Report from Team 1

(1) What attributes and skills should characterize the B.S.ChE?

Attributes:
ethical
independent
self-confident
decisive
professional integrity
work ethic
tolerant of diverse groups
concerned with safety
innovative
driven to succeed
persistence
critical mindset
ability to identify problems and improvements
lifelong learning, desire for

Skills:
problem solving
working within constraints
team worker
application of conservation laws
identify approaches to the solution of problems
assess different alternatives for success
experimental design, measurements, interpretation using quantitative models
understand societal/global problems
communicate, technical/nontechnical
can find information

(2) How should we organize/classify the subject matter of chemical engineering?

Scale-based:
molecular level
nano-microscopic
continuum
(the above 3 can be further subdivided into equilibrium and nonequilibrium)

process systems engineering, including:
engineering of living systems
manufacturing
case studies

Complexity-based:
linear vs. nonlinear
transient vs. steady-state
stochastic vs. deterministic

Assumptions:
math skills
basic sciences including biology

(3) How should we arrange the subject matter for presentation over four years?
year 1:
problem-solving with computers
process engineering I
steady state balances on lumped processes with thermo, reactions, separation

year 2:
molecular-level: equilibrium and rate-based

year 3:
continuum

year 4:
processes and systems

math and science go through first two years

method of delivery:
case studies and projects, which serve to integrate the material with writing/communication, teams, ethics, safety, lab (both analysis and building)