The Islamia University of Bahawalpur Pakistan

Rahim Yar Khan Campus

Department of Statistics

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| Class | MSC statistics | Semester | | 3rd | | session | (2018-2020) |
| Instructor |  | e-mail | | Ayeshaazmat29@gmail.com | | program | MSC |
| Course title | Ayesha  Azmat | Credit hours | 3 | |
| Lecture timings | Tuesday 8:30-10:00  Wednesday 10:00-11:30 | | | | | | |

**Description:** This course is designed to develop theoretical (mathematics) skill in the students at the master’s. The course includes basic concepts of population studies in daily life as well as different fields.

**Course objective:** The objective of the course is to familiarize the student with a through understandings of the art of population studies. After the end of this course, the students will be able to prove problems theoretically and will also be familiar with its practically in real life problems.

**Tentative study plan for the semester**

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| 1 | Introduction to survival data analysis patient time and study time |
| 2 | , Survival function and hazard function |
| 3 | , Time dependent and censored survival data. |
| 4 | Types of censoring , and examples |
| 5 | Calculations and numerical questions of survival function and hazard function |
| 6 | Density function and its calculation |
| 7 | Population life table, clinical life table , life table analysis |
| 8 | Parametric and non parametric test in survival data analysis |

**Mid Term Exam**

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| 9,10 | Maximum likely hood estimate, product limit estimate and calculation of PL estimate |
| 11,12 | . Nonparametric procedures: Estimation of Survival function, hazard function, median and percentiles of Survival times |
| 13,14 | . Confidence interval and comparison of group; stratified and log-rank tests for trend, Modeling of Survival data; Hazard function modeling; its tests and confidence interval |
| 15,16 | The Weibull model for survival data, Exploratory data analysis and other models, Sample size requirement for survival study, Use of software for Survival analysis |

**Books recommended:**

: 1**. Burkett, M**. “Analyzing Survival Data from Clinical Trials and Observational Studies”; John Wiley New York

. 2. **Collett,** D. “Modeling Survival Data in Medical Research”. Chapman & Hall, London.

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3**. Cox, DR. and Oakes, D**. “Analysis of Survival Data”; Chapman & Hall London.

4**. Eland Johnson, R. C. and Johnson N. L.** ( “Survival Models & Data Analysis”. John Wiley N.Y

. 5. **Lee, E.T**. “Statistical Methods for Survival Data Analysis”; John Wiley. N.Y

. 6. **Lee, E.T.** “Applied Survival Analysis”, John Wiley and Sons, New York

. 7. **Muller, R.G. and Xian Zhou** “Survival Analysis with long-term Survivors”, John Wiley. New York.

**8. Parmer M.K.B. & Macklin D**. . “Survival Analysis: A Practical Approach”; John Wiley New York.

9. **Turkey, J.** . “Exploratory Data Analysis”, John Wiley, New York

**Learning activities:**

Learning activities may include in class presentations, homework assignments from the textbook, small group or class discussion, and individual or group projects or exercises.

**Mark distribution:**

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| **Activity** | **Marks** |
| Classroom participation/ group work | 5% |
| Quiz/ surprise test | 5% |
| Assignments | 5% |
| Presentations/seminar | 5% |
| Mid-term exam | 30% |
| Final term exam | 50% |
| **Total** | **100%** |

**Students responsibilities:**

1. Students must attend the class. At least 80% attendance is mandatory.
2. Students must arrive on time and remain in class for the entire period.
3. Cellular phone must be turned off.
4. Test questions may be taken from text book reading, additional material discussed in the class and / or other assigned reading.