

NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

Course Name: Electronics Design for Manufacturing and Production

Course Number: ECET 430

Course Structure: 2-2-3 (lecture hr/wk – lab hr/wk – course credits)

Course Description: This course teaches the fundamental skills required to design and manufacture electrical systems on printed circuit boards. The fundamental skills of electronics CAD are taught along with industry standards for schematic designations, engineering change orders, component packaging, simulation, and verification. Students are taught basic and advanced topics in PCB construction, analysis, and layout including auto-routing with a focus on through hole and surface mount technology, impedance control, heat dissipation, interconnects, panelization techniques, and production specific features and designations. Manufacturing files and outputs are studied emphasizing the necessary considerations for mass production, testing, component selection, stencil designs, solder composition, and reliability concerns.

Prerequisites: ECET 205 or ECET 329 and Junior or Senior Standing

Corequisites: None

**Required, Elective,
or Selected Elective:** Selected Elective

Required Materials: Electronic course materials provided by the instructor.

Course Outcomes: By the end of the course students are able to:

1. Identify the major physical and electrical concerns when designing a printed circuit board.
2. Express an electronic circuit in a standard schematic form using proper notation and designation using a modern CAD package.
3. Design a printed circuit board from a schematic.
4. Identify and specify engineering constraints for a printed circuit board and mechanical layout.
5. Generate fabrication and assembly files for production and have a printed circuit board manufactured.
6. Assemble and test a printed circuit board.

Class Topics:	Schematic Capture	PCB Layout
	PCB Manufacturing	Component Packages
	Gerber Files	Pick and Place Files
	Stencils	Solder Selection
	Thermal Concerns	Interconnects
	Testing and Inspection	

NEWARK COLLEGE OF ENGINEERING

Academic Integrity: NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. Please visit the Dean of Students website at <http://www.njit.edu/doss> for a list of student policies relating to academic integrity and student conduct.

Modification to Course: The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

Prepared By: Daniel Brateris

Course Coordinator: Daniel Brateris

Updated: 26 January 2022