$u - b\dot{x} = m\ddot{x} \rightarrow \ddot{x} + \frac{b}{m}\dot{x} = \frac{u}{m}$

$(\dot{x} := v)$

$\dot{v} + \frac{b}{m}v = \frac{u}{m}$

State variable: $x := [x, v]^T$

$A = \begin{bmatrix} 0 & 1 \\ 0 & -\frac{b}{m} \end{bmatrix}$

$B = \begin{bmatrix} 0 \\ \frac{1}{m} \end{bmatrix}$

$C = \begin{bmatrix} 0 & 1 \end{bmatrix}$