Audio & Arduino Club – Spring 2026

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https://gtuttle.net/audio_arduino

In conjunction with ISU IEEE student branch.

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Jonah Samuels - President (jsamuels@iastate.edu)

Meeting times: Mondays at 5:30 p.m. (Same as before.)

Meeting places:

For talking: Coover 3043   (Same as before.)

For building, Coover 2011 (Same as before.)

Trying a new format for Spring semester

- More project time, less talk.

- We will have only two "classroom" meetings — this time and next week.

- After that, all meetings will be "build" meetings, where you work on making projects.

- As always, the only rule for Audio & Arduino Club is that you must pay for the parts used in the projects. Other than that, you can do whatever you want.

- You can do as many projects as you want, and you can do them whenever you want. You can mix and match between audio and Arduino projects.

- Sign up for a project one week in advance. Receive the parts kit the next week. (Assuming there are no inventory or shipping issues.) Pay when you order or when you receive the kit. (The exception is for speaker projects, when you must pay at half of the cost at the time of ordering.)

Spring semester, cont.

- We will work hard to keep costs low, but there is only so much that we can do — components cost what they cost.

- During the project meetings, you can: work on projects, get help with projects, ask questions of G. Tuttle (he might have answers), or just chat with like-minded colleagues.

- You can work on projects on your own time. The 2011 lab room is open pretty much 24/7 and the TLA also has lab benches with soldering irons. Or maybe you have your own equipment at home.

- You can work on your own projects during club time.

- Instead of talking, G. Tuttle will spend his time writing. There will be significantly more documentation for each project, as well as basic background on audio and Arduino topics. You will need to read!!

- The primary goal of the clubs is to learn some basics skills regarding analog and digital hardware — how to build, how to test, how to design. In that regard, failures are as useful as successes.

Spring semester meeting schedule

- Feb 2, 3043 Coover. Intro to spring semester activities. Discussion of audio projects.

- Feb 9, 3043 Coover. Discussion of Arduino projects. Demos.

- Feb 16, 2011 Coover. Project work.

- Feb 23, 2011 Coover. Project work.

- Mar 2, 2011 Coover. Project work.

- Mar 9, 2011 Coover. Project work.

- Mar 23, 2011 Coover. Project work.

- Mar 30, 2011 Coover. Project work.

- Apr 6, 2011 Coover. Project work.

- Apr 13, 2011 Coover. (If needed.) Project work.

Available and planned projects - Audio

- Altoids headphone amp.

- GTDT desktop amp.

- Low-power class-D amp.

- Desktop speakers.

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- Sub-woofers (2)

- Sub-woofer amp

- 2.1 amp

- Distortion amp (guitar effects)

- Color organ.

Suggestions?

Available and planned projects - Arduino

- Cyduino

- Resist-o-meter

- Battery checker

- Temp-Time platform

- Atmega328 programming shield.

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- Cap-o-meter.

- ATtiny-based programmer

Suggestions?

Available and planned projects - other

- Adjustable DC supply

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- Surface-mount projects

- Design a PCB

Suggestions?

Audio Club outcomes

- Altoids amp — Learn to solder. Experiment with amps.

- Desktop speakers — learn about speakers. Fun and useful!

- GTDT or low-power Class-D amp — Learn more about amps. Needed to power the speakers.

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- Sub-woofer — Nice enhancement to desktop speakers. Learn about speaker design.

- Sub amp or 2.1 amp — Higher power needed for subwoofer.

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- Any additional projects are a bonus!

Audio Club outcomes

- Learn about power — electrical and acoustical.

- Learn about amps — op amp voltage gain, output stages, Class-D.

- Learn about signals — spectral content, filtering.

- Learn to solder.

- Learn practical aspects of components — resistors, capacitors, inductors, op amps, etc.

- Learn about voltage regulators.

- Learn testing and measurement — components, amp gain, frequency response, efficiency, etc.

Extra things needed for projects

The kits generally contain everything needed to build the circuit boards for the project. But some projects need more items. Here are some things you should be prepared to buy in order to actually use the projects:

- 12-V RMS transformer. Used to power many of the projects. (Alternative: 18-V DC power supply.)

- 9-V batteries. Power for Altoids amp. (And Arduino projects.)

- Audio cables with 3.5-mm TRS connectors.

- Enclosures (boxes).