

Department of Environmental Health

I. Course Information:

Title: Statistical Computation and Software

Course #: BE7011 / PH7011

Credit Hour: 1

Term: Summer 2019

Format: Online

Instructor: Jun Ying, PHD

Prerequisites: There is NO prerequisite for this class. However, it is expected students know basic calculus and have some basic knowledge of using EXCEL. Students who take the Introduction to Biostatistics (BE7010 / PH7010) in the same summer or the next spring semester may also be benefited from the contents and computation skills learned from the class.

II. Course Description and Messages:

- **Course Description**

The goal of the course is to introduce statistical computation using different software packages. Students will learn statistical computation related to other Biostatistical courses in this class. The course may be more effective if students take the Introduction to Biostatistics (BE7010 / PH7010) simultaneously in the same term.

- **Messages**

This course is designed for students in the MPH Program Epidemiology Concentration and the CTR program. Yet other graduate and undergraduate students may be allowed to attend after the instructor's approval. Undergraduate students will also need the approval from their advisors and submit the approval by email to the instructor. This is a one credit course developed to provide some basic knowledge and skills in statistical computation using three different software packages: SAS, SPSS and R. For SAS, the class will offer computation using both SAS Program and SAS Enterprise. Many times students find instructors using different statistical software in their classes, especially the statistic and epidemiologic classes. It becomes challenging for students to take these courses and learn the software packages at the same time. Sometimes students find two similar classes may use different software packages simply because of different preference of the instructors. In this class, the students will learn how to use different software solve the same problem from the same dataset. That way they will have a better sense how these software packages are connected and be more confident in computation when they take other statistic and epidemiologic classes. In addition, such experience will be a plus in their resume when students put three software packages in their skill setting.

III. Student Learning Outcomes:

Upon successful completion of this course, the learner will be able to:	How is this outcome assessed?
1. Learn to import/export data from different software packages	Homework; Self-assessment by following exercise in each module.
2. Use graphical methods to describe sample data	Homework; Self-assessment by following exercise in each module.
3. Summarize data using descriptive statistics	Homework; Self-assessment by following exercise in each module.
4. Perform hypothesis testing and confidence interval on one sample data	Homework; Self-assessment by following exercise in each module.
5. Perform hypothesis testing on two, or more than two samples	Homework; Self-assessment by following exercise in each module.
6. Use regression and correlation techniques to examine linear relationships in data	Homework; Self-assessment by following exercise in each module.
7. Compare proportions using a Chi square test	Homework; Self-assessment by following exercise in each module.

IV. Instructor Information:

Instructor: Dr. Jun Ying

Title: Professor

Office Information: Kettering Lab, Room G06

Office: (513)558-2768

Email: yingj@ucmail.uc.edu

Office Hours: by appointment

Online Coordinator: Benjamin Filla fillab@ucmail.uc.edu

TA: Bhoomi Patel patelbo@mail.uc.edu

Communication Policy: Students are encouraged to contact the instructor, the online coordinator and the TA anytime via email. Please use the title "BE/PH7011 19US" in the email to ensure it is replied as a priority. The questions will be addressed by email, a face to face meeting or a phone meeting.

V. Course Materials

Test Book

- **There is NO required test book for this class**

Statistical software

- SAS, SPSS and R packages are used in the class. Students can use different ways to access the software at their preference. For example, (1) the students can install all software packages in their person computers. Purchase of SAS and SPSS annual licenses can be processed through UC bookstores at a discount price for students. The R software is free to download and install. (2) Some students may choose to access the software from working stations from their working places. (3) Some students may choose to use the software for free through UC Virtual Lab (details will be available in a separate file).

VI. Instructional Methods (Including Description about Bb):

Learning modules, notes, homework assignments and announcements will be made available through the Blackboard (Bb). If you are not familiar with these tools, please visit [IT@UC's Knowledge Base for Blackboard](#).

VII. Course Communication:

University policy requires that the email set up in Blackboard is the primary means of communication. It is advisable that you use your UC email for this purpose and that you check it often. If you choose to change your email in Blackboard to a non-UC email it is your responsibility to ensure you check it frequently.

VIII. Course and Grading Policies:

1. Missed and/or late completion of learning modules and homework assignments:

- a. Learning modules are available through the semester once they are posted. However, each learning module has its own deadline and it is required to complete watching before the deadline. Failing to follow the deadline will consider missing and cause deduction of points in the course grade.
- b. Missing 3 learning module deadlines will automatically receive an "I" (incomplete) from the course.
- c. Each homework assignment will be completed and submitted to the BB before its deadline. The assignment is not accepted by email unless it is approved by the instructor under special circumstances. Late submission of homework will be considered missing unless it is approved by the instructor.
- d. Missing 3 homework deadlines will automatically receive an "I" (incomplete) from the course.

2. Criteria for letter grades:

Your course grades will be based on your performance on the following:

Point Allocation:

<i>Assignments</i>	<i>60%</i>
<i>Learning modules</i>	<i>40%</i>
<i>Total</i>	<i>100%</i>

IX. Course Schedule:

Please read the following tables carefully for all the schedules related to this class.

Table1 summarizes schedules of course materials. Each learning module will be posted on schedule listed in the "Posted Date" and required to be watched by the "Due Date". Each learning module will

also come with course materials including a PPT note, datasets, and SAS and R codes for convenience to follow the contents. (Failure to watch the modules on time will cause deduction of points.)

Week	Dates	Contents	Module
1	6/3-6/11	Know your software, import / export data	Pre Notes 1 and 2; Note1
2	6/12-6/18	Data management	Note2
3	6/19-6/25	Histogram and Box plot	Note3
4	6/26-7/2	Summary Statistics	Note4
5	7/3-7/9	Inference (CI and HT)	Note5
6	7/10-7/16	Comparing Means	Note6
7	7/17-7/23	ANOVA	Note7
8	7/22-7/31	Comparing Proportions; Regression	Note8; Note9

Table2 summarizes schedules for homework (HWK) assignments (Failure to complete and submit the assignment on time will cause deduction of points.)

HWK List	Posted Date	Due Date
HWK1	6/3	6/11
HWK2	6/12	6/18
HWK3	6/19	6/25
HWK4	6/26	7/2
HWK5	7/3	7/9
HWK6	7/10	7/16
HWK7	7/17	7/23
HWK8&9	7/22	7/31

X. Other Important Policies Related to the Course and Grades:

1. **Course Structure:** Changes to the syllabus, due dates, course requirements or grading requirements will be made as far in advance as possible.
2. **Academic Code of Conduct:** Academic misconduct or dishonesty is defined in the University of Cincinnati Student Code of Conduct. Academic misconduct includes, but is not limited to: acts of cheating, plagiarism, falsification, and misappropriation of credit. The Student Code of Conduct defines behavior expected of all University of Cincinnati students. It is each student's responsibility to know and comply with the University's Student Code of Conduct. Disciplinary procedures are explained in a step-by-step manner, and the procedures for appeal of decisions are stated. (see: [UC's Student Code of Conduct](#))
3. **Disability:** Students with disabilities who need academic accommodations or other specialized services while attending the University of Cincinnati will receive reasonable accommodations to meet their individual needs as well as advocacy assistance on disability-related issues. Students requiring special accommodation must register with the Disability Services Office. [UC's Disability Services Office](#).
4. **Counseling Services, Clifton Campus:** Students have access to counseling and mental health care through the University Health Services (UHS), which can provide both psychotherapy and psychiatric services. In addition, Counseling and Psychological Services (CAPS) can provide professional counseling upon request; students may receive five free counseling sessions through CAPS without insurance. Students are encouraged to seek assistance for anxiety, depression, trauma/assault, adjustment to college life, interpersonal/relational difficulty, sexuality, family conflict, grief and loss, disordered eating and body image, alcohol and substance abuse, anger management, identity development and issues related to diversity, concerns associated with sexual orientation and spirituality concerns, as well as any other issue of concerns. After hours, students may call UHS at 513-556-2564 or CAPS Cares at 513-556-0648. For urgent physician consultation after-hours students may call 513-584-7777.
5. **Title IX:** Title IX is a federal civil rights law that prohibits discrimination on the basis of your actual or perceived sex, gender, gender identity, gender expression, or sexual orientation. Title IX also covers sexual violence, dating or domestic violence, and stalking. If you disclose a Title IX issue to me, I am required forward that information to the Title IX Office. They will follow up with you about how the University can take steps to address the impact on you and the community and make you aware of your rights and resources. Their priority is to make sure you are safe and successful here. You are not required to talk with the Title IX Office. If you would like to make a report of sex or gender-based discrimination, harassment or violence, or if you would like to know more about your rights and resources on campus, you can consult [UC's webpage for Title IX](#) or contact the office at 556-3349.
6. **LCB Weather Related Protocol:** When inclement weather threatens the safety of the University of Cincinnati community, the Senior Vice President for Administration and Finance may invoke University Rule [3361: 10-55-01](#) and declare an emergency closing.
College of Medicine Students: Graduate Students – follow all University snow policies and procedures. All classes and exams are canceled when the university has closed. On days when the



University delays opening, classes and exams will resume at the hour that the University reopens if this is at or before 3 pm.