

COURSE SYLLABUS

Division: **Workforce Services**

Revised: January 2015

Curricula in Which Course is Taught: **Technical Studies – Wood Science Technology**

Course Number & Title: **IND 162 – Product Design and Development**

Credit Hours: **5**

Hours/Wk Lecture: **5**

Hours/Wk Lab: **3**

Lec/Lab Comb: **5**

I. Catalog Description

Advancement of the foundational concepts and tools in the design and development of products utilizing wood or an alternative design material

II. Relationship of the course to curricula objectives in which it is taught.

This course is designed to build confidence in the student and to stimulate a desire to learn about and possibly consider a career path in industrial automation and robotics.

III. Required background

This course is intended for anyone with an interest in and desire to learn the subject matter. It is recommended that students complete IND 161 prior to enrolling in IND 162.

IV. Course Content

This course continues the presentation of topics, building on IND 161 foundation of concepts, and tools in product design and development utilizing wood as a primary design medium. Topics covered include: managing creativity and design, form and function, product management, through customer-focused innovation. Students will develop a product utilizing the design/build process. The course will utilize training equipment including Amatrol and Festo trainers in electricity, motors, controls, communication, PLCs, and mechatronics. In addition, robotics will be taught using Mitsubishi and Intelitek robots.

- Measurement
- Electricity and Electrical Equipment
- Relays and Sensors
- Pneumatics,
- Basic Circuits
- PLC Logic
- Intro to Robotics

V. Learning Outcomes:**VI. Evaluation**

<p>Upon completing this class a student will have an understanding of the following skills:</p> <ul style="list-style-type: none">✓ Understanding safety skills and regulations associated with a woodworking shop✓ Understanding machine operation of the equipment used, including the use and programming of a CNC router✓ Effective communication✓ Be able to identify the different wood products from rough lumber to sheet goods and the species of the material✓ Understand how to engineer well using wood as a material, including joinery methods✓ How to construct various jigs and fixtures and why they help in the manufacturing of consistent parts✓ Be able to create a full paperwork package of a particular project including: a bill of materials, project planning and implementation, a timeline for manufacture, all costs associated with the project, marketing plan, etc...✓ Be able to convey an idea through sketching	<ul style="list-style-type: none">• Homework/class work• Quizzes• Tests• Midterm exam• Final exam• Class Participation
--	---

The course supports the following objectives:

- A. DCC Educational Objectives
1. Communication
 2. Critical Thinking
 3. Computational and Computer Skills
 4. Understanding Culture and Society