

**MATH 237**  
**Elementary Biostatistics**

**Course Outline**

Topics	# of Weeks
<b>Chapter 1:</b> Basic statistical concepts, data measurements, random sampling (all sections)	0.5
<b>Chapter 2:</b> Descriptive Statistics. Organization and presentation of data in tables and graphs; frequency, relative frequency, and cumulative frequency distributions, histogram, ogive, stem-and leaf, bar chart, pie chart and pictograph. Computation of the mean, median, mode, range, variance and standard deviation for raw data, percentiles and quartiles. (sections 1- 5).	1.5
<b>Chapter 3:</b> Probability. Definition of probability, elementary properties of probability, marginal, joint and conditional probabilities. (sections 1-4, 6).	1.0
<b>Chapter 4:</b> Probability Distributions. Random variables, discrete binomial distribution, continuous distribution, normal distribution (omit Section 4).	1.0
<b>Chapter 5:</b> Sampling Distributions. Definition of sampling distribution of a statistic, sampling distribution of the sample mean (Central Limit Theorem) and sample proportion (sections 1, 2, 3, 5).	1.0
<b>Chapter 6:</b> Point and Interval Estimation. Point and confidence interval estimates of population mean, variance, proportion. Sample size determination for one sample estimates of the population mean and proportion (sections 1, 2, 3, 5, 7, 8, 9).	1.5
<b>Chapter 7:</b> Hypothesis Testing. Hypothesis testing for single population mean, proportion and variance. Hypothesis testing for difference of two population means, difference of two population proportions and ratio of two population variances. P-value and its calculation for all cases (sections 1-8).	2.0
<b>Chapter 8:</b> Analysis of Variance. The Completely Randomized Design, The Randomized Block Design, Tukey's and Dunnett's post-hoc test for paired comparisons of treatments (sections 1,2,3,6).	2.0
<b>Chapter 12:</b> Chi-Square Tests. Goodness-of-Fits tests, Tests of Homogeneity of several populations, Test of Independence of two criteria of classifications (sections 3,4,5).	1.0
<b>Chapter 9:</b> Simple Linear Regression and Correlation. The regression model, the least squares solution for the estimated regression equation, point and interval prediction, coefficients of determination and correlation, and precautions (all sections)	1.5
<b>Tests</b>	1.0

**Textbooks:** Biostatistics: A Foundation for Analysis in the Health Science, 9<sup>th</sup> Edition by W. W. Daniel, and Minitab Lab Workbook 19<sup>th</sup> Edition by Howard Kaplon

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