

EECE 326 Fundamentals of Energy Systems Lab
Department of Electrical Engineering and Computer Science

Course Number	Course Name	Semester
EECE326	Fundamentals of Energy Systems Lab	SPRING SEMESTER

Class Hours: M 1:15 - 4:00 PM (@3023 Integrated Power Systems Lab)

Catalog Data: EECE326 Fundamentals of Energy Systems Laboratory, (1 Credit). Treats poly-phase power measurements, Synchronous Machines, transmission line, Renewable Electricity Generation.

Textbook: Lab Manual

References: Sarma, Electric Machines, WEST Publishing Co. 1996

Instructor: Dr. Charles Kim (Office: LKD3014, 202-806-4821, ckim@howard.edu)
Office Hours: WR 2 - 4 pm

Goals: The purpose of this Lab is to augment the theoretical foundations introduced in the Fundamentals of Energy Systems course. The studies include power systems, its individual components, power generation, and distributed generation, and renewable energy generation. Detailed topics are found in the Laboratory manual.

Pre- or Co-requisites: Co-Requisite EECE325 Fundamentals of Energy Systems

ABET Outcomes: ABET student outcomes addressed by the course: (b) The ability to design and conduct experiments as well as to analyze and interpret data; and (k) ability to use modern engineering tools.

Topics:

<u>Labs</u>	
Lab 1	Safety and Power Supply
Lab 2	Phase Sequence Determination
Lab 3	Real and reactive power
Lab 4	Power Flow
Lab 5	Phase Angle and Voltage Regulation
Lab 6	Power Flow Between Two Sources
Lab 7	Synchronous Machines
Lab 8	Induction Machine- Motor and Generator
Lab 9	Micro-Power System 1
Lab 10	Micro-Power System 2
Lab 11	Renewable Micro-Grid Configuration

Grading:

Laboratory Reports	55
Mid-Term Exam ¹	20
Final Exam	20
Attendance	5
<u>Total</u>	<u>100</u>

Lab Report:

1. Report writing is an individual work. All reports are due in class only.
2. Reports are due 1 week after completion of the lab.
3. Late reports are not accepted.
4. Report Format: Use the lab manual.

Expected performance curve:

¹ Both Mid-term exam and Final exam are focused on checking if students can build a lab-set up for required goals using provided devices and connecting wires, and can describe how the required goals can be achieved by measurement and measured values.

A	Score ≥ 90
B	$80 \leq \text{score} \leq 89$
C	$70 \leq \text{score} \leq 79$
D	$60 \leq \text{score} \leq 69$
F	score ≤ 59

Safety/Ethics: Safety and professional ethics are emphasized in this course. See "Safety Manual" (located in Advanced Electronics Lab,) and "Electrical Engineering Undergraduates" handbook.

Note: Under the Americans with Disabilities Act of 1990, if you want to be identified as a person with a disability and need accommodations, please advise me by making an appointment.