Backward Design Approach to Curriculum Design

The seminal book discussing and explaining backward design is *Understanding by Design* by Grant Wiggins and Jay McTighe (2005). Much of the following discussion is adapted from their book, with some key quotations.

A primary learning outcome of a SP course is for the student to “demonstrate an ability to select, critically evaluate, and apply relevant areas of scholarship for the discipline” involved in the course. Enabling students to achieve this outcome requires a focus on understanding the concepts of the discipline, not simply the knowledge connected to the discipline. An underlying principle of backward design is that learning does not equate to understanding. At the end of the course, students may be able to list innumerable facts, discoveries, and principles relevant to the field of study, but if they cannot apply that knowledge to a new experience within the discipline, then they have not achieved understanding. As Wiggins and McTighe (2005) state, "To know which fact to use when requires more than another fact. It requires understanding - insight into essentials, purpose, audience, strategy, and tactics. Drill and direct instruction can develop discrete skills and facts...but they cannot make us truly able."

Many courses are designed by first choosing a textbook or perhaps a collection of favorite activities, and using this to drive a sequence of presentation of course topics. However, if this knowledge transfer has only the vague goal of teaching the student to learn "astronomy" or "architecture", then the student is unlikely to walk away from the course with any understanding or competence in any authentic practice in the field. Wiggins and McTighe (2005) convey this idea with the statement, "Knowledge and skill...are necessary elements of understanding, but not sufficient in themselves. Understanding requires more: the ability to thoughtfully and actively 'do' the work...as well as the ability to self-assess, justify, and critique such 'doings'. [Understanding] involves figuring out which knowledge and skill matters here and often adapting what we know to address the challenge at hand."

Backward design is used to set up courses that overcome the gap between learning and understanding by articulating a clear set of learning goals to be achieved by the end of the course, and then choosing the assessments, projects, and activities specifically to enable the students to achieve those goals. By tailoring the assessments, projects, and activities to the learning outcomes, it can be determined if students have met the outcomes. When understanding is an ultimate big picture goal – as in understanding the authentic work of a discipline, it is important to have some activities that to measure understanding and not simply knowledge. In particular, activities and assessments involving self-reflection, peer-review, and explanation are key for ensuring understanding. As recommended by Wiggins and McTighe (2005), "Doing something correctly...is not, by itself, evidence of understanding. It might have been an accident or done by rote. To understand is to have done it the right way, often reflected in being able to explain why a particular skill, approach, or body of knowledge is or is not appropriate in a particular situation."

Another look at this issue is presented in the article: 
http://www.glencoe.com/sec/teachingtoday/educationupclose.phtml/49

"Education Up Close" in Teaching Today by Janice Christy (M.Ed., English Department Chair, Louisa County High School, Louisa, Virginia).

As she says,
"Consider the difference between these two questions:
What is the answer to this math problem?
"Why is “this” the answer? 
"The answers to the questions reflect the difference between mastery of a skill and understanding a concept."

Designing a course via backward design follows the three steps enumerated by Wiggins and McTighe (2005):

1. Identify the desired results (Learning Outcomes)
2. Determine acceptable evidence (Assessment)
3. Plan learning experiences (Instruction)

How Is Backward Design Different?
Backward design takes the focus off the instructor-delivered content and puts the focus on student-centered learning activities. The instructor is no longer the "sage on the stage," but rather, becomes a guide to the student learning process. To design a course effectively using backward design, an instructor may find it necessary to use multiple textbooks or resources, as the "formula" of one textbook may not enable the students' success in the course. In addition, since the backward design of the course focuses on learning skills and insights to achieve specific goals, the learning progression may be quite different from that of a traditional knowledge-based course. Enabling students to learn skills instead of simple facts will likely require unconventional learning/teaching techniques. Emphasis on student self-assessment and peer review, group collaboration, and how to refine the produced result will be useful in many courses.

Sources and Resources

Michigan State University workshop "Backward Design" by Cori Fata-Hartley
http://teachingessentials.msu.edu/materials-for-each-session/10-20---backward-course-design

Example of discussion of backward design in pharmacy course in the following:
Backward Course Design: Making the End the Beginning:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1803709/

"Steps for Backward Design" by the Greece Central School District. The discussion of the steps uses somewhat different terminology, but their steps 2 - 5 have excellent practical discussions of refining course design: http://www.greece.k12.ny.us/district.cfm?subpage=1276