

Editor-in-Chief: Michael Wald

Volume 23 Number 2

Part I

Educating Students in Sustainable Engineering (I)

Guest Editors

Lynn Katz

University of Texas

John Sutherland

Michigan Technological University

Part II

**Contributions in: Engineering Education Research and Policy,
Engineering Mathematics, Engineering Management,
Mechanical Engineering, Chemical Engineering,
Manufacturing Engineering and Robotics**

The International Journal of ENGINEERING EDUCATION

EDITOR-IN-CHIEF

M. S. Wald, IJEE, Rossmore, Durrus, County Cork, Ireland.
Tel: +3532761400; Fax: 3532762895; E-Mail: ijee@eircom.net
Website: <http://www.ijee.dit.ie>. Editor's direct phone: (+353 27) 61400.

ASSOCIATE EDITOR (USA)

T. Kurfess, BMW Chair of Manufacturing Engineering, Clemson University, Clemson SC 29634-0921, USA;
E-mail: kurfess@clemson.edu

ASSOCIATE EDITORS

Ahmad Ibrahim, RCC Institute of Technology, Toronto, Canada
C. Kuo, University of Strathclyde, 100 Montrose St., Glasgow G4 0LZ, Scotland
Tel: (International +44-141) 552 4400; E-mail: c.kuo@strath.ac.uk
D. McCarthy, Dublin Institute of Technology, Bolton St., Dublin, Ireland
M. Murphy, Dublin Institute of Technology, Bolton St., Dublin, Ireland
J. Turner, Dublin Institute of Technology, Bolton St., Dublin, Ireland

BOARD OF EDITORS

C. Y. Lam, School of Mechanical and Production Engineering, Nanyang Technological University, Singapore 639798
R. Natarajan, Chairman, All India Council for Technical Education, New Delhi, India
C. S. Slater, Department of Chemical Engineering, Rowan College, Glassboro, NJ 08028, USA

EDITORIAL ADVISORY BOARD

Caroline Baillie, Integrated Learning Centre, Faculty of Applied Sciences, Queens University, Kingston, Ontario, Canada K7L 3N6
Stuart Burgess, Department of Mechanical Engineering, University of Bristol, UK
E. Eder, Royal Military College of Canada, Kingston, Ontario, Canada K7K 5L0
Nesimi Ertugrul, Department of Electrical and Electronic Engineering, University of Adelaide, 5005 Australia
R. Felder, North Carolina State University, Raleigh NC 27695, USA
Denis Gillet, Automatic Control Laboratory, Swiss Federal Institute of Technology, CH.-1015, Lausanne EPFL, Switzerland
J. Jawitz, Centre for Higher Education Development, University of Cape Town, South Africa
R. C. Jones, World Expertise LLC, 2001 Mayfair McLean Court, Falls Church, VA 22043-1761, USA
Paul King, Department of Biomedical Engineering, Vanderbilt University, Nashville TN 37235, USA
J. F. Marchman, Aerospace & Ocean Engineering Department, Virginia Tech, Blacksburg, VA 24061, USA
Etsuo Morishita, Department of Aeronautics and Astronautics, University of Tokyo, Japan
T. Owens, Dept. of Electrical Engineering and Electronics, Brunel University, Uxbridge, UB8 3PH, UK
S. Pomeranz, Department of Mathematical and Computer Sciences, University of Tulsa, Tulsa, OK, USA
Z. J. Pudlowski, Faculty of Engineering, Monash University, Clayton, Melbourne, Vic 3168, Australia
N. J. Salamon, Engineering Science and Mechanics, The Pennsylvania State University, University Park, PA 16802, USA
Sheri D. Sheppard, Mechanical Engineering, Stanford University, Stanford, CA 94305, USA
P. Shiue, School of Engineering, Christian Brothers University, Memphis TN 38104, USA
Kok Kiong Tan, Department of Electrical and Computer Engineering, National University of Singapore, Singapore
Igor Verner, Department of Education in Technology & Science, Technion, Haifa 32000, Israel
B. Wagner, Institute for Systems Engineering, University of Hanover, Germany
Levent Yilmaz, Computer Science and Software Engineering, Auburn University, Auburn AL36849, USA

2007 Subscription Rates (including postage and insurance)

Annual institutional subscription rate £515. For North American institutional subscribers \$860. Subscription enquiries should be sent to TEMPUS Publications, IJEE, Rossmore, Durrus, County Cork, Ireland. Tel: +3532761400. Fax: +3532762895. E-mail: ijee@eircom.net.

Back Issues

Back issues available from TEMPUS Publications.

Copyright © 2007 TEMPUS Publications

Published 6 per annum

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

Permission for Other Use

The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

The Item-fee Code for this publication is: 0949-149X/92 \$3.00 + 0.00.

The International Journal of ENGINEERING EDUCATION

AIMS AND SCOPE

This journal serves as an international interdisciplinary forum and source of reference for engineering education. A balance between papers on developments in educational methods and technology, case studies, laboratory applications, new theoretical approaches, educational policy and survey papers is aimed for. Comprehensive coverage of new education schemes and techniques makes the journal a unique source of ideas for engineering educators who are keen to keep abreast with latest developments in educational applications in all fields of engineering. The journal will cover engineering education news and open debates on engineering education policy related topics of transnational interest.

Some of the areas covered more extensively in recent issues are: CAD, CAE, computer applications in teaching thermodynamics, materials science, electrical engineering, new courses and curricula, engineering management, control engineering, mechanical engineering, engineering design, student evaluation and institutional accreditation.

Special issues on topics such as computer-aided engineering, engineering thermodynamics and engineering design are published periodically.

NOTES FOR CONTRIBUTORS

Papers for inclusion in the Journal should be submitted for refereeing to the Editor-in-Chief. The Editor-in-Chief should be informed by the authors of any submission made directly to a member of either Board.

The papers should include detailed information on relevance of the material to engineering education. Only papers not previously published will be accepted and, once accepted for the Journal, must not be published elsewhere.

Technical Notes, Letters-to-the-Editor and Book Reviews may also be submitted.

Papers should be submitted as A Word for Windows format and E mailed as an attachment to the editor at ijee@eircom.net. Papers over 5 MB in size should be submitted on a CD-ROM.

Images and figures should be included in the Word document or transmitted as separate GIF files. Hardcopies may be requested for improving the resolution of the print version. All published papers are available in print and online form.

News items of transnational interest, including courses and workshops, should be submitted to the Editor-in-Chief, **Dr. Michael Wald** ijee@eircom.net

Full contents Papers and Journal information are available on World Wide Web on <http://www.ijee.dit.ie>.

Access to current volumes is for subscribers only using ID password of IP identification. Current page charge rates for publication are posted on our website www.ijee.dit.ie under Important Announcement for Authors.

Papers must be submitted in English.

A brief summary (not more than 100 words) of the scope of each paper must be sent with the manuscript.

Authors are requested to submit a brief biographical sketch of up to 100 words for each author.

Biographical sketches will be published with the paper unless requested otherwise.

Captions for figures and tables must be given on a separate sheet and included at the end of the manuscript.

Page charges are calculated according to the final number of published pages.

The journal follows Le Systeme International d'Unites.

All Greek characters and unusual symbols must be identified by name in the margin the first time they appear.

References in the text to published literature should be given by numbers in square brackets on the line and the references should be listed at the end of the paper in numerical order.

Journal references should be arranged thus:

1. L. A. Pipes, Matrix analysis of heat transfer problems. *J. Franklin Inst.* **263**, 195–206 (1957).

Book references should be given as:

2. P. H. Parkin and H. R. Humphreys, *Acoustics, Noise and Buildings*, p. 84. Faber, London (1961).

Abbreviations of journal titles will follow *World List of Scientific Periodicals*.

Proofs will be sent to the first-named author for correction, unless otherwise specified.

Corrections must be restricted to printer's errors only. Other than these, any substantial changes may be charged to the author.

A selection of papers accepted for publication

See—Bilateral collaborative partnership—A joint industry/university perspective

Forcada—Students' Perceptions and Performance with Performance with Traditional vs. Blended Learning Methods in an Industrial Plants course

Inceoglu—MOGRAPH: Mobile Graph Algorithms Library for Engineering Students

Onat—Developing a PC and SMS- μ C Based Stepper Motor Drive Set

Valdivia—Face-to-Face Collaborative Learning in Computer Science Classes

Aydin, Kaptan—Computer-aided Mobile GP -education Set

Devon *et al.*—Rapid and Flexible Graphical Communication for Conceptual Design

Valera *et al.*—Control of Mobile Robots using Mobile Technologies

Markey, Schmidt *et al.*—Student-driven Learning in Integrated Lecture-lab Classroom Environments:the Role of Mobile Computing

Kazi—MILE: Mobile Intellieght Learning Environment—A Conceptual Framework for mLearning

Naya *et al.*—The Mobile Drawing Assistant

Istanbullu—Mobilim: Mobile Learning Management Framework System for Engineering Education

Hey, Agogino *et al.*—Designing Mobile Digital Library Services for Pre-engineering and Technology Literacy

Wu, Chen—Effect of Varied Types of Instructional Delivery Media and Messages for Engineering Education: An Experimental Study

Chen, Kinshuk, Wang—Cyber Schooling Framework: Improving Mobility and Situated Learning

Fok—The Engineering Graduate Training Scheme of the Hong Kong Institution of Engineers—fulfilling the purpose of training civil engineering graduates to become professional civil engineers