



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Chemical Process Safety

## CBE 5755

**Credit Hours:**

3.00 - 3.00

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**Course Levels:**

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

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**Course Components:**

Lecture

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**Course Description:**

Familiarizes students with varied topics relating to chemical and industrial process safety. Covers PHA methods and tools.

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**Prerequisites and Co-requisites:**

Prereq: Jr, Sr, or Grad standing in CBE.

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**Course Goals / Objectives:**

- Be familiar with Federal Government regulations as applied to Process Safety
  - Be familiar with methods for information searching- library and internet on-line search of database and journal publications
  - Master how to present information and ideas in a written literature review report and in oral presentation(s) using appropriate visual aids (slides and computer presentation)
  - Become familiar with the range of process safety ethical issues which commingle personal safety and environment protection with enterprise success
  - Understand the nature and cause(s) of accidental explosions
  - Be familiar with Process Hazards Analysis (PHA) methods and tools
  - Be familiar with the process safety issues as found in the chemical plant environment
  - Be able to work in a team to apply/assemble individual special skills and knowledge to a group project
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**Course Topics:**

- Introduction, Background & History; Group Assignments
  - Government Regulation and Ethical Issues Surrounding Process Safety
  - Basic Process Safety Design, Continuous & Batch, Reactive Chemical Concerns, Adiabatic Temperature Rise, Case Studies
  - The Nature of Explosions, Cause and Consequences, Case Studies
  - Safety Hardware Employed (Safeguards), Rupture Disc, Relief Valve (DIERS), Security Issues and Accident Consequence Comparisons
  - Hazard Classifications, Emergency Vent Systems, Flares, Catch Tanks, Totally Contained Systems
  - Intrinsically Safer Designs, Case Studies
  - Process Hazard Analysis (PHA), 'What-If', HAZOP, Fault Tree
  - Safety Instrumented Systems (SIS), Case Studies
  - Risk Assessment – Qualitative and Quantitative
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**Designation:**

Elective