Objective Function:

Minimize (or Maximize)

$$\vec{c}^T \vec{x}$$

where ($\vec{c}$) is a vector of coefficients and ($\vec{x}$) is a vector of decision variables.

Subject to Constraints:

1. **Linear Constraints:**

$$\mathbf{A}\vec{x} \leq \vec{b}$$

where ($\mathbf{A}$) is a matrix of coefficients, ($\vec{x}$) is a vector of decision variables, and ($\vec{b}$) is a vector of constants.

2. **Integer Constraints:**

$$x_i \in \mathbb{Z} \text{ for some } i$$

where ($\mathbf{Z}$) denotes the set of integers.

3. **Continuous Constraints:**

$$x_i \geq 0 \text{ for all } i$$

where ($\vec{x}$) are the continuous decision variables.

General MILP Formulation:

Minimize (or Maximize)

$$\vec{c}^T \vec{x}$$

Subject to:

$$\mathbf{A}_1 \vec{x} \leq \vec{b}_1$$

$$\mathbf{A}_2 \vec{x} = \vec{b}_2$$

$$x_i \in \mathbb{Z} \text{ for integer variables}$$

$$x_i \geq 0 \text{ for continuous variables}$$