



w e L C O m e

# Software Engineering

INTRODUCTION

## Class Rules

No compromise  
on Classroom  
discipline

- ▶ Bring your own pen and a register/copy/paper.
- ▶ No Food, Tea, coffee.
- ▶ No Unnecessary IN/OUT from Lecture
- ▶ Mobile phones shall be OFF/SILENT
  - ▶ RS 1000/- Fine.
- ▶ No gossips/talks during Lecture.
- ▶ Please leave the Lecture Room after your attendance if Something bothers you more important than Lecture.

## Marks Distribution

Assessment Type	Weight
Quizzes	7.5
Assignments/Deliv.	7.5
Class Participation	5
Project	10
Sessional Exams 1	15
Sessional Exams 2	15
Final Exam	40
Total	<u>100</u>

# How do you kill this monster?

“There is no silver bullet”

- A good Software Engineer knows several methods, tools, and techniques:
- How does it work?
- What are the benefits?
- What are the drawbacks?
- Is it good for my situation?



Fred Brooks, 1986

"No Silver Bullet — Essence and Accidents of Software Engineering", *Proceedings of the IFIP Tenth World Computing Conference*.

- By the end of this course, you will--
  - Be able to define and describe the phases of the software engineering lifecycle.
  - Be able to explain the role of key processes and technologies in modern software development.
  - Be able to productively apply instances of major tools used in elementary SE tasks.
  - Design and implement a portfolio-worthy software engineering project in a small team environment that can be showcased to recruiters.

# Software Engineering is about People

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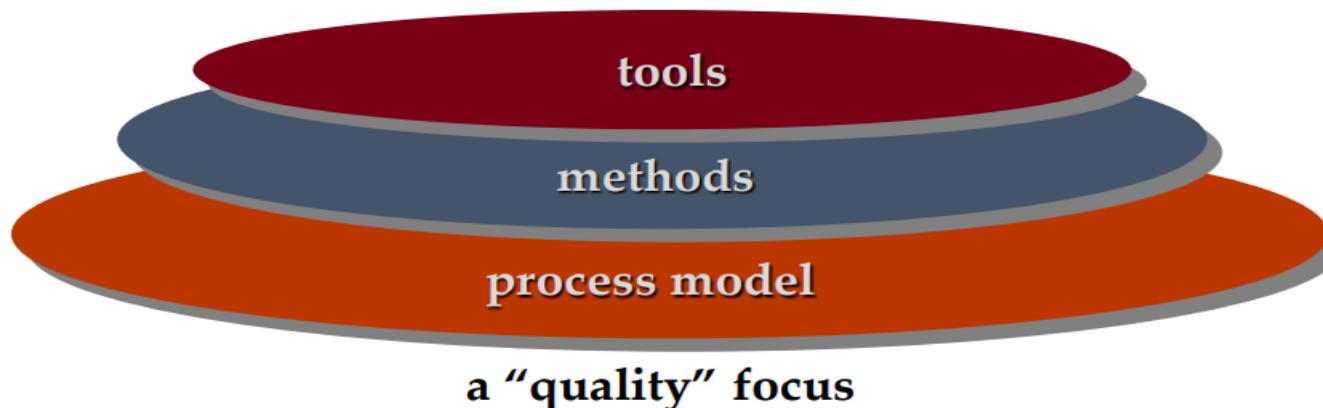
“Any fool can write code that a computer can understand. Good programmers write code that humans can understand”

- Martin Fowler



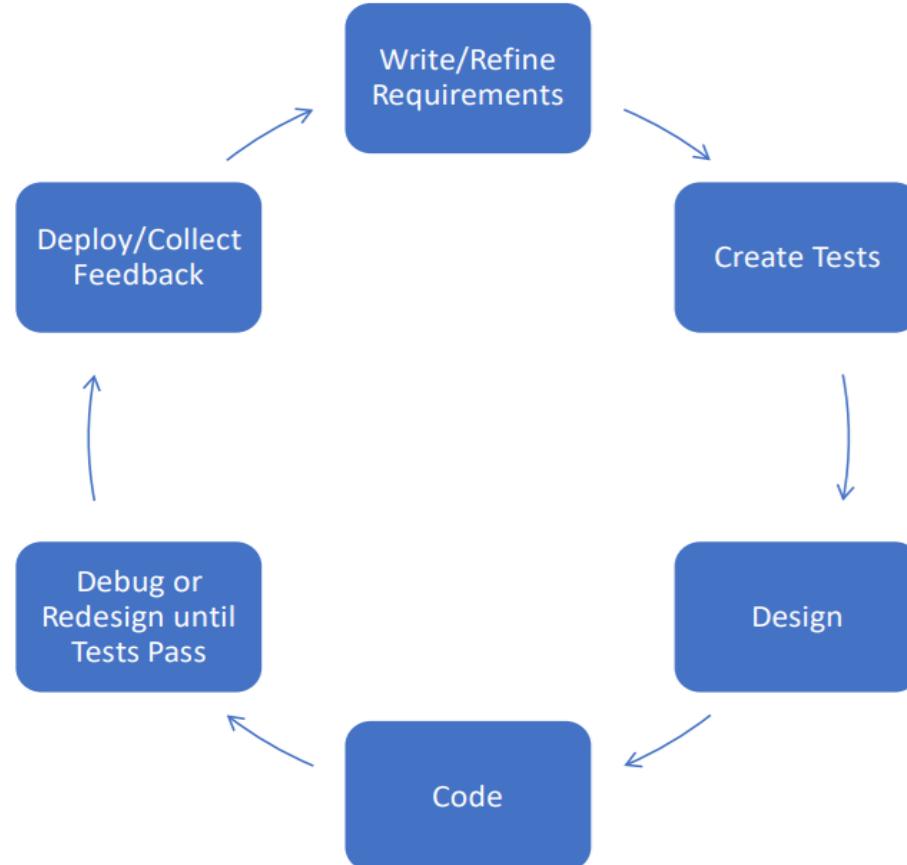
# What is software engineering?

- Software Engineering refers to the tools and processes that we use to
  - design,
  - construct, and
  - maintain programs
  - over time.



Applying “engineering” to Software!

Software Engineering encompasses the entire software development life cycle



## But this raises many questions

- How big is each cycle?
  - In code to be written?
  - In time?
  - In person-power?
- Can you have multiple cycles going at once?
- What artifacts need to be produced at the end of each stage?
  - Need to prepare for the next time through the cycle.
  - Need to document what was done, so that others can build on your work.

## The answers depend on many factors

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- Depends on things like:
  - the size of the team
  - the size of the product
  - the longevity of the product
- There's no one "right" way; there are always tradeoffs.
- But there are best practices, which we will expect you to follow.

# Course Topics

## You will learn about

- ▶ Software Engineering Fundamentals
- ▶ Software process models
  - ▶ Traditional (Waterfall)
  - ▶ Non-Traditional (Scrum)
- ▶ Software process improvement models
- ▶ Software Requirement Engineering
- ▶ Software Analysis and Design
- ▶ Software Architecture
- ▶ Software Testing
- ▶ Software Project Management
  - ▶ Cost estimation
  - ▶ Time estimation

# Other Goal



TEAMWORK



GOOD  
COMMUNICATION



PROACTIVE  
APPROACH



ACADEMIC  
HONESTY

# Course Books

- ▶ Software Engineering, Ninth Edition, 2010.  
Sommerville, Ian Addison Wesley

## **Reference Material**

- ▶ Software Engineering: A Practitioner's Approach, Pressman, R.S. & Maxim B., 8th Edition (2015), McGraw-Hill.
- ▶ SE and Testing, b. B. Agarwal s. P. Tayal m. Gupta, Jones and Bartlett Publishers.



# Software Engineering

# What is Software Engineering?

- ▶ As defined in IEEE Standard 610.12:
  - ▶ *The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.*

# CLOs

At the end of this course  
student should be able to:

1. Select an appropriate software development process for a software project
2. Develop a model of requirements for a software system
3. Design architecture of a software system by choosing the most appropriate architecture styles
4. Design test cases for a software system
5. Construct reasonable sized software in team setting

thank  
you