# C207: Radiative Processes in Astrophysics

UC Berkeley, Fall 2021

An introduction to the basic physics of astronomy and astrophysics at the graduate level. Covers principles of energy transfer by radiation; elements of classical and quantum theory of photon emission; bremsstrahlung, synchrotron radiation; compton scattering, plasma effects, atomic and molecular electromagnetic transitions. Includes applications to current research into astrophysical phenomena.

Prof. Aaron Parsons

Classes: Tu/Th 11:00 - 12:30, Campbell 121

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Office: Campbell 455, https://berkeley.zoom.us/j/3587609756

Class Participation (20% of grade):

* intended to be easy (directly based on videos/reading)
* given at beginning of class

Homework (50%):

* assigned Tu, due **before** class, next Tu
* -10% for each week late (one freebie 1-week extension allowed)
* you may collaborate (share ideas verbally, draw pictures), but …
  + implement separately (your own equations, code, writing)
  + acknowledge/cite external resources
  + no looking up answers

Oral Final (30%):

* 45-min discussion, one-on-one with me (I’m not that scary :)
* good practice for prelims/quals, giving scientific talks

Reading:

* material provided on the AstroBaki website (https://casper.astro.berkeley.edu/astrobaki/index.php/Radiative\_Processes\_in\_Astrophysics) C207 photontrain
* Rybicki & Lightman,*Radiative Processes in Astrophysics* (optional)

Materials:

* a programming language (I’ll use Python)
* optional: a jupyter installation (or datahub.berkeley.edu)

Schedule:

* See class website (AstroBaki->Radiative Processes in Astrophysics)

I'm excited we are in a position to be able to hold this class in person. Please follow campus guidelines regarding COVID precautions, posted at <https://coronavirus.berkeley.edu/return-to-campus/campus-access>. In particular:

* Be vaccinated,
* Wear masks indoors at all times (and during class), and
* Fill out a daily symptom screener for each day you are on campus: <https://calberkeley.ca1.qualtrics.com/jfe/form/SV_3xTgcs162K19qRv>

Should campus decide to reinstate remote learning, our classroom will be <https://berkeley.zoom.us/j/3587609756> (this is also where I will hold office hours).