Waipapa
Taumata Rau
University
of Auckland



Structural Engineering

LEARN MORE

Structural Engineering involves designing infrastructure of all scales that are safe, functional, sustainable, and economical with consideration of all natural and man-made forces and demands.

Offered by our Department of Civil and Environmental Engineering, this specialisation may suit you if you enjoy physics, mathematics, and sustainable design and construction.

Te Herenga Auaha, Faculty of Engineering and Design

STRUCTURAL FORMS AND DESIGN

Structural engineers apply different forms and designs to deliver efficient and resilient structures. You'll learn to analyse and interpret built structures — from simple to complex — grounded in concepts such as post-and-beam, trusses, and frames. As you progress further in your degree, these core understandings will inform systems level projects, and applications in both low-rise and multistorey buildings.

CONSTRUCTION AND PROJECT MANAGEMENT

Construction projects centre around people and communities of all scales, from housing estates to workplaces. You'll develop an understanding of these project management principles and become fluent in skills such as engineering communications, which are complementary to the technical and theoretical foundations that make great structural engineers.

GEOTECHNICAL ENGINEERING

Geotechnical engineers are responsible for the foundations that many structural engineering projects depend on, so there is benefit in understanding the language of the profession. You'll gain an understanding of how soil and rock behave, and how this knowledge influences structural design. You'll learn how to test and characterise ground conditions, assess stability, and design foundations that support structures safely.

SOLID MECHANICS AND DYNAMICS

Solid mechanics forms the foundation of structural engineering, helping engineers ensure that buildings and infrastructure can safely withstand loads over time. Applying these principles with creative problem-solving skills enables designs for both everyday use and extreme events. Within solid mechanics and dynamics, you'll learn how structures respond to forces such as tension, compression, bending, and vibration.

BEHAVIOURS AND PROPERTIES OF MATERIALS

You'll explore the properties of materials such as stretching and yielding in individual courses that focus specifically on timber, steel, and concrete within the context of structural systems. Structural engineers use this knowledge to choose the right materials for specific design requirements. You'll also understand loading standards — within gravitational, wind and seismic conditions — through case studies that emulate real-world processes.