

CACHE NEWS ARTICLE

GUIDE TO TEACHING DESIGN WITH INTERNET LINKS

In the summer of 2011, CACHE posted its first *Guide to Teaching Design with Internet Links*, which was installed on the CACHE Teaching (Learning) Resources Center. This *Guide* was prepared by experts in 10 areas of Product and Process Design who are serving as area editors:

Product design (Warren D. Seider)

Process flowsheet synthesis (Rafiqul Gani, Warren D. Seider)

Process simulation (Chau-Chyun Chen, Warren D. Seider)

Process integration (Mahmoud El-Halwagi)

Equipment design (Gavin Towler)

Environment and Sustainability (David Shonnard)

Safety (Dan Crowl)

Optimization – Process Synthesis and Flowsheet Optimization (Lorenz T. Biegler
and Ignacio Grossmann)

Process modeling (Rafiqul Gani)

Design case studies and Design problem statements (Ignacio Grossmann, Joseph
Shaeiwitz, Richard Turton)

They provided guidance for teaching product and process design, linking to materials from many sources including textbooks, monographs, completed design case studies, design problem statements, design software, POWER POINT lectures, and related materials prepared by design instructors.

Initially, it was decided the *Guide* would be prepared just for instructors that use the CACHE Learning Resource Center. Sometime in the future, we anticipated it might be adopted for *Chem. Eng. Educ.* and possibly for the broader *CEP* audience. To introduce the *Guide*, Dr. Gavin Towler (UOP, Northwestern Univ.) and Prof. Warren Seider (Univ. of Pennsylvania) presented two workshops at the 2012 ASEE Summer School for ChE Faculty.

To those that teach design, it's well-recognized that even the most comprehensive textbooks don't cover many subjects – with most design instructors assembling materials that supplement the

book(s) they adopt. Our *Guide* is a great source of supplemental materials – sufficiently broad to permit design instructors to formulate easily custom-made curricula for their courses.

As anticipated, with so many sections and area editors, overlap among the sections could not be avoided; for example, links to case studies appear in the last section and in several other sections. When searching for case studies, especially, instructors are advised to check those sections in which specific case studies are likely to appear. For example, case studies on molecular structure design can be found in the Product Design section.

Second Edition

As planned, in August 2012, the second edition of our *Guide* was installed in the CACHE Teaching (Learning) Resource Center. The links in all sections were checked and updated when necessary. A few new links were entered. In addition, a new section was added:

Planning and Scheduling, and Supply Chain Optimization (Ignacio Grossmann
and G. V. Reklaitis)

Future

We are considering organizing the links to guide students and practitioners, in addition to design instructors, in answering their questions and locating specific instructional materials. In so doing, common key words might be translated into more specific terms; e.g., “mixers” to “agitators” when carrying out equipment design.

To instructors that use our *Guide*, we ask you to make us aware of other sources and links. For some sources, we can create web sites if necessary. Please address these to the area editors or to the overall editor, Prof. Warren D. Seider (seider@seas.upenn.edu). Feel free to suggest new sources, or even new areas – we welcome new area editors!