- **Specifications:**
    - Define the functionality of the integrated circuit (IC).
    - Specify the required outputs and their characteristics.
    - Determine the acceptable input power range and other physical and behavioral specifications and constraints of the desired chip.
- **Behavioral Modeling and Circuit Design:**
    - Create an overview of the required circuit by creating behavioral model and then create a circuit design. This step focuses on functionality and not on the specific implementation details.
- **Building Circuits on HDL (RTL Design):**
    - Implement the design using Hardware Description Languages (HDL) such as Verilog or VHDL.
    - This involves specifying the behavior of the digital logic in terms of data transfers between registers.
- **Simulation and Verification:**
    - Write testbenches in Verilog or VHDL to simulate the designed models.
    - Verify that the outputs meet the specified requirements.
    - Modify the circuit as necessary based on simulation results.
- **Converting RTL Description to Netlist of Gates and Flip-Flops:**
    - Use synthesis tools (e.g., Vivado) to convert the HDL description into a netlist of gates and flip-flops.
    - Optimize the netlist for performance, area, and power.
- **Physical Design such as Area Optimization and Floor Planning:**
    - Optimize the physical layout for area, power, and performance.
    - Utilize tools for placement and routing of modules to achieve the desired physical implementation.
- **STA (Static Timing Analysis):**
    - This step involves testing the timing of the output required and adjusting the design if necessary to meet timing constraints.
- **DFT (Design for Test):**
    - Integrate test structures into the design to facilitate manufacturing testing and fault detection.
- **GDS II file generation:**
    - Generate the GDSII (Graphic Data System II) file, which contains the final layout information in a format suitable for chip fabrication.
- **Mask data generation:**
    - In this process we use the GDS II file to create masks for photolithography process which is used to manufacture chips by transferring the circuit pattern in the silicon wafers.
- **Fabrication:**
    - Send the finalized design to a fabrication center for the physical creation of silicon chips on wafers.
    - Utilize advanced processes such as photolithography, metal layer deposition, and etching.
- **Assembly and Testing:**

- Assemble the fabricated chips into packages suitable for practical use.
- Perform rigorous testing to ensure the functionality and reliability of the integrated circuits.
- After successful testing, the chips are ready to be sent to end-users.