

ECEN 3771 - Digital and Analog Circuits 1

Fall 2026 Syllabus, Section 01, CRN 40733,

Credit hours: 3

Instructor

Sina Bakhtar Chavari

Email: sbakhtarchavari@ysu.edu

Public Instructor Information

Instructor Title: Assistant Professor, Electrical & Computer Engineering

Instructor Professional Qualifications: Dr. Bakhtar Chavari holds a B.S. and M.S. in Electrical Engineering and a Ph.D. in Materials Science & Engineering. His background includes energy-storage, additive manufacturing, electrical systems, laboratory instruction, and mentoring students in engineering disciplines.

Instructor Office Location: Moser 2016

Instructor Office Phone: 330-941-3106

Course Description

3771. Digital and Analog Circuits 1. Terminal characteristics of electronic devices such as diodes, BJTs (bipolar junction transistors), FETs (field effect transistors), and operational amplifiers. The design of digital circuits with these devices. Basic bias and small-signal models for analog amplifiers. Computer-aided design and analysis. Prereq.: ECEN 2633. 3 s.h.

Catalog Description

Terminal characteristics of electronic devices such as diodes, BJTs (bipolar junction transistors), FETs (field effect transistors), and operational amplifiers. The design of digital circuits with these devices. Basic bias and small-signal models for analog amplifiers. Computer-aided design and analysis.

Prereq.: ECEN 2633.

Course Readings

Group	Title	Author	ISBN
Required			

Course Materials

Textbook: Microelectronics: Circuit Analysis and Design (any edition). Neamen.

Software:

- MATLAB and/or Python with NumPy and Matplotlib.
- PSPICE and/or LTSPICE

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Schedule of Topics and Assignments

Week of	Proposed Topic	Due/To Prepare for Class
8/24	Semiconductor materials and Diodes	
8/31	Semiconductor materials and Diodes	
9/7	Semiconductor materials and Diodes	
9/14	Semiconductor materials and Diodes	
9/21	Semiconductor materials and Diodes	Prepare for Exam 1



9/28	The Field-Effect Transistor	
10/5	The Field-Effect Transistor	
10/12	The Field-Effect Transistor	
10/19	The Field-Effect Transistor	
10/26	The Field-Effect Transistor	
11/2	The Field-Effect Transistor	Prepare for Exam 2
11/9	The Bipolar Junction Transistors	
11/16	The Bipolar Junction Transistors	
11/23	The Bipolar Junction Transistors	
11/30	The Bipolar Junction Transistors	Prepare for project submission
12/7	The Bipolar Junction Transistors	Prepare for final

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.