Department: Mechanical Engineering A.Y. 2023-24 Semester:II Date:

Course Outline

Class: TY B Tech	**Name of the Course: Mechatronics**			
Course Type: PCC	**Course code: BME6414**			
	Examination Structure			
Credits: 03	IE	MTE	ETE	Total
	20	30	50	100

Course Relevance: Mechatronics is an interdisciplinary branch of engineering that focuses on the integration of mechanical, electronic and electrical engineering systems, and also includes a combination of robotics, electronics, computerscience, telecommunications, systems, control,and product engineering.

Pre requisites:
a. Applied Mathematics
b. Metrology and Mechanical Measurement

Course Outcome and Mapping with POs and PSOs

CO	Statement	Learning Level	PO/ PSO Mapped	Tools for direct Assessment
1	SELECT appropriate electrical actuator for any mechatronics system.	SELECT	PO1	IE, MTE, ETE
2	UTILIZE the concept of DAQ and signal processing to interface any sensor to acquire the data.	UTILIZE	PO1, PO5, PO12, PSO1	IE, MTE, ETE
3	DETERMINE the transfer function and PREDICT the stability of the mechanical system.	DETERMINE and PREDICT	PO1, PO2, PSO1	IE, MTE, ETE
4	IDENTIFY and APPLY the basics fluid power components to CREATE the hydraulic /pneumatic circuits.	IDENTIFY, APPLY and CREATE	PO1, PO12, PSO1	IE, ETE
5	DESIGN and DEVELOP a ladder programming for mechanical applications.	DESIGN and DEVELOP	PO1, PO2, PO3, PO5, PO12, PSO1, PSO2	IE, ETE
6	DESIGN and ANALYSE the PID controller for mechanical system.	DESIGN and ANALYSE	PO1, PO2, PO3, PO12, PSO1, PSO2	IE, ETE

Internal Evaluation-1 will be based on Case study using Modern Software Tools.

Internal Evaluation-2 will be the based on prepare the digital poster which can be demonstrating and highlighting the technology in the field of mechatronics field.

Rubrics for IE1

	Excellent (2 marks)	Good (1 marks)	Poor (0 marks)
Understanding of Engineering Concepts: ● Demonstrates a clear understanding of relevant engineering principles and concepts. ● Applies appropriate engineering theories and methodologies ● Problem Identification			
Solution Development: ● Analyzes and interprets results to support conclusions and recommendations. ● Displays logical and systematic thinking throughout the case study.			
Technical Knowledge and Application: ● Applies technical knowledge effectively to propose engineering solutions. ● Demonstrates an understanding of relevant engineering tools, software, or techniques.			
Time Management: ● Adherence to the allocated time frame ● Ability to summarize and prioritize key points within the given time ● Efficient use of time for each section or topic covered			
Teamwork and Professionalism: ● Responding to questions effectively ● Overall professionalism and preparedness			

Rubrics for IE2

	Excellent (2 marks)	Good (1 marks)	Poor (0 marks)
Content: ● Accuracy: The information presented on the poster is accurate, reliable, and supported by credible sources. ● Relevance: The content is directly related to safety, health, and environmental topics. ● Completeness: The poster covers all the essential aspects of the chosen topic. ● Depth: The content demonstrates a thorough understanding of the subject matter.			
Visual Design: ● Organization: The poster is well-organized, with a clear and logical flow of information. ● Visual Appeal: The overall design is visually appealing, using appropriate colors, fonts, and images.			

• Graphics and Images: Relevant graphics, images, and diagrams are used effectively to enhance understanding.			
Communication: • Clarity: The message of the poster is clear and easily understandable. • Conciseness: The content is concise and avoids unnecessary jargon or technical language. • Communication of Key Points: The poster effectively communicates the main points and takeaways.			
Creativity and Innovation: • Demonstrates: The poster demonstrates contemporary ideas • Innovative Solutions: The poster presents creative and innovative solutions to safety, health, and environmental challenges. • Engagement: The poster captures and maintains the viewer's attention through creative elements.			
Time Management: • Adherence to the allocated time frame			

Teaching Plan for Theory Sessions

CO/PO	PO1	PO2	PO3	PO5	PO12	PSO1	PSO2	
1	7							7
2	4			1	2	1		8
3	4	3				1		8
4	4				2	1		7
5	3	1	1	1	1	0.5	0.5	8
6	2	1	1		1	1	1	7
	24	5	2	2	6	4.5	1.5	45

Marks distribution

CO	IE1	IE2	MTE	ETE
Out of	10	10	50	80
Converted to	10	10	30	50
1	-	5	-	20
2	-	5	-	20
3	5	-	10	5
4	5	-	10	5
5	-	-	-	25
6	-	-	15	10

Course Faculty TY A	Course Faculty TY B	Course Faculty TY C
V.K. Aher	Dr. R.A. Gujar	Dr. R. Bhosale

Course Coordinator: V.K. Aher