Chapter 1: Electric Circuit Variables

ECE 2040

1 Definitions

Students who have taken Physics 2 are likely to know these already.

- **Electric Circuit/Network:** Interconnection of electrical elements linked together in a closed path so that an electric current may flow continuously.
- **Charge:** Quantity o electricity responsible for electric phenomena.
- **Current:** Time rate of flow of electric charge past a given point

$$i = \frac{\mathrm{d}q}{\mathrm{d}t}$$

- **Direct Current:** Current of constant magnitude
- **Voltage** across an element is the work required to move a unit positive charge from the -ve terminal to the +ve terminal.

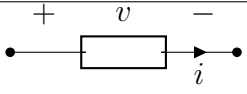
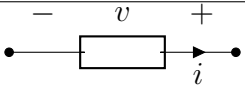
$$v = \frac{\mathrm{d}w}{\mathrm{d}q}$$

- **Power:** Time rate of supplying or receiving power

$$p = \frac{\mathrm{d}w}{\mathrm{d}t}$$

2 Passive Convention

Table 1
Passive Sign Conventions

Passive Convention	**Non-Passive Convention**
	
Power *received* by element	Power *supplied* by element