



FORMAN CHRISTIAN COLLEGE (A Chartered University)
CSCS 105: Basic Electronics (Section A)
Course Outline and Lesson Plan
Spring 2023

Instructor Information	
Name	Akheem Yousaf
Email	akheemyousaf@fccollege.edu.pk
Office Hours	by appointment
Course Material/ Announcements	Will be shared via email/uploaded on Moodle
Office	S - 016 D
Course Information	
Class Section, Timings & Venue	Section C: Monday, Wednesday, Friday 11:00 – 11:50 (S215) and Monday 14:00 – 16:50 (S-027)
Course Objectives	This course will introduce students to electronics, a high-technology field undergoing great expansion in many societies. Through a theoretical and hands-on approach using a multitude of components and devices, students will explore the fascinating world of electricity and electronics. The course can be divided into two major components, DC circuits and Semiconductor Devices (Diodes and BJTs). It presents electricity, circuit boards, simple active and passive electronic components, semiconductors, semiconductor devices like Bipolar junction Transistors (BJTs), as well as digital logic circuits to students in an easy to understand and methodological way. These concepts provide students sufficient knowledge for the advanced courses like Embedded Systems. Through demonstrations and basic circuit design and assembly, students will demystify the wonderful world of electronics.
Text Book	Thomas L. Floyd, Electronic devices; 9 th edition Fundamentals of Electric Circuits 4 th ed Alexander & Sadiku
Reference Material	<ul style="list-style-type: none">• Lab Handouts• Class Handouts• Reading Assignments
Important to know	<ul style="list-style-type: none">• <u>Due Dates:</u><ul style="list-style-type: none">○ All assigned tasks are to be submitted at the defined deadline.○ Late activities will not be graded.• <u>Quizzes:</u><ul style="list-style-type: none">○ The quiz will be put up on Moodle. The deadline will also be mentioned.

- Assignments:
 - Students will be notified about it on Moodle and will be required to submit them by the deadline. Students may be asked to give a viva for the assignment in-person.
- Lab Exams:
 - Every week, there will be a lab exam of the last lecture covered in the previous week.
- Attendance:
 - Students are advised to attend all lectures. 75% attendance is mandatory.
 - It is entirely the students' responsibility to recover any information or announcements presented in lectures from which they were absent.
 - Being absent from class means losing class activity and surprise quiz marks.
- Academic Honesty:
 - All work that you submit in this course must be your own.
 - Unauthorized group efforts are considered academic dishonesty.
 - You may discuss homework (Assignments, Projects) in a general way with others, but you may not consult anyone else's written work.
 - You are guilty of academic dishonesty if you examine another's solution, allow (actively or passively) another student to examine your solution, or you copy from the Internet without complete understanding of what you have done. University policy of plagiarism will be applicable in the case.
 - All cases no matter how trivial they are will be reported to Academic Integrity Committee (AIC) of FCCU. Cheating or violation of academic integrity in any exam will cause F grade.
- Moodle:
 - All announcements will be made on Moodle regularly. All resource materials will also be uploaded there.
- Class Participation:
 - Lectures are meant to summarize the readings and stress the important points. You are expected to come to class having already critically read corresponding reading material as would be announced in the class.
 - Your active participation in class is crucial in making the course successful.

Assessment Criteria	Quizzes	15%	
	Class Activities (Homework)	10%	
	Labs	20%	
	Mid Term	25%	
	Final Exam	30%	
	Total	100%	
Lesson Plan	Week No.	Topics	
	1, 2	<ul style="list-style-type: none"> • Introduction to course • Electricity Vs Static Charge • Basic concepts of Electric field and Potential • Current, Voltage • Power and Energy • Problem Solving Session • Ohm's Law • Resistivity and conductivity • Nodes, branches and loops 	
		Lab 1 Introduction to Lab Components & Resistors Color Codes	
	3.	<ul style="list-style-type: none"> • Kirchoff's Current and Voltage laws 	
		Lab 2 Verifying Ohm's Law	
	4.	<ul style="list-style-type: none"> • Series Resistors and Voltage Divider Rule • Parallel Resistors and Current Divider Rule 	
	Lab 3 KVL and KCL		
5.	<ul style="list-style-type: none"> • Circuit Analysis • Nodal Method • Nodal Analysis with voltage sources 		
	Lab 4 Series and Parallel Circuits		
6.	<ul style="list-style-type: none"> • Introduction to semiconductor materials • Electron and hole current • N-type and p-type materials • Intrinsic and extrinsic materials • Energy levels 		
	Lab 6 VI Characteristics of Diode		

	7.	<ul style="list-style-type: none"> • PN junction • Forward Vs Reverse Biased Diode and its Models • VI Characteristics of diode 	
		Lab 7 VI Characteristics of Zener Diode	
	8, 9	Revision and Midterm Exam	
	10.	<ul style="list-style-type: none"> • Half wave rectifier • Full wave rectifier • Bridge rectifier • Power supply filters and regulators • Design of a power supply. 	
		Lab 8 Series and Parallel Diodes	
	11.	<ul style="list-style-type: none"> • Introduction to BJTs • BJT operations • Transistor currents • BJT parameters 	
		Lab 9 BJT characteristic Curves	
12.	<ul style="list-style-type: none"> • BJT as Logic Gates • BJT as amplifier • BJT as a switch 		
	Lab 10 BJT as Switch / Digital Gates Using BJTs		
14.	Final Exam		

Disclaimer

The course instructor reserves the right to modify the above plan as need be during the course of the class; however, it won't be done impetuously. Any changes that would be incorporated will be informed well in advance.