

Topic Synopsis (SGUS Specialist Diploma in Building Information Modelling (BIM) Management)

1. Certificate in Communication and Interpersonal Skills

Topic 1: Mindset Transformation for Workplace

This workshop incorporates insights, methodologies and practical approaches in SP's 4-T Mindset Transformation model to help participants manage change and embrace innovation. The contents are designed to develop the mindset, skills-sets and behaviours (practices) to enable participants to learn, adapt and improve by acquiring relevant updated or new skills relevant for the workplace.

Topic 2: Intergenerational Communication

Individuals and managers everywhere must now navigate and cope with the confluence of different needs, expectations and age span present in the modern workplace. But does the multi-generational workforce equate to more opportunities or challenges? Should we pop the champagne or pull our hair out at this new development? 'Intergenerational Communication' examines the value of having multi-generational team members in terms of the strengths and challenges of working with people from different age groups. It covers the expectations from different age groups, by exploring individual personalities and their preferred work styles. Broad strategies will be introduced to build effective multi-generational teams at the workplace.

Topic 3: Emotional Intelligence (EQ) for Career Decision Making

This 2 days' workshop is an enhanced training in which participants will acquire job-seeking related skills, capabilities and the ability to expand employment opportunities.

Emotional Intelligence (EQ) facilitates career decision-making process and leads to decisions that can achieve greater satisfy career-related interests, values, and aspirations. Emotions experienced during this process have implications for the perception of risk related to specific career options, the kind of self-exploration individuals will engage in, and how information related to career choice will be processed.

Through EQ, participants will be able to cope and learn to manage one's self-awareness which affect their overall well-being and decision making.

Topic 4: Digital Confidence for Communication and Collaboration

This course focuses on using various digital tools for effective online communication and collaboration in the workplace. Participants will be equipped with the knowledge and skills to plan and execute a productive online communication and collaboration experience.

Participants will be equipped with the tools to evaluate various digital tools for online communication and collaboration; practise using digital tools; appreciate the elements of effective digital storytelling, and apply these digital tools at the workplace.

2. Certificate in Introduction to Analytics, Cyber Security, AI and Blockchain

Topic 1: Fundamental Data Analysis Using Excel 2016

The objective of the course is to equip learners with relevant skills to use Excel for the purpose of organize and analysing data for visual presentation and improve decision making in business development.

By the end of the course, learner will have:

- An understanding of how to apply most commonly used statistical and lookup functions;
- The ability to gather data and organize the data for analysis in business;
- The know-how on how to generate and interpret charts;
- Be able to build dashboards using PivotTables and PivotCharts; and
- Skills in using Excel What-If Analysis and Data Analysis tools for generating different scenarios of business environment and aiding decision making.

Topic 2: Essential Statistical Analysis

The course aims to equip the participant with the following:

Knowledge and Understanding: An understanding of the main basic principles for preparing data for statistical analysis; carry out and interpret statistical analysis such as exploratory analysis and testing for differences and associations.

Intellectual skills: Skills in problem solving, data analysis and evaluation methods through lectures, practical, and independent reading.

Practical skills: Skills in using social science datasets and practical experience of sampling and data analysis including using software (Excel or Minitab Express).

Transferable skills and personal qualities: Data handling, interpretation and reporting of statistical analysis. Social statistics and data analysis skills are highly in demand in the labour market. This will also aid the student in the development of their communication and team working skills.

By the end of the course, learners will be able to:

- Organize, manage and present data
- Use and apply basic specific statistical methods to infer data, such as estimation, testing for difference and association.
- Use appropriate statistical software for data analysis
- Analyse and interpret statistical output and charts.

Topic 3: Visual Analytics using Power BI

The course aims to equip the participant with the following:

Knowledge and Understanding: An understanding of how a dashboard works; its advantages and disadvantages and how it will be useful at workplaces.

Intellectual skills: How to apply the knowledge received during the course in developing the dashboard and using DAX functions, filters etc.

Practical skills: Participants will be developing their own dashboard. This exercise will enable them to show their creativity, skills obtained from the course and a satisfaction from attending the Power BI course.

Transferable skills and personal qualities: The knowledge and skills acquired from this course can be used at workplaces especially for those involved in KPI reporting, dashboard development or someone who have regular management meetings.

By the end of the course, learners will be able to:

- Upload data & and create data models
- Use DAX functions to enhance dashboards
- Associate links between variables for visual and descriptive analytics
- Find hindsight and insights from dashboard

Topic 4: Cyber Security for Non-IT Professionals

The objectives of the course is to create awareness and understanding of common cyber threats, both at home and at work. Typical mitigation methods will be discussed to help participants make better use of the available cyber security tools to protect themselves against cyber adversaries.

Upon completion of this course participants will be able to:

- Relate what is Cyber Security what are at stake
- Examine common threats (e.g. Phishing, malware)
- Use common mitigation methods
- Use basic wireless and smartphone security
- Outline security related laws (e.g. PDPA, CMA)

Topic 5: Introduction to Blockchain

This course aims to equip participants with a strong fundamental knowledge on Blockchain technology and educate them on the underlying mechanisms that make up a blockchain. Participants will also be familiarized with certain cryptocurrencies, such as Bitcoin to augment their understanding of Blockchain Technology.

Upon completion of this course participants will be able to:

- Explain the fundamental principles of Blockchain Technology.
- Describe and appraise the encryption technology used in Blockchain.
- Develop a crypto currency wallet and complete a transaction.

Topic 6: Introduction to AI and Machine Learning

This course aims to introduce artificial intelligence (AI) and machine learning (ML). The course focuses on learning how to apply AI and ML to solve real-life problems. Through practical sessions, participants will experience the setting up and use of a simple machine learning tools that do not require coding.

Upon completion of this course participants will be able to:

- Illustrate the project workflow in a machine learning project
- Classify and frame industry problems as supervised learning or unsupervised learning problems
- Select suitable machine learning algorithms
- Use online/cloud-based machine learning tools

3. **Certificate in Essential and Emerging Skills for Employability**

Topic 1: Getting ready for Your Next Job

This course equips participants with the essential job search skills, knowledge and tools that will allow them to present themselves positively on paper, in person and on professional networking sites.

Participants will learn how to craft resumes that get the attention of prospective employers and recruiters and pivot their experiences to succeed and leave a good impression at job interviews (face-to-face or digital). This course also helps jobseekers to get started on using the popular professional networking site, LinkedIn, to create a professional brand for job search and networking.

Topic 2: HR for Non-HR Professionals

The 1-day workshop will introduce participants to what Human Resource Management is about, key Human Resource functions and how it impacts business success. Using an interactive approach, participants will gain a better understanding and exposure of the HR-related issues that they may face as a manager or employee spanning recruitment, development, engagement and separation from the firm.

Topic 3: Finance Fundamentals

A basic knowledge of finance is essential for any non-financial professionals to function effectively in his/her current capacity. The ability to understand finance is not only useful as a life skill, but a much needed requirement for non-financial professionals occupying or about to assume a greater leadership role in the organization.

The 1-day course allows participants to:

- Interpret financial information correctly for decision-making
- Understand the impact of your decisions and actions (or non-action) on the “bottom-line” performance of your organization
- Bridge your communication gap with colleagues from the finance department
- Understand the common yardsticks used in project evaluation

Topic 4: Design Thinking for Business Innovation

Businesses, social entrepreneurs, and other innovators have used human-centered design for decades to create solutions for many different types of challenges. This workshop will teach you the human-centered design process so you can be more people-centric when problem solving.

In this two day workshop, tools such as Deep User Interview, Persona, Gmap and Rapid Prototyping will be introduced to identify and execute opportunities for growth and innovation.

Topic 5: Robotic Process Automation

Robotic Process Automation is the application of technology that allows employees in a company to configure software or a “robot” to capture and interpret existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital system. This course will show how businesses can automate some of the internal process to bring about an improvement in productivity and get employees to move up the work value chain. This 1 & ½ day course aims to equip participants with the skills to easily create useful RPA scripts to automate their own desktop processes, without coding or programming knowledge. They will learn how to achieve this.

Topic 6: Digital Marketing with Personal Branding

This course introduces students to tools for establishing a personal brand online and importance of establishing digital marketing strategy to promote their own personal brand.

4. Certificate in Certificate in Sectoral Fundamentals for BIM

Topic1: AutoCAD 2018 Basics [2D & 3D]

Upon completing the module, participants will acquire the essential knowledge & core skills in the area of drafting & design. Participants will appreciate the simplistic and yet efficient use of AutoCAD 2018.

Topic 2: BIM Basic Essential Training [Architecture & C&S Track]

This module aims to provide trainees with a general knowledge of BIM work flow, basic modelling skills and submission processes so as to equip them with basic skills necessary for BIM adoption. There will be lectures and lab hands-on practical sessions for this course.

Topic 3: Essential REVIT MEP Modelling

This introductory module will equip the learner with overview of MEP BIM processes and essential REVIT software skills to model MEP services models. Its main objectives are:

- To provide the overview of MEP BIM processes
- To equip the trainees with Essential Revit MEP skills with hands on MEP modelling exercises

5. Certificate in BIM Management [Fundamentals, Deployment & Coordination Strategies]

Topic 1: BIM Fundamentals

This module aims at providing trainees with BIM Fundamentals knowledge, where BIM concepts and basics will be introduced. Lectures will be conducted to facilitate learning. The module will provide background knowledge on the work processes pertaining to modelling development during project phases. Elaboration on the types of BIM Model will be introduced and their purposes in which they are modelled for coordination and collaboration activities will also be explained. Trainees will also be introduced to the type of BIM software and tools available in the market.

Topic 2: BIM Standards & Implementation Strategies

This module aims at providing trainees with in-depth knowledge on BIM deployment within an organisation, where trainees will be taught how to implement BIM Strategies and setup of necessary standards operating procedures and guidelines when adopting BIM in an organisation. Lectures will be conducted to facilitate learning. The module will thus aim to introduce trainees with Singapore BIM Guide, Submission Guideline and Essential Guides to facilitate setting up of standards. Trainees will also be introduced to BIM Risk Management where they will learn about BIM legal issues and BIM Particular Conditions.

Topic 3: BIM for Design Coordination & Documentation

This module aims at providing trainees with the work processes involved during Design Coordination. Trainees will be introduced firstly to the challenges faced during Design Processes when using BIM. Both Lectures and Lab practices will be conducted to facilitate learning. Secondly, topics on Design Documentation on creating model and drawing content for submission and documentation will also be taught. Next, the module will also provide trainees with skillsets on how to use BIM for Design Visualisation and how to conduct Spatial Coordination amongst different disciplines' models. Subsequently, trainees will also be introduced to BIM Disciplinary Strategies for Model Integration, where they will learn how to prepare the models for Sharing and Coordination purposes and identify the strict protocols when preparing model content for Documentation. Trainees will also be introduced to Work-sharing methodology and BIM Objects modelling. Finally, the last two topics will provide trainees on knowledge pertaining to BIM used for Project Periodic Reviews, Tendering and Quantity Take Off purposes, where trainees will learn how to ensure model consistency between different disciplines during Reviews and how to prepare model for scheduling and costing.

6. Certificate in BIM Management [Quality Assurance, Quantity Surveying & Construction Coordination]

Topic 1: BIM for Quality Assurance Checking, design & Quantity Surveying Analysis

This module aims at providing trainees with the knowledge on BIM protocols involving Quality Assurance/ Model Checking during coordination work with different disciplines at design and construction phases. Both Lectures and Lab practices will be conducted to facilitate learning. Trainees will be introduced to the types of Quality Assurance Checks involved during Coordination activities and the types of Quality Assurance Software available in the industry. Trainees will also be introduced to topics on a typical Quality Checking process. Further to Quality Assurance Checking, trainees will learn how to use BIM for Quantity Surveying work, such as Quantity Taking Off. Apart from these, trainees will also learn how to use BIM for Structural Analysis and Energy Analysis.

Topic 2: BIM for Construction Planning & Coordination

This module aims at providing trainees with the knowledge on using BIM for construction projects. Both Lectures and Lab practices will be conducted to facilitate learning. Trainees will first be introduced to the concepts of Construction Planning and Coordination. Secondly, trainees will also be introduced to BIM application areas in construction projects. Thirdly, trainees will learn how use 4D BIM for construction management, where they will be trained with software skillsets. The module also aims to teach trainees on how to use 5D BIM for cost estimation, where there will be hands-on opportunities.

Topic 3: BIM Project

This module aims to assess trainees' abilities to apply BIM knowledge and skills learnt from Modules: BIM Fundamentals, BIM Standards and Implementation Strategies, BIM for Design Coordination & Documentation, BIM for Construction Planning and Coordination & BIM for Quality Assurance Checking & Design Analysis. Trainees will need to collaborate in the context of different disciplines coordinating and managing a building project using BIM. Trainees would be required to propose a Project on BIM modelling and applications, in which they will be assessed based on individual and group effort. The BIM project will need to encompass applications pertaining but not exhaustive to the following:

- BIM Modelling
- Site Analysis
- E-Submission
- Visualisation
- Clash Detection
- 4D Scheduling
- 5D Estimation
- Sustainability

7. Certificate in BIM for Mechanical Electrical Plumbing (MEP)

Topic 1: Computational BIM for MEP Projects using Revit Dynamo

Computational BIM leverages on the innovative problem-solving approach where users define algorithms to have automated generation and manipulation of building-related information for better work efficiency, effectiveness and productivity gains. This course will equip the learners with essential Dynamo and python skills by going through many useful hands-on examples. Its main objectives are:

- To provide the overview of the Computational BIM and its benefits in modelling processes
- To equip the trainees with Revit Dynamo skills to automate and optimize the BIM modelling processes
- To equip the trainees with Basic Python skills to create customized Dynamo notes

Topic 2: Autodesk Navisworks for MEP BIM Project Collaboration

Multidisciplinary coordination and collaborations by using software tools such as Autodesk Navisworks become one of the most important aspects in the BIM/IDD journey nowadays. This course will equip the trainees with the essential Navisworks skills so that they will be able perform the coordination and collaborations in the multidisciplinary projects. Its main objectives are:

- To provide the overall understanding of the BIM workflow for construction projects
- To provide the essential Navisworks skills to perform MEP project coordination and collaborations

Topic 3: Advanced REVIT MEP Modelling

This module will provide advanced Revit MEP skills for learners to have an understanding of creating Revit families, sheets, schedules and as well as computational BIM and their benefits in the construction processes. Its main objectives are:

- To equip the trainees with Advanced Revit MEP skills which are highly sought after in the building construction industry
- To provide the overview concept of computational BIM and its benefits in construction processes automation

8. Practicum

- a. Attachment @ Companies or
- b. Project @ Companies or
- c. Project @ Digital Building Innovation Centre [DBIC]

This module will immerse students in project based learning, where they are required to be either attached to companies, or work on BIM Projects for Companies or for DBIC. Projects are BIM related ranging from BIM Adoption Activities, BIM Modelling, Research Work, Report Writing and relevant BIM work. This module will facilitate Students' application of BIM knowledge in 'real' work situations, where students can learn on the job or be self-directed in his or her learning.