FINAL REPORT

Submitted to:

National Science Foundation

REPORT OF THE ICEE-1999 INTERNATIONAL WORKSHOP, PRAGUE, CZECH REPUBLIC
August 14, 1999
and
PROMOTING U.S. PARTICIPATION IN THE ICEE-1999, OSTRAVA, CZECH REPUBLIC
AUGUST 9-14, 1999

Submitted by:

Vittal Rao, Ph.D.
Professor and Director, Intelligent Systems Center, 320 Engineering Research Lab., 1870 Miner Circle, University of Missouri – Rolla, Rolla, Missouri 65409-0440
raov@umr.edu
and
Timothy Anderson, Ph.D.
Director, SUCCEED Coalition
Chairman, Department of Chemical Engineering, University of Florida, Gainesville, FL, U.S.A.

July 31, 2000

REPORT OF THE ICEE-1999 INTERNATIONAL WORKSHOP
PRAGUE, CZECH REPUBLIC
August 14, 1999

Summary and Recommendations

The theme of ICEE-99 is 'Progress through Partnership'. The host institutions were the Technical University of Ostrava and the Technical University of Prague, Czech Republic. A post conference workshop was organized in Prague, for the purpose of forming strategies for international collaborations with respect to faculty and student exchange program, global industry-university interactions, multidisciplinary design, teaching assessment and international accreditation. The summary and recommendation of the workshop are given below:

(1) International partnerships and alliances in education and research are the key factors for progress through partnerships. It is recommended to develop bilateral programs in the development of non-credit short courses, joint credit courses at senior undergraduate and graduate level, undergraduate capstone design projects, and short-term research projects. Multi-university collaborations in engineering education and research could also unfold through joint summer seminars and web-based course developments.

(2) Faculty/student exchange program is considered as an ideal vehicle to put international university programs into action. The visit of exchange professors may aim at joint course development and the formulation of a larger student exchange program. Courses offered, as part of an International Student Exchange programs should be taught in English to facilitate accessibility, compatibility, and transferability of course credits of students from different nationalities. For implementation several models were suggested: the European Union model for student exchanges, institutional consortia, research grants from agencies, and institution funds.

(3) Global industry-university interactions are instrumental in improving education, training, and cultural understandings of the future engineers for career opportunities in global markets. It is recommended to develop joint summer short courses and seminars for dissemination of new technologies to students and industrial participants.

(4) In order to provide a forum for international collaborations and alliances, it is recommended to form an international society for engineering education or a network for engineering education and research.

PROMOTING U.S. PARTICIPATION IN THE ICEE-1999, OSTRAVA, CZECH REPUBLIC
AUGUST 9-14, 1999

Summary

The purpose of this project is to support a team of U.S. Engineering educators for participation in the International Conference on Engineering Education (ICEE-99). One of the goals of the conference was the formation of follow-up collaborations that would promote international activities in curricular development and increase international awareness among engineering students. A number of educators from 30 countries have participated in the conference. The conference consisted of regular submitted papers, invited speakers, panel discussions, workshops on topics such as innovations in curricula content and structure, new technologies in teaching and learning, multimedia teaching tools, distance learning, integration of natural sciences and engineering education, mobility of students and teachers, models for higher education in various countries, etc. A post conference workshop was organized in Prague, for the purpose of forming strategies for international collaborations with respect to faculty and student exchange program, global industry-university interactions, multidisciplinary design, teaching assessment and international accreditation. The US delegation contributed significantly in the conference as well as the post conference workshop.

(1) The ICEE-99 Conference:

The theme of ICEE-99 is 'Progress through Partnership'. The host institution was the Technical University of Ostrava, Czech Republic. Professor Vaclav Roubicek, Rector of the Technical University served as the conference General Chair. The ICEE-99 has provided a forum for further strengthening alliances, bringing new partners from North America, South America, Western, Central and Eastern Europe Countries. The following topics were discussed at the conference:

- Innovations in curricula content and structure
- Entry-level course design
- Multidisciplinary design integration;
- Applications of new communication and information technologies in teaching and learning;
- Multimedia teaching tools;
- Distance learning;
- Quality methods in teaching;
- Models of higher education in various countries;
- Integrating laboratory instruction;
- University-industry joint programs;
- Practice-based engineering education;
- Integration of basic sciences and engineering courses
- Global engineering practice, design of co-operative networks for engineering education development;

- Foreign languages and social sciences in engineering education and
- Increasing participation of women and minorities.

Panel sessions addressed several topics of interest to engineering educators. The topics were:

- The US Engineering Education Coalitions: Focus and Accomplishments
- The Best Products of the EEC programs: Dissemination Opportunities
- Commercial Engineering Software: Core Technology for Curriculum Integration in North American Engineering Education
- Restructuring of the Mining Engineering Curriculum.

Approximately 400 individuals from 30 countries attended the conference. The conference proceedings were produced in a CD-ROM format.

(2) Selection of Travel Grant Recipients:

The call for papers and announcement of the availability of travel grants was sent to all the Engineering Department Chairs and Deans of Engineering in the Country. We also contacted all the authors of the papers who submitted abstracts to ICEE conference. We received 57 applications from all over the country. The primary criteria for selection of travel grantees were:

- Accomplishments as well as potential for future contributions in engineering education, research, and practice
- Presentation of papers at oral, poster, panels or workshop forum of the conference
- Commitment for the development of alliances and collaborative projects in the engineering education and
- The sharing of US-based innovations with educators and educational researchers abroad to provide enhanced opportunities for the testing of those opportunities.

The selection committee consisting of the following members has reviewed the 56 proposal and selected the travel grant recipients:

(i) Timothy Anderson, University of Florida in Gainesville
(ii) Frank Kulacki, University of Minnesota
(iii) Robert Coleman, University of North Carolina-Charlotte
(iv) John Mead, Southern Illinois University-Carbondale
(v) Barry Farbrother, Rose-Hulman Institute of Technology
(vi) Vittal Rao, University of Missouri-Rolla

The list of travel grant recipients is given below:

Name/Rank	Address	e-mail	Telephone	Title of Paper
1. **Sohail Anwar,** Assistant Professor of Engineering, Pennsylvania State University, Altoona College	Penn State Altoona 3000 Ivyside Park Altoona, PA 16601-3760	sxa15@psu.edu	814/949-5181	An International Collaboration in Engineering Project Design and Curriculum Development: A Case Study
2. **Haniph Latchman,** Associate Professor, Electrical & Computer Engineering, University of Florida	CSE 424 University of Florida Gainesville, FL 32611	Latchman@list.ufl.edu	352/392-4950	Bachelor and master of Science Degrees using an ALN Lectures on Demand Approach
3. **Paul McCormack**, Assistant Professor, Electrical & Computer Engineering, Suffolk University	Suffolk University Computer & Electrical Engineering Dept. 41 Temple Street Boston, MA 02114	Pmccorma@suffolk.edu	617/573-8676	Enhancing and Extending an Engineering Program using Video Conferencing
4. **Banmali Rawat**, Professor, Electrical Engineering, University of Nevada-Reno	University of Nevada-Reno, Electrical Engineering Dept. Reno, NV 89557-0153	Rawat@ee.unr.edu	775/784-6927	"A New Approach to Globalization of Engineering Education" An Invited Paper for Opening Session
5. **Jean-Claude Rogiers**, McCasland Chair & Professor, University of Oklahoma, School of Petroleum & Geological Engineering	Rock Mechanics Institute, University of Oklahoma, Sarkeys Energy Center, P119 100 E. Boyd Norman, OK 73019-1014	jc@rmg.ou.edu	405/325-2900	THE CUST PROGRAM: An example of industrial internships and scientific exchanges between USA and France
6. **Lewis Thigpen**, Professor & Chair, Mechanical Engineering Dept, Howard University	Mechanical Engineering Dept, Howard University 2300 6th St. N.W. Washington, D.C. 20059	thigpen@scs.howard.edu	202/806-6600	Academic and Industry Cooperation in Mechanical Engineering at Howard University
7. **Sally Wood**, Professor, Electrical Engineering, Santa Clara University	Electrical Engineering Santa Clara University Santa Clara, CA 95053	Swood@scu.edu	408/554-4058	Curriculum Evolution: Integration of Web-based Resources, Tutorial Software, and Commercial Design Tools
8. **Biswajit Das**, Assistant Professor, Computer Science & Electrical Engineering Dept, West Virginia University	Computer Science & Electrical Engineering Dept, West Virginia University Morgantown, WV 26506-6109	das@csee.wvu.edu	304/293-6371 ext. 2525	Education in Three Dimensions: Using Virtual Reality in Education for Illustrating Spatial Relationships
Name/Rank	**Address**	**e-mail**	**Telephone**	**Title of Paper**
9. **Adel Ghandakly**, Professor & Chairman, Electrical Engineering &	Electrical Engineering & Computer Science	aghanda2@uoft02.utoledo.edu	419/530-8196	Collaborations in Engineering Education made Possible by

Computer Science, University of Toledo	Dept, University of Toledo Toledo, OH 43606-3390			Multimedia Technology
10. **Andreas Linninger**, Assistant Professor, Chemical Engineering, University of Illinois	Chemical Engineering Dept, M/C110 810 S. Clinton St. Chicago, IL 60607-7000	Linninge@uic.edu	312/996-2581	Integrated Chemical Engineering & Industrial Outreach-A New Approach to Design and Chemical Engineering Practice
11. **Jack Lohmann**, Associate Dean for Academic Affairs, College of Engineering & Professor of Industrial & Systems Engineering	Associate Dean for Academic Affairs, College of Engineering, Georgia Institute of Technology Atlanta, GA 30332-0360	jack.lohmann@coe.gatech.edu	404/894-3355	Designing, Developing, and Implementing an Outcomes-Based Assessment for Engineering Education
12. **Stephen Parke**, Associate Professor, Electrical Engineering, Boise State University	Electrical Engineering Boise State University 1910 University Drive Boise, ID 83725	sparke@boisestate.edu	208/426-3842	The Idaho Microfabrication Laboratory: A Unique Industry/University Partnership for Microelectronics Education and Research
13. **Robert Pfeffer**, Distinguished Professor, Chemical Engineering Dept, New Jersey Institute of Technology	Chemical Engineering New Jersey Institute of Technology, University Heights Newark, NJ 07102	pfeffer@admin.njit.edu	973/642-7496	Curriculum in Particle Technology at New Jersey Institute of Technology: Experiences with Building Partnerships (#275)
14. **Janusz Zalewski,** Associate Professor, Electrical & Computer Engineering Dept, University of Central Florida	Dept of ECE University of Central Florida Orlando, Fl 32816-2450	jza@ece.engr.ucf.edu	407/823-6171	Software Engineering Tools in Real-Time Control Courses
15. **Christina Arrington**, Instructor, Electrical & Computer Engineering Dept, University of Alabama-Huntsville	Electrical & Computer Engineering Dept University of Alabama-Huntsville Huntsville, AL 35899	Ceha@eb.uah.edu	256/890-6859	Motivating Students for Engineering Through an Interactive Freshman Course
16. **Max Yen**, Professor, Dept of Civil Engineering, Southern Illinois University-Carbondale	Materials Technology Center Southern Illinois University-Carbondale Carbondale, IL 62901	Myen@siu.edu	618/536-7525	Partnership with Industry toward Research, Education, and International Collaboration