Modeling is a vague term that has diverse meanings across the fields in which it is used. There is not a generally accepted “syllabus” or set of topics that students need to learn about modeling. As part of the work on the NSF-funded project MOSAIC, we have separated concepts of modeling into a set of identifiable components that are consistent across fields (e.g. they apply to both mathematics and statistics) and used those components to build a Modeling Concept Inventory. We will share the development of this inventory, the framework that we have used to organize the modeling process for teaching and evaluating students, and discuss inventory’s intended use in a variety of courses that teach aspects of modeling. (Received September 12, 2011)