

M.E. - CAD/CAM

Curriculum & Syllabus for

REGULATIONS 2024

(ACADEMIC YEAR 2024-25 ONWARDS)





K.S.R. COLLEGE OF ENGINEERING : TIRUCHENGODE - 637 215
(Autonomous)
CAD/CAM ENGINEERING
(REGULATIONS 2024)

Vision of the Institution

IV We envision to achieve status as an excellent educational institution in the global knowledge hub, making self-learners, experts, ethical and responsible engineers, technologists, scientists, managers, administrators and entrepreneurs who will significantly contribute to research and environment friendly sustainable growth of the nation and the world.

Mission of the Institution

IM 1 To inculcate in the students self-learning abilities that enable them to become competitive and considerate engineers, technologists, scientists, managers, administrators and entrepreneurs by diligently imparting the best of education, nurturing environmental and social needs.

IM 2 To foster and maintain mutually beneficial partnership with global industries and Institutions through knowledge sharing, collaborative research and innovation.

Vision of the Department / Programme: (Industrial Safety Engineering)

DV To be a centre of excellence in the field of Mechanical Engineering for providing its students and faculty with opportunities for excel in education and targeted research themes in emerging areas.

Mission of the Department / Programme: (Industrial Safety Engineering)

DM 1 To excel in academic and research activities that meet the industrial and social needs.

DM 2 To develop competent, innovative and ethical mechanical Engineers.

Programme Educational Objectives (PEOs) :(Industrial Safety Engineering)

The graduates of the programme will be able to	
PEO 1	To Impart knowledge to students in recent advances in the Computer Aided Manufacturing to educate them to prosper in Manufacturing engineering and research related professions.
PEO 2	To enhance the scientific and engineering fundamentals the provide students with a solid foundation in required to solve analytical problems
PEO 3	To coach students with good design and engineering skills so as to comprehend, analyze, design, and produce novel materials, products and solutions for the contemporary manufacturing issues.
PEO 4	To inculcate students with professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate Computer Integrated Manufacturing engineering issues to broader engineering and social context.



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PROGRAMME OUTCOMES (POs) AND PROGRAMME SPECIFIC OUTCOMES (PSOs)

Programme Outcomes (POs)	
PO1	An ability to independently carry out research/investigation and development work to solve practical problems
PO2	An ability to write and present a substantial technical report/document
PO3	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program
PO4	Graduate will demonstrate skills to use modern engineering tools, software and equipment to analyze engineering problems.
PO5	Graduates will demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks in the design and manufacturing applications
PO6	Responsibility of understanding ethically and professionally and develop confidence for self-education and ability for life-long learning
Programme Specific Outcomes (PSOs)	
PSO1	Design, analyse, formulate and solve engineering problems using computer software, tools and techniques.
PSO2	Adopt and demonstrate multidisciplinary approach to solve design, manufacturing and allied problems.

		K. S. R COLLEGE OF ENGINEERING An Autonomous Institution Approved by AICTE and Affiliated to Anna University, Chennai Accredited by NBA,NAAC ('A++' Grade)							Curriculum PG R - 2024		
Department		Department of Mechanical Engineering									
Programme		M.E. CAD/CAM									
SEMESTER I											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
Induction Programme			-	-	-	-	-	-	-	-	-
THEORY COURSES											
1	CC24T11	Computer Applications in Design	PCC	3	0	0	3	3	40	60	100
2	CC24T12	Computer Aided Manufacturing	PCC	3	0	0	3	3	40	60	100
3	CC24T13	Advanced Manufacturing Processes	PCC	3	0	0	3	3	40	60	100
4	RM24T19	Research Methodology and IPR	RMC	3	0	0	3	3	40	60	100
5		Professional Elective–I	PEC	3	0	0	3	3	40	60	100
6		Professional Elective–II	PEC	3	0	0	3	3	40	60	100
LABORATORY COURSES											
7	CC24P11	Computer Aided Design Laboratory	PCC	0	0	4	4	2	60	40	100
8	CC24P12	Computer Aided Manufacturing Laboratory	PCC	0	0	4	4	2	60	40	100
TOTAL				18	0	8	26	22	800		
SEMESTER II											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
THEORY COURSES											
1	CC24T21	Product Life cycle Management	PCC	3	0	0	3	3	40	60	100
2	CC24T22	Finite Element Methods in Mechanical Design	PCC	3	0	0	3	3	40	60	100
3	CC24T23	Solid Freeform Manufacturing	PCC	3	0	0	3	3	40	60	100
4	CC24T24	Industry 4.0	PCC	3	0	0	3	3	40	60	100
5		Professional Elective-III	PEC	3	0	0	3	3	40	60	100
6		Professional Elective-IV	PEC	3	0	0	3	3	40	60	100
LABORATORY COURSES											
7	CC24P21	Rapid Prototyping Laboratory	PCC	0	0	4	4	2	60	40	100
8	CC24P22	Simulation and Analysis Laboratory	PCC	0	0	4	4	2	60	40	100
TOTAL				18	0	8	26	22	800		

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Department		Department of Mechanical Engineering									
Programme		M.E. CAD/CAM									
SEMESTER III											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
THEORY COURSES											
1	CC24T31	Design for Sustainability	PCC	3	0	0	3	3	40	60	100
2		Professional Elective-V	PEC	3	0	0	3	3	40	60	100
3		Open Elective	OEC	3	0	0	3	3	40	60	100
EMPLOYABILITY ENHANCEMENT COURSES											
4	CC24P31	Technical Presentation	EEC	0	0	2	2	1	60	40	100
5	CC24P32	Project Work I	EEC	0	0	12	12	6	60	40	100
AUDIT COURSES											
6		Audit Course	AC	2	0	0	2	0	100	-	100
TOTAL				11	0	14	25	16	600		
SEMESTER IV											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
EMPLOYABILITY ENHANCEMENT COURSES											
1	CC24P41	Project Work II	EEC	0	0	24	24	12	60	40	100
TOTAL				0	0	24	24	12	100		

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Programme		M.E. CAD/CAM									
PROFESSIONAL CORE COURSES (PCC)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1.	CC24T11	Computer Applications in Design	PCC	3	0	0	3	3	40	60	100
2.	CC24T12	Computer Aided Manufacturing	PCC	3	0	0	3	3	40	60	100
3.	CC24T13	Advanced Manufacturing Processes	PCC	3	0	0	3	3	40	60	100
4.	CC24P11	Computer Aided Design Laboratory	PCC	0	0	4	4	2	60	40	100
5.	CC24P12	Computer Aided Manufacturing Laboratory	PCC	0	0	4	4	2	60	40	100
6.	CC24T21	Product Lifecycle Management	PCC	3	0	0	3	3	40	60	100
7.	CC24T22	Finite Element Methods in Mechanical Design	PCC	3	0	0	3	3	40	60	100
8.	CC24T23	Solid Freeform Manufacturing	PCC	3	0	0	3	3	40	60	100
9.	CC24T24	Industry 4.0	PCC	3	0	0	3	3	40	60	100
10.	CC24P21	Rapid Prototyping Laboratory	PCC	0	0	4	4	2	60	40	100
11.	CC24P22	Simulation and Analysis Laboratory	PCC	0	0	4	4	2	60	40	100
12.	CC24T31	Design for Sustainability	PCC	3	0	0	3	3	40	60	100
TOTAL				24	0	16	40	32			
RESEARCH METHODOLOGY AND IPR COURSE (RMC)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1	RM24T19	Research Methodology and IPR	RMC	3	0	0	3	3	40	60	100
TOTAL				3	0	0	3	3			
EMPLOYABILITY ENHANCEMENT COURSES (EEC)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1	CC24P31	Technical Presentation	EEC	0	0	2	2	1	60	40	100
2	CC24P32	Project Work I	EEC	0	0	12	12	6	60	40	100
3	CC24P41	Project Work II	EEC	0	0	24	24	12	60	40	100
TOTAL				0	0	38	38	19			

PROFESSIONAL ELECTIVE COURSES (PEC)											
PROFESSIONAL ELECTIVE - I and II (SEMESTER- I)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1	CC24E01	Integrated Product Development	PEC	3	0	0	3	3	40	60	100
2	CC24E02	Composite Materials and Mechanics	PEC	3	0	0	3	3	40	60	100
3	CC24E03	Computer Control in Process Planning	PEC	3	0	0	3	3	40	60	100
4	CC24E04	Advanced Finite Element Analysis	PEC	3	0	0	3	3	40	60	100
5	CC24E05	Optimization Techniques in Design	PEC	3	0	0	3	3	40	60	100
6	CC24E06	Advanced Machine tool Design	PEC	3	0	0	3	3	40	60	100
7	CC24E07	Reverse Engineering	PEC	3	0	0	3	3	40	60	100
PROFESSIONAL ELECTIVE –III and IV (SEMESTER-II)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1	CC24E08	Industrial Safety Management	PEC	3	0	0	3	3	40	60	100
2	CC24E09	Mechanical Measurements and Analysis	PEC	3	0	0	3	3	40	60	100
3	CC24E10	Reliability in Engineering Systems	PEC	3	0	0	3	3	40	60	100
4	CC24E11	Lean Manufacturing	PEC	3	0	0	3	3	40	60	100
5	CC24E12	Performance Modeling and Analysis of Manufacturing Systems	PEC	3	0	0	3	3	40	60	100
6	CC24E13	Creativity and Innovation	PEC	3	0	0	3	3	40	60	100
7	CC24E14	Industrial Robotics and Expert systems	PEC	3	0	0	3	3	40	60	100
8	CC24E15	Design for Cellular Manufacturing Systems	PEC	3	0	0	3	3	40	60	100
9	CC24E16	Manufacturing Technology For Electronic Devices	PEC	3	0	0	3	3	40	60	100
10	CC24E17	Smart Manufacturing	PEC	3	0	0	3	3	40	60	100
PROFESSIONAL ELECTIVE –V (SEMESTER-III)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1	CC24E18	Quality Concepts in Design	PEC	3	0	0	3	3	40	60	100
2	CC24E19	Non–Destructive Testing	PEC	3	0	0	3	3	40	60	100
3	CC24E20	Design of Hybrid and Electric Vehicles	PEC	3	0	0	3	3	40	60	100
4	CC24E21	Material Handling Systems and Design	PEC	3	0	0	3	3	40	60	100
5	CC24E22	Designing with Advanced Materials	PEC	3	0	0	3	3	40	60	100
6	CC24E23	Advances in Manufacturing Processes	PEC	3	0	0	3	3	40	60	100
AUDIT COURSES (AC)											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
1	AX24A01	Disaster Management	AC	2	0	0	2	0	100	-	100
2	AX24A02	Value Education	AC	2	0	0	2	0	100	-	100
3	AX24A03	Constitution of India	AC	2	0	0	2	0	100	-	100
4	AX24A04	Indian Knowledge System	AC	2	0	0	2	0	100	-	100

OPEN ELECTIVE COURSES											
S. No.	Course Code	Course Title	Category	Periods / Week				Credit	Max. Marks		
				L	T	P	Tot		CA	ES	Tot
COMPUTER SCIENCE AND ENGINEERING											
1	CS24O01	Machine learning and Deep Learning	OEC	3	0	0	3	3	40	60	100
2	CS24O02	Blockchain and Crypto Currency	OEC	3	0	0	3	3	40	60	100
3	CS24O03	Multimedia Technologies	OEC	3	0	0	3	3	40	60	100
BIG DATA ANALYTICS											
4	BD24O01	Big Data Analytics	OEC	3	0	0	3	3	40	60	100
5	BD24O02	Internet of Things and Cloud	OEC	3	0	0	3	3	40	60	100
6	BD24O03	Big Data Visualization	OEC	3	0	0	3	3	40	60	100
POWER ELECTRONICS AND DRIVE											
7	PE24O01	Switching Concepts and Power	OEC	3	0	0	3	3	40	60	100
8	PE24O02	Smart Grid Technology	OEC	3	0	0	3	3	40	60	100
9	PE24O03	Renewable Energy Technology	OEC	3	0	0	3	3	40	60	100
10	PE24O04	Energy Management and Conservation	OEC	3	0	0	3	3	40	60	100
EMBEDDED SYSTEMS TECHNOLOGY											
11	ET24O01	Embedded Systems	OEC	3	0	0	3	3	40	60	100
12	ET24O02	Embedded Control	OEC	3	0	0	3	3	40	60	100
13	ET24O03	Embedded Automation	OEC	3	0	0	3	3	40	60	100
INFORMATION TECHNOLOGY											
14	IT24O01	IoT for Smart System	OEC	3	0	0	3	3	40	60	100
15	IT24O02	Machine Learning for Intelligent	OEC	3	0	0	3	3	40	60	100
16	IT24O03	DevOps and Microservices	OEC	3	0	0	3	3	40	60	100
17	IT24O04	Cyber security and Digital Awareness	OEC	3	0	0	3	3	40	60	100
CONSTRUCTION ENGINEERING AND MANAGEMENT											
18	CN24O01	Energy Efficient Building	OEC	3	0	0	3	3	40	60	100
19	CN24O02	Economics and Finance management	OEC	3	0	0	3	3	40	60	100
20	CN24O03	Stress management	OEC	3	0	0	3	3	40	60	100
STRUCTURAL ENGINEERING											
21	ST24O01	Principles of Sustainable	OEC	3	0	0	3	3	40	60	100
22	ST24O02	Failure Analysis of Structures	OEC	3	0	0	3	3	40	60	100
23	ST24O03	Smart materials and Smart Structures	OEC	3	0	0	3	3	40	60	100
COMMUNICATION SYSTEMS											
24	CU24O01	Principles of Multimedia	OEC	3	0	0	3	3	40	60	100
25	CU24O02	Software Defined Radio	OEC	3	0	0	3	3	40	60	100
26	CU24O03	MEMS & NEMS	OEC	3	0	0	3	3	40	60	100

27	CU24O04	Introduction to cognitive Radio Network	OEC	3	0	0	3	3	40	60	100
INDUSTRIAL SAFETY ENGINEERING											
28	IS24O01	Industrial Safety Engineering	OEC	3	0	0	3	3	40	60	100
29	IS24O02	Fire Engineering and Protection	OEC	3	0	0	3	3	40	60	100
30	IS24O03	Food and Bio-safety	OEC	3	0	0	3	3	40	60	100
OPEN ELECTIVE COURSES OFFERED BY CAD/CAM ENGINEERING											
1	CC24O01	Digital Manufacturing	OEC	3	0	0	3	3	40	60	100
2	CC24O02	Design for Manufacturing and Assembly	OEC	3	0	0	3	3	40	60	100
3	CC24O03	Smart Materials and Structures	OEC	3	0	0	3	3	40	60	100

Summary						
Name of the Programme: M.E CAD/CAM						
CATEGORY	Credits per Semester				TOTAL CREDITS	%
	I	II	III	IV		
PCC	13	16	03		32	44.44
RMC	03				03	04.17
PEC	06	06	03		15	20.83
OEC			03		03	04.17
EEC			07	12	19	26.39
AC			√			
Total	22	22	16	12	72	100