

Ethics in Science and Engineering

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Ethics in Science and Engineering

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Preface

The various scientific and engineering disciplines are world-wide professional disciplines. The members of these disciplines collect factual data, and the ensuing treatment of the data to discover new arenas of knowledge is universal. No one can foresee the tortuous path of scientific and engineering investigation and know where experimentation and observation may lead. Then there is always the mode of data interpretation.

The pursuit of science and engineering requires freedom of thought and, in the academic sense, unrestricted communication. It is through the professionalism of the members of the scientific and engineering disciplines that world knowledge and technology advances. Yet there are continuous reports of unethical behavior in the form of data manipulation, cheating, and plagiarism at the highest levels of the disciplines. The causes are manifold whether it is the need to advance in one of the chosen disciplines or to compete successfully for and obtain research funding.

Disappointingly, individuals who are oriented to any form of scientific or engineering dishonesty are individuals who had previously displayed little or no consideration for the feelings of others and are therefore more interested in other scientists and engineers recognizing them by any means necessary.

This project was triggered by a combination of factors – awareness by the authors of the increasing frequency of unethical practices in the realm education, recognition of the focus of the literature on ethical behavior, and the realization that ethical/unethical behavior is the outcome of choice and is not due to chance. There is no attempt to be judgmental but to encourage everyone to reflect on

themselves philosophically (that is, in terms of individual values and beliefs) since it was absolutely clear that personal motivations and preferences can override any other contributory factor.

This book gives an account of various scientific and engineering disciplines and examines the potential for unethical behavior by professionals. Documented examples are presented to show where the matter could have been halted before it became an ethical issue. The authors also look to the future to see what is in store for professionals in the scientific and engineering disciplines and how the potential for unethical behavior can be negated.

On the basis of the observations and research by the authors, this publication seeks to advance basic requirements for the application of ethical behavior, to mitigate the frequent occurrences of misconduct, which currently and frequently appear in the scientific and engineering disciplines.

To claim completeness in a project of this nature would be foolhardy, but it is hoped that this preliminary treatment will stimulate discussions about ethics among students and faculty within universities and other educational institutions. There is a further hope that such self-examination will encourage students and faculty to raise their own standards of ethical conduct without having to be forced to do so.

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