

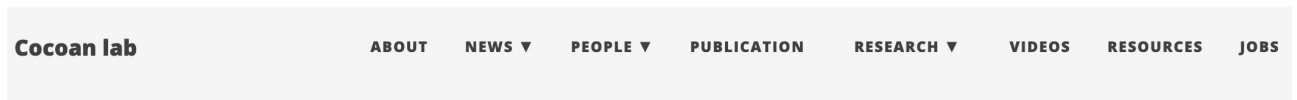
# Lecture 01

## Course overview

# Introduction

Lab webpage

<https://cocoanlab.github.io/>



## COCOAN lab

Computational Cognitive Affective Neuroscience Laboratory



**Cocoan lab** is a neuroimaging research lab led by Dr. Choong-Wan Woo.

We are joining the [IBS Center for Neuroscience Imaging Research \(CNIR\)](#) at [Sungkyunkwan University \(Wikipedia\)](#) located in Suwon, South Korea (starting March 2017).

The **keywords** of our research include:

fMRI; Machine learning; Neuroimaging biomarkers; Data science; Translational research; Predictive modeling; Brain decoding, Encoding-decoding model; Pain; Emotions; Psychiatric and neurologic disorders; Mind-body interaction; Behavioral medicine; Network science; Psychological and social pain modulation; Emotion regulation, and more.

The mission of our lab is to understand **pain** and **emotions** in the perspective of data science, cognitive/affective/social neuroscience, and psychology. We also aim to develop clinically useful neuroimaging models and tools that can be used and shared across different research groups and clinical settings.

Our main research tools include functional Magnetic Resonance Imaging (fMRI; we're using 3T and 7T MRI), psychophysiology measures (skin conductance, pupillometry, electrocardiogram, respiration), electroencephalogram (EEG), and other behavioral measures such as facial expression, eye movement, etc. Most importantly, we use data science (computational) tools to model and understand affective, cognitive, and behavioral responses.

# Survey

Please complete this before next week class (3/13):

<https://forms.gle/HJPyX8y4RryYWZai8>

## 'Biostat and Big Data' course survey (Spring 2024)

This survey isn't meant to test your knowledge. Rather, it'll help us adjust the class just for you, and make it fun! (이 설문조사는 여러분을 평가하기 위한 것이 아닙니다. 수업이 여러분에게 더 도움이 되고, 즐겁게 만들기 위한 것이니 솔직하고 편하게 작성해주세요!)

choongwan.woo@gmail.com [Switch account](#)



Not shared

\* Indicates required question

Name \*

Your answer

Student ID (e.g., 2019123456) \*

Your answer

Do you have any experience with data analysis? (데이터 분석을 해본 경험이 있나요?) \*

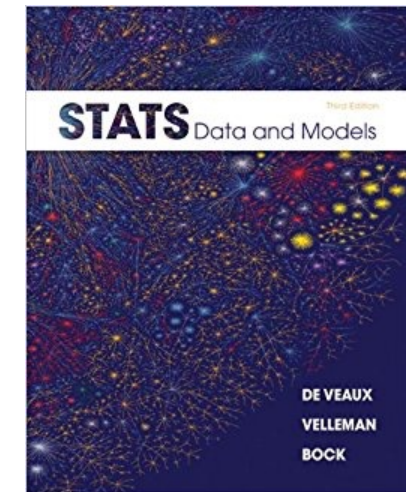
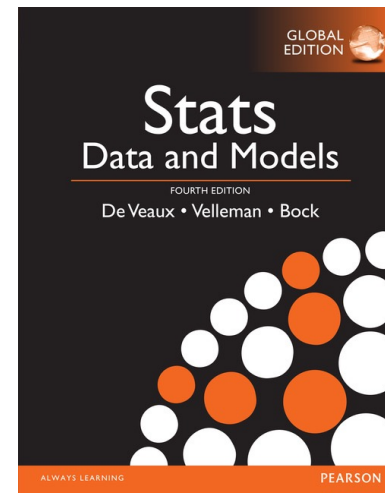
☐ Yes

☐ No

If you have experience with data analysis, please describe it here: (데이터 분석을 해본 적이 있다면 어떤 분석이었는지 간단히 해설지 조금 더 설명해주세요)

# Course overview

- Biostats and Big data (previously GBME's Probability and Statistics)
- Class code: GBE 3064
- Intro Stats
- Textbook: "Stats: Data and Models" by De Veaux, Velleman, and Bock, Fourth Edition
  - Third edition also works!



# Course overview

- Biostats and Big data (previously GBME's Probability and Statistics)
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- Textbook: "Stats: Data and Models" by De Veaux, Velleman, and Bock, Fourth Edition
  - Third edition also works!
  - And I recently wrote a textbook in Korean
    - I am sharing this for free!
    - Download: <https://tinyurl.com/4kdx8thf>
    - No cover, no design yet..

(if you want to help with the book design, let me know. ☺ )

**바이오통계와 빅데이터**

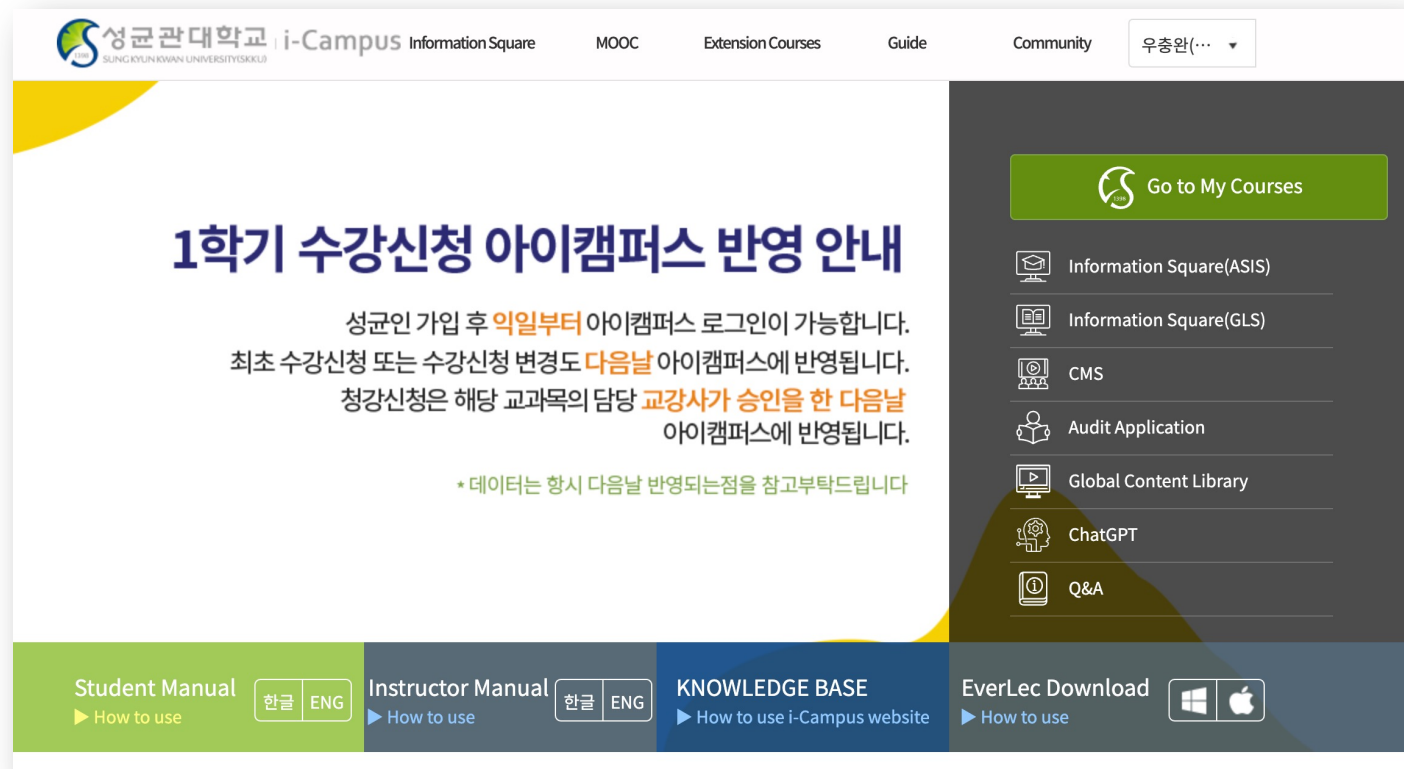
**(부제: 수학없는 통계)**

우충완 (성균관대학교 글로벌바이오메디컬공학과)



# For communications!

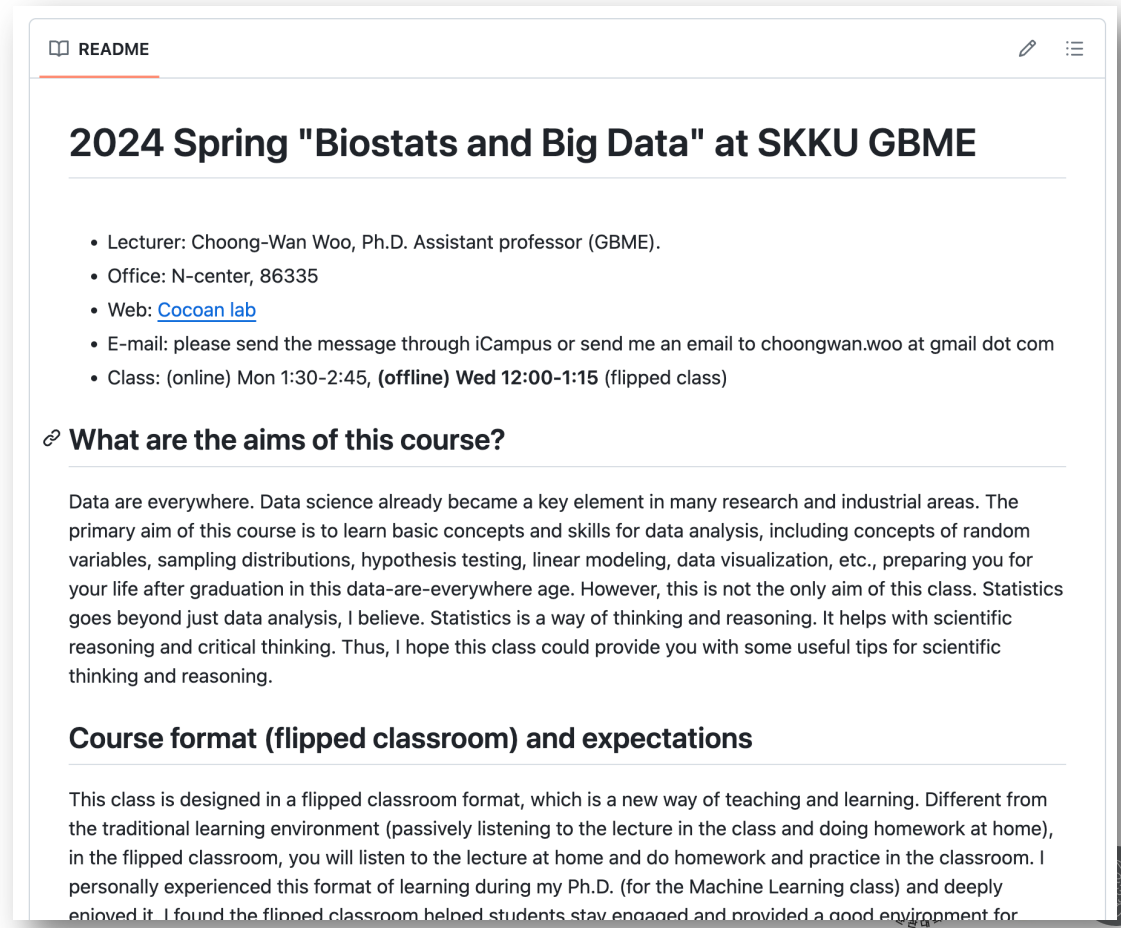
- iCampus
- and email (choongwan.woo@gmail.com)



# Syllabus

Our class website: [https://github.com/wanirepo/Stats\\_2024Spring](https://github.com/wanirepo/Stats_2024Spring)

- README.md is the syllabus.
- Let's visit the website and read the syllabus together.



The image is a screenshot of a GitHub README file. At the top, it says 'README' with a book icon. The title of the document is '2024 Spring "Biostats and Big Data" at SKKU GBME'. Below the title, there is a bulleted list of course details: Lecturer (Choong-Wan Woo, Ph.D. Assistant professor (GBME)), Office (N-center, 86335), Web (Cocoan lab), E-mail (please send the message through iCampus or send me an email to choongwan.woo at gmail dot com), and Class (online Mon 1:30-2:45, offline Wed 12:00-1:15 (flipped class)). Below this list is a section titled 'What are the aims of this course?' with an icon of a magnifying glass. The text in this section describes the course's focus on data science and statistics, aiming to provide students with practical skills and critical thinking. The final section is titled 'Course format (flipped classroom) and expectations' and describes the flipped classroom format, where students listen to lectures at home and do homework and practice in the classroom. It mentions that the lecturer personally experienced this format during their Ph.D. and found it helpful for student engagement.

README

## 2024 Spring "Biostats and Big Data" at SKKU GBME

- Lecturer: Choong-Wan Woo, Ph.D. Assistant professor (GBME).
- Office: N-center, 86335
- Web: [Cocoan lab](#)
- E-mail: please send the message through iCampus or send me an email to choongwan.woo at gmail dot com
- Class: (online) Mon 1:30-2:45, (offline) Wed 12:00-1:15 (flipped class)

### What are the aims of this course?

Data are everywhere. Data science already became a key element in many research and industrial areas. The primary aim of this course is to learn basic concepts and skills for data analysis, including concepts of random variables, sampling distributions, hypothesis testing, linear modeling, data visualization, etc., preparing you for your life after graduation in this data-are-everywhere age. However, this is not the only aim of this class. Statistics goes beyond just data analysis, I believe. Statistics is a way of thinking and reasoning. It helps with scientific reasoning and critical thinking. Thus, I hope this class could provide you with some useful tips for scientific thinking and reasoning.

### Course format (flipped classroom) and expectations

This class is designed in a flipped classroom format, which is a new way of teaching and learning. Different from the traditional learning environment (passively listening to the lecture in the class and doing homework at home), in the flipped classroom, you will listen to the lecture at home and do homework and practice in the classroom. I personally experienced this format of learning during my Ph.D. (for the Machine Learning class) and deeply enjoyed it. I found the flipped classroom helped students stay engaged and provided a good environment for

# Watching lecture videos



I will upload lectures like this every week.

There will be **two types** of lectures:

- 1) Short lectures in English
- 2) Long lectures in Korean  
explaining the short English lectures

For those who do not use Korean, you can watch 1). It covers all the contents.

But if you know Korean, please watch 2), which has more in-depth explanations.




# Smart attendance

**CHAP.2 전자출결 시스템 출결 방법(1) | 블루투스 장치(비콘) 이용**

학생들은 미리 다운받은 전자출결 앱(APP)으로 편리하게 출석할 수 있습니다.

전자출결 APP은 iOS, 안드로이드OS에서 사용 가능




출석: 강의시간 5분 전~ 시작 후 10분  
 지각: 강의시간 +10분 ~ +40분  
 결석: +40분 이후 또는 미참석

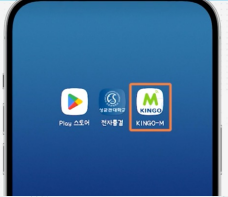
**CHAP.3 전자출결 시스템 출결 방법(2) | 전자출결 단말기 이용(학생증/NFC/QR코드)**



**CHAP.3 전자출결 시스템 출결 방법(2) | 전자출결 단말기 이용(학생증/NFC/QR코드)**

**KINGO-M 신분증 NFC**


학생이 소지하고 있는 휴대폰에 설치된 KINGO-M 앱에 로그인합니다.



**CHAP.3 전자출결 시스템 출결 방법(2) | 전자출결 단말기 이용(학생증/NFC/QR코드)**

**KINGO-M 신분증 NFC**

신분증 탭을 누르고 NFC 표시가 있는지 확인합니다.



**KINGO-M 신분증 NFC**

휴대폰을 강의실 출입문에 설치된 전자출결 단말기에 접촉해 출석을 진행합니다.



**KINGO-M 신분증 QR코드**

신분증 탭에 있는 QR코드를 인식시켜 출석합니다.



# Team activity

Each class, you will form new teams depending on where you sit

4-5 members per team

# To-do before the next class

Survey before the next class (3/6): <https://forms.gle/HJPyX8y4RryYWZai8>

- Watch the first two week's lecture
- Next class: 3/13 Monday 1:30 PM here at 86120