

# EEE 101: INTRODUCTION TO PRINTED CIRCUIT BOARD DESIGN

## In Workflow

1. EEE Committee Chair (102011596@csus.edu)
2. EEE Chair (mahyar.zarghami@csus.edu)
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## Approval Path

1. Fri, 14 Apr 2023 21:13:25 GMT  
102011596: Approved for EEE Committee Chair
2. Fri, 05 May 2023 22:19:06 GMT  
Mahyar Zarghami (mahyar.zarghami): Approved for EEE Chair
3. Fri, 12 May 2023 17:00:33 GMT  
Masoud Ghodrat Abadi (abadi): Approved for ECS College Committee Chair
4. Fri, 12 May 2023 17:04:02 GMT  
Behnam Arad (arad): Approved for ECS Dean

## New Course Proposal

Date Submitted: Wed, 04 Jan 2023 02:32:45 GMT

**Viewing: EEE 101 : Introduction to Printed Circuit Board Design**

**Last edit: Fri, 12 May 2023 16:59:45 GMT**

Changes proposed by: 102011596

### Contact(s):

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### Catalog Title:

Introduction to Printed Circuit Board Design

### Class Schedule Title:

Intro to PCB Design

### Academic Group: (College)

ECS - Engineering & Computer Science

### Academic Organization: (Department)

Electrical and Electronic Engineering

### Will this course be offered through the College of Continuing Education (CCE)?

No

### Catalog Year Effective:

Spring 2024 (2023/2024 Catalog)

### Subject Area: (prefix)

EEE - Electrical and Electronic Engineering

### Catalog Number: (course number)

101

**Course ID: (For administrative use only.)**

TBD

**Units:**

3

**Is the only purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?**

No

**In what term(s) will this course typically be offered?**

Fall, Spring

**Does this course require a room for its final exam?**

Yes, final exam requires a room

**This course complies with the credit hour policy:**

Yes

**Justification for course proposal:**

This is an expansion of an existing 1-unit experimental course (EEE196A) in Printed Circuit Board (PCB) design to a permanent 3-unit (2-unit lecture, 1-unit lab) course. The existing experimental course has proven to require additional time to adequately provide the instruction necessary for thorough comprehension of the materials. Furthermore, it is necessary to have dedicated separate lecture and lab time to ensure complete understanding of both the theoretical concepts and practical hands-on aspects (board layout, documentation, manufacturing, etc.). This course will help the students understand and design printed circuit boards for use in today's modern, high-end, high-speed systems where proper printed circuit board design is not only important but critical to the success of the product or system being developed. The prerequisites for EEE 196A were found to be excessive, since students really only need to understand the physics of board design, rather than circuit design itself.

**Course Description: (Not to exceed 80 words and language should conform to catalog copy.)**

Introduction to Printed Circuit Board (PCB) design techniques including library component creation, schematic capture, layout, routing, signal integrity analysis, IEEE/IPC rules & standards, materials, manufacturing processes, and physical properties of a PCB. Industry standard electrical computer-aided design (ECAD) software tools will be used.

**Are one or more field trips required with this course?**

No

**Fee Course?**

No

**Is this course designated as Service Learning?**

No

**Is this course designated as Curricular Community Engaged Learning?**

No

**Does this course require safety training?**

No

**Does this course require personal protective equipment (PPE)?**

No

**Does this course have prerequisites?**

Yes

**Prerequisite:**

PHYS 11C

**Prerequisites Enforced at Registration?**

Yes

**Does this course have corequisites?**

No

**Graded:**

Letter

**Approval required for enrollment?**

No Approval Required

**Course Component(s) and Classification(s):**

Laboratory  
Lecture

**Laboratory Classification**

CS#16 - Science Laboratory (K-factor=2 WTU per unit)

**Laboratory Units**

1

**Lecture Classification**

CS#02 - Lecture/Discussion (K-factor=1 WTU per unit)

**Lecture Units**

2

**Is this a paired course?**

No

**Is this course crosslisted?**

No

**Can this course be repeated for credit?**

No

**Can the course be taken for credit more than once during the same term?**

No

**Description of the Expected Learning Outcomes and Assessment Strategies:**

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Analyze and determine printed circuit board material and environmental parameters based on industry specifications.	Laboratory assignments and projects, and lecture quizzes and exams.
2	Design library of parts compliant to relevant industry standards.	Laboratory assignments and projects.
3	Design printed circuit boards; including parts placement, trace routing, markings placement compliant to relevant industry standards.	Laboratory assignments and projects.
4	Define manufacturing requirements and create necessary documentation to support the circuit board fabrication and assembly.	Laboratory assignments, projects, lecture quizzes, exams, and documentation.

**Attach a list of the required/recommended course readings and activities:**

EEE\_101\_syllabus\_V3.docx

**For whom is this course being developed?**

Majors in the Dept

**Is this course required in a degree program (major, minor, graduate degree, certificate?)**

No

**Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?**

No

**Will there be any departments affected by this proposed course?**

No

**I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.**

I/we agree

## **University Learning Goals**

**Undergraduate Learning Goals:**

Competence in the disciplines

**Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?**

No

## **GE Course and GE Goal(s)**

**Is this a General Education (GE) course or is it being considered for GE?**

No

Key: 14860