Course Code :   ME 791

Course Title :   Advanced Mechatronic systems

Credit Hours :   3

Course Description
Foundational concepts in mechatronics and mechatronics systems including analog and digital electronis, Basic electronic circuits, Logic gates, Encoders / decoders, Dc and steppers motors, A/D and D/A conversion, Sensors, actuator, microprocessors, Microprocessor interfacing to electromechanical systems, Combining hardware and software into integrated mechatronics, and Hands on laboratory experiments with components and measurement equipment used in the design of mechatronics products

Course Objectives

Understand the concept of Mechatronics.
Analyze Mechatronic Systems and combine hardware and software into integrated typical Mechatronic Systems.
Develop both modeling and hands-on laboratory experience with components and measurement equipment.

Course Topics

Week no. 1:   Foundational concepts in mechatronics and mechatronics systems including analog and digital electronis.

Week no. 2:   Basic electronic circuits.

Week no. 3:   Logic gates.

Week no. 4:   Encoders / decoders.
Week no. 5:   Dc and steppers motors.

Week no. 6:   A/D and D/A conversion.

Week no. 7:   Sensors, actuator, microprocessors / 7th week evaluation.

Week no. 8:   Microprocessor interfacing to electromechanical systems.

Week no. 9:   Microprocessor interfacing to electromechanical systems.

Week no. 10:   Combining hardware and software into integrated mechatronics systems.

Week no. 11:   Combining hardware and software into integrated mechatronics systems.

Week no. 12:   Combining hardware and software into integrated mechatronics systems. / 12th week evaluation

Week no. 13:   Hands on laboratory experiments with components and measurement equipment used in the design of mechatronics products.

Week no. 14:   Hands on laboratory experiments with components and measurement equipment used in the design of mechatronics products.

Week no. 15:   Presentation on selected topics.

Week no. 16:   Final Examination

References

- J.E.Carryer, R.M.Ohline, and T.W.Kenny, " Introduction to Mechatronic design", Latest Edition, PEARSON Publishing Company.

- C.W. deSilva, " Mechatronics; An Integrated Approach," Latest Edition, CRC Press.

- M.B.Histand & D. G. Alciatore" Introduction to Mechatronics and Measurement Systems", McGraw-Hill, Latest Edition.