



**DR. SUDHIR CHANDRA SUR INSTITUTE OF
TECHNOLOGY AND SPORTS COMPLEX**

540, Dum Dum Road, Suremath, Kolkata- 700074, West Bengal



**Code of Ethics in
Research & Development**

Code of Ethics in Research & Development

Introduction:

Ethics is "the science of moral values and duties; the study of ideal human character, actions, and ends". Ethics is a norm for conduct that distinguishes between acceptable and unacceptable behavior. It is usually expressed in terms of rules, codes of professional conduct, religious creeds, or a wise aphorism that makes a distinction between right and wrong.

Everyone recognizes some ethical rules, but each person interprets, applies, and balances these norms differently based on their own values and life experiences. Ethics, on the other hand, is not the same as a law. Ethical norms are more flexible and informal than laws. We utilize laws to enforce widely accepted moral norms, and ethical and legal principles may use notions that are comparable.

In general, a code of ethics is a set of written rules offered by an organization to its employees and students to assist them in acting in accordance with the organization's primary principles and ethical standards.


In various fields of knowledge, research is a careful, patient, systematic, and conscientious inquiry or examination performed to establish facts or principles. However, research entails not only applying scientific principles but also instilling ethical values for each researcher to develop as an honest and intelligent creative human being capable of serving as pillars of strength in society for the advancement of scientific knowledge and global prosperity.

As a result, research ethics refers to the moral principles that guide research from conception to completion and publication of results, as well as beyond. Many diverse fields, institutions, and professions have conduct norms that suit their interests and ambitions, according to global experience. These norms also aid members of the discipline in coordinating their actions or activities, as well as establishing the discipline's public confidence.

Objectives :

The major objectives for adhering to ethical norms in the research system are to:

- Assist research facilities and researchers in conducting ethical research.
- Increase research system awareness of research and scientific ethics, reducing the likelihood of scientific ethics violations.
- Establish a clear knowledge of scientific ethics requirements to create a true commitment to fairness, truth, and integrity in the conduct of scientific research and development.
- Ensure that researchers are accountable to the public
- Support the goals of research (knowledge, truth) while avoiding errors
- Promote values such as trust, accountability, mutual respect, and justice, which are fundamental to collaborative work.
- Gain public support for research through instilling confidence in the research's quality and integrity.
- Encourage the promotion of other moral and social principles such as social responsibility, human rights, animal welfare, legal compliance, and health and safety.


Prof. (Dr.) Saradindu Panda
Principal
Dr. Sudhir Chandra Sur Institute
Technology and Sports Complex
Road, Kolkata-700074



Therefore, all the faculty members, students, and other research staff must abide by the following regulations:

A. Scientific misconduct:

Both research misconduct and professional misconduct are examples of scientific misconduct. Honest mistakes such as sloppiness, poor record keeping, miscalculations, bias, self-deception, and even neglect do not, however, constitute misconduct. Study misconduct does not include reasonable differences regarding research techniques, processes, or interpretations.

✚ Research Misconduct:

Research Misconduct is described as activities that virtually all researchers consider unethical while proposing, conducting, or assessing study, or when reporting research results. "Fabrication, falsification, or plagiarism (FFP)" are examples of this.

Fabrication: Fabrication is the act of fabricating results and then recording or reporting them.

Falsification: Manipulation of study supplies, equipment, or procedures, as well as modifying or omitting data or outcomes so that the research is not accurately represented in the research record, is considered falsification.

Plagiarism: Plagiarism is defined as the unauthorized use of another person's ideas, techniques, findings, or words, including those obtained through confidential examination of others' research proposals and papers, without giving appropriate credit.

Misconduct, on the other hand, happens only when researchers attempt to deceive. It excludes instances of honest error, honest differences of opinion, conflicts over scientific data interpretation, and disagreements over experimental design.

✚ Professional Misconduct:

Professional misconduct includes, but is not limited to, exploitation of research associates, inappropriately conferring or denying authorship, duplicative publication, misstating one's research credentials, failing to retain significant data for a reasonable period, unauthorized use of data, and failing to publish significant data in a timely manner without reasonable cause.

To avoid Professional Misconduct, when conducting research and going through the research process, keep the following in mind:

- Deviating significantly from a study protocol that has been authorized by a review forum
- False data recording
- Failure to keep research data for a long enough period
- Failure to maintain accurate research records
- Failure to report an undesirable incident in a research study
- Setting up an experiment in such a way that you know how it will turn out
- Changes in research findings
- Taking supplies, literature, or information
- Subordinates and technical assistants are overworked, neglected, or exploited.
- Providing a subordinate with a higher rating in exchange for sexual favors
- Infringing on biosafety regulations by exposing employees to biological dangers
- Failure to report on time
- Taking advantage of research resources
- On a job application or curriculum vitae, exaggerating the truth

Saradindu Panda
Prof. (Dr.) Saradindu Panda
Principal
Dr. Sudhir Chandra Sur-Institute
Technology and Sports Complex
Road, Kolkata-700074



- To persuade reviewers that his or her project will make a substantial contribution to the area, he or she will lie on a grant application.

To avoid Professional Misconduct, when publishing any research paper, keep the following in mind:

- Conducting a literature review that ignores the contributions of other experts in the subject or pertinent earlier work
- Publishing the identical work in two journals without informing the editors is unethical.
- submitting the same article to multiple publications without informing the editors
- To ensure that you are the lone inventor, you should not alert a collaborator of you intend to file a patent.
- Inclusion of a coworker as an author on a paper in exchange for a favor, even though the colleague made no significant contribution to the paper
- Confidential data from a study you're reviewing for a journal is being discussed with your coworkers.
- removing outliers from a data collection without explaining why in a paper
- Using an ineffective statistical approach to increase the significance of your study
- Bypassing the peer review procedure and releasing your findings at a news conference without providing enough information for peers to evaluate your work
- In your review of the author's contribution, making disparaging remarks and personal attacks
- Without ever reading a manuscript, a manuscript is rejected for publication.
- sabotaging another person's job
- Copying data, publications, or computer programmes without permission

B. Expertise in conducting research:

- The research projects must adhere to the institute's criteria and regulations.
- The research topic should be chosen with the institute's availability and provisions in mind; thus, it is recommended that you work under the supervision of a faculty member who is familiar with the guidelines and requirements.

C. Accuracy of Research data and reports:

- The data selected or acquired for the study must be accurate enough to assure the study's quality.
- Data and information used for publication in journals, conferences, and other publications must be accurate and not gained by deception.
- Appropriate actions to minimize error must be taken.
- Any comments or claims that are misleading must be avoided at all costs.
- No exaggerated statements should be made, and interpretability should be maximized to the greatest extent possible.

D. Invest yourself in the search, progress, and promotion of scientific knowledge.

- Knowledge is the purpose of science, and new knowledge is gained through scientific inquiry and progress.

Panda
Prof. (Dr.) Saradindu Panda
Principal
Dr. Sudhir Chandra Sur Institute
Technology and Sports Complex
Road, Kolkata-700074



- Fairness and honesty are expected of all employees.
- Maintain and increase your own professional competence and expertise through lifetime learning and education; take initiatives to promote science-wide competency.
- Strive for honesty in all the scientific communications.
- Data, results, methods and processes, and publication status should all be reported honestly. Don't make up, falsify, or misrepresent information.
- Do not deceive coworkers, grantors, or the public.
- Know and follow all applicable laws, as well as institutional and governmental rules.

E. Conduct, manage, judge, and report scientific research in a transparent, thorough, and conflict-free manner.

- In areas where objectivity is expected or required, such as experimental design, data analysis, data interpretation, peer review, personnel decisions, grant writing, expert testimony, and other parts of research, strive to eliminate bias.
- Bias or self-deception should be avoided or minimized. Declare any personal or financial interests that may have an impact on the research.
- Avoid thoughtless mistakes and negligence by carefully and critically examining your own and your colleagues' work.
- Keep meticulous records of all research activities, including data gathering, research design, and correspondence with agencies and publications. However, this code element does not imply that utilizing unique investigation procedures, atypical analysis methodologies, removing data points that are known to be incorrect for identified material reasons, or interpreting data in a novel way are all immoral.
- Any changes to the data should be reported in the research record.
- Use of unconventional methodologies, analysis methods, and interpretations can result in considerable scientific advances when done honestly and thoroughly. If these procedures are employed to promote a desired conclusion, however, it is a breach of scientific ethics. It's especially unethical if the claim is made that the unique or unconventional techniques are typical or the sole correct way to conduct the study, analyze the data, or interpret the results.
- Conduct, manage, judge, and report scientific research in a non-conflicted manner. A conflict of interest occurs when a person's personal interests' conflict with the objectivity of his or her actions or judgments. When a person's personal financial interests influence their actions, this is referred to as a conflict of interest. More typical conflicts of interest arise when prospects for job progress, professional prestige, and personal allegiances or animosities influence actions or judgments.

F. Prevent the misuse of all resources entrusted to you, and make every effort to treat subjects humanely, adhering to established norms when they are available.

- Researchers are expected to protect the resources employed in scientific study from abuse.
- Damage to the public interest (through damage to the resource) surpasses the public benefit in terms of relevant knowledge gathered as a guideline for judging abuse.
- When employing animals in study, treat them with respect and care. Experiments on animals that are unneeded or poorly designed should be avoided.

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Prof. (Dr.) Saradindu Panda
Principal
Dr. Sudhir Chandra Sur Institute
Technology and Sports Complex



G. Do not intentionally obstruct others' research or engage in dishonesty, fraud, deception, misrepresentation, or any other form of professional misconduct.

- Actions such as biased review of research proposals or manuscripts submitted for publication, physical disruption of another scientist's experiments, denial of access to resources or data needed by other researchers to perform their work, or failure to provide information that other researchers need to duplicate; research or verify its accuracy may obstruct the work of other researchers.
- Unless doing so would jeopardize the scientific validity of their research or significantly impair its performance, scientific professionals are obligated to grant others access to research materials entrusted to them. It is unethical to deny other researchers access to research resources or data from published studies to elevate one's own position of relevance. Keep pledges and agreements; be sincere actions; and aim for consistency in your thinking and actions. Data, outcomes, ideas, tools, and resources should all be shared.

H. Be willing to accept constructive criticism of your own scientific work and to deliver it to your colleagues in a way that encourages mutual respect during objective scientific debate.

- Be receptive to fresh ideas and criticism. Peer review, like research review forums, is a vital phase in scientific research that should be free of personal and professional jealousies, contests, disagreements, and conflicts of interest. Reviewer comments on in-process publications should be focused on their logical and scientific soundness, rather than the reviewer's personal feelings or previous or current relationships with the author.
- All writers should endeavor to keep reviewers out of situations where their personal or professional relationships can influence their ability to offer an unbiased evaluation. In these cases, using a single- or double-blind peer review method may be beneficial. Certain scientific evaluations must occasionally be conducted anonymously, and the identities of the reviewers must be kept secret. Each participant in the review process should respect the confidential nature of the review process and not identify themselves or other reviewers in order enable other reviewers to voice their views honestly and without fear of retaliation.

I. Recognize past and current contributors to your research and do not accept or assume unjustified credit for another's successes.

- Scientific knowledge is accumulated over time and is based on the contributions of many researchers. Credits in a publication, such as acknowledgements, citations, or co-authorship, are common forms of recognition. When a scientist's ideas have affected a manuscript, it is unethical to delete citations of their work due to personal disputes. Assist in the education, mentoring, and advice of your subordinates. Encourage their well-being and give them the freedom to make their own choices.
- Respect and treat your coworkers fairly. Through research, strive to promote social good and prevent or reduce social damage. Discrimination against colleagues based on sex, ethnicity, or other variables unrelated to their scientific ability and integrity should be avoided.

Saradindu Panda

Prof. (Dr.) Saradindu Panda
Principal
Sudhir Chandra Sur Institute
and Sports Complex
Kolkata-700074



J. Only claim authorship of a research paper if you're willing to be held accountable for both the data interpretation and the findings stated.

- Responsible authorship is meant to deter individuals from claiming authorship rights and rewards without a desire to assume the professional responsibilities that come with it. It's also meant to ensure that people who have made a significant intellectual contribution to a study are properly acknowledged. Manuscripts with many authors reflect all the writers' creative contributions. Individual writers may not be able to confirm the accuracy of every detail of their co-authors' work in complex studies.
- Individual writers are not required to be responsible for every technical aspect of work done by co-authors in these cases, but they should be able to thoroughly explain and defend the manuscript's primary conclusions. All statements made in publications are jointly liable by co-authors.

K. Only claim authorship for a research work if you contributed significantly to its preparation and made a key intellectual contribution (as part of the conception, design, data collection, data analysis, or interpretation) (write, review, or edit)

- It is not appropriate to be an honorary author. It is likewise inappropriate when a junior scientist adds the name of a senior scientist to a manuscript submitted by the junior scientist to speed up the peer review process.
- Researchers should not include a person's name in a manuscript's byline unless that individual contributed to the manuscript's intellectual content. It is dishonest and, as a result, improper to claim authorship on papers to which an individual made no intellectual contribution.
- However, the individual's work description should contain acknowledgement for these critical functions in promoting research and development.
- Contributing intellectually to data gathering requires designing the process by which data are collected or validated, rather than simply collecting data according to a standard, accepted protocol.

L. Without prior permission, do not publish or use original ideas, research data, or unpublished findings of others.

- This code element addresses concept, data, or unpublished discoveries theft. It tries to safeguard researchers' work. Permanent damage to the scientific record can occur after the stolen intellectual property is published. Once published, it may be impossible to amend the record to properly identify the source. Exclusive intellectual property rights to ideas are retained by the scientist who writes a manuscript or submits a research proposal.
- Until the manuscript is published, or the proposal author grants permission, reviewers may not utilize the ideas in their own research or development activities. Official approval can only be granted in writing. Permission may be granted with conditions about use of ideas or information. Those rules must be observed, and credit given. Supervisors may publish or present outcomes of their study in papers or presentations. Permission and knowledge of the subordinate scientist are required.
- Untimely death, lifelong infirmity, or job transition (e.g., from research to non-research) of a researcher or developer creates unique scenarios. To ensure that unpublished ideas, data, and/or discoveries are made public is usually ethical. The scientist generating the

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ideas, data, and/or discoveries should be explicitly identifiable through co-authorship. Senior authorship for a deceased or disabled scientist is determined similarly to current researchers. Respect patents, copyrights, and other intellectual property. Unpublished data, techniques, or results must be cited. Recognize merits. Recognize and credit all research efforts. Never copy. Confidentiality is key when submitting articles or grants for publication. Non-scientific speeches and writings are not covered by this Code of Research Ethics. For example, academics may produce anonymous speeches for management on programmatic or policy issues.

M. Avoid publishing the same research findings as the original

- Repeated publication of the same study or manuscript in different channels is unethical. Publish to improve scholarship and research, not just your personal career.
- Avoid needless duplication. This does not mean that multiple manuscripts based on the same research should be published. In some circumstances, the same research may be of interest to multiple audiences or journals.
- It is permissible and ethical to publish the same research paper in numerous venues with varying styles, emphasis, breadth, and/or customized to their individual interests.
- Also, numerous data types may be acquired during a study, and publishing all data or analysis in a single article may not be viable due to manuscript length restrictions. Earlier publications should be mentioned if possible.

N. Preserve and manage resources entrusted to you, such as data records.

- Researchers must present and keep information so that others can reproduce and/or evaluate their work. Not that researcher must disclose their methods in articles or presentations; editorial constraints sometimes prevent this. Authors must nevertheless offer accurate, concise descriptions of technique upon request.
- Similarly, researchers should save raw data for 5 years after publication. Exceptions include when other researchers have given permission, when resources have been abandoned, or when goods represent an impending safety concern. Other people's data should be respected as well; it should not be rejected until it is objectively assessed to be invalid. No scientific validity should be determined without contacting the source.
- The project plan, laboratory notes, original data, metadata, and quality assurance/quality control information should also be kept. These products may be printed or electronic. The study file belongs to the unit where the researcher or developer works. When a researcher leaves for another employment or retires, the former supervisor may decide for the researcher to take duplicates of some or all study files with them.
- Always keep originals with the research institution.

O. Handling Research Misconduct Allegations

- In the event of research misconduct, the Civil Service discipline rules will be followed to handle the claims.
- If necessary, the institute may appoint a separate Ethics Panel to deal with Code violations as well as claims of research and professional misconduct.
- It's also worth noting that if a researcher suspects research misconduct, he, or she must act quickly and in accordance with the institution's policies.

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