Sri Krishna College of Engineering and Technology

An Autonomous Institution, Affiliated to Anna University

Coimbatore – 641 008

DEPARTMENT OF MECHANICAL ENGINEERING

CURRICULUM AND SYLLABI

M.E. CAD/CAM

(R2022)

Vision

The department aspires to produce experts in Mechanical Engineering with moral values and desires to set up centers of excellence in innovative design and testing, composite materials, automation, automotive technology and green fuels.

Mission

To produce world class mechanical engineering graduates by promoting core technical competency blended with advanced computing skills, creative thinking and desire to upgrade continuously, so as to empower them to the expectation of the industries in our country and abroad and also to impart the interpersonal skills and make them realize the values of life.

Programme Outcomes:

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Educational Objectives

PEO 1	Impart the knowledge and skills required to analyze and solve the design and manufacturing problems using advanced software in industries in India and abroad
PEO 2	Update the advancements in computer assisted design and manufacturing to enable them to pursue research and teaching in their career.
PEO 3	Educate them the leadership, ethics, entrepreneurial skills and continuous learning needed for their successful career in our country and abroad.

CURRICULUM & SYLLABUS – R2022 - M.E. CAD/CAM

SEMESTER 1							
S No.	**Course Code**	**Course**	**L/T/P**	**Contact hrs./wk.**	**Credits**	**Ext./Int.**	**Cat.**
1	22PD101	Research Methodology (Common for ED and CC)	3/0/0	3	3	60/40	PC
2	22PC101	Geometric Modelling and Graphics	3/0/0	3	3	60/40	PC
3	22PC102	CNC Technology	3/0/0	3	3	60/40	PC
4	22PC5XX	Professional Elective – I	3/0/0	3	3	60/40	PE
5	22PC5XX	Professional Elective – II	3/0/0	3	3	60/40	PE
6	22PC103	Computer Aided Modelling, Simulation and Manufacturing Laboratory	0/0/4	4	2	40/60	PC
7	22PC104	Industrial Case Study – 1	0/0/3	3	1.5	40/60	EEC
8	22AC00X	Audit Course – 1	2/0/0	2	0	0/100	AC
			Total	**24**	**18.5**	**800**	

SEMESTER 2							
S No.	**Course Code**	**Course**	**L/T/P**	**Contact hrs./wk.**	**Credits**	**Ext./Int.**	**Cat.**
1	22PD201	Advanced Finite Element Analysis (Common for ED and CC)	3/1/0	3	3	60/40	PC
2	22PC201	Computer Integrated Manufacturing	3/0/0	3	3	60/40	PC
3	22PC5XX	Professional Elective – III	3/0/0	3	3	60/40	PE
4	22PC5XX	Professional Elective – IV	3/0/0	3	3	60/40	PE
5	22PD203	Computer Aided Engineering Laboratory (Common for ED and CC)	0/0/4	4	2	40/60	PC
6	22PC202	Industrial Case Study – 2	0/0/3	3	1.5	40/60	EEC
7	22PC203	Mini project	0/0/4	4	2	40/60	PW
8	22AC00X	Audit Course – 2	2/0/0	2	0	0/100	AC
			Total	**25**	**17.5**	**800**	

SEMESTER 3							
S No.	**Course Code**	**Course**	**L/T/P**	**Contact hrs./wk.**	**Credits**	**Ext./Int.**	**Cat.**
1	22PC5XX	Professional Elective – V	3/0/0	3	3	60/40	PE
2	22PX00X	Open Elective	3/0/0	3	3	60/40	OE
3	22PC301	Dissertation Phase I	0/0/20	20	10	40/60	PW
			Total	**26**	**16**	**300**	

SEMESTER 4							
S No.	**Course Code**	**Course**	**L/T/P**	**Contact hrs./wk.**	**Credits**	**Ext./Int.**	**Cat.**
1	22PC401	Dissertation Phase II	0/0/32	32	16	40/60	PW
			Total	**32**	**16**	**100**	

Total Credits: 68

S No.	Course Code	Course	L/T/P	Contact hrs./wk.	Credits	Ext./Int.	Cat.
Professional Electives – Group 1							
1	22PD501	Advanced Automotive Systems (Common for ED and CC)	3/0/0	3	3	60/40	PE
2	22PC501	Advanced Manufacturing Methods	3/0/0	3	3	60/40	PE
3	22PC502	Architecture of CAD Systems	3/0/0	3	3	60/40	PE
4	22PC503	Computational Fluid Dynamics	3/0/0	3	3	60/40	PE
5	22PC504	Computer Aided Inspection	3/0/0	3	3	60/40	PE
6	22PC505	Design of Mechatronics Systems	3/0/0	3	3	60/40	PE
7	22PC506	Enterprise Resource Planning	3/0/0	3	3	60/40	PE
8	22PC507	Product Design and Development	3/0/0	3	3	60/40	PE
9	22PC508	Rapid Prototyping and Tooling	3/0/0	3	3	60/40	PE
10	22PC509	Reverse Engineering	3/0/0	3	3	60/40	PE
Professional Electives – Group 2							
11	22PC510	Agile and Lean Manufacturing	3/0/0	3	3	60/40	PE
12	22PC511	Concepts of Industry 4.0	3/0/0	3	3	60/40	PE
13	22PC512	Concurrent Engineering	3/0/0	3	3	60/40	PE
14	22PC513	Flexible Manufacturing Systems	3/0/0	3	3	60/40	PE
15	22PD515	Geometric Dimensioning and Tolerancing (Common for ED and CC)	3/0/0	3	3	60/40	PE
16	22PD516	Industrial Robotics and Artificial Intelligence (Common for ED and CC)	3/0/0	3	3	60/40	PE
17	22PD517	Optimization Techniques in Design (Common for ED and CC)	3/0/0	3	3	60/40	PE
18	22PD518	Quality Concepts in Engineering Design (Common for ED and CC)	3/0/0	3	3	60/40	PE
19	22PD519	Material Characterization Techniques (Common to ED and CC)	3/0/0	3	3	60/40	PE
20	22PM101	Reliability and Computational Methods (Common to ED and CC)	3/0/0	3	3	60/40	PE

Open electives offered to other programmes:

S No.	Course Code	Course	L/T/P	Contact hrs./wk.	Credits	Ext./Int.	Cat.
1	22PC001	Cost Management of Engineering Projects	3/0/0	3	3	60/40	OE
2	22PC002	Fundamentals of Composite Materials	3/0/0	3	3	60/40	OE

Open electives offered by other programmes:

S No.	Course Code	Course	L/T/P	Contact hrs./wk.	Credits	Ext./Int.	Cat.
1	22PD001	Fundamentals of Industrial Safety	3/0/0	3	3	60/40	OE
2	22PD002	Operations Research	3/0/0	3	3	60/40	OE
3	22PE001	Waste to Energy	3/0/0	3	3	60/40	OE
4	22PF001	Business Analytics	3/0/0	3	3	60/40	OE

Audit Courses

S No.	Course Code	Course	L/T/P	Contact hrs./wk.	Credits	Cat.
1	22AC001	English for Research Paper Writing	2/0/0	2	0	AC
2	22AC002	Disaster Management	2/0/0	2	0	AC
3	22AC003	Sanskrit for Technical Knowledge	2/0/0	2	0	AC
4	22AC004	Value Education	2/0/0	2	0	AC
5	22AC005	Constitution of India	2/0/0	2	0	AC
6	22AC006	Pedagogy Studies	2/0/0	2	0	AC
7	22AC007	Stress Management by Yoga	2/0/0	2	0	AC
8	22AC008	Personality Development Through Life Enlightenment Skills	2/0/0	2	0	AC
			Total	**16**	**0**	

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

S. No	Stream	Credits/Semester				Credits	%
		I	II	III	IV		
1	Basic Sciences (BS)	-	-	-	-	**0**	0
2	Professional Core (PC)	11	8	-	-	**19**	27.94
3	Professional Electives (PE)	6	6	3	-	**15**	22.06
4	Open Electives (OE)	-	-	3	-	**3**	4.41
5	Project Work (PW)	-	2	10	16	**28**	41.18
6	Industrial Case Study (EEC)	1.5	1.5	-	-	**3**	4.41
Total		**18.5**	**17.5**	**16**	**16**	**68**	68