National Engineering College,

(An Autonomous Institution)

K R Nagar, Kovilpatti

Department of Mechanical Engineering

MINUTES of 22nd Meeting of Board of Studies held on

7th December, 2024 at 10.30 a.m.

Venue: Conference Hall,

Autonomous Block,

National Engineering College

National Engineering College, K.R.Nagar, Kovilpatti – 628 503

(An Autonomous Institution - Affiliated to Anna University, Chennai)

www.nec.edu.in

22nd Board of Studies Meeting

Department of Mechanical Engineering

Venue: Conference Hall,
Autonomous Block,
National Engineering College

Date & Time: 07.12.2024 & 10.30 a.m.

AGENDA

BoS / MECH 22.1	:	Welcome address and Opening Remarks by Chairman, Board of Studies, Department of Mechanical Engineering	
BoS / MECH 22.2	:	Vision and Mission of Department & PEOs and PSOs of B.E. Mechanical Engineering	
BoS / MECH 22.3	:	Action taken report on minutes of 21st Board of Studies meeting	
BoS / MECH 22.4	:	Business brought forward by the Chairman, Board of studies	
		22.4.1	B.E. Mechanical Engineering Programme – Changes in Curriculum of R2023
		22.4.2	B.E. Mechanical Engineering Programme – Changes in Verticals of R2023
		22.4.3	B.E. Mechanical Engineering Programme – Syllabus for V semester core courses under R2023.
	:	22.4.4	B.E. Mechanical Engineering Programme– Syllabus for few elective courses under R2023.
	:	22.4.5	Syllabus for few Open Elective Courses under R2023 (For Other Disciplines)
	:	22.4.6	B.E. Mechanical Engineering Programme– Suggestions for One Credit Elective Courses under R2023
	:	22.4.7	List of Courses to be offered by the Department of Mechanical Engineering in the Vertical - Industrial Internet of Things passed in ECE Board
	:	22.4.8	Course Design Document for 23ME46C System Modelling Projects under R2023
BoS / MECH 22.5	:	Suggestions given by the BOS Members	

National Engineering College, K.R.Nagar, Kovilpatti – 628 503
(An Autonomous Institution - Affiliated to Anna University, Chennai)

F. No. 1-2/NEC/ MECH

Date: 12th December, 2024

Dear Sir,

Sub: ***Minutes of the 22nd Board of Studies meeting for Mechanical Engineering - Reg.***

Kindly find attached herewith the Minutes of the Board of Studies meeting for Mechanical Engineering of National Engineering College, K.R.Nagar, Kovilpatti – 628503 held on 7th December, 2024 at 10.30 a.m. in the Conference Hall, Autonomous Block, National Engineering College, K R Nagar.

It is requested that comments on the Minutes of Board of Studies meeting, if any, may please be sent by email to hodmech@nec.edu.in, at the earliest. If no comments are received, within one week, the Minutes shall be taken as confirmed.

Yours Sincerely,

12/12/24

Chairman
Board of Studies

Dr. S. IYAHRAJA M.Tech, (IITM), Ph.D.,
Professor & Head,
Dept. of Mechanical Engineering,
National Engineering College,
K.R. Nagar, Kovilpatti - 628 503.

National Engineering College, K.R.Nagar, Kovilpatti – 628 503

(An Autonomous Institution - Affiliated to Anna University, Chennai)

Department of Mechanical Engineering

MINUTES OF THE MEETING

The 22nd Board of Studies meeting of the Mechanical Engineering was held on 7th December, 2024 at 10.30 a.m.in in the Conference Hall, Autonomous Block, National Engineering College, K.R.Nagar, Kovilpatti – 628 503

1. The following members were present

1.	**Dr. S. Iyahraja,** Professor & Head, Department of Mechanical Engg., NEC	Chairman
2.	**Dr. D Samuel Raj,** Associate Professor/Mechanical Engineering, CEG Campus, Anna University, Chennai – 600025.	University Nominee
3.	**Dr. M. Venkata Ramanan,** Professor & Director, Institute for Energy Studies, CEG, Anna University, Chennai – 600025	Academic Experts
4.	**Dr. C. Prathap,** Professor / Aerospace Engg, Indian Institute of Space Science & Tech., Thiruvananthapuram.	
5.	**Mr. K. Monickavasagom Pillai**, Senior Principal Scientist, CSIR –National Aerospace Laboratories, Bangalore.	Meritorious Alumnus Nominated by the Principal
6.	**Mr. V. Hari Babu** Senior Vice President, Head of Engineering (Aero) & DOA Delegations Responsible, Axiscades Technologies Ltd., Bangalore.	Industrial Experts
7.	**Mr. S. Ravikumar** Chief Research & Innovation Testing and Validation, Iniciotek Private Limited, Chennai.	
8.	**Mr. A T Paary,** Deputy General Manager, Mechanical – Static Dept., Larsen & Toubro (L&T) Limited, Chennai	
9.	**Mr. S. Balaji**, Assistant General Manager, Hyundai Motor India Limited, Chennai.	

10.	Dr. D. Venkat Kumar, Professor / Mechanical Engineering	Internal Members
11.	Dr. M. Kathiresan, Professor / Mechanical Engineering	
12.	Dr. R. Harichandran, Professor / Mechanical Engineering	
13.	Dr. P. Ramanan, Associate Professor / Mechanical Engineering	
14.	Dr. I. Sankar, Associate Professor / Mechanical Engineering	
15.	Dr. D. Vignesh Kumar, Associate Professor / Mechanical Engineering	
16.	Dr. F. Michael Thomas Rex, Associate Professor / Mechanical Engineering	
17.	Dr. A. Andrews Assistant Professor (S.G) / Mechanical Engineering	
18.	Dr. K. Thoufiq Mohammed, Assistant Professor (S.G) / Mechanical Engineering	
19.	Mr. C. Veera Ajay, Assistant Professor / Mechanical Engineering	
20.	Dr. T. Sakthi, Assistant Professor (S.G) / Humanities	
21.	Mr. V. Dhanush, IV Year / Mechanical Engineering	Student Members
22.	Mr P. Abinsasha, III Year / Mechanical Engineering	
23.	Mr V. Sanjay, II Year / Mechanical Engineering	

2. The following members could not attend the meeting due to unavoidable reasons and they were granted leave of absence.

1.	**Dr. N.Siva Shanmugam**, Professor / Mechanical Engg., NIT Trichy.	Academic Experts
2.	**Dr. K.Hariharan,** Associate Professor / Mechanical Engineering, IIT Madras, Chennai.	
3.	**Dr. D. P. Sudhakar** Deputy Director, Indian Space Research Organization, Mahendragiri, Tirunelveli District.	Research & Development Expert from Centrally Funded Organization
1.	**Mr. K. Subramanian,** Team Lead, ELGI Equipments Limited, Coimbatore.	Industrial Experts
2.	**Mr. S. Manikandan,** Senior Engineer, Rolls-Royce Power Systems, Pune	

BoS / MECH 22.1	:	WELCOME ADDRESS AND OPENING REMARKS BY CHAIRMAN, BOARD OF STUDIES, DEPARTMENT OF MECHANICAL ENGINEERING
	:	The Chairman, BOS of the Mechanical Engineering welcomed and introduced the members of 22nd Board of Studies and thanked each one of them for sparing their valuable time to attend the meeting.
BoS / MECH 22.2	:	TO DISCUSS ANY SUGGESTIONS / MODIFICATIONS NEEDED IN THE VISION AND MISSION OF DEPARTMENT & PEOs AND PSOs OF B.E. MECHANICAL ENGINEERING
	:	Vision and Mission of the Mechanical Engineering Department, and PEOs and PSOs of B.E. Mechanical Engineering were presented by the Chairman. There was a discussion about the same. The members gave the following suggestions. • *In PEOs, the terms* ***will have*** *may be suitably modified.* • *In PSO1 and PSO2, the terms -* ***the different analytical/CAD/experimental tools*** *can be modified as* ***the different simulation/experimental tools****.*
BoS / MECH 22.3	:	TO APPROVE THE ACTON TAKEN REPORT OF THE MINUTES OF TWENTY FIRST BOS MEETING HELD ON 18th May, 2024.
	:	The minutes of the **Twenty First Board of Studies meeting** held on 18th May, 2024 were communicated to the members. The comments given by the members have been incorporated and placed for confirmation. The same was approved in the 21st Academic Council Meeting. The action taken report of the **Twenty First Board of Studies meeting** held on 18th May, 2024 has been presented and the same has been approved in the 22nd Board of Studies meeting. (Enclosed in Annexure – I)
BoS / MECH 22.4.1	:	**TO CONFIRM AND APPROVE** Changes in curriculum of B.E. - Mechanical Engineering under R2023. (Enclosed in Annexure – II)
BoS / MECH 22.4.2	:	**TO CONFIRM AND APPROVE** Changes in verticals of B.E. - Mechanical Engineering under R2023. (Enclosed in Annexure – III)

BoS / MECH 22.4.3	:	**TO CONFIRM AND APPROVE** Syllabus for V semester core courses for B.E. - Mechanical Engineering under R2023. (Enclosed in Annexure – IV)
BoS / MECH 22.4.4	:	**TO CONFIRM AND APPROVE** Syllabus for few elective courses for B.E. - Mechanical Engineering under R2023. (Enclosed in Annexure – V)
BoS / MECH 22.4.5	:	**TO CONFIRM AND APPROVE** Syllabus for few Open Elective Courses under R2023 (For Other Disciplines) (Enclosed in Annexure – VI)
BoS / MECH 22.4.6	:	**TO DISCUSS AND INVITE** Suggestions for One Credit Elective Courses for B.E. - Mechanical Engineering under R2023 (Enclosed in Annexure – VII)
BoS / MECH 22.4.7	:	**TO CONFIRM AND APPROVE** List of Courses to be offered by the Department of Mechanical Engineering in the Vertical - Industrial Internet of Things offered by the Department of Electronics and Communication Engineering (Enclosed in Annexure – VIII)
BoS / MECH 22.4.8	:	**TO CONFIRM AND APPROVE** Course Design Document for 23ME46C System Modelling Projects for B.E. - Mechanical Engineering under R2023 (Enclosed in Annexure – IX)
BoS / MECH 22.5	:	**Suggestions Given by the Members**
22.5.1		**Curriculum Structure** • The name of open elective course viz. "Elective – Science Stream" may be suitably changed. • For the course 23ME72C, the review may be completed once the students complete the partial/full internship in the earlier semesters of 4th and 5th semesters for the better assessment of outcome what the students gained through the internship. The final evaluation for awarding the grades may be conducted during the 7th semester.
22.5.2	:	**Heat and Mass Transfer** • In CO1, the term "conditions" may be changed as "conduction". • More contact hours may be given for CO1 since it may be difficult to complete the syllabus of CO1 within 9 hours. • In CO2, the sequence of types of convection may be changed as "forced and free convection" instead of "free and forced convection".

		• In CO3, "case studies" may be removed since it is given only in this CO. • The order of COs may be changed as per the following sequence: "Conduction, Convection, Radiation, Phase change heat transfer and Heat exchanger, and Mass transfer". • Text Book 2 may be brought as Text Book 1 and vice versa. • In reference books, the books authored by "John H Lienhard", "R Yadav" may be included.
22.5.3	:	**Dynamics of Machinery** • In CO4, vibration measurement of "Machine tools" may be included.
22.5.4	:	**Mechatronics, Robotics and Control** • The title of the course may be changed as "Mechatronics and Robotics Engineering" since control is part of both Mechatronics and Robotics.
22.5.5		**Computer Aided Design and Manufacturing** • CO9 may be added along with CO5 since CAM software is discussed in CO5 only. • Suitable book to cover CO5 may be added in Reference Books.
22.5.6	:	**IoT Laboratory** • In CO1 and CO2, a generic term may be given instead of Arduino/Raspberry.
22.5.7	:	**Simulation using Modern Tool** • In CO5 Examples, "Simulation of Thermal Systems" may be added.
22.5.8	:	**Advanced Engineering Materials** • In CO4, the terms "Definition", "Introduction' may be removed since these are all included one by default in any topics. • Instead of CO1, CO2 and CO3, instead of mentioning specific applications, it can be mentioned simply as "Applications". • In CO5, "smart gets" can be corrected as "smart gels". • Book for "Smart Materials" can be added in References. • Related NPTEL materials can be added.
22.5.9	:	**Operations Research** • In CO3 statement, the term "safety stock" may be replaced with "inventory control". • Related NPTEL materials can be added.

22.5.10	:	**Renewable Energy Sources** • In CO1, "Energy Scenario" can be included. • Solar Energy Concepts, Solar Thermal and Photovoltaic systems can be restricted in CO1 or CO1 and CO2. • "Sustainability of solar cell materials and recycling" may be added in the related CO. • "Biomass gasification" can be included in CO related to Bio Energy. • "Wind Energy" and "Bio Energy" may be given as separate COs. • Books authored by B H Khan, Godfrey Boyle may be added in References.
22.5.11	:	**Total Quality Management** • "Statistical Quality Tools" may be added in the related COs. • In CO2, "Poka-yoke" may be included. • In CO4, "Business reprocessing" may be included. • "Case Studies in TQM" available in CO5 may be changed to "CO1". • "IATF and BIS standards" may include in CO5. • A Book authored by Subburaj Ramasamy may be included.
22.5.12	:	**Fundamentals Of 3D Modeling, Scanning and Printing** • The title of the course may be suitably changed related to Additive Manufacturing since the contents are related to Additive Manufacturing. • In CO3 and CO5, the term "3D Printing" may be removed. • The selection of right technology of Additive Manufacturing is important considering the time, materials and cost. • "DFAM" may be included in the related CO.
22.5.13		The members suggested the following courses as one credit elective courses to include in R2023 curriculum of B.E Mechanical Engineering • ISO Standards • Thermal Management of Automotive Vehicles • Green Hydrogen • Carbon Capture • Hybrid Power Train • Fundamentals of Data Science

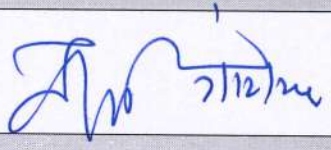
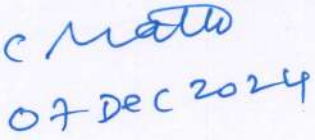
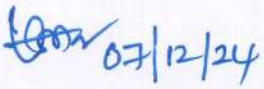
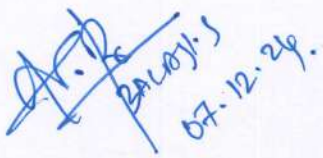
The student members from second year, third year and final year B.E Mechanical Engineering presented their views of R2023 Curriculum and courses. They pointed out that the R2023 curriculum and in particular the concept of integrated courses and project courses will give more insight for the enhancement of their skills leading to their better career settlement.

The members had a brainstorming discussion and interaction among themselves. After discussion, Board of Studies of Mechanical Engineering resolved to recommend the changes in curriculum (Annexure II) and vertical (Annexure III) of B.E Mechanical Engineering under R2023, syllabus for the V semester core courses (Annexure IV) and few programme elective courses (Annexure VI) prescribed for B.E. Mechanical Engineering under Regulation 2023, syllabus of few open elective courses prescribed for other U.G. Programmes (Annexure VI) under Regulation 2023, course design document for System Modeling Projects (Annexure IX) under R2023.

After carrying out the modifications suggested by the members, it will be presented to the Academic Council for further approval.

Dr. D. Venkatkumar, Professor / Mechanical Engineering proposed vote of thanks for their kind cooperation and the meeting came to an end.

Members Present

CHAIRMAN	
Dr. S. Iyahraja, Professor & Head / Mechanical Engineering, NEC	
UNIVERSITY NOMINEE	
Dr. D Samuel Raj, Associate Professor / Mechanical Engineering, CEG Campus, Anna University, Chennai.	
ACADEMIC EXPERTS	
Dr. M. Venkata Ramanan, Professor & Director / Institute for Energy Studies, CEG Campus, Anna University, Chennai.	
Dr. C. Prathap, Professor / Aerospace Engineering, Indian Institute of Space Science & Technology, Thiruvananthapuram.	
MERITORIOUS ALUMNUS NOMINATED BY THE PRINCIPAL	
Mr. K Monickavasagom Pillai, Senior Principal Scientist, CSIR –National Aerospace Laboratories, Bengaluru.	
INDUSTRIAL EXPERTS	
Mr. V. Hari Babu, Senior Vice President, Head of Engineering & DOA Delegations Responsible Axiscades Technologies Ltd, Bengaluru.	
Mr. S. Ravikumar, Chief Research & Innovation Testing and Validation, Iniciotek Private Limited, Chennai.	
Mr. A T Paary, Deputy General Manager/Mechanical - Static Dept., Larsen & Toubro (L&T) Limited, Chennai	
Mr. S.Balaji, Assistant General Manager, Hyundai Motor India Limited, Chennai.	

INTERNAL MEMBERS	
Dr. D.Venkat Kumar, Professor / Mechanical Engineering	
Dr. M. Kathiresan, Professor / Mechanical Engineering	
Dr. R.Harichandran, Professor / Mechanical Engineering	
Dr. P.Ramanan, Associate Professor / Mechanical Engineering	
Dr. I.Sankar, Associate Professor / Mechanical Engineering	
Dr. D.Vignesh Kumar, Associate Professor / Mechanical Engineering	
Dr.F.Michael Thomas Rex, Associate Professor / Mechanical Engineering	
Dr.A.Andrews, Assistant Professor (S.G) / Mechanical Engineering	
Dr. K.Thoufiq Mohammed, Assistant Professor (S.G) / Mechanical Engineering	
Mr.C.Veera Ajay, Asstistant Professor / Mechanical Engineering	
Dr. T. Sakthi, Assistant Professor (S.G) / Humanities	
STUDENT MEMBERS	
Mr V. Dhanush, IV Year / Mechanical Engineering	
Mr P. Abinsasha, III Year / Mechanical Engineering	
Mr V. Sanjay, II Year / Mechanical Engineering	

CHAIRMAN
BOARD OF STUDIES/MECH. ENGG.
Dr. S. IYAHRAJA M.Tech. (IITM), Ph.D.,
Professor & Head,
Dept. of Mechanical Engineering,
National Engineering College,
K.R. Nagar, Kovilpatti - 628 503.

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Department of Mechanical Engineering

Annexure - I

Action taken for Minutes of 21st BoS Meeting

S. No.	Suggestions by BoS Committee	Action Taken
B.E Mechanical Engineering – Curriculum & Syllabus		
1.	The courses "Industrial Engineering, and Project Management and Finance" presently kept at semester IV. The expert members suggested to move the same course to higher semester.	As per the suggestion, the course "Industrial Engineering" has been moved to VI Semester. But the course "Project Management and Finance" is retained in IV Semester itself due to the reason of major changes in the curriculum – total credit and contact hours.
2.	It is suggested that to have the course "Kinematics of Machinery" after the course "Strength of Materials" for the better understanding	The prerequisite for the course is Engineering Mechanics which is offered in II Semester itself. Also, the same sequence was being followed in the earlier curriculum also.
3.	The course name for "23ME81C – Capstone Project/ Industry Practice" may be changed as "23ME81C – Capstone Project/ Industry/Institution Practice".	The institution practice which means the project being done in the R&D institutions/organizations also comes under Capstone Project. Also, the title is also considered in order to avoid more elements for the evaluation process.
4.	In reference book include NPTEL course video link for all the courses.	The NPTEL Video links are included wherever possible.
5.	<u>Project Management and Finance</u> • In CO2, specific evaluation techniques can be added. • The topics "PERT and CPM' need to be delivered in specific to the programme (application oriented).	Suggestions are incorporated in the syllabus.
6.	<u>Industrial Engineering</u> For all COs rephrase the content to make it crisp and clear.	The syllabus has been rephrased. The course has been moved to VI Semester. It can be discussed in the next meeting.
7.	<u>Machining Processes</u> Reduce the detailed theory content like Types of Machining, Types of milling Introduction etc.	Suggestions are incorporated in the syllabus.
8.	<u>Thermal Engineering</u> • Remove the content "Boiler Mountings and Accessories" from CO2 considering the contact hours.	Suggestions are incorporated in the syllabus.

	• Similarly remove the topic "Adiabatic Mixing" from CO4	
9.	<u>Machine Drawing</u> Include the following contents • How to convert 2D to 3D • Auto CAD 3D (Simple Components) • Include the book "Engineering Drawing Practice for schools & Colleges - SP46:2003" published by BUREAU OF INDIAN STANDARDS. Maintain uniform format for Text book and reference book.	• During the content delivery conversion from 2D to 3D will be discussed. • Generally mentioning the name of software is not being done. But it is mentioned as CAD packages. • The book has been included in the syllabus. • Uniform format for Text book and reference book has been maintained.
10.	<u>System Modelling</u> • An introduction to Simulink (MATLAB-based graphical programming environment for modelling) may be given during the course. • Instead of going for spring – damper model focus may be given to simple mathematical models. • Simple heat transfer equation can be added for mathematical models. • Similarly, simple Fluid Mechanics problems can be included.	Suggestions are incorporated in the syllabus.
11.	<u>Product Design & Development</u> • Course name can be changed to "Product Design & Development strategies" from "Product Design & Development". • In CO4 add the topic "shape, Size optimization". • Include the topic "concurrent Engineering".	Suggestions are incorporated in the syllabus.
12.	<u>Introduction to Robotics</u> • Course name can be changed to "Industrial Robotics". • In CO3 include the topic "Transducers" and reduce the content for the topic "sensors". • Include the topic "Payload Calculation"	The title of the course has been changed as "Industrial Robotics". Suggestions are incorporated in the syllabus.
13.	<u>Power Plant Engineering</u> • In CO2 remove the topic "Micro hydel power plant" as it can be integrated with hydel power plant. • Revise the content for CO3 completely. • For CO4 all basic power plants can be included after revising the CO which may address Renewable energy-based Power Plants.	Suggestions are incorporated in the syllabus.

14.	<u>Unconventional Machining Process</u> • Course name can be changed to "Advanced Machining Processes". • In CO3 include the topic "Micro Wire cut EDM".	The title of the course has been changed as "Advanced Machining Processes". Suggestions are incorporated in the syllabus.
15.	<u>Curriculum design document</u> Course description should be given in the beginning of the course itself i.e., before the course outcomes	Suggestions are incorporated in the course design document.

14/12/24.

Chairman
Board of Studies - Mechanical
Dr. S. IYAHRAJA M.Tech, (IITM), Ph.D.,
Professor & Head,
Dept. of Mechanical Engineering,
National Engineering College,
K.R. Nagar, Kovilpatti - 628 503.

NATIONAL ENGINEERING COLLEGE, K.R. NAGAR, KOVILPATTI

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B. E. MECHANICAL ENGINEERING
REGULATIONS 2023
CHOICE BASED CREDIT SYSTEM
CURRICULAM STRUCTURE

SEMESTER - I

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Induction Programme – 2 weeks									**0**
Theory Courses									
1.	23SH11C	தமிழர் மரபு / Heritage of Tamils	HSMC	1	0	0	0	1	1
2.	23SH12C	Mathematical Foundations for Engineers	BSC	3	1	0	0	4	4
3.	23GN01C	Aptitude Essentials	EEC	1	0	0	0	1	1
4.	23SH13C	Introduction to Engineering	ESC	1	0	0	0	1	1
Integrated Courses									
5.	23SH14C	Technical English	HSMC	1	0	2	0	3	2
6.	23SH15C	Engineering Physics	BSC	2	0	2	0	4	3
7.	23SH16C	Engineering Chemistry	BSC	2	0	2	0	4	3
8.	23ME11C	Engineering Graphics	ESC	2	0	4	0	6	4
							TOTAL	**24**	**19**

SEMESTER - II

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Theory Courses									
1.	23SH21C	தமிழரும் தொழில்நுட்பமும் /Tamils and Technology	HSMC	1	0	0	0	1	1
2.	23GN05C	Professional Ethics and Human Values	HSMC	2	0	0	0	2	2
3.	23ME21C	Fourier Series, Complex Analysis and Calculus	BSC	3	1	0	0	4	4
4.	23ME22C	Material Science	ESC	2	0	0	0	2	2
5.	23ME23C	Engineering Mechanics	ESC	3	1	0	0	4	4
Integrated Courses									
6.	23SH22C	Professional English	HSMC	1	0	2	0	3	2
7.	23CS11C	Problem Solving Techniques	ESC	3	0	2	0	5	4
8.	23EE13C	Fundamentals of Electrical and Electronics Engineering	ESC	3	0	2	0	5	4
Practical Courses									
9.	23GN02C	Innovation through Design Thinking	EEC	0	0	0	4	4	2
							TOTAL	**30**	**25**

SEMESTER - III

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Theory Courses									
1.	23GN04C	Aptitude Excellence	EEC	1	0	0	0	1	1
2.	23MC02C	Environmental Science and Engineering	MC - I	2	0	0	0	2	0
3.	23ME31C	Engineering Thermodynamics	ESC	3	1	0	0	4	4
4.	23ME32C	Statistics and Numerical Methods	BSC	3	1	0	0	4	4
Integrated Courses									
5.	23ME33C	Basic Manufacturing Processes	PCC- I	3	0	2	0	5	4
6.	23ME34C	Fluid Mechanics and Hydraulic Machines	PCC - II	2	1	2	0	5	4
7.	23ME35C	Materials Engineering	PCC- III	2	0	2	0	4	3
8.	23ME36C	Kinematics of Machinery	PCC - IV	3	0	0	2	5	4
Practical Courses									
9.	23GN03C	Intellectual Property Rights Study	EEC	0	0	0	4	4	2
							TOTAL	**35**	**26**

SEMESTER - IV

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Theory Courses									
1.	23GN06C	Project Management and Finance	HSMC	2	0	0	0	2	2
2.	E1	Open Elective Course - I	OEC	3	0	0	0	3	3
3.	E2	Elective – Science Stream	OEC	3	0	0	0	3	3
4.	23MC01C	Constitution of India	MC - II	2	0	0	0	2	0
Integrated Courses									
5.	23ME41C	Machining Processes	PCC - V	3	0	2	0	5	4
6.	23ME42C	Thermal Engineering	PCC VI	3	0	2	0	5	4
7.	23ME43C	Strength of Materials	PCC VII	3	0	2	0	5	4
8.	23ME44C	Machine Drawing	PCC VIII	1	0	2	0	3	2
Practical Courses									
9.	23ME45C	System Modeling Projects	EEC	0	0	2	2	4	2
							TOTAL	**32**	**24**

SEMESTER - V

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Theory Courses									
1.	23ME51C	Mechatronics and Robotics Engineering	PCC XI	3	0	0	0	3	3
2.	E3	Program Elective Course - I	PEC	3	0	0	0	3	3
3.	E4	Program Elective Course - II	PEC	3	0	0	0	3	3
Integrated Courses									
4.	23ME52C	Heat and Mass Transfer	PCC IX	2	1	2	0	5	4
5.	23ME53C	Dynamics of Machinery	PCC X	2	1	2	0	5	4
6.	23ME54C	Computer Aided Design and Manufacturing	PCC XII	3	0	2	0	5	4
Practical Courses									
7.	23ME55C	IoT Laboratory	PCC XIII	0	0	2	0	2	1
8.	23ME56C	Simulation using Modern Tool	EEC	0	0	2	2	4	2
							TOTAL	**30**	**24**

SEMESTER - VI

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Theory Courses									
1.	23ME61C	Design for Manufacturing & Assembly	PCC XIV	3	0	0	0	3	3
2.	23ME62C	Industrial Engineering	PCC XV	3	0	0	0	3	3
3.	E5	Program Elective Course - III	PEC	3	0	0	0	3	3
4.	E6	Open Elective Course - II	OEC	3	0	0	0	3	3
Integrated Courses									
5.	23ME63C	Engineering Metrology and Measurements	PCC XVI	2	0	2	0	4	3
6.	23ME64C	Machine Elements and System Design	PCC XVII	3	1	0	2	6	5
7.	23ME65C	Computer Aided Analysis	PCC XVIII	3	0	2	0	5	4
Practical Courses									
8.	23ME66C	Product Development Practice	EEC	0	0	2	2	4	2
							TOTAL	**31**	**26**

SEMESTER - VII

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Theory Courses									
1.	E7	Open Elective Course - III	OEC	3	0	0	0	3	3
Integrated Courses									
2.	E8	Program Elective Course IV	PEC	3	0	0	0	3	3
3.	E9	Program Elective Course V	PEC	3	0	0	0	3	3
4.	E10	Program Elective Course VI	PEC	3	0	0	0	3	3
5.	23ME71C	Mini Project	EEC	0	0	0	6	6	3
6.	23ME72C	Internship	EEC	0	0	0	0	0	2
							TOTAL	**18**	**17**

SEMESTER - VIII

S. No	Course Code	Course Title	Category	Periods Per Week				Total Contact Periods	Credits
				L	T	P	E		
Practical Courses									
1.	23ME81C	Capstone Project/Industry Practice	EEC	0	0	0	12	12	6
							TOTAL	**12**	**6**

National Engineering College, K.R.Nagar, Kovilpatti – 628 503

(An Autonomous Institution - Affiliated to Anna University, Chennai)

Department of Mechanical Engineering

Sl No.	Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5
	CLEAN AND GREEN TECHNOLOGY	***ROBOTICS AND AUTOMATION***	***PRODUCT AND PROCESS DEVELOPMENT***	***MATERIALS AND MODERN MANUFACTURING ENGINEERING***	***INDUSTRIAL MANAGEMENT***
1	Renewable Energy Sources	Industrial Robotics	Product Design and Development Strategies	Advanced Machining Processes	Principles of Management
2	Solar Photovoltaic Energy Conversion	Mechanics of Robots	Product Life Cycle Management	Quality Control of Welded Structures	Total Quality Management
3	Cogeneration and Waste Heat Recovery	Control of Robotic Systems	Advanced Engineering Materials	Non-Destructive Evaluation	Operations Research
4	Energy Conservation in Industries	Electrical Drives and Control	Computer Graphics and Virtual Reality	Additive Manufacturing	Marketing Management
5	Energy Storage Systems	Mechatronics	Advanced Modeling Techniques	Lean Manufacturing	Production Planning and Control
6	Energy Efficient Buildings	Hydraulics and Pneumatics	Modelling and Simulation	Machine Tool Control	Process Planning and Cost Estimation
7	Fuel Cells & Hydrogen Energy	MEMS Devices – Design and Fabrication	Piping Design Engineering	Computer Integrated Manufacturing	Engineering Economics and Cost Analysis
8	Hybrid Electrical Vehicles	Industry 4.0		Advanced Engineering Materials	Accounting for Engineers
9		Microprocessor, Microcontroller and Applications			Industrial Safety Engineering

22nd BOARD OF STUDIES MEETING

DEPARTMENT OF MECHANICAL ENGINEERING ON 18.05.2024