

The Hong Kong University of Science and Technology
Division of Social Science
SOSC1990 Research Methods in Psychological Science
Course Syllabus
Spring Semester 2020

Lecture Time: Wednesday and Friday 04:30 – 05:50 PM

Venue: Rm 2503, Lift 25-26

Teaching Team:

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Course Description

This course introduces students to the basic research principles in psychological science. It evaluates various research designs and statistical analyses, and discusses relevant ethical issues encountered in studying human behaviors.

Intended Learning Outcomes

Upon completion of this course, students are expected to be able to do the following:

1. recognize the basic research principles in psychological science
2. evaluate various research designs and statistical analyses commonly used in research on psychological science
3. understand the professional ethics in the research and practice of psychological science
4. demonstrate skills of scientific reasoning, effective research methods, and problem solving
5. demonstrate the ability to critically read, summarize, interpret, and evaluate information regarding behavioral phenomena and social issues
6. demonstrate the ability to present, discuss, and explain knowledge about psychological science with clarity.

Learning Activities

1. *Lecture:* The lectures will include not only one-way lecturing by the instructor but also various interactive activities, such as group discussions, problem solving exercises, presentations, games, videos etc.
2. *Learning portfolio (10%+10%):* Students will complete two exercises, one on ethics and the scientific method (10%) and another on interpretation of descriptive and inferential statistics (10%).
3. *Team project (30%):* Students will work in a team to propose a research study. The assignment will be split into two parts (15% each). In the first part, students will be asked to write a literature review on a topic of their choice and identify the research gap. In the second part, students will be asked to formulate hypotheses, propose a research design to test their hypotheses, and discuss the potential challenges and limitations of their methodological choice.
4. *Team project presentation (10%):* Students will work in a team to record a presentation of their research proposal.
5. *Peer review (15%):* Students will work in a group to review their peers' research proposal. They are expected to be able to summarize and critically evaluate the research proposal with regards to the scientific and technical merit of the research question, design, and methodology.
6. *Final exam (25%):* Students will answer a series of questions about the basic research principles in psychological science. Materials covered in the lectures are tested.

Schedule (subject to minor changes)

Date	Topic
19 Feb	#01 Introduction: overview of the scientific method and various research designs in Psychology.
21 Feb	#02 Research question and hypothesis: conducting literature review, identifying research gap, formulating testable hypothesis, and presenting them in a research proposal.
26 Feb	#03 How to use scientific database and evaluate research paper.
28 Feb	#04 Ethics
4 Mar	#05 Defining variable and measuring variable
6 Mar	#06 Qualitative method 1: data collection (observation, interview, focus group)
11 Mar	#07 Qualitative method 2: data analysis (transcription and content analysis)
13 Mar	#08 Psychological testing 1: basic principles and design
18 Mar	Group research proposal consultation
20 Mar	#09 Psychological testing 2: analysis (factor and item analysis) and issues (e.g., ethical issue, cultural fairness)
25 Mar	#10 Survey 1: basic principles and questionnaire design
27 Mar	#11 Survey 2: sampling techniques and study design (e.g., longitudinal, cross-sectional)
1 Apr	#12 Experimental design 1: internal validity, confound, preventing confound, preventing participants and experimenter bias
3 Apr	#13 Experimental design 2: between- and within-subject design
8 Apr	#14 Experimental design 3: factorial design; external and ecological validity, quasi-experiment and single case
10 Apr	Holiday
15 Apr	#15 Basic statistical approach: population and sampling, descriptive statistics (frequency distribution, central tendency, variability, normal distribution, z-score)
17 Apr	#16 Inferential statistic 1
22 Apr	#17 Inferential statistic 2
24 Apr	Group research proposal consultation
29 Apr	R workshop session 1
1 May	Holiday
6 May	R workshop session 2
8 May	#18 Psychology research in a global world (e.g., cross cultural study)
13 May	#19 Recent methodological advances (e.g., neuroimaging, digital traces, big data)
15 May	#20 Issues and progress in psychology research (e.g., WEIRD problem, replicability crisis)

Important Deadlines:

16 Mar (17:00 PM): Ethics assignment
23 Mar (17:00 PM): Group research proposal 1
07 May (17:00 PM): Group research proposal 2
12 May (17:00 PM): Statistics assignment
14 May (17:00 PM): Group research proposal presentation
22 May (17:00 PM): Peer review
Exam will be held during final exam period (exact date TBC)

Points to note

1. *Learning attitude.* Be active in class, ask questions, give answers. Your participation not only

helps you learn more but also enables us to teach better! Think about what you want to learn and how you are going to learn them. Use grades, scores, and comments from us to understand how much and how well you have learned and how you can improve.

2. *Academic integrity.* We will thoroughly investigate every suspect case of cheating or plagiarism. We will heavily penalize confirmed cases and report them to the Head of the Division of Social Science for further review or action. Read <http://ugadmin.ust.hk/integrity/index.html>. Make sure you understand what constitute academic honesty.
3. *Penalties.* Penalties apply to assignments that are submitted late or over the word limit. Find the details in each assignment's respective guidelines.
4. *Make-up exam.* A make-up exam will be granted to absentees with a medical condition. Other requests for a make-up exam will be reviewed on a case-by-case basis. Find the details in the respective guidelines.
5. *Student feedback.* Two course feedback sessions, one in the middle and the other (the standard university SFQ) at the end of the course, will be conducted. You are also encouraged to speak with us directly about any concerns or questions you may have about the course.