



Course Name: Case Studies in Civil Engineering

Course Number:	Credit: 3
Program: Undergraduate	Course Type: Optional
Prerequisite: 20221,20231,20413	Corequisite: -

Course Description (Objectives):

Based on the analysis and synthesis of a failure case, such training represents a useful complement to the traditional civil engineering program. The study of engineering failures can offer students valuable insights into associated technical, ethical, and professional issues. Lessons learned from failures have substantially affected civil engineering practice.

Course Content (outline):

- Chapter 1: What is Failure?
- Chapter 2: Structural Failures
- Chapter 3: Foundation Failures
- Chapter 4: Embankment, Dam and Slope Failures
- Chapter 5: Bridge Failures
- Chapter 6: Earthquake Failures
- Chapter 7: Environmental & Geoenvironmental Failures
- Chapter 8: Transportation Systems & Water Systems Failures

References:

Bosela, Paul A., et al., eds. "*Failure case studies in civil engineering: Structures, foundations, and the geoenvironment.*" American Society of Civil Engineers, 2012.

Puzrin AM, Alonso EE, Pinyol NM. *Geomechanics of failures*. Dordrecht, The Netherlands:: Springer; 2010.

Ratay, Robert T. *Forensic structural engineering handbook*. McGraw-Hill Education, 2010.

Campbell, Peter, ed. *Learning from construction failures: Applied forensic engineering*. John Wiley & Sons, 2001.

Slosson JE, Shuirman G. *Forensic engineering: environmental case histories for civil engineers and geologists*. Academic Press; 2014.