Certified Six Sigma Green Belt (CSSGB)
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The Certified Six Sigma Green Belt (CSSGB) Body of Knowledge (BoK) has been updated to ensure that the most current state of six sigma green belt practice is being tested in the examination. If you would like more information on how a BoK is updated, see a description of the process on https://asq.org/cert/exam-development.

Part of the updating process is to conduct a job analysis survey to determine whether the topics in the 2014 BoK are still relevant to the job role of six sigma green belts and to identify any new topics that have emerged since that BoK was developed. The results of the CSSGB job analysis survey showed that most of the topics that were in the 2014 BoK are still relevant to the job roles of six sigma green belts. As indicated in Table 2, one 2014 BoK subtopic was split into two subtopics (IV.C into IV.C.1 & IV.C.2), six new subtopics were added (II.C.1, IV.C.1, VI.B.2, VI.B.3, VI.B.4, VI.B.5), and several subtexts were revised.

The 2022 Certified Six Sigma Green Belt Body of Knowledge (CSSGB BoK) will be introduced at the **August 2022** administration. Both BoKs will be available online until October 1, 2022, at which time the 2014 BoK will be removed.

General comments about ASQ Body of Knowledge updates

When the Body of Knowledge (BoK) is updated for an ASQ exam, most of the material covered in the BoK remains the same. There are very few programs that change significantly over a 5-7 year period. One of the points that we make to all the exam development committees is that ASQ Certification Exams need to reflect "the state of practice" not "the state of the art." This helps to keep the programs grounded in what people currently do, rather than being driven by the latest hot-topic improvement idea or trend. Typically, the biggest change in any updated BoK is in how the content is organized. When a new BoK is announced and posted on the ASQ website, we also include a "BoK Map" that highlights the changes between the two Bodies of Knowledge: old and new. The BoK map also clearly identifies any new content that has been added to the exam, as well as any content that has been removed from the exam.

With regard to exam preparation materials, you should be able to use any of the reference books that are currently listed on the bibliography for the exam program. These are the source materials that the exam development committees use to write questions and verify answers.

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Specific comments about the 2022 CSSGB Body of Knowledge updates

The CSSGB Body of Knowledge mostly stayed the same with the 2022 update. The primary change was the addition of the Sustain improvements (VI.B) topic that contains 4 new subtopics. There was a cognitive level made to one subtopic area.

Table 1 below portrays the change in items allocated to each section of the Body of Knowledge. The section names have all remained the same. Table 2 presents the 2022 CSSGB BoK and maps the topics to the 2014 BoK. Details on changes between the two can be found in Table 2. Table 3, presents the 2014 SSGB BoK and maps the topics to the 2022 BoK. Details on changes between the two can be found below.

Table 1. CSSGB BoK Section Item Allocation

BoK Section	2014 BoK	2022 BoK	Difference
I. Overview: Six Sigma and the Organization	13	11	-2
II. Define Phase	23	20	-3
III. Measure Phase	23	20	-3
IV. Analyze Phase	15	18	+3
V. Improve Phase	15	16	+1
VI. Control Phase	11	15	+4

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Table 2. 2022 SSGB BoK mapped to 2014 SSGB BoK

2014 BoK	2022 BoK Details	Notes
Section	**I. Overview: Six Sigma and the Organization [11 Questions]**	Number of questions changed from 13 to 11
	A. Six sigma and organizational goals	
I.A.1	1. Value of six sigma Recognize why organizations use six sigma, how they apply its philosophy and goals, and the evolution of six sigma from quality leaders such as Juran, Deming, Shewhart, Ishikawa, and others. (Understand)	
I.A.2	2. Organizational goals and six sigma projects Identify the linkages and supports that need to be established between a selected six sigma project and the organization's goals including SMART goals, and describe how process inputs, outputs, and feedback at all levels can influence the organization as a whole. (Understand)	Added SMART goals
I.A.3	3. Organizational drivers and metrics Recognize key business drivers (profit, market share, customer satisfaction, efficiency, product differentiation, key performance indicators (KPIs)) for all types of organizations. Understand how key metrics and scorecards are developed and how they impact the entire organization. (Understand)	Added key performance indicators (KPIs)
I.B	**B. Lean principles in the organization**	
I.B.1	1. Lean concepts Define and describe lean concepts such as theory of constraints, value chain, flow, takt time, just-in-time (JIT), Gemba, spaghetti diagrams, and perfection. (Apply)	Added takt time, just-in-time (JIT), Gemba and spaghetti diagrams
I.B.2	2. Value-stream mapping Use value-stream mapping to identify value-added processes and steps or processes that produce waste, including excess inventory, unused space, test inspection, rework, transportation, and storage. (Understand)	
I.C	**C. Design for six sigma (DFSS) methodologies**	

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2014 BoK	2022 BoK Details	Notes
I.C.1	1. Road maps for DFSS Distinguish between DMADV (define, measure, analyze, design, verify) and IDOV (identify, design, optimize, verify), and recognize how they align with DMAIC. Describe how these methodologies are used for improving the end product or process during the design (DFSS) phase. Understand how verification and validation are used to compare results against stated goals. (Understand)	Added verification and validation
I.C.2	2. Basic failure mode and effects analysis (FMEA) Use FMEA to evaluate a process or product and determine what might cause it to fail and the effects that failure could have. Identify and use scale criteria, calculate the risk priority number (RPN), and analyze the results. (Analyze)	
I.C.3	3. Design FMEA and process FMEA Define and distinguish between these two uses of FMEA. (Apply)	
	II. Define Phase [20 Questions]	Number of questions changed from 23 to 20
	A. Project identification	
II.A.1	1. Project selection Describe the project selection process and what factors should be considered in deciding whether to use the six sigma DMAIC methodology or another problem-solving process. (Understand)	
II.A.2	2. Process elements Define and describe process components and boundaries. Recognize how processes cross various functional areas and the challenges that result for process improvement efforts. (Analyze)	
II.A.3	3. Benchmarking Understand various types of benchmarking, including competitive, collaborative and best practices. (Understand)	
II.A.4	4. Process inputs and outputs Identify process input and output variables and evaluate their relationships using the supplier, inputs, process, output, customer (SIPOC) model. (Analyze)	
II.A.5	5. Owners and stakeholders Identify the process owners and other stakeholders in a project. (Apply)	
	B. Voice of the customer (VOC)	

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2014 BoK	2022 BoK Details	Notes
II.B.1	1. Customer identification Identify the internal and external customers of a project, and what effect the project will have on them. (Apply)	
II.B.2	2. Customer data Collect feedback from customers using surveys, focus groups, interviews, and various forms of observation. Identify the key elements that make these tools effective. Review data collection questions to eliminate vagueness, ambiguity, and any unintended bias. (Apply)	
II.B.3	3. Customer requirements Use quality function deployment (QFD), Critical to X (CTX when 'X' can be quality, cost, safety, etc.), Critical to Quality tree (CTQ), and Kano model to translate customer requirements statements into product features, performance measures, or opportunities for improvement. Use weighting methods as needed to amplify the importance and urgency of different kinds of input; telephone call vs. survey response; product complaint vs. expedited service request. (Apply)	Added CTX, CTQ, and Kano model
	C. Project management basics	
NEW	1. Project methodology Define and apply agile and top-down management methods. (Apply)	
II.C.1	2. Project charter Define and describe elements of a project charter and develop a problem statement that includes baseline data or current status to be improved and the project's goals. (Apply)	
II.C.2	3. Project scope Help define the scope of the project using process maps, Pareto charts, and other quality tools. (Apply)	
II.C3.	4. Project metrics Help develop primary metrics (reduce defect levels by x-amount) and consequential metrics (the negative effects that making the planned improvement might cause). (Apply)	
II.C.4	5. Project planning tools Use work breakdown structures (WBS), Gantt charts, critical path method (CPM),and program evaluation and review technique (PERT) charts, and toll-gate reviews to plan projects and monitor their progress. (Apply)	Added work breakdown structure (WBS), and toll-gate reviews

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II.C.5	6. Project documentation Describe the types of data and input needed to document a project. Identify and help develop appropriate presentation tools (storyboards, spreadsheet summary of results) for phase reviews and management updates. (Apply)	
II.C.6	7. Project risk analysis and management Describe the elements of project risk analysis, including feasibility, potential impact, risk priority number (RPN), and risk management. Identify the potential effect risk can have on project goals and schedule, resources (materials and personnel), business continuity planning, costs and other financial measures, and stakeholders. (Understand)	Revised subtopic name; added risk management and business continuity planning
II.C.7	8. Project closure Review with team members and sponsors the project objectives achieved in relation to the charter and ensure that documentation is completed and stored appropriately. Identify lessons learned and inform other parts of the organization about opportunities for improvement. (Apply)	
II.D	**D. Management and planning tools** Define, select, and apply these tools: 1) affinity diagrams, 2) interrelationship digraphs, 3) tree diagrams, 4) prioritization matrices, 5) matrix diagrams, 6) process decision program charts (PDPC), 7) activity network diagrams, and 8) SWOT analysis. (Apply)	Added SWOT analysis
II.E	**E. Business results for projects**	
II.E.1	1. Process performance Calculate process performance metrics such as defects per unit (DPU), rolled throughput yield (RTY), cost of poor quality (COPQ), defects per million opportunities (DPMO), sigma levels, and process capability indices. Track process performance measures to drive project decisions. (Analyze)	
II.E.2	2. Communication Define and describe communication techniques used in organizations: top-down, bottom-up, and horizontal. (Apply)	
II.F	**F. Team dynamics and performance**	

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2014 BoK	2022 BoK Details	Notes
II.F.1	1. Team stages and dynamics Define and describe the stages of team evolution, including forming, storming, norming, performing, adjourning, and recognition. Identify and help resolve negative dynamics such as overbearing, dominant, or reluctant participants, the unquestioned acceptance of opinions as facts, groupthink, feuding, floundering, the rush to accomplishment, attribution, discounts, digressions, and tangents. (Understand)	
II.F.2	2. Team roles and responsibilities Use tools such as RACI, to describe and define the roles and responsibilities of participants on six sigma and other teams, including black belt, master black belt, green belt, champion, executive, coach, facilitator, team member, sponsor, and process owner. (Apply)	Added RACI
II.F.3	3. Team tools and decision-making concepts Define and apply team tools such as brainstorming, and decision-making concepts such as nominal group technique, and multi-voting. (Apply)	Revised subtopic name and added decision-making concepts to subtext
II.F.4	4. Team communication Identify and use appropriate communication methods (both within the team and from the team to various stakeholders) to report progress, conduct reviews, and support the overall success of the project. (Apply)	
	III. Measure Phase [20 Questions]	Number of questions changed from 23 to 20
III.A	**A. Process analysis and documentation** Develop process maps and review written procedures, work instructions, and flowcharts to identify any gaps or areas of the process that are misaligned. (Create)	
III.B	**B. Probability and statistics**	
III.B.1	1. Basic probability concepts Describe and interpret basic probability concepts: independent events, mutually exclusive events, multiplication rules, permutations, and combinations. (Understand)	
III.B.2	2. Central limit theorem Define the central limit theorem and describe its significance in relation to confidence intervals, hypothesis testing, and control charts. (Understand)	
III.C	**C. Statistical distributions** Define and describe various distributions as they apply to statistical process control and probability: normal, binomial, Poisson, chi square, Student's t, and F. (Understand)	

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III.D	**D. Collecting and summarizing data**	
III.D.1	1. Types of data and measurement scales Identify and classify continuous (variables) and discrete (attributes) data. Describe and define nominal, ordinal, interval, and ratio measurement scales. (Analyze)	
III.D.2	2. Sampling and data collection plans and methods Define and apply various sampling methods (random and stratified) and data collection methods (check sheets and data coding). Prepare data collection plans that include gathering data and performing quality checks (e.g., minimum/maximum values, erroneous data, null values). (Apply)	Revised subtopic name and added data collection plans and quality checks
III.D.3	3. Descriptive statistics Define, calculate, and interpret measures of dispersion and central tendency. Develop and interpret frequency distributions and cumulative frequency distributions. (Evaluate)	
III.D.4	4. Graphical methods Construct and interpret diagrams and charts that are designed to communicate numerical analysis efficiently, including scatter diagrams, normal probability plots, histograms, stem-and-leaf plots, box-and-whisker plots. (Create)	
III.E	**E. Measurement system analysis (MSA)** Calculate, analyze, and interpret measurement system capability using gauge repeatability and reproducibility (GR&R) studies, measurement correlation, bias, linearity, percent agreement, and precision/tolerance (P/T). (Evaluate)	
III.F	**F. Process and performance capability**	
III.F.1	1. Process performance vs. process specifications Define and distinguish between natural process limits and specification limits, and calculate process performance metrics. (Evaluate)	
III.F.2	2. Process capability studies Define, describe, and conduct process capability studies, including identifying characteristics, specifications, and tolerances, and verifying stability and normality. (Evaluate)	
III.F.3	3. Process capability (C_p, C_{pk}) and process performance (P_p, P_{pk}) indices Describe the relationship between these types of indices. Define, select, and calculate process capability and process performance. Describe when C_{pm} measures can be used. Calculate the sigma level of a process. (Evaluate)	

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III.F.4	4. Short-term vs. long-term capability and sigma shift Describe the assumptions and conventions that are appropriate to use when only short-term data are used. Identify and calculate the sigma shift that occurs when long- and short-term data are compared. (Evaluate)	
	IV. Analyze Phase [18 Questions]	Number of questions changed from 15 to 18
IV.A	**A. Exploratory data analysis**	
IV.A.1	1. Multi-vari studies Select appropriate sampling plans to create multi-vari study charts and interpret the results for positional, cyclical, and temporal variation. (Create)	
IV.A.2	2. Correlation and linear regression Describe the difference between correlation and causation. Calculate the correlation coefficient and linear regression and interpret the results in terms of statistical significance (p-value). Use regression models for estimation and prediction. (Evaluate)	
IV.B	**B. Hypothesis testing**	
IV.B.1	1. Basics Distinguish between statistical and practical significance. Determine appropriate sample sizes and develop tests for significance level, power, and type I and type II errors. (Apply)	
IV.B.2	2. Tests for means, variances, and proportions Conduct hypothesis tests to compare means, variances, and proportions (paired-comparison t-test, F-test, analysis of variance (ANOVA), chi square) and interpret the results. (Analyze)	
NEW	**C. Additional analysis methods**	
NEW	1. Gap analysis Analyze scenarios to identify performance gaps and compare current and future states using predefined metrics. (Analyze)	
V.B	2. Root cause analysis Use cause and effect diagrams, relational matrices, 5 Whys, fault tree analysis, and other problem-solving tools to identify the true cause of a problem. (Analyze)	
	V. Improve Phase [16 Questions]	Number of questions changed from 15 to 16
	A. Design of experiments (DOE)	

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V.A.1	1. Basic terms Define and describe terms such as independent and dependent variables, factors and levels, responses, treatments, errors, repetition, blocks, randomization, effects, and replication. (Understand)	
V.A.2	2. DOE graphs and plots Interpret main effects analysis and interaction plots. (Apply)	
NEW	**B. Implementation planning** Apply implementation planning by using proof of concept, try-storming, simulations, and conducting pilot tests. (Apply)	
	C. Lean tools	
V.C.1	1. Waste elimination Select and apply tools and techniques for eliminating or preventing waste, including pull systems, kanban, 5S, standard work, and poka-yoke. (Apply)	
V.C.2	2. Cycle-time reduction Use various techniques to reduce cycle time (continuous flow, setup reduction), single-minute exchange of dies (SMED). (Analyze)	Added SMED
V.C.3	3. Kaizen and kaizen blitz Define and distinguish between these two methods and apply them in various situations. (Apply)	
	VI. Control Phase [15 Questions]	Number of questions changed from 11 to 15
VI.A	**A. Statistical process control (SPC)**	
VI.A.1	1. SPC Basics Describe the theory and objectives of SPC, including measuring and monitoring process performance for both continuous and discrete data. Define and distinguish between common and special cause variation and how these conditions can be deduced from control chart analysis. (Analyze)	
VI.A.2	2. Rational subgrouping Define and describe how rational subgrouping is used. (Understand)	
VI.A.3	3. Control charts Identify, select, construct, and use control charts: $\overline{X} - R$, $\overline{X} - s$, individual and moving range (ImR or XmR), median, p, np, c, and u. (Apply)	

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NEW	**B. Sustain improvements**	
VI.B	1. Control plan Assist in developing and implementing a control plan to document and monitor the process. (Apply)	Removed "maintain the improvements"
NEW	2. Document control Understand document control and its role in controlling and sustaining improvements. (Understand)	
NEW	3. Training plans Develop training plans to implement and sustain improvements. (Apply)	
NEW	4. Audits Define first-, second-, and third-party audits. (Remember)	
NEW	5. Plan-do-check-act (PDCA) Apply and distinguish between the steps of plan-do-check-act (PDCA). (Apply)	
VI.C	**C. Lean tools for process control**	
VI.C.1	1. Total productive maintenance (TPM) Define the elements of TPM, including use of predictive maintenance and describe how they can be used to control the improved process. (Understand)	Added predictive maintenance
VI.C.2	2. Visual factory Define the elements of a visual factory (Andon, Jidoka) and describe how they can be used to control the improved process. (Understand)	Added Andon and Jidoka as examples

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Table 3. 2014 SSGB BoK mapped to 2022 SSGB BoK

2014 BoK		2022 BoK		Notes
2014 BoK	**Label**	**Code**	**Label**	
I.A.1	Value of six sigma	**I.A.1**	Value of six sigma	
I.A.2	Organizational goals and six sigma projects	**I.A.2**	Organizational goals and six sigma projects	Added SMART goals
I.A.3	Organizational drivers and metrics	**I.A.3**	Organizational drivers and metrics	Added key performance indicators (KPIs)
I.B.1	Lean concepts	**I.B.1**	Lean concepts	Added takt time, just-in-time (JIT), Gemba and spaghetti diagrams
I.B.2	Value-streaming mapping	**I.B.2**	Value-streaming mapping	
I.C.1	Road maps for DFSS	**I.C.1**	Road maps for DFSS	Added verification and validation
I.C.2	Basic failure mode and effects analysis (FMEA)	**I.C.2**	Basic failure mode and effects analysis (FMEA)	
I.C.3	Design FMEA and process FMEA	**I.C.3**	Design FMEA and process FMEA	
II.A.1	Project selection	**II.A.1**	Project selection	
II.A.2	Process elements	**II.A.2**	Process elements	
II.A.3	Benchmarking	**II.A.3**	Benchmarking	
II.A.4	Process inputs and outputs	**II.A.4**	Process inputs and outputs	
II.A.5	Owners and stakeholders	**II.A.5**	Owners and stakeholders	
II.B.1	Customer identification	**II.B.1**	Customer identification	
II.B.2	Customer data	**II.B.2**	Customer data	
II.B.3	Customer requirements	**II.B.3**	Customer requirements	Added CTX, CTQ, and Kano model
II.C.1	Project charter	**II.C.1**	Project methodology	New title
II.C.2	Project scope	**II.C.2**	Project charter	
II.C.3	Project metrics	**II.C.3**	Project scope	
II.C.4	Project planning tools	**II.C.4**	Project metrics	
II.C.5	Project documentation	**II.C.5**	Project planning tools	Added work breakdown structure (WBS), and toll-gate reviews

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2014 BoK		2022 BoK		Notes
II.C.6	Project risk analysis	**II.C.6**	Project documentation	
II.C.7	Project closure	**II.C.7**	Project risk analysis and management	Revised subtopic name; added risk management and business continuity planning
		II.C.8	Project closure	
II.D.1-II.D.7	Management and planning tools	**II.D.1-II.D.7**	Management and planning tools	Added SWOT analysis
II.E.1	Process performance	**II.E.1**	Process performance	
II.E.2	Communication	**II.E.2**	Communication	
II.F.1	Team stages and dynamics	**II.F.1**	Team stages and dynamics	
II.F.2	Team roles and responsibilities	**II.F.2**	Team roles and responsibilities	Added RACI
II.F.3	Team tools	**II.F.3**	Team tools and decision-making concepts	Revised subtopic name and added decision-making concepts to subtext
II.F.4	Team communication	**II.F.4**	Team communication	
III.A	Process analysis and documentation	**III.A**	Process analysis and documentation	
III.B.1	Basic probability concepts	**III.B.1**	Basic probability concepts	
III.B.2	Central limit theorem	**III.B.2**	Central limit theorem	
III.C	Statistical distributions	**III.C**	Statistical distributions	
III.D.1	Types of data and measurement scales	**III.D.1**	Types of data and measurement scales	
III.D.2	Sampling and data collection method	**III.D.2**	Sampling and data collection method	Revised subtopic name and added data collection plans and quality checks
III.D.3	Descriptive statistics	**III.D.3**	Descriptive statistics	
III.D.4	Graphical methods	**III.D.4**	Graphical methods	
III.E	Measurement system analysis (MSA)	**III.E**	Measurement system analysis (MSA)	
III.F.1	Process performance vs. process specifications	**III.F.1**	Process performance vs. process specifications	
III.F.2	Process capability studies	**III.F.2**	Process capability studies	

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2014 BoK		2022 BoK		Notes
III.F.3	Process capability (C_p, C_{pk}) and process performance (P_p, P_{pk}) indices	**III.F.3**	Process capability (C_p, C_{pk}) and process performance (P_p, P_{pk}) indices	
III.F.4	Short-term vs. long-term capability and sigma shift	**III.F.4**	Short-term vs. long-term capability and sigma shift	
IV.A.1	Multi-vari studies	**IV.A.1**	Multi-vari studies	
IV.A.2	Correlation and linear regression	**IV.A.2**	Correlation and linear regression	
IV.B.1	Basics	**IV.B.1**	Basics	
IV.B.2	Tests for means, variances, and proportions	**IV.B.2**	Tests for means, variances, and proportions	
V.A.1	Basic terms	**V.A.1**	Basic terms	
V.A.2	DOE graphs and plots	**V.A.2**	DOE graphs and plots	
V.B	Root cause analysis	**V.B**	Implementation planning	New
V.C.1	Waste elimination	**V.C.1**	Waste elimination	
V.C.2	Cycle-time reduction	**V.C.2**	Cycle-time reduction	Added SMED
V.C.3	Kaizen and kaizen blitz	**V.C.3**	Kaizen and kaizen blitz	
VI.A.1	SPC Basics	**VI.A.1**	SPC Basics	
VI.A.2	Rational subgrouping	**VI.A.2**	Rational subgrouping	
VI.A.3	Control charts	**VI.A.3**	Control charts	
VI.B	Control plan	**VI.B.1**	Control plan	Removed “maintain the improvements”
		VI.B.2	Document control	New
		VI.B.3	Training plans	New
		VI.B.4	Audits	New
		VI.B.5	Plan-do-check-act (PDCA)	New
VI.C.1	Total productive maintenance (TPM)	**VI.C.1**	Total productive maintenance (TPM)	Added predictive maintenance
VI.C.2	Visual factory	**VI.C.2**	Visual factory	Added Andon and Jidoka as examples