

ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



University of Mysore

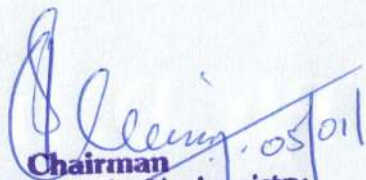
(Estd.1916)

Ph. D. in BIOCHEMISTRY



UNIVERSITY OF MYSORE
Department of Studies in Biochemistry
Manasagangotri, Mysuru-570 006

Regulations and Syllabus
Ph. D. in BIOCHEMISTRY


Chairman
Dept. of Studies in Biochemistry
University of Mysore
Manasagangotri, MYSORE-570 006
INDIA
05/01/2021

UNIVERSITY OF MYSORE
GUIDELINES AND REGULATIONS
LEADING TO
PH. D. IN BIOCHEMISTRY

Programme Details

Name of the Department	:	Department of Studies Biochemistry
Subject	:	Biochemistry
Faculty	:	Science and Technology
Name of the Programme	:	Ph. D.

PH. D. PROGRAM IN BIOCHEMISTRY

The Ph.D., programme in Biochemistry is comparable to that of reputed National Institutions and is highly sought among life sciences in the University.

PROGRAMME OUTCOME

On successful completion of this programme each Ph.D. scholar will:

- Have through knowledge of current literature in the specified area.
- Know how design experiments to address the chosen research problem.
- Have confidence to write publications in the peer reviewed Journals.
- Have knowledge to take up any research problem independently.
- Have required knowledge to teach post-graduate students.

PROGRAMME OBJECTIVES

The main objective of this Ph.D. programme is to provide strong foundation to

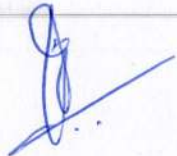
- To understand the basic problems in current research scenario and find meaningful solutions.
- To develop as an independent researcher both in academic institutions and in R & D programmes of industries.
- To take up research problems at higher level to work as a postdoctoral fellow worldwide.
- To take up teaching profession in academic institutions

PROGRAMME PEDAGOGY

- Conducting literature survey under the direction of the supervisor is a primary module in the research methodology.
- Participatory learning on surveys and conducting experiments under the supervision of teachers are adopted.
- Practical orientation on Sample survey data organisation and interpretation through statistical techniques is yet another major method of approach in the pedagogy.

COURSE – I: RESEARCH METHODOLOGY

Objectives



- To learn types of research.
- To learn about various research models with the use of advanced techniques
- To learn about good laboratory practices and ethical issues.
- To learn the applications of suitable statistical analysis.

Course outcome

- Understand the use of appropriate biological samples or animal model to address the selected research problem
- Understand the applications of advanced techniques.
- Understand the signaling pathways at cellular levels.

COURSE CONTENT

Types of Research- Academic, Industrial, clinical, Basic research, applied research. Research objectives. Review of literature-identifying gaps; formulating hypothesis, selecting research topics.

Collection of Research Material: Information, types and sources. Pubmed as a resource. Collection, classification and retrieval of information.

Research Design: Types of studies-cohort, double blind, placebo control, cross over. Overview of Framingham study.

Statistical methods: Error and its significance, choosing sample size, collection of data-questionnaire; methods of scaling, collection analysis and presentation of data. Parametric and non-parametric tests and when to use them.

Ethical issues: Handling of animals. Animal ethics; human volunteers-ICMR guidelines of ethical issues. Intellectual property rights. Conflict of interest, Issues on plagiarism. Intellectual property. Authorship issues-multiple authors, corresponding author. Safe handling and disposal of biological samples.

Writing reports- lab records, program reports, grant applications.

Modern Biochemical Techniques: Advanced techniques in Biochemical analysis- LC-MS, confocal microscopy, AFM, DNA microarray. Real time PCR.

New models of Biochemical studies: Drosophila, Zebra fish, Trypanosoma and *C. elegans*. Knock out, over expression phenotype.

Integration of metabolic pathways of carbohydrate and lipid metabolism.

Mechanism of drug action: Receptors (PPAR, LXR, RXR, AhR) downstream effectors, genes, agonists, antagonists, mechanisms and toxicity, COX-1, COX-2, Drug metabolizing enzymes-Cyp.

Cell signaling: Signaling in animal and plant cells.

Regulation of eukaryotic gene expression.

COURSE-II: RESEARCH METHODOLOGY

Objectives

- To work with research guide in scientific spirit.
- To know the current literature of the selected research problem.
- To learn about good laboratory practices and ethical issues.

Course outcome

- Understand how to work in a research group.
- Understand the use of scientific literature to support his research.
- Understand the importance of plagiarism and authorship issues.

COURSE CONTENT

Responsibility of the guide: The Guide shall ensure that the research student understands the following aspects. The Guide shall conduct tests/evaluation from time to time and have the IA marks ready.

Current status of the lab:

- 1) Ongoing projects/ past projects/ publications resulting from the Guide's Research group. Any novel technique developed. The review of the literature pertinent to candidates work-relevant publications. Identification of Research problem, identifying gaps in the knowledge, formulating objectives and work plan.
- 2) **Review of the allied fields-** Literature of the allied area to candidate's field, outstanding publications.
- 3) **Authorship issues-** the primary author, corresponding author, contributing author, etc., Guide's responsibility to assign the appropriate authorships.
- 4) **Plagiarism-** adopting a figure v/s cut and paste and its implications in plagiarism.
- 5) **Sharing reagents/ chemicals/ methods in lab-** team work is essential.

How to publish/ present in seminars/ symposia/ meeting proceedings/ etc.,



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THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

MEMORANDUM

TO: [Name]
FROM: [Name]

DATE: [Date]

SUBJECT: [Subject]

RE: [Reference]

The following information was obtained from [Source] regarding [Topic]. It is noted that [Detail] and [Detail].

It is suggested that [Action] be taken in order to [Objective]. This is based on the fact that [Reasoning].

[Signature]