DIGITAL

Course Title	Course Outline
Can I FOLLOW you?	This hands-on workshop for beginners will teach participants how to get started with Instagram for personal use but ending with an insight on Instagram for businesses. The advanced level workshop will cover taking organisations' Instagram account to the next level by using the available features to get customers' attention. Emphasis will be given to success stories from the hospitality and tourism industry.
Engineering Data Analytics	This course provides participants with insights into the emerging technology of Engineering Data Analytics. They will gain an appreciation of how the huge amount of data resulting from connectedness can be harnessed through analytics and machine learning to yield intelligent and actionable recommendations towards system improvement.
IIOT Database Management System	This course provides students with the knowledge and skills on the various types of data generated by an IIOT system, such as structured, unstructured and semi-structured data generated by an IIOT system. Participants will learn about the appropriate cloud, databus and layered databus technologies that could be used to manage such data for further analytics leading to intelligent actionable recommendations.
IIOT Integration	This course provides the knowledge and skills essential for integrating heterogeneous industrial subsystems into a bigger smart and connected system that enables data flow to where it is most needed and effective. Participants will be exposed to commonly used IIOT communication protocols, industrial connectivity standards (fieldbuses), and relevant hardware and software interfaces that will enable such integration. Participants will get to develop a Human Machine Interface (HMI) for industrial application scenarios, leveraging the acquired connectivity knowledge and skills.
Industrial IoT and Data Analytics	This course is to prepare participants for digital workplace transformation towards Industry 4.0 by providing insights into the emerging technologies of Industrial IoT and Data Analytics. Participants will gain insights into smart sensors and embedded systems that enable the integration of various industrial sub-systems for process and product optimization. They will also gain an appreciation of how the huge amount of data resulting from connectedness can be harnessed through analytics and machine learning to yield intelligent and actionable recommendations towards system improvement.
Industrial IoT and Data Analytics 201	This course will provide participants with an appreciation of how smart sensors and embedded systems make systems smart and enable the integration of various industrial sub-systems towards process and product optimization. They will also gain an appreciation of how the huge amount of data resulting from connectedness can be harnessed through analytics and machine learning to yield intelligent and actionable recommendations towards system improvement. Participants will be provided a hands-on opportunity to build a basic IoT application where they will get to learn to make systems smart and connected. The data collected from the sensors will be sent through a network and visualized on a dashboard. Participants will also get to use data analytics tools to gather data from sources, process and plot visualizations to analyze the relationships and structures of the data that could be used to improve the process or product.
Introduction to Virtual Reality	In this course, participants gain a basic understanding of VR headsets such as the Google cardboard / Samsung Gear VR and game engines that support developing VR games. Participants get hands-on in creating simple VR applications.
Rapid Engineering Data Visualization	This course introduces participants to the current methods and practices to rapidly visualize their data. They will gain an appreciation of how to harness the usefulness of visualizing data for their day to day operations to improve processes/products/systems.
Using AR and AI in Business and Training	AR and AI have been on the rise with more and more organizations making use of these technologies to attain new high levels of innovation, engagement, and productivity. While these technologies sound like a great way to move forward, many companies stumble when faced with the actual implementation of AR and AI. What platforms should I choose? Which parts of my business can I use it for? What are the areas of consideration? If those questions came to mind, then this course will help to bring you one step closer to implementing AR and AI to your organization. After the workshop, you would have been exposed to different applications of AR and AI, case studies from other implementations, as well as be equipped with the considerations needed to make your own implementation a success.

ADVANCED MANUFACTURING

Course Title	Course Outline
8 Disciplines(8D) and Failure Mode Effect Analysis(FMEA) in High Volume Manufacturing	This course enables the participants to acquire knowledge and skills in design and implementation of the 8D approach, a systematic problem-solving process in the context of high-volume manufacturing. 8D includes detailed root cause analysis, containment, corrective and preventive actions. As an integral part of 8D, FMEA is commonly used to uncover problems and the effects of failures. Its application in high-volume manufacturing will be discussed in detail. After the course, the participants will be able to adopt 8D and FMEA to resolve manufacturing issues in a systematic manner.
Automation Control & System Adaptation	This practice-based course provides intensive knowledge and practical skills on the selection and interfacing of sensors and actuators, PLC systems and troubleshooting of automation equipment.
Automation Equipment, Control & Connectivity	This practice-based course provides intensive practical skills and knowledge of proper usage of electro-pneumatic components and sensors, electric motors and drives, employing Machine Vision Systems (MVS) and automation technology for the semiconductor manufacturing industry.
Automation Interfacing & Connecting	This practice-based course provides broad-based knowledge and practical skills on automation control, system interfaces, automation equipment safety and risk assessment, configuration of Human Machine Interface (HMI), industrial networks and fieldbus, installation and commissioning of automated equipment.
Automation Equipment & Control	This practice-based course provides intensive practical skills and knowledge of proper usage of electro-pneumatic components and sensors, electric motors and drives, employing Machine Vision Systems (MVS) and automation technology for the semiconductor manufacturing industry.
Engineering Data Analytics & Machine Learning	This course equips participants with the knowledge and skills to harness the intelligence that huge amounts of data from smart and connected systems will provide in the context of advanced manufacturing. Participants will learn the various stages of analytics, right from gathering and cleaning data to visualizing and analysing it and providing actionable recommendations towards system improvement. Participants will also be exposed to emerging trends in machine learning that are made possible by the availability of big data and increasing processing speeds in advanced manufacturing.
Equipment Alignment & Troubleshooting	This practice-based course provides intensive knowledge and practical skills on interpreting electrical parameters and signals along AC/DC power distribution and signal networks, Geometric Dimensioning & Tolerancing (GD&T) to machine alignment, and automation equipment troubleshooting for the semiconductor manufacturing industry.
Industrial Robotic Systems Control and Troubleshooting	This programme equips participants with the knowledge and skills to control, maintain and troubleshoot robots. Participants will learn to maintain and repair robotic systems, integrate and troubleshoot robotic parts & circuits which include controller systems, motion controllers, motors and the related actuators for the design and development of robots, calibrate robot axis/motion, and robot performance monitoring.
Industrial Robotics Integration & Adaptation	This programme equips participants with the knowledge and skills of a Robotics Integrated Automation System. It also aims to equip participants with the knowledge and skills to design common end effectors for adaptation of various materials handling and processes, integrate machine vision with robot applications, align and calibrate x-y-z axis of robot arm for optimisation and homing. They will also apply robotic movement improvement using Kinematics in robotic automation, robotic movement improvement using motion & trajectory planning in robotic automation.
Industrial Sensors and Connectivity	This course provides the knowledge and skills essential for integrating heterogeneous industrial subsystems into a smart and connected system. Participants will be exposed to commonly used industrial connectivity standards (fieldbuses), as well as relevant hardware and software interfaces suitable for such integration.

ADVANCED MANUFACTURING

Course Title	Course Outline
Machine Learning for Industrial Applications	This course provides participants with an appreciation of the emerging advancements in machine learning. They would understand the differences between supervised and unsupervised learning. They will be introduced to the machine learning framework and processes. They would also be exposed to various machine learning frameworks and platforms currently available and case studies of industrial applications.
Machine Learning: A Case Study Approach	The vast amount of data collected in a Smart Factory environment enables manufacturers to integrate machine learning into their operations and become more competitive by gaining predictive insights into production. This course equips the participants with basic machine learning knowledge to identify appropriate tools for their applications and implement simple Machine Learning models in a manufacturing environment.
Robotics Adaptation	This course focuses on the design and control aspects of autonomous robotics. As part of this course, participants will undertake a project to develop a system that will be free to move without any human guidelines in an open environment, detect and avoid hurdles and create a map of the surroundings with the movement.
Robotics Integration	This course explores at how robots can be integrated with existing equipment and looks at the integration challenges of such an automation project. The design and integration of a wide variety of coordinated robotic systems, safety aspects of working with various types of robots, setting up of such an automated system and their benefits to a manufacturing environment are also covered.
Robotics and Automation 101	This course prepares participants for the digital workplace transformation towards Industry 4.0 by providing insights into the integration of Robotics & Automation platforms in advanced manufacturing. It includes an introduction to i4.0 and its technology enablers. Case studies and use cases in advanced manufacturing will be discussed in detail.
Smart Devices and Sensors	This course provides the knowledge and skills essential to enable sensors and devices to become smart and connected. Participants will be exposed to the use of an embedded controller to acquire data from the sensors, enable processing and data reduction on the embedded platform to reduce data communication. Participants will get to test a smart sensor and device network for typical industrial application scenarios, such as process optimization, etc.
Smart Sensors, Devices & Connectivity	This course will equip participants with the knowledge and skills essential to making devices and sensors smart and connected. Participants will learn how to use embedded controllers to enable devices to become smart by acquiring data and performing edge computing and analytics, resulting in intelligent time-sensitive action. They will also learn communication protocols to enable connectivity between devices, sensors and gateways so that data can move to where it is most effective and useful. Participants will get to configure and test a smart sensor and device network for typical industrial application scenarios, such as component functionality, asset performance, etc.
Vacuum Technology for Advanced IC Manufacturing	This course provides know-how and skills in handling vacuum systems and operating plasma equipment. These complex machines are widely used in advanced manufacturing of integrated circuits. The course covers topics such as high vacuum pumps, pressure gauges, vacuum materials, leak detection, plasma physics and high-density plasma technologies. The operation and maintenance of vacuum systems, plasma reactors and leak detection techniques will be covered through practical sessions.
WSH @Robotics	This workshop prepares individuals working in a robotics environment to have a strong awareness of robotics safety with regard to Workplace Safety and Health (WSH). Participants will be given an introduction to Singapore's WSH and risk management framework. They will be briefed on the common robotics hazards and the possible ways of mitigating these risks. A hands-on demonstration on robotics operation will be done to illustrate various hazards and risk control options in the application of industrial robotic systems in advanced manufacturing.

BUSINESS SERVICES

Course Title	Course Outline
Hotel Revenue Management: An Appreciation	This workshop covers an overview of revenue management as practised in the hotel industry. Participants will learn concepts that are relevant and important to revenue management and they will be able to explain the role and importance of revenue management in the industry.

PROFESSIONAL SKILLS & LIFESTYLE

Course Title	Course Outline
Design Thinking: An Introduction To The See Cycle	This programme is crafted for beginners who are keen to understand the fundamentals of design thinking. The Introduction to The SEE Cycle is a one-day fast-paced intensive immersion into the core areas of design thinking for busy executives. The SEE Cycle is a fresh, simple and easy to understand framework in design thinking created specifically to help participants to understand and quickly adopt the cycle of innovation and creativity in their daily work.
Handling Complaints	Participants will understand the communication process involved when applying suitable complaint resolution techniques. They will also become more skilled in overcoming barriers to listening when engaging stakeholders.