

An Introduction to Software Engineering

CENG 316 – Software Engineering

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What is Software Engineering?

1. The application of a **systematic**, **disciplined**, **quantifiable** approach to the development, operation, and maintenance of software; that is, the application of engineering to software.
2. The **study** of approaches as in (1).

The Goal of Software Engineering

deliver
high-quality products
that provide the
expected functionality,
meet **projected time estimates**,
and
have a **reasonable cost**

Software Development Project



Software development process

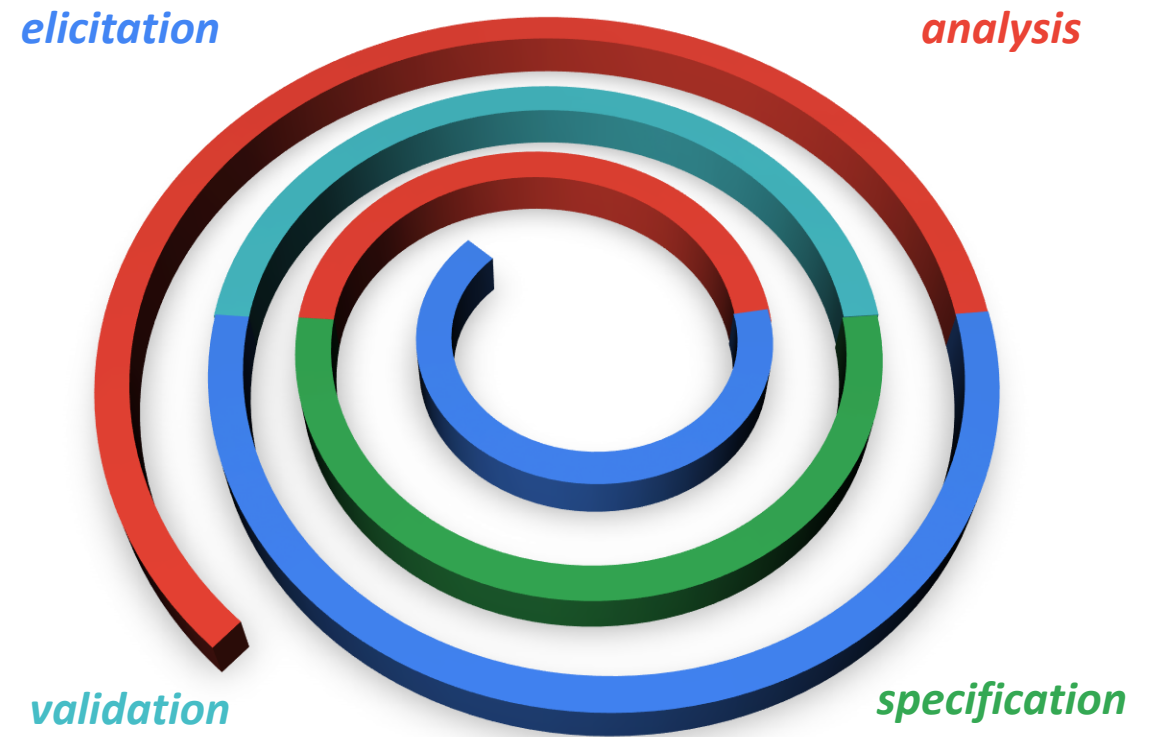
Software Development Process Phases



Requirements Engineering

establish the services that the customer requires from the software system

WHAT SHOULD THE SOFTWARE SYSTEM DO?



Design

describe the internal structure
and organization of the
software system, which will
provide the services identified
during requirements
engineering

**HOW SHOULD THE
SOFTWARE SYSTEM BE?**



Software Architecture



Component / Object / Function Design



Interface Specification



Algorithm Design



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Implementation

realize the design and create
the actual software by
following some principles

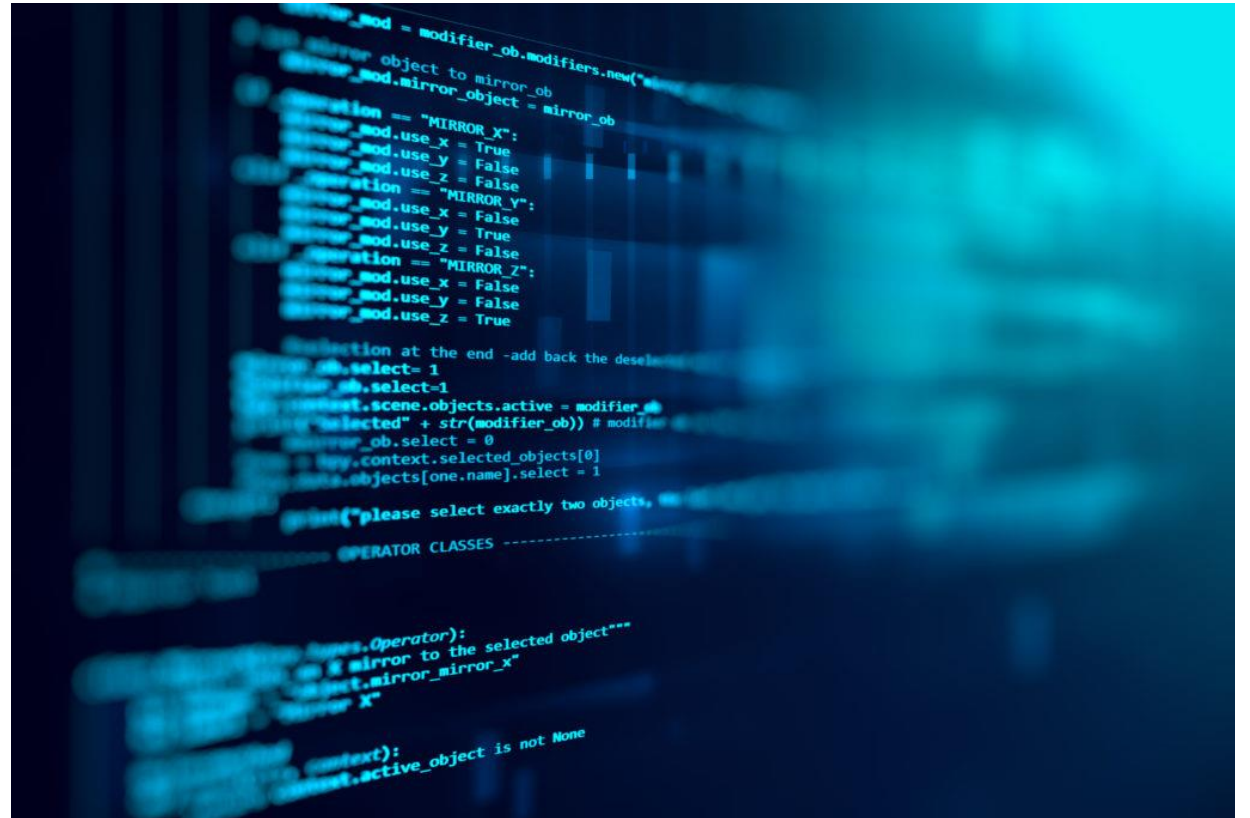


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Verification & Validation (Testing)

Verification

Are we building the system
right?

Validation

Are we building the right
system?



Unit / System / Integration Testing



User Acceptance Testing (UAT)



Regression Testing



Performance Testing



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Maintenance

The activity that sustains the software system as it evolves throughout its life cycle in response to bugs, new requirements, and environment changes



Corrective maintenance



Perfective maintenance

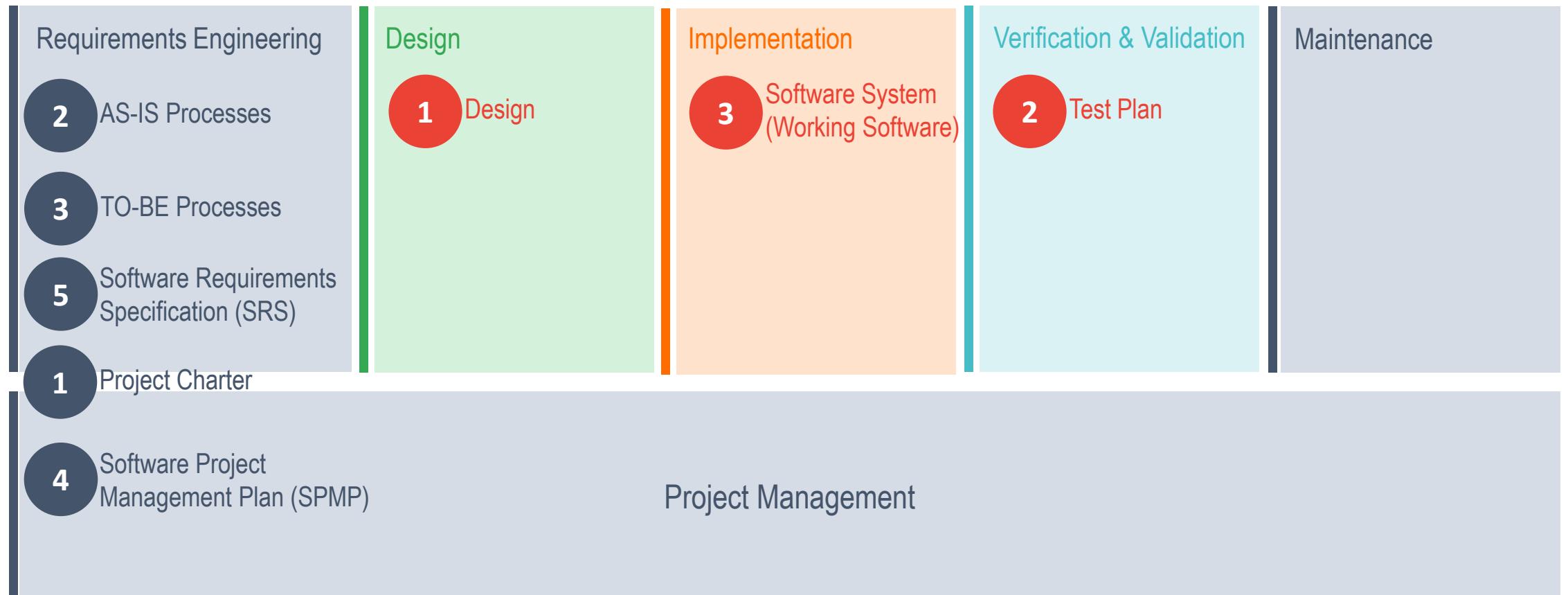


Adaptive maintenance

Scope & Deliverables for CENG 316

CENG 323 – Project Management

CENG 316 – Software Engineering





References

[IEEE Std 610.12-1990]	IEEE Standard Glossary of Software Engineering Terminology, IEEE Std 610.12-1990, 1990.
[ISO/IEC/IEEE 24765:2010]	Systems and software engineering – Vocabulary, ISO/IEC/IEEE 24765:2010(E) , 2010.
[Orso]	“Software Development Processes” course at udacity.com, Alex Orso, 2014.