

# PHIL 105 - Implication/Conditional logic

## Summary

Conditional statements have an if or a when word in them. They can come in three equivalent forms. The antecedent is sufficient for the consequent and the consequent is necessary for the antecedent. Denying the consequent is a useful argumentation strategy.

## Conditional

At is a sentence, not a statement.

**if** [they havent died] **then** [they're still alive today]

**if** [antecedent] **then** [consequent]

The conditional is any way of presenting the antecedent and consequent.  
A conditional *always* has both.

The antecedent is sufficient (it is enough for the consequent).  
The consequent is necessary for the antecedent.

Can write it in different ways.

if = when

**if** [antecedent] **then** [consequent]  
= [consequent] **if** [antecedent]  
= [antecedent] **only if** [consequent]

**only if**

emphasizes necessity. but equivalent.

You may purchase alcohol if you're at least 19

This doesn't say that a 16 year old can't buy alcohol.

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We're going to walk home unless we find a gas station soon.

We're going to walk home  
**if** we do **not** find a gas station soon

A unless B = A if not(B)

## Syllogisms with conditional

if F then G

F

therefore G

*Affirming the antecedent* Invalid

G  
therefore F  
*Affirming the consequent* Valid

### **Contrapositive**

if F then G

if not G then not F

If F then G

not F  
therefore not G  
*Denying the antecedent* Invalid

not G  
therefore not F  
*Denying the consequent* Valid

### **Only if**

Im not taller than 2m only if im taller than 1m.

Im not taller than 2m  
therefore im not taller than 1m  
*Denying the antecedent* Invalid  
= im not not taller than 1m  
= im taller than 1m

Im not taller than 2m  
therefore im not taller than 2m  
*Denying the consequent* Valid

### **DC for objections**

Bob thinks god exists, Abby thinks God does not exist

Bob's objection:  
*Abby's conclusion has to appear in the argument as an antecedent*

**if** [god does not exist] **then** [there wouldn't be a universe]  
there is a universe

therefore god exists  
*This is a valid DC argument. Abby has to reject one of the premises*

Abby's objection:  
*Bob's conclusion has to appear in the argument as an antecedent*

**if** [god exists] **then** [there wouldn't be pointless natural suffering]  
there is pointless natural suffering

therefore god does not exist  
*This is a valid DC argument. God has to reject one of the premises*