Initiatives promoting STEM majors among undergraduates are only one compelling way to close the gap between the quantitative acumen demanded by employers and the skills our students have at graduation. In this talk we present a complementary set of pedagogical approaches and course materials that we have developed and implemented in class to impart quantitative skills in the context of big data to both undergraduates and professional students in non-STEM fields. On the technical side these include techniques to make the delivery of statistical methods accessible to students with a variety of backgrounds, to involve students in pre-processing of data that are more complex (in terms of volume, variety, and/or velocity) compared to what appears in traditional textbook examples, and to familiarize students with statistical programming tools necessary for working with such data. Related to the non-technical skills, we will stress the importance of promoting a culture in class that encourages iteration through a "fail fast, fail cheap" framework, and requiring students to be comfortable with communicating the product of their analytical work not only in writing but also through effective verbal communication. (Received September 14, 2015)