INDUSTRIAL AUTOMATION (INAU)

INAU 130. Introduction to 3D Printing Technology
Credits: 2
Typically Offered: FALL
3D printing is an additive manufacturing process in which objects are built from plastic filament, powder, liquid resin, or bio-compatible and edible materials. This course introduces 3D printing technologies including history and basics of 3D printing, currently available 3D printing methods and materials as well as current and emerging applications of 3D printing. A general idea of the 3D printing industry and global effects of 3D printing is included.

INAU 132. Introduction to Engineering Mechanics for 3D Printing
Credits: 3
Typically Offered: FALL
This course offers an introduction to simplified engineering and mechanical principles as they apply to 3D printing, or additive manufacturing, designs, and products. Requires students to apply concepts related to simple force and stress analysis, material property selection, and deformation to their designs for the purpose of improving functional performance and overall printing success. Students will explore finishing and post processing techniques to enhance the final appearance and marketability of their printed work.

INAU 138. Special Projects for 3D Printing
Credits: 3
Typically Offered: FALL
This course allows the student to gain intermediate level experience in their prospective fields through projects and tasks assigned by them in conjunction with the instructor and based on applications the student may experience as a professional. There is a focus in this course on various assignments and curriculum determined by the instructor and student.

INAU 210. Automation Systems
Credits: 3
Typically Offered: FALL
This course is focused on automated manufacturing systems, automated sorting and processing systems, and delivery systems. Other systems relevant to the workplace are also covered. In this course students configure machine communications systems and calibrate discrete, analog and smart sensors in these systems.

INAU 220. Machine Vision and Identification
Credits: 3
Typically Offered: SPRING
Students discuss and demonstrate the applications and uses of systems used by machines to identify objects or their environment. The vision systems covered include RFID systems, barcode systems, color recognition systems, 2D vision systems, 3D vision systems, and other systems as they become relevant to the workplace.

INAU 230. Industrial Robotics
Credits: 3
Typically Offered: SPRING
Students develop and demonstrate an industrial robot, including application, operation and programming. Students also perform troubleshooting of basic robotics and discuss related safety issues.

INAU 240. Integrated Systems, Design and Setup
Credits: 3
Typically Offered: SPRING
This is a project-based class in which students design, build, and program a complete automated system using smart sensors to control a process, robots to move products, and a monitoring system to provide process control.

INAU 245. Integrated Systems, Troubleshooting and Quality Control
Credits: 4
Typically Offered: SPRING
Building on the Integrated Systems, Design and Setup course, students learn techniques for troubleshooting the systems to ensure the quality of the products is consistent with specifications.