**Criteria:** Students can practice writing techniques in explain technical terms to specific audience. This assignment allows student to utilize multiple methods to demonstrate a term from general understanding to expanding definition. The objective of this assignment is to improve our communication skills in transforming professional terms and knowledge into nontechnical version. Also, we will be familiar with the guidelines and formats after this assignment.

**Term:** Modus Ponens. This is a term from CPSC 121 Models of Computation course.

**Situation:** Tutor is reviewing the important term with a student.

**Parenthetical Definition:**

In logic reasoning, a statement, which can be evaluated by **modus ponens** (method of affirming), has a conclusion value as true.

**Sentence Definition**:

Modus ponens is a mathematical logic form when evaluating the conclusion of the “if, then” statement. It follows a pattern as “ If P then Q. And P is true, therefore, Q must be true”.

**Expanded Definition:**

Modus ponens is Latin meaning the conclusion is an affirmation. The history of it goes back to the Classical Age. It can be applied to series of statements or conclusions along with other reasoning forms for an ultimate goal.

Here are 2 examples:

1. If I put the spoon of ice cream into hot water, then it will melt.

 P = I put the spoon of ice cream into hot water

 Q =Therefore, ice cream will melt.

We consider the above argument as “If P then Q”. When the premise **P** matched to the original “if ” statement, **P** is true. Then the entire argument is valid for the pattern of modus ponens. Therefore, we can affirm that the conclusion **Q** must be true.

1. If I have enough time, then I will finish both my English and math homework today.

P = I do not have enough time

Q = (conclusion?)

Modus ponens only evaluate an argument following its pattern. In this example, value of **P** is opposite to the original “if ” statement so that we consider **P** as false. Therefore, this situation is not valid to apply modus ponens to evaluate the conclusion of **Q.**

The validity of applying modes ponens into arguments can be demonstrated as below:

*(The → between p and q is the symbol representing “if p, then q” in a graph.)*



Figure 1

T stands for “True” meaning value and F stands for “ False” meaning false value.

Only the highlighted row has all premises as “ T ”, therefore, modes ponens can be applied into this row and produce a conclusion as “ T ”.

Bibliography

“Discrete Mathematics - Propositional Logic.” *Tutorialspoint*, www.tutorialspoint.com/discrete\_mathematics/discrete\_mathematics\_propositional\_logic.htm.

*Logic - Good and Bad*, www.physics.smu.edu/pseudo/examples\_logic.html.

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Figure 1. Susanna S. Epp *Mathematics with Applications*, FIFTH ed., Cengage Learning, 2019, pp. 68