**Phil 201 Lecture Notes**

Sentential Logic

* Sentences / Statements / True or False
* Usually simple and precise
* A set of sentences. One of which is a conclusion, the others are called premises
* **3 dots in triangle => “therefore”**
* Example => It is raining OR it is not raining = TRUE
* Example => If today is Wednesday, then it is sunny.
* **A sentence is called logically true if there is no way for it to be false.**
* **A sentence is atomic if it contains no smaller sentence as part.**
* **An argument is (truth functionally) valid if there is no way for the premises to be true and conclusion false**
* **A set of sentences is consistent if there is some way for all to be true**

If Bill jogs regularly then Carol does, provided Dale does.

B: Bill jogs

C: Carol jogs

D: Dale jogs

Can be read as:

1. D > (B > C)
2. (D > B) > C

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| B | C | D | B > C | D > (B > C) | D > B | (D > B) > C |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Either the maid or the butler committed the murder, unless the cook did.

B: Butler did it

C: Cook did it

M: Maid did it

Can be read as:

1. B v M v C

It will rain, whether it is windy or not.

Can be read as:

1. (W > R) & (-W > R)
2. R
3. (W v -W) > R