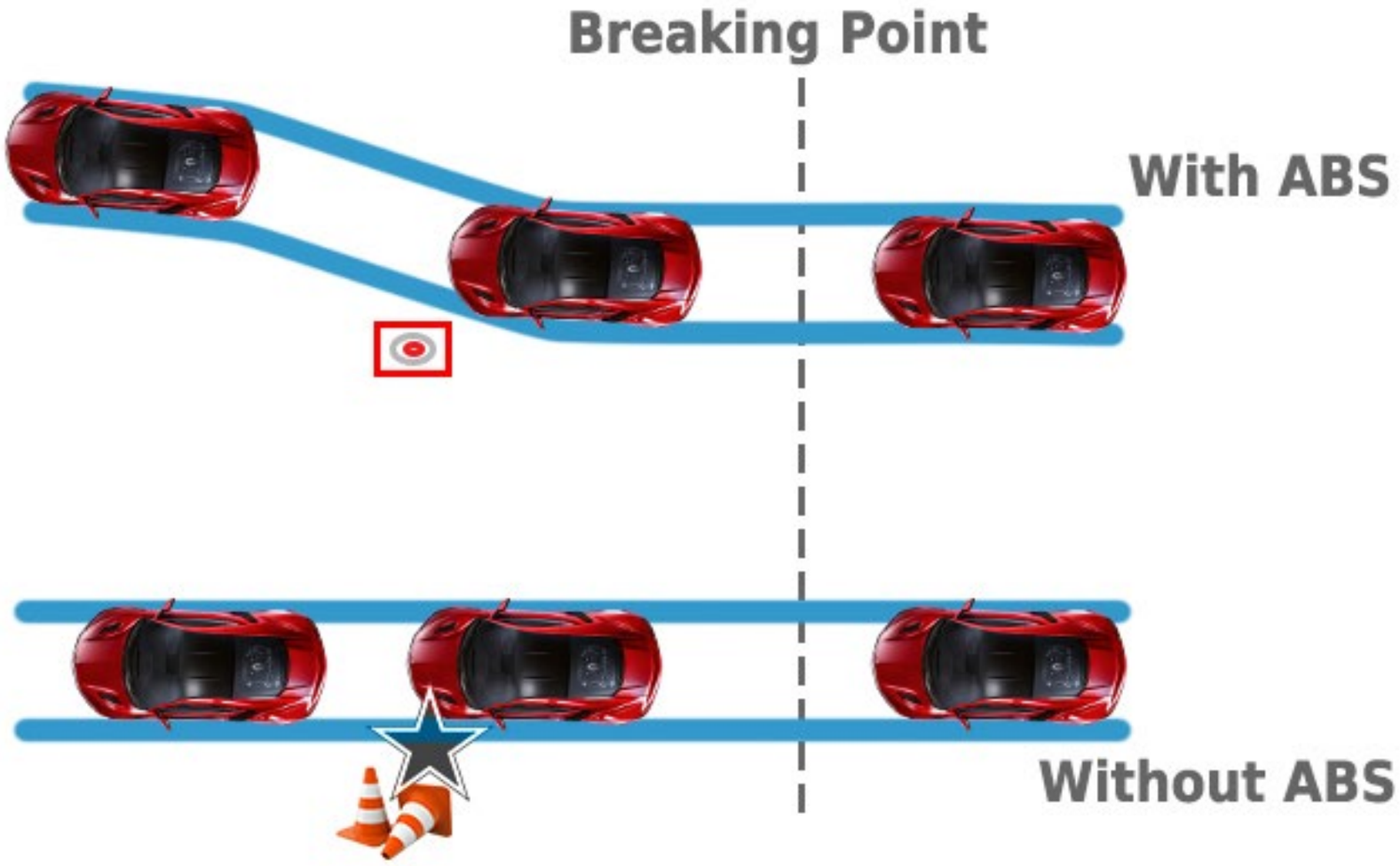

Software Engineering

Jin Hyun Kim

This Course

- 소프트웨어개발론 (FIA00017) – Software Engineering
- Thue 1, 2 (Lecturing), Thu1, 2 (PBL Activity)
- Professor:
  - Jin Hyun Kim 김진현 (해양과학관 804호)
  - jin.kim@gnu.ac.kr

This Course

- The course is
  - to study software engineering, such aprinciples, methods, and techniques for developing Cyber-Physical Systems and Internet of Things that are safety critical
- The goal is
  - to gain greater design and implementation experience in embedded software development for CPS/IoT,
  - to learn basic systems capabilities needed to support IoT/CPS applications
  - to learn how to model, design, optimize, verify, implement, and validate safety-critical CPS/IoT in a principled manner.

Topic

- Software Engineering
- Cyber-Physical Systems
- Real-Time Systems and Operating Systems
- Modeling and Verification
- Code Synthesis and Validation
- Testing
- …

This Course

- Course materials from
  - CIS441/CIS541: Embedded Systems for Life-Critical IoT/CPS Applications in University of Pennsylvania

This Course

- This course will be given in Problem (Project)-based Learning, so that students find problems and solutions themselves and evaluate themselves and others.

- All PBL activities shall be done as a TEAM, not individuals
  - **No allowance** of doing task as individual

- Lecturer of this course will be a coach and guides students to find problems, obstacles and ways to find solutions.

- For those reasons, students should be more pro-active than other courses.

- Details of PBL will be introduced to you in next class

소통 Communications

- Class homepage: https://jinkimh.github.io/aimath/
  - Introduction, Lectures, Readings, etc …

- All submissions shall be on **Google Classroom**
  - **Google classroom: yy5zefo**

Grading

- PBL Activity Evaluation 30%
  - Team, Coach, Mentor, Company, and Individual evaluation
  - 과제의 카피 적발 1회시 10% 감점
    - 카피 적발 3회시 전체 성적의 30% 감점
- Mid and Final Evaluation Each 30% (Including written exam)
- Presence 10%
  - 7 times non-presence: F
  - % (1 time late -1%, 5 time late 10%)

Class Schedule

Week	Lecture	PLB Activity
1	Introduction to Class Problem-based Learning	
2	Orientation to PLB Project Introduction to Software Engineering for CPS	Team Organization, Pick up team leader and make catchphrase PBL Module #1: Requirements for YOUR Solution
3	Requirement Engineering: Use-Case and Sequence Diagram	Team activity
4	Real-Time Systems	Team activity
5	Real-Time Operating Systems	Team Presentation and Evaluation
6	Introduction to mbed, mbed RTOS	PBL Module #2: Real-Time System and OS
7	Real-time Scheduling	Team activity
8	Mid-term Exam	Team activity
9	Introduction to Formal Methods	Team Presentation and Evaluation
10	Model Checking using Uppaal, CTL	PBL Module #3: From a Formal Model to Implementation
11	Go Programming	Team activity
12	Go Concurrency	Team activity
13	Code Generation: Uppaal to Golang	Team Presentation and Evaluation
14	Testing	
15	Final Exam	

First Homework

- Sign up Google Classroom (**yy5zefo)**
- Do personality test for PBL team organization (https://www.16personalities.com/ko)
- Submit the results of personality test to Google Classroom.
- Follow submission instruction in Google Classroom