

# Biomedical Ethics for Engineers: Ethics and Decision Making in Biomedical and Biosystem Engineering (Biomedical Engineering Series)

By Daniel A. Vallero



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Biomedical Ethics for Engineers provides biomedical engineers with a new set of tools and an understanding that the application of ethical measures will seldom reach consensus even among fellow engineers and scientists. The solutions are never completely technical, so the engineer must continue to improve the means of incorporating a wide array of societal perspectives, without sacrificing sound science and good design principles.

Dan Vallero understands that engineering is a profession that profoundly affects the quality of life from the subcellular and nano to the planetary scale. Protecting and enhancing life is the essence of ethics; thus every engineer and design professional needs a foundation in bioethics. In high-profile emerging fields such as nanotechnology, biotechnology and green engineering, public concerns and attitudes become especially crucial factors given the inherent uncertainties and high stakes involved. Ethics thus means more than a commitment to abide by professional norms of conduct. This book discusses the full suite of emerging biomedical and environmental issues that must be addressed by engineers and scientists within a global and societal context. In addition it gives technical professionals tools to recognize and address bioethical questions and illustrates that an understanding of the application of these measures will seldom reach consensus even among fellow engineers and scientists.

- · Working tool for biomedical engineers in the new age of technology
- $\cdot$  Numerous case studies to illustrate the direct application of ethical techniques and standards
- · Ancillary materials available online for easy integration into any academic program

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## Biomedical Ethics for Engineers: Ethics and Decision Making in Biomedical and Biosystem Engineering (Biomedical Engineering Series) By Daniel A. Vallero Bibliography

Sales Rank: #1210551 in Books
Brand: Brand: Academic Press
Published on: 2007-04-13
Original language: English

• Number of items: 1

• Dimensions: 9.51" h x .97" w x 7.63" l, 1.91 pounds

• Binding: Hardcover

• 408 pages

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#### **Editorial Review**

#### Review

'this is a well-structured text for engineering ethics, written in a style that takes into account the way in which engineering students think and learn'

Anji Wall, St. Louis University Center for Health Care Ethics, in DOODY'S BOOK REVIEWS

#### From the Back Cover

When is an action morally permissible and what kinds of behavior are morally obligatory? What must a professional do to be trusted? What is the role of values in bioethical decisions? What does it mean to be a good engineer? Is research using human pluripotent stem cells ethical?

All engineers, whether working or studying directly in the biomedical or a complementary engineering field, are certain to face challenging bioethical challenges such these. Biomedical Ethics for Engineers addresses the need for engineers to develop an understanding of the impact of engineering solutions from the individual engineer's professional perspective, as well as within the global and societal context.

#### Key features:

- Meets the needs of students taking upper-level undergraduate and graduate courses in professional ethics, risk assessment, and specific ethics courses in engineering, environmental science, medicine and technology
- Provides a proactive set of approaches that apply deductive and intuitive reasoning to engineering decision making within the framework of professional ethics
- Presented in the language and the context of the engineer and other science and design professionals, with issues treated from a design and problem-solving perspective
- Instead of the traditional top-down approach of learning the philosophical basis first and then judging cases accordingly, cases are presented as engineering problems, with solutions determined by design where possible and appropriate
- Supported throughout by case studies and worked examples that illustrate the direct application of ethical techniques and standards, plus frequent discussion points to stimulate debate
- Includes chapter exercises and assignments, with separate Instructor's Manual available from http://textbooks.elsevier.com

Dr. Daniel Vallero has led the establishment of the Engineering Ethics program at Duke University. This popular and innovative program introduces students to the complex relationships between science, technology and societal demands on the engineer.

#### About the Author

Dr. Daniel A. Vallero is an internationally recognized expert in environmental science and engineering. His four decades of research, teaching and professional experience in hazardous waste engineering and

management have addressed a wide range of human health risk and ecological issues, from global climate change to the release of hazardous wastes. His research has advanced the state-of-the-science of air and water pollution measurement, models of potential exposures to chemicals in consumer products, and environmental impact assessments.

He established the Engineering Ethics program and is a key collaborator in the Responsible Conduct of Research Program at Duke University. These programs introduce students, from first-year through PhD, to the complex relationships between science, technology and societal demands on the engineer. The lessons learned from the cases in this book are a fundamental part of Duke's preparation of its future engineers to address the ethical dilemmas likely to be encountered during the careers of the next generation engineers.

Dr. Vallero received a bachelor's degree from Southern Illinois University, a Master of Science in City & Regional Planning from SIU, a Masters in Civil & Environmental Engineering (Environmental Health Sciences) from the University of Kansas, and a PhD in Civil & Environmental Engineering from Duke.

#### **Users Review**

#### From reader reviews:

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#### **Gary Farrell:**

As we know that book is very important thing to add our understanding for everything. By a publication we can know everything you want. A book is a list of written, printed, illustrated or perhaps blank sheet. Every year seemed to be exactly added. This reserve Biomedical Ethics for Engineers: Ethics and Decision Making in Biomedical and Biosystem Engineering (Biomedical Engineering Series) was filled concerning science.

Spend your extra time to add your knowledge about your science competence. Some people has diverse feel when they reading a book. If you know how big good thing about a book, you can truly feel enjoy to read a book. In the modern era like now, many ways to get book that you just wanted.

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