PLASTICS TECHNOLOGY (PLT)

Courses

PLT 101. Introduction to Automated Mechanical Processes. 4 Credits.
The course will introduce students to automated mechanical processes and mechatronics systems through hands-on laboratory experience, utilizing a mechatronics training system and its associated curriculum. Workplace safety around machinery will be emphasized, as well as creating and following standard operating procedures. Each of the components and its associated function relating to the processes will be addressed, as well as how to replace or adjust if necessary. Students using small hand tools will test, adjust, remove and replace faulty components. They will also align, connect, test and run each process station within the entire mechatronics system and evaluate its performance. Prerequisites: ENG 098, FYE 101, MAT 092, RDG 098, or placement. Spring.

PLT 104. Introduction to Programmable Logic Controls. 3 Credits.
This course covers the basics of Programmable Logic Controls (PLC), their purpose, components, function, programming and integration into mechatronics systems. Students will be introduced to the methods of creating the ladder logic in an organized fashion, and then will write programs for the controllers using RSLogix 5000. The PLCs running the programs will operate desktop training equipment, as well as various manufacturing processes within a mechatronics system in the classroom. Prerequisites: ENG 098, MAT 092, RDG 098, or placement. Fall.

PLT 105. Print Reading for Industry. 3 Credits.
This course will introduce students to the history of prints and their importance across multiple industries. The order in which information is read from a print will be stressed along with the importance of understanding each before continuing. Topics will include the language of lines and representations of 3D objects as multiple views on a 2D page, as well as a broad sweep of necessary information such as print formats, title blocks, dimensions, tolerances and an overview of GD&T (Geometric Dimensioning & Tolerancing). Additional topics will include surface finishes, revision tables, assembly drawings, spring, screw thread, and other callouts, as well as understanding information on drawings related to plastics and welded structures. Students may not receive credit for both PLT 105 and MET 105. Prerequisites: ENG 098, FYE 101, MAT 092, RDG 098, or placement.

PLT 128. Hydraulics and Pneumatics. 4 Credits.
The course is an introduction to the principles and applications of hydraulic and pneumatic power in manufacturing processes. Emphasis will be on safety, basic system components, operation, controls, reading circuit diagrams, and troubleshooting techniques. Students will participate in hands-on activities with pneumatic training devices and a mechatronics system. Prerequisites: ENG 098, FYE 101, MAT 092, RDG 098, or placement. Spring.

PLT 130. Introduction to Injection Molding and Extrusion of Plastics. 3 Credits.
This course introduces two primary means for processing plastics; injection molding and extrusion of polymeric materials. The course covers both the underlying engineering principles as well as their application in the processing of plastics. Students learn the different equipment and configurations used for injection molding and extrusion. Classroom lectures and eLearning content cover the basics of these processes and can be supplemented by simulated molding and extruding examples. An overview of the role of these processes in local industry is presented. Students will demonstrate proficiency in MWCC's Institutional Student Learning Outcomes, as well as build upon communication, organizational, and interpersonal skills. Prerequisites: ENG 098, FYE 101, MAT 092, RDG 098, or placement. Spring.

PLT 220. Statistical Process Control. 3 Credits.
This course presents students with an understanding of elementary statistics by familiarizing them with basic concepts of measures of central tendency and variability, regression and correlation, probability, discrete and continuous random variables, the Central Limit Theorem, confidence intervals, and hypothesis testing. Students will learn the use of statistical methods and SPC to improve quality and productivity through measurements, control, and reduction of process variation. Topics covered include: basic statistics, the normal distribution; control charting; process capability studies; gauge and measurement analysis. Simple metrology concepts and the basics of geometric dimensioning and tolerance are also covered. Prerequisites: ENG 098, FYE 101, MAT 092, RDG 098 or placement.

PLT 223. Production Design. 3 Credits.
This course examines the interrelation of materials processing, product design, and function. Fundamentals of the 3D prototype in manufacturing within the industries of plastics, machining, fabrication, and/or casting will be explored. Prerequisites: ENG 101 (or co-requisite), MAT 162 (or co-requisite).

PLT 224. Principles of Supervision. 3 Credits.
The purpose of this course is to develop an understanding of the role and responsibilities of the production team and to strengthen values and skills related to key supervisory functions. The principles and topics addressed include production design, work simplification, inventory, quality, cost control, problem solving, decision making, leadership, management ethics, and communication. Prerequisites: ENG 101 (or co-requisite), MAT 092 (or placement).
PLT 226. Materials Design And Application. 3 Credits.
This course provides coverage of materials, design, and test methodology. Material properties, characteristics, and applications. A discussion of polymer blends and compounds using fillers, additives, and reinforcing fibers may be included. Property identification and the associated test procedures are reviewed with hands-on testing provided for the major properties. In addition, product design techniques and applications are discussed to complement the discussion of materials. Prerequisites: ENG 101 (or corequisite), MAT 162 (or corequisite).