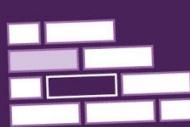




9 Mechatronics

| Criteria | Range | Resource identified |
|--|---|--|
| 9.1 The key components of a mechatronics system. | Mechanical (gears, cams, linkages, levers, pulleys) | https://technologystudent.com/cams/camdex.htm http://dtnmn.weebly.com/types-of-mechanisms.html http://wiki.dtonline.org/index.php/Category:Mechanisms |
| | Electrical/electronic (sensors and transducers, microprocessors, microcontrollers, actuators) | https://www.reac-group.com/en_en/facts/actuators/what-is-an-actuator/ https://www.electronics-tutorials.ws/io/io_1.html https://internetofthingsagenda.techtarget.com/definition/microcontroller https://www.eit.edu.au/resources/types-and-applications-of-microcontrollers/ |
| | Common drive devices (standard electrical motors, servo motors, stepper motors) | https://www.automate.org/blogs/types-of-electric-motors https://www.rs-online.com/designspark/different-types-of-motors-and-their-use https://www.elprocus.com/different-types-of-electric-motors/ |
| 9.2 The operation, function and applications of programmable logic controllers (PLC) in mechatronic systems. | PLC types (unitary, unitary with modular features, modular) | https://www.electrical4u.com/programmable-logic-controllers/ https://basicplc.com/different-types-of-plc/ https://instrumentationtools.com/types-of-plc/ |
| | PLC architecture | https://processsolutions.com/basic-architecture-of-programmable-logic-controller/ https://www.wisdomjobs.com/e-university/programmable-logic-controllers-tutorial-523/internal-architecture-14628.html https://www.youtube.com/watch?v=p-p2ljqGelQ |
| | Sensor signal conditioning | https://www.youtube.com/watch?v=HSHJXXFigz8 https://en.wikipedia.org/wiki/Signal_conditioning https://dewesoft.com/daq/what-is-signal-conditioning |





| | | |
|--|---|--|
| | Programming | https://www.watelectronics.com/how-to-program-the-programmable-logic-controllers/ https://electrical-engineering-portal.com/resources/plc-programming-training https://www.learnrobotics.org/blog/plc-programming-languages/ https://instrumentationtools.com/plc-controls-motor/ |
| | Process blocks | https://en.wikipedia.org/wiki/Function_block_diagram |
| | Motor drives | https://instrumentationtools.com/plc-controls-motor/ https://www.allaboutcircuits.com/technical-articles/how-to-choose-the-right-motor-driver-ic/ |
| | Applications - robotic arms | https://www.youtube.com/watch?v=3IP7fkEMEqE https://www.youtube.com/watch?v=88xH9ASsXDE https://www.youtube.com/watch?v=6dev9c79zWE |
| | Applications - conveyor belts | https://www.youtube.com/watch?v=_yG3MwEWv_0 https://www.youtube.com/watch?v=nv17SkwP9vo |
| | Applications - packaging | https://instrumentationtools.com/plc-packaging-process/ https://www.mikroe.com/ebooks/introduction-to-plc-controllers/7-8-automation-of-product-packaging |
| | Applications - supervisory control and data acquisition (SCADA) | https://inductiveautomation.com/resources/article/what-is-scada https://en.wikipedia.org/wiki/SCADA https://www.youtube.com/watch?v=nIFM1q9QPJw |
| | Applications - remote technical units | https://en.wikipedia.org/wiki/Remote_terminal_unit https://electronicscoach.com/remote-terminal-unit.html |
| | Applications - animatronics | https://en.wikipedia.org/wiki/Animatronics |





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|--|---|---|
| 9.3 The basic principles of hydraulics and pneumatics. | Transmission of power | https://en.wikipedia.org/wiki/Fluid_power https://www.nfpa.com/home/About-NFPA/What-is-Fluid-Power.htm |
| | Fluid compressibility | https://www.engineersedge.com/fluid_flow/compressibility.htm https://www.youtube.com/watch?v=zIQyckTvSFE |
| | Components (valves, pumps, actuators, cylinders, compressors) | http://wiki.dtonline.org/index.php/Pneumatic_Components_and_Symbols https://www.smcpneumatics.com/Pneumatic-System-Components-Their-Functions_b_71.html https://coalhandlingplants.com/hydraulic-system/ |