



Call for Participation

IEEE Education Workshops

Best Pedagogical Practices for Electrical Engineering, Computer Engineering, and Computer Science

1. Program Description

The IEEE is launching a new program to develop high quality, online, self-study workshops on the best pedagogical techniques for the Electrical Engineering (EE), Computer Engineering (CE), and Computer Science (CS) classrooms.

This call for participation is directed at educators of these students, and is a public invitation to submit workshop plans for consideration for full development.

A three step process

- At this stage we invite workshop abstracts. The abstracts should briefly describe the workshop topic, the learning objectives, and an illustrative example.
- Authors of selected abstracts will be invited to develop a workshop proposal for a workshop requiring a total of 1-2 hours of online self-study. We expect 10-15 invitations for proposals.
- Authors of selected proposals will be invited to develop a full workshop implementation. We expect 3-5 invitations for full implementation.

Authors of completed workshops will receive an honorarium from IEEE and their work will be disseminated widely through IEEE websites, conferences, and publications.

Table I shows important dates.

| Event | Invitation sent | Submission deadline | Response date |
|---|------------------------|----------------------------|----------------------|
| Call for workshop abstracts | 15 April 2007 | 15 June 2007 | 31 July 2007 |
| Invitation to submit a workshop proposal | 31 July 2007 | 28 September 2007 | 9 November 2007 |
| Invitation for full workshop implementation | 9 November 2007 | 30 May 2008 | |

Table I: Key program dates.

2. Workshop Description

We seek high quality, online, self-study workshops on the best pedagogical techniques for the Electrical Engineering (EE), Computer Engineering (CE), and Computer Science (CS) classrooms.

These workshops are based on the latest results from the research on learning and on the techniques that have increased student learning in engineering, science, technology, and mathematics.

Some example workshop topics might include (but are not limited to) how to:

- design course material around core concepts;
- employ real-world, contemporary applications (i.e. examining the course material from multiple contexts);
- address student diversity—learning styles, background/preparation level, entering skills, knowledge, attitudes and expectations;
- develop problem-solving skills through the use of hands-on projects and case studies;
- use collaborative learning techniques to help students work effectively on teams (one example: pair-programming);
- design effective assessment techniques (contrasted with ineffective methods); and,
- foster community and create a supportive learning environment focused on success.

This program will provide EE, CE and CS faculty with an invaluable library of contemporary teaching workshops for online, self-study use. Incorporating these best pedagogical practices into the curriculum will promote student learning and increase student retention.

3. Abstract

Abstract Submission: A 5 – 8 page PDF document should be submitted electronically by 15 June 2007.

- [1] Workshop title and a figure that illustrates the topic
- [2] Introduction to the best pedagogical practice topic
- [3] Germane results from recent, peer-reviewed, published literature (provide one citation)
- [4] List of 3-5 learning objectives for the EE/CE/CS faculty member who will use this workshop in a self-study fashion
- [5] Example of how the workshop material can be used in an EE/CE/CS undergraduate class

An abstract may be invited for a workshop proposal. Invitations will be sent out on or before 31 July 2007.

4. Proposal

Authors of selected abstracts will be invited to develop a proposal, to be submitted by 28 September 2007.

The proposal should consist of 10-15 PowerPoint slides and be an extended version of the abstract. The slides should be accompanied by a document that contains the corresponding narrative (approximately 30 seconds to 2 minutes per slide).

Based on the proposal, 3-5 workshops will be invited for full implementation. Invitations for full implementation will be sent out on or before 9 November 2007.

5. Full Workshop Submission

Authors of selected proposals will be invited to develop a full workshop, to be submitted by 30 May 2008.

Workshop Submission: the full workshop submission should contain the following two documents.

- [1] A **lecture** (40-70 PowerPoint slides) that motivates and introduces the best pedagogical practice topic. A background review that includes results from the recent, germane, peer-reviewed, published literature must be presented. A description of how to employ the topic in an EE/CE/CS undergraduate class must be demonstrated with at least two examples. Comparisons of curriculum “before” and “after” the best pedagogical practice is used are important for helping the audience understand *how* to use the workshop in their own classes. Illustrative figures and embedded videos are highly encouraged.
- [2] A **full text script** that contains the corresponding narrative for the slides in [1]. The narrative should be sectioned and ordered by slide number; its length should accommodate 30 seconds to 2 minutes of audio per slide.
- [3] Any additional workshop material needed for complete and proper execution of the workshop (e.g., a list of recommended reading; a list of related literature; additional files).

6. Review Criteria

The evaluation of submitted abstracts and proposals will employ a peer-reviewed process. This will be a double-blind review process (the reviewers will not know the applicants’ identities and the applicants will not know the reviewers’ identities). Abstracts and proposals will be reviewed based on three criteria: **relevance**, **quality**, and **transferability**.

- **Relevance:** Does the proposed workshop address a best pedagogical practice topic from the recent research on learning? How compelling are the published results on the effectiveness of the proposed pedagogical practice? Do the recent research/results demonstrate that this is an effective approach for the engineering classroom?
- **Quality:** Is the proposed workshop described in a straightforward, organized, and complete manner? Are the proposed workshop description and methods accurate, clear, and concise?
- **Transferability:** Does the proposed workshop provide EE/CE/CS faculty with enough background information and examples to allow them to adopt the best practice in their classrooms?

7. Eligibility

We invite submissions from individuals who are faculty members who teach Electrical Engineering, Computer Engineering, and/or Computer Science at a university that grants degrees in these areas.

Workshops developed by teams of proposers are encouraged.

8. Author Recognition

All selected workshop materials will be made available to educators worldwide through IEEE's education portal www.tryengineering.org and will be advertised heavily through IEEE publications such as *The Institute* and *The Interface*.

Upon acceptance of the final workshop, the principal author will be awarded the following:

- an honorarium of \$5000 US (at the discretion of the principal author the honorarium may be split to several authors);
- a two-year term as a member of the IEEE Educational Activities Advisory Panel;
- an invitation to submit a manuscript describing the workshop for consideration by the editors of a special issue of the IEEE *Transactions on Education* dedicated to the awarded workshops; and,
- an invitation to participate, at IEEE's expense, at a workshop that introduces and demonstrates the workshops

Each author of a completed workshop will receive a plaque and congratulatory letter.

9. Submission Instructions

- All submissions will be made electronically at <http://www.ieee.org/web/education/university/RealWorldEngineering/callforworkshops.html#workshopsubmit>
- In order to avoid reviewer bias, it is requested that no personal identification, references to the authors' own work or institutions, or other identifying characteristics be included in the abstract or the proposal. Authors will be asked to identify themselves on a separate form, as part of the abstract/proposal uploading process.
- Narratives should be provided in Microsoft Word or PDF formats. Please use 8" by 11" pages, 1 inch margins on all sides, Times New Roman 12 point font or Arial 11 point font, single spacing.
- PowerPoint slides should have plain, white backgrounds and employ the Arial font style in sizes of 18 point or larger.
- Proposers who are invited to submit full proposals will be requested to adhere to the standard IEEE copyright requirements and sign the standard IEEE copyright form upon submission of the completed project.

10. Additional Information

Please contact the IEEE Real World Engineering Projects at realworldengineering@ieee.org for additional information or consult the list of frequently asked questions at <http://www.ieee.org/web/education/university/RealWorldEngineering/faq.html>