

BIO ELECTRONICS - 2019

(NB&B 249 / Physio 205)

Thursdays 2:00 – 4:50 pm; 1201 McGaugh Hall

Instructors: Ian Parker iparker@uci.edu, Jim Hall jhall@uci.edu

No text. Handouts, plus web-based resources including;

<http://www.kpsec.freeuk.com/constr.htm>

<http://web-ee.com/>

Grades are based on the design, construction and presentation of a project – if it emits smoke and blows a fuse, you fail!

April 4: (JH) Week 1 – Voltage, current, charge. Linear circuits: resistors, voltage dividers. **Lab (JH & IP):** measuring V, I, R; resistor networks, potentiometers, mystery boxes.

April 11: (IP) Week 2 – Capacitors, inductors; time domain/frequency domain. **Lab (IP)** Oscilloscopes, function generators, RC circuits, more mystery boxes.

April 18: Week 3 – (IP) Timers (555); Practical aspects of building things.

April 25: (JH) Week 4 – Introduction to op-amps. **Lab** - Breadboard op-amp circuits with varying gains; inverter and follower circuits.

May 2: (JH/IP) Week 5 - Lab - Integrators and differentiators. Other Op amp circuits.

May 9: (IP/JH) Week 6 – Student project proposals. [*May need to reschedule for May 7*]

May 16: (IP) Week 7 - Miscellaneous useful devices (light emitters, detectors; temperature sensors; servos; Hall-effect; Power supplies.

May 23: (JH) Week 8 – Transistors. Introduction to digital circuits. TTL, logic gates, **Lab** – Digital logic chips (74xx series)

May 30: (JH) Week 9 – How to talk to a computer (or listen to one), USB kits.

June 6: (JH & IP) Week 10 - Presentation of projects