

Six Sigma Black Belt Supplemental Materials

The following is a description of the materials that are currently available for downloading.

Case Study: This is a narrative showing how a typical six sigma black belt project might evolve as the hypothetical black belt addresses an opportunity for improvement.

Data Sets: These are Excel spreadsheets that contain data used in problems within the course. The use of these data sets will eliminate the need for retyping data found in the class materials. The following serves as a key to match each data set with the appropriate page in the power point materials.

Chapter	References Page	File Name	Comments
1-3	Page 1-3-8	#1-3-1	Histogram in SPCXL and Excel
	Page 1-3-21	#1-3-1	Descriptive statistis in Excel and SPCXL
1-4	Page 1-4-13	#1-4-1	Dice Distribution
	Page 1-4-24	Text Example	Binomial Probability Exact and Cumulative: Excel then SPCXL
	Page 1-4-31	Text Example	Poisson Probability Exact and Cumulative: Excel then SPCXL
	Page 1-4-40	Text Example	Normal Probability Exact and Cumulative: Excel (all 4 functions for normal) then SPCXL
	Page 1-4-44	Text Example	Chi Square Distribution Excel: Chiinv
	Page 1-4-46	Text Example	F Distribution Excel: Finv
	Page 1-4-49	Text Example	Student t distribution: tinv
1-5	Page 1-5-22	Text Example	CI for means: Excel and SPCXL
	Page 1-5-29	Text Example	CI for proportions: SPCXL
	Page 1-5-34	Text Example	CI for Standard Deviations: SPCXL
	Page 1-5-36	Text Example	Sample Size for Variables: SPCXL
	Page 1-5-37	#1-5-1	Sample Size for Proportions: SPCXL
1-6	Page 1-6-34	#1-6-1	F test Excel; t tests Excel
1-7	Page 1-7-9	#1-7-1	Excel: Scatter Diagram, Regression, Shortcut on scatter diagram
	Page 1-7-18	#1-7-5	Problem
	Page 1-7-32	#1-7-2	Excel: Correlation Matrix
	Page 1-7-40	#1-7-6	Problem
	Page 1-7-46	#1-7-3	Excel: Shortcut on scatter diagram, straighten line out by transforming data
	Page 1-7-48	#1-7-7	Problem
	Page 1-7-51	#1-7-4	Excel: Multiple regression
	Page 1-7-58	#1-7-8	Case Study
	Page 1-7-59	#1-7-9	Case Study

2-2	Page 2-2-27	#2-2-1	SPCXL: Histogram and Xbar R chart
	Page 2-2-29	#2-2-2	SPCXL: I and MR Chart
	Page 2-2-31	#2-2-4	Problem
	Page 2-3-34	#2-2-5	Problem
	Page 2-2-40	#2-2-3	SPCXL: p Chart
	Page 2-2-69	#2-2-1	SPCXL: Process Capability
	Page 2-2-77	#2-2-6	Problem
	Page 2-2-81	#2-2-7	Case Study
2-3	Page 2-3-14	#2-3-1	Nominal Short Run Example
	Page 2-3-30	#2-3-2	Short Run Short Run Example
	Page 2-3-35	#2-3-3	Problem
3-1	Page 3-1-7	#1-4-1	Show use of Excel Template for Dice
	Page 3-1-10	#3-1-1	Show use of Excel Template for Normal Distribution
	Page 3-1-16	#3-1-2	
3-2	Page 3-2-21	#3-2	Show use of Excel Template for OC Curve
	Page 3-2-43	#3-2	Show use of Excel Template for AOQL Curve
	Page 3-2-49	#3-2	Show use of Excel Template for ATI Curve
	Page 3-2-57	#3-2	Show use of Excel Template for ASN Curve

Black Belt Week 1: PDF's of all of the power point slides in what would normally be the first week of SSBB. These should correspond to the slides seen in the online version, though there may be the occasional page that is slightly different.

Black Belt Week 2: PDF's of all of the power point slides in what would normally be the second week of SSBB. These should correspond to the slides seen in the online version, though there may be the occasional page that is slightly different.

Black Belt Week 3: PDF's of all of the power point slides in what would normally be the third week of SSBB. These should correspond to the slides seen in the online version, though there may be the occasional page that is slightly different.

Excel Templates: These are fill in the blank routines that have been written for Excel that will perform many of the calculations explained in the material. Since our objective is to use the results of the analysis step correctly, these templates will assist in the calculation process. These templates will be referenced in the manual that will be discussed later in this document. The specific templates included are:

- 2 sample TOH Calculator. This will calculate t values for the case of comparing two sample means with sample standard deviations not significantly different from each other.
- Acceptance sampling. This series of templates build OC curves and calculate descriptive statistics for single sample sampling plans. In the class presentations the "live" students build these as part of the class activity. You are encouraged to also build these and then compare. It will show you if you really understand the various Excel functions and the calculations necessary for acceptance sampling.
- Confidence intervals. Each tab in this spreadsheet shows the confidence intervals for the indicated situation. Read the names on the tabs very carefully.

- Control chart calculations. This is a series of macros that will calculate control limits and process capability measures.
- Dice. This is the theoretical distribution for the rolling of a pair of dice. It will be used in both the probability distribution section and the goodness of fit portion of the course.
- Normal distribution. This is the theoretical normal distribution. It can generate a normal curve for almost any set of process measurements. It will be used in both the probability distribution section and the goodness of fit portion of the course.
- Normal distribution Goodness of Fit. This will assist in the performance of a chi-square goodness of fit test.
- Poisson Distribution. This is the theoretical Poisson distribution. It can generate a Poisson distribution for almost any set of process measurements. It will be used in both the probability distribution section and the goodness of fit portion of the course.
- Poisson distribution Goodness of Fit. This will assist in the performance of a chi-square goodness of fit test.
- Tests of H Templates. Each tab in this spreadsheet shows the results of a test of hypothesis for the indicated situation. Read the names on the tabs very carefully.

Green Belt Course: While it is understood that you have a SSGB or equivalent, this section is the PDF version of IIE's SSGB course. The SSBB exam covers both green belt and black belt concepts. This material is provided as a reference.

Manual (Beta Version): These PDF files are an explanation of much of the material covered in the presentations that will be viewed and listened to online. It includes background information on some of the topics as well as step by step explanation of many of the calculations as well as screen shots of how most of the Excel statistical functions are navigated. It should be noted that some of the actual statistical calculations are performed using the Excel templates referenced above rather than the manual methods presented in the audio and video files. It is the expectation that this will enhance the learning experience.

Military Standards: A number of basic operational systems and methods were at one time defined by Military Standards. Some of these are provided as reference.

Practice Problems: A number of problem sets are provided with additional practice exercises. Feel free to work these problems as necessary and check with your instructor if there are any difficulties.

Probability Tables: These are provided for the distributions shown. They are referenced in some of the presentations. They are all in Excel format for easy navigation.

Project Information: This is information about the SSBB project. It is all covered as part of the introductory material in the presentation. Copies of the charter form are found here.

Readings: A number of articles have been identified as being worthwhile for the understanding of six sigma and its applications. These articles have been uploaded. The list continues to expand so check it regularly.

Sample Exam Questions: Two sample exams have been posted. These questions are representative of the questions that are found on the SSBB exam. At the end of each exam is the key to the correct answers.