

# W4CAE Photovoltaic Controller and Battery Tender

A Short Course in PCB (Printed Circuit Design)

The short course long in organization will finally proceed this new year. It appears we will have access to an A/V equipped USC classroom to facilitate the process of learning PCB design and layout.



We currently have 5 people interested in the process.

The circuit that will be the object lesson is an analog based PV controller/battery tender. This circuit will be a simple circuit (not a MPPT) solar controller. It will be suitable for low power PV applications, typically <100 W. It will allow modification of the circuit for several other power supply applications. Since it will be a linear (not switcher) design it will be low noise.

The actual dates of class meeting is still TBD, but a few weekday nights and perhaps a Saturday or two should suffice.

The outcome of the class is each student will take away a personal PV controller. Furthermore, the resulting design will be donated to the club, including 1 (one) circuit, for its non-profit use. The costs of the parts will be the only course costs incurred. Estimates depending on class size/personal modifications will be approximately \$40.

The software to be used is Design Spark which is **freeware** and a full featured set of design software. It comprises three components: DesignSpark PCB 7.1, DesignSpark Electrical, and DesignSpark Mechanical. Only PCB and Electrical will be used for the course but those interested may want to download the Mechanical module also. The process we will use is to capture the electronic circuit schematic, then import it to PCB layout the printed circuit, create the CAM files that will allow the PCB's to be manufactured. The resulting bare boards are then populated, and soldered with components by the class for a professional quality product. The final step is testing the completed circuit boards.

Each participant will need a laptop, notebook computer capable of downloading and installing the software, which will require a couple of GB of hard drive space plus at least 8 GB of Ram (more is better.) If this is an issue perhaps borrowing or teaming up will be a solution. Download the PCB and electrical modules from the respective websites. You will also need to activate the installation.

<http://www.rs-online.com/designspark/electronics/eng/page/designspark-pcb-home-page>

<http://www.rs-online.com/designspark/automation/designspark-electrical>

optionally, download the free version at the bottom of the page:

<http://www.rs-online.com/designspark/electronics/eng/page/mechanical>

Let's meet after the meeting tonight to firm-up some details.

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