Colbert comments:
OK--So we have covered the big fundamental concepts in special relativity.

In 1905 Annus Mirabilis--the miracle year of physics, there was more going on than the publication of Einstein's work on relativity (2 papers---special relativity, and mass energy equivalence). Einstein also published work on Brownian motion, and on the Photoelectric effect (which won him the Nobel Prize in Physics---later).

https://en.wikipedia.org/wiki/Annus_Mirabilis_papers

What else was happening?

1865 ---Maxwell publishes EM theory (predicts some kind of wave)---and equations are Lorentz transformation invariant.

Heinrich Hertz--1880's and 90's---nails down that the waves predicted by Maxwell--are Light, oh and also the photoelectric effect experiments.

Michelson Morley---1880's
Planck~1900
Blackbody Radiation~1900

Einstein_1905 (gen rel, ~1920)
J.J. Thomson ---cathode rays/electrons (free)
Bohr model Hydrogen 1913
Nuclear model (Rutherford~1908 or so)

1920's----Quantum mechanics.

The foundations for quantum mechanics are the photoelectric effect, brownian motion (statistical thermal physics---probabilities).

Einstein very much drove the development of quantum mechanics (photoelectric, brownian)….but not alone. Planck, atomic model, Bohr, Rutherford, Schroedinger, Heisenberg, ….

All of these events are what is considered "MODERN PHYSICS"--the development of the new paradigm---the break from Newtonian physics was required by many years of experimental observation and theoretical explanation.

We still don't have it right---

Gravity (general relativity) is still the odd ball out, with the other forces being described by the "standard model".

The next part of the course takes us into some of the specific topics and experiments that led to "Modern Physics".

We start with Blackbody radiation--

The theory is derived (with some depth to it) --but by making minimalist assumptions.

We will add on other experiments and processes that lead us into an introductory discussion of quantum mechanics.
We will just make a start of it.