

# **Central University of Punjab, Bathinda**



**M.Sc. Program in Life Sciences  
Specialization: Biochemistry**

**Session - 2019-21**

**Department of Biochemistry**

<b>S No.</b>	<b>Name of Course</b>
1.	Ethics for Science
2.	Professional Ethics
3.	Academic Writing
4.	Value Education
5.	Stress Management
6.	Personality Development through Life Skills
7.	Physical & Mental Well Being
8.	Pedagogical Studies
9.	Data Analysis using spread sheet
10.	Soft Skill Training
11.	Leadership
12.	Personal Management
13.	Wealth Management
14.	Reasoning Ability
15.	MS office Specialist
16.	Practical Taxation
17.	Ethical Issues & Legal Awareness
18.	Disaster Management
19.	Nutrition and Specialty Foods
20.	Shorthand & Typing
21.	SPSS

**Course Code: LBC.504**

**Course Title: Ethics for Science**

**Total Hours: 16**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
1	-	-	1

**Learning Outcomes:**

On completion of this course the students will be able to appraise the aspects of ethics in research which will help them to understand the set of conduct norms applicable in the field of science. The course will cover the ethics involved in human, animals and plants research and misconduct, fraud and plagiarism. The students from inter-disciplinary background will learn about the basic good practices to be followed in research and academics.

**Unit I**

**3 Hours**

**Introduction and Basic Principles of Ethics:** Ethical theories, Ethical considerations during research, Data Manipulations. Ethical review procedure and committees

**Unit II**

**4 Hours**

**Ethics in Basic and Applied Sciences:** Ethics in cloning, recombinant technology, Genetically Engineered Organisms and r-DNA based products. Animal Testing. Animal Rights, Perspectives and Methodology.

**Unit III****5 Hours**

**Principles of Ethics in Clinical and Medical Sciences:** Code of Ethics in Medical/clinical laboratories. Healthcare rationing, Ethical Issues of Xenotransplantation, Ethics involved in embryonic and adult stem cell research, Ethics in assisted reproductive technologies: animal and human cloning and *In-vitro* fertilization. Ethical issues in MTP and Euthanasia. Types of consents and Human Genome project.

**Unit IV****4 Hours**

**Ethics in Research:** Intellectual property rights (IPRs), Patents copyrights. Fair use and plagiarism. Collaboration in research: authorship, resources sharing and mentoring, publications, conflict of interest, collaboration between academia and industry. Scientific misconduct.

**Suggested Readings:**

1. Clarke, A (2012). *Genetic Counseling: Practice and Principles*. Taylor & Francis
2. Fleming, D.O. and Hunt, D.L. (2006). *Biological Safety: Principles and Practices*. American Society for Microbiology, USA.
3. Mahop, M.T. (2010). *Intellectual Property, Community Rights and Human Rights: The Biological and Genetic Resources of Developing Countries*. Routledge.
4. Rockman, H.B. (2004). *Intellectual Property Law for Engineers and Scientists*. Wiley-IEEE Press, USA.
5. Shannon, T.A. (2009). *An Introduction to Bioethics*. Paulist Press, USA.
6. Thompson J and Schaefer, B.D (2013). *Medical Genetics: An Integrated Approach*. McGraw Hill.
7. Vaughn, L. (2009). *Bioethics: Principles, Issues, and Cases*. Oxford University Press, UK.
8. WHO. (2005). *Laboratory Biosafety Manual*. World Health Organization. Ethical guidelines for biomedical research on human participants, ICMR,

**Modes of transaction**

-Lecture

-Demonstration

-Self-learning

-Group discussion

**SEMESTER II****Course Code: LMS.530****Course Title: Research Methodology and Biostatistics****Total Hours: 60**

L	T	P	Cr
3	1	-	4

**Learning Outcomes:**

This course will ensure that the student understands various aspects of research methods, ethics, technical and scientific writings and literature search.