

Every branch is guided by common engineering principles but employs specialized knowledge in solving unique sets of problems.

2. The Engineering Design Process

Engineers adopt a methodical approach to problem-solving called the engineering design process. It entails a number of procedures that assist engineers in determining the issue, investigating potential fixes, and creating the best design.

Steps in the Engineering Design Process

1. Identify the Problem:

- Understand the problem and gather information.
- Define the scope and constraints (e.g., budget, time, resources).

2. Research and Gather Information:

- Study existing solutions and technologies.
- Conduct literature reviews, experiments, or surveys.

3. Brainstorm Possible Solutions:

- Generate multiple ideas or concepts.
- Encourage creativity and innovation.
- Consider trade-offs and feasibility.

4. Select the Best Solution:

- Evaluate each idea against criteria like cost, safety, sustainability, and performance.
- Choose the solution that best meets the project's objectives.

5. Develop the Solution:

- Create detailed designs, prototypes, and models.
- Perform calculations and simulations to ensure the solution works as intended.

6. Test and Analyze:

- Test the prototype or solution to identify issues and weaknesses.
- Collect data and analyze performance.
- Make necessary modifications.

7. Communicate the Results:

- Prepare technical documentation, reports, and presentations.
- Communicate your design and results to stakeholders (e.g., clients, colleagues).