

Graduate Diploma in Industry 4.0 (GDI4)

Developed and awarded by Singapore Institute of Management, Singapore

Industry 4.0: Trends and Transformations

This module provides students with a big picture overview of how Industry 4.0 is transforming the ways that businesses operate. Topics covered include the history of industrial revolutions, what is Industry 4.0, and overview of the major areas of change, including smart factories/smart manufacturing, cyber-physical systems, Internet of Things (IoT) and Industrial IoT, big data analytics, cloud computing and edge computing, artificial intelligence, 3D printing, and more.

Cloud Computing – Concepts and Applications

Topics include types of cloud service models (e.g., IaaS, PaaS, SaaS), cloud infrastructure and network architecture, virtual machines and containers, cloud storage and automation, cloud security and identity management. Applications of cloud computing such as parallel processing, microservices, controller-based management systems, and edge computing for Industrial Internet of Things will also be discussed. After completing this module, students should be able to prepare for a Cloud Practitioner exam and get a certification.

Data Analytics for Industry 4.0

This module introduces students to some core fundamentals of data analytics, and then goes into detail about specific data analytic techniques that are used in manufacturing and supply-chain logistics. Analytics techniques include classification models, association analysis, cluster analysis, and anomaly detection. Students also learn the basics of how to visualise and present data.

Managing Cybersecurity

This module focuses on understanding the security and privacy issues surrounding the use of internet and smart technologies in Industry 4.0. Topics covered include use of information systems for business processes, legal, ethical and privacy concerns, digital forensics, secure system architecture, network vulnerabilities and analysis, malware and hacking, basics of cryptography, risk management and incident management.

Cyber-Physical Systems and the Industrial Internet of Things

This module provides a conceptual introduction to Cyber-Physical Systems and the Internet of Things (IoT), and then more specialised applications in the Industrial Internet of Things (IIoT) for manufacturing and logistical operations. Students would learn about sensor technology and embedded systems, real-time analytics paired with automated monitoring and control systems, the circular economy (i.e., reducing/reusing waste products), digital twins, and computer network architectures for IIoT.

Robotic Process Automation for Industry 4.0

This module introduces students to the core concepts of Robotic Process Automation (RPA) and how it combines software robots with Artificial Intelligence to automate routine business operations.

Topics include introduction to RPA tools, fundamentals of RPA, RPA programming, planning, and implementing RPA in organisations, roles in RPA, developing and deploying a software robot, RPA providers and future of RPA. This course will help students learn how to create and programme software robots to handle various routine activities such as data extraction from documents and email automation. After completing this module, students should be able to prepare for a RPA exam and get a certification.