Indra Ganesan
COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC
IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

INDRA GANESAN COLLEGE OF ENGINEERING

Criteria 1	Curricular Aspects	100

1.1 Curricular Planning and Implementation (20)

1.1.1 The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of continuous internal Assessment

Table of Content

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

DEPARTMENT OF MECHANICAL ENGINEERING

PREFACE OF THE COURSE FILE

Batch	: **2017-2021**
Academic Year	: **2021-2022 / EVEN**
Program	: **MECHANICAL ENGINEERING**
Year & Semester	: **4th Year / 8th Semester**
Course Code	: **ME8094**
Name of the Course	: **Computer Integrated Manufacturing Systems**
Faculty in-charge	: **Mr.R. Ramesh Babu, AP/Mechanical**

Signature of the Faculty in-charge

HoD / Mechanical

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
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Manikandam, Trichy-620 012.

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DEPARTMENT OF MECHANICAL ENGINEERING

Proof of Conduct of Content Beyond Syllabus(CBS)

Name of the Faculty : Mr.R.Ramesh Babu **Course Code & Name:ME8094 Computer Integrated Manufacturing Systems**

Degree & Program: B.E. /Mechanical **Semester: VIII** **Academic Year: 2021 -2022 /EVEN**

TOPIC: SIX INDUSTRIAL ROBOTICS TRENDS

INTRODUCTION:

Robotics are becoming more important and manufacturers are recognizing their growing role in many different industries and applications. Six industry trends are highlighted.

Industrial robotics insights

- Robotics are being used more often in industrial manufacturing facilities due to a rising labor and skills gap and strong industry demand.
- Trends in the industrial robotics market include increased digitalization and automation and an emphasis on making robots easier to use.
- Sustainability is a growing trend throughout manufacturing and industrial robots are no exception.

1. Labor and demographics

Scott Marsic, group product manager – robotics, at Epson America Inc. said labor shortages are "far and away, the number one trend" driving industrial automation adoption.

"The United States' manufacturing sector is doing great work, but there are more jobs than there are people to fill them and that presents a problem."Labor issues are global, said Kary Zate, senior director, marketing communications at Locus Robotics."You've got labor shortages, an aging population in the warehouse, and a younger generation that's not really interested in working in warehouse environments, because, frankly, it's hard work that requires people to walk 10 to 15 miles a day in a cart-based environment. It's very taxing."With finding and retaining talent a major challenge for industry, a growing number of companies are turning to industrial automation to fill labor gaps, improve productivity, and stay competitive in a challenging macroeconomic landscape, Zate said.

2. Digitalization drives

The pandemic accelerated both automation adoption and the digital transformation across the industrial sector, said Lian Jye Su, research director at market analyst firm ABI Research.

"This trend includes remote monitoring software and software that enables or otherwise facilitates the adoption of industrial automation," said Su."There is no faster way to automate, especially when deploying a mix of robot brands, than to use these types of software. The traditional approach – hiring engineers to commission a robotic solution—can take weeks and months and that means a missed opportunity for a lot of these manufacturers."Explore any industry tradeshow and you will find a wide range of digitalization tools from AI and augmented reality to digital twins geared towards manufacturing applications, Marsic said.

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"It's an exciting time in robotics and digitalization and these technologies are helping to attract new folks to robotics programming roles. For a programmer, the opportunity to work with AI and augmented reality and have their code deployed on industrial robots is pretty cool."

3. Cobot and mobile robot use increasing

Collaborative robots remain the fastest growing segment of the industrial robotics sector, Su said."There's been a lot of positive feedback in recent years about how cobots are easy to deploy and, over time, cobots have found their niche in the industrial robotics sector and it has proven to be one that can complement both human labor and traditional industrial robots. I don't think that growth is slowing down any time soon."According to ABI Research, the cobot market had a global valuation of $475 million in 2020, expanded to $600 million in 2021 and is expected to reach $8 billion by 2030, at a projected CAGR of 32.5%.At the same time, mobile robots are also seeing rapid surge in popularity, Su said. "Just ten years ago, mobile robots were a luxury, now they are found in almost every industry segment and location from deep sea oil rigs to manufacturing and warehouse facilities."Global robotics Venture Capital (VC) investment reached US$5.7 billion in 2021, at 38% year-on-year growth, with autonomous mobile robots attracting huge interest, according to ABI Research.

4. Reshoring initiatives

Labor costs overseas are rising quickly, while at the same time, the cost of automation is dropping significantly. These are just two of the factors that are helping to drive reshoring initiatives across the United States and other leading economies, Masic said."Today, there are several additional issues to contend with from intellectual property and tariffs to geopolitics, and supply chain challenges. Companies need to bring back manufacturing quickly and the best way to do that, especially in the middle of a labor crisis, is with automation."And by shortening supply lines, reshoring can also reduce emissions and generate environmental benefits that help to make manufacturing more sustainable.

5. Robots are becoming more usable

The increasing usability of industrial robot systems makes it easier than ever for companies of all sizes and technical skill levels to deploy automation."The drive for simplicity is a really important trend," Masic said. "People want to get their automation up and running quickly. This requires an easy-to-use operating system and extensive customer support throughout the entire process. The need for simplicity is being driven by new customers and new users coming into the automation space. We saw this trend before the pandemic, but since 2020 it has really blown up."The rising popularity of the robotics-as-a-service model has made automation adoption easier and less capital intensive, giving operators the ability to seamlessly scale to meet changing volumes and seasonal spikes in just minutes vs. the typical time frames that can take weeks or months, Zate said.

6. Increased focus on sustainability

There is growing concern around sustainability and climate issues among robot manufacturers and their customers, Masic said."Sustainability and environmental responsibility are long-time core values of the Epson organization. For example, by moving away from ground-based sources of materials as much as possible and by exploring the whole lifecycle of our products to discover which parts can be reused."From the outset, Locus Robotics developed its business model based on sustainability principles, including widespread refurbishment of parts, Zate said.

Website Referencce:

https://www.sciencedirect.com/science/article/abs/pii/S0736584599000368

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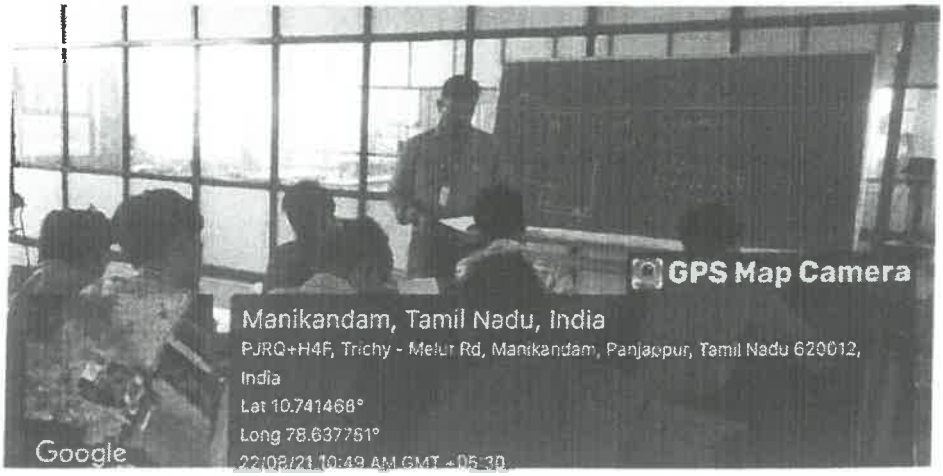

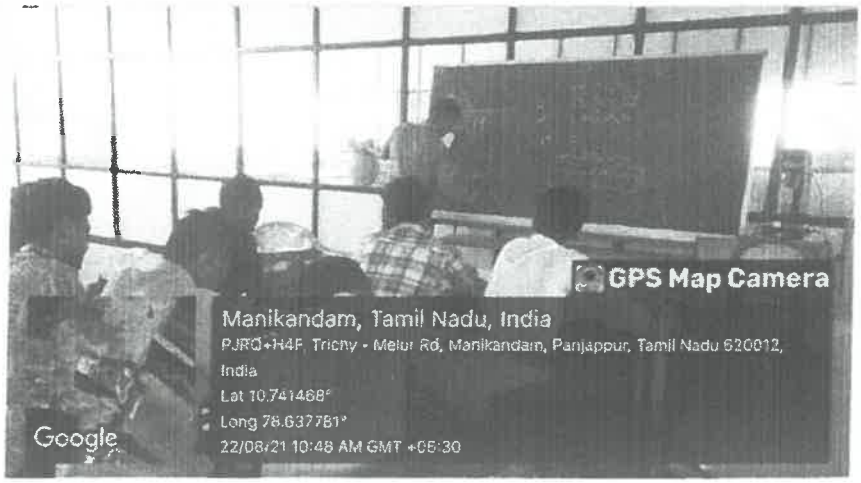

Signature of the Faculty in-charge

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Department of Mechanical Engineering

Curriculum - Even Semester 2021-2022

SI No	Contents	Course Code	Course Name	Year/Semester	L	T	P	Credits	Contact Periods	Total Periods
I YEAR MECHANICAL										
1	THEORY	GE8152	Engineering Graphics	I / II	2	0	4	4	5	90
3		BE8252	Basic Civil and Mechanical Engineering	I / II	3	0	0	4	3	45
4		PH8251	Materials Science	I / II	3	0	0	3	3	45
1	LAB	GE8261	Engineering Practices Laboratory	I / II	0	0	4	2	4	60
II YEAR MECHANICAL										
1	THEORY	MA8452	Statistics and Numerical Methods	II / IV	4	0	0	4	4	60
2		ME8492	Kinematics of Machinery	II / IV	3	0	0	3	3	45
3		ME8451	Manufacturing Technology – II	II / IV	3	0	0	3	3	45
4		ME8491	Engineering Metallurgy	II / IV	3	0	0	3	3	45
5		CE8395	Strength of Materials for Mechanical Engineering	II / IV	3	0	0	3	0	45
6		ME8493	Thermal Engineering- I	II / IV	3	0	0	3	3	45
1	LAB	ME8462	Manufacturing Technology Laboratory – II	II / IV	0	0	4	2	4	60
2		CE8381	Strength of Materials and Fluid Mechanics and Machinery Lab	II / IV	0	0	4	2	4	60
3		HS8461	Advanced Reading and Writing	II / IV	0	0	2	1	2	30
III YEAR MECHANICAL										
1	THEORY	ME8651	Design of Transmission Systems	III / VI	3	0	0	3	3	45
2		ME8691	Computer Aided Design and Manufacturing	III / VI	3	0	0	3	3	45
3		ME8693	Heat and Mass Transfer	III / VI	3	2	0	4	5	75
4		ME8692	Finite Element Analysis	III / VI	3	0	0	3	3	45
5		ME8694	Hydraulics and Pneumatics	III / VI	3	0	0	3	3	45
6		ME8091	Automobile Engineering (Professional Elective - I)	III / VI	3	0	0	3	3	45
1	LAB	ME8681	CAD / CAM Laboratory	III / VI	0	0	4	2	4	60
2		ME8682	Design and Fabrication Project	III / VI	0	0	4	2	4	60
3		HS8581	Professional Communication	III / VI	0	0	2	1	2	30
IV YEAR MECHANICAL										
1	THEORY	MG8591	Principles of Management	IV / VIII	3	0	0	3	3	45
2		IE8693	Production planning and Control (Professional Elective- IV)	IV / VIII	3	0	0	3	3	45
1	LAB	ME8811	Project Work	IV / VIII	0	0	20	10	20	300

S.No	Year	No. of Theory Subject	No. of Laboratory
1	I	4	1
2	II	5	2
3	III	6	2
4	IV	2	1
TOTAL		16	6

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Department of Mechanical Engineering

Work Load Allocation - Even Semester 2021-2022

S.NO.	Staff Name	Course Code	Course Name	Semester	Credits	Lecture / week	Total
1	Mr.R.Ramesh Babu HOD/Mech (3+2)	ME8094	Computer Integrated Manufacturing Systems	VIII	3	4	36
		ME8691	Computer Aided Design and Manufacturing	VI	3	4	
		ME8491	Engineering Metallurgy	IV	3	4	
		ME8682	Design and Fabrication Project	VI	2	4	
		ME8811	Project Work	VIII	10	20	
3	Dr. V.Vaithiyanathan AP/Mech (3+1)	ME8451	Manufacturing Technology – II	IV	3	4	16
		ME8651	Design of Transmission Systems	VI	3	4	
		PH8251	Materials Science	II	3	4	
		ME8681	CAD / CAM Laboratory	VI	2	4	
4	Mr.T.David Ubahara Samy AP/Mech (3+1)	ME8693	Heat and Mass Transfer	VI	4	5	17
		ME8492	Kinematics of Machinery	IV	3	4	
		CE8395	Strength of Materials	IV	3	4	
		CE8381	Strength of Materials and Fluid Mechanics and Machinery Lab	IV	2	4	
5	Mr.G. Deepan Kumar AP/Mech (3+1)	ME8493	Thermal Engineering- I	IV	3	4	16
		ME8694	Hydraulics and Pneumatics	VI	3	4	
		ME8091	Automobile Engineering	VI	3	4	
		ME8462	Manufacturing Technology Laboratory – II	IV	2	4	
6	Mr.M Kamalakannan/Mech (3+1)	GE8152	Engineering Graphics (A Section)	I	4	6	18
		BE8252	Basic Civil and Mechanical Engineering	II	4	5	
		IE8693	Production Planning and Control	VIII	3	4	
		GE8261	Engineering Practices Laboratory ('B' Sections)	II	2	4	
7	S.Rahul Bharath AP/Mech (3+1)	ME8692	Finite Element Analysis	VI	3	4	18
		MG8591	Principles of Management	VIII	3	4	
		GE8152	Engineering Graphics (A Section)	I	4	6	
		GE8261	Engineering Practices Laboratory ('A' Sections)	II	2	4	

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ME8094	COMPUTER INTEGRATED MANUFACTURING SYSTEMS	L	T	P	C
		3	0	0	3

OBJECTIVE:

To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.

UNIT I INTRODUCTION 9

Brief introduction to CAD and CAM – Manufacturing Planning, Manufacturing control- Introduction to CAD/CAM – Concurrent Engineering-CIM concepts – Computerised elements of CIM system – Types of production - Manufacturing models and Metrics – Mathematical models of Production Performance – Simple problems – Manufacturing Control – Simple Problems – Basic Elements of an Automated system – Levels of Automation – Lean Production and Just-In-Time Production.

UNIT II PRODUCTION PLANNING AND CONTROL AND COMPUTERISED PROCESS PLANNING 9

Process planning – Computer Aided Process Planning (CAPP) – Logical steps in Computer Aided Process Planning – Aggregate Production Planning and the Master Production Schedule – Material Requirement planning – Capacity Planning- Control Systems-Shop Floor Control-Inventory Control – Brief on Manufacturing Resource Planning-II (MRP-II) & Enterprise Resource Planning (ERP) - Simple Problems.

UNIT III CELLULAR MANUFACTURING 9

Group Technology(GT), Part Families – Parts Classification and coding – Simple Problems in Opitz Part Coding system – Production flow Analysis – Cellular Manufacturing – Composite part concept – Machine cell design and layout – Quantitative analysis in Cellular Manufacturing – Rank Order Clustering Method - Arranging Machines in a GT cell – Hollier Method – Simple Problems.

UNIT IV FLEXIBLE MANUFACTURING SYSTEM (FMS) AND AUTOMATED GUIDED VEHICLE SYSTEM (AGVS) 9

Types of Flexibility - FMS – FMS Components – FMS Application & Benefits – FMS Planning and Control – Quantitative analysis in FMS – Simple Problems. Automated Guided Vehicle System (AGVS) – AGVS Application – Vehicle Guidance technology – Vehicle Management & Safety.

UNIT V INDUSTRIAL ROBOTICS 9

Robot Anatomy and Related Attributes – Classification of Robots- Robot Control systems – End Effectors – Sensors in Robotics – Robot Accuracy and Repeatability - Industrial Robot Applications – Robot Part Programming – Robot Accuracy and Repeatability – Simple Problems.

TOTAL : 45 PERIODS

OUTCOMES:

CO1 Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems

CO2 Summarize the production planning and control and computerized process planning

CO3 Differentiate the different coding systems used in group technology

CO4 Explain the concepts of flexible manufacturing system (FMS) and automated guided vehicle (AGV) system

CO5 Classification of robots used in industrial applications

CO6 Explain the Robot control systems and part programming.

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DEPARTMENT OF MECHANICAL ENGINEERING

Identification of Curricular Gap & Content Beyond Syllabus(CBS)

Name of the Faculty :Mr.R.Ramesh Babu **Course Code & Name:ME8094-Computer Integrated Manufacturing Systems**

Degree & Program:B.E. /Mechanical **Semester: VIII** **Academic Year: 2021 -2022 /EVEN**

I.Mapping of Course Outcomes with POs & PSOs.(before CBS)

Table.1 Mapping of COs, C, PSOs with POs - before CBS.

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO411.1	3	3	-	-	2	-	1	-	1	-	-	-	3	3	2
CO411.2	3	3	-	-	2	-	1	-	1	-	-	-	3	2	2
CO411.3	3	3	-	-	2	-	1	-	1	-	-	-	3	2	2
CO411.4	3	3	-	-	2	-	1	-	1	-	-	-	3	2	2
CO411.5	3	3	-	-	-	-	1	-	1	-	-	-	3	2	2
CO411.6	3	3	-	-	2	-	1	-	1	-	-	-	3	2	2
CO411	3	3	-	-	2	-	1	-	1	-	-	-	3	2	3

II. Identification of content beyond syllabus.

Table.2 Identification of content beyond syllabus

Details of Content Beyond Syllabus(CBS) added	POs strengthened/ vacant filled	CO/Unit
Six Industrial Robotics Trends	PO4 & PO5 (1) Vacant filled	CO411.5 V

III. Mapping of Course Outcomes with POs & PSOs. (After CBS)

Table.3 Mapping of COs, C, PSOs with POs- after CBS.

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO411.1	3	3	-	-	2	-	1	-	1	-	-	-	3	2	2
CO411.2	3	3	-	-	2	-	1	-	1	-	-	-	2	2	2
CO411.3	3	3	-	-	2	-	1	-	1	-	-	-	2	2	2
CO411.4	3	3	-	-	2	-	1	-	1	-	-	-	2	2	2
CO411.5	3	3	-	*2	*2	-	1	-	1	-	-	-	2	2	2
CO411.6	3	3	-	-	2	-	1	-	1	-	-	-	2	2	2
CO411	3	3	-	-	2	-	1	-	1	-	-	-	2	2	2

Signature of the Faculty **HoD/MECHANICAL**

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10	22.03.22	2	Levels of Automation	T1
11	23.03.22	5	Lean Production and Just-In-Time Production	T1
12	25.03.22	6	Simple problems	T1
UNIT II -PRODUCTION PLANNING AND CONTROL AND COMPUTERISED PROCESS PLANNING				**Target periods :09**
13	28.03.22	2	Process planning	T1
14	29.03.22	2	Computer Aided Process Planning (CAPP)	T1
15	30.03.22	5	Logical steps in Computer Aided Process Planning	T2
16	04.04.22	2	Aggregate Production Planning and the Master Production Schedule	T2
17	05.04.22	2	Aggregate Production Planning and the Master Production Schedule	R1
18	06.04.22	5	Material Requirement planning	R1
19	08.04.22	6	Capacity Planning- Control Systems	R1
20	09.04.22	2	Shop Floor Control-Inventory Control	R1
21	11.04.22	2	Brief on Manufacturing Resource Planning-II (MRP-II)	T1
22	12.04.22	2	Enterprise Resource Planning (ERP)	T1
23	13.04.22	5	Simple Problems	T1
UNIT III - CELLULAR MANUFACTURING				**Target Periods :09**
24	15.04.22	6	Group Technology(GT)	T1
25	23.04.22	2	Part Families – Parts Classification and coding	T1
26	25.04.22	2	Simple Problems in Opitz Part Coding system	T1
27	26.04.22	2	Production flow Analysis – Cellular Manufacturing	T2
28	27.04.22	5	Composite part concept	T2
29	29.04.22	6	Machine cell design and layout	T2
30	02.05.22	2	Quantitative analysis in Cellular Manufacturing	T2
31	03.05.22	2	Rank Order Clustering Method	R2
32	04.05.22	5	Arranging Machines in a GT cell	R2
33	06.05.22	6	Simple Problems	R2
34	07.05.22	2	Hollier Method	R3
35	09.05.22	2	Simple Problems	R3
UNIT IV - FLEXIBLE MANUFACTURING SYSTEM (FMS) AND AUTOMATED GUIDED VEHICLE SYSTEM (AGVS)				**Target Periods :09**
36	10.05.22	2	Types of Flexibility - FMS	T2
37	11.05.22	5	FMS Components	T2
38	13.05.22	6	FMS Application & Benefits	T2
39	16.05.22	2	FMS Planning and Control	T2
40	17.05.22	2	Quantitative analysis in FMS	T2
41	18.05.22	5	Simple Problems	T2
42	20.05.22	6	Simple Problems	T2
43	23.05.22	2	Automated Guided Vehicle System (AGVS), AGVS Application	R3
44	24.05.22	2	Vehicle Guidance technology	R3
45	25.05.22	5	Vehicle Management & Safety	R3
UNIT V – INDUSTRIAL ROBOTICS				**Target Periods:09**
46	27.05.22	6	Robot Anatomy and Related Attributes	T2
47	30.05.22	2	Classification of Robots	T2
48	31.05.22	2	Robot Control systems	T2
49	01.06.22	5	End Effectors – Sensors in Robotics	T2
50	03.06.22	6	Robot Accuracy and Repeatability	T2
51	06.06.22	2	Industrial Robot Applications	R1

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DEPARTMENT OF MECHANICAL ENGINEERING

Lecture Schedule

Degree/Program: **B.E / MECHANICAL** Course code &Name: ME 8094-Computer Integrated Manufacturing System

Duration: **Dec 2021 - Apr 2022** Semester: **VIII** Faculty: **Mr. R. Ramesh Babu**

AIM:

To expose the students to introduction to CAD and CAM, Computer Aided Process Planning, Cellular Manufacturing, Flexible Manufacturing System, & Industrial Robot Applications.

OBJECTIVES:

To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.

PREREQUISITES: Computer Integrated Manufacturing System

COURSE OUTCOMES:

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
CO411.1	Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems	1,2,5,7,9	1,2,3
CO411.2	Summarize the production planning and control and computerized process planning	1,2,5,7,9	1,2,3
CO411.3	Differentiate the different coding systems used in group technology	1,2,5,7,9	1,2,3
CO411.4	Explain the concepts of flexible manufacturing system (FMS) and automated guided vehicle (AGV) system	1,2,5,7,9	1,2,3
CO411.5	Classification of robots used in industrial applications	1,2,7,9	1,2,3
CO411.6	Application of robotics in vehicle management and safety.	1,2,5,7,9	1,2,3

S.No	Date	Period	Topics to be Covered	Book & Page. No.
UNIT -I - INTRODUCTION				Target periods :09
1	07.03.22	2	Brief introduction to CAD and CAM	T1
2	08.03.22	2	Manufacturing Planning, Manufacturing control- Introduction to CAD/CAM	T1
3	09.03.22	5	Concurrent Engineering CIM concepts	T1
4	11.03.22	6	Computerised elements of CIM system	T1
5	14.03.22	2	Types of production	T1
6	15.03.22	2	Manufacturing models and Metrics	R2
7	16.03.22	5	Mathematical models of Production Performance – Simple problems	T1
8	18.03.22	6	Manufacturing Control – Simple Problems	T1
9	21.03.22	2	Basic Elements of an Automated system	R2

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TEXT BOOKS:

1. Mikell.P.Groover "Automation, Production Systems and Computer Integrated Manufacturing", Prentice Hall of India, 2008.
2. Radhakrishnan P, Subramanyan S.and Raju V., "CAD/CAM/CIM", 2nd Edition, New Age International (P) Ltd, New Delhi, 2000.

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1. Gideon Halevi and Roland Weill, "Principles of Process Planning – A Logical Approach" Chapman & Hall, London, 1995.
2. Kant Vajpayee S, "Principles of Computer Integrated Manufacturing", Prentice Hall India.
3. Rao. P, N Tewari &T.K. Kundra, "Computer Aided Manufacturing", Tata McGraw Hill Publishing Company, 2000.

HoD/Mech

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DEPARTMENT OF MECHANICAL ENGINEERING

Assignment Answer Sheet

Name of the Student : A. Shameer

AU Register Number: 811217114031

Assignment – 01			Date of Issue:	10.02.2021	Marks	10
Course code	ME8094	Course Title	Computer Integrated Manufacturing Systems			
Year	IV	Semester/Section	VIII/A	Date of Submission:	14.02.2021	

Q.No	Questions	CO
1	Explain the hierarchical structure of Computerized elements of CIM	C411.1
2	Explain in detail about Kanban System and its types with example.	C411.1

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	6
Presentation Quality	2	2
Timely submission	2	2
Total marks	10	10

R. RAMESH BABU

Name and Signature of the Faculty Incharge

HoD/Mech

Dr.G.Balakrishnan,M.E.,
Principal
Indira Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
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DEPARTMENT OF MECHANICAL ENGINEERING

Assignment Question Paper

Assignment – 01			Date of Issue:	10.02.2021	Marks	10
Course code	ME8094	Course Title	Computer Integrated Manufacturing Systems			
Year	IV	Semester/Section	VIII/A	Date of Submission:	14.02.2021	

Q.No	Questions	CO
1	Explain the hierarchical structure of Computerized elements of CIM	C411.1
2	Explain in detail about Kanban system and its types with example.	C411.1

Name and Signature of the Faculty Incharge

HoD/Mech

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Principal
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IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

52	07.06.22	2	Robot Part Programming	R1
53	08.06.22	5	Robot Accuracy and Repeatability	T2
54	10.06.22	6	Simple Problems	T2
Content Beyond the Syllabus				
52	11.06.22	6	Six Industrial Robotics Trends	Material

Book Reference - Text Books

Sl.	Title of the Book	Author	Publisher	Year
1.	Automation, Production Systems and Computer Integrated Manufacturing	Mikell.P.Groover	Prentice Hall of India	2008.
2.	CAD/CAM/CIM	Radhakrishnan P, Subramanyan S.and Raju V.	2nd Edition, New Age International (P) Ltd, New Delhi	2000

Book Reference – References

Sl	Title of the Book	Author	Publisher	Year
1.	Principles of Process Planning – A Logical Approach	Gideon Halevi and Roland Weill,	Chapman & Hall, London	1995.
2.	Principles of Computer Integrated Manufacturing	Kant Vajpayee S	Prentice Hall India	1995
3.	Computer Aided Manufacturing	Rao. P, N Tewari &T.K. Kundra	Tata McGraw Hill Publishing Company	2000.

Website Reference:
https://www.youtube.com/watch?v=jpP0zBFmQ9g
https://onlinecourses.nptel.ac.in/noc23_me143/preview

Signature of the Faculty in-charge

HoD / Mechanical

Dr. G. Balakrishnan, M.E., Ph.D.,
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IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Register Number:											

INDRA GANESAN COLLEGE OF ENGINEERING

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Internal Assessment Exam – I – Key Notes			Date		Marks	50
Course code	**ME 8094**	**Course Title**	**Computer Integrated Manufacturing Systems**			
Regulation	**2017**	**Duration**	**90 minutes**	**Academic Year**	**2021-22**	
Year	**IV**	**Semester**	**VIII**	**Department**	**Mechanical Engg**	

COURSE OUTCOMES

CO1:	Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems
CO2:	Summarize the production planning and control and computerized process planning
CO3:	Differentiate the different coding systems used in group technology
CO4:	Explain the concepts of flexible manufacturing system (FMS) and automated guided vehicle (AGV) system
CO5:	Classification of robots used in industrial applications
CO6:	Explain the Robot control systems and part programming.

Q.No.	Question	CO	BTS
	PART A (Answer all the Questions 10 x 2 = 20 Marks)		
1	State desirable features of CAD package. Ans: 1. Managing various fi le manipulation in the computer 2. Loading computer programs into memory and controlling the execution of program. 3. Create environment torun the application softwares.	CO411.1	K1
2	List some features of AUTO CAM system. Ans: 1. Geometry of the part can be drawn easily by using the available geometric entities. It is also possible to modify the part as per our requirements. The dimensions and other annotations required for drafting can also be defined. 2. Standards are available to convert the CAD database into manufacturing database.	CO411.1	K2
3	List out some advantages of AUTOCAM Ans: 1. Creation of part program is easy. 2. The time required to create the part program is minimized. 3. The error in part program is minimized. 4. The part program can be easily modifi ed. 5. The overall productivity of CAD/CAM system is increased.	CO411.1	K2
4	What do you mean by wireframe modeling? Ans: The word "wireframe" is related to the fact that one may imagine a wire that is bent to follow the object edges to generate the model. Typically, a wireframe model consists entirely of points, lines, arcs and circles, conics, and curves.	CO411.1	K1
5	What are the advantages of wire frame modeling? Ans:	CO411.1	K1

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Register Number: | | | | | | | | | | | |

INDRA GANESAN COLLEGE OF ENGINEERING

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Internal Assessment Exam - I			Date		Marks	50
Course code	ME 8094	Course Title	Computer Integrated Manufacturing Systems			
Regulation	2017	Duration	90 minutes	Academic Year	2021-22	
Year	IV	Semester	VIII	Department	Mechanical Engg	

COURSE OUTCOMES

CO1:	Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems
CO2:	Summarize the production planning and control and computerized process planning
CO3:	Differentiate the different coding systems used in group technology
CO4:	Explain the concepts of flexible manufacturing system (FMS) and automated guided vehicle (AGV) system
CO5:	Classification of robots used in industrial applications
CO6:	Explain the Robot control systems and part programming.

Q.No.	Question	CO	BTS
	PART A (Answer all the Questions 10 x 2 = 20 Marks)		
1	State desirable features of CAD package.	CO411.1	K1
2	List some features of AUTO CAM system.	CO411.1	K2
3	List out some advantages of AUTOCAM	CO411.1	K2
4	What do you mean by wireframe modeling?	CO411.1	K1
5	What are the advantages of wire frame modeling?	CO411.1	K1
6	What are the advantages of solid modeling?	CO411.1	K1
7	What are the drawing features of CAD package?	CO411.1	K1
8	What are the goals of automation in manufacturing industry?	CO411.1	K1
9	Give the classification of automation.	CO411.1	K1
10	What are the function of automated manufacturing system?	CO411.1	K1
	PART B (Answer all the Questions 2 x 10 = 20 Marks)		
11a	Discuss about the operator input devices used in graphics work station (2012) (2013)	CO411.1	K2
	OR		
11b	Briefly describe 3D transformations for scaling, translation & rotation. (2014)	CO411.1	K2
12a	Write in detail about production performance metrics.	CO411.1	K2
	OR		
12b	Write short notes on generative NC machining based on solid modeling.	CO411.1	K2
	PART C (Answer all the Questions 1 x 10 = 10 Marks)		
13a	The average part produced in a certain batch manufacturing plant must be processed sequentially through six machines on average .Twenty (20) new batches of parts launched each week .Average operation time =6min., average setup time =5hours, average batch size=36 parts, and average non operation time per batch=10hr/machine. There are 18 machines in the plant working in parallel. Each of the machines can be set up for any type of job processed in the plant. The plant operates an average of 70 production hour per week. Scrap rate is negligible. Determine (a) manufacturing lead time for an average part, (b)plant capacity,(c)plant utilization(2016)	CO411.1	K2
	OR		
13b	Explain the concept of Lean manufacturing and Just –in –time production systems. (2016)	CO411.1	K2

Course Faculty
(Name /Sign / Date)

HoD
(Name /Sign / Date)

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	Description – 5 marks		
	OR		
12b	Write short notes on generative NC machining based on solid modeling. Ans: Diagram – 5 marks Description – 5 marks	CO411.1	K2
	PART C **(Answer all the Questions 1 x 10 = 10 Marks)**		
13a	The average part produced in a certain batch manufacturing plant must be processed sequentially through six machines on average .Twenty (20) new batches of parts launched each week .Average operation time =6min., average setup time =5hours, average batch size=36 parts, and average non operation time per batch=10hr/machine. There are 18 machines in the plant working in parallel. Each of the machines can be set up for any type of job processed in the plant. The plant operates an average of 70 production hour per week. Scrap rate is negligible. Determine (a) manufacturing lead time for an average part, (b)plant capacity,(c)plant utilization(2016) Ans: Diagram – 5 marks Description – 5 marks	CO411.1	K2
	OR		
13b	Explain the concept of Lean manufacturing and Just –in –time production systems. (2016) Ans: Diagram – 5 marks Description – 5 marks	CO411.1	K2

Course Faculty
(Name /Sign / Date)

HoD
(Name /Sign / Date)

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	1. Simple to construct. 2. Designer needs little training. 3. It needs less memory space. 4. It takes less manipulation time.		
6	What are the advantages of solid modeling? Ans: 1. It is complete and unambiguous. 2. Suitable for automated applications like creating part program without much human involvement. 3. Creation is fast. 4. It gives more information.	CO411.1	K1
7	What are the drawing features of CAD package? Ans: 1. Geometry of the part can be drawn easily by using the available geometric entities. It is also possible to modify the part as per our requirements. The dimensions and other annotations required for drafting can also be defined. 2. Standards are available to convert the CAD database into manufacturing database.	CO411.1	K2
8	What are the goals of automation in manufacturing industry? Ans: Automation has the following primary goals. i) Process Integration ii) Improve Productivity iii) Economize on floor space v) Improve quality	CO411.1	K2
9	Give the classification of automation. Ans: Automated manufacturing systems can be classified into three basic types: 1) Fixed automation 2) Programmable automation 3) Flexible automation	CO411.1	K1
10	What are the function of automated manufacturing system? Ans: Automating manufacturing systems operate in the factory on the physical product. They perform operations such as processing, assembly, inspection, or material handing, in some cases accomplishing more than one of these operations in the same systems.	CO411.1	K1
	PART B **(Answer all the Questions 2 x 10 = 20 Marks)**		
11a	Discuss about the operator input devices used in graphics work station (2012) (2013) Ans: Diagram – 5 marks Description – 5 marks	CO411.1	K2
	OR		
11b	Briefly describe 3D transformations for scaling, translation & rotation. (2014) Ans: Diagram – 5 marks Description – 5 marks	CO411.1	K2
12a	Write in detail about production performance metrics. Ans: Diagram – 5 marks	CO411.1	K2

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Internal Assessment Test Answer Book

Name	D. MADHAN			Year/ Semester	IV/VIII
Reg. No.	811217114016	Date/Session	19/4/22-FN	Department	MECHANICAL
Course code	ME8094	Course Title	CIMS		
Internal Assessment Test	IAT 1 ☑	IAT 2 ☐	IAT 3 ☐	Model ☐	
Name and Signature of the Invigilator with date	G. DEEPAKUMAR 19/4/22				

Instruction to the Student: Put tick mark to the question attended in the column against question.

Part A			Part B / Part C					Total Marks
Q. No.	✓	Marks	Q. NO.	✓	a Marks	✓	b Marks	
1	✓	2	11	✓	04			04
2	✓	2	12			✓	05	05
3	✓	2	~~13~~					
4	✓	2	~~14~~					
5	✓	1	~~15~~					
6	✓	1	Part - c 13			✓	07	07
7	✓	2					Total	16
8	✓	1	Grand Total				Name and Signature of the Examiner with date	
9	✓	2	32/50		64/100			
10	✓	1						
Total		16					R. Ramesh Babu 22.4.22	

To be filled by the examiner							
Course Outcomes	1	2	3	4	5	6	Total
Marks allotted	50	–	–	–	–	–	50
Marks Obtained	32	–	–	–	–	–	32
IQAC Audit - Remarks						Name and Signature of the IQAC member	

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INDRA GANESAN COLLEGE OF ENGINEERING

IG VALLEY, MANIDANDAM, TIRUCHIRAPPALLI – 620 012

DEPARTMENT OF MECHANICAL ENGINEERING

ACADEMIC YEAR 2021 – 2022 (EVEN SEMESTER)

STUDENTS MARK STATEMENT- CO BASED

INTERNAL ASSESSMENT TEST – I

SUBJECT CODE &TITLE: ME8094 & COMPUTER INTEGRATED MANUFACTURING SYSTEM

YEAR/SEM: IV/VIII **MONTH & YEAR: MAR & 2022**

S.NO	REG NO	STUDENT NAME	Marks Alloted COX						Marks Obtained COY						Total (100)
			CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	
1	811217114001	S.Abdul Yasin	50	-	-	-	-	-	41	-	-	-	-	-	82
2	811217114002	R.Ajithkumar	50	-	-	-	-	-	40	-	-	-	-	-	80
3	811217114003	S.Anandha Kumar	50	-	-	-	-	-	35	-	-	-	-	-	70
4	811217114004	M.Ananth	50	-	-	-	-	-	42	-	-	-	-	-	84
5	811217114005	R.Chellaiah	50	-	-	-	-	-	38	-	-	-	-	-	76
6	811217114006	C.Devarajan	50	-	-	-	-	-	34	-	-	-	-	-	68
7	811217114007	S.Dhamotharan	50	-	-	-	-	-	28	-	-	-	-	-	56
8	811217114008	A.Dhanussh	50	-	-	-	-	-	37	-	-	-	-	-	74
9	811217114009	C.Dharanidharan	50	-	-	-	-	-	35	-	-	-	-	-	70
10	811217114010	N.Dharman	50	-	-	-	-	-	40	-	-	-	-	-	80
11	811217114013	M.Hariharasudhan	50	-	-	-	-	-	37	-	-	-	-	-	74
12	811217114014	A.Jawagar	50	-	-	-	-	-	41	-	-	-	-	-	82
13	811217114015	Karthick S	50	-	-	-	-	-	38	-	-	-	-	-	76
14	811217114016	D.Madhan	50	-	-	-	-	-	32	-	-	-	-	-	64
15	811217114018	M.Mohammed Faizal	50	-	-	-	-	-	31	-	-	-	-	-	62
16	811217114019	S.Mohanraj	50	-	-	-	-	-	42	-	-	-	-	-	84
17	811217114020	R.Munishwaran	50	-	-	-	-	-	31	-	-	-	-	-	62
18	811217114021	P.Murugan	50	-	-	-	-	-	A	-	-	-	-	-	A
19	811217114022	P.Ponnar	50	-	-	-	-	-	38	-	-	-	-	-	76
20	811217114023	M.Prakash	50	-	-	-	-	-	32	-	-	-	-	-	64
21	811217114025	M.Rajamuni	50	-	-	-	-	-	42	-	-	-	-	-	84
22	811217114026	La.Ramanathan	50	-	-	-	-	-	36	-	-	-	-	-	72
23	811217114027	G.Sairam	50	-	-	-	-	-	47	-	-	-	-	-	94
24	811217114028	R.Sankaralingam	50	-	-	-	-	-	32	-	-	-	-	-	64

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INDRA GANESAN COLLEGE OF ENGINEERING

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IQAC Academic Audit Form

ACADEMIC YEAR:2021-2022 EVEN SEMESTER

Name of Department :	MECH	Year / Sem:	IV/VIII	No. of Students Registered :	48

Details of Examination : IA Test-1

S.No.	Course Code	List of Reg.No Verified	Course Log Book Verified (Y / N)	Course File Verified (Y / N)	No of students Attended	No of Absentees	No of Failures	Pass %	Remarks
1	ME 8094	811 21 611 4001	Y	Y	46	02	1	100	–
2		4002	Y	Y					
3		4003	Y	Y					
4		4004	Y	Y					
5		4005	Y	Y					
6		4006	Y	Y					
7		4007	Y	Y					
8		4008	Y	Y					
9		4009	Y	Y					
10		4010	Y	Y					
11		4011	Y	Y					

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12		4012	4	4						
3		4013	4	4						
14		4014	4	4						
15		4015	4	4						
16		4016	4	4						
17		4017	4	4						
18		4018	4	4						
19		4019	4	4						
20		4020	4	4						
21		4021	4	4						
22		4022	4	4						
23		4023	4	4						
24		4024	4	4						
25		4025	4	4						
26		4026	4	4						
27		4027	4	4						

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28		4028	Y	Y						
29		4029	Y	Y						
30		4030	Y	Y						
31		4031	Y	Y						
32		4032	Y	Y						
33		4033	Y	Y						
34		4034	Y	Y						
35		4035	Y	Y						
36		4036	Y	Y						
37		4037	Y	Y						
38		4301	Y	Y						
39		4302	Y	Y						
40		4304	Y	Y						
41		4305	Y	Y						
42		4701	Y	Y						
43		4702	Y	Y						

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44		4501	4	4						
45		4502	4	4						
46		4503	4	4						
47		4504	4	4						
48		4505	4	4						
49			4	4						
50			4							

Verified by

External Member Name and Signature:

Internal Member Name and Signature:

Overall Remarks:

HoD/MECHANICAL **IQAC Co-ordinator** **Principal**

Dr. G. Balakrishnan, M.E., Ph.D
Principal
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STUDENT FEEDBACK ON FACULTY
THEORY COURSE

ACADEMIC YEAR: 2021 - 22 SEMESTER Even Sem

Name of Department : MECH Year / Sem: IV/VIII Faculty Name Mr. R. RAMESH BABU

Subject Code & Name ME 8094 - Computer Integrated manufacturing systems STUDENT NAME C. Vigneshwaran.

S.No.	QUESTIONS	Excellent	Very Good	good	Satisfactory	Somewhat Satisfactory	Not Satisfactory
		5	4	3	2	1	0
1	Delivery of Lectures by Interactive Communication	✓					
2	Use of Teaching Aids and ICT	✓					
3	Level of Preparedness & Knowledge Level	✓					
4	Involvement in mentoring and guiding	✓					
5	Effective Time management		✓				
6	Is the teacher completing syllabus as per lecture schedule?	✓					
7	Is the teacher distributing answer scripts of students as per schedule?	✓					
8.	Is the teacher addressing grievances on answer scripts of IA while distributing?	✓					
9	Is the teacher covering content beyond syllabus (CBS)?		✓				
10.	Is the teacher punctual to class?	✓					

R. Ramesh
HoD/ MECHANICAL

IQAC Co-ordinator

Principal

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STUDENT FEEDBACK ON FACULTY
THEORY COURSE

ACADEMIC YEAR: 2021 -2022 **SEMESTER** VIII Even

Name of Department	MECH	Year / Sem:	IV / VIII	Faculty Name	Mr. R. Ramesh Babu
Subject Code & Name	ME8094 - Computer Integrated manufacturing Systems.				

S.No.	QUESTIONS	Excellent 5	Very Good 4	good 3	Satisfactory 2	Somewhat Satisfactory 1	Not Satisfactory 0	Total Weightage	Percentage
1.	Delivery of Lectures by Interactive Communication	✓✓✓	✓	✓					
2.	Use of Teaching Aids and ICT	✓✓	✓✓	✓					
3.	Level of Preparedness & Knowledge Level	✓✓	✓	✓✓					
4.	Involvement in mentoring and guiding	✓✓	✓✓						
5	Effective Time management	✓✓✓	✓✓						
6	Is the teacher completing syllabus as per lecture schedule?	✓✓✓	✓✓						
7.	Is the teacher distributing answer scripts of students as per schedule?	✓✓	✓✓	✓					
8.	Is the teacher addressing grievances on answer scripts of IA while distributing?	✓✓✓	✓						
9.	Is the teacher covering content beyond syllabus (CBS)?	✓✓✓	✓✓	✓					
10.	Is the teacher punctual to class?	✓✓✓	✓						

R. Ramesh 25/10/22
HoD/ MECHANICAL

IQAC Co-ordinator

Principal

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Madurai Main Road(NH-45B),Manikandam,Tiruchirappalli-620012
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ChennaiNAAC Accredited, 2(F)&12(B)StatusInstitutionbyUGC

IGCE/EXAMCELL/IA/2021-22/Even/UT/001

INTERNAL ASSESSMENT TEST – I

Test Time: (FN) 11.30 am to 1.00 pm - (AN) 3.30 pm to 5.00 pm

DATE	YEAR / SESSION	18.04.2022		19.04.2022		20.04.2022	
BRANCH		FN	AN	FN	AN	FN	AN
CIVIL	II	CE8401	CE8402	MA8491	CE8491	CE8404	CE8403
	III	CE8601	CE8602	CE8603	CE8604	EN8592	CE8005
	IV	GE8076		CE8022			
CSE	II	CS8491	CS8493	CS8451	CS8494	MA8402	CS8492
	III	CS8603	CS8691	CS8601	CS8602	CS8651	CS8075
	IV	GE8076		CS8080			
EEE	II	EE8401	EE8451	MA8491	EE8402	IC8451	EE8403
	III	EE8601	EE8691	EE8602	EE8661	EE8002	EE8005
	IV	EE8015		EE8018			
ECE	II	EC8491	MA8451	EC8451	GE8291	EC8453	EC8452
	III	MG8591	EC8691	EC8004	EC8652	EC8095	EC8651
	IV	EC8072		EC8094			
MECH	II	ME8493	ME8491	ME8492	MA8452	ME8451	CE8395
	III	ME8651	ME8691	ME8091	ME8693	ME8694	ME8692
	IV	MG8591		ME8094			
IT	II	CS8491	CS8493	CS8451	GE8291	MA8391	CS8492
	III	CS8091	CS8592	IT8601	IT8076	CS8092	IT8602
	IV	GE8076		IT8078			

EXAM CELL CO ORDINATOR

PRINCIPAL

COPY TO:

1. The Director for favour of kind information
2. The Principal (file copy)
3. All HoDs :request to circulate among their faculty members
4. Exam cell file
5. Notice Board (Lab Block)

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COLLEGE OF ENGINEERING

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Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC

Department of Mechanical Engineering 2021-2022 EVEN SEM

IV-yr/VIII-Sem **CC: Mr. K. Deepan Kumar**

DAY	1	2	BREAK	3	4	LUNCH	5	6	BREAK	7	SCC/CCA
	9.15 - 10.10	10.10 - 11.00		11.05 - 12.30	12.30 - 1.05		1.45 - 2.30	2.30 - 3.15		3.30 - 4.10	4.10-05.00
MON	TATS	CIMS		TATS	POM		PROJECT WORK			PROJECT WORK	CCA/SCC
TUE	POM	CIMS		TATS	PROJECT WORK		PROJECT WORK			PROJECT WORK	CCA/SCC
WED	PROJECT WORK			POM	TATS		CIMS	TATS		TATS	CCA/SCC
THU	PROJECT WORK			PROJECT WORK			PROJECT WORK			PROJECT WORK	CCA/SCC
FRI	PROJECT WORK			PROJECT WORK			POM	CIMS		TATS	CCA/SCC

SUBJECT CODE	COURSE NAME	ERP CODE	CREDITS/ HOURS	STAFF IN-CHARGE
MG8591	Principle of Management		3/45	Dr.Thangarasu Prof/Mech
ME8094	Computer Integrated Manufacturing Systems		3/45	Mr. R.Ramesh Babu, HOD/Mech
ME8811	Project Work	IGCE0308	10/300	Mr. R.Ramesh Babu, HOD/Mech
	CCA / SCC		5 hours/week	
	TATS		7 hours/week	
	TOTAL		16/390	

HOD

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

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IGCE/EXAMCELL/IA/2021-22/Even/UT/005

MODEL EXAM-I

Test Time: (AN)2.00 pm to 5.00 pm

DATE	YEAR / SESSION	20.06.2022	21.06.2022	22.06.2022	23.06.2022	24.06.2022	25.06.2022
BRANCH		AN	AN	AN	AN	AN	AN
CIVIL	II	CE8401	CE8402	MA8491	CE8491	CE8404	CE8403
	III	CE8601	CE8602	CE8603	CE8604	EN8592	CE8005
	IV	GE8076		CE8022			
CSE	II	CS8491	CS8493	CS8451	CS8494	MA8402	CS8492
	III	CS8603	CS8691	CS8601	CS8602	CS8651	CS8075
	IV	GE8076		CS8080			
EEE	II	EE8401	EE8451	MA8491	EE8402	IC8451	EE8403
	III	EE8601	EE8691	EE8602	EE8661	EE8002	EE8005
	IV	EE8015		EE8018			
ECE	II	EC8491	MA8451	EC8451	GE8291	EC8453	EC8452
	III	MG8591	EC8691	EC8004	EC8652	EC8095	EC8651
	IV	EC8072		EC8094			
MECH	II	ME8493	ME8491	ME8492	MA8452	ME8451	CE8395
	III	ME8651	ME8691	ME8091	ME8693	ME8694	ME8692
	IV	MG8591		ME8094			
IT	II	CS8491	CS8493	CS8451	GE8291	MA8391	CS8492
	III	CS8091	CS8592	IT8601	IT8076	CS8092	IT8602
	IV	GE8076		IT8078			

EXAM CELL CO ORDINATOR

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3. All HoDs :request to circulate among their faculty members
4. Exam cell file
5. Notice Board (Lab Block)

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IGCE/EXAMCELL/IA/2021-22/Even/UT/003

INTERNAL ASSESSMENT TEST – II

Test Time: (FN) 11.30 am to 1.00 pm - (AN) 3.30 pm to 5.00 pm

DATE	YEAR / SESSION	16.05.2022		17.05.2022		18.05.2022	
BRANCH		FN	AN	FN	AN	FN	AN
CIVIL	II	CE8401	CE8402	MA8491	CE8491	CE8404	CE8403
	III	CE8601	CE8602	CE8603	CE8604	EN8592	CE8005
	IV	GE8076		CE8022			
CSE	II	CS8491	CS8493	CS8451	CS8494	MA8402	CS8492
	III	CS8603	CS8691	CS8601	CS8602	CS8651	CS8075
	IV	GE8076		CS8080			
EEE	II	EE8401	EE8451	MA8491	EE8402	IC8451	EE8403
	III	EE8601	EE8691	EE8602	EE8661	EE8002	EE8005
	IV	EE8015		EE8018			
ECE	II	EC8491	MA8451	EC8451	GE8291	EC8453	EC8452
	III	MG8591	EC8691	EC8004	EC8652	EC8095	EC8651
	IV	EC8072		EC8094			
MECH	II	ME8493	ME8491	ME8492	MA8452	ME8451	CE8395
	III	ME8651	ME8691	ME8091	ME8693	ME8694	ME8692
	IV	MG8591		ME8094			
IT	II	CS8491	CS8493	CS8451	GE8291	MA8391	CS8492
	III	CS8091	CS8592	IT8601	IT8076	CS8092	IT8602
	IV	GE8076		IT8078			

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IGCE/EXAMCELL/IA/2021-22/Even/UT/006

RE MODEL EXAM-I

Test Time: (AN)2.00 pm to 5.00 pm

DATE / BRANCH	YEAR / SESSION	29.06.2022 AN	30.06.2022 AN	01.06.2022 AN	04.07.2022 AN	05.07.2022 AN	06.07.2022 AN
CIVIL	II	CE8401	CE8402	MA8491	CE8491	CE8404	CE8403
	III	CE8601	CE8602	CE8603	CE8604	EN8592	CE8005
	IV	GE8076		CE8022			
CSE	II	CS8491	CS8493	CS8451	CS8494	MA8402	CS8492
	III	CS8603	CS8691	CS8601	CS8602	CS8651	CS8075
	IV	GE8076		CS8080			
EEE	II	EE8401	EE8451	MA8491	EE8402	IC8451	EE8403
	III	EE8601	EE8691	EE8602	EE8661	EE8002	EE8005
	IV	EE8015		EE8018			
ECE	II	EC8491	MA8451	EC8451	GE8291	EC8453	EC8452
	III	MG8591	EC8691	EC8004	EC8652	EC8095	EC8651
	IV	EC8072		EC8094			
MECH	II	ME8493	ME8491	ME8492	MA8452	ME8451	CE8395
	III	ME8651	ME8691	ME8091	ME8693	ME8694	ME8692
	IV	MG8591		ME8094			
IT	II	CS8491	CS8493	CS8451	GE8291	MA8391	CS8492
	III	CS8091	CS8592	IT8601	IT8076	CS8092	IT8602
	IV	GE8076		IT8078			

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IGCE/EXAMCELL/IA/2021-22/Even/UT/004

INTERNAL ASSESSMENT RE TEST – II

Test Time: (FN) 11.30 am to 1.00 pm - (AN) 3.30 pm to 5.00 pm

DATE	YEAR / SESSION	23.05.2022		24.05.2022		25.05.2022	
BRANCH		FN	AN	FN	AN	FN	AN
CIVIL	II	CE8401	CE8402	MA8491	CE8491	CE8404	CE8403
	III	CE8601	CE8602	CE8603	CE8604	EN8592	CE8005
	IV	GE8076		CE8022			
CSE	II	CS8491	CS8493	CS8451	CS8494	MA8402	CS8492
	III	CS8603	CS8691	CS8601	CS8602	CS8651	CS8075
	IV	GE8076		CS8080			
EEE	II	EE8401	EE8451	MA8491	EE8402	IC8451	EE8403
	III	EE8601	EE8691	EE8602	EE8661	EE8002	EE8005
	IV	EE8015		EE8018			
ECE	II	EC8491	MA8451	EC8451	GE8291	EC8453	EC8452
	III	MG8591	EC8691	EC8004	EC8652	EC8095	EC8651
	IV	EC8072		EC8094			
MECH	II	ME8493	ME8491	ME8492	MA8452	ME8451	CE8395
	III	ME8651	ME8691	ME8091	ME8693	ME8694	ME8692
	IV	MG8591		ME8094			
IT	II	CS8491	CS8493	CS8451	GE8291	MA8391	CS8492
	III	CS8091	CS8592	IT8601	IT8076	CS8092	IT8602
	IV	GE8076		IT8078			

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