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# FOUNDATIONS OF SPIRITUAL AND PHYSICAL SAFETY WITH CHEMICAL PROCESSES

**Clint Guymon**

**Brigham Young University**

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# 1 Introduction

## Learning Outcomes

- Become familiar with the course setup and topics
- Understand what you are asked to do to complete the course
- Understand where the course content is: (Learning Suite, Website, Book)
- Understand the importance of being physically and spiritually safe

## Reading

- Safety in Jesus Christ [Introduction](#)
- Foundations of Spiritual and Physical Safety: with Chemical Processes by Clint Guymon:
  - Preface
  - Chapter 1: Spiritual and Physical Safety Framework
- [Becoming Men and Women of Integrity](#)

## 1.1 Stewardship and Safety in Jesus Christ

Jesus Christ taught us to love one another (John 13:34-35) and to care for our bodies as they are temples (1 Corinthians 6:19-20). As stewards of our physical and spiritual well-being, we have a responsibility to ensure safety in all aspects of our lives. This course explores the principles of safety from both spiritual and physical perspectives, emphasizing the importance of ethical decision-making and risk management.

The course is divided up into five modules:

- Module 1: Spiritual Safety and Ethics
- Module 2: Understanding Harm and Risk
- Module 3: Systematic Hazards Analysis
- Module 4: Critical Process Safety Information
- Module 5: Safeguards & Regulations

## 1.2 Course Materials

- Learning Suite,
  - Please be patient, Learning Suite will be updated throughout the semester
- This Course GitHub Website,
  - Please be patient, this website will be updated throughout the semester
- Foundations of Spiritual and Physical Safety: with Chemical Processes by Clint Guymon
- Other helpful texts:

- The Book of Mormon
- The Bible
- Chemical Process Safety by Daniel Crowl and Joseph Louvar
- What Went Wrong? Case Histories of Process Plant Disasters and How They Could Have Been Avoided by T. Kletz

### 1.3 Work Expectations

- Lectures (3x's per week),
- Quizzes (In class, 3x's per week based on the reading material),
- Classwork (In class, 0-2x's per week),
- Reading material (prior to each class,)
- Homework (3x per week),
- Mid-term Exams (2-3),
- Final Exam
- Projects
  - Book review,
  - Safety and Ethics Evaluation (analysis, team writeup, and presentation)

### 1.4 Class Organizations

- Class Groups
- Project Groups

### 1.5 Course Grades

- Quizzes
  - 5 lowest scores dropped
- Classwork
- Homework
- Exams
  - Midterms
  - Final
- Projects
  - Book Review
  - Safety or Ethics Evaluation

### 1.6 Chemical Engineering Career Outlook

Hopefully from the above you can see that BYU chemical engineers are unique and in demand. The skills you will learn in this class will help you to be successful in your career.

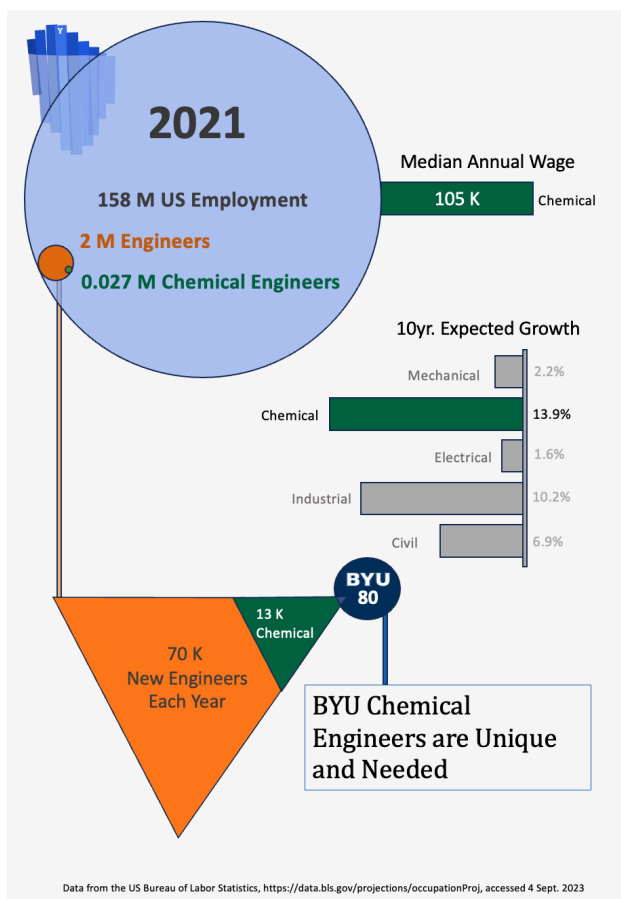


Figure 1: Chemical engineering has a strong career outlook.

## 1.7 Current Worldwide Problems in Engineering

Chemical Engineers are poised to help in each of these areas:

- Energy
  - Worldwide energy demands are growing
  - We need to use fossil fuels more efficiently and capture more of the byproducts
  - [Energy.gov](https://www.energy.gov/)
  - [Deseret News Article on Potential Energy Crisis](#)
  - Fry, Memmott, Baxter, Rappleye, Wheeler, and Lignell
- Chemical Production
  - We can continue to improve chemical production processes
  - [Chemical and Engineering News](#)
  - Argyle, Hedengren, Knotts, Nickerson, Seo, Tree, Wilding
- Health
  - We need to improve health care delivery and care
  - [World Health Organization](https://www.who.int/)
  - Bundy, Pitt, and Lewis

- Water
  - We need to improve water treatment, distribution, and conservation.
  - [World Health Organization](#)
- Transportation - How do we better move people and goods around the world?
- Environment - How do we efficiently continue improving our environment?
  - Plastics production and waste handling and reuse needs improvement.
  - [Environmental Protection Agency](#)
- Security - How do we continue to adapt and peacefully protect people from threats?
- Exploration, Food, and more...

You are the engineers that will work to improve societies' and individuals' quality of life around the world. Importantly, you can also help gather Israel and prepare the world for the second coming of Jesus Christ.

**Action Items**

Ask God to help you learn and implement principles to be physically and spiritual safe at home and at work.

## 2 Spiritual Safety and Ethics

### Learning Outcomes

- Understand the importance of integrity
- Identify different ethics approaches
- Review the Code of Ethics of the American Institute of Chemical Engineers
- Identify principles of the gospel of Jesus Christ that relate to living a life of integrity and ethics in Chemical Engineering
- Identify the influence of the Holy Ghost and how to heed the prophets invitation to be able to live by truth in an increasingly turbulent world
- Identify common justifications for unethical behavior
- Identify experiences of the prophets in the scriptures regarding ethics and integrity

### Reading

- Foundations of Spiritual and Physical Safety: with Chemical Processes; Chapter 2, Sections 1-2.
- [The Living Christ](#)
- [The Family: A Proclamation to the World](#)
- [Daniel 6](#)
- [Alma 14](#)

The world needs ethical people, people with integrity. There is no effective societal relationships be it financial, political, or personal without them built on a foundation of trust. Trust requires integrity or ethics. We can contribute significantly to the world simply by living with integrity and helping others to do the same.

### Note

This section of the course is not intended to be an in-depth review of ethics. Rather, it is a brief introduction. There is a whole fields of ethics in disciplines of medicine, finance, and business for example. The purpose of this section is to introduce you to the topic of ethics in chemical engineering and to help you understand how the gospel of Jesus Christ can help us live a life of integrity.

### 2.1 Integrity

Tad Callister spoke on the importance of integrity on “Becoming Men and Women of Integrity.” Elder Tad Callister defines integrity as **a state of purity in mind and heart, devoid of deceit, excuses, rationalizations, or any misrepresentation of facts**. It entails absolute honesty with oneself, God, and fellow human beings. It involves making **decisions based on eternal implications** and necessitates disclosing the complete truth without any alibis or excuses. Furthermore, integrity demands **keeping covenants and commitments**, even in inconvenient times, and being internally driven, not governed by the presence of others. He urges listeners to embrace integrity

not out of obligation but out of genuine desire, highlighting the Lord's acceptance of those who strive to live with integrity.

## 2.2 Ethics Approaches

### **Ethics Approach: Utilitarianism**

- The greatest good for the greatest number of people
- The ends might justify the means
- The needs of the many outweigh the needs of the few

### **Ethics Approach: Deontology (Duty)**

- Universal moral laws that can be applied to everyone
- Doing the right thing is more important than the outcome
- Double effect: the outcome of an action can be good or bad, but the action itself should be good (torture is bad, even if it is used to save lives)

### **Ethics Approach: Virtue Ethics**

- Focuses on the character of the person
- Actions judged on if a virtuous person would do them
- Virtues include: honesty, courage, compassion, generosity, fidelity, integrity, fairness, self-control, and prudence

### **Ethics Approach: Contractarianism**

- It is unethical to break a contract
- Contracts can form the backbone of society

### **Example of Jesus Christ by Words of Prophets**

- First and Second Great Commandments
- Keep the 10 commandments
- Make and keep covenants with God through authorized ordinances

- Seek for and follow the guidance of the Holy Ghost
- Individuals are expected to apply the principles of the gospel of Jesus Christ to their own lives and make their own decisions
- We will be accountable for our own decisions and actions

## 2.3 BYU Honor Code

### Some Honor Code Commitments

Sections of the BYU Honor Code are given below. I have emphasized some of the wording.

- Represent the **Savior Jesus Christ**, the Church, and the Church Educational System.
- Preserve an inspiring environment, without distraction or disruption, where covenants are kept in a spirit of unity so the **Holy Ghost can teach truth**.
- Live a **chaste and virtuous life**.
- Abstain from alcoholic beverages, tobacco, tea, coffee, vaping, marijuana, and other substance abuse.
- **Participate** regularly in Church services
- **Respect** others
- Obey the **law**.
- **Encourage others** in their commitment to comply with the Honor Code.

The above are only some of the commitments of the BYU Honor Code.

### See Also

[BYU Honor Code](#)

## 2.4 AIChE Code of Ethics

### Some AIChE Code of Ethics Principles

Sections of the AIChE Code of Ethics are given below. I have emphasized some of the wording.

- Hold paramount the **safety, health and welfare** of the public and protect the environment in performance of their professional duties.
- **Accept responsibility** for their actions, seek and heed critical review of their work, and offer objective criticism of the work of others.
- Act in professional matters for each employer or client as faithful agents or trustees, **avoiding conflicts of interest** and never breaching confidentiality.
- Perform professional services only in areas of their competence.
- Build their professional reputations on the **merits** of their services.
- Continue their professional development throughout their careers, and provide opportunities for the professional development of those under their supervision.

The above are only some of the expectations when upholding the AIChE code of ethics.

**See Also**  
[AIChE Website](#)

## 2.5 Commonly Used Justifications for Unethical Behavior

### 2.5.1 2 Nephi 28:8-11

And there shall also be many which shall say ... fear God—he will **justify** in committing a little sin; yea, lie a little, take the advantage of one because of his words, dig a pit for thy neighbor; there is gno harm in this; and do all these things, for tomorrow we die; and if it so be that we are guilty, God will beat us with a few stripes, and at last we shall be saved in the kingdom of God.

Yea, and there shall be many which shall teach after this manner, false and vain and foolish doctrines, and shall be puffed up in their hearts, and shall seek deep to **hide** their counsels from the Lord; and their works shall be in the dark.

And the blood of the saints shall cry from the ground against them.

Yea, they have ... gone out of the away; they have become corrupted.

#### Justifications

- Lost revenue
- Lost position
- Lost reputation
- Revenge or sense of justice
- Minimization of harm
- Disagreement on what is ethical
- Misunderstanding of the law or of truth
- Ignorance
- Subordinate following orders or directives
- Rights over responsibility
  - Korihor (Alma 30:27)

## 2.6 Moral Relativism

### Moral Relativism

Moral Relativism is the belief that there are no absolute truths. It is the belief that what is right or wrong is relative to the individual or the situation. It is the belief that there is no objective truth. It is the belief that there is no God. Often, 'moral dilemmas' are used to justify moral relativism in the sense that there may not be an obvious right or wrong answer.

## 2.7 Book of Mormon Counsel

### Book of Mormon

"While society in general may believe that moral relativism is a sign of progress, the Book of Mormon contains examples and teachings that warn us of the dangers of replacing God's commandments with our own relative moral standards." [Daniel Belnap](#)

## 2.8 The Holy Ghost

"In coming days, it will not be possible to survive spiritually without the guiding, directing, comforting and constant influence of the Holy Ghost"

- President Russell M. Nelson

The Spirit speaketh the truth and lieth not. Wherefore, it speaketh of things as they really are, and of things as they really will be; wherefore, these things are manifested unto us plainly, for the salvation of our souls. (Jacob 4:13)

## 2.9 Scriptural Examples of Ethics and Integrity

### Biblical Examples

- Daniel and the lion's den
- Shadrach, Meshach, and Abednego
- Joseph and Potiphar's wife

### Nephite Examples

- Nephi and Laban
- Abinadi and King Noah
- Alma and Amulek
- Moroni and Pahoran

### See Also

For further information see Aaron Miller's book titled *The Business Ethics Field Guide: The Essential Companion to Leading Your Career and Your Company to Greatness*, 2016. There's also a BYU course PHIL 213 that is taught frequently. There are many other very helpful resources on ethics and the gospel.

### 3 Ethics Approaches

#### Learning Outcomes

- Gain experience in applying ethics approaches to moral dilemmas

#### Reading

- Foundations of Spiritual and Physical Safety: with Chemical Processes; Chapter 2, Sections 4-6.

#### 3.1 Additional Ethics Resources and Activities

Ethics decisions are made with respect to the principles to which you are committed. If someone is not committed to a specific principle set, it is easier to make unethical decisions with one or more justifications or rationalizations. It is best to commit to a set of principles prior to the time when you are faced with an ethical decision.

##### Ethics Approach Step 1 Define

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Carefully determine the root dilemma to be resolved. What is the real problem? It is common for ethical dilemmas to be convoluted combinations of many issues and it is tempting to hastily jump in and try to solve the problem. When we do, we often focus on the wrong problem and end up exacerbating the entire situation. Often dilemmas are nothing more than a lack of communication.

Proper definition requires some sleuth work as the relevant data are gathered, the history of the situation is traced, the layers of “who said what and when” are peeled away, and the real dilemma is brought to light. Patience is also required. It is easy to jump to conclusions based on one person’s opinion or on less than all the data. Contractual, legal, and ethical obligations and commitments must be included as part of the definition.

##### Ethics Approach Step 2 Consider and Analyze

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Consider possible actions and then forecast the outcome. This is something like a chess game since there are multiple possible outcomes for a given action depending upon the reactions of others. A good chess player looks multiple moves ahead to anticipate outcomes, and this same mentality is valuable in considering actions to resolve an ethical dilemma. Use the clear principles of the Gospel of Jesus Christ and consider the possible courses of action from each possible course of action. The above ethics principles can be helpful. What actions would be suggested by each ethics theory? The outcomes that need to be considered include the impact on others including the public, co-workers, and family. It is helpful to organize your analysis in a flowsheet that traces actions and outcomes.

**Ethics Approach Step 3**  
**Plan**

With the results of your analysis, it is time to select and plan your strategy. As you plan and prepare to put your plan into action, seek the guidance of the Spirit. Your plan will usually be a process involving several or many steps rather than a one-step action. Some steps may involve data gathering, and some will be dependent upon the intermediate responses and reactions of others. A good plan will produce inner peace—it will let you sleep at night.

**Ethics Approach Step 4**  
**Seek Confirmation**

After you have done your homework and decided on a plan, you should seek divine approbation. (See D&C Section 9.) If this does not come, then more homework is most likely needed (Items 1, 2, and 3 above.) When you have this approval, then it is time to put the plan into action.

**Ethics Approach Step 5**  
**Act**

Do it. Carry out your plan, being cautious and flexible as events unfold. Stick to your principles, but be humble and willing to admit your own failings and culpability

**Ethics Approach Step 6**  
**Reflect**

Each time we go through the process of dilemma resolution, we should learn about ourselves and others. Take the time to digest the lessons learned so that your wisdom can increase in preparation for the next time. It helps to take some notes or make entries in a journal

**3.2 Some Ethics Case Examples**

- Chernobyl Firefighters
- Military Agreement of (Mission, Reactor, Ship, then Crew)
- Limited Information results in Bad Decision
- The Challenger Disaster
- Personal Story: Home Purchase

- Sulfanilamide Delayed Release
- The 1971 Ford Pinto
- Censorship