

Product Liability: Its Role in Safety and Engineering Design

ME 498J/599J SQ 2011

T TH 1:30-2:50 LOEW 105

INTRODUCTION

This course will introduce students to the role of products liability in the design of engineering products. The design process conducted by U.S. industries is increasingly driven by products liability law due to the dire consequences of losing major products liability lawsuits. It is therefore surprising that academic engineering institutions have not responded to this fact and do not comprehensively cover products liability, the legal system, regulatory standards, product safety and how these areas will, or should, affect the design process.

The cost of products liability to U.S. industry is continuously increasing and is rapidly approaching a level which is seriously hindering national competitiveness. The responsibility for improving this unfortunate situation rests with both legislative bodies and the engineering community. The current high cost of products liability actions cannot be blamed solely on the legal and insurance communities; the nation needs a system which discourages frivolous claims, limits astronomical financial awards, and encourages engineers to design safe, quality products.

PURPOSE

There is a lack of knowledge in the engineering community about the importance of products liability and product safety. The purpose of this course is to bridge the gap between the legal and engineering communities and to provide the engineering student with an appreciation for product safety and its role in the design process. It will do so by having students examine errors made in the past, through specific in-depth case studies, to illustrate the pitfalls in the design process and the critical decision making that could have alleviated the problems. In tandem, students will examine products liability law and be shown how the courts have treated legal actions resulting from engineering errors. The student will gain insight into the technical, ethical, and legal responsibilities of the engineering profession, the standards for product safety and performance, the consequences of failure in the technical and legal sense, and the role that failures, and the courts, have played on engineering design. Students will emerge better equipped to understand the technical, financial, and legal ramifications of the design process. It is intended that this course will be of interest to all College of Engineering students, and it will be open to all students at the senior or graduate level.

COURSE DESIGN

The course will consist of a mixture of regular lectures by the course instructor, guest lectures by industry and legal experts, case studies illustrating failures of a wide range of products in all fields in engineering, failure analysis group discussions, safe product design projects, and an overall design project to examine in-depth a current topic of interest related to the course teachings.

In the safe product design projects the students will redesign (or find solutions to) the failed products studied in the failure analysis cases. The students will be asked to use engineering fundamentals and analysis tools that they have been exposed to during their engineering education. This provides a vehicle to connect the engineering fundamentals that the students have been exposed to over the years with real practical design problems that require interdisciplinary approaches for successful implementation.

COURSE TOPICS

The following topics will be covered in the regular lectures or by the invited speakers:

- Design, testing, and manufacturing for safety
- Products liability litigation and law
- Evaluation of product design
- Failure analysis techniques
- Design and effectiveness of warnings and instructions
- Evaluation of defects
- System safety engineering
- Human factors engineering
- Risk assessment
- Guarding
- The product in the field
- The role of the forensic engineer
- Foreseeability
- Regulatory and voluntary standards, the role of regulation
- Liability prevention programs
- Product liability insurance
- Patents and intellectual property
- Records retention policies

STUDENT EVALUATION

Grading and evaluation will be primarily based on four factors: 1) daily discussion participation, 2) written reports on case studies and/or weekly assignments, 3) quizzes based on reading assignments from the text, and 4) a final project.

Class participation will be judged by attendance and preparation, willingness and ability to speak freely and thoughtfully, and ability to listen to and consider other opinions.

TEXTBOOK

Goodden, Randall, Lawsuit! Reducing The Risk Of Product Liability For Manufacturers. Wiley & Sons, New York, ISBN 978-0470177976, 2009.

INSTRUCTORS

Prof. Robert Scheibe, GT Engineering (425) 556-5555, scheibe@u.washington.edu, and Prof. Per Reinhall, MEB 307, 543-5628, reinhall@u.washington.edu

CLASS WEBSITE

http://faculty.washington.edu/reinhall/MEProdLiab/ME498_599_home.htm

RESOURCES

Abbott, Howard, Safer by Design. The Design Council, 1987.

Bass, Lewis, Products Liability; Design and Manufacturing Defects. Shepards/McGraw-Hill: Colorado Springs, CO, 1986.

Brown, Sam, The Product Liability Handbook. Van Nostrand Reinhold, New York, 1991.

Center for Case Studies in Engineering, Rose-Hulman Institute of Technology,
www.civeng.carleton.ca/ECL

Dorner, Dietrich, The Logic of Failure: Recognizing and Avoiding Error in Complex Situations. Addison Wesley, Reading, MA, 1997.

Goodden, Randall L., Preventing and Handling Product Liability. Marcel Dekker, Inc., New York, 1995.

Hammer, Willie, Handbook of System and Product Safety. Prentice Hall, 1972.

Hauptmanns, Ulrich and Wolfgang Werner, Engineering Risks; Evaluation and Valuation. Springer Verlag, 1991.

Hunter, Thomas A., Engineering Design for Safety. McGraw Hill, New York, 1992.

Jasanoff, Sheila, Learning From Disaster: Risk Management after Bhopal. University of Pennsylvania Press, 1994.

Kotler, Martin A., Products Liability and Basic Tort Law. Carolina Academic Press, Durham, NC, 2005.

Lees, Frank P., Loss Prevention in the Process Industries: Hazard Identification, Assessment and Control. Butterworths, 1980.

Leveson, Nancy G., Safeware: System Safety and Computers. Addison Wesley, 1995.

Managing for Products Liability Avoidance, CCH Business Law Editors, Chicago, 1994.

Nishida, Shin-Ichi, Failure Analysis in Engineering Applications. Butterworth-Heinemann Ltd, 1991.

Norman, Donald, The Design of Everyday Things. Doubleday, New York, 1990.

Owen, David G. and Jerry J. Phillips, Products Liability in a Nutshell Seventh Edition. Thomson West, 2005.

Petrosky, Henry, Design Paradigms: Case Histories of Error and Judgment in Engineering. Cambridge, New York, 1994.

Roberts, Lewis and Albert Weale, Innovation and Environmental Risk. Belhaven Press, 1991.

Schoff, Gretchen A., and Patricia A. Robinson, Writing and Designing Manuals Second Edition. Lewis, Chelsea MI, 1991.

Witherell, Charles E., Mechanical Failure Avoidance: Strategies and Techniques. R.R. Donnelley & Sons Company, 1994.