss on the course structure of 2024-25 admitted batch M.Tech-MD and M.Tech-TE programs

Resolution: It is resolved to approve the course structure of 2024-25 admitted batch M.Tech-MD and M.Tech-TE programs and put forth the same in the upcoming BOS

- Chairman DAC presented the the course structure of 2024-25 admitted batch M.Tech-MD and M.Tech-TE programs.  
It is resolved to approve the course structure of 2024-25 admitted batch M.Tech-MD and M.Tech-TE programs and put forth the same in the upcoming BOS.  
The course structure of M.Tech-MD and M.Tech-TE programs is given in **Annexure-10**.

Agenda-8: Any other point: Placement analytics.

Resolution: It is resolved to approve the Placement analytics

### Meeting Photos:



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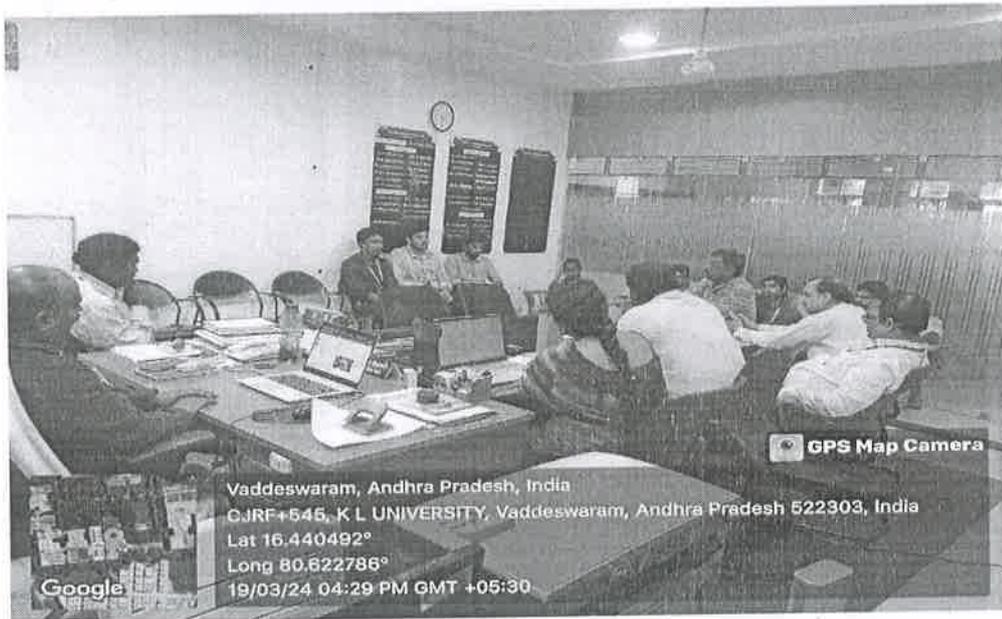
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### Annexure-2b

### Stake Holders Feedback Analysis

Department of Mechanical Engineering Koneru Lakshmaiah Education Foundation (K L Deemed to be University)												
Stake Holder Feedback Analysis and Action Taken Report Academic Year: 2024-25												
S.No	Stake Holders										Count	
1	Academic Peers										22	
2	Alumni										21	
3	Faculty										15	
4	Industry personnel										20	
5	Parents										20	
6	Students										90	
	Total										188	
Academic Peers												
Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	D A C N o.	P g No.	Date	BOS No. Pro of	Pg No.	Date
1	ME	B.Tech	Dr.G.Naga Srinivasulu, Professor, NIT Warangal	Industry and academic collaboration is very good	Curriculum is designed in line with Industry needs	Chairman -DAC thanked the stake holder	25	2	19-03-2024	26	4	29-03-2024
Alumni												
Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	D A C N o.	P g No.	Date	BOS No. Pro of	Pg No.	Date

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1	1	B.Tech	Dr. Ravi Teja, Sr.Manager, Hyundai R&D Division, Hyderabad	Suggested to include exclusive specialization in automobile field	Automobil e related courses are essential for mechanic al engineers	<p>It is resolved to offer Automotive and Energy Engineering Specialization covering the needs of automotive industry and energy sector from Y23 admitted batch students onwards in place of Energy &amp; CFD Specialization under Energy &amp; CFD Cohort with the following Courses</p> <ol style="list-style-type: none"> <li>1. PE-1: Automobile Engineering(L-T-P-S:3-0-2-4)</li> <li>2. PE-2:Autotronics &amp; Safety (L-T-P-S:3-0-0-0)</li> <li>3. PE-2: Autonomous Vehicles(L-T-P-S:3-0-0-0)</li> <li>4. PE-3: Hybrid &amp; Electric Vehicle Design (L-T-P-S: 3-0-2-4)</li> <li>5. PE-4:Special Purpose Vehicles(L-T-P-S: 3-0-0-0)</li> <li>6. PE-4:Vehicle Dynamics(L-T-P-S: 3-0-0-0)</li> <li>7. PE-5:Thermal management of Electric and Electronic Systems(L-T-P-S:2-0-2-0)</li> <li>8. PE-5: Alternate Energy Sources for Automobiles(L-T-P-S:2-0-2-0)</li> </ol>	25	3	19-03-2024	26	5	29-03-2024
Faculty												
Sl.No.	Departm ent	Name of the Program me	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	D AC N o.	P g N o.	Date	BOS No. Pro of	Pg No.	Date

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1	ME	B.Tech	Dr.G.Diwakar, Professor	Reduce the number of courses other than core courses and introduce advanced course like artificial learning machine Learning as core courses and ,digital manufacturing, Geometrical dimensions and tolerance courses,etc	Mor eimportant ce should be given to core courses to strngthen the basics of students	It is resolved that the core courses of required number for Mechanical Engineering degree are incorporated in the curriculum and the courses Artificial Intelligence and machine learning are offered from Y22 admitted batch students onward as professional core course, also digital manufacturing and GD & T courses are offered as SDP Courses	25	3	19-03-2024	26	5	29-03-2024
2	ME	B.Tech	Dr. N.B.V.Prasad, Dean Placement s & internships , KLEF	Suggested that during the placement drives students need to exhibit software skills on drafting softwares (AutoCAD), Modelling Softwares (CATIA/Solidworks/Fusion360/Unigraphics) and analysis software(Ansys/Hyper mesh). He also suggested to provide technical training to students one week prior to the drives on the basic courses like mechanics. TD, FM, PT, MD, Metallurgy, GD &T).	It is necessary to strngthen the students in all the required fields to get placement s	It is resolved that AutoCAD is taught to students in Engineering graphics course, Solid works/Fusion 360 are taught in DTW, Visualization and Modelling courses, Ansys is taught in Mechanics of solids, Mechanical Engineering Design and Innovation and Machine Design courses. Adams software is taught in Kinematics & Dynamics of Machines course. In addition to this students were offered certifications in any of the 3 softwares out of Fusion 360, Python, Ansys, Hypermesh, AutoCAD. CRT opted students will be trained in Dassault systems Lab on CATIA. Also a special technical training is offered to CRT students prior to the placement drives depending on the visit of the company.	25	4	19-03-2024	26	5	29-03-2024

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3	ME	B.Tech	Group Heads	Recommended to combine Human Values, Gen Sensitization courses and offer as single course	To reduce the no.of courses studied by studentst he courses are suggested to be combined	It is resolved to offer Human Values, Gender Equality and professional Ethics as new course for Y23 and y24 admitted batch students	25	4	19-03-2024	26	5	29-03-2024
Industry Personnel												
Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	D A C N o.	P g N o.	Date	BOS No. Pro of	Pg No.	Date
1	ME	B.Tech	Dr.P.Srinivas Rao, Global Training Head, Cyient Technologies, Hyderabad	Appreciated the efforts in framing the curriculum	All the contemporary requirements were included in framing the syllabus	Chairman -DAC thanked the stake holder	25	2	19-03-2024	26	5	29-03-2024
Parent												
Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	D A C N o.	P g N o.	Date	BOS No. Pro of	Pg No.	Date
1	ME	B.Tech		-	-	-	-	-	-	-	-	-
Student												
Sl.No.	Department	Name of the Programme	Details of Stake Holder	Recommendations / Suggestion(s)	Analysis	Action Taken	D A C N o.	P g N o.	Date	BOS No. Pro of	Pg No.	Date

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1	ME	B.Tech	2100079041 , K.Thilak	I request the concerned to please update the syllabus according to GATE.	Students willing to write GATE exam need the concepts to be covered in the relevant courses	It is resolved that 90% of GATE syllabus is covered in all core and sciences courses and it was explained to student by Dr.S.N.Padhi, professor and member of DAC that since it is necessary to give equal importance to industry needs and students opting for Entrepreneurship, courses are framed to meet the need of all students opting for various career paths.	25	2	19-03-2024	26	5	29-03-2024
2	ME	B.Tech	2100079013 , Naga Malleswara Rao	Requested to provide hands operation of welding machines	Hands on experience will make students confident in the particular trade	It is resolved that in Manufacturing Technology course hands on welding operations are performed.	25	2	19-03-2024	26	5	29-03-2024
	ME	B.Tech	2100079020 , CH. Maruthi prasad	Requested to improve the core knowledge of the students	Core knowledge is helpful in placement interviews	It is resolved that all the core courses required for Mechanical Engineering are incorporated into the curriculum based on the industry needs and GATE syllabus	25	2	19-03-2024	26	5	29-03-2024
	ME	B.Tech	2100079040 , P. Subhash Reddy	Requested to include physical Automobile Engine labs for automobile specialization students	Knowledge on the automobile engines and their physical working conditions is necessary	It is resolved to put forth the request in the upcoming BOS.	25	2	19-03-2024	26	5	29-03-2024

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					for mechanical engineers							
ME	B.Tech	2100070002 , R.Srinivas	Requested to include more practise questions in software related courses	More practise leads to better understand ing o fthe software	Dr.D.V.A.Rama Sastry, Associate Professor and member of DAC explained students that Hypermesh is a meshing software and Ansys is an analysis software. As per the timetable and allotted slots for the course it is not possible to cover all the components of all softwares. Class hours are planned to make students aware of the tools and the basic inputs will be given along with some practise problems. It is resolved to add more practise problems in software related courses to enable the advanced learners to explore deep into the software components.	25	2	19-03-2024	26	5	29-03-2024	
ME	B.Tech	2100079021 , Y.Sai Teja	Requested to provide expert guidance while participating in competitions like e- baja	It is a good practise to have proper guidance while participati ong in such competiti ons	It is resolved that faculties who are expertise in such competitions are guiding students and if any further guidance is required special training program will be planned as and when required.	25	2	19-03-2024	26	5	29-03-2024	

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ME	B.Tech	2200070011 , K Pramod Kumar	Requested to avoid self learning mode of teaching to core mechanical courses. He also requested to divide KDOM subject into KOM and DOM to attain more knowledge	Self-learning mode should be offered to courses where core or basic knowledge in that course is already imparted and if any extra knowledge needs to be gained	It is resolved that all core mechanical courses are offered in class room learning mode only. KDOM course is offered as single course covering all the concepts with an L-T-P-S:3-1-2-0 from Y23 admitted batch students due to the restriction on the no.of core courses offered per batch of students.	25	2	19-03-2024	26	5	29-03-2024
ME	B.Tech	Y22 admitted batch students	Requested to provide automobile related specialization	Knowledge on the automobile engines and their physical working conditions is necessary for mechanical engineers	It is resolved to offer Automotive and Energy Engineering Specialization covering the needs of automotive industry and energy sector from Y23 admitted batch students onwards in place of Energy & CFD Specialization under Energy & CFD Cohort with the following Courses1. PE-1: Automobile Engineering(L-T-P-S:3-0-2-4)2. PE-2:Autotronics & Safety (L-T-P-S:3-0-0-0)3. PE-2: Autonomous Vehicles(L-T-P-S:3-0-0-0)4. PE-3: Hybrid & Electric Vehicle Design (L-T-P-S: 3-0-2-4)5. PE-4:Special Purpose Vehicles(L-T-P-S: 3-0-0-0)6. PE-4:Vehicle Dynamics(L-T-P-S: 3-0-0-0)7. PE-5:Thermal management of Electric and Electronic Systems(L-T-P-S:2-0-2-	25	3	19-03-2024			

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					0)8. PE-5: Alternate Energy Sources for Automobiles(L-T-P-S:2-0-2-0)					
ME	M.Tech-MD	2300113000 5, Manikanta	Requested to include Finite Element analysis in the curriculum and also requested to include Fracture Mechanics lab. He also requested to include more practise sessions for Ansys	it is important to impart knowledge on FEA and Fracture Mechanics	It is resolved that FEA is covered in B.Tech level and regarding the Fracture Mechanics lab, the request will be sent to the concerned authorities for necessary action. It is also resolved to include more practise problems in Ansys..	25	3	19-03-2024		
ME	M.Tech-TE	2300112000 3, Uppal Chandra	Requested to give training on core software's like Ansys with more exercises.	Training on Acore softwares helpd in getting better placements	It is resolved to include more exercises in Ansys software in the relevant courses.	25	3	19-03-2024		

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## Y24 ACADEMIC STRUCTURE & FLEXIBILITIES FOR BACHELOR OF TECHNOLOGY

MAJOR FLEXIBILITY PROGRAM ADD-ON	NO MAJOR FLEXIBILITY										Major Flexibility - HONORS										Major Flexibility - HONORS through RESEARCH										Major Flexibility - HONORS through INNOVATION										Major Flexibility - HONORS through EXPERIENTIAL LEARNING									
	Sl No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min. Courses	Max. Courses	Grouping	Sl No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min. Courses	Max. Courses	Grouping	Sl No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min. Courses	Max. Courses	Grouping	Sl No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min. Courses	Max. Courses	Grouping	Sl No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min. Courses	Max. Courses	Grouping										
NO PROGRAM ADD-ON	1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5			
	2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1			
	3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1											
	35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1											
				163	163	59	59	1A3				171	213	62	68	1A3				176	229	62	71	1A3				175	221	61	71	1A3				175	217	62	68	1A3										
	Program Add-On SPECIALIZATION	1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		1	HAS	HAS-CORE	11	11	5	5		
		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1		2	HAS	HAS-FILE	3	3	1	1										
		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1		3	HAS	HAS-MNG	4	4	1	1										
		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1		35	SH	SH-CORE	3	3	1	1										
					168	168	61	62	1A3				182	224	64	70	1A3				187	240	64	73	1A3				186	228	64	70	1A3																	

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# Y24 ACADEMIC STRUCTURE & FLEXIBILITIES FOR BACHELOR OF TECHNOLOGY

MAJOR

FLEXIBILITY  
PROGRAM  
ADD-ON

## BSC DEGREE REQUIREMENTS

	Sl No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min Courses	Max Courses	Grouping
<b>NO PROGRAM ADD-ON</b>	1	HAS	HAS-CORE	11	11	5	5	
	2	HAS	HAS-FLE	3	3	1	1	
	3	HAS	HAS-MNG	4	4	1	1	
	4	BSC	BSC-CORE	4	4	1	1	
	5	BSC	BSC-ME-1	4	4	1	1	
	6	BSC	BSC-ME-2	0	0	0	0	
	7	BSC	BSC-ME-3	0	0	0	0	
	8	BSC	BSC-ME-4	0	0	0	0	
	9	BSC	BSC-ME-5	0	0	0	0	
	10	BSC	BSC-SE-1	4	4	1	1	
	11	BSC	BSC-SE-2	0	0	0	0	
	12	BSC	BSC-SE-3	0	0	0	0	
	13	ESC	ESC-CORE	29	29	9	9	
	14	PCC	PCC-CORE	40	52	11	11	
	15	FCC	FC-1	3	3	1	1	
	16	FCC	FC-2	0	0	0	0	
	17	HFC	HFC-CORE	0	0	0	0	
	18	HRC	HRC-CORE	0	0	0	0	
	19	HIC	HIC-CORE	0	0	0	0	
	20	HEC	HEC-CORE	0	0	0	0	
	21	SDC	SDP-1	2	2	1	1	
	22	SDC	SDP-2	2	2	1	1	
	23	SDC	SDP-3	2	2	1	1	
	24	SDC	SDP-4	2	2	1	1	
	25	PEC	PE-1	5	5	1	1	
	26	PEC	PE-2	3	3	1	1	
	27	PEC	PE-3	5	5	1	1	
	28	PEC	PE-4	0	0	0	0	
	29	PRI	PRI-CORE	0	0	2	2	
	30	OEC	OE-1	4	4	1	1	
	31	OEC	OE-2	4	4	1	1	
	32	OEC	OE-3	0	0	0	0	
	33	VAC	VAC-SPORTS	0	0	1	1	
	34	VAC	VAC-CERT	0	0	3	3	
	35	AUC	AUC-CORE	0	0	2	2	
	36	SIL	SIL-CORE	3	3	3	3	
	CREDITS FOR GRADUATION			134	146	51	51	124

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# Y24 ACADEMIC STRUCTURE & FLEXIBILITIES FOR BACHELOR OF TECHNOLOGY

MAJOR  
FLEXIBILITY  
PROGRAM  
ADD-ON

## DIPLOMA DEGREE REQUIREMENTS

SI No	Course Category	Sub-Category	Min. Credits	Max. Credits	Min Courses	Max Courses	Grouping
1	HAS	HAS-CORE	11	11	5	5	
2	HAS	HAS-FLE	3	3	1	1	
3	HAS	HAS-MNG	4	4	1	1	
4	BSC	BSC-CORE	4	4	1	1	
5	BSC	BSC-ME-1	4	4	1	1	
6	BSC	BSC-ME-2	0	0	0	0	
7	BSC	BSC-ME-3	0	0	0	0	
8	BSC	BSC-ME-4	0	0	0	0	
9	BSC	BSC-ME-5	0	0	0	0	
10	BSC	BSC-SE-1	4	4	1	1	
11	BSC	BSC-SE-2	0	0	0	0	
12	BSC	BSC-SE-3	0	0	0	0	
13	ESC	ESC-CORE	29	29	9	9	
14	PCC	PCC-CORE	26	26	7	7	
15	FCC	FC-1	0	0	0	0	
16	FCC	FC-2	0	0	0	0	
17	HFC	HFC-CORE	0	0	0	0	
18	HRC	HRC-CORE	0	0	0	0	
19	HIC	HIC-CORE	0	0	0	0	
20	HEC	HEC-CORE	0	0	0	0	
21	SDC	SDP-1	2	2	1	1	
22	SDC	SDP-2	2	2	1	1	
23	SDC	SDP-3	0	0	0	0	
24	SDC	SDP-4	0	0	0	0	
25	PEC	PE-1	0	0	0	0	
26	PEC	PE-2	0	0	0	0	
27	PEC	PE-3	0	0	0	0	
28	PEC	PE-4	0	0	0	0	
29	PRI	PRI-CORE	0	0	1	1	
30	OEC	OE-1	0	0	0	0	
31	OEC	OE-2	0	0	0	0	
32	OEC	OE-3	0	0	0	0	
33	VAC	VAC-SPORTS	0	0	1	1	
34	VAC	VAC-CERT	0	0	1	1	
35	AUC	AUC-CORE	0	0	1	1	
36	SIL	SIL-CORE	3	3	3	3	
CREDITS FOR GRADUATION							

NO  
PROGRAM  
ADD-ON

*Handwritten signature and date: 29/3/24*



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### Annexure-4

### Y24 Admitted Batch-B.Tech With Specialization COURSE STRUCTURE

#### 1. Program structure (with all Courses)containing following categorization

Course Code	Course Name	Course Category	L	T	P	S	CR	Pre-Requirement	New Course/Revised Course/Retained Course	Changes Proposed by	Justification	Employability /Entrepreneurship/Skill Development
23MT1001	LINEAR ALGEBRA & CALCULUS FOR ENGINEERS	BSC	2	2	0	0	4	NIL	Retained	-	-	Employability
23MT2011	OPTIMIZATION TECHNIQUES FOR MECHANICAL ENGINEERS	BSC	2	2	0	0	4	NIL	Retained	-	-	Employability
23MT2010	COMPUTATIONS IN APPLIED MECHANICS & STATISTICS	BSC	2	2	0	0	4	NIL	Retained	-	-	Employability
23ME1005	MATERIAL SCIENCE & METALLURGY	BSC	3	0	2	0	4	NIL	Retained	-	-	Skill Development
23CY1001	ENGINEERING CHEMISTRY	BSC	3	0	2	0	4	NIL	Retained	-	-	
24UC1203	DESIGN THINKING FOR INNOVATION	ESC	2	0	2	0	3	NIL	Retained	-	-	Entrepreneurship
23ME1103	DESIGN TOOLS WORKSHOP	ESC	0	0	4	0	2	DTI	Retained	-	-	Skill Development
23EC1203	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS	ESC	2	0	0	0	2	NIL	Retained	-	-	
24SC1102	COMPUTATIONAL THINKING FOR PROBLEM SOLVING	ESC	3	0	2	4	5	NIL	New Course	Faculty	Based on the recommendation of Computer Science	Skill Development

  
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											faculty new course is proposed in place of Computational Thinking for Structured Design	
24SC12030	COMPUTATIONAL THINKING FOR OBJECT ORIENTED DESIGN	ESC	3	0	2	0	4	CTS	New Course	Faculty	Based on the recommendation of Computer Science faculty new course is proposed in place of Object Oriented programming	Skill Development
23ME1002	ENGINEERING GRAPHICS	ESC	0	0	4	0	2	NIL	Retained	-	-	Skill Development
23ME1004	WORKSHOP PRACTICES FOR ENGINEERS	ESC	0	0	4	0	2	NIL	Retained	-	-	Skill Development
23ME1001	ENGINEERING MECHANICS	ESC	3	0	0	0	3	NIL	Retained	-	-	Skill Development
24SC1202	DATA STRUCTURES USING PYTHON	ESC	3	0	2	4	5	CTS	New Course	Faculty	Based on the recommendation of Computer Science faculty new course is proposed in place of Data Structures	Skill Development

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# Koneru Lakshmaiah Education Foundation

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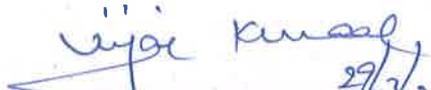
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24AD2001	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	ESC	3	0	2	0	3	Nil	New Course	Faculty	Based on the recommendation of Computer science faculty it proposed to offer new course in place of Data Driven Artificial Intelligence	Skill Development
23ME2116	FLUID MECHANICS & HYDRAULIC MACHINES	PCC	3	0	2	0	4	NIL	Retained	-	-	Skill Development
23ME2106R	MECHANICS OF SOLIDS	PCC	3	0	2	0	4	EM	Retained	-	-	Skill Development
23ME2208	MANUFACTURING PROCESSES	PCC	3	0	2	0	4	WPE	Retained	-	-	Skill Development
23ME2107	ENGINEERING THERMODYNAMICS	PCC	3	0	0	0	3	NIL	Retained	-	-	Employability
23ME3113	MANUFACTURING TECHNOLOGY	PCC	2	0	2	0	3	MP	Retained	-	-	Skill Development
23ME2209R	KINEMATICS & DYNAMICS OF MACHINES	PCC	3	1	2	0	5	EM	Retained	-	-	Skill Development
23ME3112	THERMAL SYSTEMS ENGINEERING	PCC	2	0	0	4	3	TD	Retained	-	-	Skill Development
23ME3110R	HEAT TRANSFER	PCC	3	0	2	0	4	TD	Retained	-	-	Skill Development
23ME3215	DIGITAL MANUFACTURING & ROBOTICS	PCC	3	0	0	0	3	KDOM	Retained	-	-	Employability
23ME3111R	MECHANICAL ENGINEERING DESIGN	PCC	3	0	0	0	3	SM	Retained	-	-	Employability

  
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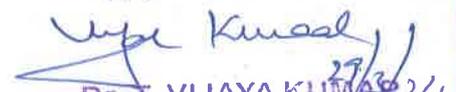
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23ME32 14R	MACHINE DESIGN	PCC	3	0	2	0	4	MED	Retained	-	-	Skill Development
23SDME 01R	VISUALIZATI ON & MODELLIN G FOR ENGINEERI NG DESIGN	SDC	0	0	2	4	2	EG	Retained	-	-	Skill Development
23SDME 02R	COMPUTER INTEGRATE D MANUFACT URING	SDC	0	0	2	4	2	MP	Retained	-	-	Skill Development
23SDME 03R	FINITE ELEMENT ANALYSIS	SDC	0	0	2	4	2	MOS	Retained	-	-	Skill Development
	SPECIALIZA TION SPECIFIC SKILL PROJECT	SDC	0	0	2	4	2	NIL	Retained	-	-	Skill Development
23IE304 1	TECHNICAL INTERNSHIP	PRI	0	0	4	0	0	NIL	Retained	-	-	Skill Development
23IE204 0	SOCIAL INTERNSHIP	PRI	0	0	4	0	0	NIL	Retained	-	-	Skill Development
23IE405 3R	ENGINEERI NG CAPSTONE PROJECT - 1	PRI	0	0	8	16	8	NIL	Retained	-	-	Skill Development
23IE405 4R	ENGINEERI NG CAPSTONE PROJECT - 2	PRI	0	0	8	16	8	NIL	Retained	-	-	Skill Development
	FLEXI CORE	PEC	3	0	0	0	3	NIL		-	-	
	PROFESSIO NAL ELECTIVE - 1	PEC	3	0	2	4	5	NIL		-	-	
	PROFESSIO NAL ELECTIVE - 2	PEC	3	0	0	0	3	NIL		-	-	
	PROFESSIO NAL ELECTIVE - 3	PEC	3	0	2	4	5	NIL		-	-	
	PROFESSIO NAL ELECTIVE - 4	PEC	3	0	0	0	3	NIL		-	-	
	PROFESSIO NAL ELECTIVE - 5	PEC	3	0	0	0	3	NIL		-	-	

  
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24UC1 102	LANGUAGE SKILLS FOR ENGINEERS	HAS	2	0	2	0	3	NIL	New Course	Faculty	Based on the recommen dation of English faculty new course is proposed in place of English proficienc y	Employability
24UC1 204	COMMUNI CATION SKILLS FOR ENGINEERS	HAS	2	0	2	0	3	NIL	New Course	Faculty	Based on the recommen dation of English faculty new course is proposed in place of Integrated Profession al English	Employability
23UC0 027	LEADERSHI P AND MANAGEM ENT SKILLS	HAS	2	0	2	0	3	Nil	New Course	Faculty	Based on the recommen dation of English faculty new course is proposed	Employability
23FLXX XCX	FOREIGN LANGUAGE ELECTIVE	HAS	0	0	0	0	3	NIL	Retained			
23UC0 026	HUMAN VALUES, GENDER EQUALITY & PROFESSIO NAL ETHICS	HAS	0	0	0	0	2	NIL	New course	Group heads	Based on the recommne dations of group heads Human vales and Gender sensitizati ona re combines and offerd	Entrepreneurs hip

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19/3/24  
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												as single course	
23ME01H F	RENEWABLE ENERGY SYSTEMS	HFC	3	0	2	0	4	Nil	New Course	Group Heads		Based on the recommendations of Group Heads new Course was introduced under HFC category	Skill Development
23ME02H F	ADVANCED FINITE ELEMENT ANALYSIS	HFC	3	0	2	0	4	Nil	New Course	Group Heads		Based on the recommendations of Group Heads new Course was introduced under HFC category	Skill Development
23ME03H F	MULTIDISCIPLINARY DESIGN OPTIMIZATION	HFC	3	0	2	0	4	Nil	New Course	Group Heads		Based on the recommendations of Group Heads new Course was introduced under HFC category	Skill Development
23ME04H F	ADVANCED MANUFACTURING TECHNOLOGIES	HFC	3	0	2	0	4	Nil	New Course	Group Heads		Based on the recommendations of Group Heads new Course was introduced under	Skill Development

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											HFC category	
23ME01R F	HEAT TRANSFER ENHANCEMENT TECHNIQUES	HRC	2	0	2	0	3	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HRC category	Skill Development
23ME03R F	EXPERIMENTAL METHODS AND SIMULATION MODELLING IN MECHANICAL ENGINEERING	HRC	2	0	2	0	3	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HRC category	Skill Development
23ME04R F	EMERGING TRENDS IN ROBOTICS AND AUTOMATION	HRC	2	0	2	0	3	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HRC category	Skill Development
23ME02R F	ADVANCED MATERIALS FOR ENGINEERING APPLICATIONS	HRC	2	0	2	0	3	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under	Skill Development

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											HRC category	
23ME01E F	ENERGY STORAGE SYSTEMS AND TECHNOLOGIES	HEC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HEC category	Skill Development
23ME02E F	MECHANICAL SYSTEMS DESIGN	HEC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HEC category	Skill Development
23ME03E F	ADVANCED MANUFACTURING PROCESSES	HEC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HEC category	Skill Development
23ME04E F	MECHATRONICS AND ROBOTICS	HEC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under	Skill Development

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											HEC category	
23DT01IF	ENTREPRENEURIAL TECHNOLOGY DEVELOPMENT AND PROTOTYPING	HIC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HEC category	Skill Development
23DT02IF	CUSTOMER DISCOVERY FOR STARTUPS	HIC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HEC category	Skill Development
23DT03IF	CUSTOMER VALIDATION FOR STARTUPS	HIC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under HEC category	Skill Development
23DT04IF	CUSTOMER CREATION AND MARKETING FOR ENTREPRENEURS	HIC	0	0	6	4	4	Nil	New Course	Group Heads	Based on the recommendations of Group Heads new Course was introduced under	Skill Development

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											HEC category	
23UC008	INDIAN CONSTITUTION	AUC	0	0	0	0	0	NIL	Retained	-	-	Entrepreneurship
23UC009	ECOLOGY & ENVIRONMENT	AUC	2	0	0	0	0	NIL	Retained	-	-	Employability
23UC017	INDIAN KNOWLEDGE SYSTEMS : VEDIC MATHEMATICS	AUC	0	0	0	0	0	NIL	Retained	-	-	
23UC013	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 1	AUC	0	0	0	0	0	NIL	Retained	-	-	Skill Development
23UC014	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 2	AUC	0	0	0	0	0	NIL	Retained	-	-	Skill Development
	OPEN ELECTIVE - 1	OEC	0	0	0	0	4	NIL	Retained	-	-	Employability
	OPEN ELECTIVE - 2	OEC	0	0	0	0	4	NIL	Retained	-	-	Employability
	OPEN ELECTIVE - 3	OEC	0	0	0	0	4	NIL	Retained	-	-	Employability
23MEX XXX	INDUSTRIAL MANAGEMENT AND PRODUCTION CONTROL	OEC	0	0	0	0	4	NIL	New Course	Group Head	Based on the recommendation of Group head the course is introduced to cover the topics of GATE	Entrepreneurship
23UC021	SOCIAL IMMERSIVE LEARNING - 1	SIL	0	0	0	0	1	NIL	Retained			Skill Development
23UC022	SOCIAL IMMERSIVE LEARNING - 2	SIL	0	0	0	0	1	NIL	Retained			Skill Development
23UC023	SOCIAL IMMERSIVE	SIL	0	0	0	0	1	NIL	Retained			Skill Development

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	LEARNING - 3											
23SDME 04R -4	ANALYSIS OF ENERGY SYSTEMS	SDP-4	0	0	2	4	2	TD	Retained			Skill Development
23SDME 05R	3D MODELLING AND DIGITAL PROTOTYPING	SDP-4	0	0	2	4	2	EG	Retained			Skill Development
23SDME 06R	GEOMETRIC DIMENSIONING AND TOLERANCING	SDP-4	0	0	2	4	2	MP	Retained			Skill Development
23ECF31 01R	AUTOMOBILE ENGINEERING	Auto motive & Energy Engineering	3	0	2	4	5	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Skill Development
23ECF32 02	AUTOTRONICS & SAFETY		3	0	0	0	3	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Employability
23ECF32 03	AUTONOMOUS VEHICLES		3	0	0	0	3	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is	Employability

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										offered to Y23 and Y24 admitted batch students	
23ECF33 04R	HYBRID & ELECTRIC VEHICLE DESIGN	3	0	2	4	5	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Skill Development
23ECF34 05M	SPECIAL PURPOSE VEHICLES	3	0	0	0	3	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Employability
23ECF34 06M	VEHICLE DYNAMICS	3	0	0	0	3	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Employability

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23ECF35 07	THERMAL MANAGEM ENTOF ELECTRIC AND ELECTRIONI CS SYSTEMS		3	0	0	0	3	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Employability
23ECF35 08	ALTERNATE ENERGY SOURCES FOR AUTOMOBIL ES		3	0	0	0	3	TD	New Course	Students and Industry persons	Based on the suggestion of the stake holders a new specializat ion is offered to Y23 and Y24 admitted batch students	Employability
23EGD3 101R	MODELING ANALYSIS & DESIGN OF ROBOTIC SYSTEMS	Engin eering Desig n	3	0	2	4	5	KDO M	Retained			Skill Development
23EGD3 202	CREEP, FATIGUE AND FRACTURE MECHANIC S		3	0	0	0	3	SM	Retained			Employability
23EGD3 203	THEORY OF ELASTICITY AND PLASTICITY		3	0	0	0	3	SM	Retained			Employability
23EGD3 304R	SUSTAINAB LE DESIGN & SOCIAL INNOVATIO N IN ENGINEERI NG DESIGN		3	0	2	4	5	MED	Retained			Skill Development
23EGD3 405M	ADVANCED VIBRATIONS		3	0	0	0	3	KDO M	Retained			Employability

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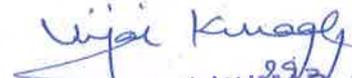
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23EGD3 406M	MECHANICS OF COMPOSITE MATERIALS	e-Mobility	3	0	0	0	3	MED	Retained		Employability
23EGD3 507	ADVANCED STRENGTH OF MATERIALS		3	0	0	0	3	SM	Retained		Employability
23EGD3 508	HYBRID AND ELECTRIC VEHICLE DESIGN		3	0	0	0	3	SM	Retained		Employability
23EME3 101R	POWER TRAIN DESIGN FOR ELECTRIC VEHICLE		3	0	2	4	5	KDOM	Retained		Skill Development
23EME3 203	AUTONOMOUS VEHICLES & AUTOMOTIVE ELECTRONICS		3	0	0	0	3	SM	Retained		Employability
23EME3 202	COMMUNICATION PROTOCOLS & TESTING OF ELECTRIC VEHICLE		3	0	0	0	3	SM	Retained		Employability
23EME3 304R	CHARGING STATIONS FOR ELECTRIC VEHICLES		3	0	2	4	5	MED	Retained		Skill Development
23EME3 406MA	BATTERY STATE ESTIMATION ALGORITHMS FOR ELECTRIC VEHICLE		3	0	0	0	3	KDOM	Retained		Employability
23EME3 404M	THERMAL MANAGEMENT OF ELECTRIC AND ELECTRONIC SYSTEMS		3	0	0	0	3	MED	Retained		Employability
23EME3 507	AI AND IOT FOR ELECTRIC VEHICLE		3	0	0	0	3	SM	Retained		Employability
23EME3 508	EV SYSTEM FOR	3	0	0	0	3	SM	Retained		Employability	

  
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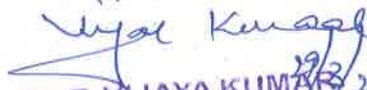
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	WIRING DESIGN																				
23RAN3 101R	Robot Motion Planning, dynamics and Control	Robotics & Automation	3	0	2	4	5	KDO M or FIT	Retained											Skill Development	
23RAN3 202	Autonomous Vehicles & Automotive Electronics		3	0	0	0	3	EM	Retained												Employability
23RAN3 203	Robot Manipulation and Wheeled Mobile Robots		3	0	0	0	3	FIT or SM	Retained												Employability
23RAN3 304R	Advanced Robotics		3	0	2	4	5	DMR	Retained												Employability
23RAN3 405M	Artificial Intelligence for Robotics		3	0	0	0	3	SM	Retained												Employability
23RAN3 406M	Human Machine Interface & Brain Machine Interface		3	0	0	0	3	AMR B	Retained												Employability
23RAN3 507	Computer Vision & Applications		3	0	0	0	3	AMR B	Retained												Employability
23SMF3 101R	REVERSE ENGINEERING & RAPID PROTOTYPING	Smart Manufacturing	3	0	2	4	5	MP	Retained												Skill Development
23SMF3 202	ADVANCED MATERIALS MANUFACTURING & TESTING		3	0	0	0	3	MP	Retained												Employability
23SMF3 203	MODERN MANUFACTURING PROCESSES		3	0	0	0	3	MP	Retained												Employability
23SMF3 304R	SUSTAINABLE DESIGN & SOCIAL INNOVATION IN SMART MANUFACTURING		3	0	2	4	5	MP	Retained												Skill Development
23SMF3 405M	ROBOTICS & INDUSTRIAL AUTOMATION		3	0	0	0	3	MP	Retained												Employability

  
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23SMF3 406M	MEASUREMENT & INSTRUMENTATION		3	0	0	0	3	MP	Retained			Employability
23SMF3 507	MACHINE TO MACHINE COMMUNICATION		3	0	0	0	3	MP	Retained			Employability
23SMF3 508	FLEXIBLE MANUFACTURING SYSTEMS		3	0	0	0	3	MP	Retained			Employability
23AEA3 101R	Automotive Sensor and Applications	Auto moti ve Elect ronics & Auto sar	3	0	2	4	5	TD	Retained			Skill Development
23AEA3 202	Autotronics		3	0	0	0	3	TD	Retained			Employability
23AEA3 203	Automotive Pollution and its Control		3	0	0	0	3	TD	Retained			Employability
23AEA3 304P	Alternate Drives, Traction and Controls		3	0	2	4	5	TD	Retained			Skill Development
23AEA3 304P	Alternate Drives, Traction and Controls		3	0	0	0	3	TD	Retained			Employability
23AEA3 406M	Automotive electrical and electronic systems		3	0	0	0	3	TD	Retained			Employability
23AEA3 507	Soft Computing Techniques for Automotive Applications		3	0	0	0	3	TD	Retained			Employability
23AEA3 508	Automotive Networking and Protocols		3	0	0	0	3	Nil	Retained			Employability
23ME22 21	SUPPLY CHAIN & QUALITY MANAGEMENT		FCC	3	0	0	0	0	Nil	Retained		
23ME22 25	INDUSTRIAL INTERNET OF THINGS	FCC	3	0	0	0	0	Nil	Retained			Employability

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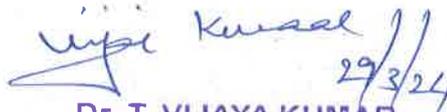
23ME22 26	ELECTRIC VEHICLE TECHNOL OGY	FCC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB1	Robotics	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB1	Mechatroni cs	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB2	Operations Research	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB3	Hybrid Electric vehicles	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB4	Industry 4.0	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB5	Industrial Automatio n	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB6	Logistics & Supply chain manageme nt	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB7	Total Quality Manageme nt	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB8	Smart Mobility	OEC	3	0	0	0	0	0	Nil	Retained			Employability
OEME4 OB9	Managerial Economics for Engineers	OEC	3	0	0	0	0	0	Nil	Retained			Employability
Total			83	9	64	56	170						

**Percentage of Syllabus Revision=32\*100/131=24.42%**

**Percentage of Courses focusing on Employability= 60\*100/131=45.8%**

**Percentage of Courses focusing on Entrepreneurship= 4\*100/131=3.05%**

**Percentage of Courses focusing on Skill Development = 43\*100/115=45.03%**

  
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### Annexure-5

#### Syllabus for New Courses

#### Management Elective – 23MEXXX-Industrial Management and Production Planning

L-T-P-S : 3-0-0-0-0

Credits : 3

Contact Hours : 3

Pre-requisite : Nil

#### Mapping of Course Outcomes with PO/PSO:

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

#### Syllabus:

<b>Module-1</b>	Management Introduction - Management Concept –Scope and functions of Management - Levels of Management - Importance of management. Classical Approach to Management: Scientific Management- The advent of Scientific Management – Frederick W Taylor’s 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-batch and continuous
<b>Module-2</b>	Forecasting models - Definition, Approaches, and Types, Qualitative Approach: Judgmental Methods, Quantitative Approach: Time Series, Regression, Multiple Regression, Forecasting Error Estimation Techniques, Aggregate production planning, introduction to computer integrated production planning systems-elements of Just In Time Systems – Fundamentals of MRP II and ERP
<b>Module-3</b>	Scheduling: Introduction - 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 2 machines (Johnson’s algorithm), n jobs through 3 machines, n jobs through m machines, materials requirement planning, lean manufacturing
<b>Module-4</b>	Inventory control – Purpose of holding stock-Effect of demand on inventories. Determination of Economic order quantity and economic lot size- Method study, basic procedure-Selection-Recording of process – Critical analysis, work measurement – Techniques of work measurement – Time study – Production study – Work sampling

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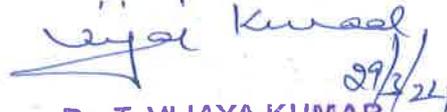
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### Text Books/ Reference Books:

1. Management by Stoner, Freeman, Gilbert – PHI – 7th edition.
2. James. B. Dilworth, "Operations management – Design, Planning and Control for manufacturing and services" McGraw Hill International edition 1992.
3. R. Pannerselvam, Production and Operations Management, PHI Learning Pvt. Ltd., 3rd Edition, 2012.
4. Roberta S. Russell and Bernard W. Taylor, "Operations Management", Pearson Education, 2003.

### Reference Books:

1. S.N. Chari, Production and Operations Management, Tata McGraw Hill, 3rd Edition, 2007
2. S. K. Mukhopadhyay, Production planning and control, PHI Learning Pvt. Ltd., 2015

  
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### Automobile Engineering

COURSE CODE	23ECF3101	MODE	General	LTPS	3-0-2-4-0	PRE-REQUISITE	TD
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### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Understand various principles, components, classification of vehicles in an Automobiles	3	PO1, PSO2
CO2	Understand working of Engine cooling system, Coolant properties and combustion chambers.	3	PO1, PSO2
CO3	Understand various lubricating systems, its properties and Transmission systems of an Automobile.	3	PO1, PSO2
CO4	Understand the concepts of Suspension system and Vehicle control in an Automobile.	4	PO2, PSO2
CO5	Apply the knowledge of various concepts of Automobile engineering using simulation and analysis through suitable soft	5	PO3
CO6	Apply THE Automobile engineering using simulation and analysis through suitable soft	5	PO3

### Syllabus

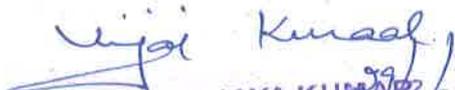
Module 1	Introduction: Classification of Vehicles – applications, Components of an automobile. Engine and cooling system
Module 2	Engine Classification, types of combustion chambers and components of engine. Coolants and its properties, Air and water cooling systems.
Module 3	Lubrication and transmission Systems: Lubricants, Properties, Splash, semi-pressure and full pressure Lubricating systems. Clutches, Gear Box, Automatic transmission, propeller shaft, differential.
Module 4	Suspension systems and vehicle control: springs, shock absorbers, wheel alignment, steering mechanisms, power steering, Brakes, Emission from automobiles

### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Automotive Mechanics, Principles & Practices.	Joseph Heitner,	EWP	1992

### Global Certifications:

Mapped Global Certifications;
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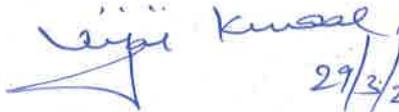
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	Nil	Nil	Nil	Nil	Nil	Nil

Tools used in Practical / Skill:

Sl No	Tool Name	Parent Industry	Open Source/ Commercial
1	Ansys, matlab	Ansys, matlab	Ansys, matlab

Evaluation Components:

Evaluation	Component	Weightage	Total
In-Sem Formative	Home Assignments	5	22
	Quiz	5	
	Global Challenges.Participation	2	
	Practical Continuous Evaluation	5	
	Skill Continuous Evaluation	5	
In-Sem Summative	In-Sem 1	12	38
	In-Sem 2	12	
	Practical In-Sem	7	
	Skill In-Sem	7	
End-Sem Summative	End-Sem Exam (Paper Based)	24	40
	Lab End-Sem Exam	8	
	Skill End-Sem Exam	8	

  
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### AUTOTRONICS & SAFETY

COURSE CODE	23ECF3202	MODE	General	LTPS	3-0-0-0-0	PRE-REQUISITE	TD
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#### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Apply the electrical principles to estimate the performance of batteries for automotive applications	3	PO1, PO7
CO2	Apply the basics of electronics to develop circuits for electronic fuel injection and ignition systems	3	PO1, PO2
CO3	Develop circuit layouts for automotive lighting systems and accessories.	3	PO1, PO2
CO4	Understand various comfort and safety features existing in automobiles and possible future developments	2	PO1

#### Syllabus

Module 1	<p><b>Introduction to Automotive Batteries</b> - Importance of batteries in vehicle operation Overview of battery construction and components, Historical development of automotive batteries</p> <p><b>Electrochemical Principles</b> - Basics of electrochemistry, Chemical reactions in lead-acid batteries, Voltage, current, and capacity in battery cells</p> <p><b>Types of Automotive Batteries</b> - Lead-acid batteries (flooded; AGM, gel), Lithium-ion batteries and hybrid vehicle batteries, Specialty batteries (start-stop systems, deep-cycle batteries)</p> <p><b>Battery Performance Factors</b> - Temperature effects on battery performance, State of charge (SOC) and state of health (SOH), Battery aging and degradation mechanisms</p> <p><b>Charging Systems</b> - Alternator operation and regulation, Voltage regulation and charging algorithms, Battery charging methods (float, bulk, absorption),</p> <p><b>Battery Testing and Diagnosis</b> - Voltage testing and load testing, Conductance testing and impedance spectroscopy, Diagnostic tools and equipment for battery testing</p> <p><b>Battery Maintenance and Troubleshooting</b> - Preventive maintenance procedures (cleaning, terminal inspection), Common battery problems and their causes, Troubleshooting charging system faults</p>
Module 2	<p><b>Electronic Fuel Injection</b>- Overview of internal combustion engines, Evolution of fuel delivery and ignition systems, Advantages of electronic systems over carburetors and mechanical ignition systems, EFI System Components and Architecture, Throttle body, fuel injectors, fuel pump, fuel pressure regulator, Engine control unit (ECU) and its functions</p> <p><b>Ignition System</b> - Distributor-based ignition systems, Distributorless ignition systems (DIS), Coil-on-plug (COP) ignition systems, Capacitive discharge ignition (CDI)</p>
Module 3	<p><b>Wiring Diagram Interpretation</b> - Understanding symbols and abbreviations, Reading wiring diagrams for different vehicle systems, Tracing circuits and identifying components</p> <p><b>Automotive Wiring System Components</b> - Wiring harnesses and connectors, Relays, fuses, and circuit breakers, Switches and controls</p>

  
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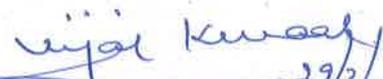
	<p><b>Lighting System Components</b> - Headlights, taillights, and turn signals, Interior lighting and dashboard illumination, Auxiliary lighting (fog lights, driving lights, etc.), Lighting control modules and sensors</p> <p><b>Diagnosis and Repair Techniques</b> - Using multimeters and other diagnostic tools, Troubleshooting common electrical problems, Repairing damaged wiring and connectors, Testing and replacing lighting system components</p> <p><b>Advanced Topics</b> - CAN bus systems and networked electronics, LED lighting technology and retrofitting, Electrical modifications and aftermarket installations, Future trends in automotive wiring and lighting systems</p>
Module 4	<p><b>Introduction to Automotive Safety</b> - Importance of automotive safety, Historical overview of automotive safety advancements, Role of safety organizations and regulations</p> <p><b>Crash Dynamics</b> - Kinematics of collisions, Impact forces and energy absorption, Factors affecting crash severity</p> <p><b>Vehicle Safety Systems</b> - Passive safety systems (seatbelts, airbags, crumple zones), Active safety systems (ABS, ESC, collision avoidance systems), Emerging safety technologies (autonomous emergency braking, lane departure warning)</p> <p><b>Occupant Protection</b> - Seatbelt design and effectiveness, Airbag types and deployment criteria, Child restraint systems and guidelines</p> <p><b>Pedestrian Safety</b> - Vehicle design considerations for pedestrian protection, Impact of vehicle speed on pedestrian injury severity, Pedestrian detection systems and collision mitigation strategies</p> <p><b>Safety Regulations and Standards</b> - Global vehicle safety standards (NHTSA, Euro NCAP, IIHS), Crash test procedures and rating systems, Compliance with safety regulations in vehicle design and production</p> <p>Emerging trends in vehicle safety technology, Challenges and opportunities in improving automotive safety</p>

## Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Automotive Electrical and Engine Performance	James D. Halderman	Pearson	2019
2	Automotive Wiring and Electrical Systems	Tony Candela	CarTech Inc	2009
3	Automotive vehicle safety	George A. Peters, Barbara J. Peters	Taylor and Francis	2015
4	Automotive Electricals / Electronics System and Components	Tom Denton	Routledge	2017

## Global Certifications:

Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification

  
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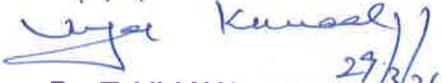
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1	NA	NA	NA	NA	NA	NA
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### Evaluation Components:

Evaluation	Component	Weightage	Total
In-Sem	Active Learning	10	20
Formative	Home Assignment & Textbook	10	
In-Sem	In-Sem 1	20	40
Summative	In-Sem 2	20	
End-Sem	End-Sem Exam (Paper Based)	40	40
Summative			

  
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### Autonomous Vehicles

COURSE CODE	23ECF3203	MODE	General	LTPS	3-0-0-0	PRE-REQUISITE	TD
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#### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Evaluate object detection and tracking algorithms utilized in autonomous vehicle systems, assessing their efficacy in real-world scenarios.	3	PSO1,PO1,PO2
CO2	Critically evaluate global and local localization methods for autonomous vehicles, discerning their strengths and limitations.	3	PSO1,PO1,PO2,PO3
CO3	Apply advanced modeling techniques to accurately represent vehicle dynamics in simulation environments.	3	PSO1,PO1,PO3,PO4
CO4	Using a critical lens, students will analyze the integration of autonomous vehicles in various industrial sectors, including agriculture, mining, and logistics, to optimize processes and increase productivity.	4	PSO2,PO1,PO2,PO4

#### Syllabus

Module 1	Overview of autonomous vehicle technology, Historical perspective and evolution, Key components and architecture of autonomous vehicles, Sensor technologies: LiDAR, RADAR, cameras, ultrasonic sensors, Sensor fusion techniques, Object detection, tracking.
Module 2	Global and local localization methods, Simultaneous Localization and Mapping (SLAM) techniques, Mapping approaches: grid-based, feature-based, semantic mapping, PID control and its variants, Model Predictive Control (MPC), Reinforcement learning in control systems.
Module 3	Vehicle modeling and simulation, Trajectory generation, Handling dynamics and stability control, Human factors in autonomous vehicle design, User interface design for autonomous vehicles, Ethical considerations and safety implications.
Module 4	Transportation and mobility services, Industrial applications: agriculture, mining, logistics, Future trends and emerging applications

#### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Autonomous Vehicles: Concepts and Implementations	John Doe	Dhanpat Rai Publishing Company	2019
2	Principles of Autonomous Vehicle Systems	Jane Smith	Tata McGraw Hill	2020
3	Autonomous Driving: Technical, Legal and Social Aspects	Adam Johnson	Wiley	2018
4	Handbook of Autonomous Vehicles	Michael Brown	Cambridge University Press	2021

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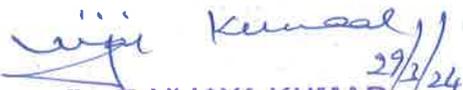
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### Global Certifications:

Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	Introduction to Self-Driving Cars	Coursera	Y	Online	Coursera	<a href="https://www.coursera.org/learn/intro-self-driving-cars">https://www.coursera.org/learn/intro-self-driving-cars</a>

### Evaluation Components:

Evaluation	Component	Weightage	Total
In-Sem Formative	Active Learning	10	20
	Home Assignments	10	
In-Sem Summative	In-Sem 1	20	40
	In-Sem 2	20	
End-Sem Summative	End-Sem Exam (Paper Based)	24	40

  
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## Hybrid and Electric Vehicle design (HEVD)

COURSE CODE	23ECF3304	MODE	General	LTPS	3-0-2-4-0	PRE-REQUISITE	TD
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### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Understand Hybrid /EV Vehicles and study of vehicle dynamics	3	PS01,P01,P02
CO2	Apply Architecture of Hybrid/EV Vehicles, components and Battery EV	3	PS01,P01,P02,P03
CO3	Apply and analyse Fuel Cell, DC/AC Drives and SRM	3	PS01,P01,P03,P04
CO4	Apply EV Controls, Controller, and control strategies	4	PS02,P01,P02,P04
CO5	Analyze and apply theoretical concepts to develop mathematical models and simulate	5	PS02,P02,P03,P05
CO6	Analyze the EV characteristics under various conditions	5	PS02,P02,P03,P05

### Syllabus

Module 1	Electric Vehicle History, Components of Electric Vehicle, Comparison with Internal combustion, Engine: Technology, Comparison with Internal combustion Engine: Benefits and Challenges, EV classification and their electrification levels, EV Terminology Motor Torque Calculations for Electric Vehicle: Calculating the Rolling Resistance, calculating the grade resistance.
Module 2	Calculating the Acceleration Force, Finding the Total Tractive Effort, Torque Required on The Drive Wheel. Electric Vehicle Architecture Design: Types of Electric Vehicle and components, Electrical protection and system requirement, Photovoltaic solar based EV design.
Module 3	Battery Electric vehicle (BEV), Hybrid electric vehicle (HEV), Plug-in hybrid vehicle (PHEV), Fuel cell electric vehicle (FCEV), Electrification Level of EV, Comparison of fuel vs Electric and solar power, Solar Power operated Electric vehicles.
Module 4	Electric Drive and controller: Types of Motors, Selection and sizing of Motor, RPM and Torque calculation of motor, Motor Controllers, Component sizing, Physical locations, Mechanical connection of motor, Electrical connection of motor.

### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
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1	Vehicular Electric Power Systems	Ali Emadi, Mehrdad Ehsani, John M. Miller	Marcel Dekker Publications	2004
2	Vehicle Dynamics- Theory & Practice	Reza N. Jazar	Springer Publications	2008

### Global Certifications:

Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	NA	NA	NA	NA	NA	NA

### Tools used in Practical / Skill:

Sl No	Tool Name	Parent Industry	Open Source/ Commercial
1	MATLAB	NA	NA

### Evaluation Components: L-T-P-S: 3-0-2-4

Evaluation	Component	Weightage	Total
In-Sem Formative	Home Assignments	5	22
	Quiz	5	
	Global Challenges Participation	2	
	Practical Continuous Evaluation	5	
	Skill Continuous Evaluation	5	
In-Sem Summative	In-Sem 1	12	38
	In-Sem 2	12	
	Practical In-Sem	7	
	Skill In-Sem	7	
End-Sem Summative	End-Sem Exam (Paper Based)	24	40
	Lab End-Sem Exam	8	
	Skill End-Sem Exam	8	

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### Special Purpose Vehicles (SPV)

COURSE CODE	23ECF3405	MODE	General	LTPS	3-0-0-0-0	PRE-REQUISITE	TD
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### Course Outcomes

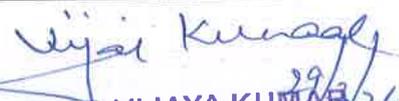
CO#	CO Description	BTL	PO Mapping
CO1	Classify special purpose vehicles and its ergonomic considerations	3	PO 1
CO2	Enumerate design considerations of special purpose vehicles.	3	PO 1, PO 2
CO3	Examine different features of various types of earth moving machinery such as Tippers, Scrapers and shovels, Loaders, Excavators, Dumpers, Bulldozers, Fork Lift and Road rollers, Tractors	3	PO 1, PO 2
CO4	Assess design features of Mobile Cranes.	3	PO 1, PO 3
CO5	Summarize Features of Articulated vehicles, Ambulance, fire extinguishing vehicle and Tipper-working of Hover craft	4	PO 1, PO 3

### Syllabus

Module 1	<b>Introduction:</b> Classification of Special Purpose Vehicles, wheel type & track type, applications, Vehicles for differently challenged persons ; <b>Principles and design considerations of special purpose vehicles:</b> Study of working principles and design considerations of different systems involved such as power system, transmission, final drive, lubrication, electrical, braking, steering, pneumatic & hydraulic control circuits
Module 2	<b>Earth Moving Machines:</b> Construction and working features of different types of earth moving machinery such as Tippers, Scrapers and shovels, Loaders, Excavators, Dumpers, Bulldozers, Fork Lift and Road rollers; <b>Tractors:</b> Classification of tractors-lay out of wheeled tractor- power transmission system & drive line - steering system - accessories of wheeled tractors- hydraulic control system- power take off unit
Module 3	<b>Mobile Cranes:</b> Basic characteristics of truck cranes, stability and design features, control systems and safety devices; <b>Special purpose vehicles:</b> Features of Oil tankers- Articulated vehicles, working -features of Ambulance, fire extinguishing vehicle and Tipper-working of Hover craft
Module 4	<b>Ergonomic considerations:</b> Human factors in special purpose vehicle design with reference to comfort, convenience and safety, effects of noise, vibration and thermal stresses on human performance. Economics of special purpose vehicle utilization.

### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Construction Equipment Operation & Maintenance	Y. Pokras and M. Tushnyakov	MIR, Moscow	
2	Truck Cranes	A. Astskhov	MIR, Moscow	

  
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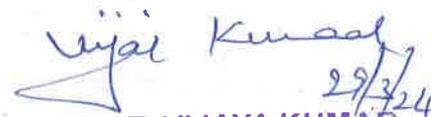
3	Motor Graders	E.G. Poninson	MIR, Moscow	
4	Hand book of Earth Moving Machinery		Central Water & Power Commission (Govt. of India)	
5	Material Handling Equipment	E.G. Poninson	M.R. Publishers	
6	Electric Vehicles	Sheldon, R.Shacket	Domus Books, New York	
7	Construction Equipment Guide	David A. Day, Neal B. H. Benjamin	Wiley	
8	Farm Machines and Equipment	C.P. Nakra	Dhanpat Rai Publications, New Delhi	
9	Farm machinery and mechanism	Donnell hunt and L.W.garver	Lowa state university press	
10	Theory of Ground vehicles	J.Y Wong	John Wiley and Sons	

### Global Certifications:

Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	NA	NA	NA	NA	NA	NA

### Evaluation Components: 3-0-0-0

Evaluation	Component	Weightage	Total
In-Sem	Active Learning	10	20
Formative	Home Assignments	10	
In-Sem	In-Sem 1	20	40
Summative	In- Sem 2	20	
End-Sem	End-Sem Exam (Paper Based)	40	40
Summative			

  
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### Vehicle dynamics

COURSE CODE	23ECf3406	MODE	General	LTPS	3-0-0-0-0	PRE-REQUISITE	TD
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### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Apply the evaluate the natural frequency of a single and multi-degree freedom systems	3	PO1, PSO2
CO2	Apply the predict the stability of vehicle at different operating conditions	3	PO1, PSO2
CO3	Apply the predict the behavior of tyres during braking, acceleration and cornering.	3	PO1, PSO2
CO4	Analyse the directional stability of the vehicle during cornering	4	PO2, PSO2

### Syllabus

Module 1	Vibration System and human comforts, One DOF, Two DOF, Free and Forced Vibration, Random Vibration, Magnification and Transmissibility, Vibration Absorber.
Module 2	Multi DOF systems, Modal Analysis, Vehicle Vibration Models- Quarter Car and Half Car Model.
Module 3	Load Distribution, Stability on Curved Track and on slope, Gyroscopic Effect, weight Transfer during Acceleration, Cornering and Braking, Overturning and Sliding, Cross wind stability and Equations of motions.
Module 4	Behavior while Cornering, Slip angle, Cornering force, Cornering Properties, Camber Thrust, Camber Scrub and Camber Steer.

### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Fundamentals of vehicle dynamics.	Thomas D.Gillespie,	SAE	1992
2	Steering, Suspension and Tyres	J.G. Giles,	Illiffe Books Ltd.,	1968
3	Theory of Ground Vehicles	J. Y. Wong,	John Wiley and Sons Inc	2001

### Global Certifications:

Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	Nil	Nil	Nil	Nil	Nil	Nil

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### Tools used in Practical / Skill:

Sl No	Tool Name	Parent Industry	Open Source/ Commercial
1	Null	Null	Null

### Evaluation Components:

Evaluation	Component	Weightage	Total
In-Sem Formative	Active Learning	10	20
	Home Assignments	10	
In-Sem Summative	In-Sem 1	20	40
	In- Sem 2	20	
End-Sem Summative	End-Sem Exam (Paper Based)	40	40

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## Thermal Management of Electrical and Electronics system (TMEES)

COURSE CODE	23ECF3506	MODE	General	LTPS	2-0-2-0-0	PRE-REQUISITE	TD
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### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Apply the concepts of heat transfer to various electric and electronic systems requiring heat dissipation	3	PO1, PSO2
CO2	Apply different cooling techniques to microchannels, heat pipes and vapor chambers.	3	PO1, PSO2
CO3	Apply various thermal management techniques in the fields of automobiles and electronics.	3	PO1, PSO2
CO4	Analyze the battery thermal management system and design for the battery pack.	4	PO2, PSO2
CO5	Analyse the battery pack design by using ansys fluent.	5	PO 1, PO 3,

### Syllabus

Module 1	Introduction to Thermal Management in Electronics -heat transfer modes, electronics packaging, contact and spreading resistances, heat sink design, thermal interface material (TIM).
Module 2	Cooling Technologies- thermal interface and phase change materials, active, passive and novel air-cooling approaches, microchannels, jet impingement, immersion cooling, heat pipes and vapor chambers, thermoelectric, Hybrid Thermal Management system, Air cooled combine with Phase change material, Liquid cooled combine with phase change material, Heat pipe combine with phase change material.
Module 3	Applications of thermal management: avionics, data centers, mobile, internet of things, high-performance computing, automotive, etc Lithium-ion battery configuration and operation.
Module 4	Sources of heat in Lithium-ion battery, Lithium Ion- cell temperature ranges. Battery Thermal Management System (BTMS): Need of BTMS, Technologies of BTMS, Battery pack design, Lithium ion chemistries, challenges of the battery pack.

### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	THERMAL MANAGEMENT OF MICROELECTRONIC EQUIPMENT HEAT TRANSFER THEORY, ANALYSIS METHODS, AND DESIGN PRACTICES.	L. T. Yeh, Ph.D., P.E. R. C.Chu	ASME PRESS NEW YORK	1997

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2	The Handbook of Lithium-Ion Battery Pack Design Chemistry, Components, Types and Terminology	John Warner	Elsevier	2000
3	Heat Transfer	Holman, J. P	McGraw-Hill Book Co	
4	Thermal Management of Electric Vehicle Battery Systems	Ibrahim Dinçer, Halil S. Hamut and Nader Javani	7 John Wiley & Sons Ltd. Published	2014

### Global Certifications:

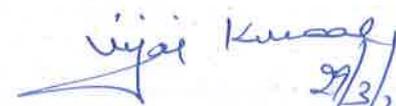
Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	Battery thermal management and safety	ISIE INDIA	Y	Online	ISIE INDIA	<a href="https://isieindia.com/courses/battery-thermal-management-and-safety/">https://isieindia.com/courses/battery-thermal-management-and-safety/</a>

### Tools used in Practical / Skill:

Sl No	Tool Name	Parent Industry	Open Source/ Commercial
1	Ansys	Ansys	Open source

### Evaluation Components:

Evaluation	Component	Weightage	Total
In-Sem Formative	Active Learning	8	22
	Home Assignments	7	
	Practical Continuous Evaluation	7	
In-Sem Summative	In-Sem - 1	15	38
	In-Sem -2	15	
	Practical In Sem	8	
End-Sem Summative	End-Sem Exam (Paper Based)	24	40
	Lab End-Sem Exam	16	

  
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## ALTERNATE ENERGY SOURCES FOR AUTOMOBILES

COURSE CODE	23ECF3507	MODE	R	LTPS	2-0-2-0-0	PRE-REQUISITE	TD
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### Course Outcomes

CO#	CO Description	BTL	PO Mapping
CO1	Apply the basic principles of IC engines and understand the technologies behind alternate energy sources for automobiles	3	PO1, PO2
CO2	Evaluate feasibility and scalability of Hydrogen & Solar energy for automobiles	3	PO1, PO2
CO3	Evaluate the performance of CNG, LPG, & other Biofuels fed IC engines	3	PO1,PO2,PO7
CO4	Analyse the environmental economic and social impacts of alternative energy adoption in the automotive sector through case studies	4	PO1,PO2,PO7
CO5	To analyse the performance of various alternative energy fuel automobiles	4	PO1,PO2,PO7

### Syllabus

Module 1	Importance of alternative energy in the automotive industry, Historical context and current trends, Types of electric vehicles (BEVs, PHEVs, HEVs),
Module 2	Hydrogen Fuel Cell Vehicles (FCVs), Working of HFC, Advantages and challenges of FCVs, Hydrogen production, storage, and distribution, Solar-powered vehicles,
Module 3	Types of biofuels (biodiesel, ethanol, biogas), Production processes and feedstocks Environmental and social implications, Overview of natural gas as a vehicle fuel CNG vs. LPG: characteristics and applications Infrastructure challenges and opportunities
Module 4	Life cycle analysis of alternative energy vehicles, Carbon footprint comparison with conventional vehicles, Mitigating environmental impacts, Total cost of ownership for alternative energy vehicles, Market trends and consumer preferences

### Reference Books:

Sl No	Title	Author(s)	Publisher	Year
1	Electric and Plug-in Hybrid Vehicles (Green Energy and Technology)	Bogdan Ovidiu Varga and Florin Mariasiu,	Springer,	2015
2	Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design, Second Edition,	by Mehrdad Ehsani, Yimin Gao and Ali Emadi	Power Electronics and Applications Series	2009
3	Alternative Fuels Concepts, Technologies and Developments.	S. S. Thipse		2010

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4	Alternative Fuel Technology: Electric, Hybrid and Fuel-Cell Vehicles	Erjavec Jack,	2007
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### Global Certifications:

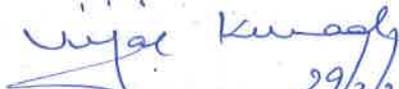
Mapped Global Certifications:						
Sl No	Title	Certification Provider	Proctored (Y/N)	Format of the Exam	Exam Provider	URL of the Certification
1	NA	NA	.NA	NA	NA	NA

### Tools used in Practical / Skill:

Sl No	Tool Name	Parent Industry	Open Source/ Commercial
1	Trnsys	Trnsys	Commercial

### Evaluation Components: 2-0-2-0

Evaluation	Component	Weightage	Total
In-Sem Formative	Active Learning	8	22
	Home Assignments	7	
	Practical Continuous Evaluation	7	
In-Sem Summative	In-Sem - 1	15	38
	In-Sem -2	15	
	Practical In Sem	8	
End-Sem Summative	End-Sem Exam (Paper Based)	24	40
	Lab End-Sem Exam	16	

  
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## Annexure-6

### Y23 Admitted Batch Course Structure

Course Code	Course Name	Course Category	L	T	P	S	I	CR	Pre-Requisite
22UC1101	INTEGRATED PROFESSIONAL ENGLISH	HAS	0	0	4	0	0	2	NIL
22UC1202	ENGLISH PROFICIENCY	HAS	0	0	4	0	0	2	NIL
23MT100 I	LINEAR ALGEBRA & CALCULUS FOR ENGINEERS	BSC	2	2	0	0	0	4	NIL
22MT200 3	MATHEMATICAL METHODS AND NUMERICAL METHODS	BSC	2	2	0	0	0	4	
23MT2011	OPTIMIZATION TECHNIQUES	BSC	2	2	0	0	0	4	NIL
23MT2010	COMPUTATIONS IN APPLIED MECHANICS & STATISTICS	BSC	2	2	0	0	0	4	NIL
23ME1005	MATERIAL SCIENCE & METALLURGY	BSC	3	0	2	0	0	4	NIL
23CY1001	ENGINEERING CHEMISTRY	BSC	3	0	2	0	0	4	NIL
23UC1203	DESIGN THINKING FOR INNOVATION	ESC	2	0	2	0	0	3	NIL
23ME1103	DESIGN TOOLS WORKSHOP	ESC	0	0	4	0	0	2	DTI
23EC1203	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS	ESC	2	0	0	0	0	2	NIL
23SC1101	COMPUTATIONAL THINKING FOR STRUCTURED DESIGN	ESC	3	0	2	4	0	5	NIL
23CS1207	OBJECT ORIENTED PROGRAMMING	ESC	2	0	2	0	0	3	CTS
23ME1002	ENGINEERING GRAPHICS	ESC	0	0	4	0	0	2	NIL
23ME1004	WORKSHOP PRACTICES FOR ENGINEERS	ESC	0	0	4	0	0	2	NIL
23ME1001	ENGINEERING MECHANICS	ESC	3	0	0	0	0	3	NIL
23SC1202	DATA STRUCTURES	ESC	2	0	2	4	0	4	CTS
23ME2116	FLUID MECHANICS & HYDRAULIC MACHINES	PCC	3	0	2	0	0	4	NIL
23ME2106 R	MECHANICS OF SOLIDS	PCC	3	0	2	0	0	4	EM
23ME2208	MANUFACTURING PROCESSES	PCC	3	0	2	0	0	4	WPE
23ME2107	ENGINEERING THERMODYNAMICS	PCC	3	0	0	0	0	3	NIL
23ME3113	MANUFACTURING TECHNOLOGY	PCC	2	0	2	0	0	3	MP
23ME2209 R	KINEMATICS & DYNAMICS OF MACHINES	PCC	3	1	2	0	0	5	EM
23ME3112	THERMAL SYSTEMS ENGINEERING	PCC	2	0	0	4	0	3	TD
23ME3110 R	HEAT TRANSFER	PCC	3	0	2	0	0	4	TD
23ME3215	DIGITAL MANUFACTURING & ROBOTICS	PCC	3	0	0	0	0	3	KDOM

  
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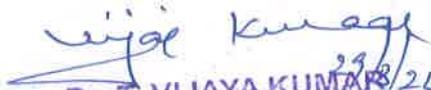
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23ME3111R	MECHANICAL ENGINEERING DESIGN	PCC	3	0	0	0	0	3	SM
24AD2001O	ARTIFICIAL INTELLIGENCE & MACHINE LEARNING	PCC	3	0	2	0	0	4	LCE
23ME3214R	MACHINE DESIGN	PCC	3	0	2	0	0	4	MED
23SDME01R	VISUALIZATION & MODELLING FOR ENGINEERING DESIGN	SDC	0	0	2	4	0	2	EG
23SDME02R	COMPUTER INTEGRATED MANUFACTURING	SDC	0	0	2	4	0	2	MP
23SDME03R	FINITE ELEMENT ANALYSIS	SDC	0	0	2	4	0	2	MOS
	SPECIALIZATION BASED SDC	SDC-4	0	0	2	4	0	2	
23IE3041	TECHNICAL INTERNSHIP	PRI	0	0	0	0	4	0	NIL
23IE2040	SOCIAL INTERNSHIP	PRI	0	0	0	0	4	0	NIL
23IE4053R	ENGINEERING CAPSTONE PROJECT -1	PRI	0	0	4	8	8	8	NIL
23IE4054R	ENGINEERING CAPSTONE PROJECT -2	PRI	0	0	4	8	8	8	NIL
	FLEXI CORE	PEC	3	0	0	0	0	3	NIL
	PROFESSIONAL ELECTIVE - 1	PEC	3	0	2	4	0	5	NIL
	PROFESSIONAL ELECTIVE - 2	PEC	3	0	0	0	0	3	NIL
	PROFESSIONAL ELECTIVE - 3	PEC	3	0	2	4	0	5	NIL
	PROFESSIONAL ELECTIVE - 4	PEC	3	0	0	0	0	3	NIL
	PROFESSIONAL ELECTIVE - 5	PEC	3	0	0	0	0	3	NIL
	LANGUAGE SKILLS FOR ENGINEERS	HAS	2	0	2	0	0	3	NIL
	COMMUNICATION SKILLS FOR ENGINEERS	HAS	2	0	2	0	0	3	NIL
	FOREIGN LANGUAGE ELECTIVE	HAS	0	0	0	0	6	3	NIL
	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS	HAS	0	0	0	0	4	2	NIL
	INDIAN CONSTITUTION	AUC	0	0	0	0	2	0	NIL
	ECOLOGY & ENVIRONMENT	AUC	2	0	0	0	0	0	NIL
	INDIAN KNOWLEDGE SYSTEMS : VEDIC MATHEMATICS	AUC	0	0	0	0	2	0	NIL
	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 1	AUC	0	0	0	0	2	0	NIL
	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 2	AUC	0	0	0	0	2	0	NIL
	OPEN ELECTIVE - 1	OEC	0	0	0	0	8	4	NIL
	OPEN ELECTIVE - 2	OEC	0	0	0	0	8	4	NIL
	OPEN ELECTIVE - 3	OEC	0	0	0	0	8	4	NIL
	INDUSTRIAL MANAGEMENT AND PRODUCTION CONTROL	OEC	0	0	0	0	8	4	NIL
	SOCIAL IMMERSIVE LEARNING - 1	SIL	0	0	0	0	2	1	NIL
	SOCIAL IMMERSIVE LEARNING - 2	SIL	0	0	0	0	2	1	NIL
	SOCIAL IMMERSIVE LEARNING - 3	SIL	0	0	0	0	2	1	NIL
Total			80	10	70	56	76	168	

  
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## Annexure-7

### Y24 B.SC Admitted Batch Course Structure

Course Code	Course Name	Course Category	L	T	P	S	CR
23MT1001	LINEAR ALGEBRA & CALCULUS FOR ENGINEERS	BSC	2	2	0	0	4
23MT2010	COMPUTATIONS IN APPLIED MECHANICS & STATISTICS	BSC	2	2	0	0	4
23ME1005	MATERIAL SCIENCE & METALLURGY	BSC	3	0	2	0	4
24UC1203	DESIGN THINKING FOR INNOVATION	ESC	2	0	2	0	3
23ME1103	DESIGN TOOLS WORKSHOP	ESC	0	0	4	0	2
23EC1203	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS	ESC	2	0	0	0	2
24SC1102	COMPUTATIONAL THINKING FOR PROBLEM SOLVING	ESC	3	0	2	4	5
24SC1203O	COMPUTATIONAL THINKING FOR OBJECT ORIENTED DESIGN	ESC	3	0	2	0	4
23ME1002	ENGINEERING GRAPHICS	ESC	0	0	4	0	2
23ME1004	WORKSHOP PRACTICES FOR ENGINEERS	ESC	0	0	4	0	2
23ME1001	ENGINEERING MECHANICS	ESC	3	0	0	0	3
24SC1202	DATA STRUCTURES USING PYTHON	ESC	3	0	2	4	5
24AD2001	ARTIFICIAL INTELLIGENCE-AND MACHINE LEARNING	ESC	3	0	2	0	3
23ME2116	FLUID MECHANICS & HYDRAULIC MACHINES	PCC	3	0	2	0	4
23ME2106R	MECHANICS OF SOLIDS	PCC	3	0	2	0	4
23ME2208	MANUFACTURING PROCESSES	PCC	3	0	2	0	4
23ME2107	ENGINEERING THERMODYNAMICS	PCC	3	0	0	0	3
23ME3113	MANUFACTURING TECHNOLOGY	PCC	2	0	2	0	3
23ME2209R	KINEMATICS & DYNAMICS OF MACHINES	PCC	3	1	2	0	5
23ME3112	THERMAL SYSTEMS ENGINEERING	PCC	2	0	0	4	3
23ME3110R	HEAT TRANSFER	PCC	3	0	2	0	4
23ME3215	DIGITAL MANUFACTURING & ROBOTICS	PCC	3	0	0	0	3
23ME3111R	MECHANICAL ENGINEERING DESIGN	PCC	3	0	0	0	3

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23ME3214R	MACHINE DESIGN	PCC	3	0	2	0	4
23SDME01R	VISUALIZATION & MODELLING FOR ENGINEERING DESIGN	SDC	0	0	2	4	2
23SDME02R	COMPUTER INTEGRATED MANUFACTURING	SDC	0	0	2	4	2
23SDME03R	FINITE ELEMENT ANALYSIS	SDC	0	0	2	4	2
	SPECIALIZATION SPECIFIC SKILL PROJECT	SDC	0	0	2	4	2
23IE3041	TECHNICAL INTERNSHIP	PRI	0	0	4	0	0
23IE2040	SOCIAL INTERNSHIP	PRI	0	0	4	0	0
	FLEXI CORE	PEC	3	0	0	0	3
	PROFESSIONAL ELECTIVE - 1	PEC	3	0	2	4	5
	PROFESSIONAL ELECTIVE - 2	PEC	3	0	0	0	3
	PROFESSIONAL ELECTIVE - 3	PEC	3	0	2	4	5
24UC1102	LANGUAGE SKILLS FOR ENGINEERS	HAS	2	0	2	0	3
24UC1204	COMMUNICATION SKILLS FOR ENGINEERS	HAS	2	0	2	0	3
23UC0027	LEADERSHIP AND MANAGEMENT SKILLS	HAS	2	0	2	0	3
23FLXXCX	FOREIGN LANGUAGE ELECTIVE	HAS	0	0	0	0	3
23UC0026	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS	HAS	0	0	0	0	2
23UC0013	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 1	AUC	0	0	0	0	0
23UC0014	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 2	AUC	0	0	0	0	0
	OPEN ELECTIVE - 1	OEC	0	0	0	0	4
	OPEN ELECTIVE - 2	OEC	0	0	0	0	4
<b>Total</b>							<b>134</b>

  
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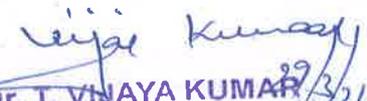
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## Annexure-8

### Y24 Diploma Admitted Batch Course Structure

Course Code	Course Name	Course Category	L	T	P	S	CR
23MT1001	LINEAR ALGEBRA & CALCULUS FOR ENGINEERS	BSC	2	2	0	0	4
23MT2010	COMPUTATIONS IN APPLIED MECHANICS & STATISTICS	BSC	2	2	0	0	4
23ME1005	MATERIAL SCIENCE & METALLURGY	BSC	3	0	2	0	4
24UC1203	DESIGN THINKING FOR INNOVATION	ESC	2	0	2	0	3
23ME1103	DESIGN TOOLS WORKSHOP	ESC	0	0	4	0	2
23EC1203	BASIC ELECTRICAL AND ELECTRONIC CIRCUITS	ESC	2	0	0	0	2
24SC1102	COMPUTATIONAL THINKING FOR PROBLEM SOLVING	ESC	3	0	2	4	5
24SC1203O	COMPUTATIONAL THINKING FOR OBJECT ORIENTED DESIGN	ESC	3	0	2	0	4
23ME1002	ENGINEERING GRAPHICS	ESC	0	0	4	0	2
23ME1004	WORKSHOP PRACTICES FOR ENGINEERS	ESC	0	0	4	0	2
23ME1001	ENGINEERING MECHANICS	ESC	3	0	0	0	3
24SC1202	DATA STRUCTURES USING PYTHON	ESC	3	0	2	4	5
24AD2001	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	ESC	3	0	2	0	3
23ME2116	FLUID MECHANICS & HYDRAULIC MACHINES	PCC	3	0	2	0	4
23ME2106R	MECHANICS OF SOLIDS	PCC	3	0	2	0	4
23ME2208	MANUFACTURING PROCESSES	PCC	3	0	2	0	4
23ME2107	ENGINEERING THERMODYNAMICS	PCC	3	0	0	0	3
23ME3113	MANUFACTURING TECHNOLOGY	PCC	2	0	2	0	3
23ME2209R	KINEMATICS & DYNAMICS OF MACHINES	PCC	3	1	2	0	5
23ME3112	THERMAL SYSTEMS ENGINEERING	PCC	2	0	0	4	3
23SDME01R	VISUALIZATION & MODELLING FOR ENGINEERING DESIGN	SDC	0	0	2	4	2
23SDME02R	COMPUTER INTEGRATED MANUFACTURING	SDC	0	0	2	4	2
23IE2040	SOCIAL INTERNSHIP	PRI	0	0	4	0	0
	PROFESSIONAL ELECTIVE - 1	PEC	3	0	2	4	5

  
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	PROFESSIONAL ELECTIVE - 2	PEC	3	0	0	0	3
24UC1102	LANGUAGE SKILLS FOR ENGINEERS	HAS	2	0	2	0	3
24UC1204	COMMUNICATION SKILLS FOR ENGINEERS	HAS	2	0	2	0	3
23UC0027	LEADERSHIP AND MANAGEMENT SKILLS	HAS	2	0	2	0	3
23FLXXCX	FOREIGN LANGUAGE ELECTIVE	HAS	0	0	0	0	3
23UC0026	HUMAN VALUES, GENDER EQUALITY & PROFESSIONAL ETHICS	HAS	0	0	0	0	2
23UC0013	GLOBAL LOGIC BUILDING CONTEST PRACTICUM - 1	AUC	0	0	0	0	0
<b>Total</b>							<b>92</b>

  
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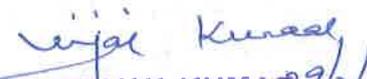
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## Annexure-9

### Y24 admitted batch M.Tech-Machine Design Course Structure

S.NO	COURSE TYPE	Course Code	COURSE NAME	MODE	L	T	P	S	Cr	CH	New/ Revised/ Retained	EES
1	ESC	23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION	R	2	2	0	0	4	4	Retained	Employability
5	AUC	23MD5101	DESIGN OF EXPERIMENTS	R	0	0	4	0	0	4	Retained	Skill Development
2	PCC	23ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS	R	2	0	2	4	4	4	Retained	Employability
3	PCC	23MD5102	ROBOTICS MANIPULATOR DESIGN AND ANALYSIS	R	3	0	2	0	4	5	Retained	Skill Development
4	PCC	23MD5103	MECHANICAL BEHAVIOUR OF MATERIALS	R	3	0	2	0	4	5	Retained	Skill Development
6	PRI	23IE5201	ESSENTIALS OF RESEARCH DESIGN	R	2	0	0	0	2	2	Retained	
7	PCC	23MD5204	ADVANCED STRENGTH OF MATERIALS	R	3	0	2	0	4	5	Retained	Skill Development
8	PCC	23MD5205	MECHANICAL VIBRATIONS	R	2	0	2	0	3	4	Retained	Skill Development
9	AUC	23UC5201	PROFESSIONAL COMMUNICATION SKILLS	R/M	0	0	4	0	0	4	Retained	
10	VAC		DIGITAL TWIN FOR DESIGN AND MANUFACTURING	R/M	2	0	0	0	0	2	Retained	Employability
11	VAC		MACHINE LEARNING WITH PYTHON	R/M	2	0	0	0	0	2	Retained	Employability
12	ELEC-1		ELECTIVE-1		2	0	2	0	3	4		
13	ELEC-2		ELECTIVE-2		2	0	2	0	3	4		
14	ELEC-3		ELECTIVE-3		3	0	2	0	4	5		
15	ELEC-4		ELECTIVE-4		3	0	0	0	3	3		
16	ELEC-5		ELECTIVE-5		3	0	0	0	3	3		
17	OE		OPEN ELECTIVE		3	0	0	0	3	3		
18			TERM PAPER		0	0	8	0	4	8		Skill Development
19			DISSERTATION (PART I)		0	0	32	0	16	24		Skill Development
20			DISSERTATION(PART II)		0	0	32	0	16	24		Skill Development
TOTAL					37	2	96	4	80	119		
LIST OF ELECTIVES												
12	PE-1	23MD51A1	LEAN MANUFACTURING	R	2	0	2	0	3	4	Retained	Skill Development

  
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13		23MD51A2	PRECISION AND QUALITY ENGINEERING	R	2	0	2	0	3	4	Retained	Skill Development
14		23MD51A3	BEHAVIOUR OF COMPOSITE MATERIALS	R	2	0	2	0	3	4	Retained	Skill Development
15	PE-2	23MD52C1	DESIGN FOR MANUFACTURING	R	2	0	2	0	3	4	Retained	Skill Development
16		23MD52B1	DESIGN FOR SUSTAINABILITY	R	2	0	2	0	3	4	Retained	Skill Development
17		23MD52B2	CONCURRENT MANUFACTURING	R	2	0	2	0	3	4	Retained	Skill Development
18	PE-3	23MD52C1	ADVANCED FINITE ELEMENT ANALYSIS	R	3	0	2	0	4	5	Retained	Skill Development
19		23MD52C2	FRACTURE MECHANICS	R	3	0	2	0	4	5	Retained	Skill Development
20		23MD52C3	TRIBOLOGICAL SYSTEM DESIGN	R	3	0	2	0	4	5	Retained	Skill Development
21	PE-4	23MD52D1	DESIGN OF PRESSURE VESSELS AND PLATES	R	3	0	0	0	3	3	Retained	Employability
22		23MD52D2	ENGINEERING FAILURE ANALYSIS AND PREVENTION	R	3	0	0	0	3	3	Retained	Employability
23		23MD52D3	MODELING AND SIMULATION OF MECHATRONIC SYSTEMS	R	3	0	0	0	3	3	Retained	Employability
24	PE-5	23MD53E1	DESIGN OF HYBRID VEHICLES	R	3	0	0	0	3	3	Retained	Employability
25		23MD52O5	ENTERPRISE RESOURCE PLANNING FOR MECHANICAL ENGINEERS	R	3	0	0	0	3	3	Retained	Employability
26		23MD52E2	INTERNET OF THINGS IN INDUSTRIES	R	3	0	0	0	3	3	Retained	Employability

Percentage of New Courses= $0 \times 100/30=0\%$

Percentage of courses on Employability= $10 \times 100/30=33.33\%$

Percentage of courses on Skill Development= $17 \times 100/30=56.7\%$

Percentage of courses on Entrepreneurship= $0 \times 100/30=0$

*Vijaya Kumar*  
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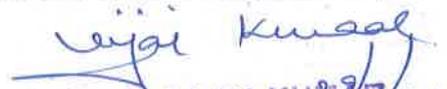
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## Annexure-10

### Y24 admitted batch M.Tech-Thermal Engineering Course Structure

S.NO	COURSE TYPE	Course Code	COURSE NAME	MODE	L	T	P	S	Cr	CH	New/ Revised/ Retained	EES
1	ESC	23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION		2	2	0	0	4	4	Retained	Employability
5	AUC	23TE5101	SIMULATION OF ENERGY MANAGEMENT SYSTEMS		0	0	4	0	2	4	Retained	Skill Development
2	PCC	23TE5102	DESIGN OF THERMAL SYSTEMS		2	0	2	4	4	8	Retained	Skill Development
3	PCC	23TE5103	ADVANCED THERMODYNAMICS		3	0	2	0	4	5	Retained	Skill Development
4	PCC	23TE5104	COMPUTATIONAL FLUID DYNAMICS		3	0	2	0	4	5	Retained	Skill Development
6	PCC	23TE5205	ADVANCED HEAT AND MASS TRANSFER		3	0	2	0	4	5	Retained	Skill Development
7	PCC	23TE5206	MEASUREMENTS IN THERMAL ENGINEERING		2	0	2	0	3	4	Retained	Skill Development
8	PRI	23IE5201	ESSENTIALS OF RESEARCH DESIGN		1	1	0	0	2	2	Retained	Employability
9	AUC	23UC5201	PROFESSIONAL COMMUNICATION SKILLS .		0	0	4	0	0	4	Retained	
10	VAC		FUELS, COMBUSTION AND POLLUTION CONTROL		2	0	0	0	0	2	Retained	Employability
11	VAC		MACHINE LEARNING WITH RYTHON		2	0	0	0	0	2	Retained	Employability
12	ELEC-1		ELECTIVE-1		2	0	2	0	3	4		
13	ELEC-2		ELECTIVE-2		2	0	2	0	3	4		
14	ELEC-3		ELECTIVE-3		3	0	2	0	4	5		
15	ELEC-4		ELECTIVE-4		3	0	0	0	3	3		
16	ELEC-5		ELECTIVE-5		3	0	0	0	3	3		
17	OE		OPEN ELECTIVE		3	0	0	0	3	3		
18			TERM PAPER		0	0	8	0	4	8		Skill Development
19			DISSERTATION (PART I)		0	0	32	0	16	24		Skill Development
20			DISSERTATION(PART II)		0	0	32	0	16	24		Skill Development
TOTAL					37	2	96	4	80	119		
LIST OF ELECTIVES												
12	PE-1	23TE51A1	GAS TURBINE ENGINEERING	R	2	0	2	0	3	4	Retained	Skill Development
13		23TE51A2	ELECTRIC VEHICLE ENGINEERING	R	2	0	2	0	3	4	Retained	Skill Development

  
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14		23TE51A3	ENERGY CONSERVATION & AUDIT	R	2	0	2	0	3	4	Retained	Skill Development
15	PE-2	23TE52B1	ADVANCED ENERGY STORAGE TECHNOLOGIES	R	2	0	2	0	3	4	Retained	Skill Development
16		23TE52B2	FOOD PROCESSING, PRESERVATION AND TRANSPORT	R	2	0	2	0	3	4	Retained	Skill Development
17		23TE52B3	CONVECTION AND TWO-PHASE FLOW	R	2	0	2	0	3	4	Retained	Skill Development
18	PE-3	23TE52C1	RENEWABLE ENERGY SOURCES & TECHNOLOGY	R	3	0	2	0	4	5	Retained	Skill Development
19		23TE52C2	PRINCIPLES OF TURBO MACHINERY	R	3	0	2	0	4	5	Retained	Skill Development
20		23TE52C3	HEAT EXCHANGER DESIGN	R	3	0	2	0	4	5	Retained	Skill Development
21	PE-4	23TE52D1	REFRIGERATION AND CRYOGENICS	R	3	0	0	0	3	3	Retained	Employability
22		23TE52D2	AIR CONDITIONING SYSTEMS	R	3	0	0	0	3	3	Retained	Employability
23		23TE52D3	SOLAR ENERGY & SYSTEMS	R	3	0	0	0	3	3	Retained	Employability
24	PE-5	23TE53E1	HYDROGEN AND FUEL CELLS	R	3	0	0	0	3	3	Retained	Employability
25		23TE53E2	AIRCRAFT AND JET PROPULSION SYSTEMS	R	3	0	0	0	3	3	Retained	Employability
26		23TE53E3	BATTERY AND THERMAL MANAGEMENT SYSTEMS	R	3	0	0	0	3	3	Retained	Employability

**Percentage of New Courses=0\*100/30=0%**

**Percentage of courses on Employability=10\*100/30=33.33%**

**Percentage of courses on Skill Development=18\*100/30=60%**

**Percentage of courses on Entrepreneurship=0\*100/30=0**

  
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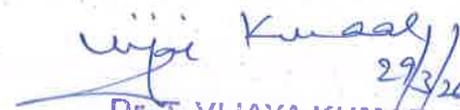
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## Annexure-11

### Y24 admitted batch M.Tech-Mechanical Engineering Course Structure

S.NO	COURSE TYPE	Course Code	COURSE NAME	MODE	L	T	P	S	Cr	CH	New/ Revised/ Retained	EES
1	ESC	23MT5102	COMPUTATIONAL TECHNIQUES IN ENGINEERING OPTIMIZATION		2	2	0	0	4	4	Retained	Employability
5	AUC	23ME5101	NEW PRODUCT DESIGN		0	0	4	0	2	4	Retained	Skill Development
2	PCC	23ME5205	WEB AND NETWORKING TECHNOLOGIES		3	0	2	0	4	5	Retained	Skill Development
3	PCC	23ME5102	MODELLING AND ANALYSIS OF MECHANICAL ELEMENTS		2	0	2	4	4	8	Retained	Skill Development
4	PCC	23ME5103	DIGITAL MANUFACTURING		3	0	2	0	4	5	Retained	Skill Development
6	PCC	23ME5104	PROJECT MANAGEMENT FOR ENGINEERS		3	0	2	0	4	5	Retained	Skill Development
7	PCC	23ME5206	LOGISTICS AND SUPPLY CHAIN		2	0	2	0	3	4	Retained	Skill Development
8	PRI	23IE5201	ESSENTIALS OF RESEARCH DESIGN		1	1	0	0	2	2	Retained	Employability
9	AUC	23UC5201	PROFESSIONAL COMMUNICATION SKILLS		0	0	4	0	0	4	Retained	
10	VAC		DIGITAL TWIN FOR DESIGN AND MANUFACTURING		2	0	0	0	0	2	Retained	Employability
11	VAC		MACHINE LEARNING WITH PYTHON		2	0	0	0	0	2	Retained	Employability
12	ELEC-1		ELECTIVE-1		2	0	2	0	3	4		
13	ELEC-2		ELECTIVE-2		2	0	2	0	3	4		
14	ELEC-3		ELECTIVE-3		3	0	2	0	4	5		
15	ELEC-4		ELECTIVE-4		3	0	0	0	3	3		
16	ELEC-5		ELECTIVE-5		3	0	0	0	3	3		
17	OE		OPEN ELECTIVE		3	0	0	0	3	3		
18			TERM PAPER		0	0	8	0	4	8		Skill Development
19			DISSERTATION (PART I)		0	0	32	0	16	24		Skill Development
20			DISSERTATION(PART II)		0	0	32	0	16	24		Skill Development
TOTAL					37	2	96	4	80	119		
<b>LIST OF ELECTIVES</b>												
12	PE-1	23ME51A1	PROGRAMMING AND DATA MANAGEMENT	R	2	0	2	0	3	4	Retained	Skill Development
13		23ME51A2	OPERATIONS RESEARCH FOR ENGINEERS	R	2	0	2	0	3	4	Retained	Skill Development
14		23ME51A3	MATERIALS AND PROCESS SELECTION FOR DESIGN	R	2	0	2	0	3	4	Retained	Skill Development

  
 29/3/24  
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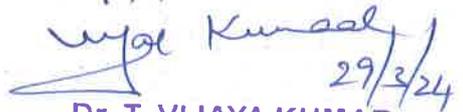
15	PE-2	23ME52B2	MACHINE TOOL DESIGN	R	2	0	2	0	3	4	Retained	Skill Development
16		23ME52B3	RELIABILITY AND LIFE TESTING	R	2	0	2	0	3	4	Retained	Skill Development
17		23ME52B1	PLM ADVANCED CONCEPTS	R	2	0	2	0	3	4	Retained	Skill Development
18	PE-3	23ME52C2	LEAN MANUFACTURING	R	3	0	2	0	4	5	Retained	Skill Development
19		23ME52C3	DIMENSIONAL MANAGEMENT	R	3	0	2	0	4	5	Retained	Skill Development
20		23ME52C1	DESIGN FOR MANUFACTURING	R	3	0	2	0	4	5	Retained	Skill Development
21	PE-4	23ME52D1	CUSTOMIZATION OF PLM SOFTWARE	R	3	0	0	0	3	3	Retained	Employability
22		23ME52D2	COMPOSITES: DESIGN AND MANUFACTURING	R	3	0	0	0	3	3	Retained	Employability
23		23ME52D3	PRECISION AND QUALITY ENGINEERING	R	3	0	0	0	3	3	Retained	Employability
24	PE-5	23ME53E2	ROBOTICS AND AUTOMATION	R	3	0	0	0	3	3	Retained	Employability
25		23ME53E1	ENTERPRISE RESOURCE PLANNING FOR MECHANICAL ENGINEERS	R	3	0	0	0	3	3	Retained	Employability
26		23ME53E3	ENGINEERING ECONOMICS AND FINANCIAL ANALYSIS	R	3	0	0	0	3	3	Retained	Employability

Percentage of New Courses= $0 \times 100/30=0\%$

Percentage of courses on Employability= $10 \times 100/30=33.33\%$

Percentage of courses on Skill Development= $18 \times 100/30=60\%$

Percentage of courses on Entrepreneurship= $0 \times 100/30=0$

  
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## Annexure-12

### Value Added Courses Offered to Y22, Y23 & Y24 admitted Batch Students

S. No	Certification Course Title	L	T	P	S	Cr	Name of Vendor
1	Autodesk-AutoCAD	0	0	0	4	0	Etrain India Pvt. Ltd New Delhi
2	Autodesk - Fusion360	0	0	0	4	0	Etrain India Pvt. Ltd New Delhi
3	Introduction to Python Programming	0	0	0	4	0	Etrain India Pvt. Ltd New Delhi
4	Static Analysis using AnSys	0	0	0	4	0	Ark Infosolutions Pvt. Ltd (Mind Box) - Bangalore
5	Static and Dynamic Analysis Using Altair Hyper Works	0	0	0	4	0	DesignTech Systems Pvt. Ltd. - Hyderabad
6	3D Modeling using CATIA	0	0	0	4	0	Revathi Devi Yalamanchili, APSSDC - Vijayawada

Professor I/c Academics

  
Chairman-BOS 29/3/24

HOD-ME

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