

IEEE AP-S Student Design Challenge: Antennas on a Budget 2012

Travel to the 2012 IEEE Antennas and Propagation Symposium
Win \$1500, \$750, \$250

Join the 3rd IEEE AP-S Antenna Design Challenge! Build a biologically inspired antenna system that achieves a long transmission range with a small size. The top three teams will receive up to \$2,500 in travel funds to attend the IEEE Antennas and Propagation Symposium in Chicago, Illinois, USA, July 8-12, 2012 to demonstrate their working systems. From these top teams, first, second, and third place winners will be announced at the 2012 IEEE AP-S Awards Banquet and will receive cash awards of \$1500, \$750, and \$250, respectively.

Important deadlines are **January 16, 2012** and **May 25, 2012**. See the Application and Review Process below for details.

Goals and Specifications:

- Design a biologically inspired antenna system with the objective of achieving a long transmission range with a small antenna size. The judging criteria will be based on the uniqueness and effectiveness of the biologically inspired approach.
- The system must be safe and durable, easily reproducible by others, inexpensive, and portable so that it can be demonstrated at the Symposium.
- The system must operate at 2.4 GHz, have its own source (i.e. no commercial signal generator can be used), and fit on a table top (roughly 24"x 40") or two closely spaced tables. Readily available software (e.g., student versions of C, Matlab, Visual Basic, LabView) or free software packages may be used. All software must be included in the budget.
- The total cost for reproduction of the system must be **less than \$1,500**. The use of a laptop computer is allowed and does not have to be included in the \$1,500 limit.

The Application and Review Process:

1. All applicants must submit a preliminary design by **January 16, 2011**. It must include:
 - a. A proposal limited to two pages and in 12-pt Times New Roman font that includes
 - i. A detailed description of the system to be built.
 - ii. The steps that will be taken to ensure the accuracy of the system.
 - iii. A bill of materials (up to \$1,500).
 - b. A letter from a professional mentor such as a professor or engineer in industry indicating agreement to supervise the project. The mentor must be an IEEE AP-S

member and must verify that all members of the team are graduate and/or undergraduate students at a university, college, or technical school.

The proposal and letter must be integrated into a single pdf file named TeamName.pdf. The proposal should precede the letter.

2. The Design Contest Committee will assess each preliminary design based on creativity, likelihood of achieving the design goals, and quality of written materials. Six semi-finalist teams will be selected by **January 30, 2012** and will receive \$1,500 each to build and test their designs.
3. Each of the six semi-finalist teams must submit its final design by **May 25, 2012**. It must be accompanied by a video demonstration of its working system, and a final report in pdf format using the template available at the AP-S web-site. Submission instructions for the video demonstration will be provided later. The report must be limited to 10 pages and include:
 - a. A detailed description of the system (including schematic and other diagrams).
 - b. A list of parts and materials required, including where to obtain them and costs.
 - c. Photos of the final system (including a scale to show how large it is).
 - d. Assembly and operating instructions for the system.
 - e. A set of measurements obtained using the system with an example test antenna.
 - f. Biographies (100 words or less each) and photos of all design team members.
 - g. All software necessary to build and/or operate the system in a separate file(s).
4. The Design Contest Committee will assess each semi-finalist's design based on creativity, completeness of the description, functionality of the system as determined by the video, and quality of written materials. Three finalist teams will be selected by **June 8, 2012** and will receive stipends of up to \$2,500 per team to travel to and attend the IEEE AP-S Symposium. The stipend is intended to cover equipment shipping costs and all of the expenses for one team representative; however, it may be divided among multiple team members.
5. The finalists will be expected to demonstrate their working systems during the Symposium and attend the Awards Ceremony at the banquet. Power supplies will be made available at the Symposium. Each team is responsible for bringing all other necessary equipment for a successful demonstration.
6. The Design Contest Committee will judge the final demonstrations and select the first, second, and third prize winners to receive \$1,500, \$750 and \$250, respectively. The prize winners will be announced at the AP Awards Banquet.

How to Submit Materials:

Send all materials to designcontest@ieeeaps.org with the subject line "2012 IEEE AP-S Design Contest Submission." Questions may be sent to the same address. All submitted materials must be in pdf format according to the guidelines above.