

# SS3726: DESIGNING EXPERIMENTS IN PSYCHOLOGY

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## Effective Term

Semester A 2024/25

## Part I Course Overview

### Course Title

Designing Experiments in Psychology

### Subject Code

SS - Social and Behavioural Sciences

### Course Number

3726

### Academic Unit

Social and Behavioural Sciences (SS)

### College/School

College of Liberal Arts and Social Sciences (CH)

### Course Duration

One Semester

### Credit Units

3

### Level

B1, B2, B3, B4 - Bachelor's Degree

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

SS1101 Basic Psychology; and SS2033 Research Methods for Behavioural Sciences

### Precursors

Nil

### Equivalent Courses

Nil

### Exclusive Courses

Nil

## Part II Course Details

### Abstract

This course aims to inform students about methodological and design issues in planning and conducting psychological experiments. The course will walk through the steps involved in designing an experiment from planning, writing research proposal for ethical approval, selecting stimuli, doing manipulation check, writing program for data collection, and sorting and analysing pilot data. After taking this course, students should be able to design a psychological experiment on their own. Students are assumed to have basic knowledge of the scientific methods and different research designs prior to taking this course, and so SS2033 or equivalent is the prerequisite. This course focuses on hands-on laboratory skills in experimental set up, basic programming skills (e.g., e-prime, Inquisit, etc.) for creating an experiment program, and principles of using the eye tracker device in psychological experiments.

### Course Intended Learning Outcomes (CILOs)

| CILOs |                                                                                                                                                                       | Weighting (if app.) | DEC-A1 | DEC-A2 | DEC-A3 |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------|--------|--------|
| 1     | Describe the principles and control techniques in each stage of experimental design                                                                                   | 25                  | x      |        |        |
| 2     | Explain the design and planning of experiments in psychology                                                                                                          | 25                  | x      |        |        |
| 3     | Demonstrate research skills through hands-on lab experience in experimental research techniques (eye-trackers, and programming experiments) and applied data analyses | 50                  |        | x      | x      |

#### A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

#### A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

#### A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

### Learning and Teaching Activities (LTAs)

| LTAs |                                                    | Brief Description                                                                                                                    | CILO No. | Hours/week (if applicable) |
|------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------|
| 1    | Lecture                                            | Students will engage with key principles and control techniques in each stage of experimental design                                 | 1, 2     |                            |
| 2    | Short discussions and in-class learning activities | Students will develop skills in experiment design by designing their own experiment step-by-step                                     | 1, 2     |                            |
| 3    | Lab participation                                  | Students will participate in experimental set up, basic programming skills, data acquisition, applied data analysis, and eye tracker | 3        |                            |

**Assessment Tasks / Activities (ATs)**

|   | <b>ATs</b>                                                       | <b>CILO No.</b> | <b>Weighting (%)</b> | <b>Remarks (e.g. Parameter for GenAI use)</b> |
|---|------------------------------------------------------------------|-----------------|----------------------|-----------------------------------------------|
| 1 | Short Assignment                                                 | 1, 2, 3         | 15                   |                                               |
| 2 | Research Proposal, Proposal Presentation, and Experiment Program | 3               | 35                   |                                               |
| 3 | Quiz                                                             | 1, 2            | 35                   |                                               |
| 4 | Lab Participation                                                | 3               | 15                   |                                               |

**Continuous Assessment (%)**

100

**Examination (%)**

0

**Assessment Rubrics (AR)****Assessment Task**

1. Short Assignment

**Criterion**

Ability to evaluate experimental research methods in psychology

**Excellent (A+, A, A-)**

Demonstration of an excellent ability to evaluate experimental research methods and paradigms in psychology

**Good (B+, B, B-)**

Showing a good capability to analyse experimental research methods in psychology

**Fair (C+, C, C-)**

Limited capability to analyse experimental research methods in psychology

**Marginal (D)**

Limited familiarity with the subject issue

**Failure (F)**

Little evidence of familiarity with the subject issue.

**Assessment Task**

2. Research Proposal, Proposal Presentation, and Experiment Program

**Criterion**

- Quality of writing and presentation
- Students will demonstrate how well the experimental design aligns with the research questions and how well the experiment program is designed

**Excellent (A+, A, A-)**

- The experimental proposal is well written with appropriate experimental design for the research questions.
- The presentation is clear and organized
- the experiment program is well designed

**Good (B+, B, B-)**

- The experimental proposal is adequately written with appropriate experimental design for the research questions.
- The presentation is adequately clear and organized
- the experiment program is adequately designed

**Fair (C+, C, C-)**

- The experimental proposal is not clear and there are some flaws in the experimental design used for adjusting the research question.
- The presentation is not clear and not well-organized
- the experiment program contains minor flaws in design

**Marginal (D)**

- The experimental proposal is very confusing and the experiment is poorly designed.
- The presentation is not clear and is confusing
- the experiment program contains many flaws in design

**Failure (F)**

- The experimental proposal is very confusing and there are severe flaws in the experimental design used for adjusting the research question.
- The presentation is confusing and missing crucial content
- the experiment program is not executable with major flaws

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**Assessment Task**

3. Quiz

**Criterion**

- Ability to evaluate experimental research methods in psychology
- Explain and describe the principles of eye tracker

**Excellent (A+, A, A-)**

Demonstration of an excellent ability to evaluate experimental research methods and paradigms in psychology. Excellent grasp of principles of eye tracker

**Good (B+, B, B-)**

Showing a good capability to analyse experimental research methods in psychology. Demonstrate reasonable understanding of principles of eye tracker

**Fair (C+, C, C-)**

Limited capability to analyse experimental research methods in psychology. Ability to understand the subject knowledge about principles of eye tracker in a general way.

**Marginal (D)**

Limited familiarity with the subject issue about principles of eye tracker.

**Failure (F)**

Little evidence of familiarity with the subject issue.

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**Assessment Task**

4. Lab Participation

**Criterion**

- attendance of lab session
- amount of participation in lab

**Excellent (A+, A, A-)**

- attend all the lab session
- always ask and answer questions during lab

**Good (B+, B, B-)**

- attend almost all the lab session
- usually ask and answer questions during lab

**Fair (C+, C, C-)**

- attend half of the lab session
- seldom ask and answer questions during lab

**Marginal (D)**

- attend half of the lab session
- never ask or answer questions during lab

**Failure (F)**

- never attend lab session
- no participation at all

## Part III Other Information

**Keyword Syllabus**

Experiments, eye tracker, control technique, programming skills

**Reading List****Compulsory Readings**

| Title |                                                                                                                                             |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Research Methods, Design, and Analysis, 12th Edition by Larry B. Christensen, R. Burke Johnson, and Lisa A. Turner, (2014) Allyn and Bacon. |

**Additional Readings**

| Title |                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Isaacowitz, D. M. (2005). The gaze of the optimist. Personality and Social Psychology Bulletin, 31(3), 407–415. <a href="https://doi.org/10.1177/0146167204271599">https://doi.org/10.1177/0146167204271599</a>     |
| 2     | Isaacowitz DM, Choi Y. Looking, feeling, and doing: Are there age differences in attention, mood, and behavioral responses to skin cancer information? Health Psychology. 2012;31(5):650-659. doi: 10.1037/a0026666 |