

1999-2000 Catalog Data:

Students will work in teams of two to assemble a variety of fun and interesting electronic projects. Some project examples are: a battery powered emergency strobe light; a Digital Thermometer, LED sequential flasher, infrared communicator, and a LED Digital Clock. Projects have been designed and selected in order to develop student experiences in a variety of electronic circuit assembly topologies as used in industry and current Electrical Engineering Laboratory teaching and research environments. Some examples include: solderless bread boarding techniques, soldering with point-to-point wiring, soldering printed circuit boards, wire wrapping, and finish packaging techniques. Course work emphasis will be placed on maximum student hands on experiences, and will include a necessary introduction to electronics schematic diagram reading.

Prerequisites:

None

Textbooks:

None

Reference:

None

Coordinator:

Paul L. Discher, Supervisor of Technical Facilities

Goals:

The purpose of this course is to introduce students to schematic diagram reading, industry vernacular, component identification, and electronic fabrication technologies for prototyping and finish designs. Students achieve these goals by assembly of interesting "hobby" type electronic circuits using various wiring topologies and assembly techniques. Repetition of techniques is achieved across the spectrum of assignments allowing the students to improve skills at their own pace without the additional burden of grading or testing. Students develop their own healthy motivation to complete a project as a result of being able to keep the "gizmo" that they build. EE151 is an optional course taught pass/fail limited to Freshman. All laboratory materials are copyrighted by Paul L. Discher.

Prerequisites by topic:

None

Topics:

1. Schematic Diagram Reading and Drawing
2. Component identification, passive and active
3. Fundamental function of active and passive components
4. Electronic and industry vernacular
5. Care and preparation Soldering equipment and tools
6. Soldering using point to point wiring practices
7. Techniques for printed circuit board production
8. Soldering using printed circuit boards
9. Solderless breadboard systems for prototyping
10. Wire wrap using special tools and socket components.
11. Methods for Finish packaging
12. Innovative and creative use of materials.

Tests:

None

Computer Usage:

None

Laboratory:

1. The Three way switch -> use of screw terminal connectors and power supplies
2. LED Flasher -> Using a solderless breadboard
3. LED Flasher -> Soldering on a printed circuit board
4. The Strobe Flash ->Soldering on a printed circuit board

5. Regulated Fixed voltage Power Supply - > Soldering with point-to-point practices
6. The digital Dice - > Soldering on a printed circuit board CMOS components
7. The Nail Motor - > Assembly of a Permanent Magnet DC motor and motor vernacular
8. Light Wave Communication - Transmitter - >Soldering on a printed circuit board
9. Light Wave Communication - Receiver - >Soldering on a printed circuit board
10. RF Remote Control - > use of preassembled modules - >Soldering on a printed circuit board
11. The Digital Thermometer - > Using a solderless breadboard
12. The Digital Thermometer - > Soldering on a printed circuit board (high density)
13. The Digital Clock - > Soldering on a printed circuit board (high density)
14. The Digital Clock - > Wire wrapping, - > Soldering with point-to-point practices

ABET Category content as estimated by faculty member who prepared this course description:

Engineering Science: 2 credits 100%
Engineering Design: 0 credits 0%

Prepared By: Paul L. Discher **Prepared On:** 4/6/00