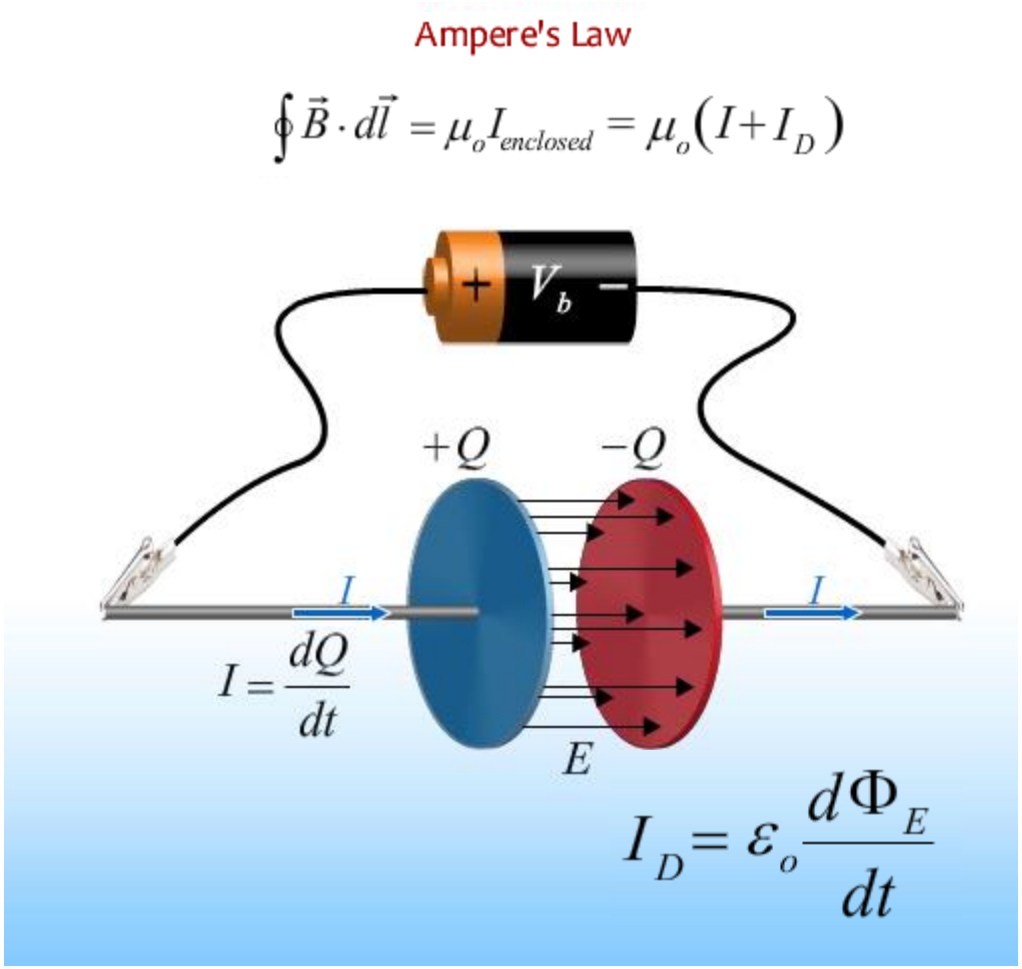
After Prelecture 21: Modify Ampere's Law



$$E = \frac{\sigma}{\varepsilon_0} = \frac{Q}{\varepsilon_0 A}$$

$$\Phi = EA = \frac{Q}{\varepsilon_0}$$

$$Q = \varepsilon_0 \Phi$$

$$\frac{dQ}{dt} = \varepsilon_0 \frac{d\Phi}{dt} \equiv I_D$$