Class 3 – Introduction to Nanotechnology and Society
Working definitions of science and technology in the context of society.

Technology:

Technology is, literally, the study of methods or skills. We define it practically as the application of knowledge in a useful or extensive way. It is not simply the application of science because it does not explicitly depend on science and may develop empirically (by trial and error). In other words, technology can include methods that are known to work without knowing how they work.

We take a human-centric approach and consider technology as it develops in the environment of human endeavor: personal ambition and insight, societal decisions (e.g., moral norms, active funding, regulations), environmental pressures, etc.

The future of technology can to some extent be predicted based on our current knowledge.
(For example, in the early 1900s we understood gravity and flight and so could predict that reaching the moon was technologically possible. As a counter example, we can't meaningfully predict faster-than-light travel in the future because we have no understanding, no science, of that being possible – it would require a scientific breakthrough.)

Science:

Science is a way of learning about the physical universe by applying the scientific method. We define the scientific method as a recursive application of three not-necessarily consecutive procedures: 1) making empirical observations, 2) proposing hypotheses to explain those observations (theorize), 3) and testing those hypotheses in valid and reliable ways (experiment). Science is societal by its nature because it is defined by society. It's meaning may change with time and may be

different among different groups (e.g., the public versus the scientific community).

We note that in many cases science is "codified technology." In other words, science can still be science even if we don't know everything completely.

Predicting scientific breakthroughs, as compared to technological prediction, is much more difficult, if not impossible.