Contents

Navigating the Symposium

• Sessions/workshops are grouped by length. Each listing carries time and location.

• To view the sessions by time schedule, turn to the overview on pages 2 and 3.

• Abstracts and handouts for all sessions are printed in the session booklets in your bag.

• Maps are on the inside covers and the outside back cover of this program.

• All symposium sessions and workshops will be in Olin Hall and Hulman Union.

• The Symposium information areas will be in the lower level of the Hulman Union and the entrance to Olin Hall.

• Phones are available on the upper level of the Hulman Union in the Presenters' Lounge located in the Performing Arts Room.

Rose-Hulman Institute of Technology, 5500 Wabash Avenue, Terre Haute, Indiana 47803

Welcome

February 2004

On behalf of the entire Rose-Hulman Institute of Technology community, it is an honor and pleasure to welcome you to our campus. We are proud to be hosting the sixth symposium on "Best Assessment Processes."

The challenge of achieving institutional excellence has never been greater. The demands on the time and energies of faculty, staff, and students to meet the growing needs of a global and virtual workplace have increased dramatically. In the process of trying to keep up with the pace and, at the same time, continuously improve our educational services it is important that we work both efficiently and effectively. Defining who we are as educational institutions and aligning our services and program offerings to achieve our institutional and programmatic goals is critical to educational effectiveness and our ability to succeed in a highly competitive educational environment. Only those institutions that are committed to self-assessment and improvement will survive.

Rose-Hulman has combined major facilities upgrade and additions in the past few years with a commitment to academic quality improvement in and out of the classroom. In addition to viewing our classrooms and laboratories, I encourage you to visit Hatfield Hall (alumni and performing arts center), the John T. Myers Center for Technological Research with Industry, and the White Chapel which are among the newest facilities on campus.

May the symposium provide you with quality information exchange, lively debate, a collegial atmosphere and a focus on the future. Thank you for letting Rose-Hulman play a part.

Sincerely,

Samuel F. Hulbert
President

Symposium At-A-Glance

Sunday, February 29 (Pre-Symposium Showcase)
1:00 p.m. - 8:00 p.m. - Early Check-in (Lower Level-Student Union)
3:00 p.m. - 6:00 p.m. - Rose-Hulman Showcase Workshops, Sessions and Campus Tours
6:00 p.m. - 8:00 p.m. - Reception and Dinner

Monday, March 1
7:30 a.m. - 5:00 p.m. - Symposium Check-in (Lower Level-Student Union)
8:30 a.m. - 9:50 a.m. - Opening Session, Welcome ABET/Plenary: Gloria Rogers
10:00 a.m. - 10:50 a.m. - Concurrent Sessions
11:00 a.m. - 12:20 p.m. - Mini-Workshops
12:20 p.m. - 1:30 p.m. - Lunch
1:40 p.m. - 2:30 p.m. - Concurrent Sessions
2:40 p.m. - 5:40 p.m. - Workshops
5:45 p.m. - 8:00 p.m. - Reception and Dinner

Tuesday, March 2
8:30 a.m. - 9:20 a.m. - Concurrent Sessions
9:30 a.m. - 10:20 a.m. - Concurrent Sessions
10:30 a.m. - 11:50 a.m. - Mini-Workshops
12:00 p.m. - 1:00 p.m. - Lunch
1:10 p.m. - 2:00 p.m. - Concurrent Sessions
2:15 p.m. - 3:30 p.m. - Roundtable Sessions with David Hornbeck, Dave Holger and Ben Huey

ATTENTION: Registration is located in the lower level of the Hulman Union Building. Please follow the signs.

Organizing Committee

Gloria Rogers, Chair
Rose-Hulman Institute of Technology

Barbara Olds
Colorado School of Mines

Ronald Miller
Colorado School of Mines

Maryanne Weiss
ABET, Inc.

Kathy Gregory, Symposium Administrator
Rose-Hulman Institute of Technology

Judy Houghtalen, Symposium Coordinator
Rose-Hulman Institute of Technology

Symposium Highlights

Plenary

"Assessment Rocks"
8:30 am Monday, Hulman Union,
Kahn Room

Gloria Rogers, Ph.D.
Vice President for Institutional
Research, Planning and Assessment
Rose-Hulman Institute of Technology

Celebration or geological metaphor? When faculty in ABET related programs work to develop manageable assessment processes that are both efficient and provide necessary quality assurance information, how do they know when they have appropriate assessment processes in place? The assessment process cannot be isolated from the question(s) that faculty are trying to answer, the outcomes that are being measured, and the

Gloria Rogers

resources that are available. This session will identify some key questions that faculty can ask to evaluate the effectiveness of their quality assurance assessment plan.

Gloria Rogers is Vice President for Institutional Research, Planning and Assessment at Rose-Hulman Institute of Technology. She has been active in institutional and program assessment at Rose-Hulman since 1991 where she is Co-Chair of the Commission on the Assessment of Student Outcomes who have developed the RosE-Portfolio, an integrated student outcomes assessment portfolio system. She is active as a consultant to ABET, American Association of Higher Education and the Higher Learning Commission and serves on the Advisory Committee to the National Science Foundation for the Government Performance and Results Act (AC/GPRA) Performance Assessment.

Team Chair Roundtable - Preparation for Accreditation: Ask the Experts!
Engineering, Engineering Technology and Computing
2:15-3:30 p.m., Tuesday, Hulman Union, Kahn Room and Worx

Interactive Sessions will be held by team chairs from each of the ABET Commissions who are experienced with the new accreditation criteria. Each symposium participant can choose the session that is most appropriate for his/her program. The representative will make a brief presentation of his experiences with site visits under the new criteria identifying the most improvement. Ample time will be given for the participants to ask questions and interact with the presenter.

Team Chairs:

David E. Hornbeck
Interim Vice President for Academic
  Affairs and Professor of Civil
  Engineering Technology
Southern Polytechnic State University
2:15 -p.m., Tuesday, Hulman Union, Robert Kahn Room

Dr. David E. Hornbeck is currently Interim Vice President for Academic Affairs and Professor of Civil Engineering Technology at Southern Polytechnic State University, Marietta, Georgia, where he has been employed since 1976. Dave has participated as program evaluator or team chair in 26 ABET accreditation vis-

David E. Hornbeck

its and has served on the TAC Criteria ommittee on two occasions. Dave has been active in training activities related to outcomes-based assessment of academic programs and serves as a member of the project advisory team and as a facilitator in assessment workshops of the ABET/NSF Technological Education Initiative (TEI).
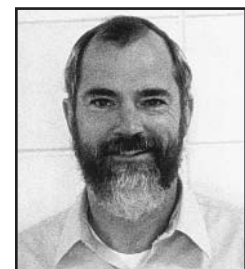
David Holger
Associate Dean of Engineering
Iowa State University
2:15 p.m., Tuesday, Hulman Union, Louise Kahn Room

Dr. David Holger is Associate Dean of Engineering at Iowa State University, received his B.S., M.S., and Ph.D. degrees in aerospace engineering from the University of Minnesota. Dr. Holger's broad academic and professional career includes extensive work with ABET. In 1997, he was appointed to the Engineering Accreditation

David Holger

Commission as a representative from AIAA. Additionally, he has served as chair of the Engineering Accreditation Commission of ABET's Criteria Committee from 1999 through 2002, as a member of the EAC Executive Committee since 2001, and is currently serving as chair elect of the EAC.

Ben Huey
Associate Dean for Planning and
 Administration
Arizona State University
2:15 p.m., Tuesday, Hulman Union, WORX

Dr. Ben Huey is Associate Dean for Planning and Administration at Arizona State University, working with college level program initiatives including development of information science and technology, budget and facilities issues, and continuous quality improvement. Dr. Huey received his B.S. in Mathematics from Harding University, and his M.S. and Ph.D. degrees in Electrical Engineering from the University of Arizona.

Ben Huey

In 2001-2002 Dr. Huey was chair of the Computing Accreditation Commission of ABET, and currently serves as a member of the CAC/ABET and as a member of the IEEE EAB Accreditation Policy Council. He is a member of the Board of Directors for the Consortium for Embedded InterNetworking Technologies, and is participating in CEINT and NSF sponsored curriculum development in embedded systems.

Sponsoring Organizations

Rose-Hulman Institute of Technology
Foundation Coalition
ABET, Inc.

Symposium Honored as Dissemination Channel

The Best Assessment Processes Symposium has been named a 2003-2005 "Dissemination Channel" by the National Academy of Engineering Center for the Advancement of Scholarship on Engineering Education. We are very proud to be the first recipient of this prestigious honor. Thank you to all the presenters and participants and staff who have made this possible.

Pre-Symposium Showcase

Workshop: Foundation Coalition Resources 4:00-6:00 p.m.

The Foundation Coalition (FC), one of eight engineering coalitions funded by the National Science Foundation, was established as an agent of systemic renewal for the engineering educational community. FC partner campuses (see below) have restructured their curricula, renovated or built new classrooms, and created faculty development projects guided by seven ideas. Most projects have focused on the first two years, the foundational years, of the engineering curricula, but faculty members also initiated several upper division curricular projects. Based on its innovations, the FC has created a number of different resources to assist faculty members with their efforts to improve their learning environments and curricula.

Student Teams in Engineering:
FC faculty members have created resources that address many issues that faculty members raise about student teams including forming teams, assigning individual scores for team projects, facilitating dysfunctional teams, etc.

Assessment Instruments:
FC faculty members have created many assessment instruments, for example, concept inventory assessment instruments for engineering science and lifelong learning assessment instruments, that could be used to address several of the student outcomes in EC 2000.

Active/Cooperative Learning:
FC faculty members have created several resources that may assist faculty as they prepare to use active/cooperative learning in their classes. These resources include a web site (http://clte.asu.edu/active/main.htm), a one-page introduction, and several mini-documents that address many issues that faculty members have raised about using active/cooperative learning.

Curricular Materials:
FC faculty members have documented their innovative curricular efforts and many of these materials may be helpful to other faculty members. These materials include project assignments, syllabi, and course notes.

Curriculum Integration/Learning Communities:
As FC faculty members helped students build links between courses, it became natural to cluster students in common sections of courses. Results about student experiences in these learning communities may be valuable to campuses considering similar initiatives.

Organizational Learning and Change:
Lessons extracted from the experiences of many campuses making significant curricular changes may be helpful to campuses considering curricular changes of similar magnitude. These lessons draw on disciplines of organizational learning and change.

One hour sessions: 3-6 p.m.

MEMS and Micro-fabrication Laboratory

Azad Siahmakoun, Professor of Physics and Optical Engineering

Micro-electro-mechanical systems (MEMS) are having an impact on a wide range of professional fields. RHIT has developed a new laboratory to support a course taught by a team of eight professors from six engineering and science departments. The MEMS

initiative is an extension of the certificate program in semiconductor materials and devices, a multi-disciplinary program that allows students to concentrate on the physical properties of semiconductors and their applications. In the MEMS course students design, fabricate and characterize simple tiny mechanical devices with one or more moving parts using silicon wafers. A $400,000 grant from the W. M. Keck Foundation of Los Angeles has made it possible to develop this new undergraduate MEMS course and equip a new MEMS fabrication and testing laboratory in Moench Hall of RHIT.

Bio-Chemistry Laboratory

Mark Brandt, Assistant Professor, Chemistry

The biochemistry laboratory is currently being used for two research projects involving the use of genetic engineering techniques to produce the human estrogen receptor in bacteria and the use of enzymes responsible for synthesis of the carbohydrate metabolite glucose-1, 6-bisphosphate. In addition, the Biochemistry Laboratory course (Chem 433) is largely held in the facility allowing the students to learn to use the equipment as they explore the techniques and strategies of modern biochemical research.

Entrepreneurship and 21st Century Education

Tom Mason - Professor of Economics & Director of M.S. in Engineering Management Program

Professionals need to think like entrepreneurs in the 21st century. Entrepreneurship is being integrated at Rose-Hulman through entrepreneurial concepts that contribute to design courses, through Engenius Solutions, a unique, student managed technology transfer operation, and through Rose-Hulman Ventures, a

well-funded incubator, new product development center with educational objectives. Plans for the future will also be discussed. Outcomes of these efforts are the focus of the presentation, and time will be available for questions and comments.

A Chemist Tinkering in Engineering

Howard McLean, Associate Professor of Chemistry
Bill Wilkinson, 8th grade Science Teacher, Honey Creek Middle School

Participants will play the role of a famous forensic scientist and use a personal digital assistant (PDA) interfaced to a sensor or probe to solve either an environmental problem or an on-line process problem. This will be a hands-on activity for a team of three individuals.

Laptop Computer Program

Louis Turcotte, Vice President for Institutional, Administrative and Information Technology

In 1995 Rose-Hulman became one of the first higher education institutions in the country to require all incoming students to purchase an institute-selected laptop computer. The purpose of this requirement was to foster the integration of technology throughout the curriculum. The effective execution and sustainment of the laptop program is now essential to our educational activities. Such issues as third party software availability (on and off campus), a hardware and software maintenance center that ensures students are never without their laptop, and the annual review of technological advances (such as wireless) and when/if they should be incorporated into our environment will be presented.

Studio Classroom/Laboratory

Ed Wheeler, Assistant Professor, Electrical and Computer Engineering

The studio classroom is well suited to meet the needs of students in introductory and intermediate-level courses. The studio format is delivered in 2-hour long class periods, enhancing learning through a combination of lecture, laboratory, and demonstration. Students are engaged through hands-on work, while their reasoning ability and laboratory technique are enhanced through frequent reinforcement. The classroom is equipped with student laboratory instruments, an instructor demonstration bench, and a flexible AV system. Partly funded through the NSF and Caterpillar Foundation, there will be another studio classroom built during the summer of 2004.

PRISM: A Portal with a Purpose

Patricia A. Carlson, PhD, Professor,
*   Humanities and Social Sciences*
Gwen Lee-Thomas, PhD, Director of
*   Assessment, Office of Institutional*
*   Research, Planning and Assessment*
Barbara J. Edwards, Digital Librarian
Ryan N. Smith, Web Portal Master

This session demonstrates and discusses the PRISM (Portal Resources for Indiana Science and Mathematics) Program. PRISM is a free, web-delivered "window" on digital resources for middle school teachers of science, mathematics, and computer science. The project is hosted at Rose-Hulman Institute of Technology (Terre Haute), and funding has been provided by the Lilly Endowment.

Calibrated Peer Review™ and

Learning Outcomes Assessment

Patricia A. Carlson, Professor,
*   Humanities and Social Sciences*
Frederick C. Berry, Head, Electrical and
*   Computer Engineering*

Calibrated Peer Review CPR™ is an end-to-end computer-mediated learning environment that seamlessly integrates writing as a vehicle for critical thinking into a content course.

Developed by the Division of Molecular Sciences at UCLA, CPR™ is an excellent "learning environment" that creates an electronic, asynchronous, discipline-independent platform for creating, implementing, and evaluating writing assignments, without significantly increasing the instructor's workload. The extensive data collected by the "environment" can be used to measure learning outcomes for an ABET-style assessment.

Providing Structure to Client-Based Projects in Freshman and Senior Design Courses in Civil Engineering

James Hanson, Professor, Civil Engineering
Robert Houghtalen, Head, Civil Engineering
Kevin Sutterer, Associate Professor,
*   Civil Engineering*

Client-based projects are used by many schools for senior design courses. Such projects tend to be much larger than anything the students have previously attempted, and the projects tend to be extremely open-ended. These characteristics can paralyze student teams. The Civil Engineering Department at Rose-Hulman has been using client-based projects for senior design for over 15 years. Over five years ago, client-based projects were introduced in the freshman civil engineering design course. In this session, we show how routine due dates and prescribed formats for deliverables provide sufficient structure to the projects to allow students in the freshman and senior design courses to focus on the problem and solution. We will also highlight how the prescribed formats for the deliverables make performance assessment easier.

Tours:

John T. Myers Center for Technological Research with Industry

Dan Moore, Associate Dean of Faculty and Associate Professor Electrical and Computer Engineering

The John T. Myers Center for Technological Research with Industry will be open for tours. The 40,000-square-foot, two-story building contains large and small spaces for engineering design and project construction. On display will be the rapid prototyping 3-D printer, circuit-board manu-facturing facili-ties, chemical and chemistry testing facili-ties, high reso-lution imaging equipment such as SEM, and a variety of laboratory spaces for industrial projects of varying size and complexity. The Center also contains a state-of-the-art pre-sentation and teleconferencing facility.

Art Tours — 3:00-4:00 p.m.

Matt McNichols, Art Curator

One of the aesthetic delights for Rose-Hulman students is the Institute's art col-lection and annual temporary exhibition series. The Permanent Collection numbers nearly 2000 works, including sculptures, and there are on average 20 temporary exhibits of work by local, nation-al, and international artists on a yearly basis. The long-term commitment of the school to the visual arts stems from a belief that the education of the engineer or scien-tist can be expanded and enhanced by con-tact with the boundless creative possibilities present in the arts and by having this com-mitment we find ourselves studying and working in a more pleasant environment. The tour will include the current temporary exhibits as well as the 19th century British Watercolors Collection and the Tri-Kappa Collection of work by Hoosier Artists. See a preview at http://www.rose-hulman.edu/Users/groups/AdminSvcs/html/art/index.html

Campus Tours

Wayne Spary, Vice President of Facilities Operations

Since 1997 Rose-Hulman has added several new facilities including the $21M Sports and Recreation Center, $6.7M John T. Myers Center for Technological Research with Industry, $11M Sophomore Residence Hall, $700K Oakley Observatory, $2.8M White Chapel, $14.7M Hatfield Hall and Alumni Center and nearing com-pletion is a $13.5 million student apartment style residence hall, designed to accommodate 240 students. Guides will be available to conduct tours of many of these new facilities.

Rose-Hulman Institute of Technology at a Glance

Founded in 1874, Rose-Hulman is located on a 200-acre campus just east of Terre Haute, Indiana. The college offers a rigorous, hands-on education that stresses development of technical and interpersonal skills in an environment characterized by close personal attention for every student. The college has an enrollment of 1,800 undergraduate students. Degree programs are offered in applied biology, biomedical engineering, chemical engineering, chemistry, civil engineering, computer engineering, computer science, economics, electrical engineering, engineering physics, mathematics, mechanical engineering, optical engineering, physics and software engineering.

Many national guides to select colleges include Rose-Hulman. In 2003, for the fifth year in a row, U.S. News & World Report ranked Rose-Hulman as the #1 college in the United States specializing in engineering at the baccalaureate and masters level. Rose-Hulman is also included in the Barron's Guide to Best College Buys and has been listed as one of 12 "hot colleges" in the 2004 Kaplan/Newsweek College Guide. Also, Rose-Hulman Institute is ranked fifth on a list of the nation's "Top 25 Most Connected Campuses" that was released by The Princeton Review. Some of the nation's best students enroll at Rose-Hulman. The median SAT score of a first-year student at Rose-Hulman is 1320.

Foundation Coalition

In 1990 the National Science Foundation (NSF) established the Engineering Education Coalitions program to "stimulate bold, innovative, and comprehensive models for systemic reform of undergraduate engineering education." In 1993, NSF funded the fifth coalition, the Foundation Coalition (FC). Four of the original member institutions - Arizona State University, Rose-Hulman Institute of Technology, Texas A&M University, and the University of Alabama, have been joined by the University of Massachusetts-Dartmouth, and the University of Wisconsin-Madison. These institutions have developed improved curricula and learning environments, and will graduate a new generation of engineers who can more effectively function in the 21st century.

Over the last five years, FC faculty members have systematically incorporated the five basic themes of curriculum integration, active/cooperative learning, student teams, technology-enabled learning, and continuous improvement through assessment and evaluation into their engineering curricula, beginning with the freshman year. For example, the new freshman curricula that are in place today at these institutions are as diverse as the universities that comprise the Foundation Coalition, due to the fact that they have been designed to meet a variety of cultural and resource constraints. Nevertheless, they are all based on the same core FC themes and all provide models for various engineering institutions across the country. Assessment data, including retention, grades in following courses, standardized tests, and formal student feedback, indicate that these programs are successful in a number of ways. More information about the Foundation Coalition can be found at *http://www.foundationcoalition.org.*

The Sessions

50-Minute Sessions

The following are being offered as 50-minute interactive sessions. You will be able to attend four different 50-minute sessions.

1 ABET Accreditation Case Study: United States Air Force Academy
8:30 a.m., Saturday, Olin Hall O257

Lt Col Larry Butkus, United States
Air Force Academy
Maj James Solti, United States
Air Force Academy

Emphasis will be on the accreditation process as it pertains to the engineering mechanics and mechanical engineering programs.
Key points will include:
1. Assessment - obtaining and using feedback from students and faculty;
2. Course and Program Reviews - formal processes to identify areas for improvement and preparation for future course offerings & program modifications; and
3. Faculty Particpation - maximizing faculty engagement for the ABET visit and ongoing accreditation efforts.

2 Applying Software Engineering Techniques to the Assessment Process
10:00 a.m., Monday, Olin Hall O159
9:30 a.m., Tuesday, Olin Hall O159

Donald Needham, United States
Naval Academy

An observable and repeatable process for identifying measurable goals and outcomes is critical to the success of any assessment process. We analyze a strategic plan and use software engineering techniques to mine assessment goals, objectives, and outcomes, and focus on making assessment manageable from an implementation perspective. An active-learning approach is used in which a typical lecture format is punctuated with short, informal group discussions/activities in order to actively engage the audience in the material.

3 Assessment Methodology for the First-Year Engineering Program at SDSM&T
9:30 a.m., Tuesday, Olin Hall O259

Larry Stetler, South Dakota School of
Mines & Technology
Stuart Kellogg, South Dakota School of
Mines & Technology

A curriculum assessment and improvement program has been initiated for GE 115, a 1st-year introductory engineering course at SDSM&T. Elements of this program that will be presented here include: 1) a description of the program and governing processes; 2) rubrics and results from both the portfolio and digital archive assessment; 3) other assessment tools and results (focus group surveys); 4) current improvements being implemented; and 5) other program assessments (team development, longitudinal tracking).

4 Assessment using Capstone Experiences: Maximizing the Assessment Potential of What You are Already Doing
10:00 a.m., Monday, Olin Hall O257
9:30 a.m., Tuesday, Olin Hall O257

Joseph Shaeiwitz, West Virginia University

This will be an interactive session. Methods will be suggested for including desired outcomes in a capstone experience followed by identification of desired attributes in capstone experiences. Development of rubrics for assessing attributes of capstone projects will be discussed. There will be an exercise on creating sample rubrics to obtain assessment information from capstone experiences. Finally, time permitting, the use of oral presentations of capstone projects for obtaining assessment results will be discussed.

5 Convergence: Getting From Desired Outcomes to Curriculum
8:30 a.m., Tuesday, Olin Hall O267

Wayne Wells, University of Texas-Brownsville

This session will explore ways to reconcile program and course outcomes with curriculum and syllabi. The subject matter content of the curriculum will be described in terms of

introduction, development and application of knowledge elements. An effective method of assuring complete coverage of all knowledge elements required to support program outcomes and ways to assure that individual course syllabi are consistent with these needs will be explored.

6 Data Collection for the ABET Self-Study and Beyond

1:10 p.m., Tuesday, Olin Hall O267

Roger Burk, United States Military Academy
MAJ Suzanne DeLong, United States
*   Military Academy*

During the 2001-2002 academic year, the Systems Engineering and Engineering Management programs in the Department of Systems Engineering at the United States Military Academy prepared for an ABET re-accreditation review, which took place October 2002. New for this accreditation cycle are the EC2000 criteria and outcomes assessment. The process of re-accreditation also involves producing a Self-Study, a document that relies heavily on documentation of processes and procedures and requires input from every staff and faculty member. The Systems Engineering Department looked to web-based automation to manage and maintain the requirements of EC2000 and the data collection process. We will address the question on how outcome-based accreditation fostered an environment of innovation and how this process has encouraged cooperation among all the engineering disciplines at the United States Military Academy. We note some lessons learned, and make recommendations for programs looking forward to re-accreditation review.

7 Development of a Faculty-Involved Assessment Plan with Links to Regional Accreditation

1:40 p.m., Monday, Olin Hall O157
1:10 p.m., Tuesday, Olin Hall O157

Michael Kozak, University of North Texas
Albert Grubbs, Jr., University of North Texas

This session will assist participants in preparing learning outcomes (LO) and course objectives (CO) based on existing student activities (participants are to bring at least one course syllabus with them). Participants will relate the LO/CO to their existing program, department goals and their college/university mission, which they are also asked to bring with them. Excel spreadsheets will be used to demonstrate how continuous quality improvement and course assessment can be accomplished to meet both ABET and Regional Accreditation. Documents developed for electronics engineering technology will be used to demonstrate this procedure in practice.

8 E-Portfolio Streamlines the Assessment Process

1:40 p.m., Monday, Olin Hall O159

Dominic Halsmer, Oral Roberts University

This session will focus on: university and department missions, department conceptual framework, university and department outcomes, choice of portfolio artifacts, development of rubrics for assessment of artifacts, implementation issues with e-portfolio, data collection from internal and external sources, aggregation and disaggregation of data, use of data for program improvements assessing the assessment system, and making the assessment system manageable.

9 Experience Report from ABET Accreditation of Our Computer Engineering Degree

1:40 p.m., Monday, Olin Hall O257

Lt Col Ricky Sward, United States
*   Air Force Academy*

This presentation will discuss our experi-

ences in planning, preparing for and hosting a successful ABET accreditation visit for our newly developed Computer Engineering degree. We'll discuss the assessment methods we use and how they helped us plan and collect data before the visit. We'll also discuss the assessment binders we prepared that showed how we had met our educational objectives and outcomes. Finally, we'll discuss our efforts during the visit to host the accreditation team.

10 The Faculty Course Assessment Report
1:40 p.m., Monday, Olin Hall O259
8:30 a.m., Tuesday, Olin Hall O259

John Estell, Ohio Northern University

The Faculty Course Assessment Report (FCAR) presents a methodology that allows instructors to write assessment reports in a format that is conducive for use in ABET Criterion 3 program outcomes assessment in addition to performing traditional course outcomes assessment. This interactive presentation will introduce the FCAR format, provide examples of actual FCARs, and illustrate several ways that FCARs can be used to facilitate the assessment of program outcomes and document the closing-the-loop process.

11 The Integrations of True Outcomes into the Assessment Process
1:10 p.m., Tuesday, Olin Hall O257

Dot Lestar, Arizona State University East
Lakshmi Munukutla, Arizona State University East

This session will explore the use of database and internet-based technologies as an aid in documenting success. The accreditation process for Engineering and Engineering Technology, as defined by ABET is evolving to include the requirement for measurable evidence that program outcomes are both valid and meet the requirements of individual institutions and departments. This session will also demonstrate the process of integrating an electronic portfolio and data management system into an existing curriculum for the pur-

pose of improving long and short-term assessment for each course and/or program area and subsequent improvement of the overall curriculum in a way that will satisfy the College's many accreditation boards.

12 Leading the Self-Study Preparation
1:40 p.m., Monday, Olin Hall O267

Raymond Greenlaw, Armstrong Atlantic State University

This presentation will address issues relating to playing the leadership role in the Self-Study preparation. Issues included are:
1) How to streamline the assessment process;
2) How to develop an assessment plan;
3) How to close the feedback loop;
4) How to produce documentation efficiently; and
5) How to engage faculty and staff in the accreditation process.

13 Maintaining Unity and Flow in the Assessment Process
1:40 p.m., Monday, Olin Hall O269

Laura Sanders, Valparaiso University

How to streamline the procedures for obtaining assessment information from stakeholders, create unity in assessment efforts and create a plan to keep assessment efforts running on schedule will be discussed. Ideas for creating a "headquarters" for assessment management will be shared.

14 Measurable Student Outcomes vs Topics: Changing Faculty Thinking About Course Objectives
8:30 a.m., Tuesday, Olin Hall O159

Mary Lou Hines, University of Missouri-Kansas City
Linda Garavalia, University of Missouri Kansas City

This session is designed to share experiences with engineering accreditation. Topics to be covered are: background and context,

establishment of school-wide assessment and curriculum review process for new school (merger of computer science and engineering programs), involvement of interdisciplinary team to facilitate a common academic foundation and establishing a foundation for continuous curricular and assessment improvement.

15 A Model for Improving and Assessing Cognitive Growth
1:10 p.m., Tuesday, Olin Hall O159

*Stuart Kellogg, South Dakota School of
        Mines and Technology*
*Frank Matejcik, South Dakota School of
        Mines and Technology*
*Carter Kerk, South Dakota School of
        Mines and Technology*
*Jennifer Karlin, South Dakota School of
        Mines and Technology*
*John Lofberg, South Dakota School of
        Mines and Technology*

This session will describe the use of the following:
1. Steps for Better Thinking Model;
2. A systems approach for developing a long-term assessment and improvement plan under the vision of cognitive development;
3. Improvements in the foundational support and higher steps;
4. Assessment tools/results currently in use to assess improvements; and
5. Assessment tools and improvements that still need to be developed.

16 A National Study of EC2000 Student Learning Outcomes: Measuring Criteria 3, a-k
9:30 a.m., Tuesday, Olin Hall O157

Linda Strauss, Penn State University
Javzan Suhkbaatar, Graduate Assistant

An overview of the National Study of EC2000 Student Learning Outcomes sponsored by ABET will be provided. The session will focus on the development of a set of psychometrically sound scales to measure a-k of Criteria 3. This methodology can assist others to create scales for constructs of interests. Additionally, the scales developed by CSHE may assist others in their own self-studies of a-k.

17 Problems in the Assessment Process of Engineering Education in a Typical Undergraduate College
10:00 a.m., Monday, Olin Hall O269

Moujalli Hourani, Manhattan College

The assessment process is a continuous headache for every school, department and teacher. Assessment, outcomes and objectives represent the components of an overload course imposed on every teacher by ABET, Middle States and other accreditation agencies. Is it worth it? Are the students receiving a better education? Can the teacher afford to spend a significant amount of time on paper work dealing with the assessment? The answer to these questions as applicable to a typical undergraduate engineering school, are the focus of this presentation

18 SHOWTIME! Creating a Site Visit that Makes the Grade
10:00 a.m., Monday, Olin Hall O157
8:30 a.m., Tuesday, Olin Hall O157

*Barton Cregger, Virginia Commonwealth
        University*

This session explores the site visit as the culminating opportunity to verify compliance to EC2000 criteria and to make a lasting and positive impression on ABET's accreditors. Depending on the number of degree programs to review and the number of visitors, the site visit can become a difficult event to manage and a logistical headache. Details of proper planning and precise attention to every detail of the visit will be discussed.

19 Simplifying the Curriculum Assessment and Enhancement Process
10:00 a.m., Monday, Olin Hall O167

Bipin Pai, Purdue University-Calumet
Nasser Houshangi, Purdue University-Calumet

For the first time in Fall 2003, the engineering department had an accreditation evaluation based on ABET Engineering Criteria 2000. The main focus of the assessment committee and the engineering department has been on preparing for the ABET visit based on criteria 2000 and streamlining the process. The

accomplishments and experiences gained from this visit will be shared at the symposium.

20 Streamlining the ABET Assessment Process: Less Might be More
10:00 a.m., Monday, Olin Hall O259

Philip Parker, University of Wisconsin-Platteville

The University of Wisconsin-Platteville (UWP) Department of Civil and Environmental Engineering (CEE) successfully retained accreditation from ABET following the review visit in 2000. Although the assessment process used prior to the 2000 visit resulted in a favorable review by ABET, the CEE Curriculum and Assessment Committee (CAC) was dissatisfied with the inability of the process to generate statistically defendable recommendations. In the Fall 2003, the CAC recommended several changes to the assessment process. The primary change involved moving from depending exclusively on "check-the-box" survey forms to using a combination of personal interviews and surveys. The resulting assessment plan is intended to be more comprehensive and provide more meaningful data.

21 Use of Advisory Boards for Assessing ABET Outcomes
8:30 a.m., Tuesday, Olin Hall O167

Michael Katona, Washington State University

The importance of the advisory board in playing an active role in evaluating the senior design projects and project teams will be discussed. This process includes formal presentations from each project team to the advisory board in a poster session format with a follow-up interview meeting. The role of the advisory board in assessing student outcomes will be described.

22 Use of Industry Advisory Boards in the Accreditation Process
10:00 a.m., Monday, Olin Hall O267
9:30 a.m., Tuesday, Olin Hall O267

Neal Armstrong, University of Texas-Austin

Industry advisory boards are used to provide input on ABET EC2000 matters. They provide valuable counsel in a number of ways including being representative stakeholders in the various degree programs, helping to develop and review program educational objectives and determining if they are being met, obtaining industry input on assessment of graduates, and helping to obtain the resources needed by the school/college to sustain a highly competent faculty and adequate infrastructure, as well as other areas.

23 The Use of Industry Advisory Committees for Curriculum Assessment
1:40 p.m., Monday, Olin Hall O167

Lewis Bellinger, Hampton University

Topics explored in this session include:
1) The Traditional methods of gathering data from industry advisory boards;
2) Failures encountered using the traditional needs assessment process; and
3) Using a more scientific/strategic based data gathering process to determine curriculum goals.

24 Using a Five-Column Report to Manage the Assessment Process
1:10 p.m., Tuesday, Olin Hall O259

Brian Swenty, University of Evansville
Mark Valenzuela, University of Evansville

The University of Evansville, Civil Engineering Program uses a Five-Column Report to manage assessment for EAC-ABET accreditation. The data produced by multiple assessment measures are organized in a single report that serves as an "executive summary" of the assessment process. This report allows faculty and constituents (e.g. advisory boards) to focus on using assessment results for con-

tinuous improvement. Persons attending this presentation will learn how to use a Five-Column Report to streamline the assessment process.

25 Using Portfolios to Assess Engineering Communication

9:30 a.m., Tuesday, Olin Hall O167
1:10 p.m., Tuesday, Olin Hall O167

Anneliese Watt, Rose-Hulman Institute of Technology
Julia Williams, Rose-Hulman Institute of Technology

As teachers of the RHIT Technical Communication course, and faculty involved in the portfolio rating process, we will offer an overview of how we have used the RosE-Portfolio system for both classroom and institutional assessment. We will describe the benefits for our classroom, our students, our department, and our Institute. We will also describe the difficulties and limitations we have encountered and our current thoughts about overcoming them, seeking input from the audience.

80-Minute Workshops

The Workshops 30 through 39 are being offered as 80-minute interactive mini-workshops. These sessions have been designed to enable the presenters to cover the topic in greater detail. Each workshop will be limited to 60.

30 Classroom Assessment: Tried, True and Timely

11:00 a.m., Monday, Olin Hall O203
10:30 a.m., Tuesday, Olin Hall O203

M. Jennifer Markus, University of New Mexico

Do you believe that assessment drives learning? If yes, are you preplexed about how to get started with effective classroom assessment? If yes, then the Web-based Field-tested Learning Assessment Guide (FLAG) can help you! Designed for science, mathematics, engineering, and technology (STEM) faculty, the FLAG, using a guidebook as a model, includes a peer-reviewed selection of classroom assess-

ment techniques (CATs) with enough background information to employ specific assessment tools to streamline the startup and following cycles. URL: www.flaguide.org

31 Developing a Meaningful Assessment Plan

11:00 a.m., Monday, Olin Hall O269

Robert Speckert, Miami University-Hamilton
David Hergert, Miami University-Hamilton

We will discuss our assessment plan and processes as they existed since early 1990's and then discuss our revised plan and processes. Participants will be involved with developing and evaluating their own assessment plans. We will address the utilization of advisory councils; summative and formative assessment methods; developing a manageable plan that includes faculty buy-in; and implementing processes that yield useful information and become part of what you do on a regular basis.

32 Effective and Efficient Use of the Fundamentals of Engineering Exam for Outcomes Assessment

11:00 a.m., Monday, Olin Hall O259
10:30 a.m., Tuesday, Olin Hall O259

John Steadman, University of Wyoming
David Whitman, University of Wyoming
Walter LeFevre, University of Arkansas

This presentation provides graphical and statistical methods for using data from the NCEES Fundamentals of Engineering Examination as an effective and efficient means of assessing program educational outcomes. Examples are presented for both the general engineering portion of the examination and for topics from the afternoon examination in various engineering disciplines such as Civil Engineering, Electrical Engineering, etc. This provides methods for developing objective and quantitative outcomes assessment requiring minimum faculty time and effort.

33 Introduction to Developing Surveys

11:00 a.m., Monday, Olin Hall O167
10:30 a.m., Tuesday, Olin Hall O167

Joseph Hoey, Georgia Institute of Technology

This session will provide participants with a grounding in basic survey research methods: writing good survey items, principles of instrument design, sample selection, implementation methods and logistics, analysis, and report writing. Alumni, employer, graduating senior, and other relevant surveys will be covered. Participants are encouraged to contact the presenter at joseph.hoey@oars.gatech.edu prior to the conference regarding surveys they would like to work on.

34 Program Assessment: Conquering the Slow Loop

11:00 a.m., Monday, Olin Hall O267

COL Allen Estes, United States Military Academy
COL Ronald Welch, United States Military Academy

The ABET two-loop assessment process defines a fast loop where areas are assessed relatively frequently (usually annually) and a slow loop where assessment occurs less frequently. The session defines the slow loop assessment process and identifies where it is most appropriate. The recent slow loop assessment conducted for the West Point Civil Engineering Program is presented as an example followed by a discussion of how it can be implemented at other institutions.

35 Streamlining ABET EC2000 Preparation Using a Web-Based Assessment Tool

10:30 a.m., Tuesday, Olin Hall O267

Fong Mak, Gannon University

This presentation will describe the use of an on-line survey and reporting tool to streamline ABET EC2000 preparation and to support consistent student evaluation of instruction. The web-based tool applied to course-exit survey consists of information on course objectives, assessment methods, and textbooks/tools used for each course as well as the pertinent qualitative and quantitative means of data collection. The survey site also provides means to track course objectives in relation to program outcomes.

36 Streamlining Assessment through Institutional Support

11:00 a.m., Monday, Olin Hall O157
10:30 a.m., Tuesday, Olin Hall O157

Julia Pet-Armacost, University of Central Florida
Robert Armacost, University of Central Florida

It is a challenge to create an environment where assessment is appreciated as a means to improve programs and operations, and is not viewed as a tremendous "time-sink." Providing support and a system for quality assurance at the institutional level is critical in achieving such an assessment environment. We describe how to create relevant support systems to reduce the time involvement and empower program-level personnel to be more focused and efficient.

37 Using Electronic Portfolios for Program & Institutional Assessment: 8 Years Experience

11:00 a.m., Monday, Olin Hall O257
10:30 a.m., Tuesday, Olin Hall O257

Julia Williams, Rose-Hulman Institute of Technology

Electronic portfolios appear to hold a utopian promise for effortless data collection and easy institutional assessment. Many of the electronic portfolios currently offered on the market make such pie-in-the-sky promises, while few identify what real benefits and drawbacks come with the use of portfolios. At Rose-Hulman, we have been developing and implementing an electronic portfolio system since 1996, and our experiences can serve other institutions that may be considering a similar decision. This presentation will focus on the history of electronic portfolio development at Rose-Hulman, the design elements of the early versions of the portfolio, subsequent design changes and rationale for modifications, and the role of electronic portfolios in institutional change.

38 Using GQM for Program Assessment
10:30 a.m., Tuesday, Olin Hall O159

Tim Chamillard, University of Colorado-Colorado Springs

This session will introduce the Goal-Question-Metric (GQM) approach from the software engineering domain and briefly discuss how it can be used for program and course assessment. The bulk of the session will be a hands-on application of the approach to build an assessment plan for a typical undergraduate computer science course.

39 Using Learning Objectives for Course and Curriculum Assessment and Improvement
11:00 a.m., Monday, Olin Hall O159

Donald Carpenter, Lawrence Technological University

This presentation will describe Learning Objectives in detail and provide the audience with an opportunity to develop their own objectives and to share those objectives with the session participants. The presentation will conclude with a description of how learning objectives are being used in the College of Engineering at Lawrence Technological University for course and curriculum improvement in preparation for the upcoming ABET accreditation visit in 2004.

Three-Hour Workshops

The following are being offered as 3-hour interactive workshops. These workshops have been designed to enable the presenters to engage the participants with more depth in the topic. Each workshop will be limited to 60.

40 Assessing the Software Development Process (Software Engineering) Aspects of Undergraduate Degree Programs in Computer Science
2:40 p.m., Monday, Olin Hall O259

David Klappholz, Stevens Institute of Technology

The goals of this session are to: convince Computer Science educators that outcomes assessment of the development process aspects of the undergraduate program are required; discuss instruments for measuring knowledge of, attitude towards, and ability to apply software development processes that have been developed and vetted for reliability; discuss the further development and use of these instruments; determine if other instruments are required; and determine how these instruments and other means are best used.

41 Assessment is a Journey Not a Destination: Lessons Learned from the First ABET EC2000 Visit
2:40 p.m., Monday, Olin Hall O203

Catherine Blat, University of North Carolina-Charlotte
Patricia Tolley, University of North Carolina-Charlotte

The Lee College of Engineering at UNC Charlotte has been engaged in an outcomes-based culture change that integrates assessment into current faculty workloads. This session shares: how to develop and implement tools and processes which minimize demands of faculty time and ensure long-term sustainability; lessons learned from overcoming the obstacles, resistance, and challenges of change; and examples of outcomes based curriculum improvement from the first ABET EC2000 visit in October 2003

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42 Developing a Plan for Understanding, Writing, and Assessing Measurable Outcomes
2:40 p.m., Monday, Olin Hall O257

Charles Yokomoto, IUPU-Indianapolis

Writing measurable learning outcomes can be difficult because of three factors:
(1) Understanding what measurable outcomes are;
(2) Developing an effective and efficient process for writing them; and
(3) Developing an effective strategy for assessing them.

Participants will be engaged in activities that will work through these difficulties and see that there are several different ways that the process can take shape, depending on the culture of your organization.

43 Beyond the Numbers: Maximizing the Robustness of Qualitative Assessments
2:40 p.m., Monday, Olin Hall O267

Gwen Lee-Thomas, Rose-Hulman Institute of Technology

This session will provide information on: (a) the purpose of focus groups (including what focus groups are not); (b) appropriate and inappropriate uses of focus groups; (c) resources required to conduct focus groups; (d) methods of analyzing and interpreting data from focus groups; and (e) reporting the results. Participants will have an opportunity to think through the decision-making process of choosing to conduct a focus group, determining the participants, and designing focus group questions. Also, participants will critique a focus group session and identify themes from a focus group transcript.

44 Quality Assurance for Technology Education in the 21st Century
2:40 p.m., Monday, Olin Hall O167

John Sutton, Central Missouri State University

The hands-on-workshop for participants will provide the opportunity to develop the core structure for a quality assessment program to support any engineering/technology program at the post secondary level. Participants will be provided worksheets to assist in their development of a model quality assurance plan for a program of their selection.

45 A Unified Assessment System for ABET Accreditation and Beyond
2:40 p.m., Monday, Olin Hall O157

el-Hadi Aggoune, Henry Cogswell College
Ronnie Hundley, Henry Cogswell College
Abdelouahab Abrous, Henry Cogswell College

Institutions should develop a comprehensive assessment plan covering all of their sectors to avoid the unwanted disconnect between institutional and program assessments. The plan should link the institution's mission and vision, institutional and program assessments, resource planning and allocation, strategic planning, and involvement of stakeholders. Designed as such, the plan will inherently interweave indicators to gauge and ensure the overall "health" of the institution. Such a unified assessment system is the focus of this workshop.

46 Vectoring the Change: Can ABET and its Constituents Sustain the Change Begun by Outcomes-Based Accreditation?
2:40 p.m., Monday, Olin Hall O269

Maryanne Weiss, ABET, Inc.

ABET is now focusing on the ability for ABET and its constituents to maintain the momentum and movement toward the vision in the second cycle of visits and the evaluation of programs that have yet to be accredited under the new criteria. ABET is concerned about the sustainability of assessment efforts at the campus level. This session will provide attendees with an opportunity to engage in interactive exercises designed to gather input from one of ABET's most important constituents, program faculty, and will provide an update to attendees on ABET's efforts to "close-the-loop" for its own continuous improvement.

47 Versatile Assessment Tools for Improving Students' Readiness for Team Design Assignments
2:40 p.m., Monday, Olin Hall O159

Denny Davis, Washington State University

This workshop will provide participants an opportunity to explore a three-component assessment of students' knowledge, application, and analysis capabilities in engineering design at points prior to capstone design projects. This assessment has been used widely and evaluated for reliability and validity. Participants will examine the assessment's construction and scoring rubrics. They also will engage in parts of the assessment, review typical student work, and practice scoring results. Upon completion of this workshop, participants will be able to effectively use this assessment to identify areas in design education needing improvement in their own engineering programs.

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