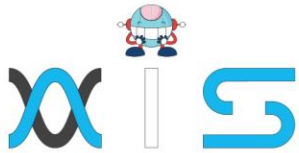


LEAN SIX SIGMA BLACK BELT CERTIFICATION TRAINING

Course Outline





Program Overview:

The Lean Six Sigma Black Belt training and certification course is designed to help you master the combined concepts of Lean and Six Sigma. This course will help you develop an in-depth understanding of the Six Sigma phases Define, Measure, Analyze, Improve, and Control (DMAIC) and how to maximize customer value while minimizing waste.

Program Features:

- 9 hours of online self-paced learning
- 36 hours of instructor-led training
- 4 Lean Six Sigma Black Belt simulation exams
- 35 PDUs offered and six end-of-chapter quizzes
- Two-course end projects Experiential learning through case studies
- Course completion certificate

Delivery Mode:

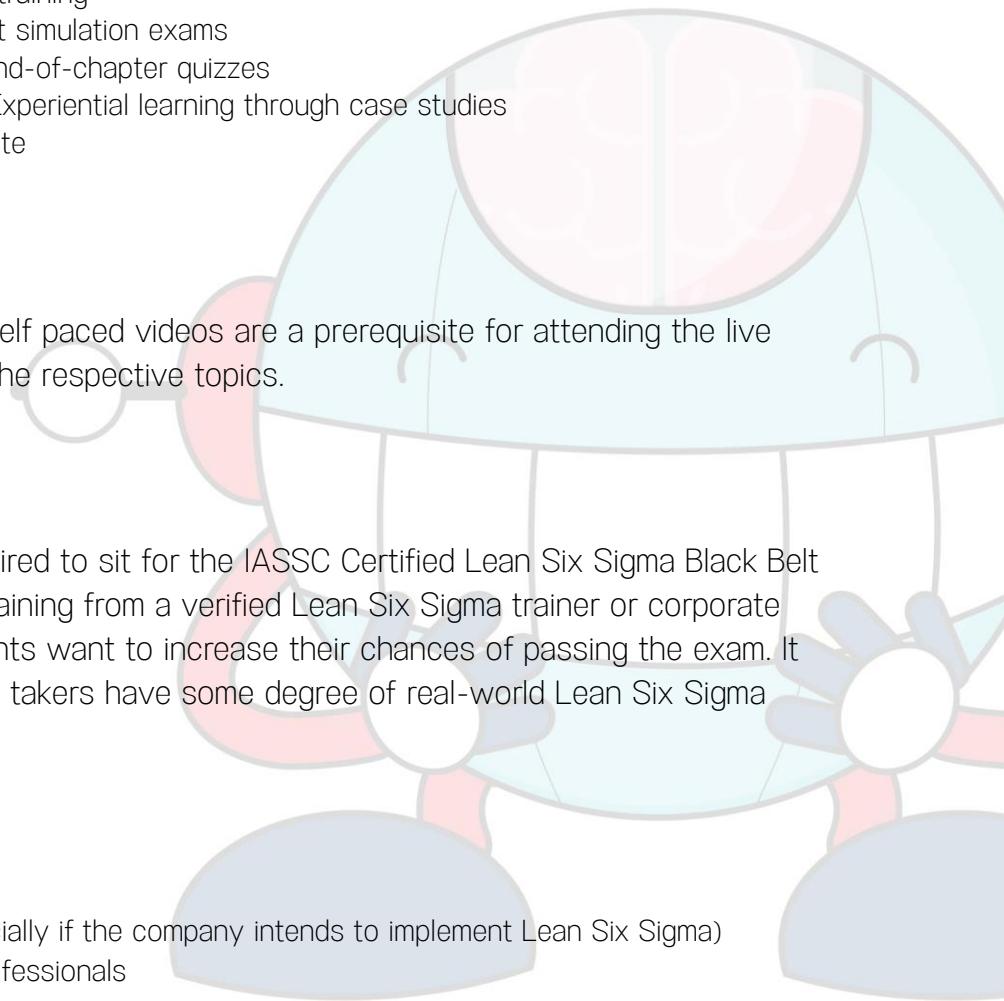
Online Bootcamp - The online self paced videos are a prerequisite for attending the live virtual classroom sessions for the respective topics.

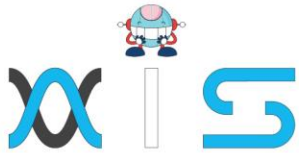
Prerequisites:

There are no prerequisites required to sit for the IASSC Certified Lean Six Sigma Black Belt exam. Formal Lean Six Sigma training from a verified Lean Six Sigma trainer or corporate program is suggested if applicants want to increase their chances of passing the exam. It is also recommended that exam takers have some degree of real-world Lean Six Sigma work experience.

Target Audience:

- Senior management (especially if the company intends to implement Lean Six Sigma)
- Team leaders Software professionals
- Project managers
- Quality assurance engineers





- Software quality assurance team members
- Management students

Key Learning Outcomes:

At the end of Simplilearn's Lean Six Sigma Black Belt training, you will know how to:

- Apply Lean concepts such as 5S, waste reduction, process mapping, value stream mapping, and mistake proofing
- Apply basic and more advanced statistical analyses to determine the relationship between key inputs and process outputs
- Effectively manage team dynamics and understand how to work with multiple levels of leadership to remove barriers and achieve project success
- Close projects and hand over control to process owners
- Present projects to instructors, peers, and managers

Certification Alignment:

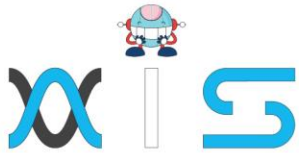
Our Certified Lean Six Sigma Black Belt is accredited by IASSC

Certification Details & Alignment:

Simplilearn Lean Six Sigma Black Belt Certification follows the flipped classroom model. The online self-paced content acts as the pre-read material for the live sessions. The learner needs to complete the online self-paced videos, attend live sessions and pass both the projects and assessments to get the Simplilearn certification.

IASSC Certification

The exam fee is included for all regions except the Indian subcontinent and Africa. The candidate can earn IASSC certification in Lean Six Sigma Black Belt by appearing for the IASSC Certified Lean Six Sigma Black Belt exam and scoring a minimum of 70%. Upon succeeding, the candidate will receive a certificate, suitable for framing, issued by the IASSC.



Course Curriculum:

Session 00 - Course Introduction

Session 01 - Define Phase

Lesson 1 – The Basics of Six Sigma

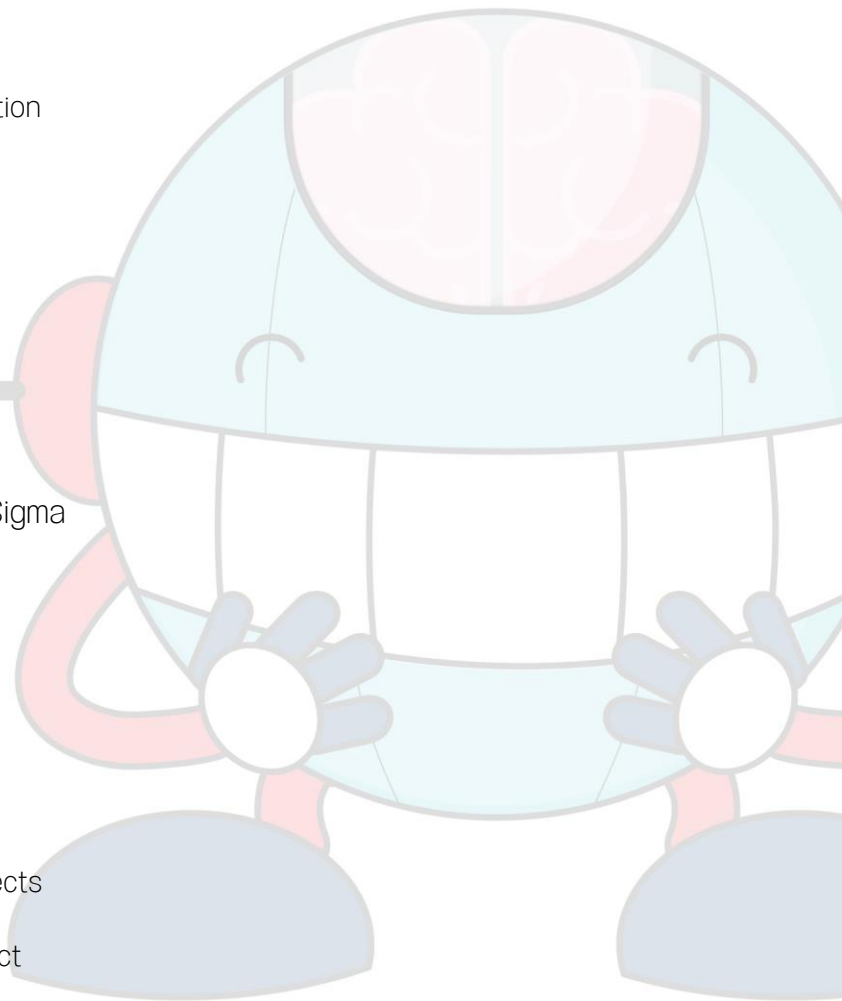
- Introduction to define phase
- Learning objectives
- Six Sigma
- Lean
- Sigma shift
- Yield
- Continuous Improvement Process Evolution
- Six Sigma Deliverables
- Problem Solving Strategy
- VOC Campaign
- VOC Tools
- KANO Analysis
- Six Sigma Roles and Responsibilities
- Project Champion and Master Black
- Belt Black Belt and Yellow Belt
- Drivers of Six Sigma

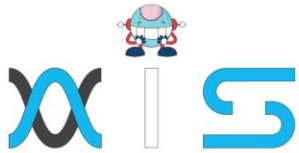
Lesson 02 - The Fundamentals of Six Sigma

- Process
- Project charter
- Critical to quality
- Cost of poor quality
- Calculating CoPQ
- Pareto Analysis
- Basic six sigma metrics

Lesson 03 - Selecting Lean Six Sigma Projects

- Selecting Lean Six Sigma Projects Project
- Selection Roadmap
- Project Charter Elements
- Project Charter Business Case





- Project Charter Problem Statement
- Project Charter Goal Statement
- Project Charter Scope
- Project Charter Key Milestones
- Project Charter Team Selection
- Tuckman's Stages of Team Formation
- The RACI Matrix
- Expected Financial Benefits
- Developing Project Metrics
- Key performance indicator
- Financial Evaluation and Benefits Capture
- Net present value

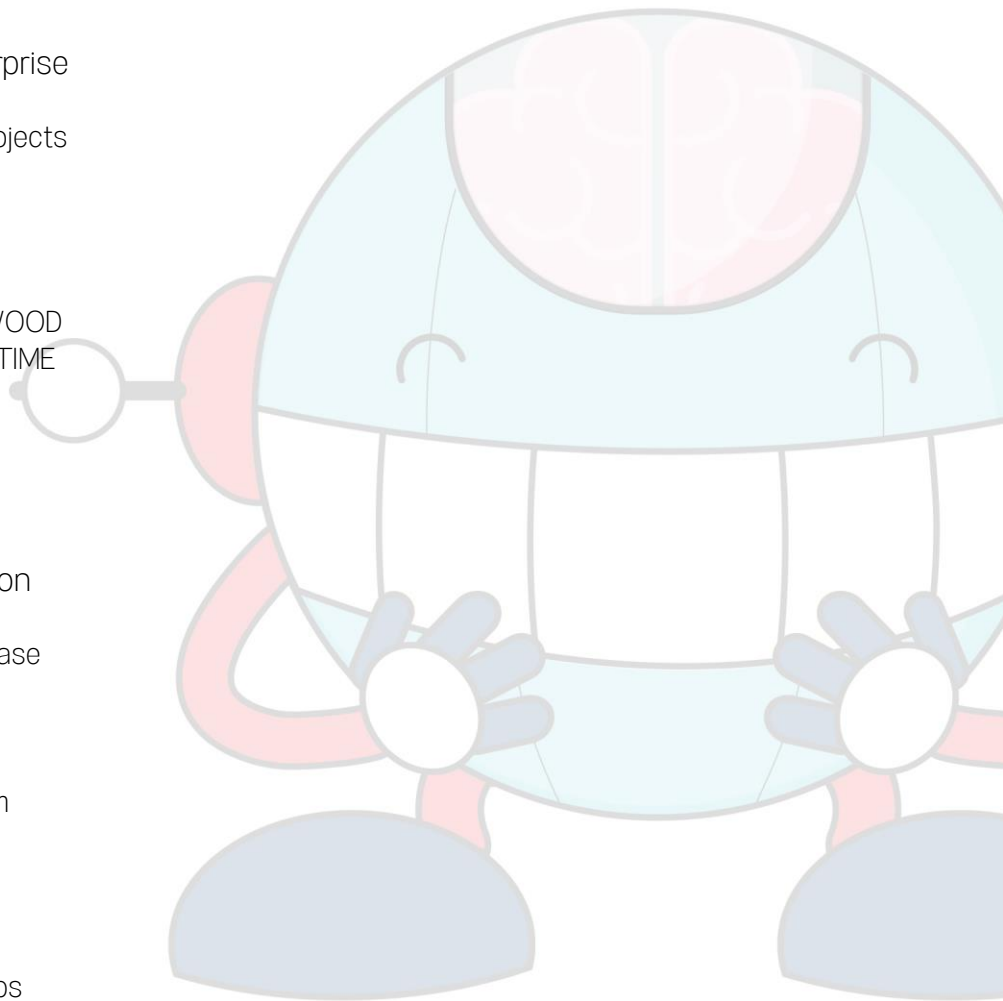
Lesson 04 - The Lean Enterprise

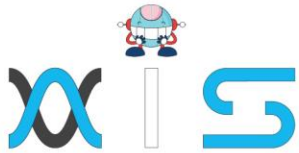
- Selecting lean six sigma projects
- Principles of Lean
- Lean Methodology
- Lean and Six Sigma
- 3M's of Lean
- Categories of Waste: TIMWOOD
- Category of Waste: DOWNTIME
- 5S
- Steps in 5S

Session 02 - Measure Phase

Lesson 01 - Process Definition

- Introduction to measure phase
- Learning Objectives
- Tools to Define a Process
- Cause and Effect Diagram
- Drawing a Fishbone diagram
- Root Cause
- Process Mapping
- Creating a Process Map
- Process Mapping Levels
- Four Types of Process Maps
- SIPOC Process Map
- Value Stream Maps





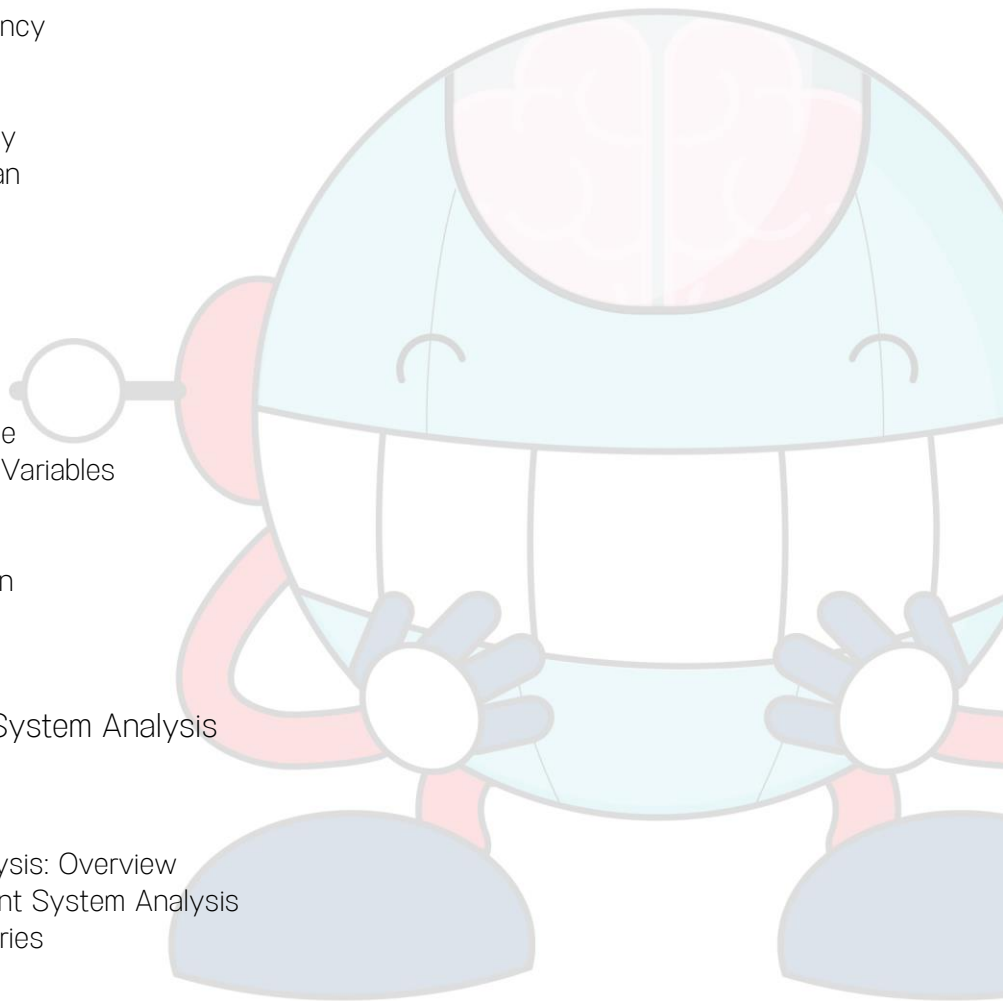
- Value Stream Maps: Key Metrics
- X-Y Diagram or Scatter Plots
- Failure Mode and Effects Analysis (FMEA)
- FMEA Process
- FMEA Template Severity, Occurrence, and Detection Table
- Risk Priority Number (RPN)

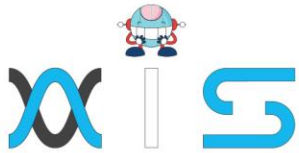
Lesson 02 - Six Sigma Statistics

- Data
- Measuring data
- Basic Statistics
- Measures of Central Tendency
- Measures of Dispersion
- Data Collection Plan
- Data Collection Methodology
- Develop a Measurement Plan
- Collect Data
- Sampling
- Sampling methods
- Graphical Analysis
- Graphical Analysis Tool
- Introduction to Minitab
- Demo: Box Plot One Variable
- Demo: Box Plot with Three Variables
- Demo: Time series plot
- Normal Distribution
- Standard Normal Distribution
- Demo: Normality

Lesson 03 - Measurement System Analysis

- Introduction
- Measurement System Analysis: Overview
- Good and Poor Measurement System Analysis
- Measurement Error: Categories
- MSA: Sources of Variation
- Repeatability
- Reproducibility





- Accuracy and Precision
- Bias
- Stability
- Linearity
- MSA: Types
- Gage R&R Guidance in MINITAB
- Gage R&R Ground Rules
- Demo: Gage R_R Continuous Data
- Attribute Gage Study
- Demo: Gage R_R Attribute Data

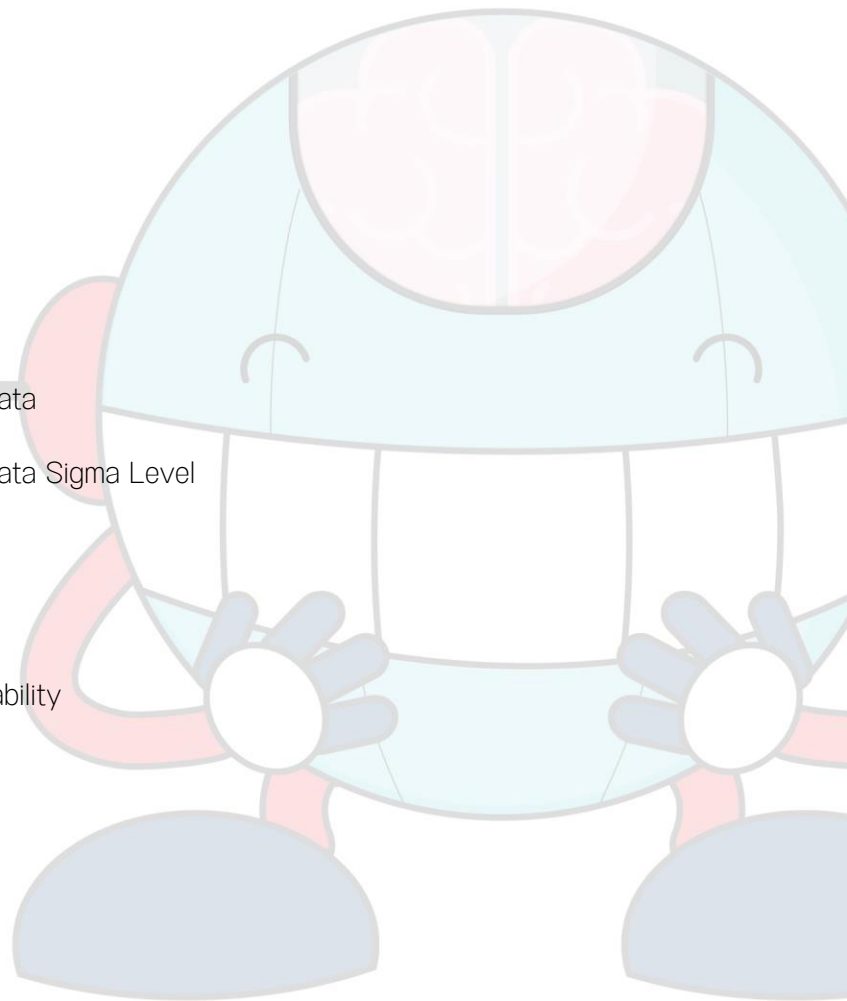
Lesson 04- Process Capability

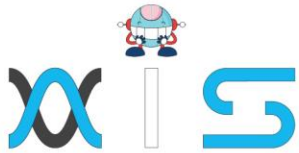
- Introduction
- Process Capability
- RUMBA Analysis
- Process Capabilities
- Data Types
- Baseline Performance
- Components of Variation
- Process Stability
- Process Capability: Indices
- Demo: Capability Analysis Continuous Data
- Process Capability Indices: Example
- Demo: Capability Analysis Continuous Data Sigma Level
- Z Score
- Process Baseline
- Defects Per Unit
- Defects Per Million Opportunities
- Attribute Data: Example
- Short-term and long-term Process Capability

Session 03 - Analyze Phase

Lesson 01 - Classes of Distribution

- Introduction to Analyze phase
- Learning Objectives
- Frequency Distribution
- Demo: Frequency Distribution
- Probability Distribution





- Types of Probability Distribution
- Types of Discrete Probability Distribution
- Types of Continuous Probability Distribution

Lesson 02 - Inferential Statistics

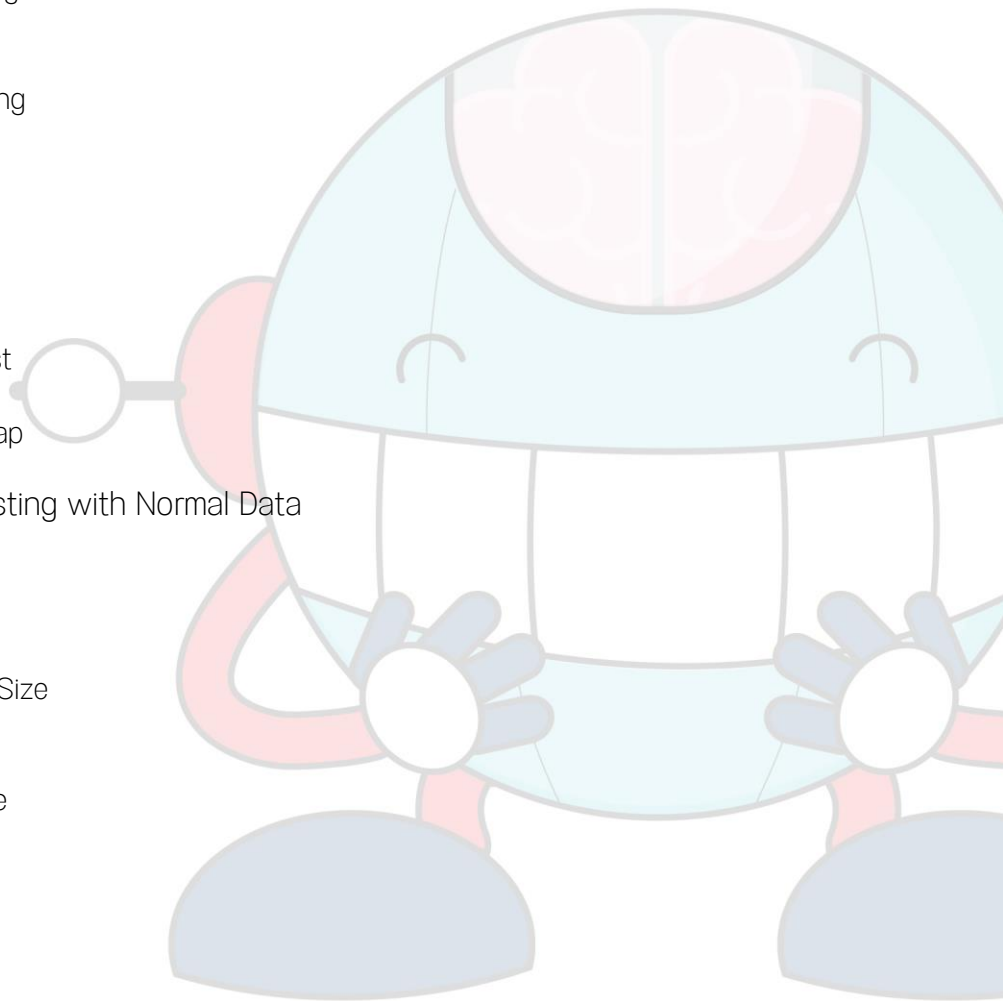
- Introduction
- Inferential Statistics
- Branches of Inferential Statistics
- Central Limit Theorem

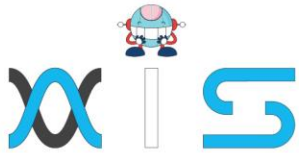
Lesson 03 - Hypothesis Testing

- Introduction
- Basics of Hypothesis Testing
- Confidence Interval
- Significant difference
- Detecting Significance
- Statistical Hypothesis Test
- Hypothesis Testing: Risks
- Beta Risk
- Power of a Hypothesis Test
- Sample Size
- Hypothesis Testing Roadmap

Lesson 04 - Hypothesis Testing with Normal Data

- Introduction
- Normal Data
- One Sample t-test
- One Sample t-test Sample Size
- Demo: 1 sample t test
- Two-Sample t-test
- Two-Sample t-test Example
- Demo: 2 sample t test
- Demo: Bartlett's Test
- Paired t-test
- Demo: Paired test
- ANOVA
- Demo: Anova
- Residual Plot





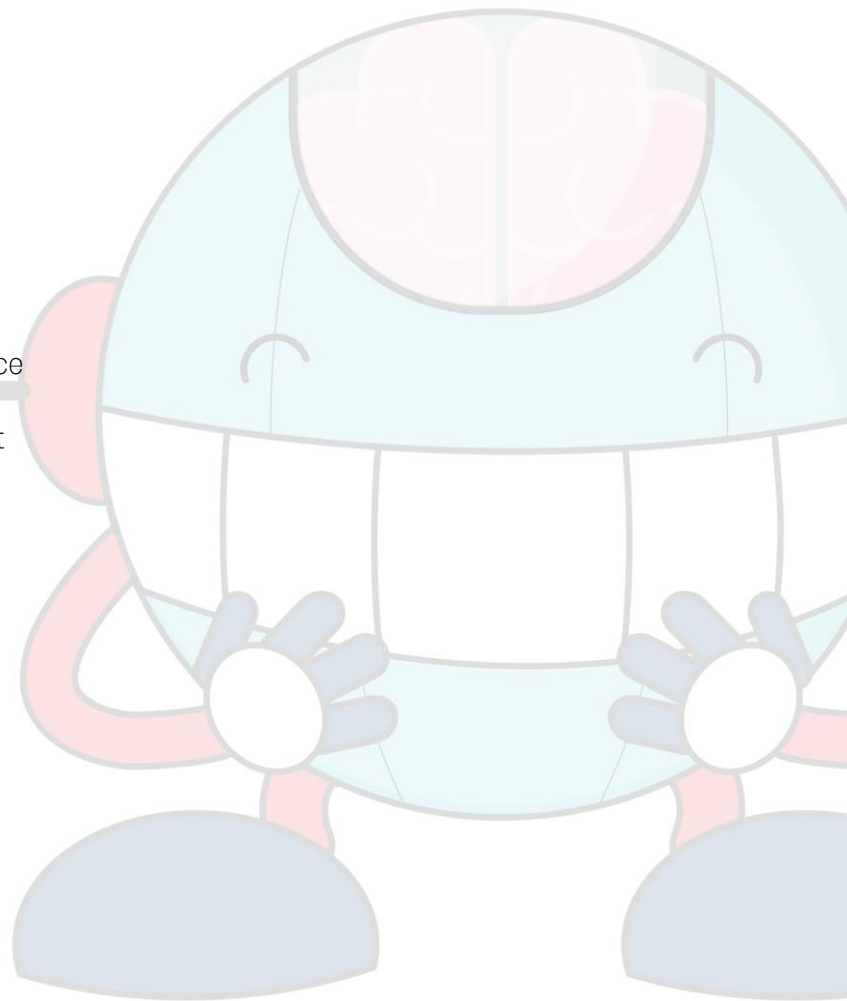
Lesson 05 - Hypothesis Testing with Non-Normal Data

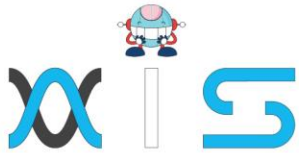
- Introduction
- Non Parametric tests
- Mann-Whitney Tests
- Demo: Mann_Whitney_Test
- Kruskal-Wallis Test
- Demo: Kruskal_Wallis_Test
- Mood's Median Test
- Demo: Mood's Median Test
- Friedman Test
- Demo: Friedman_Test
- 1 Sample Sign Test
- Demo: 1_Sample_Sign_Test
- 1 Sample Wilcoxon Test
- Demo: 1 Sample Wilcoxon Test
- One-Sample Proportion Test
- Demo: One-Sample Proportion Test
- Two-Sample Proportion Test
- Demo: Two-Sample Proportion Test
- Chi-Square Tests
- Demo: Chi-Square_Test_of_Independence
- Chi-Square Goodness-of-Fit Test
- Demo: Chi-Square Goodness-of-Fit Test
- Chi-Square Cross Tabulation
- Demo: Chi-Square Cross Tabulation
- Demo: Levene_F-Test

Session 04 - Improve Phase

Lesson 01 - Simple Linear Regression

- Introduction to improve phase
- Learning objectives
- Correlation
- Demo: correlation
- Demo: Scatter plot
- Correlation and Causation
- Predictor measures and Results
- Correlation Coefficients
- Regression Analysis





- Demo: Regression
- Residual Analysis

Lesson 02 - Multiple Regression Analysis

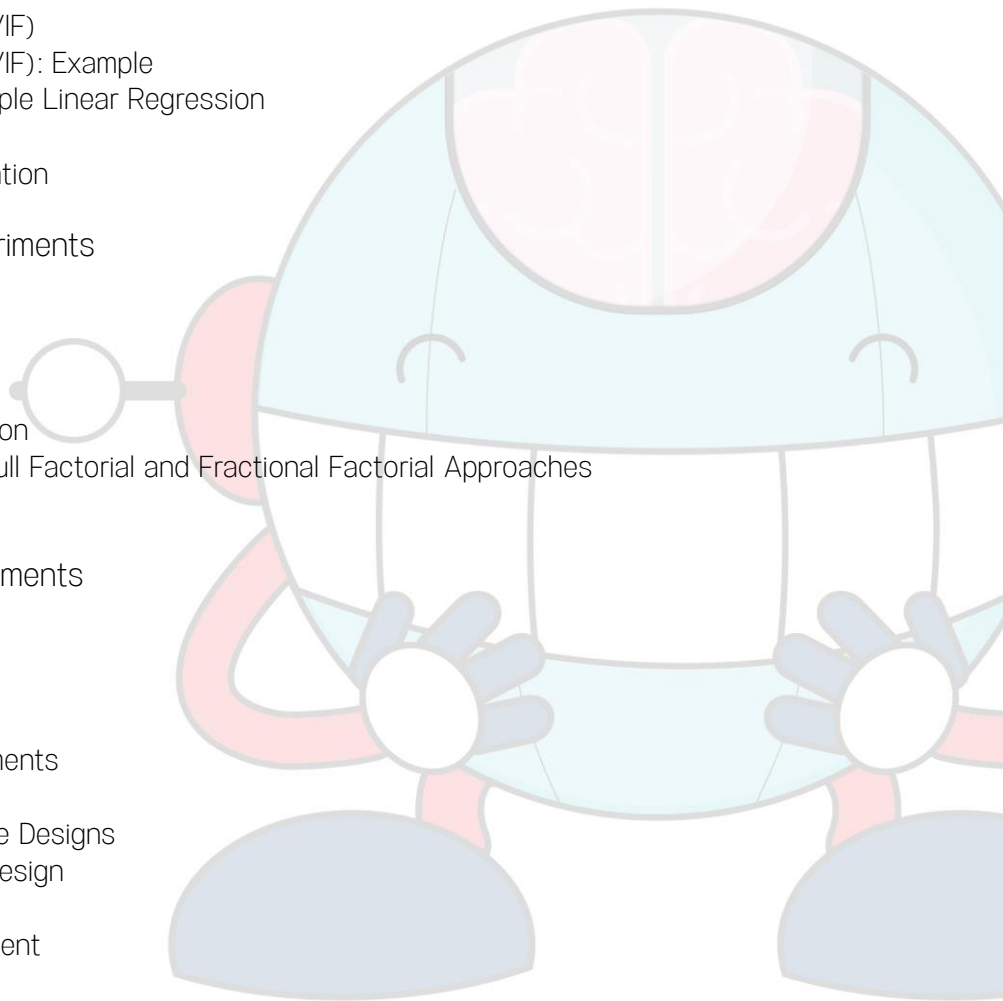
- Introduction
- Multi-Vari Analysis
- Demo: Multi-Vari Analysis
- Non Linear Regression
- Multiple Linear Regression
- Demo: Multiple Linear Regression
- Variance Inflation Factor (VIF)
- Variance Inflation Factor (VIF): Example
- Confidence Interval in Multiple Linear Regression
- Box Cox Transformation
- Demo: Box-Cox Transformation

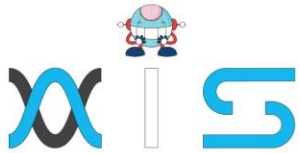
Lesson 03 - Designed Experiments

- Introduction
- Designed Experiments
- Phases of DOE Process
- Optimization and confirmation
- Types of DOE Strategies Full Factorial and Fractional Factorial Approaches
- Experimental Design: Consi

Lesson 04 - Factorial Experiments

- Introduction
- Factorial Designs
- Full Factorial Experiments
- Demo: Full Factorial Experiments
- Quadratic Models
- Types of Response Surface Designs
- Balanced and Orthogonal Design
- Center Points
- Fractional Factorial Experiment
- Confounding
-





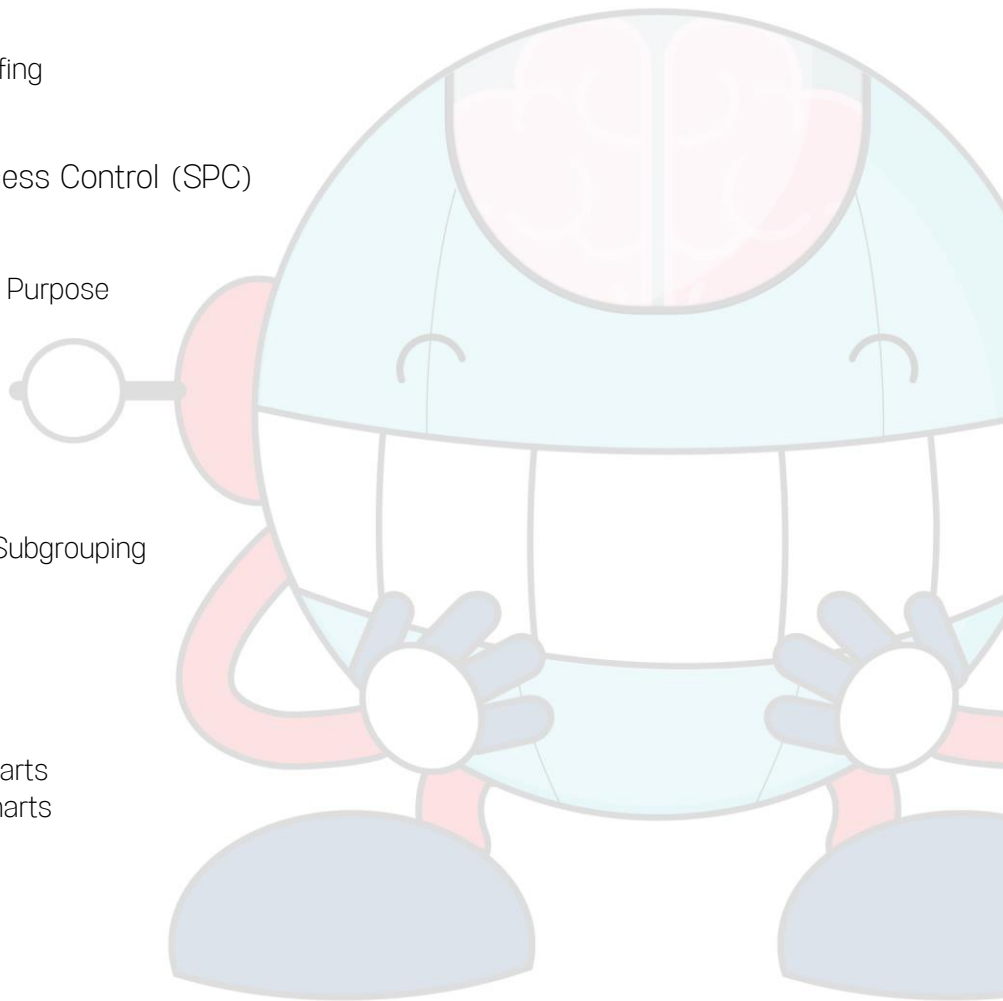
Session 05 - Control Phase

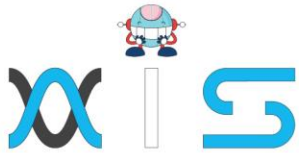
Lesson 01 - Lean Controls

- Introduction to Control Phase
- Learning Objectives
- Control Methods of 5S
- Sort
- Set in order
- Shine standardize and sustain
- Kanban
- Kanban Principles
- Steps to Implement Kanban
- Poka Yoke or Mistake Proofing
- Mistake Proofing Examples

Lesson 02 - Statistical Process Control (SPC)

- Introduction
- Statistical Process Control: Purpose
- Control Charts
- Control Charts: Objectives
- Control Charts: Uses
- Control Charts: Types
- Control Charts: Steps
- Subgroup
- Consideration for Rational Subgrouping
- Charts for Attribute Data
- Tests for Special Causes
- Demo: I MR chart
- Demo: X Bar R chart
- Demo: X Bar s chart
- Demo: P charts Demo: NP carts
- Demo: U Charts Demo: C charts
- Demo: Cusum chart
- Demo: EWMA chart



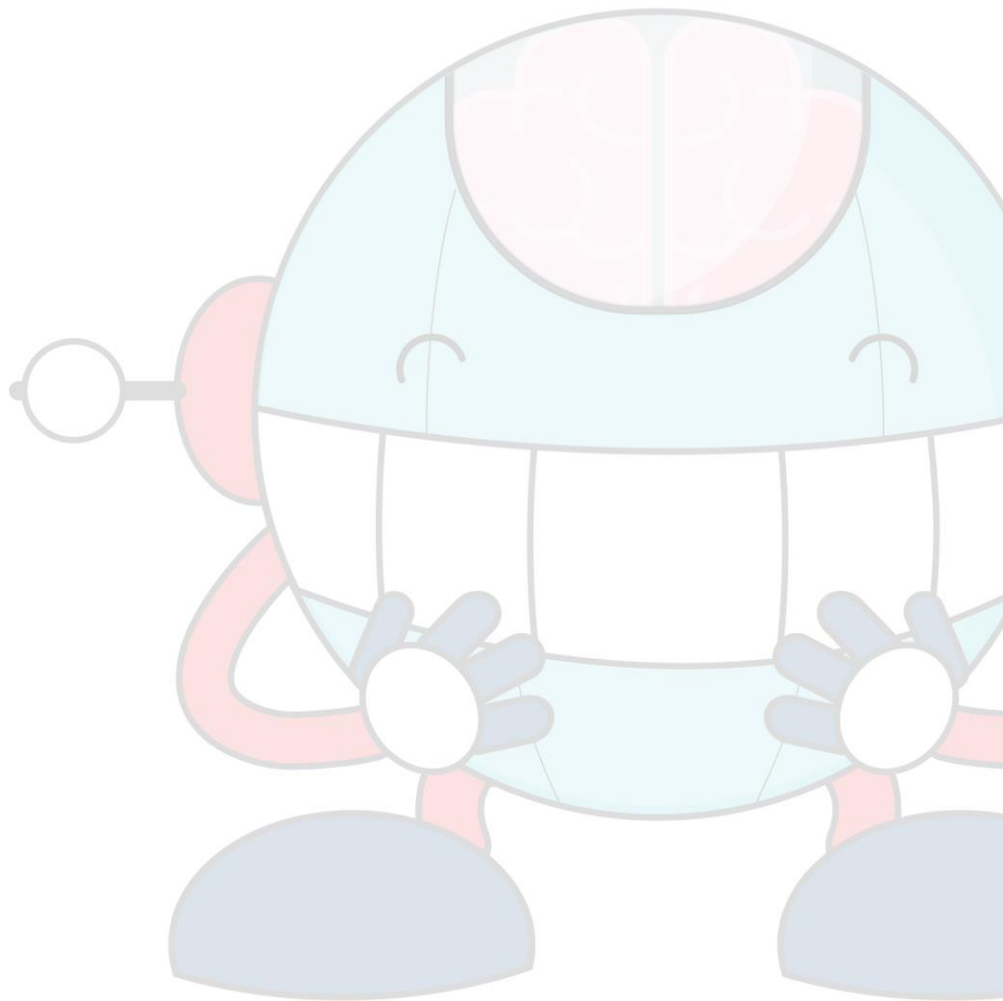


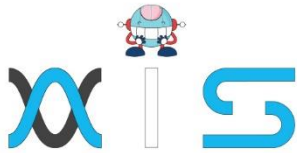
Lesson 03 - Six Sigma Control Plans

- Introduction
- Project Cost Benefit Analysis
- Return on Investment (ROI)
- Cost Benefit Analysis
- Cost Benefit Analysis: Steps
- NPV and IRR Selecting the Right Solutions: Guidelines
- Implementation of Proposed Solutions: Roadmap
- Control Plan
- Elements of a Control Plan
- Control Plan: Training
- Response Plan
- Project Closure

Practise Projects:

- V-tech Hydraulic Solutions
- Elite Elegance





AIS

With the rising demand in scalable technology, AIS provides tailored goal-setting based on your organization's needs and expectations. With products geared towards the growing needs of your organization's customers and employees, AIS has innovative and value-driven solutions.

Learning Partners



SAS Management, Inc.

SAS Management, Inc. has been a leader in the training, certification and consulting services industry in the Philippines. With offices in Makati, Ortigas and Cebu, Philippines, the company has been the top training and consulting company for over 9 years. In its years of existence, it has provided certificates to over 100,000 professionals including 10,000 participants in the 160+ courses that have been conducted just during the 2020-2021 pandemic alone. The most sought-after courses being offered are ITIL, Project Management Professional (PMP)®, COBIT 5, Six Sigma Yellow Belt, Six Sigma Green Belt, PRINCE2, and organizational skills, among others.



Simplilearn

Simplilearn, based in California and India, is the world's #1 online bootcamp and one of the world's the leading certification and training providers. Simplilearn trained over 2,000,000 professionals with 2,000+ trainers and provides over 400 different courses.

Technology Partner



Freshworks

With over 40,000 customers, Freshworks is a business solutions software provider with products ranging from IT helpdesk and service desk, customer relationship management, live chat, marketing automation, phone system, and HR.

Partners & Affiliates

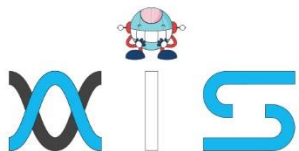


PECB

SDI Service Desk Institute

EC-COUNCIL





The program presented, as well as a wide range of programs are products of the partnership of AIS, SAS Management, Inc., and Simplilearn. With a common goal of providing the best practice of facilitating learning with an array of choices available in the online platform in this time of digitization.

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