



**SRI VENKATESA PERUMAL**  
**COLLEGE OF ENGINEERING AND TECHNOLOGY**

# **GUIDELINES AND CODE OF ETHICS FOR RESPONSIBLE CONDUCT OF RESEARCH**

The purpose of this set of guidelines is to provide a positively oriented set of practical suggestions for maintaining integrity in research. Not only does the ethical conduct of science satisfy a scientific moral code, it also leads to better scientific results. Because, the adherence to ethical research practice leads to more attention to the details of scientific research including qualitative analysis, quantitative & statistical techniques and to more thoughtful collaboration among investigators. Also, the credibility of science with the general public depends on the maintenance of the highest ethical standards in research.

Observance of these guidelines will help an investigator avoid departures from accepted ethical research practice and prevent those most serious deviations that constitute research misconduct. Research misconduct is defined as fabrication, falsification, or plagiarism including misrepresentation of credentials in proposing, performing, or reviewing research or in reporting research results. It does not include honest error or differences of opinion. Misconduct as defined above is viewed as a serious professional deviation that is subject to sanctions imposed both by the University by many professional associations and in the case of funded research, the respective funding agency.

These guidelines can be used as a common repository of generally accepted practice for experienced researchers and as an orientation to those beginning research careers. Although some of these principles apply to all fields of research including scientific research, social and behavioral sciences that involve collection and interpretation of data. These materials can be adapted or specified in a more particular form appropriate for each scholarly discipline or academic unit. In fact, many academic units have developed excellent handbooks on research ethics and integrity. When in doubt about the accepted ethical standards in a particular case, a researcher should discuss the matter on a confidential basis with an academic supervisor, another respected colleague, or the Dean of Research of the University.

## **MATTERS OF ETHICAL CONCERN IN RESEARCH**

### **1. Plagiarism**

Authors who present the words, data, or ideas of others with the implication that they own the same, without attribution in a form appropriate for the medium of presentation, are committing theft of intellectual property and may be guilty of plagiarism

and thus of research misconduct. This statement applies to reviews and to methodological and background/historical sections of research papers as well as to original research results or interpretations. If there is a word-for-word copying beyond a short phrase or six or seven words of someone else's text, that section should be enclosed in quotation marks or indented and referenced, at the location in the manuscript of the copied material, to the original source. The same rules apply to grant applications and proposals, to clinical research protocols, and to student papers submitted for academic credit. Not only does plagiarism violate the standard code of conduct governing all researchers, but in many cases it could constitute an infraction of the law by infringing on a copyright held by the original author or publisher.

The work of others should be cited or credited, whether published or unpublished and whether it had been written work, an oral presentation, or material on a website. Each journal or publisher may specify the particular form of appropriate citation. One need not provide citations, however, in the case of well-established concepts that may be found in common textbooks or in the case of phrases which describe a commonly-used methodology. Special rules have been developed for citing electronic information.

## **2. Use and Misuse of Data**

Research integrity requires not only that reported conclusions are based on accurately recorded data or observations but that all relevant observations are reported. It is considered a breach of research integrity to fail to report data that contradict or merely fail to support the reported conclusions, including the purposeful withholding of information about confounding factors. If some data should be disregarded for a stated reason, confirmed by an approved statistical test for neglecting outliers, the reason should be stated in the published accounts. A large background of negative results must be reported. Any intentional or reckless disregard for the truth in reporting observations may be considered to be an act of research misconduct.

## **3. Ownership of and Access to Data**

Research data obtained in studies performed at the University by employees of the University are not the property of the researcher who generated or observed them or even of the principal investigator of the research group. They belong to the University, which can be held accountable for the integrity of the data even if the researchers have left the University. Another reason for the University's claim to ownership of research data is that the University, not the individual researcher, is the grantee of sponsored research awards. Reasonable access to data, however, should normally not be denied to any member of the research group in which the data were collected. If there is any possibility

that a copyright or patent application might emerge from the group project, a written agreement within the group should specify the rights, if any, of each member of the group to the intellectual property. A researcher who has made a finding which may be patentable should file an Invention Disclosure with the Office of Technology Management.

A principal investigator who leaves the University is entitled to make a copy of data to take to another institution so as to be able to continue the research or, in some cases, to take the original data, with a written agreement to make them available to the University on request within a stated time period. A formal Agreement on Disposition of Research Data should be negotiated in such cases through the Office of Research. Each student, postdoctoral fellow, or other investigator in a group project should come to an understanding with the research director or principal investigator, preferably in writing, about which parts of the project he or she might continue to explore after leaving the research group. Such an understanding should specify the extent to which a copy of research data may be taken. Co-investigators at another institution are entitled to access the data which they helped to obtain.

Since the scientific enterprise may be a cooperative endeavor encompassing many persons who now or in the future might pursue related research interests, and since it is in the interest of all to rely on the contributions and findings of others, every investigator has an obligation to the general scientific community to cooperate by sharing of data. Other virtues of sharing data include the facilitation of independent confirmation or refutation of reported outcomes. It is generally accepted that the data underlying a research publication should be made available to other responsible investigators upon request after the research results have been published or accepted for publication.

#### **4. Authorship and Other Publication Issues**

Publication of research results is important as a means of communicating to the scholarly world so that readers may be informed of research results and other researchers may build on the reported findings. In fact, it is an ethical obligation for an investigator at the University to make research findings accessible, in a manner consistent with the relevant standards of publication. The reported data and methods should be sufficiently detailed so that other researchers could attempt to replicate the results. Publication should be timely but should not be hastened unduly if premature publication involves a risk of not subjecting all results to adequate internal confirmation or of not considering adequately all possible interpretations.

A commercial sponsor of a research project may not have a veto over a decision to publish, but a delay of publication for an agreed period, not to exceed six months, may be allowed in order to permit filing of a patent application.

### **a. Criteria for Authorship**

Since academic work is informed by a multitude of sources offering concepts and information, it is essential to emphasize rightful acknowledgement in the presentation of ideas and the publication of manuscripts. Authorship should be awarded only to those persons who have made an original and significant contribution to the conceptualisation, design, execution and interpretation of the published work.

Individuals who have made smaller contributions by for instance giving advice, performing analyses or providing subject material, or who have supported the research in some other way, should also be acknowledged. The principal author should determine whether or not these individuals should be included as authors. Sometimes written permission has to be obtained for acknowledgement in the published work and even the format thereof is prescribed by the party concerned.

In the case of co-authorship, questions arise as to the criteria for inclusion as author, the ability of each author to evaluate all aspects of the study and the sequence of the list of authors. Authors should discuss these questions openly and should make appointments before undertaking a co-author project. The author submitting the work, or the principal author, is responsible for coordinating the completion and submission of the work and for ensuring that all the contributions and all the collaborators are given proper acknowledgement. All authors should approve the final version of the manuscript and should be prepared to accept responsibility for the work in public.

Each author or co-author is responsible for the compilation, revision and verification of those parts of the manuscript, publication or presentation representing his/her contribution. All co-authors are entitled to making their own copies thereof, including figures and attached documents.

In factual or scientific reports, authors should go out of their way to quote applicable data, including those data not supporting the hypothesis proposed. It is the responsibility of the author(s) to be au fait with other appropriate publications and to quote from them.

It is unethical, and harmful to the academy, to present as one's own the work of others, whether in part or in full, to fabricate research results or to omit or change information.

Authors who wish to quote information obtained at a personal level or from unpublished written material should obtain written permission from the source.

It is inappropriate and unacceptable to submit extracts from research, or reports on the same research, to more than one publisher, unless such action has been approved by the editors of each publication or multiple submissions is the acceptable standard practice in the specific discipline or field. In the complete report on the work in question, reference should be made to preliminary extracts from work that has already been published.

### **b. Order of Authors**

Customs regarding the order in which co-authors' name(s) appear vary with the discipline. Whatever the discipline, it is important that all co-authors understand the basis for assigning an order of names and agree in advance to the assignments.

A corresponding, or senior author (usually the first or last of the listed names in a multi-authored manuscript) should be designated for every paper, who will be responsible for communicating with the publisher or editor, for informing all co-authors of the status of review and publication, and for ensuring that all listed authors have approved the submitted version of the manuscript. This person has a greater responsibility than other co-authors to vouch for the integrity of the research report and should make every effort to understand and defend every element of the reported research.

### **c. Self-citations**

In citing one's own unpublished work, an author must be careful not to imply an unwarranted status of a manuscript. A paper should not be listed as submitted, in anticipation of expected submission. A paper should not be listed as accepted for publication or in press unless the author has received galley proof or page proof or has received a letter from an editor or publisher stating that publication has been approved, subject perhaps only to copy-editing.

### **d. Duplicate Publication**

Researchers should not publish the same article in two different places without very good reason to do so, unless appropriate citation is made in the later publication to the earlier one, and unless the editor is explicitly informed. The same rule applies to abstracts. If there is unexplained duplication of publication without citation, sometimes referred to as self-plagiarism, a reader may be deceived as to the amount of original research data.

It is improper in most fields to allow the same manuscript to be under review by more than one journal at the same time. Very often journals specify that a submitted work

should not have been published or submitted for publication elsewhere, and some journals require that a submitted manuscript be accompanied by a statement to that effect.

An author should not divide a research paper that is a self-contained integral whole into a number of smaller papers merely for the sake of expanding the number of items in the author's bibliography.

## **5. Conflict of Interest**

Academic members of staff may not allow other professional or outside activities to distract their attention from their primary responsibilities towards the University. They should maintain a significant and professionally acceptable presence on campus during each semester in which they are on active duty. Holidays and leave should be in accordance with the University's regulations.

They should create an atmosphere of academic freedom by promoting the open and timely disclosure of the results of their academic activities, by ensuring that their advice to students and postdoctoral associates is not influenced by personal interests, and by disclosing external activities that could affect the free flow of academic information between themselves, students and colleagues.

Researchers may use University resources, including facilities, staff, equipment, information or confidential information as part of contract work, provided that the University is compensated in terms of the provisions of the Rules for Contract Work of the University. Researchers may not use University resources for any purpose other than purposes related to tuition, research or service by the University, unless prior permission has been obtained by the head of the department and/or the dean, as provided by the University's regulations.

Researchers should disclose in good time all potentially patentable inventions that have been discovered or created in the course and within the ambit of their service to the University. Ownership of such inventions should be dealt with in accordance with the policy of University. The inventors will, together with the University, share in the benefits or royalties earned in accordance with the provisions of the University's Intellectual Property Policy.

Researchers should inform the University whether they (or members of their families) have consultation agreements or work in an outside institution, before the following proposed arrangements or agreements between such institutions and the University will be approved: a) gifts; b) funded projects; c) technology licensing agreements; and d) allocations.

In such cases formal University permission will be required before the proposed arrangements or agreements can proceed.

University researchers should not allow their names to be used as “ghost” authors of manuscripts written or provided by commercial sponsors.

Faculty may be allowed to engage in outside professional activities such as consulting or service on a scientific advisory board, but approval of each such activity from the academic supervisor must be obtained in advance. In no case are University facilities to be used in the conduct of an outside activity, and the University name and logo may be used by outside entities only with permission of designated University officers. Research performed for an external entity should be conducted by means of a sponsored research contract and not by way of consulting. In some schools a contract for consulting must be approved in advance, to ensure, among other things, that remuneration is related to specific services and that legitimate intellectual property rights of the University are not compromised.

## **6. Obligation to Report**

### **a. Reporting Suspected Misconduct**

Reporting suspected research misconduct is a shared and serious responsibility of all members of the academic community. Any person who suspects research misconduct has an obligation to report the allegation to the HoD of the department in which the suspected misconduct occurred or to the Dean of Academic Research. Allegations are handled under procedures described in the University's Policy. All reports are treated confidentially to the extent possible, and no adverse action will be taken, either directly or indirectly, against a person who makes such an allegation in good faith.

### **b. Correction of Errors**

If a finding of error, either intentional or inadvertent, or of plagiarism should be made subsequent to publication, the investigator has an obligation to submit a correction or retraction in a form specified by the editor or publisher.

## **7. Responsibilities of a Research Investigator**

An investigator who leads a research group has leadership and supervisory responsibilities with respect to the research performed by members of the group. A principal investigator must not only put together the research group but also arrange for the assembly of an adequate financial and administrative structure to support the research. A supervisor not only provides guidance and advice to individual members of the group in the responsible conduct of the research but also has ultimate responsibility for the scientific integrity of the whole research project. He or she should thus take all reasonable steps to check the details of experimental procedures and the validity of the

data or observations reported by members of the group, including periodic reviews of primary data in addition to summary tables, graphs, and oral reports prepared by members of the group.

An investigator serves not only as a research manager with respect to members of the research group but also as a mentor responsible for the intellectual and professional development of graduate students, postdoctoral fellows, and junior faculty in the group, including awareness and sensitivity to issues in research ethics.

A researcher should be open to collaborative work with investigators having different but complementary skills at the University.

## **8. Responsibilities to Funding Agencies**

An investigator should be aware that the same standards of accuracy and integrity pertain to grant applications and proposals as to manuscripts submitted for publication. Reporting of results of experiments not yet performed as evidence in support of the proposed research funding, for example, is considered to be fabrication and is subject to a finding of research misconduct, even if the proposal is subsequently rejected for funding or is withdrawn before full consideration for funding is completed. The same definition of plagiarism applies to an application or proposal, including background and methodological sections, as to a publication.

An investigator must submit progress and final research reports to a sponsor at times specified in the award. He or she must authorize expenditures in a manner consistent with the approved budget and should review financial reports carefully.

Investigators, who enter into agreements with commercial sponsors of research, as negotiated by the Office of Research, should familiarize themselves with the special terms of such agreements, such as those, for example, concerning reporting of results, disclosure of inventions, and confidentiality. Failure to comply with the provisions might sometimes constitute a breach of contract or might compromise the University's claims to intellectual property.