

# ADVANCE YOUR CAREER IN RAIL

## PROGRAM GUIDE

▶ Railway Signalling and Telecommunications

▶ Rail Operations Management

▶ Railway Infrastructure

▶ Rolling Stock Engineering



**Looking to start or advance your career in the railway industry? Give it a boost undertaking a flexible study through dedicated rail postgraduate educational programs or stand alone continuing professional development units chosen to fit best to your needs.**

### **Who would benefit from the study?**

- The programs are developed for early and mid-career engineers and professionals working or joining the railway industry.
- The purpose of the programs is to equip you with skills and a knowledge required to better understand complexities of modern railways, achieve superior performance in the workplace and accelerate their careers in the railway industry.

### **What differentiate these programs from many others?**

- Be involved in implementation of real-world projects and case studies working in teams and learning not only from tutors and mentors but also from your peers working in the railway industry in Australia and all around the world.
- Learn from case studies developed by experienced industry professionals and projects linked to particular needs and challenges of your job and your company.
- Benefit from support to your study provided by work placed mentors and program tutors.
- Enjoy the flexibility of online studies from your office and/or home.
- Establish a dedicated network of professionals for ongoing life long learning.
- Have a choice to be enrolled in a program or commence your study from undertaking individual units and get credits toward a degree.

# RAILWAY SIGNALLING and TELECOMMUNICATIONS

## PROGRAM STRUCTURE

### GRADUATE CERTIFICATE IN RAILWAY SIGNALLING AND TELECOMMUNICATIONS

- CPD1 Signalling and Safe Rail Operations
- CPD2 Signalling Principles
- CPD3 Signalling Layout or CPD7 Rail Telecommunications

OR

### GRADUATE DIPLOMA OF RAILWAY SIGNALLING AND TELECOMMUNICATIONS

- CPD4 Signalling Applications and Engineering
- CPD5 Signalling System, Management and Engineering
- CPD6 Signalling Research/Investigation

### MASTER OF RAILWAY SIGNALLING AND TELECOMMUNICATIONS

- CPD8 Signalling Project Definition and Planning
- CPD9 Signalling Project Implementation 1
- CPD10 Signalling Project Implementation 2

You can enrol in a single unit of study, subject to approval from the course coordinator. There is no award for a single unit of study however credit may be counted towards completion of the program.



## PROGRAM DESCRIPTION

Collectively developed by the rail industry, IRSE and the CQUniversity Australia, this program captures the knowledge and expertise of long-term railway signalling engineers for purpose of fast-tracking the professional development for people working in the rail industry.

The programs offer a good fundamental understanding of signalling and the telecommunication environment and covers the topics of safety and best practice signalling.

The Graduate Diploma program is recognised by the Institution of Railway Signalling Engineers (IRSE) as an acceptable substitute to the IRSE exam when applying for corporate membership. It is delivered in the flexible learning mode via the internet. As such, it is particularly suitable for students studying part-time and working full-time.

## CURRENT FEES, SESSION DETAILS AND ENROLMENTS

Contact 13CQUni 13 27 86 or <http://seh-postgrad.cqu.edu.au/> for latest enrolment deadlines, fees and session dates.  
Enrolment start: November – February each year.



**CASSANDRA GASH**  
PROJECT ENGINEER  
UNITED GROUP LIMITED  
GD Graduate 2009

I have found the course material useful in my roles as design, test and project engineer as I have a greater appreciation for all aspects of railway signalling and the different principles/practices used in other states in Australia.



### CPD1 SIGNALLING AND SAFE RAILWAY OPERATION

Provides broad, systematic and multidisciplinary knowledge and skills for railway signal engineers and technologists on the role of signalling in safe railway operation and on signalling principles and equipment. This will provide the foundation on which the remaining courses within the diploma will build. Attention will be focused on the current business environment of the rail industry and the demand for quality and safety management practices in the delivery of signalling systems. The content of this course shares much commonality with the IRSE examination module *Safety of Railway Signalling and Communications*.

### CPD2 SIGNALLING PRINCIPLES

Provides a fundamental understanding of signalling and signalling systems from first principles, and ensures that you can apply this knowledge in a safe, fit for purpose and cost effective manner. Students must be able to show in their work that the issues that arise when multiple units of equipment of diverse types are combined have been taken into account. The content of this course is aligned with the IRSE examination module *Signalling Principles*.

### CPD3 SIGNALLING THE LAYOUT

Provides you with skills to design a signal layout for a variety of different traffic patterns and equipment systems in a professional and cost effective manner, taking into account the constraints of the layout and safety requirements. You also need to demonstrate a professional understanding of the integration of the equipment and subsystems used to form the complete signalling system. The content of this course is aligned with the IRSE examination module *Signalling the Layout*.

### CPD4 SIGNALLING APPLICATIONS ENGINEERING

Provides you with professional skills when dealing with equipment at modules *Signalling and Control Equipment*, *Applications Engineering* and *Communications Engineering Applications Engineering*.

### CPD5 SIGNALLING SYSTEMS, MANAGEMENT AND ENGINEERING

Assists you to further develop a systems engineering perspective of railway signalling, control and communications systems and to develop professional skills for the integration of many subsystems and diverse equipment in a professional manner. The content of this course shares substantial commonality with the IRSE examination module *Systems, Management and Engineering*.

### CPD6 SIGNALLING RESEARCH/ INVESTIGATION PROJECT

Continues with your development of a systems engineering perspective of the railway signalling, control and communications system and to enhance your capability to contribute to the body of professional know-how in railway signalling. On successful completion of this course, you are expected to have produced investigative/research works that are suitable for presentation to IRSE and other professional body technical meetings.

### CPD7 RAILWAY TELECOMMUNICATIONS

Provides you with broad, systematic knowledge and skills for the application of telecommunications systems in a railway environment. You will develop a professional understanding of the factors to be considered in applying telecommunications systems and equipment in a railway environment.

### CPD8 RAILWAY SIGNALLING PROJECT DEFINITION AND PLANNING

This course requires you to perform background research in the area of their project; establish project goals, as well as a plan for the completion of their research/investigation work. On successful completion of the course, you should have demonstrated your ability to identify a suitable problem relevant to their area of work, determined an appropriate research methodology, conducted adequate literature survey, as well as developed and communicated a plan for the completion of the proposed project.

### CPD9 RAILWAY SIGNALLING PROJECT IMPLEMENTATION 1

This course follows on from CPD7 and requires you to implement investigation and research in the area of their project; in accordance with the establish project goals and project plan, and to communicate your findings to a professional audience. On successful completion of this course, you should have demonstrated their ability to complete planned tasks within the duration of the term, applied suitable research methodology towards the problem being investigated, and increasing mastery of your area of study.

### CPD10 RAILWAY SIGNALLING PROJECT IMPLEMENTATION 2

This is the final course of the master program. On successful completion of this course, you should have demonstrated your ability to conduct industrial research and achieved the goals of your investigative study. You should also have demonstrated mastery of your area of study and able to defend your thesis to a professional panel.

## ENTRY REQUIREMENTS

A Bachelor of Engineering degree from a recognised tertiary institution, or equivalent.

Applicants holding other tertiary qualifications with at least five years' relevant industry experience and who are nominated by their employer may be considered.

### LES BREARLEY

#### CHAIR OF THE IRSE EDUCATIONAL COMMITTEE

'It is hard to imagine how the industry would have completed the extensive work over the past few years without the **Railway Signalling and Telecommunications program**. It has been a key element assisting engineers to become future leaders of the industry. The extensive use of IRSE members in the development and maintenance of the course content makes sure that the Program includes the latest technologies and practices relevant to the industry. It is satisfying and rewarding to see the transition from the students entering the Program to the students presenting their final projects two years later. The improved knowledge and abilities of graduates has prepared them to make a valuable contribution to the industry.'

For enquiries or further information  
please call +61 7 4923 2277  
or email [v.kreiser@cqu.edu.au](mailto:v.kreiser@cqu.edu.au).



# RAIL OPERATIONS MANAGEMENT

## PROGRAM STRUCTURE

### GRADUATE CERTIFICATE IN RAIL OPERATIONS MANAGEMENT

- OPS1 Introduction to rail operations management
- OPS2 Rail infrastructures
- OPS3 Network and localised train control

OR

### GRADUATE DIPLOMA IN RAIL OPERATIONS MANAGEMENT

- OPS4 Train planning
- OPS5 Passenger and freight operations
- OPS6 Rail operations risk management and administration

### MASTER OF RAIL OPERATIONS MANAGEMENT

- OPS7 Rail operations management project definition and planning
- OPS8 Rail operations management project implementation 1
- OPS9 Rail operations management project implementation 2

You can enrol in a single unit of study, subject to approval from the course coordinator. There is no award for a single unit of study however credit may be counted towards completion of the program.



## PROGRAM DESCRIPTION

Developed as a cooperative project between the rail industry and CQUniversity, this course captures the knowledge and expertise of long-term railway managers working in the Australian rail industry. It is provided as a professional development program for people working in the rail industry. Graduates will gain skills and knowledge of the complex and interactive railway operating environment including legal, technical, operational and community requirements. The degree offers understanding of safety and risk management issues in railways and introduces the best practices in operation. The course is delivered via flexible online learning suitable for mature-age students studying part-time and working full-time.

## CURRENT FEES, SESSION DETAILS AND ENROLMENTS

Contact 13CQUni 13 27 86 or <http://seh-postgrad.cqu.edu.au/> for latest enrolment deadlines, fees and session dates.  
Enrolment start: November – February each year

### BROOK MARKEWICZ CONSULTANT, SYSTEMWIDE

I chose to complete this degree because it covers a wide-range of contemporary rail industry issues and enhances my rail understanding. I can directly apply the learned knowledge in my job as a Railway Consultant at Systemwide. As well as receiving a university qualification to further my career, this course has given me the opportunity to interact with other students from rail operators around Australia via online forums and gain a greater understanding of the national railway industry.



### OPS1 INTRODUCTION TO RAIL OPERATIONS MANAGEMENT

This course aims to provide broad, systematic, and multidisciplinary awareness for people engaged in railway operations activities. This will provide the foundation on which the remaining courses will build. Attention will be focused on the principles of rail operation as well as the current business, legislative, industrial, environmental, and social environment of the rail industry and the demand for quality and safety management practices in the running of train services. In addition, you will be introduced to basic analysis and analytical tools in rail operation such as demand and performance analysis and public, private, and PPP financing. Further more, the importance of human factors and people skills in rail operations will be examined, particularly in the context of industrial process and change management.

### OPS2 RAILWAY INFRASTRUCTURES

This course aims to provide an overview of railway technologies and their impact on rail operations activities. This and the previous course will provide a solid foundation on which rail operations skills can be developed. Coverage will include both above rail and below rail infrastructures. The principle of asset management within rail operations context will be explained, as well as and the general process of track possession planning and management.

### OPS3 NETWORK AND LOCALISED TRAIN CONTROL

This course aims to assist you to develop critical skills in network and localised train control. You will be introduced to the fundamental principles of train movement control systems; the legislative requirements of emergency planning, preparedness, recovery, and response. In addition, you will learn techniques on disruption management and rail operations in degraded mode; as well as incident management and investigation and reporting process. Other topics to be covered include crisis management and the impact of train control system in rail operation.

### OPS4 TRAIN PLANNING

This is the first of the level two courses and aims to assist you to develop professional competencies required in train planning. Topics to be covered include goals and current art in train planning; performance measurement, and factors influencing optimal train planning including human resource issues, market and industry sector needs. In addition, the course covers opportunity management and planning for special events as well as leadership in train planning.

### OPS5 PASSENGER AND FREIGHT OPERATIONS

This is the second of the level two courses and aims to assist students to develop professional competencies required in passenger or freight operations. Topics to be covered include goals and current art in freight and/or passenger operations, and factors influencing 'best performance' in this sphere. In addition, issues relating to industry based service delivery and the role of rail operation managers in managing external relationships will be studied.

### OPS6 RAIL OPERATIONS RISK MANAGEMENT AND ADMINISTRATION

This course guides you through the ultimate goal of rail operations – one of business continuity; and assists you to develop professional competencies in the business of train operations and risk management. Topics to be covered include rail business continuity – which centred on rail business analysis and management; rail business marketing, and managing changes within rail operations. You will also be exposed to the process of rail safety accreditation, legislative framework, and factors critical to obtaining, and maintaining, this accreditation.

### OPS7 RAIL OPERATIONS MANAGEMENT PROJECT DEFINITION AND PLANNING

### OPS8 RAIL OPERATIONS MANAGEMENT PROJECT IMPLEMENTATION 1

### OPS9 RAIL OPERATION MANAGEMENT PROJECT IMPLEMENTATION 2

#### ENTRY REQUIREMENTS

A bachelor degree from a recognised tertiary institution, or equivalent. Applicants holding other tertiary qualifications with at least five years' relevant industry experience and who are nominated by their employer may also be considered. Applicants must be working in the railway industry and have the support of their employer to study the degree.

#### MARTIN BAGGOTT

#### BUSINESS LEADER RAIL GHD, AUTHOR OF 'NEW RAILWAY ENVIRONMENT' TEXTBOOK

'The **Rail Operations Management program** is designed to prepare operational managers and supervisors for senior operational roles where leadership and directions are required for major projects and management positions. Learning materials include the specification of performances required from staff and engineering support across different areas such as signalling, communication, infrastructure and rolling stock. Organisational and advanced management processes learned include Business Continuity, Procurement and Asset Management. It is a well rounded course for aspiring operational managers but also is a good training program for engineers who need to provide services to their own organisations and clients'

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# RAILWAY INFRASTRUCTURE

## PROGRAM STRUCTURE

### MASTER OF ENGINEERING (RAILWAY INFRASTRUCTURE)

UDN500	Ballast sleepers and fasteners
UDN501	Rail and related track structures
UDN502	Track stability design and formation
UDN503	Geometry and track-train interaction
UDN504	Track construction and civil structures
UDN505	Assets environment and safety
BEZ910	Integrated project
Elective	

### GRADUATE CERTIFICATE (RAILWAY INFRASTRUCTURE)

Completion of 4 units (UDN500, UDN501, UDN502, UDN503, UDN504 or UDN505)



### PROGRAM DESCRIPTION

Developed as a cooperative project between the rail industry and the Queensland University of Technology (QUT), this course captures the knowledge and expertise of rail engineers internationally. It is provided as a professional development program for people working in the rail industry. Graduates will gain skills and knowledge in a range of areas related to the design, construction, maintenance and management of railway infrastructure. The degree offers both theoretical understanding and practical applications of advanced professional practice. The course is delivered via flexible online learning suitable for mature age students studying part-time and working full-time.

### CURRENT FEES, SESSION DETAILS AND ENROLMENTS

Contact [bee.enquiries@qut.edu.au](mailto:bee.enquiries@qut.edu.au) or visit [www.qut.edu.au/engineering](http://www.qut.edu.au/engineering) for latest enrolment deadlines, fees and session dates.

Enrolment start: two intakes per year – February and July commencement.

OR

You can enrol in a single unit of study, subject to approval from the course coordinator. There is no award for a single unit of study, however, credit may be counted towards completion of the program.

### MICHAEL LEGAULT RAILWAY DESIGN ENGINEER DESSAU, MONTREAL, CANADA

The masters degree in railway infrastructure facilitates the development of my theoretical knowledge and technical skills as a railway engineer, in a structured learning environment, with access to resources, knowledgeable staff and peers, resulting in a more efficient use of my time.

As an international student, I am awarded the opportunity to study the standards and specifications adopted by various countries and to appreciate their distinctions. These differences can be related to local climatic conditions, existing technology, financial considerations, theoretical approaches or simply from a more developed understanding of railway infrastructure and maintenance requirements.





### UDN500 BALLAST, SLEEPERS AND FASTENERS

This unit will help you to competently interpret and prepare specifications for ballast, analyse below-rail track superstructure problems as well as determine appropriate rectification procedures, and determine appropriate sleeper maintenance strategies based on life cycle costing developed from available economic models.

### UDN501 RAIL AND RELATED TRACK STRUCTURES

This unit will help you to develop your knowledge of the characteristics of rails and principles of the selection and maintenance of rails and apply it towards the safe operation of trains; you will also be able to describe the operation of rail related track structures and determine their maintenance requirements.

### UDN502 TRACK STABILITY, DESIGN AND FORMATION

This unit will help you to explain and apply geotechnology theory as it refers to the rail permanent way and track substructures, undertake an economic assessment of the selection of track structures, evaluate and mitigate the likelihood of track instability, and undertake a first order track design by applying track design processes and theories incorporating the effect of individual parameters.

### UDN503 TRACK GEOMETRY AND TRAIN INTERACTION

This unit will help you to assess the significance of geometry imperfections in track and deduce appropriate remedial measures, describe the physical characteristics and key elements of track and vehicles insofar as they affect track-train interaction, explain the theoretical bases for development of wheel-rail forces and the influence of vehicle and track parameters on those forces, and assess the impact of design parameters for and deterioration processes within wheels and track on the operation of trains.

### UDN504 TRACK CONSTRUCTION, CIVIL STRUCTURES

This unit will help you to contribute to the management of track construction projects, recommending appropriate construction methodologies and monitoring tools, describe and assess the maintenance needs of civil structures within the rail corridor, and investigate, evaluate and mitigate the risks of geotechnical hazards in the corridor.

### UDN505 ASSETS, ENVIRONMENT AND SAFETY

This unit will help you to apply appropriate tools, concepts and life cycle evaluations to the management of railway infrastructure assets at an introductory level, assess and monitor the parameters associated with safe operation of the rail corridor and its interfaces with the rail track, and evaluate environmental assessment plans and their implementations with respect to operations and construction within the rail corridor.

### BEZ910 INTEGRATED PROJECT

The aim of this unit is to provide you with research skills that acknowledge prior learning and that can develop further through an authentic learning project of relevance to your career aspirations and to your employer.

#### ENTRY REQUIREMENTS

A Bachelor of Engineering degree from a recognised tertiary institution, or equivalent. Applicants holding other tertiary qualifications with relevant industry experience and who are nominated by their employer may also be considered. Applicants must be working in the railway industry and have the support of their employer to study the degree.

#### JOHN POWELL, REGIONAL ENGINEERING MANAGER, QUEENSLAND RAIL NETWORK CHAIRMAN OF THE INDUSTRY ADVISORY COMMITTEE FOR THE INFRASTRUCTURE PROGRAM

It is a fast world we live in. Hence, it is important for the rail industry that the necessary knowledge can be delivered in a structured and timely way. The **Railway Infrastructure masters program** has been developed by the industry for the industry. As such it is strongly recommended to those in the industry wishing to accelerate learning, which under normal operational time scales may take a career and many different positions to achieve. Indeed, it would be very difficult to achieve a similar outcome given the international participation and knowledge transfer that occurs as a result of the online delivery mode. 'It is satisfying and rewarding to see the transition from the students entering the program to the students presenting their final projects two years later. The improved knowledge and abilities of graduates has prepared them to make a valuable contribution to the industry.'

#### IAN TELFORD, TRACK DESIGN ENGINEER, QUEENSLAND RAIL, BRISBANE, AUSTRALIA

As a track engineer for QR, I am applying the knowledge gained from my masters in railway infrastructure engineering directly to my working environment. This degree is providing me with the resources to become a more capable track engineer, and a network of railway-specific colleagues all over the world to discuss rail-related issues, problems and solutions. Returning to study was initially a challenge, however I have adapted to the change and still have time for family, friends and sport.

For enquiries or further information  
please call +61 7 3138 9966  
or email [bee.enquiries@qut.edu.au](mailto:bee.enquiries@qut.edu.au)

or

please call +61 7 4923 2277  
or email [v.kreiser@cqu.edu.au](mailto:v.kreiser@cqu.edu.au)





# ROLLING STOCK ENGINEERING

## PROGRAM STRUCTURE

### MASTER OF ROLLING STOCK ENGINEERING

- ENGG924 Railway and rolling stock environment
- ENGG925 Rail motive power
- ENGG926 Rail vehicle design
- ENGG927 Rolling stock safety and braking systems
- ENGG928 Rolling stock dynamics and bogies
- ENGG929 Rolling stock construction maintenance and design
- ENGG940 Dissertation (in rolling stock engineering)

OR

You can enrol in a single unit of study, subject to approval from the course coordinator. There is no award for a single unit of study however credit may be counted towards completion of the program.

### THE GRADUATE CERTIFICATE OF ROLLING STOCK ENGINEERING

Comprises 4 of the following 5 units (ENGG924, ENGG925, ENGG926, ENGG927 or ENGG928)



### PROGRAM DESCRIPTION

Developed as a cooperative project between the rail industry and the University of Wollongong, this course captures the knowledge and expertise of leading rolling stock engineers. It is provided as a professional development program for people entering or working in the rail industry.

The course is delivered via flexible online learning suitable for mature-age students studying part-time. A one-day workshop for each subject/unit provides a firm foundation and interaction with peers and experts.

### CURRENT FEES, SESSION DETAILS AND ENROLMENTS

[www.uow.edu.au/eng/flexibledelivery/rollingstockengineering/UOW064413.html](http://www.uow.edu.au/eng/flexibledelivery/rollingstockengineering/UOW064413.html)

Enrolment: two intakes per year – February and July commencement.

How to apply: Visit [www.uow.edu.au/future/postgrad/apply/coursework](http://www.uow.edu.au/future/postgrad/apply/coursework) for detailed information on how to apply.

### ADI MIFTAR RELIABILITY AND MAINTENANCE ENGINEER, V/LINE PASSENGER PTY LTD

I chose the masters of rolling stock engineering post graduate course to gain more knowledge on rolling stock design methods, system specifications for rolling stock components and system/component operation. I also chose this course to pursue my career within rolling stock engineering. I found the study forums useful and contained a lot of information.

UNIVERSITY OF  
WOLLONGONG



#### **ENGG924 RAILWAY AND ROLLING STOCK ENVIRONMENT**

Rail within a transport industry context, historical perspective on railways development, business structures for rail organisations, rolling stock interfaces, safety considerations, design drivers, system design specification, rolling stock system (operations, servicing, maintenance), component interfaces, train types and applications, rolling stock operation and asset management, railway cost perspectives, technological development trends in rolling stock.

#### **ENGG925 RAIL MOTIVE POWER**

Diesel electric locomotives, electric locomotives, diesel hydraulic locomotives, integrated EMU, locomotive structure, locomotive configurations, locomotive performance, locomotive control systems, locomotive bogies, locomotive engines, locomotive traction generation, locomotive auxiliary systems, locomotive maintenance considerations. Elements of a traction system: interfaces with other systems, interactions between elements, limitations on tractive effort, traction control, basic traction technologies and their design, operation and maintenance characteristics: electric, diesel hydraulic, diesel, railcars, EMU, safety and environmental issues, performance criteria and measurement.

#### **ENGG926 RAIL VEHICLE DESIGN**

Types and application of passenger rolling stock, passenger rolling stock configurations, passenger rolling stock structure, passenger rolling stock performance, passenger rolling stock traction and control systems, passenger rolling stock human interfaces, passenger rolling stock bogies, passenger rolling stock brakes, passenger rolling stock auxiliary systems, passenger rolling stock maintenance considerations, freight wagon types and applications, freight wagon standards, freight wagon life cycle, freight wagon structures,

freight wagon configurations, freight wagon coupling systems, freight wagon brakes, freight wagon bogies, freight wagon performance, freight wagon auxiliary fittings, freight wagon loading and unloading systems, freight wagon dangerous goods.

#### **ENGG927 ROLLING STOCK SAFETY AND BRAKING SYSTEMS**

Rail safety systems and the interface with train braking systems, historical development of train brakes, train brake fail-safe concepts, train brake types, components and applications, compressed air systems, train brake control and controllers, train brake system performance and design – parking, normal and emergency operation, train brake examination and testing, deadman and vigilance control, investigation of incidents where brake system failure may have been a factor.

#### **ENGG928 ROLLING STOCK DYNAMICS AND BOGIES**

Introduces you to the application of engineering principles and techniques to rolling stock design and guide them in the application of codes of practice and standards governing rolling stock design, operation and asset management. It builds on the broad body of knowledge obtained from the Graduate Certificate in Rolling Stock Engineering. Wheel-rail interface and resulting dynamic forces applied to bogies, wind loadings on vehicles, forces arising from abnormal conditions, modes of vibration, control of longitudinal dynamics, control of lateral dynamics, control of vertical dynamics, suspension design, stability of wagons, passenger cars, locomotives and trains.

#### **ENGG929 ROLLING STOCK CONSTRUCTION MAINTENANCE AND DESIGN**

Capstone subject bringing together the various factors influencing rolling stock design into a coherent process of engineering application. Integration of factors governing rolling stock design including safety, dynamic performance, structural integrity, environmental and social impact, crashworthiness. Rolling stock types and configurations, rolling stock construction methods and techniques, couplers and draft gear, air and water piping, electrical cabling, internal fit out, auxiliary systems, passenger car door mechanisms, wagon loading and unloading design. Maintenance strategies, rolling stock maintenance techniques, rolling stock maintenance facilities, life cycle considerations in design.

#### **ENGG940 DISSERTATION (IN ROLLING STOCK ENGINEERING)**

The dissertation is a project allowing you to pursue a particular area in depth and solve a specific practical engineering problem. You can complete a dissertation in your area of interest. The dissertation develops skills in information retrieval, project planning and organisation, analysis, problem solving and effective communication of results. Involves the undertaking of an individual supervised project focused on solving a problem relevant to the discipline area of the degree. You would normally be required to do a literature survey, analysis, and develop suitable solutions to the selected problem. This will allow you to apply the knowledge and skills acquired in the structured coursework and thus gain valuable confidence in their ability to practice engineering at a high professional standard.

#### **ENTRY REQUIREMENTS**

A Bachelor of Engineering degree from a recognised tertiary institution, or equivalent. Applicants holding other tertiary qualifications with at least five years' relevant industry experience and who are nominated by their employer may also be considered.

#### **IAN ROSSOW**

#### **CHAIR OF THE INDUSTRY ADVISORY COMMITTEE FOR THE ROLLING STOCK PROGRAM**

The **Rolling Stock Engineering program** provides the ideal transition from general engineering theory to practical aspects of engineering in a rolling stock environment. The Program uses real-world data and examples from international case studies to provide hands on learning. Ongoing contact and support from mentors and others in the industry help and encourage students and provide valuable learning insights. The student, when qualified, can expect to take their part in the front line of expanding and exciting international careers in rolling stock.

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please call +61 2 4221 4566  
or email [rweine@uow.edu.au](mailto:rweine@uow.edu.au)**

**or**

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or email [v.kreiser@cqu.edu.au](mailto:v.kreiser@cqu.edu.au)**



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