**Course Syllabus**

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| **2023 CNU International Summer Session** |

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| **Name of the Course**  | Introduction to Statistics | **Credits****(hours/day)** | 3(3hrs/day) | **Name of the Professor** | Sohee Kang |
| **Course Code** | N/A | **Office****Address** | N/A | **Cellphone** |   |
| **Department** | Statistics | **E-mail** | sohee.kang@utoronto.ca |
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| **Course objectives** | This course will lead students to learn about the process of conducting statistical investigations from data collection, to exploring data, to statistical inference, to drawing appropriate conclusions.   |
| **Course summary** | Statistics is the science of collecting, organizing and interpreting data. In science, society and everyday life, people use data to help them understand the world and choose how to act, and statistical methods help to separate sense from nonsense.In this course, we learn about some of the most important techniques used in statistical work. The emphasis of this course is on concepts and techniques and will be useful to students who seek to gain an understanding of the use of statistics in their own field. Our ultimate goal is to gain understanding from data, going from data collection to analysis to conclusions. |
| **Academic Support for Handicapped students** | - Visually handicapped students: provision of course related materials, note taking helper, permission to record the lecture.- Audibly handicapped students: provision of course related materials, note taking helper, permission to have e-learning lectures in sign language or shorthand.- Physically handicapped or mentally challenged students: provision of course related materials, note taking helper, permission to record the lecture.* Any other requests that are considered necessary.
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| **Grade calculation** | Mid-term | Final | Practical / Coursework | Attendance | **Total** |
| 30% | 40% | Weekly Quizzes and Data lab (20%) | 10% | 100% |
|  ※ According to Amendment No. 28, in case of handicapped students, the lecture-management and evaluation methods can be adjusted. |
| **Textbooks & References** |
| Category | Title | Author | Publisher | Year of publication |
| Main textbook | **STATS-Data and Models**  | De Veaux, Velleman, and Bock  | Pearson | 2016 |
| Others | **Introduction to Statistical Investigations** | Nathan Tintle et al | Wiley | 2016 |
| Reference | **Introductory Statistics with R** | Peter Dalggard | Springer | 2008 |
| **Daily Course Schedule** |

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| **Day****(3hrs)** | **Lecture Topic** | **Hours per day** | **Method of Instruction** | **Class Materials & Assignments** |
| 1 |  Introduction to Statistical investigation and introduction to R studio | 3 | Power point presentation and R studio demonstration | R practice assignment |
| 2 | Describing and summarizing Categorical Data and Quantitative Data | 3 | Power point presentation | Homework from the Textbook ExerciseData Lab1 |
| 3 | Comparing Distributions, SD as ruler and normal model | 3 | Power point presentation and R boxplot demonstration | Homework from the Textbook ExerciseQuiz 1 |
| 4 | Scatter plots and Correlation | 3 | Power point presentation and R scatter plot and correlation demonstration | Homework from the Textbook ExerciseQuiz 2 |
| 5 | Linear Regression | 3 | Power point presentation | Homework from the Textbook ExerciseData Lab2 |
| 6 | Regression Wisdom and understanding randomness | 3 | Power point presentation | Homework from the Textbook ExerciseQuiz 3 |
| 7 | Sample surveys and Experiments and observational studies | 3 | Power point presentation | Homework from the Textbook ExerciseQuiz 4 |
| 8 | Midterm Exam | 3 |  |  |
| 9 | Randomness to probability, probability Rules, and Random variables | 3 | Power point presentation | Homework from the Textbook ExerciseQuiz 5 |
| 10 | Sampling distributions and confidence intervals for proportion | 3 | Power point presentation and in-class applet | Homework from the Textbook ExerciseData Lab 3 |
| 11 | Testing hypotheses about proportion | 3 | Power point presentation | Homework from the Textbook ExerciseQuiz 8 |
| 12 | Comparing two proportions: theory-based approach and simulation based approach | 3 | Power point presentation and in-class applet | Homework from the Textbook ExerciseData Lab4 |
| 13 | Comparing two means: theory-based approach and simulation based approach | 3 | Power point presentation and in-class applet | Homework from the Textbook ExerciseQuiz 9 |
| 14 | Paired designs and analyzing paired data  | 3 | Power point presentation | Homework from the Textbook ExerciseQuiz 10 |
| 15 | Final Exam | 3 |  |  |