

What is Environmental Engineering?

Over the last 20 years, as we have begun to realise just how much impact human activity has on natural systems, civil engineering schools have begun including in their offerings, programs that focus on the interaction between natural and engineered environments.

Dams, for example, unless you are a beaver, are not part of the natural environment, nor are roads, bridges or desalination plants. They are imposed on the natural system to improve human welfare, societies and the economy, but can have huge, unexpected and negative impacts on the natural environment, and, ultimately, on us.

Cutting edge program

Realising this, Civil and Environmental Engineering at the University of Adelaide has developed as a cutting edge engineering discipline in terms of research into ways of integrating the built and the natural environments.

Our civil and environmental engineering graduates leave the University ready to work in multidisciplinary teams to deal with the world's 'big' problems. They are characteristically curious, active problem solvers who are, by nature and training, interested in finding ways to manage the sensitive issues that arise when man-made constructions rub up against natural systems.

What sorts of jobs?

When you graduate as a Civil and Environmental Engineer, therefore, there will be no single 'job' you will automatically slot into. Instead you will have many diverse and exciting choices. Civil and environmental engineers are already involved in (to name a few):

- climate change adaptation
 - controlling air and water pollution
 - water sensitive urban design
 - the prevention of land and water degradation in the built environment
 - bioremediation of areas degraded by human activity, including mining and landfill site restoration
 - recycling, solid and hazardous waste management
 - water resources management (hydrology), including pipelines and water distribution systems
 - managing coastal development and other land use planning
 - integrating transport into sustainable land use
- environmentally sensitive design and construction of buildings, roads, bridges and other infrastructure
 - assessing the feasibility of infrastructure and other development
 - designing ways to ameliorate the impact of human activity on natural systems
 - designing for sustainability
 - environmental law (by adding law to their engineering degree, then using their expertise to contribute to the development and enforcement of the law in this growing legal field)

Expertise that is needed and in demand

In essence, civil and environmental engineering graduates work widely in the area of civil engineering to contribute to the design, oversight and management of engineering projects in environmentally sensitive ways. The problems are challenging, but the solutions you develop could benefit our society, the natural environment and the state, nation or world's economy.

Demand is increasing for engineers in general. Graduates with expertise in analysing the environmental impact of a project and the creativity to suggest ways to successfully bring the natural and the engineered world together in harmony are increasingly sought after by local, state and federal governments, consulting firms, educational institutions, and contracting and building firms.

FINDING A BALANCE

- 1) **Rotting Vegetation:** releases greenhouse gases contributing to global warming; degrades water quality
- 2) **Dam:** flood protection; **but** blocks fish migration; disrupts water and sediment flow; aging structures pose safety hazards
- 3) **Reservoir:** helps with water supply security; **but** displaces communities; floods and fragments ecosystems; increases waterborne diseases; triggers earthquakes
- 4) **Downstream Impacts:** generates electricity; **but** disrupted water and sediment flow reduces biodiversity; communities suffer from poor water quality, lower crop production and decreased fish populations

