

Mechanical Design Engineering Catalog



Day 1-

- a) Mock interview on Mechanical design & analysis how you are aware about mechanical
- b) Get feedback on your Mechanical design concepts on mail to comparing your knowledge after 4 month

Day2-

Building Your ATS friendly Resume & add all the key points which required for MNC companies

day 3-

Modifying your resume and finalize it. Upload the finalized resume on your linkd-In and naukri.com

Day 4-

Strat your 1st project

- a) Meeting with sales team and clients for the requirement of client
- b) Understand the client requirement

Day 5-

- a) Get a Business requirement documents from sales team which have all the requirements, timeline of the project etc.
- b) understand the BRD and make a list of brought out components like which needs for this projects.

Brought out components-

1. Actuation Components

1. **Pneumatic Cylinders** (Double acting, Rotary, Compact, Guided)
2. **Hydraulic Cylinders**
3. **Electric Linear Actuators**
4. **Stepper / Servo Motors**
5. **Gearboxes** (Planetary, Helical, Worm)
6. **Rotary Tables / Indexers**

2. Motion Transmission Components

1. **Couplings** (Flexible, Rigid, Jaw, Oldham)
2. **Shafts, Pulleys & Belts (Timing, V-belts)**
3. **Ball Screws / Lead Screws**
4. **Linear Guides & Rails**
5. **Rack & Pinion sets**
6. **Chains & Sprockets**
7. **Bearings (Ball, Roller, Linear Bushes)**



3. Structural / Support Components

1. **Aluminum Extrusion Profiles (T-Slot Frames)**
2. **Fasteners (Bolts, Screws, Nuts, Washers)**
3. **Brackets, Gussets, and Connectors**
4. **Base Plates & Mounting Plates**
5. **Vibration Mounts / Levelling Feet**

4. Sensors and Feedback Devices

1. **Proximity Sensors (Inductive, Capacitive)**
2. **Limit Switches**
3. **Photoelectric Sensors**
4. **Encoders (Rotary / Linear)**
5. **Load Cells / Pressure Sensors**
6. **Temperature Sensors (RTD, Thermocouple)**

5. Pneumatics and Fluid Control

1. **Air Preparation Units (FRL – Filter, Regulator, Lubricator)**
2. **Solenoid Valves / Manual Valves**
3. **Fittings & Tubing**
4. **Vacuum Ejectors / Suction Cups**
5. **Manifolds & Flow Control Valves**

6. Electrical & Control Hardware

1. **Control Panels / Enclosures**
2. **Relays / Contactors**
3. **Power Supplies**
4. **Terminal Blocks**
5. **PLC / HMI / Industrial PC**
6. **Wiring Harnesses / Cable Trays / Glands**

7. Safety and Ergonomics

1. **Safety Light Curtains**
2. **Emergency Stop Buttons**
3. **Safety Fencing / Interlocks**
4. **Two-Hand Safety Devices**
5. **Protective Covers / Guards**



8. Miscellaneous / Machine Accessories

1. **Sensors Mounts & Clamps**
2. **Tool Changers / End Effectors (Robotics)**
3. **Conveyor Rollers / Belts**
4. **Cooling Units / Fans**
5. **Labels, Tags, Cable Ducts**

Day 5-

Making the same list which brought out components & send it to the quotation team for making quotation of the project for client

Day 6 -

a) A Formal meeting with clients for the your understanding about the project & make a Design Approval process documents which will be updating when you have meeting with clients.

Day 7 & Day 8

- a) Make a dimensional layout of the project
- b) Get approval from client on mail and update the DAP documents and send it to client for ref.

Day 9 & Day 10 -

- a) Works on Design failure mode effective analysis (DFMEA) document.
- b) Make a list of all the failure things which will be in our design
- c) Reduce or eliminate the each severity.
- d) Send a mail this DFMEA document to design team, drafting team, manufacturing team, assembly and planning team.

Day 11 – Day 35

Start your 1st Design project - (Creo)

- a) Start working on calculations on all required brought out components.
- b) Select all the required brought out components.
- c) Make a design calculation sheet in excel for calculating the formula and calculations.
- d) Download the 3D component from GrabCad, Tracepart or from company website.
- e) Make 3D manufacturing parts like -
 - i) Fabrication
 - ii) Shaft
 - iii) drive line
 - iv) C channel
 - v) Tables
 - vii) Bearing guide
 - viii) plates
 - ix) plastic components
 - x) Sheet metal
 - xii) Spacer **etc.**
- f) Works on Stress strain Diagram for analysis mechanical properties in manufacturing components.
- g) Works on Iorn-Iorn carbide diagram for analysis mechanical properties in manufacturing components.
- h) Works on heat treatment diagram for analysis mechanical properties in manufacturing components.
- i) Make a running cycle of the project excel sheet to calculate how much time need to complte the task in project.



- j) Develop individual parts, sub-assemblies, and main assemblies.
- k) Perform interference checks and functional design validation.
- l) Select appropriate materials for each component based on- **Load, stress, and vibration conditions.**
- m) Refer to manufacturer catalogs and data sheets for accuracy.
- n) Have meeting with clients for every changes which is not in DAP and take approval.
- o) Conduct client meetings for design updates and approvals (DAP review).
- p) Modify and finalize the design as per client feedback.
- q) Freeze design after final client approval.

Day 36-42

Start Drawings

- a) Start 2D drawing preparation for all parts and assemblies.
- b) Apply GD&T symbols and standards.
- c) Add welding, machining, and surface finish symbols.
- d) Specify heat treatment on required component.
- e) Specify surface treatment on required component.
- f) Ensure drawings comply with manufacturing standards.
- g) Release the all manufacturing drawings
- h) Make Engineering change note (ECN) & Engineering release note (ERN)
- i) Make all project, Assembly and sub assembly drawing.
- k) Working on 3-2-1 principle & how it works?

Day 42-Day45

- a) Working on Stack up analysis
- b) working on tolerance analysis

Day after Drawing release Continuous work till project successful deliver

- a) Coordinate to Manufacturing team
- b) Coordinate to Assembly team
- c) Coordinate to project & planning team

Day 46-

- a) Make a Bill of Material for all project, Assembly and sub assembly drawing.
- b) Release this BOM to project and planning team.

Day 47 – Day 48

- a) Conduct prototype assembly and validation testing.
- b) Update design based on test results or production feedback.
- c) Ensure smooth transition from design to shop floor.

Day 49-

Project Execution & Closure

- a) Execute the project in collaboration with the client, ensuring smooth testing, validation, and performance



checks.

b) Coordinate with the assembly team for disassembly and final inspection of the project components.

Day 50- Day 51

Prepare and compile all required project closure documentation like-

- i) Request for Quotation (RFQ)
 - ii) Design Approval Process (DAP)
 - ii) Minutes of Meeting (MOM)
 - iv) Layout Drawings
 - v) Design Failure Mode and Effects Analysis (DFMEA)
 - vi) Bill of Materials (BOM)
 - vii) Design Calculations and Reports
 - viii) Material Specifications
 - viii) Design Review Documents
 - ix) Assembly and Installation Instructions
 - x) ISO Compliance Documents
 - xii) Engineering Change Note (ECN)
 - xiii) Engineering Release Note (ERN)
 - ivx) Technical Manuals
- etc.**

Day 52-

Finalize, review, and submit the complete project documentation for closure and client approval.

Project 1 completed with best practice on Creo.

Day 53- Day 55

- a) Study on the above 1st project for preparation for 1st interview In 53rd ,54th ,55th day.
- b) On 54th day 1st project interview will schedule.
- c) If fail or pass we will mail you about your feedback about your interview and will mention what you need to improve.

Day 56-59

- a) Time for those fail in interview and will give more 3 days for 1st project preparation.
- b) 2nd time interview will schedule for the fail students on 59th day.
- c) If fail or pass we will mail you about your feedback about your interview and will mention what you need to improve
- d) Those pass the interview we will assign the next 2nd project & those fail we will continue the preparation on 1st project.

Day 60 - Day80

Begin Project 2 using the same workflow: (Solid Works)

- a) Requirement collection → Concept Design → 3D Modeling → DFMEA → Drawing & Documentation → Manufacturing → Testing.



b) Develop independent project handling capability.

Day 81-Day 83

a) Study on the above 1st & 2nd project for preparation for mock interview.

b) On 1st & 2nd project interview will schedule.

c) If fail or pass we will mail you about your feedback about your interview and will mention what you need to improve

Day 84-Day 88

a) Time for those fail in interview and will give more 3 days for 1st & 2nd project preparation.

b) Mock interview will schedule for the fail students

c) If fail or pass we will mail you about your feedback about your interview and will mention what you need to improve

d) Those pass the interview we will assign the next 3rd project & those fail we will continue the preparation on 1st & 2nd project.

Day 89-Day 100

Begin Project 3 using the same workflow: (Solid Edge)

a) Requirement collection → Concept Design → 3D Modeling → DFMEA → Drawing & Documentation → Manufacturing → Testing.

b) Develop independent project handling capability.

Day 101-103

a) Study on the above 1st, 2nd & 3rd project for preparation for mock interview.

b) On 1st, 2nd & 3rd project interview will schedule.

c) If fail or pass we will mail you about your feedback about your interview and will mention what you need to improve

Day 104- Day 105

a) Time for those fail in interview and will give more 3 days for 1st, 2nd & 3rd project preparation.

b) Time mock interview will schedule for the fail students

c) If fail or pass we will mail you about your feedback about your interview and will mention what you need to improve

d) Those fail we will continue the preparation on 1st, 2nd & 3rd project.

Day 106-Day 120

1) In-depth preparation on:

a) BRD, DAP, RFQ, DFMEA, Layouts

b) Design concepts & calculations

c) Material, Heat & Surface treatment selection

d) GD&T, Tolerance & Stack-up analysis

e) SAP / Windchill workflows



2) Practice explaining completed projects confidently with proper technical reasoning.

After Day 120

- a) Continuous mock interviews until candidates achieve full technical confidence.
- b) Guidance on presenting projects during interviews with calculations and documentation.
- c) Final preparation for interviews with top MNCs and product-based companies.

After successfully complete this 3 projects-

- a) Resume shortlisting and interview scheduling with partner companies.
- b) Guidance for final interviews, HR discussions, and onboarding.

✓ **End Outcome:**

After completion, students will be able to:

- a) Handle complete mechanical design projects independently.
- b) Prepare all industrial design documents (BRD, DAP, DFMEA, BOM, ECN, etc.).
- c) Communicate professionally with clients and cross-functional teams.
- d) Secure placement opportunities in top MNCs and product-based companies

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