

## CE 115 Introduction to Civil Engineering Quiz 1

### 1. Develop a definition of an “engineer.”

Professionals that apply knowledge of mathematical and natural sciences gained by study, experience, and practice with sound judgment to develop ways to economically use the materials and forces of nature for human benefit.

- *paraphrased from the definition published by ABET*

### 2. List 5 things Civil Engineers design.

Structures: buildings, bridges, dams

Geotechnical: dams, foundations

Hydraulics: dams, rivers, pipelines

Hydrology: urban and road drainage, dams, rivers

Transportation: highways, intersections and traffic lights, railways, airports

Materials: buildings, roads, dams

Environmental: water/wastewater/industrial treatment plants, remediation systems, mitigation plans for buildings, roads, dams, etc.

### 3. What is design?

*Analysis*: separate into fundamental parts

*Synthesis*: combine separate elements to form a whole

**Design**: The systematic and creative application of scientific and mathematical principles to practical ends.

**Design Steps**: Need → Problem Definition → Planning → Collect Information → Conceptualize Alternatives → Evaluate Alternatives → Select Alternative → Communicate Design → Implement (note: not linear!)

### 4. What do you expect to learn in a) Civil Engineering at UI, and b) in CE 115?

a) math/science, problem solving and design skills, disciplinary knowledge, technology/software, engineering measurement devices, communication techniques, people skills, project management

b) Same as above

### 5. What tools and skills do Civil Engineers use in practice?

See answer to 4. In practice, the problems addressed become larger and more complex, requiring greater project management skills.