

Probability and Statistics 1

Course Name	Course type (credit/hours)	Required course(3/3)	Course code	M002
	Target students Division/major/grade	Digital Media/Freshman	Opening semester	2020 2ND SEMESTER
	Class time and classroom	Tue F(IUCB103)Thu E(IUCB103)	English Grade	A(100%English)
Reference to this course	Prerequisite courses			
	Related basic courses			
	Recommended concurrent courses			
	Related advanced courses			

Instructor	Name (title/division)		Teemu H. Laine(Associate Professor, Digital Media)			
	Office Room Number		Office phone Number		e-mail	
	Office hours	Mon/Wed 9:30–11:30		Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

The world we live in is full of uncertainties. Probability is a branch of mathematics that deals with uncertainties. Our world is also full of data. Statistics is all about collecting, organizing, analyzing and interpreting and presenting data. In this course we will study the basics of probability and statistics, which will prepare you for more advanced courses. Knowledge of probability and statistics will be very useful after graduation, especially if you are working in the field of research and development.

2. Course Objectives

Students will gain basic understanding of probability and will learn the basic principles of statistics. They will then apply the learned concepts to solve real problems.

* Subject learning outcomes

1. Learn that events and their occurrences can be defined in mathematical terms.
2. Understand random variables and various uses for them.
3. Understand how random variables can be used to model random phenomena
4. Learn about different distributions (e.g. normal, geometric, binomial)
5. Learn effective ways to do sampling in statistics
6. Learn how to make predictions in statistics and understand the meaning of confidence in these predictions

3. Class types and activities

The course uses lectures and exercises as main teaching methods. During lectures, the professor will introduce theoretical concepts, followed by practical examples.

Lectures will be recorded and there will also be weekly live discussion and Q&A sessions where students can ask the professor about lectures and exercises.

Additionally, quizzes may be used in addition to mid-term and final exams.

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 checked="" 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 Science Active Learning) |
| <input type="checkbox"/> others | | |

7. Knowledge and ability required for taking this course

수학I 수준의 미분 적분

8. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance			
midterm exam	1	40	Paper exam
final exam	1	40	Paper exam
quiz			
presentation			
discussion			
homework		20	Assignments
etc			
study hours			

9. Textbook and supplementary material

Main/Sub	Title (Web-site)	Writer	Publisher	Publication year
Main	Head First Statistics (Korean: 실생활 예제로 배우는 정말 쉬운 통계 이야기)	Griffiths	OReilly Media	2008

10. Class system and Class shedule

Students learn basic concepts and theories of probability theory, such as events, random variables, density, expected value,, binomial distribution, and normal distribution.
Based on this, the main areas of statistics, such as point estimation, interval estimation, and confidence intervals are also covered.

< Class Schedule >

* language : K-korean, E-English

Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
1	Visualizing information		Teemu H. Laine	강의/연습		
2	Measuring central tendency		Teemu H. Laine	강의/연습		
3	Measuring variability and spread		Teemu H. Laine	강의/연습		
4	Calculating probabilities		Teemu H. Laine	강의/연습		

< Class Schedule >

* language : K-korean, E-English

Week s	Topics	lang uage	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
5	Using discrete probability distributions		Teemu H. Laine	강의/연습		
6	Permutations and combinations		Teemu H. Laine	강의/연습		
7	Geometric, binomial and Poisson distributions		Teemu H. Laine	강의/연습		
8	중간고사		Teemu H. Laine	강의/연습		
9	Normal distribution		Teemu H. Laine	강의/연습		
10	Normal distribution		Teemu H. Laine	강의/연습		
11	Statistical sampling		Teemu H. Laine	강의/연습		
12	Estimating populations and samples		Teemu H. Laine	강의/연습		
13	Constructing confidence intervals		Teemu H. Laine	강의/연습		
14	Hypothesis testing		Teemu H. Laine	강의/연습		
15			Teemu H. Laine	강의/연습		
16	기말고사		Teemu H. Laine	강의/연습		

11. Other items of notification