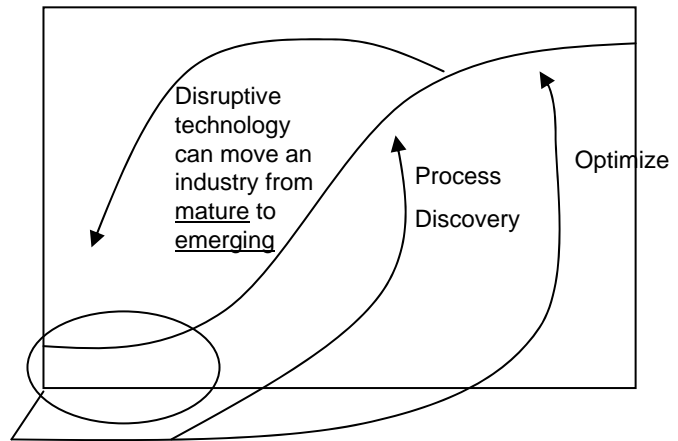


Session 1 - Response to 2015 Speculation

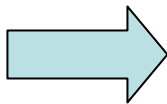
ROLE
OF
BS
ChE?



CURRICULUM & RESULTING ATTRIBUTES

Six groups have speculated on industry needs in 2015. We respond by examining what influences the curriculum, and the resulting attributes of the graduates. First, the role of the BS ChE varies according to the type of industry, represented here by the S-curve distribution of emerging, developing, and mature industries. The curriculum must prepare ChEs for a variety of industrial roles.

Change In
Content



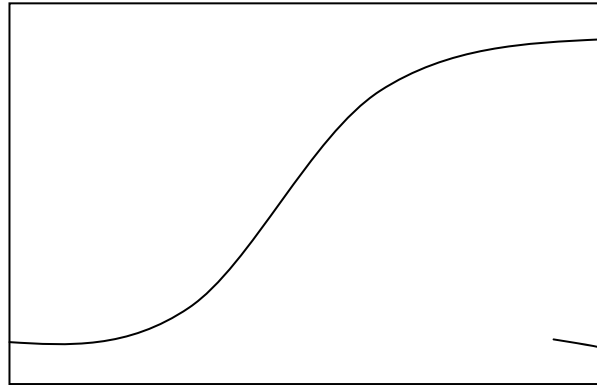
- Emerging
Technologies

- Changes in
Foundation
Sciences

- Emerging
Industrial
context

CURRICULUM
& RESULTING
ATTRIBUTES

What causes us to change curriculum content? New technology, certainly, but also changes in the foundation sciences. Biology, for example, provides new content. Advances in chemistry, our traditional science base, also give us new tools for engineering work; for example, asymmetric catalysis. The industrial context includes political and social influences.



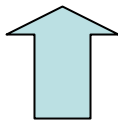
CURRICULUM
& RESULTING
ATTRIBUTES

Examples & lab
(illustration of
principles

- Mature –
process
optimization
- Developing –
process design
- Emerging –
product design

Examples are necessary to illustrate principles to engineering students. The type of example may vary according to the type of industry supplying it. Examples from emerging industries would tend to support notions of product design, while mature industries would offer examples of process optimization.

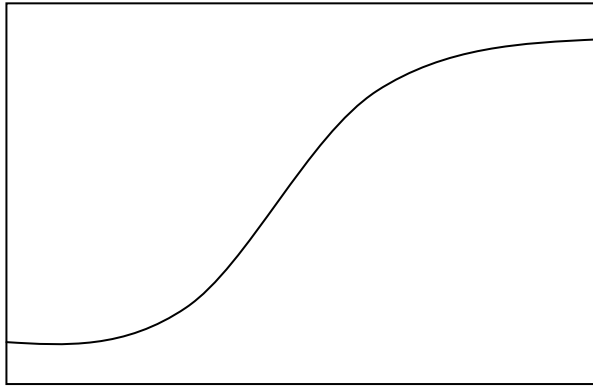
CURRICULUM
& RESULTING
ATTRIBUTES



Driving Forces (gaps?)

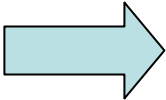
- What are gaps?
 - What is not being supplied?
- What is perception of field?
- Where are students going?

Examination of the curriculum itself also influences the curriculum.

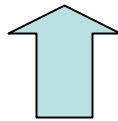


Role
of BS ChE

Changes
In Content



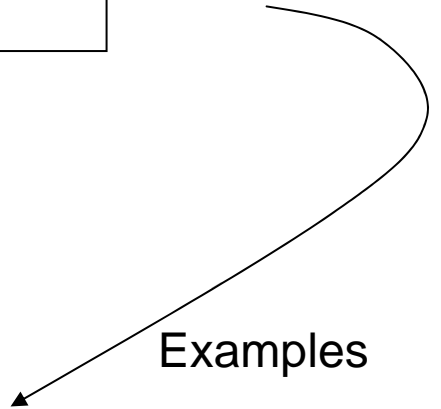
CURRICULUM
& RESULTING
ATTRIBUTES



Driving Forces (gaps)

Examples

- Illustration of principles
- Examples of practice



Discussion Following the Presentation

- Axes on s-curve: don't presume "maturity" implies "lack of jobs".
- We should focus on 2015 grads being competitive in 2030. That is, foster their capacity for advancement – this capacity is a desired attribute.
- ChE is particularly multi-disciplinary in nature – adds versatility. Don't lose this; we should enhance it in new curriculum
- ChE is at the top – examine why? Do we need more ChEs? Is high starting salary due to our relatively small numbers?
- What's needed from this group to support funding for curriculum development?
- Support from industry would legitimize university funding requests.
- How do Chemistry & Biology compare in our foundation? (both are emphasized more than Physics)
- What do ChEs do now? How does this inform our vision of a new curriculum?
- We should be able to explain what ChEs do, in brief, to clarify who we are.
- ChE vs Ch/BioE? Students labeled as "ChE" don't get credit for Bio content?
- What does "ChE" mean? Do we need a broader name? Some departments actually have 2 distinct tracks.
- Industry: don't worry too much about the name
- Should students specialize/focus in senior year in a desired industry area?
- Don't use sub-specialties, if it means fracturing the curriculum. (Not enough time in BS, anyway, to develop meaningful specialties.)
- However, tracks and minors do help to capture students' interest
- Industry: we train new employees in specifics. Give us problem-solvers who can be imaginative. Expose students to a broad range of problems.
- Expose students to various skill sets, range of things they might do. Integrated learning – each new thing in context of goal
- Focus on fundamentals – learn how to think. How to solve problems. Hardest thing to teach is engineering judgment.
- Want BS engineers to have a fearless approach to new areas – confidence to enter a new field w/o knowing details. Able to learn and adapt.