

## University of Pretoria Yearbook 2016

## Mechatronics 421 (MEG 421)

**Qualification** Undergraduate

Faculty Faculty of Engineering, Built Environment and Information Technology

Module credits 16.00

**Programmes** BEng Mechanical Engineering

BEng Mechanical Engineering Engage

**Prerequisites** No prerequisites.

**Contact time** 3 lectures per week, 1 practical per week

Language of tuition English

**Academic organisation** Mechanical and Aeronautical En

**Period of presentation** Semester 2

## **Module content**

Sensors: limit switches, encoders, thermocouples, strain gauges, CCD cameras, various sensors. Actuators: electric motors, pneumatic and hydraulic actuators, shape memory alloys. Signal conditioning: component interconnection, amplifiers, analogue filters, modulators and demodulators, analogue-digital conversion, sample-and-hold circuitry, multiplexers, software and hardware implementation of digital filters and Wheatstone bridge. Control: H-Bridge and PWM motor control, stepper motors, non-linear control of hydraulic and pneumatic actuators, PLCs, SCADA systems, industrial Fieldbus, micro-processor control.

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