

MF5017 MECHATRONICS

DETAILED SYLLABUS

OBJECTIVES

This syllabus is formed to create knowledge in Mechatronics systems and impart the source of concepts and techniques, which have recently been applied in practical situation. It gives the frame work of knowledge that allows engineers and technicians to develop an interdisciplinary understanding and integrated approach to engineering.

UNIT I INTRODUCTION

Introduction to Mechatronics-systems – Mechatronics approach to modern engineering and design – Need of Mechatronics – Emerging areas of Mechatronics – Classification of Mechatronics – Mechatronics elements.

UNIT II SENSORS AND TRANSDUCERS

Introduction – Performance Terminology – Potentiometers – Strain gauges – I VDT – Eddy current sensor – Hall effect sensor – Capacitance sensors – Digital transducers – Temperature sensors – Optical sensors – Piezo electric sensor- ultrasonic sensors – Proximity sensors – Signal processing techniques.

UNIT III MICROPROCESSORS AND MICROCONTROLLERS

Introduction – Architectures of 8 – bit microcontrollers (8051) series, PIC Microcontrollers (16fxxx) series – Assembly language programming instruction format, addressing modes, instruction sets, Basic program examples interface of keypads, leds, A/D and D/A Converters, RS 232 serial communication interface, classification of memories.

UNIT IV ACTUATORS

Switching Devices, Classification of actuators – Electrical actuators – Solid state relays, solenoids, D.C. motors, Servo motors, Stepper motors – Interfacing with microcontroller through H-bridge Circuits – Piezoelectric actuators.

UNIT V MECHATRONIC SYSTEMS

Design process-stages of design process – Traditional and Mechatronics design concepts – Case studies – Engine management system, Automatic camera, Automatic washing machine, Pick and place robots.

Diploma, Anna University-UG, PG., HSC & SSLC

Notes
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REFERENCES

1. Devadas shetty, Richard A. Kolk, "Mechatronics System Design", PWS Publishing Company, 2001.
2. M.A. Mazidi & J.G. Mazidi, 8051 Microcontroller and embedded systems, 2002
3. R.K.Rajput.A Text Book of Mechatronics, Chand &Co, 2007
4. W.Bolton, "MECHATRONICS" Pearson Education Limited, 2004