EAST WEST UNIVERSITY

# CSE 412

## Software Engineering

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# Topic 1: Introduction to Software Engineering

# What is Engineering?

Engineering is the ***application*** of scientific principles and mathematics to ***solve problems***, create systems, and improve technology.

- Problem-solving
- Design and implementation
- Optimization of resources
- Innovation and testing

# What is Software Engineering?

Software Engineering is the discipline of designing, developing, testing, and maintaining software systems in a systematic, organized, and efficient way.

- Focus on ***quality, scalability, and performance***
- Use of engineering principles and methods
- Aims to create software that meets the needs of users

# How Software Engineering is Different from Other Engineering?

Unlike traditional engineering, software is -

- Intangible
- Constantly evolving
- Can be easily modified even after deployment

# Difference Between Software Engineering Process and Conventional Engineering Process

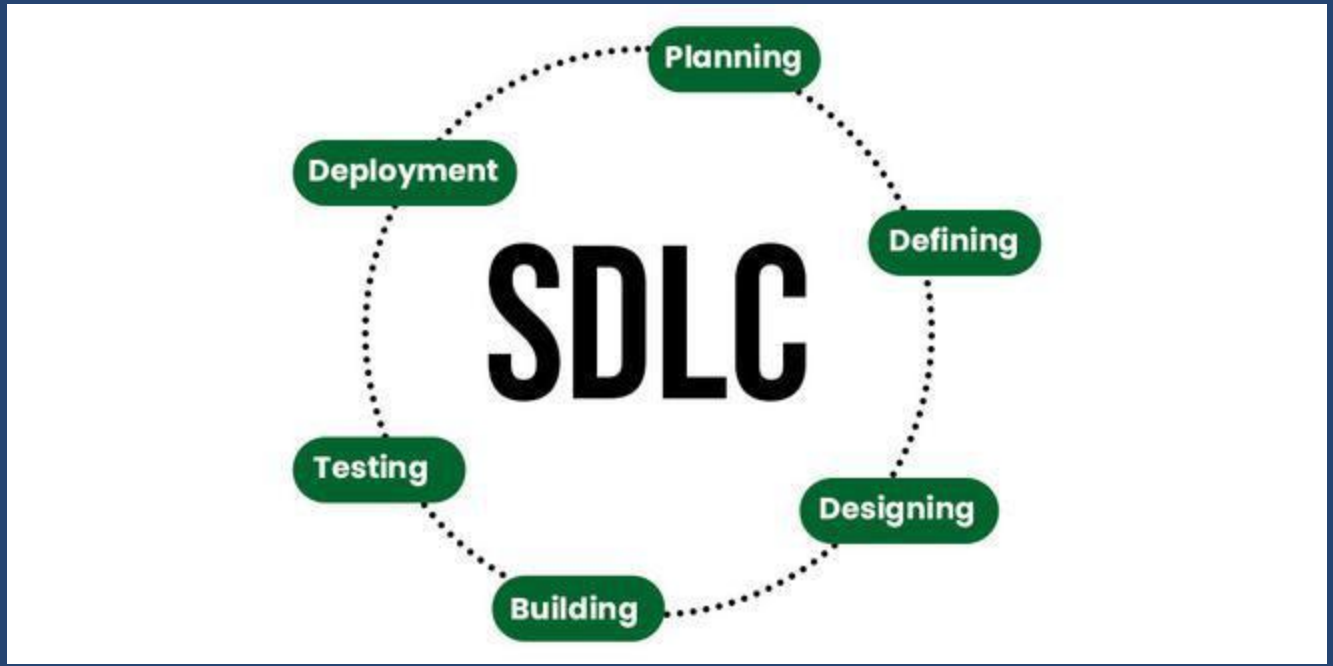
# Sub-Disciplines of Software Engineering

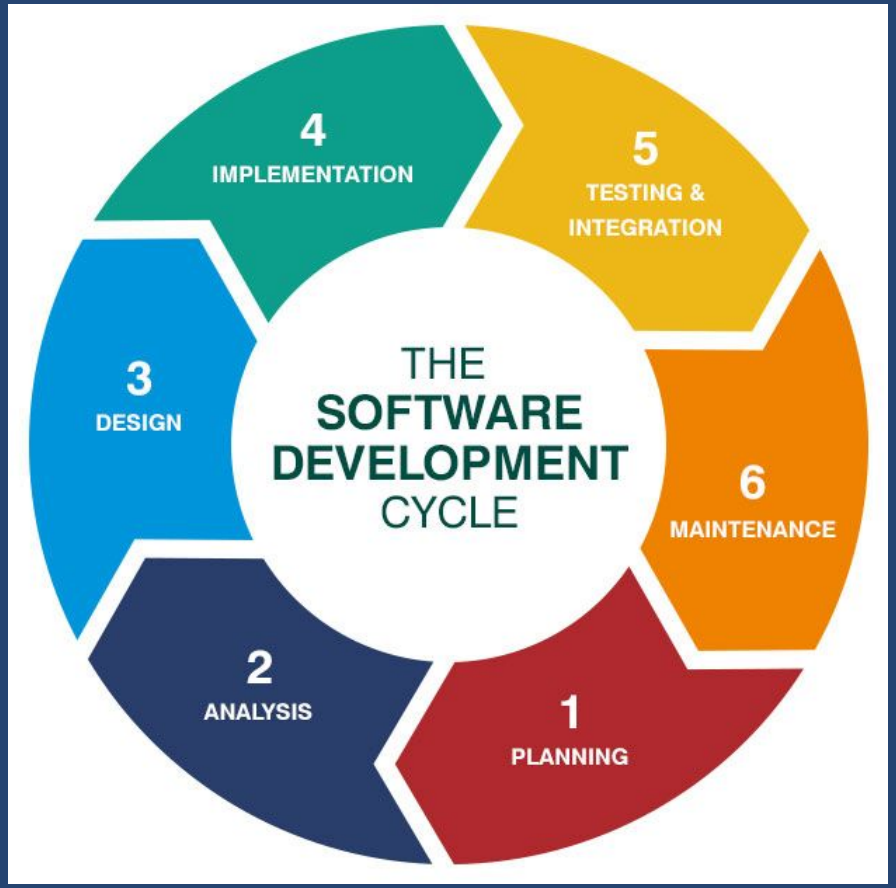
- ***Requirements Engineering***: Defining what the software should do.
- ***Software Design***: Architecting the system’s structure.
- ***Software Development***: Coding and implementation.
- ***Software Testing***: Ensuring the software works as intended.
- ***Software Maintenance***: Updating and fixing the software post-deployment.

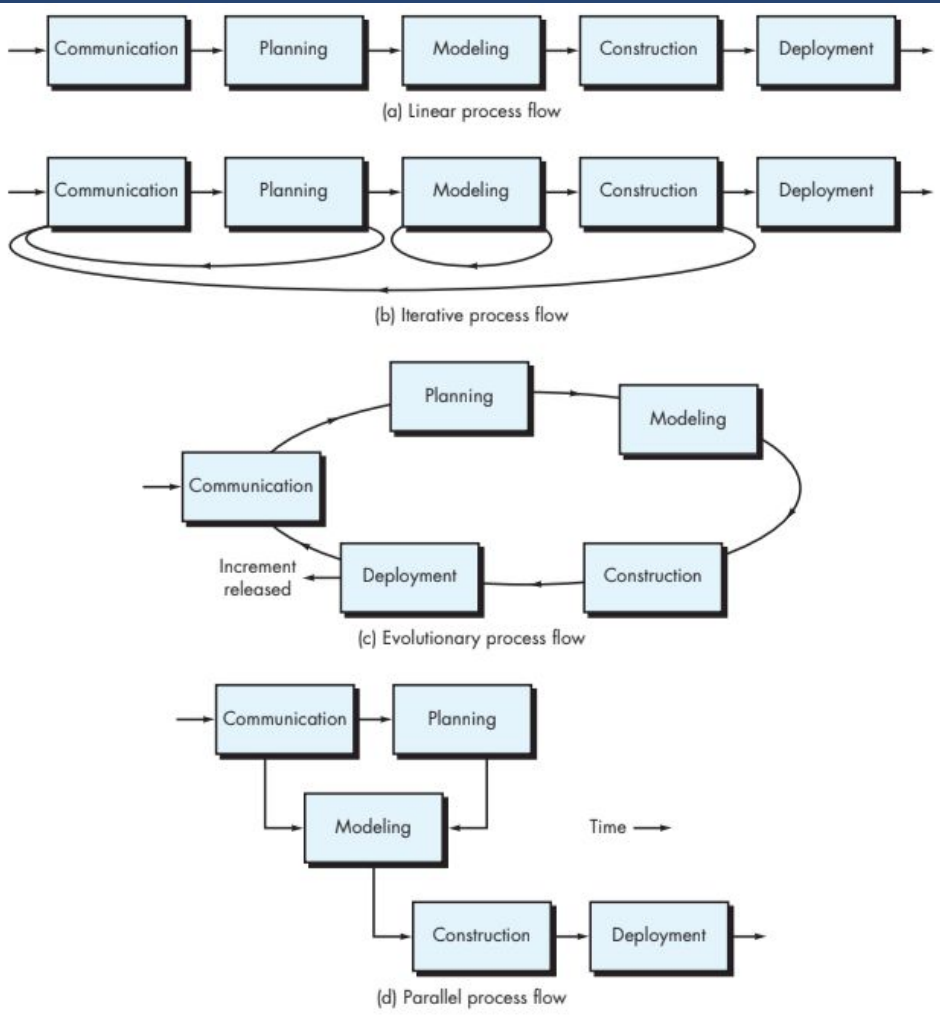
# Goals of Software Engineering

- ***Functionality***: Ensuring the software performs as expected.
- ***Reliability***: The software must be dependable and not prone to failure.
- ***Efficiency***: Optimizing the use of resources.
- ***Maintainability***: Ability to modify and enhance the software over time.
- ***Usability***: Ensuring the software is easy for users to interact with.

# Software Development Life Cycle (SDLC)


Planning
Defining
Designing
Building
Testing
Deployment
SDLC


4
IMPLEMENTATION
5
TESTING &
INTEGRATION
3
DESIGN
THE
SOFTWARE
DEVELOPMENT
CYCLE
6
MAINTENANCE
2
ANALYSIS
1
PLANNING


Communication
Planning
Modeling
Construction
Deployment
(a) Linear process flow
Communication
Planning
Modeling
Construction
Deployment
(b) Iterative process flow
Planning
Modeling
Communication
Increment released
Deployment
Construction
(c) Evolutionary process flow
Communication
Planning
Modeling
Time
Construction
Deployment
(d) Parallel process flow

# THANK YOU