In the set cover problem, the goal is to find a collection of subsets indexed by \( I \) that minimizes \( \sum_{j \in I} w_j \) such that,
\[
| \bigcup_{j \in I} S_j | = |E|
\]

Consider the partial cover problem, in which one finds a collection of subsets indexed by \( I \) that minimizes \( \sum_{j \in I} w_j \) such that,
\[
| \bigcup_{j \in I} S_j | \geq p|E|
\]

Where \( 0 < p < 1 \) is a constant.

Express this problem as a linear program.