

PBL Summary for Digital Signal Processing: COSC360

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Abstract

Our course in modern DSP unfolded in several phases. First, an overview of digital signal processing (DSP) basics was given in Unit 0. Second, DSP filtering techniques were covered in Unit 1. Third, DSP applications to audio systems, digital images, electrical circuits, and neural networks were introduced in Unit 2. Finally, and synchronously with Unit 2, we began a project-based learning (PBL) environment to build modular synthesizer circuits with DSP applications. We will gather data in this document to assess the PBL learning environment.

PBL environment objective: *To understand, build and test modern audio circuits using standard electronics prototyping equipment. These included breadboards and power supplies, DVMs, signal generators, and oscilloscopes.*

Format: *Students worked in pairs to make progress toward the objective.*

Course time: *Approximately 30% of the course was devoted to working on the PBL projects.*

Materials: *The Moritz Klein/Erica Synths EDU kits, and prototyping equipment, were provided free of charge.*

Grading: *See Tab. 1.*

Assignment	Weight	Target Date
PBL Individual	20%	April 28th - May 2nd, 2024 (in-class)
PBL Team	10%	April 28th - May 2nd, 2024 (in-class)

Table 1: Itemized grade components from the PBL learning environment.

Questions for Students:

- List the top three ideas or techniques you learned from the PBL learning environment:
- List any ideas or techniques you wish we had reached or included in the PBL learning environment:
- How well do you feel we have met the overall objective of *understanding* the audio circuit we have constructed?
- How well do you feel we have met the overall objective of *building* the audio circuit we have constructed?
- How well do you feel we have met the overall objective of *testing* the audio circuit we have constructed?
- On a scale of 0-20%, what PBL individual score¹ do you feel is warranted for your progress this semester?
- On a scale of 0-10%, what PBL team score² do you feel is warranted for the progress of your team this semester?
- Finally, would you have liked to spend *more time* on the PBL learning environment, or *less time* on it?

Name/ID: _____ Name/ID of lab partner: _____

¹Note: your opinion is important to us as instructors, and we will take it into account.

²Note: your goal here is to assess the participation of your lab partner in the team effort.