

Necessity and sufficiency

If A then B ($A \Rightarrow B$)

B is **necessary** for A
because B is guaranteed by A ;
it is impossible to have A without B .

A is **sufficient** for B ,
because A always implies that B ;
but A not being true does not always imply that B is not true.

$A \Rightarrow B$
is equivalent to
 $\text{not } B \Rightarrow \text{not } A$

But it is not equivalent to
 $\text{not } A \Rightarrow \text{not } B$