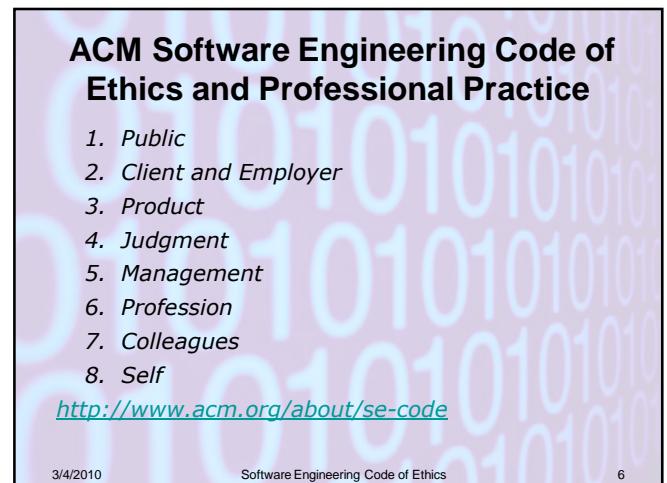
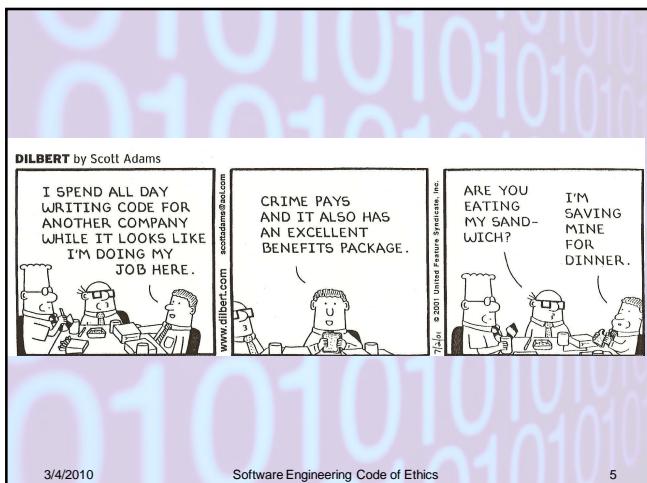
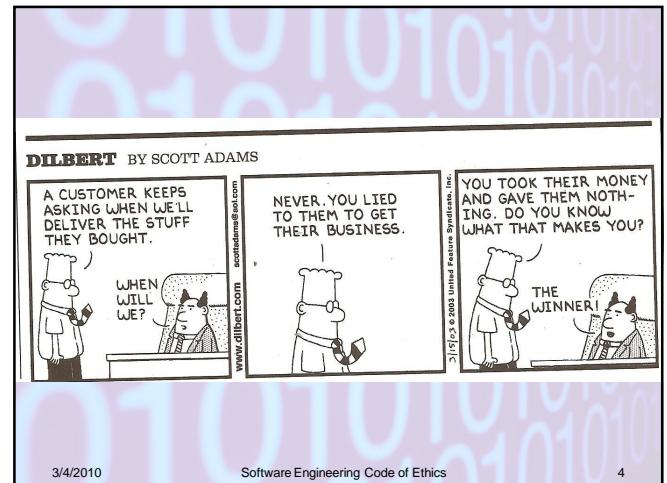
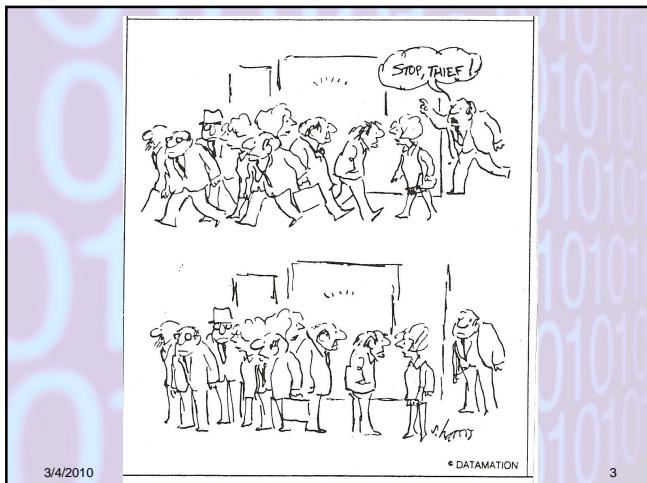
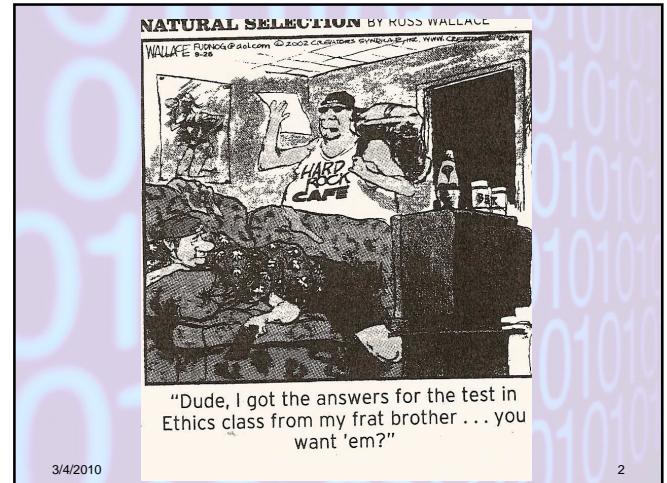


# Software Engineering Code of Ethics and Professional Practice

Dr. Bob Weber  
CEG 460 / 660  
Wright State University



## Public

- Software engineers shall act consistently with the public interest.**

- Accept responsibility for your own work
- Moderate interests of all stakeholders with public good
- Approve software only if you have well-founded belief in its safety; disclose any actual or potential danger
- Cooperate in efforts to address matters of grave public concern
- Be fair and avoid deception in all statements
- Consider issues of physical disabilities, allocation of resources, economic disadvantage
- Be encouraged to volunteer professional skills to good causes

3/4/2010

Software Engineering Code of Ethics

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## Client and Employer

- Software engineers shall act in a manner that is in the best interests of their client and employer, consistent with the public interest.**

- Provides service in area of competence; be honest and forthright about experience and education
- Not knowingly use illegally- or unethically-obtained software
- Use property only as properly authorized and with owner's knowledge and consent
- Identify, document, collect evidence, and report to the client if a project is problematic
- Accept no outside work that is detrimental to your primary employer
- Promote no interest detrimental to your employer or client, unless higher ethical concern exists

3/4/2010

Software Engineering Code of Ethics

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## Product

- Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.**

- Strive for high quality, acceptable cost, and reasonable schedule
- Identify, define, and address ethical, economic, cultural, legal, and environmental issues related to the project
- Ensure you use appropriate methods on projects
- Follow professional standards whenever possible
- Strive to fully understand specifications for software
- Ensure specifications are well-documented and approved
- Ensure adequate testing, debugging, and review of software
- Ensure adequate documentation
- Treat software maintenance as professionally as new development

3/4/2010

Software Engineering Code of Ethics

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## Judgment

- Software engineers shall maintain integrity and independence in their professional judgment**

- Temper all technical judgments by need to support and maintain human values
- Only endorse documents you prepared or are under your control
- Maintain professional objectivity
- Do not engage in deceptive financial practices
- Disclose conflicts of interest to all concerned parties
- Refuse to participate in bodies in which you have potential conflicts of interest

3/4/2010

Software Engineering Code of Ethics



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## Management

- Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance**

- Ensure good management practices; inform other software engineers of standards and security procedures
- Assign work by education and experience levels
- Ensure realistic quantitative estimates of cost, scheduling, personnel and outcomes
- Describe position accurately and fully when hiring; offer fair and just remuneration
- Don't ask software engineers to violate this Code
- Don't punish for expressing ethical concerns about project

3/4/2010

Software Engineering Code of Ethics

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## Profession

- Software engineers shall advance the integrity and reputation of the profession consistent with the public interest**

- Help develop favorable organizational environment
- Participate in professional organizations, meetings, and publications; avoid associations that lead to conflict of interest
- Support other SW engineers striving to follow this Code
- Do not promote your own interests at the expense of profession, client, or employer
- Obey all laws governing work
- Be accurate describing the characteristics of software
- Violations of the Code are inconsistent with being a professional software engineer
- Report violations of the Code to appropriate authorities

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Software Engineering Code of Ethics

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# Copy-and-Paste Papers Put Profs On the Offensive

BY ANNA BOGDANOWICZ

**M**ore than 100 incidents of college students plagiarizing their work are popping up today than ever before, according to engineers' concerns expressed by The Institute. And, a recent study by the Center for Academic Integrity of 50,000 undergraduates shows the problem is getting worse. In 1999, 10 percent admitted to plagiarizing in their papers; 10 percent admitted to plagiarizing in 1999, whereas almost 40 percent said they did so in 2001.

Today, however, for example, 21 mechanical engineering graduates from Ohio University, in Athens, were found to have plagiarized their final design reports, and others at the school are now under investigation. The problem

is growing at universities around the world as well.

Many professors place the blame on the Internet, which has made plagiarizing using a simple copy-and-paste process. But there are other reasons for the increase, too, including a misunderstanding of what plagiarism is and what it includes.

"There are many subtle differences in how plagiarism is perceived, a lack of basic education in what plagiarism is, and the difficulty to get away with it because plagiarism is too busy to check every paper."

The consequences of getting caught with plagiarized behavior could be devastating, says IEEE Member Virendra Agarwal, a former part-time lecturer in electrical engineering at Deakin University in Victoria, Australia. "I find plagi-

arism students are taught in schools—most to cite sources, that principle needs to be reinforced in college," says IEEE Member Michael J. Motes, a professor of microwave engineering at the Institute of Microwave Techniques part of the University of Ulm, in Germany.

"It's important to write, I go over our institute's rules of conduct, how to cite a source, and what makes good writing," he says. "Students must also understand that they need to understand the rules, just telling students their thesis will be checked for plagiarism is not enough," he adds.

IEEE Fellow Lloyd "Pete" Morey, who retired last year after having taught as a professor of electrical engineering at the University of Arkansas, Tuscaloosa, made more than that point. He says, "It's not just about what constitutes plagiarism and why it's a serious offense. Students need such reminders because they may have heard about plagiarism, but don't understand what it really means," Morey says.

Many professors believe that the best way to catch plagiarists is to have them submit their papers online, where they can be checked for originality.

Hoffmann adds, "We have had success with Turnitin.com, which has been submitted through Turnitin, and it also checks the Internet."

But, he says, "The problem is that plagiarism is a global phenomenon, so why can't foreign students rewrite their papers to, in extreme cases, exploit them? In most cases, students are given time to fix them."

Still, some professors say plagiarism detection tools do not lack of understanding. "Students feel like they're revealing somebody else's work, I think sometimes it's a temptation because they think it's an easy way out," says Life Sciences Professor Bruce Murray, now an adjunct professor in the electrical and computer engineering department at the University of Alberta, in Canada.

Others say that in the end it's just a culture of getting away with it. "Students don't even think if they're caught, their plagiarism is not a bad thing," Hoffmann says.

Senior Member Bruce Maxfield, a profes-

or one, are being taught that copying another's work is unethical." "Plagiarism is a very serious offense at my university," Agarwal says. "After a few serious cases, students receive a failing grade." Although spotting plagiarism has gotten easier with such engines as Turnitin.com, some professors don't always apply the technology. They rarely read every paper through a plagiarism tool because it's time-consuming, he says.

Instead, most look for telltale signs—an interesting writing style, say, or a particular sentence that sounds familiar and then either search for the plizzes on the Web or use a detection program such as Turnitin.com. "That program checks papers for similarity, but it can't detect self-plagiarism from Turnitin, and it also checks the Internet," he says.

He says that, in general, plagiarism is a learned behavior. "Students learn to write their papers to, in extreme cases, exploiting them. In most cases, students are given time to fix them."

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**FOR MORE INFORMATION** on the plagiarism survey of students conducted by the Center for Academic Integrity, a consortium of more than 390 institutions affiliated with the American Institute for Ethics, in Durham, N.C., visit <http://www.academicintegrity.org/caci-research.aspx>.

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**Writing Across the Curriculum**  
Wright State University

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## Helping Students Move Beyond “Avoiding Plagiarism”

When surveyed each spring, faculty teaching WAC courses invariably suggest plagiarism as a topic for WAC workshops, and surveys show that most students away from plagiarism are generally not concerned every academic year. A series of newsletter items on the topic have also appeared over the years.

It's probably past time, then, for thinking about plagiarism to step beyond getting students to recognize the necessity of documenting their sources. Even though novice writers may document data or statements, gamma rays or whatever, they sometimes do not integrate that material into their writing. That means that the concepts embedded in their prose like so many foreign objects, with no indication of where they fit in the engagement with his or her words. Faculty who want to help in taking that next step:

One possible approach to this challenge appears in Jeanne Hall's “Plagiarism Across the Curriculum.” The Writing Committee must Meet the Challenge of the ‘Undocumented’ Writer, an article published in the 2005 edition of *Across the Disciplines*, an online WAC journal (<http://wac.colostate.edu/journals/click2005/click2005.html>). Hall, who teaches at the Newark campus of Rutgers University, suggests a workshop that incorporates the idea of critical engagement with primary sources by avoiding plagiarism. Thus, from the beginning students are asked to consider the mechanics of correct citation.

Using a scale from 1 to 14, Hall offers distinctions among incorrect and correct use of sources. The first two categories (4, -3) are couched in terms of “Fraud”; the next two (2, -1), “Misappropriation,” and “Documentation.” At the center of the scale—and bearing in point most closely on the concept of identification of a source. The highest level goes to “Synthesis and Value Added.” Hall stresses that the negative scores are just as important as the positive ones. “What I'd like to emphasize is that the negative scores are just as important as the positive ones.”

That “avoiding plagiarism” gets you only so zero on the scale’s “incorrect” side—“the negative,” and the creative—use of sources.”

To help students grasp these distinctions, Hall has developed

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an exercise in which they are asked to apply the scale to a series of photographs showing on the one hand “good” and on the other “bad” examples. Both the scale and exercise are reproduced on the website (<http://wac.colostate.edu/journals/click2005/click2005.html>). Hall gives permission to reproduce the exercise, but asks that the credit line at the bottom of each page be retained.

*Continued near 3 pages*

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### Writing From Sources: Rating Scale

The purpose of this scale is to provide definitions and examples of good, moderate, and poor use of sources in analytical essays such as those that require negative or positive stances. Negative numbers reflect serious deceptions or incorrect uses of sources, while positive numbers present progressively better uses of sources in developing one's own argument. "Avoiding plagiarism" is the beginning, not the end, of the proper use of the source material.

- 4=Fraud: Verbatim. Use of verbatim materials from source, in whole or in part, without quotation marks, mention of an author, or an indication that they come from a source. There is a clear intent to deceive the reader into believing that the ideas are the writer's own work.
- 3=Fraud: Paraphrase/Summary. Paraphrases or summarizes a source, in whole or in part, in a way that makes use of someone else's ideas or information without giving credit. This could also involve fabricating sources, or including sources that do not support the writer's own argument. There is a clear intent to deceive the reader into believing that these stated ideas are the writer's own work.
- 2=Inadequate Documentation: General Acknowledgments. The writer acknowledges, in a general way, that sources were used, but does not cite them. The writer may say, for example, "I have a 'Bibliography' at the end, or, for example, with no parenthetical citations.
- 1=Inadequate Documentation: Under-Citation. This appears to documentation, but placement of citations is formulaic, such as "According to [source]..." or "The writer believes..." and the writer's ideas begin. An example would be a single general parenthetical citation at the end of a long paragraph.
- 0=Correct Documentation: No Value Added. Avoid plagiarism, but doesn't add anything of the writer's own. Usually the writer has done a good job of summarizing the source material, but has not added his or her own analysis or synthesis to this organized argument. The selection of a particular passage reflects a skill, perhaps, but this idea has not been spelled out explicitly or developed with the writer's own words.
- +1=Correct Documentation: Present Source Only. Writer source ideas intact with writer's own, with only occasional stamp to delineate. The writer may quote facts in a narrative or summary fashion, but does not attempt to analyze or synthesize the source material, nor does the writer make any claims about what through writer's own words.
- +2=Correct Documentation: Distorted Value Added. Incomplete attempt to integrate source's ideas into writer's own. The writer may quote facts in a narrative or summary fashion, but does not fully analyze or synthesize what is being quoted, regardless of what the source actually means. Comment on the source material may be irrelevant or misleading, and may reflect a misunderstanding on the writer's part. The writer's own voice is heard, but it is not clearly integrated with the source's ideas.
- +3=Correct Documentation: Source + Writer's Value Not Synthesized. Usually makes it possible to distinguish source ideas from writer's own, occasionally supported by writer's own words. The writer may quote facts in a narrative or summary fashion, but does not fully synthesize or evaluate the source material. "We tell which is the writer's and which is the source's," but we're not quite sure how the two relate to each other. The writer's own voice is heard, but it is not clearly integrated with the source's ideas.
- +4=Correct Documentation: Synthesis and Value Added. Frequently identifies source and writer's own words, and clearly separates them. The writer may quote facts in a narrative or summary fashion, but also synthesizes and evaluates the source material by reworking it in a different context, by adding one's own words, or by reflecting on the source material. The writer's own voice is clearly heard, and it is clearly related to the source's ideas. The writer's own arguments are clearly supported by an appropriate relation between the writer's argument and the source's material.
- +5=Correct Documentation: Synthesis and Value Added. Frequently identifies source and writer's own words, and clearly separates them. The writer may quote facts in a narrative or summary fashion, but also synthesizes and evaluates the source material by reworking it in a different context, by adding one's own words, or by reflecting on the source material. The writer's own voice is clearly heard, and it is clearly related to the source's ideas. The writer's own arguments are clearly supported by doing so, or by giving a fair interpretation of the source's conclusion as evidence in writer's own arguments.

WAC Newsletter Wright State University Winter 2007

On my “Links of Interest” page:

[Avoiding Plagiarism](#) - Writing Across the Curriculum newsletter, Winter 2007, WSU.  
<http://www.wright.edu/academics/wac/documents/WACNewsletter32Winter07.pdf>