

Misconceptions of Science

Instructors: Howard Barth and Bruce Neff

This two-semester course deals with common misconceptions of science typically held by nonscientists as well as scientists. The course will follow Dr. Don Lincoln's Great Courses (Teaching Company) lectures, "Understanding the Misconceptions of Science", a prominent physicist from Fermi National Accelerator Lab and professor of high energy physics at University of Notre Dame. Each lecture will be followed by discussion and supplemented by sufficient background information to ensure clarity.

The first semester will include a wide range of topics, covering physical and life sciences: philosophy of science, electricity, non-ideal gas behavior, Bernoulli equation, behavior of gases, fictitious Coriolis force, nonelliptical orbits of planets, inside an atom, alien life forms, and common misconceptions involving evolution, nutrition, evolution, genetics, and brain function.

Schedule

Week 1 – Philosophy of science, definition of science, difference between theory and law, actual practice of science

Week 2 – Franklin's kite and other misconceptions of electricity

Week 3 – Ideal gas law versus actual gas behavior

Week 4 – Bernoulli's theorem as applied to flying

Week 5 – Non-parabolic motion of projectiles

Week 6 – Nonelliptical orbits or spirographic motion of planets

Week 7 – Inside an atom

Week 8 – Science of aliens and discrepancies of the Drake equation

Week 9 – Common misconceptions about evolution

Week 10 – Nutrient and gut microbiome misinformation

Week 11 – Myths about genetics and brain function