

DAV UNIVERSITY, JALANDHAR



Scheme of Courses for Doctor of Philosophy - Biochemistry

Syllabus for Course Work

Course Syllabus Applicable to Admissions in 2018

Semester 1

S.No.	Paper Code	Course Title	L	T	P	Credits	Course Type
1.	BCH801	Research Methodology in Life Sciences	4	0	0	4	Core
2.	BCH802	Seminar/Workshop /Thesis Review	0	0	2	2	Core
3.	BCH803	Seminar based on Specialization course	0	0	2	2	Elective
4.		Specialization course	4	0	0	4	Elective
		Total	12	0	4	12	

L: Lectures T: Tutorial P: Practical Cr: Credits

Course Title: Research Methodology in Life Sciences
Paper Code: BCH801

L	T	P	Credits	Marks
4	0	0	4	100

Objective:

To make the students learn how to design an experiment and what are the various research strategies.

Teaching Methodology:

Class room Lectures, practicals, models, charts, power point presentations.

Learning outcomes:

This course will impart the comprehensive knowledge of designing a research experiment, how to write a research paper, the relevant ethics, copy right, impact factor etc.

UNIT-I

Biostatistics: Definition and relevance in biological research; Measures of Central Tendency: Arithmetic Mean, median, mode, quartiles and percentiles; Measures of Dispersion: Range, variance, standard deviation, coefficient of variation; Skewness and Kurtosis.

Inferential Statistics: Hypothesis testing, Errors in Hypothesis Testing-Null Hypothesis, Alternative Hypothesis, Type I and Type II errors, Confidence Limits. Setting up of level of significance. One tailed and Two-tailed tests.

Correlation and Regression: Correlation coefficient (r), properties, interpretation of r , partial and multiple correlations, linear regression: Fitting of lines of regression, regression coefficient, Bivariate and Multiple Regression.

UNIT-II

Parametric and Non-Parametric Statistics: Definition, Advantages, Disadvantages, Assumptions; Parametric Tests: Student's t-test, One Way Analysis of Variance, Two Way Analysis of Variance; Non-Parametric Tests: Analysis of Variance, Chi square and Kendall Rank Correlation

Experimental Set-up: Basic principles and significance of research design; Randomized Block Designs (RBD), completely randomized designs (CRD); Latin square design and Factorial design

UNIT-III

Data collection, organization and interpretation.

Research articles, research papers, popular research articles and reviews; difference between periodicals; journals; monographs, magazines; proceedings.

How to write a research paper, reference styles, process of submission of a paper; process of proof reading of a research manuscript; process of reviewing.

Important journals in life-sciences.

An introduction to Science citation index; H-index, i10 index, Impact factor calculation, Impact factor of a journal; Eigen factor, Major journal search engines.

Copyright act; Academic frauds; Plagiarism; Softwares to check plagiarism.

UNIT-IV

Biosafety and Bioethics in Research: Guidelines for Biosafety and Bioethics; Safety practices and Bio-waste in the laboratory; Radioactivity and Safety; Fire hazards and safety; Institutional Biosafety, Ethics and Animal Ethics compliance and concerns; Genetically modified organisms; Patents and Intellectual property rights; Reproduction of published material, Citation and acknowledgement; Guidelines for Ph.D. thesis.

Reference Books

1. Kothari, C.R. Research Methodology—Methods and Techniques. 2nd revised ed. New Delhi: New Age International (P) Ltd. Publishers, 2007. Print.
2. McKillup, S. Statistics Explained. An Introductory Guide for Life Scientists. Cambridge, UK: Cambridge University Press, 2006. Print.
3. Selvin, S. Biostatistics—How it Works. First Impression. New Delhi: Pearson Education Inc., 2007. Print.
4. Agarwal, B.L. Basic Statistics. New Delhi: New Age International, 2006. Print.

Course Title: Seminar
Paper Code: BCH802

L	T	P	Credits	Marks
0	0	2	2	100

Seminar Objective:

During the course students will come to know about the general understanding of the most common problems, recent advances in biotechnology research. The instructor shall allot each student a topic. Student will have to understand the topic, collect literature and prepare the presentation. Through this the students will develop habit of reading newer topics, will become inquisitive and develop confidence of presentation and discussion before audience. The students shall submit a project report on the allotted topic, which shall be evaluated by the concerned internal faculty. He/She then would present a seminar on the concerned topic. The students will be encouraged to explore all available literature as well as the internet to prepare the seminar report and present the same using informative slides made using Power Point or projectors.

Seminar Contents:

Students will present their work on a selected topic with the following headings:

- Title
- Objectives
- Review of Literature
- Materials and Methods
- Results
- Conclusion/recommendations

Examination Scheme (Weightage in %):

Literature study/ Fabrication/ Presentation : 50%

Written Report : 25%

Question answer session : 25%