

Discussion of Ethics
in
Civil and Architectural Engineering
Department
Illinois Institute of Technology

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Ethics Across the Curriculum Workshop

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Background Information

Programs in Civil and Architectural Engineering Department at IIT include:

Civil Engineering (BS, MS, PhD)

Architectural Engineering (BS, MS)

Engineering Management (BS)

Engineering Graphics (certificate program)

Concentration areas:

Civil Engineering: Structural design; construction engineering and management; geotechnical engineering; transportation engineering

Background information (continued)

Architectural Engineering: Building design; building energy design (heating, ventilation air conditioning); acoustic and lighting design; construction engineering and management

Engineering Management: finances; environmental engineering; construction management; transportation planning and management; manufacturing

Engineering Graphics: Computer-aided design

Statistical Data:

UG students: 90

Graduate students: 65

Faculty: 12

Background information (continued)

Five faculty members have actively participated in workshops/seminars organized by IIT's Center for the Study of Ethics since 1991.

Ethics have been included in courses on a regular basis since 1992.

The purpose is to introduce ethics to students and increase awareness among students regarding the responsibilities of civil and architectural engineers to the safety of the public.

Importance in Civil and Architectural Engineering Courses

Courses in civil and architectural engineering involve design of facilities and/or management of the construction process.

Objectives of design in a facility are safety and economy:

Safety: covers strength requirements, stability, and serviceability

Economy: considers minimizing cost without compromising safety

Discussions on ethics emphasize on:

- Responsibilities of the engineer in assuring public safety while making design economical
- Following the code of ethics by the professional society
- Following a well-established set of procedures for design and safety calculations
- Exercising professionalism when conducting design calculations

A major component of professionalism in preparing design calculation document is to follow quality assurance procedures. Elements of QA procedures emphasized in design courses are:

- Preparing a legible and complete design document
- Including introduction, specification data, clear information on standards used, surveys conducted and methods employed in design document
- Conducting and documenting verifications for new methods and new software used
- Preparing design document using a three-level process: preparation, verification and approval

QA Procedures (Continued)

- Providing adequate background information for future use and modification of the design document
- Providing adequate information on alternate methods, software and standards that may be applicable.
- Acknowledging the work of others

Ethics discussion also emphasizes on:

- Professional licensing and state regulations on signing documents and misuse of titles
- Proper coordination between design engineers, fabricators, contractors and inspectors
- Proper execution of “change orders”
- Proper handling of mistakes discovered after the completion of the design

Format of Instruction

Open discussions (about 2-3 lecture hours)

Reading assignments (case studies, journal articles and web site information)

Problem-solving sessions

Discussion of the code of ethics by American Society of Civil Engineers (ASCE) and other societies

Lecture presentation by members of the Center for the Study of Ethics (IPRO classes)

Students' case studies and projects

Resources

1. IIT's Ethics Center

2. Journal articles

ASCE News

Structural Engineer

ENR

ASCE Journal of Professional Issues

3. Web Sites

Earthquake Engineering Research Institute

ASCE

List of Courses

1. Structural Design Courses
2. Interprofessional (IPRO) design courses
3. Construction Planning and Scheduling
4. Construction Cost Estimating
5. Architectural Engineering (Building & Energy Design)
6. Transportation Planning
7. Systems Engineering