Informatics 1: Computation & Logic:
Logical Equivalences

December 2, 2010

The following logical equivalences are assumed to be known for the Computation & Logic exam.

For propositions X and Y we have the following set of equivalences:

- $\neg\neg X$ is equivalent to X
- $X \rightarrow Y$ is equivalent to $\neg X \vee Y$
- $X \leftrightarrow Y$ is equivalent to $(X \rightarrow Y) \ \wedge \ (Y \rightarrow X)$
- $\neg(X \vee Y)$ is equivalent to $\neg X \ \wedge \ \neg Y$
- $\neg(X \ \wedge \ Y)$ is equivalent to $\neg X \vee \neg Y$
- $X \vee (Y \ \wedge \ Z)$ is equivalent to $(X \vee Y) \ \wedge \ (X \vee Z)$
- $X \wedge (Y \ \vee \ Z)$ is equivalent to $(X \wedge Y) \ \vee \ (X \wedge Z)$