KU4VACPHY103 : Scientific Ethics

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
IV	VAC	100	KU4VACPHY103	3	45

Learning Approach (Hours/ Week)		Marks Distribution			Duration of ESE (Hours)
Lecture+ Tutorial	Practical	CE	ESE	Total	
3	0	25	50	75	1.5

Course description:

The ethics of the design, execution, and reporting of research are referred to as research ethics. Ethical norms are to be followed in publication also. This course aims at equipping the students with a knowledge of various research misconducts, its coasts, and the need and methods to avoid scientific misconduct. The student will have an insight about the research ethical committees and its function. Various ethical issues related to the publication also forms a part of this course.

Course Prerequisite: NIL

Course Outcomes

CO No.	Expected Outcome	Learning Domains
1	Appreciate the importance of ethical practices in research	*R*
2	Understand various unethical practices in research and publication	*U*
3	Understand the importance of intellectual honesty and integrity in research	*U*

4	Understand the role and responsibilities of research ethics committees	*U*

Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)

Mapping of Course Outcomes to PSOs/POs

	PSO 1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CO1	1	1	3	1	0	1	3
CO2	1	3	3	0	1	1	3
CO3	1	3	3	1	2	0	3
CO4	1	3	3	1	1	0	3

Correlation level 0-None, 1-Slight, 2-Medium, 3-High

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	**UNIT**	**DESCRIPTION**	**HOURS**
1	**Research Ethics**		**8**
	1	Importance of research ethics, values and principles of ethics - Scientific Integrity and Research Ethics	2
	2	Intellectual property rights, autonomy, dignity, beneficence/non-maleficence, Vulnerability and Justice	2

	3	Conflict of interest and undesirable authorships	2
	4	Costs of scientific misconduct.	2
		Book 1: **Section 9.1-9.3, 9.4, 9.5.6, 9.5.7, 9.7, Book 2: chapter 3**	
2	**Intellectual Honesty and Research Integrity**		**9**
	1	Environment and bases of research integrity, promoting research integrity	2
	2	Integrity of individual research, support by research institution	3
	3	Fostering integrity in research and promoting honesty in research	2
	4	Research environment and its impact on research integrity	2
		Book 2: Chapter 4	
3	**Scientific Misconduct**		**10**
	1	Poor Practices v/s. Misconduct, Examples for scientific misconduct, Falsifying and Fabricating of Data, stealing of credit, Omission of data, misinterpretation of previous work, intentional negligence in acknowledging previous work, passing off another researcher's data as one's own	4
	2	Plagiarism, different forms of plagiarism and methods to avoid plagiarism	2
	3	Regulations of plagiarism, tools for plagiarism checking - Research ethics committees and functions	2
	4	Institutional Responses to Scientific Misconduct and Administrative Responses to Scientific Misconduct	2
		Book 1: Sections 9.5.1, 9.5.2, 9.5.3, 9.8, 9.9, Book 2: chapter 5	
4	**Publication Ethics**		**9**
	1	Ethical issues in publication, types of publication misconduct	3
	2	Ethical responsibilities of authors, editors and reviewers	2
	3	Redundant publication and problems caused by redundant publication	2
	4	Misconduct by Editors, Publishers, and Peer-Reviewers.	2
		Book 1: Section 10.5-10.7, Book 2: chapter 7 and 8	
5	**Teacher Specific Module**		**9**

	Directions: Course faculty can design content.	

Essential Readings:

1. Research Methodology for Scientific Research, (Second Edition), K. Prathapan, I K International Publishers, New Delhi, (2023)
2. Research and Publication Ethics, Santhosh Kumar Yadav, Anne Books PVT. Ltd. New Delhi (2022)

Suggested Readings:

1. Ethics in Science, John G D'Angelo, (Second Edition) CRC Press (2019)
2. Responsible Conduct of Research, Adil E. Shamoo and David B. Resnik, Oxford University Press, (2009).
3. Student's Guide to Research Ethics, Paul Oliver, Open University Press Maidenhead · Philadelphia (2003).
4. Research and Publication Ethics, Nimit Chowdhary, Sunayana, and Monika Prakash, Routledge India, (2023).
5. Research Ethics for Scientists, C. Neal Stewart Jr, Wiley Blackwell (2011).
6. Scientific Integrity and Research Ethics, David Koepsell, Springer Nature (2015).

Assessment Rubrics:

Evaluation Type		**Marks**
ESE		**50**
CCA		**25**
a)	*Test Paper	10
c)	**Assignment/ Book- Article Review	5
d)	Seminar/ Viva -Voce	10
Total		**75**

*Best out of two test papers

** or any other activities like quiz, open book exam, group activity