



SECOND SEMESTER 2019-2020

Course Handout (Part II)

In addition to part I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : MSE G511

Course Title : Mechatronics

Instructor-in-Charge : Dr. Prateek Kala

1. Scope and Objective of the Course:

This course is intended to a comprehensive knowledge of the technology related to Mechatronics. The necessity of integrating and embedding electronics and microprocessor into mechanical systems have been long felt, due to rapid progress in microprocessor computer based technology, in domestic products to manufacturing systems. Mechatronics is a recently defined engineering field that builds on the traditional mechanical engineering studies, combines it with technologies from the electrical, electronics, computer and control fields, using techniques such as simultaneous engineering to provide solutions in manufacturing applications. Also, mechatronics has been applied to manufacturing and other industrial automation: robotic automation found in car automated production lines, such as welding, and assembly line in computer integrated manufacture etc. Thus, the manufacturing system is greatly enhanced by the application of mechatronics. This course will develop overall background of the student in interdisciplinary mechatronic technology and a broad introduction to the issues encountered and techniques required in developing mechatronic products and automation systems.

2. Text books

T1. Bolton W., *Mechatronics*, 3rd Ed., Pearson, 2004. [1].

3. Reference books

- (i) M.P. Groover, “Automation, Production systems, and Computer-Integrated Manufacturing”, PHI, 2008. [2]
- (ii) Stadler, W., *Analytical Robotics and Mechatronics*, McGraw Hill, 1995. [3]
- (iii) *Mechatronics*, HMT Ltd., TMH, 1998. [4]

4. Course Plan





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Lec	Topic
1	Introduction to course
2-4	Introduction to Arduino microcontroller and its programming
5-6	Sensors and Actuators
7-11	Signal conditioning
12-15	Transfer function and system modelling
16-20	Controllers implementation using Matlab Simulink
21-23	Communication between devices
24-30	Hydraulics system and analysis
31-34	Electro-pneumatics
35-37	PLC
38-40	Display devices

5. Evaluation Scheme:

EC No.	Evaluation Component	Duration	Weightage	Date, Time & Venue	Nature of Component
1	Mid Sem Test	90 min	30	TBA*	TBA
2	Surprise Tests/ Quizzes / Assignments/ Projects and seminars	-	40	Dates to be announced in the class	
3	Comprehensive Examination	2 Hrs	30	22/6 AN	TBA

6. Chamber consultation hour: To be announced in the class.

7. Notices: All notices regarding the course will be displayed only on Mechanical Engineering Department notice board.

8. Make-up Policy: Make-up will be granted ONLY in genuine cases with prior permission. The request application for make-up test MUST be reached to the Instructor-in-Charge before commencement of the scheduled test along with DOCUMENTARY PROOF. No make- up will be allowed for the Surprise Quiz Tests.

*TBA: To Be Announced

Instructor-in-Charge,



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