Philosophy 134
Spring, 2007
Homework 2 (Corrected)

Based on the April 12 versions of Modules 3 and 4.
Due: April 18, 2007, in class

1. Given the informal interpretations of the modal operators in Module 3, show how to define the '$\multimap$' in terms of the '$\circ$.'

2. Given the basic semantical rules in Module 3, prove that for all frames **Fr**, all interpretations **I** based on **Fr**, and all worlds **w** in **Fr**, if $\mathbf{v_I}(\alpha \multimap \beta, \mathbf{w}) = \mathbf{T}$, then if $\mathbf{Rww}_i$, then, if $\mathbf{v_I}(\alpha, \mathbf{w}_i) = \mathbf{T}$, then $\mathbf{v_I}(\beta, \mathbf{w}_i) = \mathbf{T}$.

3. Prove in the basic semantics of Module 3 that for all sentences α of *MSL*, $\sim\Diamond\alpha$ is semantically eqivalent to $\Box\sim\alpha$.

4. Prove that '$\Box(A \vee B)$' is derivable from '$\Box A \vee \Box B$' in the basic derivational system of Module 4.

5. Using the basic derivational rules for '$\Box$' and '$\sim\Diamond$' (and De Morgan's as a derived rule if useful), prove that '$\Box A \vee \Diamond B$' is derivable in the basic system of Module 4 from '$\Box(A \vee B)$.'