

## Object-oriented Programming and Practice

Course Name	Course section (credit/hours)		Required course(4/5)			course code	F060
	course item					course component	
	Target students Division/major/grade					opening semester	2021 1ST SEMESTER
	Class time and classroom		Mon 10:30~12:00 (Pal325)Thu 10:30~12:00 (Pal325)Fri 4(Pal318) Fri 5(Pal318)			English Grade	A(100%English)
Reference to this course	Credit compositon		Theory(3) + Design(0) + Practice(1)				
	Prerequisite courses		C Programming				
	Related basic courses		Data structure				
	Recomanded concurrent courses		Algorithm				
Instructor	Name (title/division)		Yenewondim Biadgie.S(Assistant Professor, Software and Computer Engineering)				
	Office Room Number	팔달관 1011	Extension Number	3857	e-mail	wondim@ajou.ac.kr	
	Office hour				Homepage address		
Teaching Assistant	Name (title/division)						
	Office Room Number		Office phone Number		e-mail		

### 1. Course Introduction

? This course uses java programming language as vehicle to take you to a journey through the world of object-oriented programming paradigm. The course covers fundamental concepts object-oriented programming paradigm, namely, class, object, Interface, data encapsulation, hierarchical class Inheritance, hierarchical class polymorphism and generic programming. The course also coverers standard java Application Programming Interfaces such as Exception Handling API, Graphical User Interface API(GUI), Collection Framework, File Stream API. The course has laboratory session to apply learned theories in practice.

## 2. Course Objectives & course outcome

At the end of the course, students will be able to

- ? Know the fundamental concepts and principles of object-oriented programming paradigm
- ? Design and implement java-based software by applying the basic principles of object oriented programming

### 3. Class types and activities

During lecture time, the fundamental concepts of object-oriented programming paradigm are covered. Students are encouraged to participate actively by asking questions and by answering questions. During practical session, students design and implement software using object-oriented programming style. Students are supposed to spend considerable amount of time by doing programming projects to understand this course.

### 4. Teaching Method

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> lecture                          | <input type="checkbox"/> discussion and debate              |
| <input type="checkbox"/> team project(presentation and case studies) | <input type="checkbox"/> experiments(role-playing,etc)      |
| <input type="checkbox"/> designing and production                    | <input type="checkbox"/> on-site learning(on-site training) |
| <input type="checkbox"/> others                                      |   |

### 5. Support Systems in Use

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> AjouBb               | <input type="checkbox"/> automatic recording system | <input type="checkbox"/> web-based assignment |
| <input type="checkbox"/> cyber lecture                   | <input type="checkbox"/> online content             |   |
| <input type="checkbox"/> class behavior analyzing system | <input type="checkbox"/> others                     |   |

### 6. Teaching Tools

- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> PBL(Problem Based Learning) | <input type="checkbox"/> CBL(Case Based Learning) | <input type="checkbox"/> TBL(Team Based Learning)           |
| <input type="checkbox"/> UR(Undergraduate Research)             | <input type="checkbox"/> FL(Flipped Learning)     | <input type="checkbox"/> DSAL(Data Sciencd Active Learning) |
| <input type="checkbox"/> others                                 |   |   |

### 7. Evaluation method of course outcome

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		5	
midterm exam	1	30	
final exam	1	30	
quiz			

## 7. Evaluation method of course outcome

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
presentation			
discussion			
homework	2	15	Programming Assignment
etc	14	20	Lab Session
study hours			

## 8. Textbook and Reference material

Main/Sub	Title	Writer	Publisher	Publication year
Main	Core Java, Volume I, 11th ed	Cay S. Horstmann	Prentice Hall	2016
Ref.	Java How to program early objects (10th ed.)	Paul Deitel and Harvey Deitel	Pearson	2015
Ref.	Head First Java, 2nd ed	Kathy Sierra and Bert Bates	Oreiley	2005
Ref.	Java API documentation			

## 9. Class system and Class shedule

In the beginning of the course, concepts of algorithms, mathematical induction, and asymptotic analysis of an algorithm are taught. Algorithm design techniques follow including divide-and-conquer, dynamic programming, greedy method, and iterative improvements. Then students will learn problems that do not have efficient algorithms (NP-hard problems), and how to cope with such problems.

### < Schedule >

\* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
1	Introduction to object-oriented programming paradigm	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
2	Fundamental programming structures of java	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam

## &lt; Schedule &gt;

\* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
3	Objects and classes in java	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
4	Objects and classes in java	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
5	Inheritance and polymorphism	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
6	Inheritance and polymorphism	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
7	Interfaces and Lambda Expression	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
8	Midterm Exam	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
9	Inner class	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
10	Exception Handling	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
11	Generic programming	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
12	Collection Framework API	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
13	GUI Application	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
14	GUI API Application	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam

### < Schedule >

\* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
15	File Stream	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam
16	Final Exam	E	5			Multimedia based lecture, active participation, and discussion	Programming projects, paper-based mid and final exam

### 10. Contribution index of the course for attaining ABEEK program outcomes

course outcome	contribution scale
No Data	

### 11. Analysis of improved matters for the previous semester

### 13. Reference items