## Required Level of Study

Reading: about 60 pages per week

Doing: some work each week

Writing: grammatically correct English documents

#### **Individual Effort:**

your grade is based on your effort and performance

#### **Time Commitment:**

9-12 hours per week outside of class

## Meetings for Discussion

Read assigned material *before* class each week.

Take notes: summarize important points.

Participate in discussions.

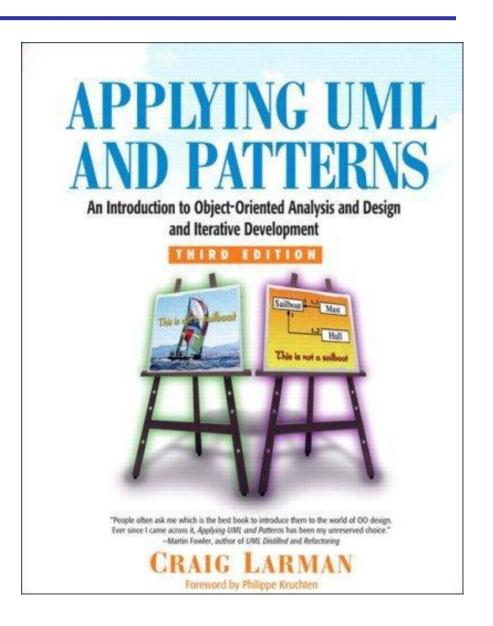
### Main Textbook

"People often ask me which is the best book to introduce them to OO design.

... Applying UML and Patterns has been my unreserved choice."

-- Martin Fowler

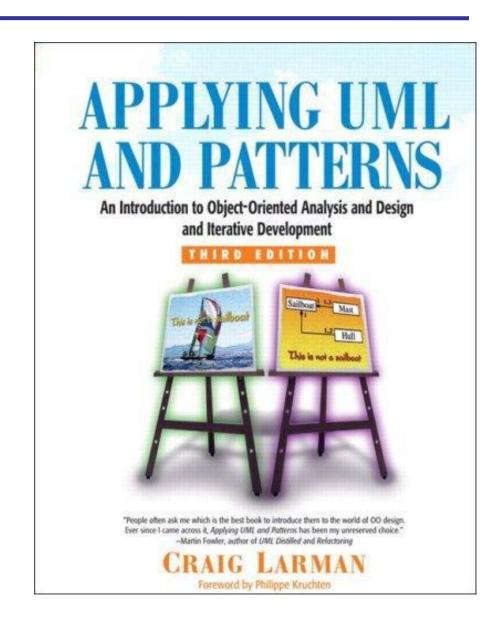
Was 700 Baht at KU Books (discount for this course).



### Main Textbook

If you don't read the book,

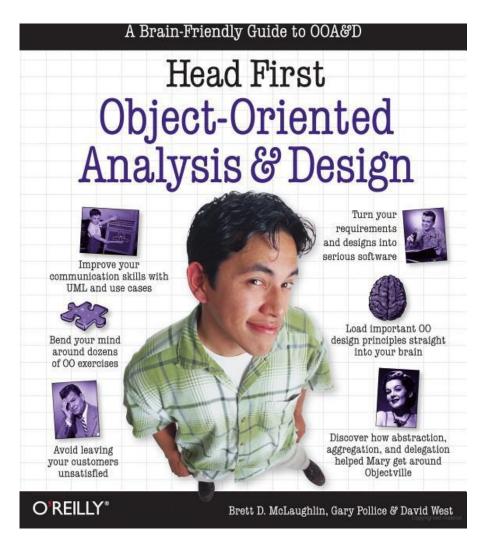
you will not pass this course.



### Other Books

For OO Design Principles, we will use some chapters.

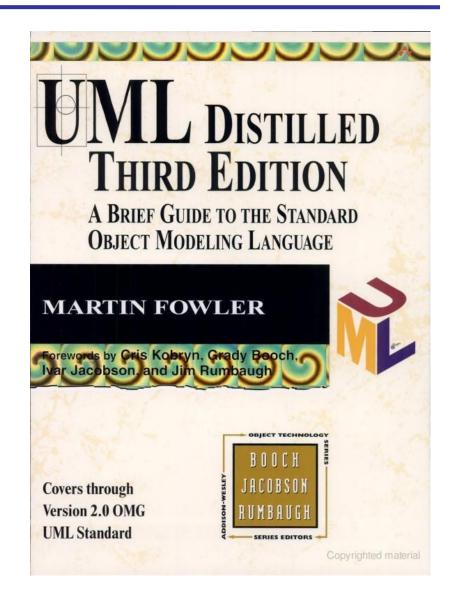
Amusing case studies make it easy to remember the principles.

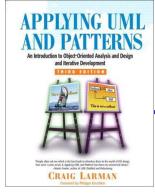


## Other Books

For learning UML.

Chapter 2 is good intro to software process.

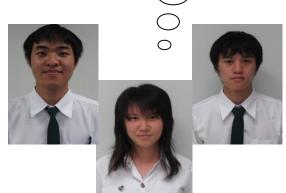




## Using the Textbook

Easy to read, but written for developers

what ???

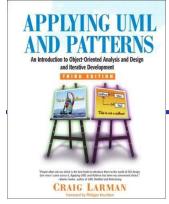




Agile UP Inception is not Waterfall Requirements phase... involve Stakeholders ... Risk ...



Craig Larman



## **Textbook**

### Strengths:

- Excellent for O-O Analysis and Design
- Emphasizes iterative development
- Author conveys real-world experience

#### Weaknesses:

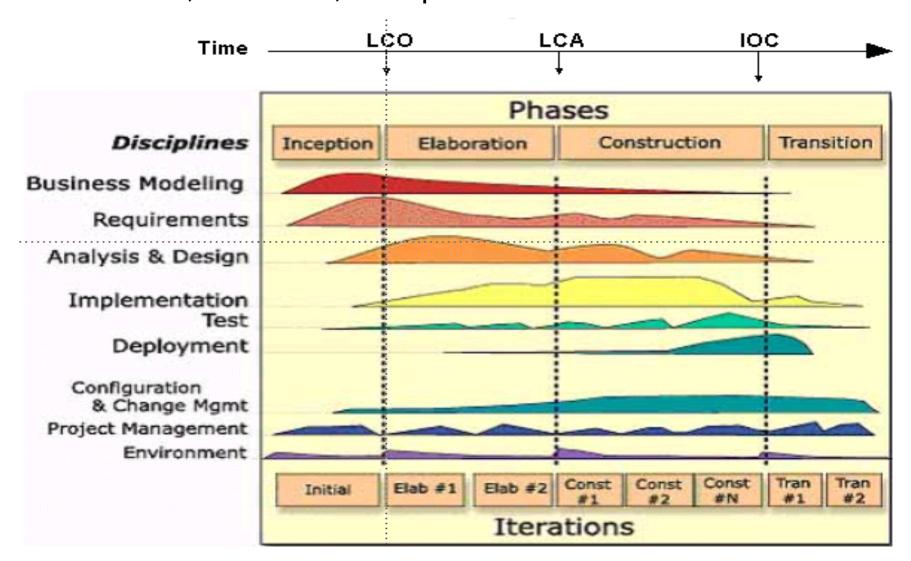
- Fuzzy about process and how docs fit together.
- Bias towards Agile methods.
- Some gaps you have to research for yourself.
- Redundant

### **Software Process**

- Requirements, Analysis, and Design are part of any software process.
- Hence, it helps to know where they fit in and when to do them.
- Larman favors an Agile UP (Unified Software Development Process).

### **UP Model**

Phases, iterations, 'disciplines' for kinds of activities

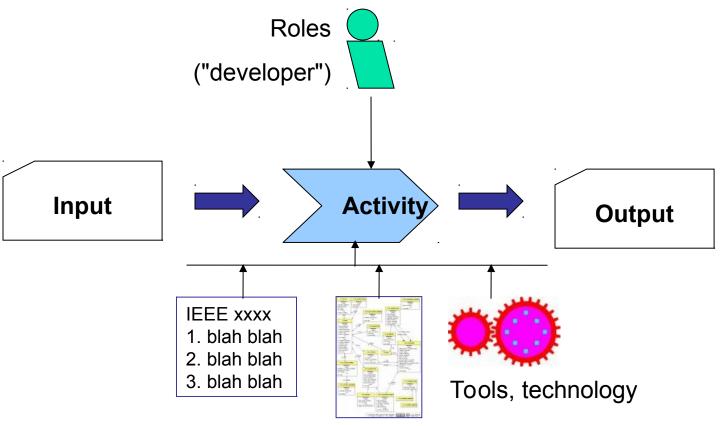


## Characteristics of U.P.

- Plan based, but accommodate change
- Architecture centric
- Identify & address risks early
- implement requirements based on business value, architecture, and risk
- handle risky requirements early
- prioritize requirements that have a big impact on software architecture
- time-boxed iterations with milestones
- UP is a "framework". Tailor it for your project.

### **Activities and Artifacts**

UP can be agile, but prefers tangible work products



Guidance, standards, procedures

## **Key Artifacts**

Vision Statement

**Business Case** 

Software Requirements Specification (SRS)

- Functional Requirements (Use Cases)
- Other requirements, "URPS+"
- Acceptance Criteria

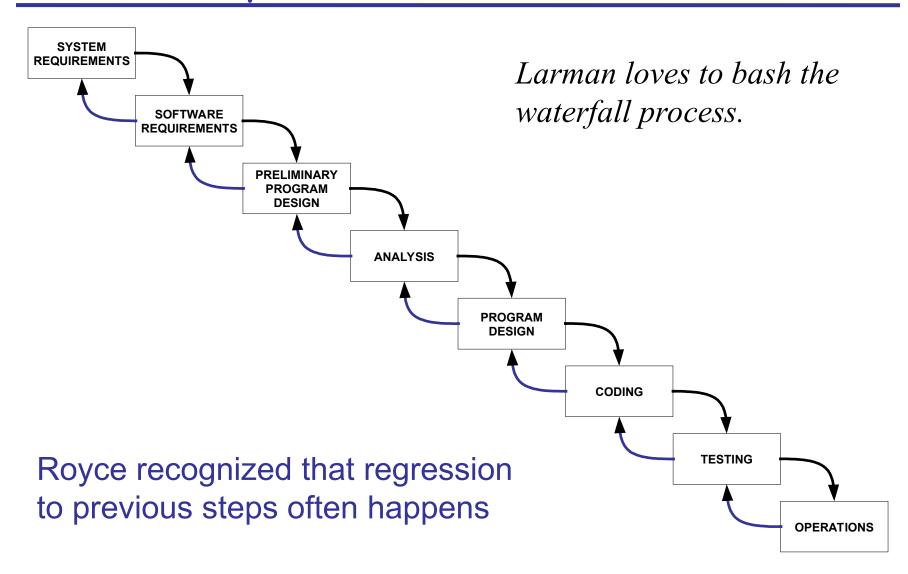
Software Development Plan

**Iteration Plans** 

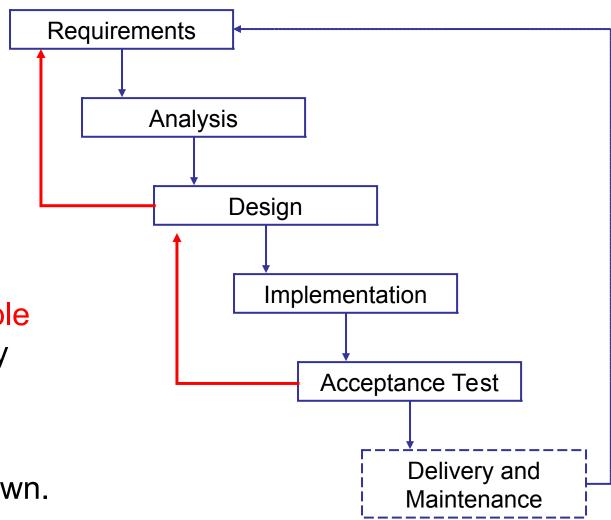
Project Measurements (many kinds)

Software (of course)

## The Royce Waterfall Model (1970)



## Waterfall Loopback in Reality



Royce found that backtracking multiple phases was usually necessary.

The most common backtracks are shown.

# Importance of Good Requirements

"The hardest single part of building a software system is deciding what to build.

No other part of the conceptual work is as difficult as establishing the detailed technical requirements.... No other part of the work so cripples the resulting system if done wrong. No other part is as difficult to rectify later..."

"No Silver Bullet" by Frederick Brooks. Computer, 1987

# Intrinsic Complexity of Software

"There is no single development, in either technology or in management technique, that promises even one order of magnitude improvement in productivity, in reliability, in simplicity."

"No Silver Bullet" by Frederick Brooks. Computer, 1987

See also page 5-6 for Brooks comments about objectoriented approach.