MCE527 Introduction to Mechatronics (2 Units)

Department of Mechanical Engineering

Covenant University
1. MCE527
1.1. MCE527 Introduction to Mechatronics (2 Units)

Definition and application of the synergy. Mechanical gear system, rack and pinion, worm and screw, and simple calculations. Electrical transformer as equivalent of mechanical gear. Analogue sensors: pressure, temperature, linear displacement, angular displacement, rate gyro, acceleration, light sensors, ir sensors, hall effect sensors. Motion detection. Digital sensors: heading sensor, gps, gsm, compass, digital infrared sensor, shaft encoder, and their interfacing. Actuators: DC motors, ac servo, stepper motor, ac motor, linear actuator, relays. Signal conditioning, introduction to adc and dac. Electronics and hardware components for mechatronics - Computer interfacing, hardware for digital/analog interfacing, devices for data conversion Advances applications - Topics may be chosen from the following: fuzzy logic control, adaptive control techniques and applications, intelligent supervisory control in process systems, condition monitoring methods and examples, performance evaluation and fault finding