

IEEE Sections Congress



By Evangelia Micheli-Tzanakou
Resources available for Program Planning -
Educational, Professional, Standards



EAB's Guiding Principles

- Education is an essential process that all persons involved with technology need to pursue on a planned and continuing basis.
- IEEE has an obligation to provide its members, and others who are concerned with IEEE's technical fields of interest, with high-quality educational opportunities to explore and study these topics.
- IEEE needs to educate and foster a dialog with the public on technological and engineering questions, with emphasis on young people who may consider engineering as a career path.

EAB's Purpose

- To provide members and all persons involved in IEEE's technical fields of interest with high-quality opportunities for education on these topics.
- To provide young people and their teachers, school counselors and parents with opportunities to understand prospects and career paths in engineering and technology.
- To provide the profession's perspective on all key aspects of higher education in IEEE's technical fields of interest.
 - Among these are: curriculum, accreditation, recruiting and retention, educational policies, and the research enterprise.

EAB Areas of Activity

- Pre-university education
- University-level education
- Accreditation
- Post-university and continuing education
- Outreach activities
- Standards in Education

Pre-University Education

- Portals:
 - Tryengineering.org
 - Accreditation.org
- Teacher in Service Program (TISP)
- Outreach to educators and school counselors

Overview University Education

- University education
 - Accreditation in the United States
 - Accreditation outside the United States
 - Portal: Accreditation.org
 - Development of Model Curricula
 - Student retention: Real World Engineering Projects
 - Education about Standards
 - Technical English Program

Overview Post-University Education

- Post-university education
 - Continuing education
 - IEEE Education partners, IEEE Expert Now, Education about Standards
 - Certification
 - Biometrics

- Awareness and Public Education on Engineering, Computing and Technology

- WIE

Pre-University Educational Outreach

Portals

TISP

President's Scholarship





Portals - Overview

TryEngineering.org

Information portal targeted to school counselors, parents, teachers, and students providing information about engineering careers, accredited engineering programs, classroom activities and more

Accreditation.org

Information portal intended to provide the general public with on-line resources on accreditation of academic programs in engineering, engineering technology and computing.

Nanotechnology for a Wider Audience

Information portal to raise awareness to pre-university students, general public, undergraduate students, and practicing engineers on Nanotechnology



TryEngineering.org

Statistics (as of June 2008)

2.5 MILLION HITS IN 2007

38,927 = average # of visitors per month

200,686 = average # of page hits per month

Work in Progress

Ask an Expert FAQ

Portuguese Translation – in QA

New Lesson Plans – To be reviewed at PECC meeting

Bionic Arm Builder Design Challenge -

Undergraduate Student Focus

E-newsletter Subscription Service – 726 subscribers



Web presence: Accreditation.org

The Ultimate Resource for Engineering, Computing and Technology Accreditation

- A new IEEE service recently launched
- We want to make it the premier on-line resource on accreditation
- It covers all branches of engineering, computing and technology
 - ...and it has IEEE's name on it
 - along with our partners: IBM and the New York Hall of Science





The ultimate resource for engineering, computing and technology accreditation

What's Inside?

Accrediting Bodies

Recognized accrediting agencies throughout the world.

Accords

Mutual recognition agreements, their texts and interpretations.

Find a University

University search engine to find accredited programs.

Research

Annotated bibliography of articles, books, publications and other resources.

TryEngineering

A portal about engineering and engineering careers.



Accrediting Bodies | Accords | Find a University | Research | TryEngineering

Accreditation.org Home > Home

What is Accreditation?

Accreditation of degree-granting academic programs is intended to provide these programs with a credential. The credential can be used by the programs and their constituencies - the general public, students and prospective students, employers, industry, and governmental bodies - to assess the quality of the program and the extent to which it achieves its own goals as well as agreed-upon educational standards. The process of accreditation also serves to foster self-examination by learning institutions; to develop a dialog between constituents of educational programs on content, methods, and outcomes; and to encourage continuous improvement of academic programs.

Accreditation often plays a role in decisions about enrollment in schools, hiring of employment seekers, and licensing of professionals by governmental bodies. Accreditation of a program is sometimes used as an indicator that graduates of the program received education that qualify them to be employed as professionals at a certain level (e.g., entry level) or to become candidates for a professional license.

In this site we focus on accreditation of academic programs in engineering, engineering technology and computing.



Find an Accrediting Agency

Search the list of [accrediting agencies](#) to learn more about the organizations around the world that oversee the quality of engineering, computing and technology programs at institutes of higher learning.

[View](#) the description of each organization to read about their mission, responsibilities and functions. [Find](#) contact information and lists of programs accredited by the organization.

Accreditation.org is brought to you by:





Accreditation.org

- It introduces and covers (almost) all accrediting agencies worldwide
 - Along with all the programs that they cover
 - University and Program Searches are available
 - Over all accredited programs
 - All international accords are available
 - Links to research articles and presentations about accreditation

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[Accreditation.org Home](#) > [Find a University](#)

Find a University

Accreditation.org provides search capabilities for accredited engineering, engineering technology and education degree programs throughout the world. All included programs have been accredited by a recognized accrediting body in the specific country or region where they are offered. A search can be launched by country, region, state/province/territory, degree field, tuition ranges, size of student body, and several other criteria.

Links are provided to each university's main page, engineering college/department, and admissions sites. Relevant university data is also available, such as number of seats, accommodations, or university location.



Detailed University Search

Translation of ABET Criteria

- EAB coordinated the translation of five documents from Spanish into English for the Accrediting body in Peru, ICACIT.
- EAB was responsible for translating ABET PEV Policies and Procedures into Spanish and Simplified Chinese in 2006.
 - April 2008 - Ten more documents were sent to ASET for translation into Spanish. These documents reflect changes made to the 2008-2009 ABET criteria.
 - Documents to be translated into Simplified Chinese are in the process of being identified and should be sent to ASET within the next few weeks.

Committee on Global Accreditation Activities (CGAA)

Pre-University Educational Outreach

TISP

President's Scholarship



Teachers In Service Program (TISP)

- Features engineers developing and presenting technologically oriented subject matters to pre-university educators
- Purpose
 - To enhance the level of technological literacy of pre-university educators
 - To establish engineer/educator partnerships to promote applied inquiry-based learning
 - To expose teachers to career options for their students in engineering and other technical fields

Teacher In-Service Program (TISP)

- IEEE Section volunteers developing and presenting technologically oriented subject matters to local pre-university educators in an in-service or professional development setting.
- Other talks in this series will provide detailed information as to how to run a successful TISP

Sample Presentation Topics

- “Everything You Wanted to Know About Electric Motors But Were Afraid to Ask”
- “Build Your Own Robot Arm”
- “Effective Lighting”
- “Light Waves and Spectroscopes”
- “Get Connected with Ohm’s Law”
- “Build Working Models Using Household Items”
- “Rotational Equilibrium: A Question of Balance”
- “Insulators and Conductors”

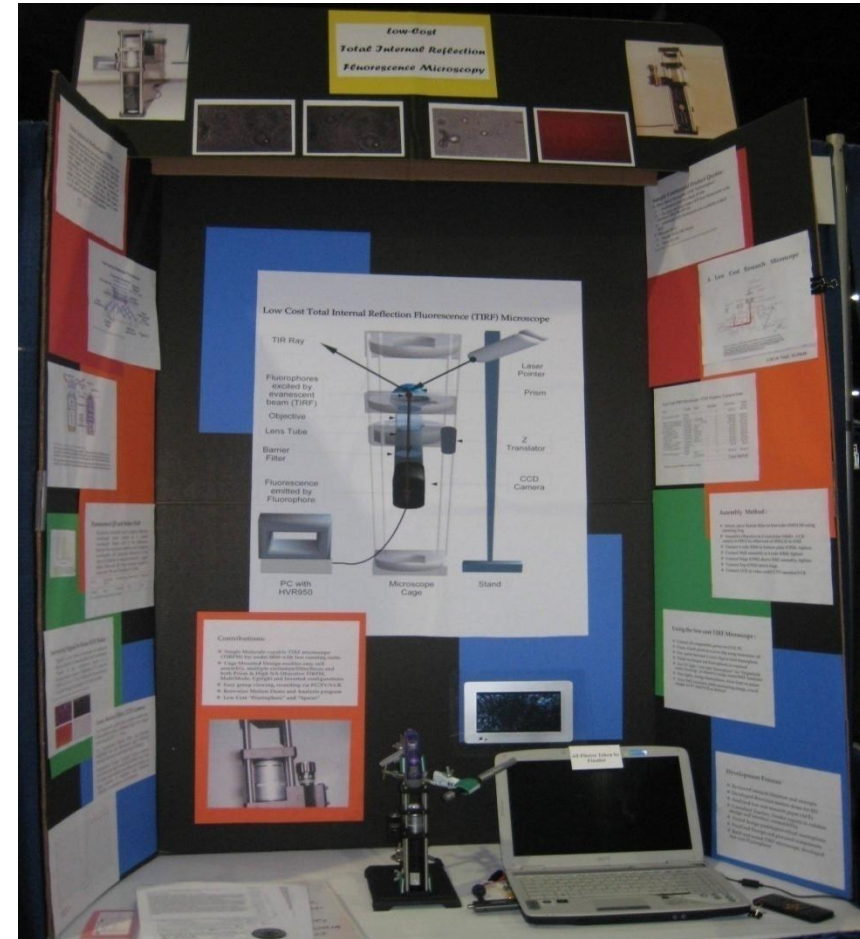
Intel ISEF President's Scholarship

- The winner receives:
 - \$10,000 evenly dispersed over 4 years of undergraduate study
 - Four year IEEE Student Membership and Student Society Membership
 - Framed certificate and engraved plaque



And the winner is.....Harikrishna Rallapalli

for his Low-Cost Total Internal Reflection Fluorescence Microscopy Package



Post-University Educational Outreach



Continuing education

IEEE Expert Now,
IEEE Education partners,
Education about Standards

Certification

Biometrics

Women In Engineering (WIE)



Post-University Activities

- On-line tutorial library: IEEE Expert Now
- On-line course library: Educational Partners
- Development of certification programs
 - Current focus is **biometrics**
- Workshops on IEEE standards

IEEE Expert Now



Why are we doing this?

- To facilitate the continuing education needs of IEEE Members and other practitioners
- To provide learning opportunities in manageable installments
- To make IEEE the marketplace leader in providing high-quality e-learning services for practicing engineers, scientists and researchers

Expert Now

- 1-hour long on-line learning modules
- Developed by leading experts
 - Usually on the basis of conference workshops
- Professionally produced
- Easy to use player-viewer
 - audio and video files, diagrams, animations, and automatic place marking
- Optional CEUs

Production

- 70 modules currently available
- Good number of modules ready for production
- Estimated to release 17 new modules by end of September (for a total of 87 available modules)

Acquisitions

- Focus to develop modules on advanced topics and standards related topics
- 9 agreements close to being finalized
- Significant number of leads for remaining modules ...
 - Still awaiting feedback from a few societies
 - May also see additional new modules to be funded later in the year
- New FTP site for Editorial Board Members to easily review large presentation files for newly proposed modules
- Efforts to engage new Societies to develop modules
 - Professional Communications Society – 2 modules in 2008

Expert Now IEEE: Simple Graphical User Interface

Real-Time Computer Systems with Applications - Microsoft Internet Explorer provided by IEEE

IEEE

OPTIONS
HELP

Real-Time Computer Systems with Applications

An XELL course by Dr. Phillip A. Laplante

Sponsored by the IEEE Computer Society from the Real-Time Technology and Applications Symposium (RTAS)

CLICK [HERE](#) FOR A NAVIGATION

BACK PAUSE AGAIN PLAY

INTRODUCTION

BANDWIDTH

course map

MAP LABS SEARCH

Key: Learning Object Content Page Hands-On Lab Assessment

REAL-TIME COMPUTER SYSTEMS WITH APPLICATIONS

- Introduction
 - Real-Time Computer Systems with Applications
 - Systems Concepts
 - Real-Time Definitions
 - Real-Time Design Issues
 - Real-Time Systems Examples
 - Common Misconceptions
 - Process Management
 - The Rate Monotonic Theorem
 - Process Synchronization
 - Programming Languages
 - Real-Time Design Issues
 - The Role of Testing
 - Systems Integration

• Clean Interface

• Intuitive Navigation

• Convenient Course Map

• Linear Outline for Quick Navigation

Provides a linear view of the course structure

Opens the course hierarchy in a separate window where a search can be performed

Takes you to the previous screen


Replays the Audio and Visual of the current screen

Stops the Audio and Visual

Takes you to the next screen

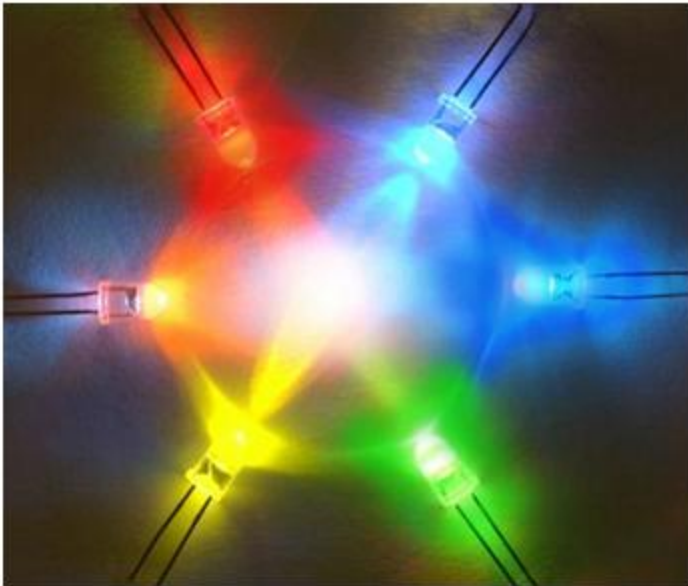
Expert Now IEEE: Dynamic Graphics

IEEE - Solid State Lighting - Microsoft Internet Explorer provided by IEEE

 **IEEE**

OPTIONS
HELP

Color Mixing



Additive Color Mixing

Gamut size increases with the number of light sources.

MAP EXAMPLE OF COLOR MIXING BANDWIDTH COMPLETE LEARNING MODE BACK PAUSE AGAIN PLAY

Expert Now IEEE: Glossary

Glossary

Bandwidth

Decibel (dB):

Graded index fiber

Index of refraction

Longitudinal Mode

Mode

Modulation

Multiplexing

Numerical aperture (NA)

Photon

Plesiochronous Digital

Hierarchy (PDH)

PN Junction, PIN photodiode

Raman Optical Amplifier

Rayleigh scattering

Polarization

Wavelength

Decibel (dB): Decibels is a unit expressing the ratio of two powers on a logarithmic scale. Ten times the logarithm of the ratio P_2/P_1 is the number of dB that P_2 is above P_1 . Power in dBm (decibels relative to 1 milliwatt) is the number of dB that a given power is above 1 milliwatt (mW). For example, a power of 100 mW = 0.1 watts may also be expressed as 20 dBm; a power of 0.01 mW = 10 microwatts is -20 dBm.



COMPLETE



Expert Now IEEE: Reference Materials

http://delivery.monsoon5.com - Interactive Course Map and Search...

course map

MAP LABS SEARCH

Key: Learning Object Content Page Hands-On Lab Assessment

REAL-TIME COMPUTER SYSTEMS WITH APPLICATIONS

Introduction


- Real-Time Computer Systems with Applications
 - Systems Concepts
 - Real-Time Definitions
 - Real-Time Design Issues
 - Real-Time Systems Examples
 - Common Misconceptions
 - Process Management
 - The Rate Monotonic Theorem
 - Process Synchronization
 - Programming Languages
 - Real-Time Design Issues
 - The Role of Testing
 - Systems Integration
 - Code Smells
 - Real-Time Systems Engineering
 - Summary
 - Glossary
 - References
- Post-Test

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http://delivery.monsoon5.com - Real-Time Computer Systems with Applications - Microsoft Internet Explorer

IEEE

References



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Sperry, T. "Real-time operating systems: let the buyer be aware." *Embedded Systems Programming Product News*, Summer 1995, pp. 12-21.

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Stewart, David B. "Twenty-Five Most Common Mistakes With Real-Time Software Development," Class #270, *Proc. 1999 Embedded Systems Conference*, San Jose CA, 1999.

MAP REFERENCES BANDWIDTH COMPLETE LEARNING MODE BACK PAUSE AGAIN PLAY

Done Internet

Pilot

- Open to anyone who has an IEEE web account
- 3 fixed courses offered
 - Real-Time Computer Systems with Applications
 - Transition into Management
 - Introduction to Wireless Ad-hoc Networks
- CEUs available upon successful passing of the assessment at no additional cost

IEEE Education Partners Program



IEEE Education Partners Program

- Program offers IEEE members a 10% discount on courses through partnerships with academia and industry
- The program is offered as a Member benefit.

IEEE Education Partners Program 2007 Highlights

- 435 IEEE members took courses through the Partners program (that we know of- not all partners had a mechanism in place to give us the information on how many participants they had)
- **601 total courses taken by members**
- 30 Partners in the program
- 12 of the 30 Partners now also offer IEEE CEU's

IEEE Education Partners Program 2008 Program Achievements

- Other partners have become more involved in reaching our membership by contacting local Chapters and Student branches with help from EA
- We currently have 36 partners with 4-5 more in process of applying (27 currently live on the website)

IEEE Education Partners Program Market Research

- Market research is being conducted in 2008 to identify courses and subject areas currently needed but not in the program.
- The research will also help us see the value of the 10% discount and quality of the courses from our partners
- Research for non participants
- Research for members who have taken courses

IEEE Certification



Certification

- Computer Software Design Associate Certification
 - N. American exam roll out May 13
 - Self-directed Learning System available end of June
 - International exam roll out in September
 - Instructor materials to be released end of 2008
 - India and China market development underway

Certification

■ Wireless Technologies Certification

- Exam rollout scheduled for September
- Educational materials developed by third party

■ Biometrics Certification

- Draft BOK submitted
- Outline development
- Industry feedback
- Further BOK development

Certification

■ Chip Design Certification

- Initial plan reconsidered
- Market assessment underway
 - Market size, potential
 - Corporate interviews

■ Potential Certification Programs

- Power engineering
- Systems engineering

IEEE Women in Engineering (WIE)



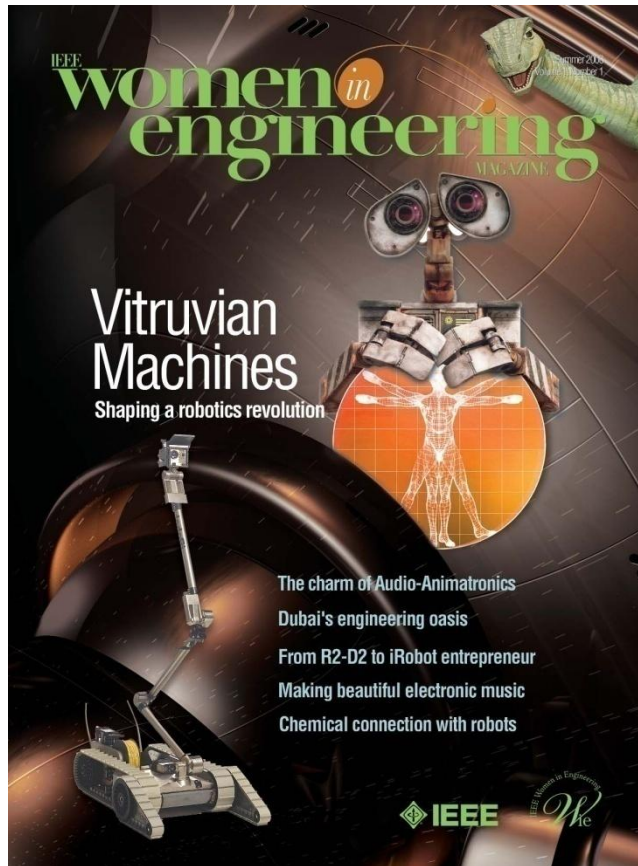
IEEE Women in Engineering (WIE)

Goals/Projects and Highlights

Outreach Events in 2008

- WIE continues to host collaborative events in an effort to establish IEEE WIE as a recognized international leader for supporting and developing women in engineering.
- As of June 2008, WIE has conducted more than **70 Outreach events worldwide**, including pre-university educational outreach attracting **well over 11,500 participants**.

WIE E-Magazine June 2008 launched

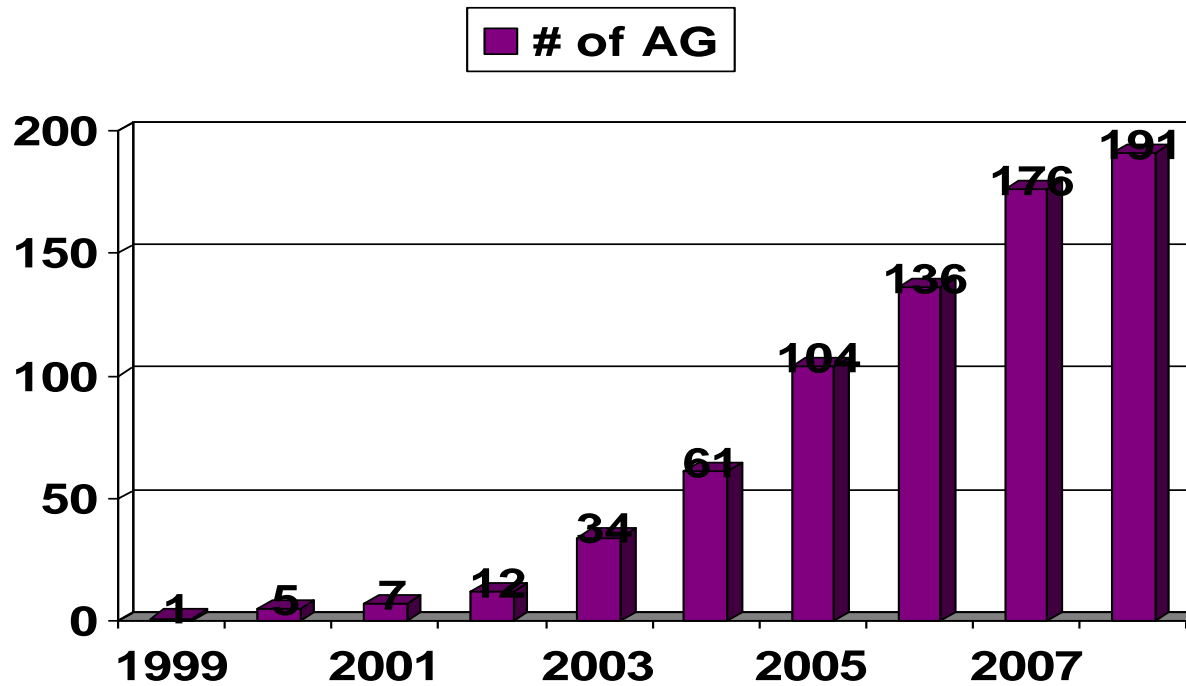


- The next issue of the WIE E-Magazine, Women in Power will launch December 2008

Monthly WIE Newsletter

- As of June 2008 WIE Staff and WIE Volunteer produced 6 monthly WIE Newsletters
- Articles on Career information, Educational Outreach, reports on IEEE WIE, WIE Affinity Group activities, IEEE news, Resources, and more

Growth of WIE Affinity Groups



- As of June 2008, 200 WIE Affinity Groups in over 45 countries. 13 pending formation

IEEE Standards



Standards in Education

- New activity in EAB
- Workshops organized
- Tutorials in progress
- Applications
 - 802.11
 - Others in progress

IEEE Other Educational Products



Other Educational Offerings

- Some IEEE Societies have tutorials on line in a variety of formats and prices
- It has been recognized that there is a decentralization of all educational products

Divergence among...

- ▣ Platforms
- ▣ Vendors
- ▣ Instructional design
- ▣ User interface
- ▣ Marketing
- ▣ Pricing

What is next??

■ 2008

- One stop shop for all IEEE educational offerings
 - Unified framework for delivery of presentations and video/audio
 - Probably in cooperation with IEEE.tv
 - Including CEUs and PDHs where appropriate
- Definition of the IEEE educational product(s)
- Organization of all IEEE tutorial material in XPLORE

Questions and Comments



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