AE-231: OVERVIEW and **Reading Assignments**
TEXT BOOK: Teach Yourself Electricity and electronics (TYE+E) by Stan Gibilisco (4th edition)
INSTRUCTOR: Eddie Ciletti

TYE+E is an easy-to-read text book that, if read as intended - one chapter per week - you'd have a good "grounding" in basic electronics in nine months! Our class is only ten weeks, so obviously we're not going as deep into the material, but I do plan to cover four chapters per week for the first five weeks. We will accomplish this by focusing on the audio-specific aspects of electronics.

You already have an organic grasp of how things work based on your life and studio experiences. I hope this class will shed light on those everyday things you take for granted and how they work.

Chapter-1: Electronics, as taught in an Electrical Engineering program, includes a background in chemistry - to understand the materials and how they behave - and Physics, for the laws that govern our world and the math to define those laws. Don't be intimidated by the opening chapter – every study of electronics must start somewhere. The key chapter headings are Electrons (page-4), and Conductors (page-8). Keep reading...

Chapter-2: The foundation of Electrical Concepts is laid out from page-17 through page-32. The drawing (2-4, p.21), is key to understanding how current is measured and calculated.

Chapter-3: Before there were digital multi-meters, nearly measuring device had a meter. Now, analog meters are found on vintage and retro-style gear.

Chapter-4: This is the Law and Order chapter - Ohm's Law, the Power formula plus series and parallel resistance.

Chapter-5: Lay down on Doctor Freud's couch for your first Circuit Analysis session. The ending chapter topic is Voltage Divider networks - and if you've wondered what any of this has to do with audio, this is the heart of the LA-2, LA-3, LA-4 and UREI 1176.

Chapter-6: Viva La Resistance! Resistors were introduced way back in Chapter-2 and have appeared in every chapter since, but now we find out their purpose in our electronic lives. Resistors are passive "static" devices, they can divide a signal but they can not multiply. That's active territory, such as our dynamic, thermionic friends the vacuum tube and their solid-state cousin the transistor. In order for these active devices to function, we must bias them using resistors to establish their operating parameters. The resistor Color Code and Logarithms are introduced.

Chapter-7: Remember Law and Order? Well this chapter has you as the lawbreaker, so let's walk into the cell quietly and no one will get hurt. Actually, the topic is those chemically active DC power sources, the cell and the battery.

Chapter-8: It don't mean a thing if it ain't got that cling. Magnetically speaking, that is, the force is all around us, like in your iPod's hard disk, the stripe on your credit card and in those vintage analog beasties, the recorder-reproducers (tape recorders and disc cutting lathes). Magnetism works in both DC (battery and power supply) and AC (sound and wall-power) domains.

Chapter-9: Alternating Current is sound pressure converted to electricity and a key component to our power distribution system. DC is to Edison as AC is to Tesla.

Chapter-10 and –11: You recall the resistor? Well, Impedance is Resistance with Resonance. That's one of the significant changes once AC enters the equation. All the DC stuff we've learned is given an added dimension - Inductors (ch-10) and Capacitors (ch-11) are the ***re-active*** components added to our arsenal of electron manipulators. You'll want to google "ELI the ICE man."

Chapter-12: You will be phased, chorused and flanged in this chapter.

Chapter-17: If you are building a studio and need to determine the amount of power that will be consumed, then this is required reading.

Chapter-18
If you've ever gone on a blind date then you should check out this informative chapter on Impedance matching. It's particularly applicable to those building mic preamps and power supplies.

PART-3 Basic Electronics: Up until this point we've been studying Electricity. But now, but according to the book, Basic Electronics starts here.

Chapter-19: Semiconductors are not part-time Light Rail engineers, but instead are those solid-state devices that were developed by Bell Labs and are the reason we can have cell phones.

Chapter-20: Diodes, the most basic of semiconductors, only pass current in one direction. This is useful when converting AC-to-DC, illumination (Light Emitting Diodes = LEDs) and clipping (fuzz boxes).

Chapter-21: Supplies, Supplies, Surprise! Now that we know how to convert AC to DC, it's time to dig in and build one to power our project.

Chapter-22 and –23: Semiconductors come in many flavors, the Bipolar Transistor and the Field Effect Transistor being two of them. If you're building the solid-state preamp, these are where you'll find the building blocks.

Chapter-28: The Operational Amplifier (opamp) was the first analog computer. It can add, subtract and multiply. Don't think that applies to audio? Think mixer (summing), balanced input (noise rejection) and mic preamp (gain = multiplication).

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week-2 Ch. 5: pp.69-80 Ch. 6: pp.85-98 Ch. 7: pp.102-111 Ch. 8: pp.115-128	**week-4** Ch. 17: pp 265 - 282 Ch. 18: pp.286 - 299 Ch. 19: pp. 315 - 321 Ch. 20: pp. 325 - 336	