

# AUTOMATION & MANUFACTURING (MAT)

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## **MAT 102 Print Reading for Industry 3 Credits (3)**

Reading, interpretation, and revisions of industrial technical drawings common to manufacturing, Aerospace, machine parts, electrical, hydraulic, and Pneumatic drawings. Interpretation of engineering drawings and related shop calculations. Introduction (2+2P)

**Crosslist:** AERT 113

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## **MAT 105 Introduction to Manufacturing 3 Credits (3)**

Introduction to manufacturing evolution from basic assembly process to modern automated processes. Covers history, employability, soft skills, quality measurements, teamwork concept, production requirements, and considerations in plan layout and design. Minimum math proficiency of CCDM 114 required or math placement into MATH 1215 or higher.

**Crosslist:** AERT 112 (2P)

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## **MAT 106 Applied Manufacturing Practices 3 Credits (3)**

Course will illustrate how various products are manufactured along with associated process. Mechanical behavior such as bending, cold worked, strained, work hardened, and heat transfer will be emphasized as well. In lab, students will learn how to make selected products starting from prints to complete projects including quality control. Cross listed with: AERT 114. (2+2P)

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## **MAT 110 Machine Operation and Safety 3 Credits (3)**

Introduction to the operation and safety aspects of various types of machinery and equipment, including both mechanical and electrical machines, Rigid Tubing, and Flexible Lines. Maintenance and safety operation of industrial equipment will also be covered. Cross listed with: AERT 115. (2+2P)

### **Learning Outcomes**

1. Graduates will demonstrate competence in the use of general and highly specialized tools and equipment.
2. Graduates will read and comprehend technical information and materials from printed and electronic sources relevant to the diagnosis and repair of automotive systems.
3. Graduates will apply technical knowledge and skills to repair, service, and maintain various types of automobiles.

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## **MAT 130 Applied Industrial Electricity I 4 Credits (4)**

Electrical safety, AC and DC circuits, use and care of common measuring instrumentation, schematic and wiring diagrams, electromagnetism, National Electric Code branch circuits. (3+2P)

**Prerequisite(s):** MATH 1215 or OETS 118

### **Learning Outcomes**

1. Describe applications of preventive and corrective maintenance on automated industrial production machines.
2. Explain troubleshooting procedures using system block.
3. Define the various types of electromechanical systems and equipment and how they operate.

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## **MAT 135 Applied Industrial Electricity I 4 Credits (4)**

Relationship between motor power, speed, and torque, basic application of relay circuits, motor control circuits, inductance and capacitance factors, transformers, solid state devices circuits and applications. (3+2P)

**Prerequisite(s):** MAT 130

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## **MAT 145 Electromechanical Systems for Non-Majors 4 Credits (4)**

Electromechanical system interfacing. Principles and applications of preventive and corrective maintenance procedures on automated industrial production machines using system technical and maintenance manuals to develop troubleshooting procedures using systems block and schematic diagrams. (3+3P)

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## **MAT 221 Cooperative Experience I 6 Credits (6)**

Supervised cooperative work program. Student is employed in an approved occupation and rated by employer and instructor. Student meets in a weekly class. Graded S/U.

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## **MAT 234 Industrial Electricity Maintenance 3 Credits (3)**

Introduction into electrical systems, theory and uses for the different types of motors used in the industry and related industrial safety practices. DC, AC stepper and servo motors, motor speed and torque, motor performance, and efficiency, motor control fundamentals using variable frequency drives, vector controls, servo and stepper drives. (2+2P)

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## **MAT 265 Special Topics 1-6 Credits**

Course subtitled in the Schedule of Classes.

**Repeatable:** for a maximum of 12 credits

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