Suggested approaches, with an emphasis on developing quant skills:

Students develop and test a hypothesis

A general structure for labs, with steps following:

hypothesis development: before seeing much data, students formulate hypotheses about how a particular process works, and what data should look like

data collection: they collect data (i.e. websites, map measurements, lab or field measurements, etc.)

data reduction

uncertainty analysis

hypothesis testing and analysis of results

Advantages are increased likelihood of motivation when the students develop an expectation themselves; likeness to scientific process, and framework to involve quant skills.

Question-based approaches

(Comparable to developing a hypothesis)

Beginning and developing a lecture by posing questions to students can keep them engaged, and incite them to start thinking early on (very useful in intro classes).

Example: An instructor, in the first 10 minutes of class on the first day, posed the question does the earth resemble more a beach ball, or a frisbee (and then tossed one of each of these objects to the students). After taking a poll, he asked, "Prove it". Various examples arrive. He then said the earth is much bigger than a ball. How big? (Together the class & instructor repeat Erastothenes' method).

Doing back of the envelope calculations

Students can use simple calculations to answer simple yes-no questions which both exercises quant skills, and gives geologic insight. Also immediately illustrates value of quantitative analysis to students. Calculations can also be used to develop various intuitive ideas by relating scales to common or familiar settings.

Examples:

We've been broadcasting radio waves in all directions since the development of radio and television stations. Have we been broadcasting them long enough to have reached the moon? Edge of solar system? Nearest star?

Imagine a basketball as a scale model of the earth. How big would the moon and sun be, to scale? How far away? How far from the basketball would a satellite be? The atmosphere? An airplane? The Himalayas?

Over the last 70 My or so, the Hawaiian hot spot has pumped out a total of ~775000 km3 worth of lava. If all that lava had erupted in and covered California, how deeply would California be buried in lava?

Common quant threads throughout a course -

Students may be introduced to quant tasks, but without reinforcement, the skills may easily be lost. Repeating a quant skill has the advantage not only of helping students learn a specific skill, but also in helping them develop confidence in doing quant tasks.

Predict process behavior graphically, then introduce equations:
Visualize trends of a process graphically before presenting an equation, taking polls of how characters should depend on various factors.
Example: River discharge during and after a storm: first poll students how they think discharge will behave. Eventually arrive at an increasing step function with storm arrival, and gradual decay following. Gradual decay resembles exponential behavior, then present function.
Follow-up: One can then show illustrations of more complex phenomenon, such as cloud cover patterns over the Atlantic, and point out that more complex patterns are also often modeled by scientists.

Introduce quant techniques with something familiar:
Popular approach of doing calculations first with very familiar quantities.
Example: As an intro to unit conversion, first day of lab, have students find their height in centimeters by measuring themselves against a ruler on the wall. Have them convert to inches, and then feet and inches.

A final favorite from the mathematicians: Spend some time going through math, also explaining graphs, as they probably need a refresher, and often need help translating from one class to another.