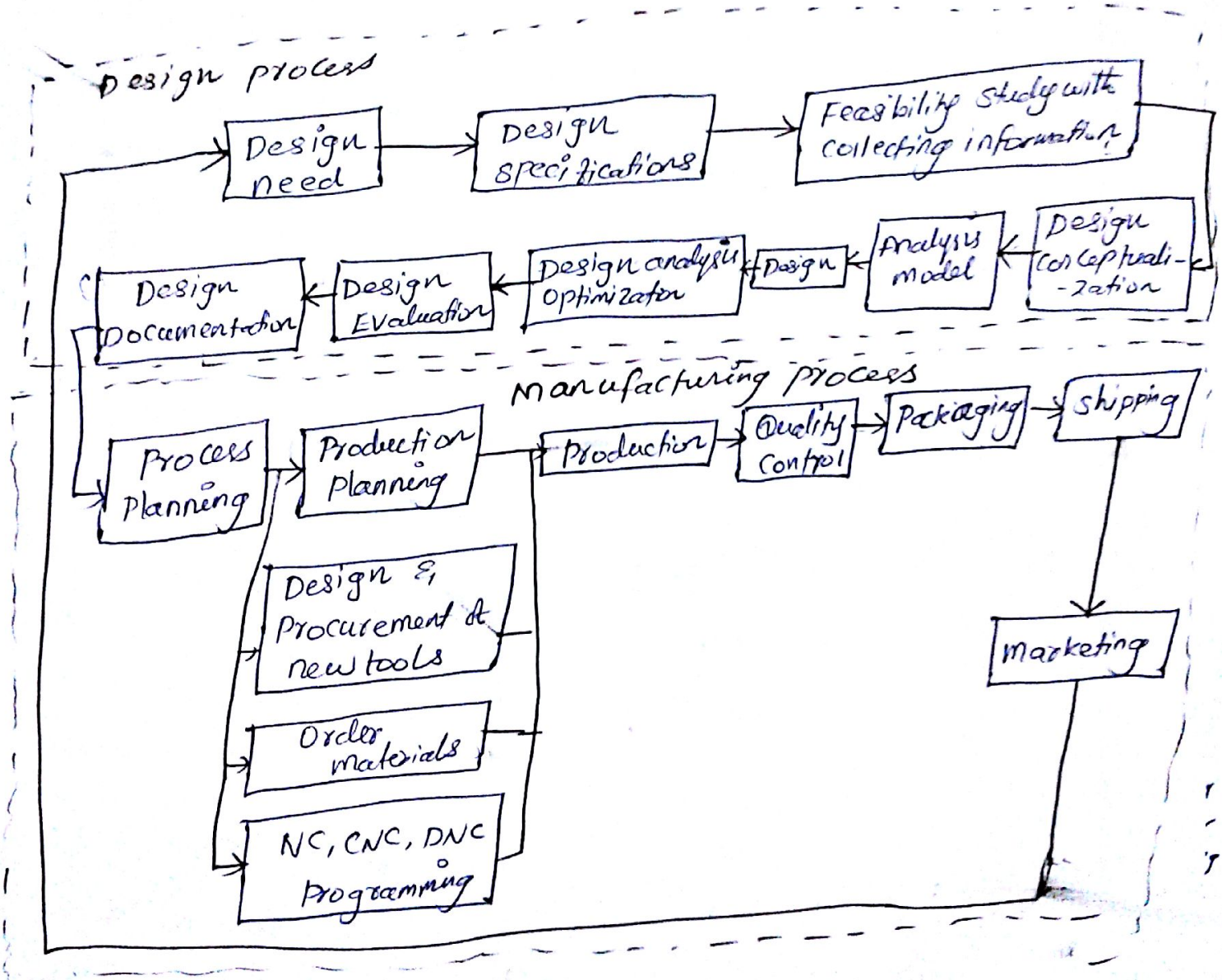
- A mechatronics system integrates various technologies involving sensors, measurement systems, drives, actuation systems, microprocessor systems & s/w Engineering.

- In manufacturing a product, the process involves 2 steps → Design process
→ manufacturing process.



- with the help of micro electronics and sensor technology, mechatronics systems are providing high levels of precision and reliability.

- Today's customers are demanding more variety and higher levels of flexibility in the products.
- Due to these demands & competition in the market mfg are striving to launch new/modified products to survive.
- It is therefore essential to automate the manufacturing & assembly operation of a product.
- using CAD/CAE tools, 3D models of products can easily be developed.
- These models can then be analyzed & can be simulated to study their performances using numerical tools.
- mechatronics based automated systems such as automatic inspection & quality assurance, automatic packaging, record making and automatic dispatch help to expedite the entire manufacturing operation.
- Automation in the machine tools has reduced the human intervention in the machining operation and improved the process efficiency and product quality.
- applications :-
  * Computer numerical control (CNC) machines
  * Tool monitoring systems
  * Advanced manufacturing systems < Flexible mfg systems (FMS) / Computer integrated mfg (CIM)
  * Industrial robots
  * Automatic inspection system : machine vision system
  * Automatic packaging systems.