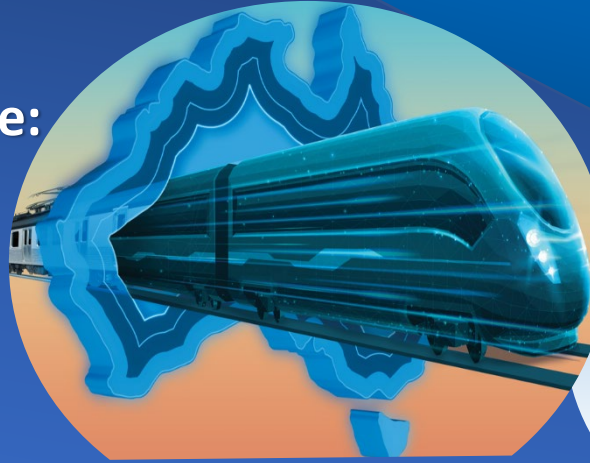


Professional Short Course: Railway Rolling Stock

*The Fundamentals of Rolling Stock
Design, Maintenance and Operations*



www.irt.monash.edu

The Railway Rolling Stock Course is a structured professional course designed as face to face, interactive and flexible learning supported by activities and tasks to ensure participants learn practical skills related to railway systems. The course covers key topics in Freight and Passenger Rollingstock including Common Terminology and Components, Wheel-Rail Interface, Safety, Rail Standards, Vehicle Dynamics, System Design, Maintenance and Operations. An interactive quiz will be used to assess the learning outcomes and a digital certificate will be awarded to the participants.

Learning Outcomes

Understanding the key issues and concepts relating to rollingstock design, maintenance and operations.

Knowledge of rollingstock technologies including structural, mechanical, electrical and communications and how each interacts within the rail system.

Exposure to problem solving methodologies that include real world examples of how rollingstock aspects and interfaces function.

The information presented will be reinforced by site visits.

Site Visit

Site 1: Rollingstock Manufacturing facility
Site 2: Rollingstock Maintenance facility

Who Should Attend?

Rail professionals with some rolling stock experience seeking to broaden their knowledge of rollingstock design, maintenance and operation concepts.

Those in other areas of the railway industry wanting to understand the interaction between rollingstock and the rest of the rail system.

People wishing to enter the rail industry.

Course Duration

The Course is held over 5 days with one day of site visits. All days include tea, lunch and refreshments.

Course Date

Date: **01 July to 05 July 2024**

Time: 9am to 5pm

Type: In-Person

Venue

Monash University Clayton Campus,
Victoria 3800, Australia

Registration

Registration Close: 21 June

Fee: **AUD \$3,500** (excl. GST)

This is an exclusive event with limited seats. Early registration is essential to avoid disappointment.

For registrations and dietary requirements contact

Connie Varamo

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Course Endorsed By



How have participants benefitted from the course?

This course has helped many rail industry professionals to understand the key details of freight and passenger rollingstock systems used in Australia. The course is structured in a way that allows an individual to understand the key technical need of each rolling stock subsystem at a component level and how it scales up to train level. Through understanding the design, maintenance and operations after the course, each individual was able to confidently utilise the knowledge gained and shape their career in rail domain.

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Course Program

Day 1: Overview of Rollingstock Types, Components and Basic Design Concepts

- Introduction to Australian railways and commonly used rollingstock
- Description of key characteristics of different rollingstock types
- Design characteristics for passenger and freight vehicles, locomotives and railcars
- Passenger Car Crash Energy Management System
- Electrical System and application of electrical theory for rollingstock specific applications
- Case Study

Day 2: Braking, Bogies, Wheel/Rail Interface

- Understand bogie design and interaction between bogies, wheels and track
- Identify key elements of traction and traction control system
- Understand engines, transmissions, interfaces and environmental requirements
- Evaluate locomotive selection based on network and train requirements
- Calculate traction requirements for running a train, and be able to create a viable rail system
- Detailed understanding of Wheel Rail Interface

Day 3: Design, Safety and Maintenance of Locomotives, Passenger and Freight Vehicles

- Identify different brake systems, and calculate stopping distances
- Understanding of rail safety, ALARP & SFAIRP, ATP and RAMS
- Detailed analyses on Derailment
- Rail innovations and Monash Rail laboratory visit
- Case Study

Day 4: Asset Management and Site Tours

- Railway Standards
- Asset Management and Reliability Centred Maintenance principles
- Observe maintenance methods & how maintenance is conducted in maintenance depots
- Observe the manufacture of new rollingstock

Day 5: Operating Rollingstock on the Railway

- Explain how railway operations work
- Detail how rollingstock & equipment interface with track, railway signalling and electrical supply
- Railway Track Geometry Basics and Train Dynamics
- Key technical requirements to decide suitable rollingstock for a train
- Discussion of the future trends of rail and rollingstock
- Testing of rail and vehicle materials at the Monash IRT facility

Featured Monash IRT Presenters

Mr Shreevinder Saxena B

Team Leader - Rollingstock

Mr John Watsford

Senior Research Consultant

Mr Russell Bowey

Senior Engineer

Dr Elias Kassa

Team Leader- Track Infrastructure

Mr Marc Listmangof

Principal Engineer - Rollingstock

Mr Scott Younes

Principal Engineer - Track Dynamics

Mr Daniel Grimm

Senior Engineer - Electrical

Dr Asith Abeysinghe

Research Engineer - Rollingstock