



**National Society of
Professional Engineers**
Professional Engineers in Education

Selected References & Resources
on
ENGINEERING ETHICS & PROFESSIONAL PRACTICE
for
Practicing Engineers, Engineering Educators & Engineering Students

**National Society of Professional Engineers
Board of Ethical Review
Professional Engineers in Education
Sustaining Universities Program**

NSPE - PEE
**SUSTAINING
UNIVERSITY**
PROGRAM

**Wisconsin Society of Professional Engineers
Board of Engineers Professional Responsibility**



**Wisconsin Society of
Professional Engineers**
A state society of the National Society of Professional Engineers

Spring 2000

Preface and Introduction

The National Society of Professional Engineers and the Wisconsin Society of Professional Engineers are pleased to present this first edition of the *Selected References and Resources on Engineering Ethics and Professional Practice for Practicing Engineers, Engineering Educators, and Engineering Students* publication. The principal sections are:

- NSPE Code of Ethics of Engineers
- Internet Web Sites and URLs
- Engineering Ethics and Related Courses
- Video Products and Study Guide Materials
- Books and Software
- Games Involving Ethics
- Journals and Miscellaneous Publications

We welcome suggestions for additional information you believe should be included in subsequent editions. We recognized that resources dealing with engineering ethics and professional practice are rapidly becoming available. This edition is our first effort to organize some of these. Your suggestions should be sent to the Board of Engineers Professional Responsibility, Wisconsin Society of Professional Engineers, 6501 Watts Road, Suite 112, Madison, WI 53719, or fax to (608) 278-7005 or e-mail to <wspe1@aol.com>. Please include a brief annotation if appropriate, and complete addresses and references as to the sources where the material may be obtained.

We have endeavored to furnish the most current information as to title, organization, address, telephone, fax, email, URL, cost, etc. Complete information was not always available and is subject to change. (URLs are often revised.)

One of our impetuses for publishing at this time was the Accreditation Board for Engineering and Technology, Inc.'s "ABET Engineering Criteria 2000." New criteria for accrediting programs in engineering in the United States are coming into practice, and institutions seeking accreditation will in the future have planned outcomes and associated assessments for their programs. Specifically engineering programs must demonstrate that their graduates have...

- (f) an understanding of professional and ethical responsibility...
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context...

Each program must have an assessment process with documented results. The assessment process must demonstrate that the outcomes important to the mission of the institution and the objectives of the program, including those listed above, are being measured. Although the ABET criteria do not call for stand-alone ethics courses per se, some 1, 2, and 3-credit courses will be developed in the schools and colleges of engineering throughout the United States.

Other envisioned activities include:

- Inculcating issues of engineering ethics and professional practices into existing engineering courses, including fundamentals courses, design courses, and seminars.
- Using outside professional engineers as guest lecturers and adjunct faculty, and as mentors to engineering students.
- Expanding activities of student technical and professional society chapters to include student discussions of their real-world work experiences on coop and summer jobs and internships.
- Training faculty seeking help in teaching ethics and professional practices related to engineering and their specific disciplines.

The American Society for Engineering Education’s ASEE Statement on Engineering Ethics Education states:

“...To educate students to cope with ethical problems, the first task of the teacher is to make students aware of ethical problems and help them learn to recognize them. A second task is to help students understand that their projects affect people for good or ill, and that, as “moral agents” they need to understand and anticipate these effects. A third task is to help students see that, as moral agents, they are responsible for helping to develop solutions to the ethical problems they encounter...” *January 31, 1999*

Which approach(s) to take to ensure that tomorrow’s engineers will meet the program criteria remains to be seen and will likely vary a great deal among engineering programs. It is hoped that this publication will be of assistance.

*Madison, Wisconsin
January 2000*

*Professor C. Allen Wortley, P.E., NSPE, chair
Board of Engineers Professional Responsibility
Wisconsin Society of Professional Engineers*

Internet Web Sites and URLs

Online Ethics Center for Engineering and Science at Case Western Reserve University
<<http://www.onlineethics.org/>>

This Online Ethics Center web site, which was formerly maintained by MIT, is an excellent resource for engineering ethics information, and is possibly the best on the web. The Center contains case studies for educational use.

One segment of this site contains 36 Discussion Cases based on cases considered by the Board of Ethical Review (BER) of the National Society of Professional Engineers (NSPE). These brief cases present situations that raise ethical questions common in engineering practice and research. The cases were rewritten to make them more suitable for group and class discussion. The NSPE BER reviews cases with the narrower purpose of making an ethical judgment on the actions of (only) the engineers in the cases, based solely on the NSPE Code of Ethics. Each of the discussion cases has a link to the original NSPE case. Cases are grouped into five categories. Some cases appear in more than one category.

- Public Safety and Welfare
- Conflicting Interests and Conflict of Interest
- Ethical Engineering/Fair Trade Practices
- International Engineering Ethics
- Research Ethics

In addition to the 36 NSPE BER cases mentioned above, there are 19 detailed cases from various sources, and an Ethics Case of the Month Club, which discusses a new case each month. Besides case studies the Center contains an extensive collection of research ethics information, ethical moral leaders, ethical problems submitted by visitors to the site, ethical advice from corporations, scores of ethical codes, articles related to diversity issues, essays on science and engineering ethics, instructional resources, and an ethics help-line for engineers and scientists. The site is easy to use, and comprehensive in scope.

National Society of Professional Engineers (NSPE) Home Page
<<http://www.nspe.org/>>

This site is an excellent place to start researching the broad topic of engineering ethics. It is maintained primarily for members of the National Society of Professional Engineers. It also contains a wide range of resources including information on getting licensed as a professional engineer (PE), continuing education, and the NSPE annual convention. Additionally, this site has engineering ethics resources like the NSPE Code of Ethics for Engineers, case studies, an annual ethics contest, and links to other engineering ethics sites.

National Institute for Engineering Ethics (NIEE) Home Page

<<http://www.niee.org/>>

NIEE was created by the National Society of Professional Engineers. It is now an independent not-for-profit educational corporation. NIEE's mission is to provide opportunities for ethics education and to promote the understanding and application of ethical processes within the engineering profession and with the public. The principal thrusts of NIEE are: communication, program development, education, and practice applications in the area of engineering ethics.

At this site are an ethics resources guide with an extensive engineering ethics bibliography, the past issues of the NIEE newsletter, "Engineering Ethics Update," lists of videos and books, links to related web sites, and the NSPE Board of Ethical Review cases.

Texas A&M Engineering Ethics Web Site

<<http://lowery.tamu.edu/ethics/>>

Texas A&M, a leading school in engineering ethics, has created a course in engineering ethics, as well as developed materials for introducing ethical issues into required undergraduate engineering courses. Contained in the web site are 14 case study modules. This site also contains ethics essays, additional case studies, and links to other web sites.

Murdough Center for Engineering Professionalism at Texas Tech University

<<http://www.coe.ttu.edu/murdough/default.htm>>

The primary goal of the Murdough Center is to increase the awareness of an engineer's professional and ethical responsibilities. Their home page contains case studies, TexethicS Newsletters, links to other ethics sites, principles of ethical conduct in engineering practice under NAFTA, and information on their correspondence courses.

These independent study courses emphasize:

- Applied Ethics Case Studies
- Ethical Theories
- Risk and Safety Issues
- Responsibilities and Rights of Engineers
- Global Issues
- Engineers as Leaders
- Study of Codes of Engineering Ethics

**Ethics Bowl, Center for the Study of Ethics in the Professions
Illinois Institute of Technology**
<<http://www.iit.edu/departments/csep/EB/bob.html>>

The Ethics Bowl is conducted annually in Washington, D.C. in conjunction with the annual meeting of the Association for Practical and Professional Ethics (APPE) and is sponsored by the Office of Ethics and Business Practices of Sears Roebuck & Company. This site explains how the bowl is played and judged, and gives links to past game questions.

Applied Ethics in Professional Practice – Case of the Month Club at the University of Washington
<<http://www.engr.washington.edu/~uw-epp/Pepl/Ethics/>>

The focus of the Case of the Month Club is to present real situations taken from professional practice to stimulate greater emphasis on ethical issues and heighten awareness of ethics among professionals. The club's site presents a new ethics-related case on a bi-monthly basis.

The cases are presented with suggested solutions, and reference materials including a list of core ethical values, links to relevant codes of ethics, and some guidelines for facilitating solutions to ethical dilemmas in engineering practice. Visitors to the site may vote for any of the suggested solutions, or submit their own solutions for discussion. Results of voting on a case are tabulated and posted, along with some of the most frequent and insightful comments relating to the case.

Institute of Electrical and Electronics Engineers (IEEE) Ethics Committee Home Page
<<http://www.ieee.org/organizations/committee/ethics>>

IEEE is a technical and professional organization that is very active in ethical issues. The IEEE Ethics Committee home page contains the IEEE Code of Ethics, mailing lists for ethical guidelines and discussions, an ethics question roundtable, some guidelines for resolving ethical issues, and links to ethics pages, organizations, cases, and articles. This site will most likely be of particular interest to practitioners and students of electrical engineering, but the links, cases, and discussions cover a wide range of engineering related ethics.

American Society of Civil Engineers (ASCE) Ethics Web Site
<<http://www.asce.org/aboutasce/ethics.html>>

This technical and professional society maintains a Code of Ethics and takes disciplinary action if warranted. The organization endeavors to educate its members and the public on ethical issues. The ASCE ethics web site has three major components: The ASCE Code of Ethics and history, an explanation of enforcement of that code, and a list of educational resources. For civil engineers, this site is a good reference for ethical questions. Members of the ASCE can log complaints regarding violation of the code, or learn about how the code is enforced by the ASCE's Committee on Professional Conduct.

SUNY Stony Brook Ethics in Engineering Web Site

<<http://dol1.engr.sunysb.edu/ethics/index.html>>

This site contains the Accreditation Board for Engineering and Technology (ABET) code, the Ethics for Educators code, the Institute of Electrical and Electronics Engineers (IEEE) code, the Institute of Materials (UK) code, and the Council of the American Chemical Society's (ACS) "Chemist's Creed." The site also contains links to a few additional engineering ethics related web pages.

Markkula Center for Applied Ethics at UC Santa Clara

<<http://www.scu.edu/SCU/Centers/Ethics/homepage.shtml>>

The Markkula Center for Applied Ethics is an excellent source of general ethical information. The site has ethical case studies ranging from business applications to academic ethics. It also has codes of ethics, links to hundreds of other ethics sites, book and article of the month clubs, and links to publications like *Ethics Now Online*. While somewhat low on cases relating specifically to engineering ethics, the Markkula Center page is a great source on a broader range of ethical issues.

Virginia Tech Ethics in Science Web Site

<<http://www.chem.vt.edu/ethics/ethics.html>>

This site is devoted to the broad topic of ethics in physical sciences, especially related to chemistry. To the prospective professor of engineering ethics, this site may be useful as a source of ethical codes and essays outside of their specific field. In addition to essays and bibliographies pertaining to ethics in science, this site also contains a bibliography of books on engineering ethics.

Virginia Tech Choices and Challenges Project Web Site

<<http://www.cis.vt.edu/Choices&Challenges/overview.html>>

The *Choices and Challenges* project represents a unique, ongoing effort to encourage the humanistic components of science and technology to be identified and addressed—and to engage public audiences as key participants in this process. Sixteen *Choices and Challenges* programs have taken place to date, featuring individual day long forums. Written transcripts and videotapes are available.

North Carolina State University Web Clearinghouse for Engineering and Computing Ethics

<<http://www4.ncsu.edu/unity/users/j/jherkert/ethicind.html#courses>>

The Web Clearinghouse for Engineering and Computer Ethics is a good source of engineering ethics information. This comprehensive site has a collection of links to ethics course syllabi from a number of universities. These syllabi may be especially useful to someone looking to create a new course in engineering ethics. The site also contains case studies, codes of ethics, newsletters and journals, books and reports, and links to professional societies and ethics centers.

Engineering Ethics and Related Courses

Course Syllabi On-Line

Syllabi are available on-line from the North Carolina State University Web Clearinghouse site (<<http://www4.ncsu.edu/unity/users/j/jherkert/ethicind.html#courses>>) for:

- *Real World Ethics*, Massachusetts Institute of Technology
- *Ethics in Engineering*, North Carolina State University
- *Technological Catastrophes*, North Carolina State University
- *Professional Aspects of Electrical Engineering*, Ohio State University
- *Ethical Issues in Engineering*, Stanford University
- *Engineering Ethics in Historical Perspective Syllabus*, University of Minnesota
- *Engineering Ethics*, University of Illinois
- *Computer Ethics*, University of Notre Dame
- *Ethics in Computing*, North Carolina State University
- *Ethics & Computing*, University of South Florida
- *Computers, Ethics, and Society*, University of Delaware
- *Professionalism in Computing*, Virginia Tech
- *Legal and Ethical Issues in Mass Media*, Boise State University
- *Ethics and the Internet*, Duke University
- *Computer Ethics*, University of Redlands
- *Computers, Ethics, and Social Responsibility*, Princeton University

Other Courses Referenced at Web Sites and URLs

Texas A&M has created a new course in engineering ethics. Please refer to: <<http://lowery.tamu.edu/ethics/>>.

Texas Tech Murdough Center for Professionalism has ethics courses by distance education. Please refer to: <<http://www.coe.ttu.edu/murdough/correspo.htm>>.

The Institute for Professional Practice has developed a new instructional module entitled *Applied Ethics in Engineering Practice* to provide engineering students and emergent engineers with an understanding of the factors impacting ethical decision making in engineering practice. The program is structured around a constructivist philosophy. The basis for this philosophy is that the learners will have a better grasp of the concepts when they construct their own knowledge of professional ethics, as opposed to passively being told to make value based decisions. The course will be an adjunct to the IPP video *Testing Water and Ethics*. Please refer to: <http://w3.arizona.edu/~civil/ipp.html>.

Video Products and Study Guide Materials

Gilbane Gold, 1978, NSPE#1201, Price \$95.00 + S&H
National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314-2794
1-800-417-0348, Fax 412-741-0609 www.nspe.org

Gilbane Gold shows the dilemma of an engineer caught between doing what he feels is right, and remaining loyal to the company. When the engineer discovers that his company is polluting the environment despite compliance with regulations, he must convince his superiors that their deceptive water quality reporting policy isn't ethical. Eventually, he is forced to risk his career by making the deception public. This video also shows factors that motivate companies as they balance tradeoffs between safety and profits, and how cities make tradeoffs between tax revenues from companies and the strictness of pollution standards applied to those companies. This video is well acted and written, making it easy for students to identify with the engineer's crisis. A discussion guide is included.

The Glass Ceiling, 1997, NSPE#2232, Price \$125 + S&H, \$50+ S&H NSPE Members
National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314-2794
1-800-417-0348, Fax 412-741-0609 www.nspe.org

The Glass Ceiling deals specifically with attitudes towards females in the traditionally male dominated engineering profession. The story follows a highly competent and qualified female engineer who is up for a promotion to the executive council, breaking her through "the glass ceiling." The video shows how prejudiced colleagues can work against a female engineer, and how women engineers are often held to a higher standard on the job. Issues for discussion include quotas, affirmative action, stereotypes, and sexism in the workplace. The characters in this video effectively portray real problems facing women as engineers. A study guide is included.

Testing Water...and Ethics, 1997, Price \$150.00 and \$100.00 for college/university faculty
Institute for Professional Practice
13 Lanning Road
Verona, NJ 07044-2511
1-888-477-2723, Fax 973-857-5952

Helping engineers to think in terms of design problems, *Testing Water...and Ethics*, shows that some ethical issues don't have completely satisfying solutions. This video examines the case of a young engineer who must decide whether or not to report test information in a complete manner, despite the fact that not all of the information was required. After initially seeing the problem as a clear case of responsibility for public safety, the engineer later finds that there are equally important ethical responsibilities to consider. The engineer adopts a design approach to this complex problem, but finds in the end that even a good engineering solution may necessitate tradeoffs that are somewhat unsatisfying. This video effectively encourages viewers to use their engineering design skills, and the applicable codes of ethics when dealing with ethical issues. A workbook is included. (An applied ethics course has been developed as an adjunct to this video. Please refer to: <<http://w3.arizona.edu/~civil/ipp.html>>.)

Academic Integrity: The Bridge to Professional Ethics, 1995, Price \$50.00
Center for Applied Ethics
School of Engineering
Duke University
Durham, NC 27708-0290
919-660-5200, Fax 919-660-5219

Academic Integrity: The Bridge to Professional Ethics was produced to increase awareness of ethical issues facing students every day. The emphasis is on teaching students to identify and deal with ethical crises now, therefore helping them prepare for similar situations when they become professional engineers. This video contains four short stories of ethical questions facing science and engineering students. The first story deals with the conflict of helping friends on a take home exam, even though the professor has explicitly prohibited group work. The second section of the video explores the question of cultural differences in ethical matters. Next, the video depicts a student who decides that it is easier and more accurate to copy data from an old experiment rather than risking poor grades with their own data. In the final story, competitive scholastic nature that can lead to unethical behavior is examined. In each story, a student must decide whether it is right to be a whistleblower based on the potential consequences of doing so. The issues raised in this video are similar to those seen by students in their day to day lives. An instructor's manual is included.

Ethics on Trial: The Case of Marvin L. Camper, 1978
American Society of Civil Engineers
1801 Alexander Bell Drive
Reston, VA 20191-4400
Contact Thomas Smith, General Counsel 203-295-6061, E-mail:<tsmith@asce.org>

Based on an actual case brought before the American Society of Civil Engineers board of direction, *Ethics on Trial: The Case of Marvin L. Camper*, shows how a board functions when faced with an ethical violation by one of its members. This video shows a meeting of the ASCE board to discuss what actions should be taken against Mr. Camper, a civil engineer who violated two sections of the ASCE code when he paid a kickback to a Mr. Riley to secure work. The meeting shows a presentation of evidence from the criminal trial of Mr. Riley, who was found guilty of extortion. The video also shows Mr. Camper's defense, in which he explains the difficulty of his circumstances at the time of the kickback, and demonstrates that he values his membership in ASCE.

Because Mr. Camper admitted to wrongdoing, the board decides to suspend him and use his case as an educational tool. This case can be used as an example of how a board would proceed with the trial of an engineer. Because the video also contains a short prologue explaining the case, it is possible to use it as a short case study without showing the entire trial. Issues for discussion include how to interpret both the letter and the spirit of a code of ethics, and how to deal with ethical issues when there are conflicts with business interests. This is now a rather old video and has very little action, but it gives a unique perspective on the inner workings of an ethical trial. It runs 74 minutes, and has a rather surprising ending. (Video is available to ASCE members and universities, and for others...please contact ASCE.)

The 59 Story Crisis: A Lesson in Professional Behavior, Price \$54.00 incl. S&H
Online Ethics Center at Case Western Reserve University
<<http://www.onlineethics.org/text/moral/LeMessurier/lem.html>>
216-368-0528, Fax 216-368-2216

A vivid description of the original mistake made in designing the NYC Citicorp Building structural support, and the dramatic race against time to prevent a hurricane-caused disaster. A positive case with a happy ending due the good work of the building engineer, LeMessurier. Approx. 70 minutes.

The Aberdeen Three Case
Contact: Dr. Michael J. Rabins, Mechanical Engineering Department
Texas A&M University, College Station, TX 77843-3123, 409-845-2615

A tape of the seminar presentation by the U.S. Justice Department lawyer who successfully prosecuted the three U.S. Army civilian employees developing chemical weaponry who violated the U.S. Resource Conservation & Recovery Act by dumping toxic wastes illegally. Approx. 32 minutes.

The Story Behind the Space Shuttle *Challenger* Disaster, Price \$725 incl. S&H and \$420 incl. S&H for schools

Dr. Mark Maier, Founding Chair Organization, Leadership Program

333 North Glassell Street, Orange, CA 92866, 714-744-0943, Fax 714-744-3889

This powerful instructional unit provides users with a full overview of the *Challenger* disaster, and reveals how it resulted from dynamic processes typical of most organizations. It can be customized for advanced high school students plus undergraduate and graduate courses plus leadership training and development.

To Engineer Is Human, #825758, Price \$149 + S&H

Films, Inc., Video Education Department

5547 North Ravenswood Ave., Chicago, IL 60640-1199, 1-800-323-4222 x323

An excellent presentation loosely based on the book of the same title by Prof. Henry Petroski. Gives numerous graphical examples of how engineers learn to deal better with risk by carefully studying previous failures. Approx. 55 minutes.

Insight Media

2162 Broadway, P.O. Box 621, New York, NY 10024-06

<<http://www.insight-media.com>>

Insight Media distributes video and CD-ROM products. Listed below are five videos from their Ethical Issues library. Their synopses are indicated together with our review comments.

- ***The Trueteel Affair*, 1985, Atlantis Films, 24 minutes, #6U674, Price \$139.00 + S&H**

Based on an actual case, this video is aimed at triggering discussion on ethical responsibility in the workplace. It explores the dilemma of a young engineer whose loyalties to family, employer, and fellow workers come into conflict with his professional judgment [Insight Media]. Insight Media reports that *The Trueteel Affair* has generated positive feedback from buyers, with a low rate of returns. This video effectively depicts the consequences involved when an engineer chooses whether or not to “blow the whistle.” The engineer in question is eventually disciplined by his professional society, after failing to act ethically and report the problem. Discussion topics may include how to deal with potential safety hazards when fixing them may cause bankruptcy for your company, or loss of your job. This video is a bit old, but it still contains very relevant issues to young engineers, especially those in construction related fields.

- ***Ethics and Scientific Research*, 1992, 30 minutes, #6U461, Price \$139.00 + S&H**

This video addresses ethical issues faced by scientific researchers, focusing on scientific misconduct and its control. It features Dr. Robert L. Sprague, recipient of the AAAS Scientific Integrity and Freedom Award [Insight Media]. Based on positive feedback from buyers, Insight Media highly recommends *Ethics and Scientific Research*. This video also has

a very low rate of returns, indicating that customers have historically been very pleased with its quality and usefulness.

- ***Engineering Ethics: The Case of Challenger*, 1992, 30 minutes, #6U459, Price \$139.00 + S&H**

Designed to encourage critical thinking about ethical issues that might arise during an engineer's career, this video considers when an engineer has a responsibility to blow the whistle. Roger Boisjoly, former Morton Thiokol engineer, discusses the Challenger disaster [Insight Media]. Insight Media reports that *Engineering Ethics: The Case of Challenger* is their best selling video on engineering ethics. According to Insight, this is a high quality production. It is returned occasionally, although Insight personnel feel that this is most likely due to the specific nature of the video, which may make it a somewhat limited application teaching tool.

- ***Blowing the Whistle: How to Protect Yourself and Win*, 1997, 35 minutes, #6U843, Price \$119.00 + S&H**

Produced by the National Whistleblower Center, this video demonstrates how to report violations and explains what assistance is available [Insight Media]. Because *Blowing the Whistle: How to Protect Yourself and Win* is a relatively new production without much history of either positive or negative feedback, Insight Media was unable to give any meaningful evaluation of this video.

- ***Beyond Borders: Ethics in International Business*, 1993, 35 minutes, #6U891, Price \$375.00 + S&H**

This program considers ethical issues that can arise from differences in laws and practices of other countries. It addresses ethical concerns related to technology transfer, and explains how to comply with the Foreign Corrupt Practices Act. It also considers how to handle conflicts between company standards and local practice [Insight Media]. Perhaps due to its high price, *Beyond Borders: Ethics in International Business* has not sold well historically for Insight Media. Because of this fact, Insight was unable to give any meaningful evaluation of this video.

Books and Software

**Opinions of the Board of Ethical Review, Volumes II-VIII, NSPE,
Price variable with member discounts and entire-set discounts.
National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
1-800-417-0348, Fax 412-741-0609**

In 1954, NSPE adopted a Code of Ethics for engineers. To interpret the Code and educate engineers about its applications, NSPE established a Board of Ethical Review (BER). The BER is educational rather than disciplinary, and the cases reviewed and reported in these volumes do not name the actual individuals and firms. The publications are offered to the profession to teach engineering ethics to students and provide instruction to practicing engineers. Note: Volume I is out of print.

**Ethics in Engineering, M.W. Martin and R. Schinzinger, 3rd ed., 1996,
McGraw-Hill, New York, 439 p.**

Ethics in Engineering provides an introduction to the basic issues in engineering ethics, with emphasis given to the moral problems engineers face in the corporate setting. It places those issues within a wider philosophical framework than has been customary in the past, and it seeks to exhibit both their social importance and their intellectually challenging nature. The primary goal is to stimulate critical reflection on the moral issues surrounding engineering practice and to provide the conceptual tools necessary for pursuing those issues. This book is intended to be a teaching instrument while also serving to advance the field of engineering ethics. [Martin and Schinzinger]

**Controlling Technology: Ethics and the Responsible Engineer,
S.H. Unger, 2nd ed., 1994, John Wiley & Sons, Inc., New York, 353 p.**

This valuable guide provides an in-depth treatment of what constitutes ethical behavior on the part of engineers. It carefully examines the various conflicts faced by engineers and offers practical, proven advice on what to do in such situations [Unger].

Engineering Ethics: Concepts and Cases, C.E. Harris, Jr., M.S., Pritchard, and M.J. Rabins, 2nd ed., 2000, Wadsworth Publishing Company, an International Thomson Publishing Company, Belmont, California, 377 p.

This book is organized into three major sections: Critical Approaches, Generic Concerns and Special Topics. Many new cases illustrate engineers acting in a professionally responsible manner (rather than emphasizing failure to act responsibly). This approach includes examples of what the authors call “good works,” going well beyond what is minimally required professional obligation. The book offers an entirely new chapter on international engineering ethics. An accompanying CD-ROM contains the professional society codes and many additional cases and materials. [Harris, Pritchard, and Rabins]

Engineering Ethics, C.B. Fleddermann, 1999, ESource Prentice-Hall, Inc., Upper Saddle River, New Jersey, 135 p.

This text is one of a series of introductory/first-year engineering books which may be customized by faculty either on-line or through examination copies. To learn more about this new system for creating the perfect textbook, go to: <<http://emissary.prenhall.com/esource/>>. [ESource Prentice-Hall]

What Every Engineer Should Know About Ethics, K.K. Humphreys, 1999, Marcel Dekker, Inc., New York, New York, \$75, 264 p.

This compact reference succinctly explains the engineering professions’ codes of ethics using case studies drawn from decisions of the National Society of Professional Engineers’ (NSPE) Board of Ethical Review – examining ethical challenges in engineering, construction, and project management. Includes study questions to supplement general engineering survey courses and a list of references to aid practicing engineers to explore topics in depth. [Marcel Dekker, Inc.]

Moral Issues in Engineering: Selected Readings, V. Weil, ed., 1988, Illinois Institute of Technology, 300 p.

Professional Ethics and Engineering: A Resource Guide, 1997, National Institute for Engineering Ethics (NIEE)
<<http://www.niee.org/resource.htm>>

Engineering Law, Design Liability, and Professional Ethics, 1983, Editors of PPI,
<<http://www.drblank.com/reeldlp1.htm>>, 110 p.

Good preparation for questions on the PE exams concerning management, ethics, professional responsibility, and law. Offers more than 120 case studies and review problems, with answers included [PPI].

Introduction to Teaching Engineering Ethics: A Case Study Approach, M.S. Pritchard, c.1995, Center for the Study of Ethics in Society, Western Michigan University, 310 Moore Hall, Kalamazoo, MI 49008-3899, 616-387-4397, two 3½" disks (WordPerfect) for \$20.00 including a teaching reference guide.

Philosophy professor Michael Pritchard has prepared 33 cases based on everyday ethical problems that arise frequently in engineering under rather ordinary circumstances. Many of the cases have multiple stages and present different alternatives depending on the choices made at each juncture. It is preferable that users look at stages one at a time, reflecting on the questions each stage poses before moving to the next stage.

Once the reader has completed a case, he or she may wish to see how the case has been analyzed by a group of educators involved in teaching ethics. Each case is accompanied by the written reflections of several commentators (from communication, engineering, and philosophy). This should stimulate further reflection and suggest other resources that can be consulted.

Ethics in Engineering Practice and Research, C. Whitbeck, 1998, Cambridge University Press, \$69.95 (hardcover), \$27.95 (paperback), 330 p.

This textbook, written for engineers and scientists by a philosopher teaching at Case Western Reserve University, emphasizes research ethics and also tackles workplace ethics and environmental concerns. It offers a real-world, problem-centered approach to engineering ethics, using a rich collection of open-ended scenarios and case studies to develop skill in recognizing and addressing ethical issues. The book is designed to be used with active learning classroom exercises and makes extensive use of the resources on the WWW Ethics Center for Engineering and Science, <<http://www.onlineethics.org/>>. [CUP].

Games Involving Ethics

The Ethics Challenge, 1997, Lockheed Martin
Lockheed Martin Corporate Communications
Attn: Maureen Curow
310 North Westlake Blvd., Suite 200
Westlake, CA 91362
805-381-1412, Fax 805-381-1415

Lockheed Martin, a company that holds all of its employees to high ethical standards, has developed a unique tool for teaching ethics. *The Ethics Challenge* is an interactive game that uses the comic strip DILBERT as a vehicle for teaching employees about Lockheed's guiding ethical principles of honesty, integrity, respect, trust, responsibility, and citizenship. The game is based on fifty ethics case files, designed to teach a practical ethics decision-making model. Lockheed reports that feedback from the game has been very positive, as it stimulates workers to actively learn about ethics. Lockheed Martin has been sharing *The Ethics Challenge* on a complimentary basis with companies, universities, and organizations in a cooperative spirit of teaching.

Boeing's Questions of Integrity: The Boeing Ethical Challenge
Nancy McReady Higgins
Director, Ethics & Business
The Boeing Company
P.O. Box 3707
Seattle, WA 98214-2207
http://active.boeing.com/company_offices/ethicschallenge/cfm/initial.cfm

This interactive website is available to the public free-of-charge. Developed by Boeing Company for employee education, the challenge site is easy to use and provides feedback on your response to the questions. The site also provides links to Boeing's Ethics Homepage and Boeing's Ethics Policies and Procedures.

Journals and Miscellaneous Publications

Journal of Science and Engineering Ethics, eds. **Stephanie J. Bird (MIT) and Raymond Spier (Surrey University)**, Institutional Price \$146.00 and Personal Price \$70.00 per year
Opragen Publications
P.O. Box 54, Guildford
Surrey GU2 1YF
United Kingdom
Tel/Fax +44 1483 560074
<opragen@cableol.co.uk>

The *Journal of Science and Engineering Ethics* is a multi-disciplinary quarterly journal, launched in 1995, exploring ethical issues confronting scientists and engineers through:

- Refereed Papers and Reviews
- Editorials, Comments, Letters
- Educational Resources
- Book and Conference reports
- Special Topic Issues

The journal has made a promising beginning then. If it has not always been clear-sighted in its selection of papers, this is partly a consequence of the scale of its editorial ambitions. Offering consistently high quality across the range of areas covered and developing a distinctive contribution to the discussions it wants to promote will demand much of its editors and reviewers. I wish them well. They have launched an important journal which is already a rewarding read most of the time. In a few years it could become a vital one. (Jon Turney, Times Supplements Limited, 1996, <<http://www.cableol.net/opragen/>>).

Epilogue

A reminder...the WSPE Board of Engineers Professional Responsibility welcomes your suggestions as to additional information that should be included in subsequent editions of "Selected References and Resources on Engineering Ethics and Professional Practice for Practicing Engineers, Engineering Educators, and Engineering Students." Please send to:

WSPE Board of Engineers Professional Responsibility
6501 Watts Road, Suite 112, Madison, WI 53719
or Fax 608-278-7005
or E-mail <wspe1@aol.com>

And be sure to include a brief annotation, if appropriate, and complete addresses and references as to the sources where the material may be obtained.

Thank you.