

# Topic Synopsis (SGUS Specialist Diploma in Data Science and Analytics)

## 1. Certificate in Essential Skills to Enhance Employability

This certificate covers essential communication areas which include emotional intelligence (EQ), digital marketing and essential job search skills. It introduces key concepts in the areas of data and visual analytics using Power BI, statistics and cyber security. It introduces key concepts in the areas of data and visual analytics using Power BI, statistics and cyber security.

### **Topic 1: 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 2: 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 3: 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.

### **Topic 4: 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 5: 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)

## **2. Certificate in Fundamentals of Data Science**

### **Topic 1: Introduction to Statistics for Data Science**

This module provides students with an introduction to elementary probability theory and statistical concepts and principles that lay the foundation to understand and learn the statistical procedures and methods in the subsequent modules. The topics covered include descriptive statistics, rules of probability, probability distributions of discrete and continuous random variables, sampling distributions, statistical estimation and hypothesis testing.

### **Topic 2: Introduction to Programming for Data Science**

This module provides students with the fundamental skills to code applications to retrieve, clean and visualize data using the Python programming language. Students learn key concepts such as what structured and unstructured data are, and how they can create and manipulate relational and NoSQL databases to explore data and to create visualizations that can help them gain useful insights from it.

## **3. Certificate in Data Analytics**

### **Topic 1: Data Mining Techniques**

This module teaches students key concepts in data mining, including data exploration, data preparation, and model building. Students will learn how to prepare data from multiple sources, and develop classification models for applications such as direct marketing and customer retention. Modelling techniques covered include k-nearest neighbours, logistic regression, classification trees, and neural networks.

### **Topic 2: Applied Statistical Methods**

This module equips students with the statistical procedures and methods commonly used in the analysis of information and data in industry. The coverage specifically discusses analysis techniques necessary for multivariate data. Topics include matrix algebra, analysis of variance, design of experiments, multivariate statistical analysis, principal component analysis, factor analysis, discriminant analysis and cluster analysis.

## **4. Certificate in Linear Statistical Models**

### **Topic 1: Building Linear Statistical Models**

This module covers the theory and applications of statistical data modelling techniques. The module aims to equip students with good knowledge of the underlying theory, assumptions and applications of the techniques in statistical data modelling. Students will be exposed to the least squares theory required for modelling work. They will learn how to deal with various types of data using simple linear models, models for heteroscedastic data, model diagnostics, adequacy, comparison and building techniques as well as essentials of statistical simulation. Students will also be exposed to ideas of experimental design and system optimization in modelling work.