

# Electronic Circuits – EE359A Fall 2008

## Final project requirements

- Design an electronic circuit – it may be one of the ideas described below or a similar project of your choosing. Senior Design projects are acceptable designs if the design is **yours**, and not your team's.
- Write a report describing your design, including
  - Definition of the problem addressed by your design
  - Assumptions
  - Design goals (e.g., performance)
  - Component specifications, including tolerance and power dissipation
  - Presentation of design (including schematic)
  - Circuit analysis using concepts presented in course and textbook
  - Simulation results, including any models used
  - Tolerance of system design to system variation, e.g., component tolerances, supply voltage, temperature, etc.
  - Conclusions, observations
  - References
- The written report should be about 5-8 pages, not including illustrations and simulation results.
- A 1-2 paragraph project abstract will be due in 2 weeks describing the circuit you plan on designing

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## Sample projects

- The following is a list of sample projects to illustrate the level of difficulty expected in your design project. You may choose one of these or propose your own problem of about the same complexity. Any of these circuits are available off-the-shelf as IC modules, that is not what is required – you are to design the circuit out of discrete components (transistors, diodes, resistors, capacitors, etc.)
  - Three transistor audio amplifier: input signal 10 mV P-P, output 2 watts into 8 ohm speaker. Frequency response: 50 Hz – 10 kHz  $\pm 1$  dB. Operates with +12 V DC supply voltage. THD < .5% with maximum input level sine wave.
  - Transistorized oscillator: output signal up to 5 V P-P, level controlled to within .1 dB with +12 $\pm$ 1 V DC supply voltage over an output frequency from 100 Hz to 10 kHz. THD < 1% for sine wave output. Extra credit for maintaining level to within .01 dB, extra credit for operation to 1 MHz, extra credit for generation of sine, triangle and square waves.
  - Regulated power supply: input voltage 90 – 130 VAC rms, output 12VDC  $\pm 1\%$  with output current from 0 – 2A.
- Do not over-specify components, e.g., a 2 Watt resistor where a  $\frac{1}{4}$  watt will do, a 1% resistor where a 10% will do
- Extra credit for experimentally verifying circuit operation