# Psychology Department

**PSY 232: Mathematical and Statistical Methods in Psychology (3 credits)**

**Fall 2013**
**Tentative Syllabus**

**Course ID:**  2643

**Course prerequisites:** MAT 125

**Instructor:**  Mehrigiul Ablezova, MA

**E-mail:** mehrigiul@gmail.com

| **Schedule:** | 1 session: | Monday | 8:00 – 9:15 | and | Thursday | 8:00 – 9:15 |
| --- | --- | --- | --- | --- | --- | --- |
| | 2 session: | Monday | 9:25 - 10:40 | and | Thursday | 9:25 - 10:40 |

**Office Hours:**  Monday and Thursday at 11:45 – 12:34 in room 234 (main building)


## Introduction

This course covers the basic principles of collecting, organizing, and analyzing psychological data. These include basic descriptive (e.g., means, standard deviations) and inferential statistics (t-tests, correlation, regression, ANOVA). This class aims to provide you students with the basic statistical concepts and necessary skills needed for the laboratory research, survey work and to provide adequate quantitative background for understanding psychological literature. The special emphasis of the course will be on the use of a statistical software package SPSS.


## Program Goals
In this course, students will develop the skills needed to:
1. acquire the concepts, terms, and symbols used in data analysis;
2. learn to formulate research ideas that can be evaluated with statistical analysis;
3. understand the logic and mathematical basis for different statistics;
4. choose appropriate statistical techniques for the problems they will investigate in their future studies and work;
5. use the SPSS as a tool for data management and hypothesis testing;
6. draw valid conclusions; and
7. coherently describe conclusions in written form.


## Readings
Textbook I:      *Fundamentals of Behavioral Statistics* by Richard P. Runyon, Audrey Haber, David J. Pittenger and Kay A. Coleman

Textbook II:     *Fundamental Statistics for the Behavioral Sciences* by David C. Howell.

Additionally, students will receive handouts and other small reading assignments on occasion.

Students must complete all reading assignments prior to class. Statistics texts typically require to read a chapter more than once (before and after class) to fully understand the material.


## Requirements
Class participation and effort (10% of final grade)
Attendance in a statistical course is highly important since an understanding of later section of the course is dependent on an understanding of earlier sections. Students will be held accountable for all class material on the exam and on the homework assignments. **Students must attend all classes on time.** Since this is a lab class, latecomers create a major disturbance.
Grading guidelines for seminar and lecture participation:
'10' – Students attend each lecture and seminar with questions about the lectures and readings. In engaged

dialogues, they raise these questions for other students to discuss, and listen to contrary opinions. They initiate and develop critical issues concerning the seminar activities

'8' – Students complete their readings, but do not always reflect on the questions and issues raised during the lectures and seminars. Though they articulate their own views, they passively wait for others to initiate interesting issues.

'6' – Students attend, prepare and listen attentively, but rarely enter into discussions.

'4' – Students are inconsistent in their attendance and preparations. They do not respect others' contributions.

'2' – Students are consistently ill-prepared and have poor attendance. They are rude and disruptive.

Homework Assignments (3*10=30 % of final grade)
There will 3 math problems and computer tasks. Each assignment can contribute 10% to the final grade. Students should do homework assignments **INDEPENDENTLY**. **THIS IS NOT A GROUP ASSIGNMENT! Any students who plagiarize or cheat from other students' work will get an "F" (0 points) grade for that assignment.** Problem assignments must be turned in at the beginning of the class session on the indicated dates. **NO LATE ASSIGNMENTS WILL BE ACCEPTED.**

Exams (3*20 = 60% of final grade)
There will be three in-class exams during the semester (see schedule below). Each exam will contribute 20% to students' total grade Exams will be on materials covered in lectures and in textbook. **Any students who cheat during the exam will get an "F" (0 points) grade for that exam.**

Missed exams can be re-scheduled under following conditions:
1.  students inform the instructor before an exam unless of an illness;
2.  students must have written documentation for the absence; and
3.  the instructor determines when the make-up is taken and the format of the exam.

**Grades will be assigned based on the following ranges:**

| Grade | Percentage Score Range |
|-------|------------------------|
| A     | 95-100                 |
| A-    | 90-94                  |
| B+    | 85-89                  |
| B     | 80-84                  |
| B-    | 75-79                  |
| C+    | 70-74                  |
| C     | 65-69                  |
| C-    | 60-64                  |
| D     | 55-59                  |
| D-    | 50-54                  |
| F     | 0 – 49                 |

**Academic integrity**
Academic integrity is the pursuit of scholarly activity free of fraud and deception and is an educational objective of the American University of Central Asia. It includes, but not limited to, cheating, plagiarism, fabrication of information and citations, facilitating acts of academic dishonesty by others, submitting work of another person or work previously used without informing the instructor, tampering with the academic work of another student, and lying to the instructor. Please refer to the University's Undergraduate Catalog 2011-2013 for additional information on Honor Code, which is also available on AUCA website. There is no tolerance policy toward academic dishonesty in this course.

# Course Outline

| Weeks | Tentative topic calendar | Readings | Homework |
|---|---|---|---|
| **WK1** September 9 | Review of the syllabus<br>Statistics in the research context | Textbook I Chapter 1&2 | |
| **WK2** September 9 and 12 | Data entry Frequency distributions and percentiles<br>Graphing techniques and Data transformation | Textbook I Chapter 3 and 6 | |
| **WK3** September 16 and 19 | Measures of central tendency<br>Measures of central tendency cont. | Textbook I Chapter 4<br>Textbook I Chapter 4 | |
| **WK4** September 23 and 26 | Measures of dispersion<br><br>Measures of dispersion cont. | Textbook I Chapter 5 | |
| **WK5** September 30 and October 3 | Revision of Homework 1<br><div align="center">**EXAM 1**</div> | | **HW 1** |
| **WK6** October 7 and 10 | Contingency tables<br>Measures of association | <br>Textbook I Chapter 7 | |
| **WK7** October 14 and 17 | Sampling designs<br><br>Independent study | Textbook I Chapter 9 | |
| **WK8** October 21 and 24 | The standard normal probability distribution<br>Sampling distribution<br>Introduction to regression | Textbook I Chapter 10<br><br>Textbook I Chapter 8 | |
| **WK10** October 28 and 31 | Regression and prediction<br><br>Revision of Homework 2 | Textbook II Chapter 10 and 11 | <br><br>**HW 2** |
| **WK11** November 4 and 7 | Independent study<br><div align="center">**EXAM 2**</div> | | |
| **WK12** November 11 and 14 | Introduction to hypothesis testing procedures<br><br>Hypothesis tests applied to means: one sample | Textbook II Chapter 12 | |
| **WK13** November 18 and 21 | Hypothesis tests applied to means: two related samples<br>No classes: Thanksgiving day | Textbook II Chapter 13 | |
| **WK14** November 25 and 28 | Hypothesis tests applied to means: two independent samples<br>Hypothesis tests applied to means: two independent samples cont. | Textbook II Chapter 14 | |
| **WK15** December 2 and 5 | Chi –square test<br><br>Chi –square test cont. | Textbook II Chapter 19 | |
| **WK16** December 9 and 12 | Revision of Homework 3<br>Course revision | | **HW 3** |
| December 17 | <div align="center">**EXAM 3**</div> | | |