Coulomb's law: $F = k\frac{Q_1Q_2}{r^2}$; $k = 9\times10^9\, N\cdot m^2/C^2$; $\varepsilon_0 = 8.85\times10^{-12}\, C^2/(N\cdot m^2)$.

Electric field due to a point Q charge at distance r: $E = k\frac{Q}{r^2} = \frac{1}{4\pi\varepsilon_0}\frac{Q}{r^2}$. Linear, surface and volume charge densities: $\lambda = \frac{dq}{dl}$, $\sigma = \frac{dq}{dA}$, $\rho = \frac{dq}{dV}$. Electric field of an infinite uniformly charged line $E = \frac{2k\lambda}{r}$ and plane $E = \frac{\sigma}{2\varepsilon_0}$. Electric flux: $\Phi = \vec{E}\cdot\vec{A}$; $d\Phi = \vec{E}\cdot d\vec{A}$; $\Phi = \int \vec{E}\cdot d\vec{A}$. Gauss's law: $\oint \vec{E}\cdot d\vec{A} = Q_{encl}/\varepsilon_0$.

Potential energy, potentials and potential differences: $U_{ab} = U_b - U_a = -W_{ab} = -\int_a^b \vec{F}\cdot d\vec{l}$; $V_{ab} = V_b - V_a = -\int_a^b \vec{E}\cdot d\vec{l}$; Volt $[V] = [J/C]$; $V = k\frac{Q}{r}$; $V = k\int\frac{dq}{r}$; $E_l = -\frac{dV}{dl}$; $E_x = -\frac{\partial V}{\partial x}$; $U_{12} = k\frac{Q_1Q_2}{r_{12}}$.

Capacitors: $Q = CV$; parallel plate $Q = \varepsilon_0\frac{A}{d}$; energy $U = \frac{1}{2}\frac{Q^2}{C}$; with dielectric: $C = KC_0$; permittivity of material $\varepsilon = K\varepsilon_0$. Capacitors in parallel $C = C_1 + C_2$; in series $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$.