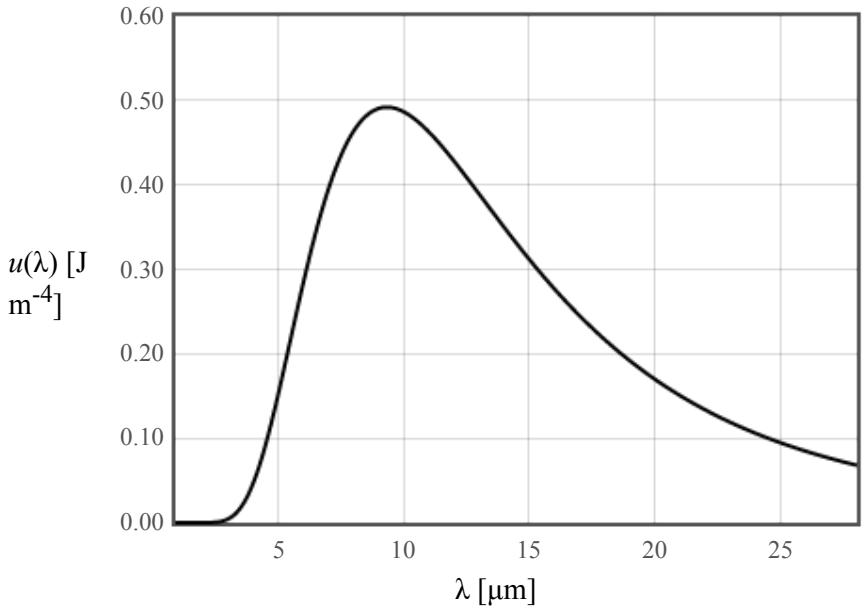
Planck curve for black body radiation

The energy density of a black body between λ and λ + $d\lambda$ is the energy $E=hc/\lambda$ of a mode times the density of states for photons, times the probability that the mode is occupied.

$$u(\lambda)d\lambda = \frac{8\pi hc}{\lambda^5}\frac{1}{e^{hc/\lambda k_B T}-1}d\lambda \quad \mathrm{J/m^3}.$$

This is Planck's famous formula for the energy density of a black body.



Temperature: T = 310 [K]
Replot

This plot was generated for an object with a temperture of 5700 K. That is the temperture of the surface of the sun. The peak in the spectrum is then in the visible at about 0.5 μm (green). The form above can be used to generate Planck curves for other temperatures. Put 310 K = 37 C into the form to see the spectrum of radiation that people emit. The color temperature refers to the color that a blackbody has at a certain temperature.