arc training centre for **information resilience**

# INFORMATION RESILIENCE TRAINING

## OVERVIEW

As technological advancements outpace societal expectations and legislative frameworks, the ARC Industrial Transformation Training Centre for Information Resilience (CIRES), a government and industry funded Centre, was established in 2021 to address the depth as well as breadth of data and digital skills in Australia's workforce.

CIRES is responding to an urgent need to build workforce capacity in Australia to create, protect, and sustain agile data pipelines, capable of detecting and responding to failures and risks across the information value chain.

CIRES has developed a tailored professional training program focused on the upskilling needs of its stakeholders as well as the broader Australian workforce.

The CIRES training program aims to:

- Build capacity in Australian public and private sector organisations to develop resilient data pipelines capable of delivering game-changing productivity gains.
- Position Australian organisations at the forefront of technology leadership and value creation from data assets.

The program has been designed in a modular way to cater for a variety of training needs and backgrounds, while providing end-to-end coverage of topics relating to information resilience – the capacity to create, protect, and sustain agile data-through-value processes in business.

## WHO SHOULD PARTICIPATE?

The training program will benefit three types of professionals:

1. those working directly with data including storage, curation, infrastructure, analytics, model development, machine learning, visualization, and reporting; for example,
   **(a)** business end users such as business intelligence specialists, data reporting analysts; and
   **(b)** more technical roles, such as data analysts, data engineers, data analytics specialists, data architects, data scientists, data governance analysts, data administrators, research and data strategists, data operations specialists, and machine learning and AI engineers.
2. those that manage data workers, analysts, and data scientists, or oversee data-driven functions at an executive level; for example, data analytics managers, business intelligence leads, data science team leads, and data governance heads.
3. those working in other functions of the organisation and wishing to gain knowledge of Information Resilience more generally; for example solution architects, and business function heads.

## HOW IT WORKS

The curriculum combines theoretical instruction with hands-on demonstration, and the opportunity to bring your own data to work with, and participation in discussion, case studies, and reflection. The program is designed to upskill the workforce with information resilience knowledge and related skills through the following courses:

- **Managing Business Data**
- **Responsible AI for Business**
- **Value Creation from Data**

Each course consists of multiple modules of **three hours each**, with an additional hour of discussion. The modules can be stacked within and between courses in a variety of ways. Delivery will be face to face, with light pre-module self-training and post session work. Courses are designed to be taken independently of each other by cohorts to which they are relevant. The initial offering of each course is expected to be **10 hours of contact** and an **additional three hours of independent work**.

| COURSE | MODULES AND LEARNING OUTCOMES |
|---|---|
| **Managing Business Data**: To perform and develop data management techniques to model and manage organisational data to generate insights and inform decision-making via storytelling with data. | **Essential Prerequisite:** Basic proficiency with a programming language (SQL, Python, or R)<br>**Leveraging your Data Assets:** Understand how to use the data science process to best utilise your data assets.<br>**Resilient data pipelines:** Investigate the quality and fitness of your data and learn how to wrangle your data to make it fit for purpose.<br>**Storytelling with Data:** Become familiar with how to present your findings via storytelling with data through effective visualisations and narratives. |
| **Responsible AI for Business:** To apply machine learning models to leverage AI for business growth while prioritising transparency, equity, and accountability to align with societal well-being and corporate responsibility. | **Essential Prerequisite:** Basic proficiency with a programming language (ideally Python)<br>**Preferred Prerequisite:** Familiarity with the content of the Managing Business Data course.<br>**Machine Learning Overview:** Learn about machine learning paradigms, applicability and potential pitfalls of opaque algorithms.<br>**Clustering and Classification Methods:** Become familiar with using several clustering and classification methods.<br>**Deep Learning and Other Techniques and Applications:** Get to grips with some of the latest trends in machine learning. |
| **Value Creation from Data:** To unlock the potential of data, transforming it into actionable insights and strategic assets that drive innovation, optimize operations, and create economic value while upholding the principles of data integrity and privacy. | **Essential Prerequisite:** None.<br>**Data Governance:** Understand data governance and its relationship with legislative compliance and ethics.<br>**Responsible Use:** Learn about frameworks for best practice for responsible use of data.<br>**Data Monetization Strategy:** Learn effective strategies of how to monetize data. |

## ABOUT CIRES

Headquartered at The University of Queensland in Brisbane, the Centre is a collaboration with Swinburne University of Technology in Melbourne, and partners: Aginic, Astral Consulting, Allianz Worldwide Partners (AWP) Australia, Health & Wellbeing Queensland, Queensland Department of Education, Queensland Health, and the Queensland Police Service. The Centre will run for 5 years, training a cohort of Higher Degree Research students, Postdoctoral Research Fellows, and Data Engineers, during its lifetime. These researchers will be embedded in industry projects, working collaboratively with partners on real-world problems and solutions.

## LEARN FROM THE EXPERTS

**ASSOCIATE PROFESSOR GIANLUCA DEMARTINI**
**Expert In:** Information Retrieval, Semantic Web, and Human-in-the-loop Artificial Intelligence
**Affiliation:** The University of Queensland

**PROFESSOR MARTA INDULSKA**
**Expert In:** IT business value, data quality, business process management, and open innovation
**Affiliation:** The University of Queensland Business School

**ASSOCIATE PROFESSOR HASSAN KHOSRAVI**
**Expert In:** Artificial intelligence in the future of education and learner-centred, data-driven learning at scale
**Affiliation:** The University of Queensland

**PROFESSOR SHAZIA SADIQ**
**Expert In:** Data quality management and responsible use of advanced technologies
**Affiliation:** The University of Queensland

**DR IDA ASADI SOMEH**
**Expert In:** Organizational and societal impact of data, analytics, and artificial intelligence
**Affiliation:** The University of Queensland Business School; Centre for Information Systems Research (CISR), MIT Sloan School of Management, USA

**DR THOMAS TAIMRE**
**Expert In:** Probability theory, computer simulation, and mathematical optimization
**Affiliation:** The University of Queensland

**DR SEN WANG**
**Expert In:** Feature Selection, Semi-supervised Learning, Deep Learning, Pattern Recognition, Data Mining, and Health Informatics
**Affiliation:** The University of Queensland

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