

## CHAPTER IV METHODOLOGY

### 4.1 Materials and Equipment

4.1.1 Equipment: Computer Laptop Model: Intel(R) Core(TM) i7-2630QM at CPU 2.00GHz, RAM: 8 GB and 64-bit Operating System.

4.1.2 Software:

1. GAMS version 24.2.1
2. Microsoft office excel 2007

### 4.2 Methodology:

4.2.1. Grass-root Design for Heat Exchanger Network

- a. Design and modify the original algorithm of stage-wise superstructure model.
- b. Develop solving strategy.
- c. Test the modified model using a number of complex cases and compare the result of the best heat exchanger network with other models published in literature.

4.2.2. Determining the Best Solution of the New Model

Apply bounds to the objective variable and employ the concept of heat exchange constraint (HEXC) to obtain the best solution results compare the results to those published in literature.