

Ethics and a PSM Applied Physics Program—Oil and Water?

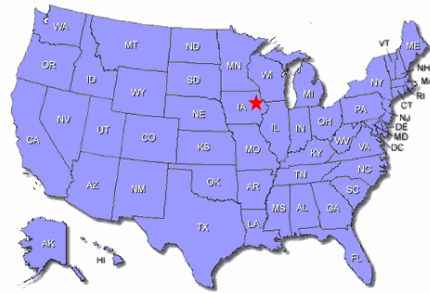
Cliff Chancey
Department of Physics

Donna J. Wood
Department of Management

University of Northern Iowa
Cedar Falls, Iowa 50614



Where is the University of Northern Iowa?



Cedar Falls, Iowa

UNI PSM programs

- Applied Physics
- Applied Chemistry & Biochemistry
- Biotechnology
- Ecosystem Management
- Industrial Mathematics.



UNI PSM PROGRAM ORGANIZATION

SCIENCE & MATH CONTENT



PLUS COURSES

UNI PLUS COURSES

- PSM SEMINAR
- TEAM-BUILDING PROBLEM SOLVING
- BUSINESS MANAGEMENT FOR SCIENCE PROFESSIONALS
- PSM INTERNSHIP

BUSINESS MANAGEMENT FOR SCIENCE PROFESSIONALS

- Accounting
- Legal issues
- Personnel management
- Communication styles
- Strategic management
- Business ethics
- ...

BUSINESS MANAGEMENT FOR SCIENCE PROFESSIONALS

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Case-lets for faculty discussion...

An example Case-let

Background: Some agencies authorize companies to test products, provide the data to the agency, and ship the product bearing the agency mark. The company's capability has been evaluated by the agency and a contract signed to allow this.

Situation 1a: A new high-end computer is ready to ship except for one test that you will not complete for another three weeks. The probability of failure is low—and even if the test fails, corrections can be made and sent out later to customers. Marketing is VERY anxious to ship because the end of the fiscal quarter is next week. Should you put on the agency mark and ship while finishing the test?

Situation 1b: Your boss tells you that this has occurred before; the company shipped the product, and there was no problem. He also says that if you do not want to sign off, then he will do so. What should you do?

Situation 1c: Products were shipped before this test was completed, but it happened when you were on a business trip. The production manager apologizes, but doesn't want to take any action. What should you do?

Result:

- Science faculty understood the rationale for including Business Ethics in the PSM Plus program...it wasn't just lip service.
- Faculty were prepared to reference "ethics" issues in their science courses.
- A PSM *Plus* "Business Ethics" module was included in the Management for Science Professionals course.

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Cliff Chancey¹
Department of Physics
University of Northern Iowa
Cedar Falls, Iowa 50614-0259

Dennis J. Wozniak²
Department of Management
University of Northern Iowa
Cedar Falls, Iowa 50614-0225

Abstract

PBM programs prepare their students for professional positions in companies and organizations—positions that often have significant pressures of time-crunches, short deadlines, and profit demands. Granted these pressures, and possible unethical urges to cut corners, the issue is what type of ethics instruction can best prepare PBM graduates for the workplace. A business ethics course might help, but there is no course for another course by an already-saturated curriculum. This presentation discusses an ethics module embedded in a PBM Plus course at the University of Northern Iowa (Business Management for Science Professionals). The course is to model the types of situations that an employee might face, both as an individual and as a member of a team. Real-life scenarios are used to prompt discussions, which are led by a specialist in business ethics. Scenarios appropriate to PBM Applied Physics students will be discussed.

Introduction

Planning for and implementation of the Professional Science Master's program in Applied Physics at the University of Northern Iowa (UNI) were funded by State Foundation grants administered by the Council of Graduate Schools. In July 2016 the Iowa Board of Regents approved the PBM as a graduate degree at UNI, and the first PBM Applied Physics students matriculated in August that year. Enrollment has grown with each passing year, and the PBM Applied Physics program reached its goal of 10 matriculated students per year in the 2016-2017 academic year—an equilibrium which the program attempts to maintain. There are currently 175 PBM degree programs at UNI.¹

The planning phase involved extensive surveys of engineering and high-technology companies in Iowa and surrounding states. Their responses and the advice of an Applied Physics PBM Advisory Committee guided curriculum design. Courses in LaTeX and software, computer simulations, design of experiments, and computer-aided design & digital processing were created. These technical courses were blended with two broader courses—*Applied Physics*—that educated the PBM students in areas of business practice, introduced them to business managers,

¹Professor and Head of Physics and Coordinator of the PBM Applied Physics program, e-mail: cliffchancey@uni.edu
²Dean of Undergraduate Business Affairs, Professor of Management, Professor of Philosophy & World Religions, e-mail: dennis.wozniak@uni.edu
³Applied Physics, Applied Chemistry & Biochemistry, Biotechnology, Executive Management, and Industrial Mathematics