

# FUNDAMENTALS + ADVANCED RAILWAY HUMAN FACTORS & ERROR MANAGEMENT

11-week online course | 2 hours per week | 2 May – 22 July 2022

11-week online course | 2 hours per week | 3 October – 16 December 2022



## Our Expert Course Instructor



**Dr Graham Edkins** is considered one of Australia's leading Safety Management and Human Factors experts and is regularly retained as an independent safety investigator and human factors expert witness for various civil and criminal matters.

## Key Learning Objectives

Upon completion of this course, you will be able to:

- ▶ Understand the evolution of human factors in rail, its current scope and how it may contribute to addressing future safety challenges in modern railway systems
- ▶ Understand human error within the context of significant rail safety incident investigations
- ▶ Incorporate practical proactive error management strategies contextualised to rail operations
- ▶ Address human performance limitations that impact effective decision making and increase the probability of error occurrence
- ▶ Adopt a systematic human factors analysis method for incident investigations to better identify errors and error producing conditions
- ▶ Identify social and group influences that shape human performance
- ▶ Understand the impact of rail infrastructure and equipment design on human performance and the pros and cons of automation and advanced technology
- ▶ Understand the incidence of mental health issues in the rail industry and strategies to support rail safety critical workers
- ▶ Identify cultural influences that shape human performance including the practical application of a fair and just culture approach to consequence management
- ▶ Adopt a proactive human factors analysis approach to identify the triggers that may lead to a potential fatal/critical risk event and fix conditions before they cause problems

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## ABOUT THE COURSE

*"Error is pervasive. The unexpected is pervasive. What is not pervasive are well-developed skills to detect and contain these errors at their early stages".*

- Karl Weick, Managing the Unexpected

Rail remains one of the safest forms of land transport, with road transport generating almost 14 times more accident costs than rail. While rail imposes fewer costs on the community in terms of accidents, congestion and emissions than other surface transport modes, the cost of rail accidents in 1999 was estimated at AUD\$133 million according to the Australian Bureau of Transport and Regional Economics (BTRE).

Over 20 years since this BTRE figure was published, and despite the highly protected and technological nature of the rail industry, human performance limitations at all levels of the rail industry remain the greatest challenge to further improving safety and reducing rail accident costs and impacts. The consequences of errors in the rail industry can be disastrous and the subject of public outrage, exhaustive inquiries and drawn out legal action.

However, the underlying reasons for human error are the most commonly misunderstood and poorly analysed issue in rail safety. While human error is widely recognised as a problem, management often engage in learned helplessness; nothing can be done to prevent human failings as accident causes. Some community sectors are also quick to attribute rail accidents to human errors, without taking the opportunity to assess human error within the context of the organisation and wider rail system.

This advanced 11-week online modular program builds on the 7-week **Fundamentals of Railway Human Factors and Error Management program** and provides participants with a contemporary, non-academic and highly practical understanding of human error causes, consequences and management strategies within the rail industry.

Whether you work for a rail transport operator (RTO), rail infrastructure manager (RIM) or are involved in rail operations, management, investigation or regulation, our program will provide you with an opportunity to understand human error occurrence as well as provide case study examples of individual and organisational error tolerant solutions to human factors challenges across the rail industry. Several practical rail case studies presented throughout will reinforce key concepts and a comprehensive suite of practical resources, tools and strategies is provided to apply in your own workplace.

## EXPERT COURSE INSTRUCTOR



Dr Graham Edkins

Organisational Psychologist Dr Graham Edkins is considered one of Australia's leading Safety Management and Human Factors experts and is regularly retained as an independent safety investigator and human factors expert witness for various civil and criminal matters.

As a former Transport Safety Investigator with the ATSB, Manager Human Factors for Qantas Airways, Executive Director of Public Transport Safety Victoria, and Group General Manager for CASA, he brings a wealth of experience and detailed knowledge of contemporary safety regulation, major event investigation and human error management practices.

Dr Edkins has represented both the Victorian and Commonwealth Governments on a number of national forums, including the Standing Committee on Transport (SCOT) Rail Group, Vice Chairman, International Air Transport Association (IATA), Human Factors Working Group, Chair National Rail Safety Regulators Panel and the National Steering Committee for the development of National Rail Model Safety Legislation.

He has successfully designed and delivered customised rail safety investigation and human factors management training programs globally to a variety of public and private sector organisations and cultures.

## WHO WILL BENEFIT

This training program is designed for those individuals seeking a comprehensive understanding of applied rail human factors. Expected participants include:

- Rail Operations and Engineering Senior Managers
- Team Leaders and Supervisors
- Human Resource Managers
- Rail Safety and WHS Managers, Investigators and Auditors
- Quality, risk, compliance and assurance managers

## BENEFITS OF LEARNING ONLINE

Informa Corporate Learning's online courses are new digital, interactive and engaging educational experience designed to maximise learning for professionals with busy schedules and/or small training budgets.

Our online courses are perfect opportunity for busy professionals as they require just 2 hours per week of your time and include an interactive forum for you to ask direct questions about challenges you are facing to expert course leaders.

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## Course Outline

### MODULE 1:

#### INTRODUCTION TO HUMAN FACTORS IN RAIL

- Human factors in context
- Human factors: Past, present and future
- The human factors contribution to significant rail safety accidents
- A simple human factors model
- Case study: Off the rails
- Course activity: Towards 2040 - What will be the human factors challenges in rail in the next 20 years?

### MODULE 2:

#### INTRODUCTION TO HUMAN ERROR IN RAIL

- Introduction to human error
- What causes error?
- Different types of errors
- The positive side of error: Human compensatory ability
- Course activity: Which error type is it?

### MODULE 3:

#### PRACTICAL ERROR MANAGEMENT STRATEGIES

- Organisational error management strategies
- Managing unintended actions (slips & lapses)
- Managing intended actions (mistakes & violations)
- Error management checklists for inspectors, investigators and auditors
- Course activity: Quiz

### MODULE 4:

#### HUMAN PERFORMANCE LIMITATIONS

- Human information processing
- Task demands: Overload and underload
- Fitness for duty
- Managing human performance limitations in rail
- Case study: SPAD incident
- Course activity: Participants will examine a SPAD incident to identify human performance limitations and practical management strategies

### MODULE 5:

#### SOCIAL & GROUP INFLUENCES ON PERFORMANCE

- Role, status, authority and conformance
- Strategies to improve team performance
- Case study: Rail safety incident
- Course activity: Participants will design a program to manage authority gradients

### MODULE 6:

#### A HUMAN FACTORS ANALYSIS METHOD FOR INCIDENT INVESTIGATION

- Human factors analysis methods
- Errors and Error Producing Conditions (EPC's)
- Reactive Loss of Control Analysis (R-LOCA) model
- Case study: Revisiting off the rails
- Course activity: Quiz

### MODULE 7:

#### MAJOR COURSE EXERCISE #1 - REACTIVE HUMAN FACTORS ANALYSIS

- Participants will be provided with the raw data from a rail safety incident and be required to:
  - Use the R-LOCA model to classify the errors and contributing factors; and
  - Identify practical strategies to reduce the potential consequences of any errors identified

### MODULE 8:

#### DESIGN AND AUTOMATION

- User centered workplace design principles
- Automation and advanced technology
- Case study: Designing for vigilance
- Course activity: Participants will design a user centered train driver vigilance system

### MODULE 9:

#### MENTAL HEALTH, WELLBEING & SUPPORT PROGRAMS

- The incidence of mental health in the workplace
- Mental health issues in the rail industry
- Practical strategies to support rail safety critical workers
- Course activity: Quiz

### MODULE 10:

#### CULTURAL INFLUENCES ON PERFORMANCE

- The influence of safety culture and safety culture maturity
- The essential ingredients of safety culture
- Accountability and just culture
- Case study: Rail safety incident
- Course activity: Participants will design a practical cultural improvement program

### MODULE 11:

#### MAJOR COURSE EXERCISE #2 - PROACTIVE HUMAN FACTORS ANALYSIS

- Application of the Proactive Loss of Control Analysis (P-LOCA) method
- Course activity: Create your own potential workplace accident

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## Fundamentals + Advanced Railway Human Factors & Error Management

| Course Code | Location | Course Dates                 | Standard Price       | 4+ Dels Discount  |
|-------------|----------|------------------------------|----------------------|-------------------|
| P22GR34ON   | Online   | 2 May – 22 July 2022         | \$3,125 + 312.50 GST | <b>\$3,437.50</b> |
| P22GR34ON02 | Online   | 3 October – 16 December 2022 | \$3,125 + 312.50 GST | <b>\$3,437.50</b> |

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If you have 8+ interested people, an on-site course can be the ideal solution – giving you the opportunity to customise our course content to your specific training needs, as well as attracting significant savings compared to public course costs.

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- 3. On-site training** is a cost effective way to train your people and achieve your defined outcomes.

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Speak with **Anton Long** on **+61 481 995 653** to discuss your customised learning solution, or email [training@informa.com.au](mailto:training@informa.com.au)

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