Constants:

$$c = 2.998\times10^{8}\,\mathrm{m/s} \qquad e = 1.602\times10^{-19}\,\mathrm{C} \qquad N_\mathrm{A} = 6.02\times10^{23}$$

$$k_\mathrm{B} = 1.38\times10^{-23}\,\mathrm{J/K} \qquad m_\mathrm{e} = 511\,\mathrm{keV/c^2} \qquad \frac{1}{4\pi\epsilon_0} = 8.99\times10^{9}\,\mathrm{N\cdot m^2/C^2}$$

$$h = 6.626\times10^{-34}\,\mathrm{J\cdot s} \qquad \hbar = h/2\pi \qquad 1\,\mathrm{eV} = 1.602\times10^{-19}\,\mathrm{J} \qquad R = 1.09737\times10^{7}/\mathrm{m}$$

$$hc = 1240\,\mathrm{eV\cdot nm} \qquad \frac{e^2}{4\pi\epsilon_0} = 1.44\,\mathrm{eV\cdot nm} \qquad 1\mathrm{u} = 931.5\,\mathrm{MeV/c^2}$$

Classical Physics:

$$\vec{F} = m\vec{a} \qquad K = \frac{1}{2}mv^2 \qquad a = \frac{v^2}{r} \qquad F_{12} = \frac{1}{4\pi\epsilon_0}\frac{q_1 q_2}{r^2} \qquad V_{12} = \frac{1}{4\pi\epsilon_0}\frac{q_1 q_2}{r}$$

Modern Physics:

$$\gamma = \frac{1}{\sqrt{1-v^2/c^2}} \qquad \Delta t = \gamma \Delta t_p \qquad L = L_0/\gamma \qquad f_\mathrm{obs} = \frac{\sqrt{1+v/c}}{\sqrt{1-v/c}}\, f_\mathrm{source}$$

$$x' = \gamma(x - vt) \qquad y' = y \qquad z' = z \qquad t' = \gamma\left(t - \frac{vx}{c^2}\right)$$

$$u'_x = \frac{u_x - v}{1 - u_x v/c^2} \qquad u'_y = \frac{u_y}{\gamma(1 - u_x v/c^2)} \qquad u'_z = \frac{u_z}{\gamma(1 - u_x v/c^2)}$$

$$\vec{p} = \gamma m\vec{v} \qquad K = (\gamma - 1)mc^2 \qquad E_0 = mc^2 \qquad E_\mathrm{tot} = \gamma mc^2 \qquad E^2 = (pc)^2 + (mc^2)^2$$

$$n_i = A\, g_i\, e^{-E_i/kT} \qquad n(v) = 4\pi \frac{N}{V}\left(\frac{m}{2\pi kT}\right)^{\frac{3}{2}} v^2 e^{-mv^2/2kT}$$

$$e_\mathrm{total} = \sigma T^4 \qquad \lambda_\mathrm{max} T = 2.898\times10^{-3}\,\mathrm{m\cdot K} \qquad J(f) = \frac{c}{4}\,u(f) \qquad u(f) = \frac{8\pi h f^3}{c^3}\frac{1}{e^{hf/kT} - 1}$$

$$E = hf \qquad p = \frac{h}{\lambda} \qquad K_\mathrm{max} = hf - \phi \qquad \lambda' = \lambda + \frac{h}{m_\mathrm{e} c}(1 - \cos\theta)$$

$$\frac{1}{\lambda} = R\left(\frac{1}{m^2} - \frac{1}{n^2}\right) \qquad d_\mathrm{min} = \frac{zZe^2}{4\pi\epsilon_0}\frac{1}{E} \qquad \Delta n = n\,N\left(\frac{A}{R^2}\right)\left(\frac{zZe^2}{4\pi\epsilon_0}\frac{1}{4E}\right)^2 \frac{1}{\sin^4\theta/2}$$

$$L = n\hbar \qquad r_n = \frac{4\pi\epsilon_0}{e^2}\frac{\hbar^2}{m}n^2 \qquad E_n = -\frac{1}{2}\left(\frac{e^2}{4\pi\epsilon_0}\right)^2 \frac{m}{\hbar^2}\frac{1}{n^2}$$