Statistics subsidiary syllabi for B.Sc. (Hons. School) in Bio-Physics
3rd Semester Examination Dec. 2015.

Paper: BIOSTATISTICS-I

Distributions of marks:
Theory: 
(i) Final paper : 30 marks  
(ii) Internal Assessment : 10 marks  
Total : 40 marks  
Time : 3 hours

Objective: The main objective of the course is to give applications of Statistical Methodology in medical and Bio-Sciences to summarize and analyse the data, and modeling of real life data through standard distributions.

Note: Theory paper will have 8 questions. A candidate is required to attempt any five questions.

SYLLABUS

Biostatistics: Its meaning and objectives, measurement scales, concept of population and sample, Frequency tables. Diagrammatic and graphical representation of data (Bar, Pie, Histogram, Ogives stem-and-leaf plot) Measures of location (mean, median mode) and variability (range, standard deviation, coefficient of dispersion and variation). Moments, Skewness and Kurtosis, Box and whisker plot.

Intuitive concept of probability as a limit of relative frequency, equally likely outcomes, some elementary combinatorial problems, conditional probability, Bayes theorem and its applications. Sensitivity, specificity and predictive value positive and negative, Risk Ratio and Odds Ratio. Random variables, probability mass function and probability density function. Expectation and variance of a random variable variance. Bernoulli trials, binomial, Poisson, negative binomial, exponential and normal distributions. Fitting of binomial, Poisson and normal distributions.

Scatter diagram, correlation and linear regression, Spearman’s rank correlation coefficient.

References:

Additional References:

Practical : Marks: 10
Time: 3 hours

NOTE: 1. Practical paper will have 5 questions. A candidate is required to attempt any three questions.

2. The distribution of marks for practical examination will be as under:

<table>
<thead>
<tr>
<th>Component</th>
<th>Marks</th>
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<tbody>
<tr>
<td>Practical Questions</td>
<td>6</td>
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<tr>
<td>Record of practicals/</td>
<td>2</td>
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<tr>
<td>Internal Assessment</td>
<td>2</td>
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<td>Viva-Voce</td>
<td>2</td>
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Statistics subsidiary syllabi for B.Sc.(Hons. School) in Bio-Physics
Fourth Semester Examination April/May 2016
Paper: BIOSTATISTICS-II

Distributions of marks:

<table>
<thead>
<tr>
<th>Theory:</th>
<th>Final paper : 30 marks</th>
<th>Internal Assessment : 10 marks</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>40 marks</strong></td>
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<tr>
<td><strong>Time</strong></td>
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<td><strong>3 hours</strong></td>
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**Objective:** The course provides a systematic account of the theory of point estimation and related theory of testing of hypothesis. The course also presents orientation of Statistics while designing Statistical Experiments using Analysis of Variance technique. The focus of approach is the practical orientation of theoretical concepts using data from medical or health sciences.

**Note:** Theory paper will have 8 questions. A candidate is required to attempt any five questions.

**SYLLABUS**

The basic idea of significance test. Null and alternative hypothesis. Type I & II errors, level of significance, concept of p-value Estimation of population means. Tests of hypotheses and confidence intervals for the parameters of a normal distribution (two sample problems also).

Categorical data: Tests of proportions, tests of association and goodness-of-fit using Chi-square test, Yates’ correction.

Tests for the significance of correlation coefficient. Sign test, Wilcoxon Signed Rank Test, Wilcoxon two-sample test.

Analysis of variance, one-way and two-way classifications. Brief exposure of three basic principles of design of experiments, treatment, plot and block. Analysis of completely randomized design, randomized complete block design. Bioassay.

**References:**


**Additional References:**


**Practical:**

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<td>Time:</td>
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</table>

**NOTE:**

1. There will be five questions in the practical paper. A candidate is required to attempt three questions.

2. The distribution of for practical examination will be as under:

| Practical Questions | 6 marks |
| Record of practicals/ | 2 marks |
| Internal Assessment |  |
| Viva-Voce | 2 marks |