Public Works Foundations Program

Course Outline

Road Engineering Foundations

What is the Road Engineering Foundations course?

This course is one of eight **Public Works Foundations Program** courses curated by IPWEA Victoria to develop the skills of public works professionals in key responsibility areas. Each course comprises four 4-hour sessions presented over consecutive weeks.

Course Overview

Roads are a lifeline for our communities and public works professionals play a vital role in their design, construction and maintenance. This course outlines the principles, players and practices supporting the road network.

Modules

Session 1: **Introduction to Road Management**
Session 2: **Geometric Road Design**
Session 3: **Pavement Design and Construction**
Session 4: **Road Network Maintenance**

Learning Objectives

Introduction to Road Management: Delegates will gain an understanding of the overall concepts and principles of the road industry in Australia, including the language used, the people involved and the steps needed to design, build, manage & maintain a road.

- Importance of roads in the Australian economy.
- Language of the roads sector (including components of a typical cross-section).
- People and Associations of the roads sector (Austroads, AfPA, AustStab, ASCP, NatSpec, AusSpec, Tyre Stewardship Aust, NATA etc.)
- Types of pavements
  - Flexible (sprayed seal)
  - Bound (Stabilisation, Asphalt)
  - Rigid (Concrete)
- How does council get a road built?
  - Planning approvals
  - Environmental approvals (EES, EIS etc)
  - Budget estimates & approval
  - Survey
  - Design
  - Project delivery models
- Some construction considerations

- Legislative requirements
  - Names of the various Acts of Parliament
  - Where does State responsibility end and Council responsibility start?
- Asset management
  - Aim of asset management
  - Use of pavement maintenance and rehabilitation techniques
- Using recycled materials

Geometric Road Design: Delegates will gain a broad understanding of some practical elements relating to geometric road design.

- Introduction & Objectives
- Fundamentals Considerations: location, road classification, traffic volumes, environment considerations
- Speed Parameters: terminology, speed factors, local & rural roads
- Cross-section: crossfall, crowns, lane widths, shoulders, roadside drainage
- Sight Distance
- Coordination of Horizontal & Vertical Alignment
- Horizontal Alignment and Vertical Alignment
- Optimising Design
- Austroads Guide/s**:** Guide to Road Design - Part 3: Geometric Design

Pavement Design and Construction: After this session, delegates will have a broad understanding of the various factors affecting pavement design and the methods used in Australia to undertake a pavement design.

- Introduction to APGT02-17 & pavement design systems
- Road environment
- Subgrade evaluation
- Design traffic
- Pavement materials & tests
- Structural thickness of unbound flexible pavements
- Mechanistic design of bound pavements
- Various State Supplements to Austroads APGT02-17
- Pavement construction

Road Network Maintenance: After this session, delegates will have an understanding of the investigation of sealed road pavements and the selection and design of pavement strategies and treatments for roads carrying normal loadings with a focus on flexible pavements.

- Refresher on road pavements
- Modes & mechanisms of pavement distress
- Pavement evaluation techniques
- Preventative maintenance
- Periodic maintenance

Delivery

The course is presented online to maximise accessibility for regional & interstate participants.

Public Works Foundations Program

Facilitators

Madeleine McManus

Madeleine is CEO of CPEE, Global Director of Robogals, Director Victorian Business Licensing Authority (BLA) – where she has oversight of the Victorian Professional Engineering Registration Scheme – and Co-Chair National Future Cities Taskforce. She is a Fellow of Engineers Australia and the Chartered Institute of Logistics and Transport, a Chartered Professional Engineer and a member of IPWEA Victoria. Madeleine was awarded the Medal of the Order of Australia in 2017 for her services to Engineering and Education.

Peter Gibbings

Dr Peter Gibbings is an Honorary Associate Professor and recently retired after 25 years in academia where he was the Associate Dean (Learning, Teaching and Student Success) in the Faculty of Health, Engineering and Sciences at the University of Southern Queensland. His professional background is in land surveying having spent 20 years in private practice, including many years designing engineering infrastructure including roads.

Dr Kym Neaylon

Kym's engineering career began with a practical focus on open cut mining, local government engineering, state government road transport, road construction and contract superintending before he specialised in bituminous surfacing treatments and pavement maintenance. His role for the Centre for Pavement Engineering Education is to facilitate the ongoing development and implementation of CPEE's professional development offerings for transport professionals within the road sector.

Who should enrol?

This course has been developed for engineers, technical officers, coordinators and supervisors engaged with the design and construction of community infrastructure.

CPD and Badge

The course provides 16-hours of structured professional development. A digital badge is provided on completion for social media application and Public Works Foundations Program graduates will be awarded a **Certificate of Public Works Engineering**.

Course Partner

Centre for Pavement Engineering Education