



1.3 Successful Engineering Skills

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Preview

- In the previous sequences, a brief overview of engineering, which included definition and history, was provided. Also, different engineering disciplines were presented.
- In this sequence, essential skills that can help engineers succeed in their professional career will be presented.

Successful Engineer Skills

- There are many skills that are required for engineers to practice effectively in a professional manner.
- These skills can be divided into two categories:
 1. Analytical Skills
 2. Personal Skills

I. Analytical Skills

1. Math, science, and technology.
2. Professional library.
3. Specialized knowledge.
4. Problem solving.
5. Design.
6. Creativity.

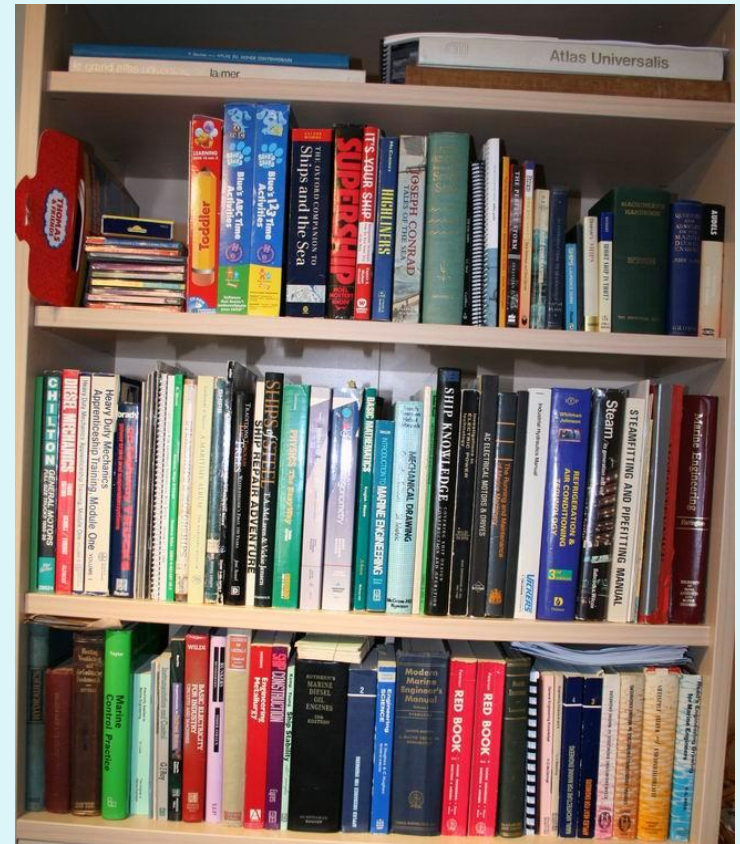
Math, Science, and Technology

- It is essential for engineers to be able to understand and apply mathematical, scientific, and technology tools to solve engineering problems.



Professional Library

- Maintaining a professional library is a must for all engineers.
- Also, engineers should always be eager to read and learn more and therefore continue their quest for knowledge.



Specialized Knowledge

- Engineers should have excellent understanding and knowledge in a specific field and broad knowledge in all other related fields.



Problem Solving

- Engineers are problem solvers and therefore they should be able to apply their knowledge and skills to achieve a desired outcome in an unfamiliar situation.
- Common sense should be used in the process.



Design

- Engineers should be able to follow a well-defined process in order to originate and develop new products.



Creativity

- Creativity is the ability or power to create
 - to invest with a new form
 - to produce through imaginative skill
 - to make or bring into existence something new.



II. Personal Skills

1. Communication.
2. Leadership.
3. Team work.
4. Motivation.
5. Dependability.
6. Professionalism.
7. Management.

Communication

- Writing, speaking, and showing visuals to others, as well as listening to and reading other people work is essential for the success of engineers.
- Even if you have the ‘best’ design, it will go nowhere if you cannot explain it well.



Leadership

- Leadership is the process of utilizing your capabilities to create a well communicated vision for a team and to take effective actions to translate that vision into reality



Teamwork

- Engineers do not work in isolation.
- Team work is the essence of productive company.



Motivation

- Engineers should have positive attitude, enjoy their work, and never give up.



Dependability

- Engineers should develop a reputation that they can and will finish the work assigned to them.
- At the same time they should be able to work independently.



Professionalism

- Engineers are highly-educated and should present themselves professionally by following ethical codes.



Management

- Engineers should be able to manage all available resources such as people and time.
- They should also be well-organized.



Conclusions

- Analytical Engineering Skills
 - Math, Professional library, Specialized knowledge, Problem solving, Design, and Creativity.
- Personal Skills
 - Communication, Leadership, Team work, Motivation, Dependability, Professionalism, and Management