



# CQE EXAM ONLINE RESOURCE GUIDE

A 100% totally free guide  
to help you study for the  
ASQ CQE Exam!

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## Thank You & Congratulations!

Hey There! First off let me say Thank You & Congratulations!

You've likely found this E-Book after joining the CQE Academy Email Newsletter and I appreciate the opportunity to add value to your life. If someone sent you this E- book and you're interested in joining the free newsletter, you can [check it out here](#).

Secondly, congratulations on taking action toward becoming a Certified Quality Engineer. You will find that gaining certification will give you the skills & knowledge that will set you and your organization apart from your competition!

Finally, If you're interested in getting more free content or joining a community of like-minded people then I would recommend you check out [the CQE Academy LinkedIn Page](#).

## Why the E-Book?

So my name's [Andy Robertson](#) and on my journey to become a Certified Quality Engineer (CQE) I wondered if I could collect enough free resources related to CQE certification and learn everything for free; [Good Will Hunting](#) style.

This Guide is a collection of the top 4 free online resources that contain epic content associated with the [ASQ CQE Body of Knowledge](#).

## Tips to Become a Certified Quality Engineer & Using this E-Book.

1. Spend 20 minutes reading the [CQE Body of Knowledge](#) - This will familiarize yourself with all the CQE Topics.
2. Take a practice exam to uncover your weakness - the practice exam is linked below in the ASQ Section.
3. Come back and fill in your knowledge gaps by utilizing the resources I've provided here.
4. Got Questions? - Check out my [FAQ Page](#).

# Complete Guide to the Top 4 Free Online Resources for CQE Certification

## Free Resource #1 - ASQ (American Society for Quality)

If you've ever wondered which topics will be on the CQE Exam then you're in luck, American Society for Quality (ASQ) has published the [CQE Body of Knowledge](#). I've used the Body of Knowledge (BOK) below as my guide in collecting the information below.

In addition to publishing the CQE BOK, ASQ has a fantastic [Knowledge Center](#) for many of the CQE Topics. The one drawback here is that getting to the actual topics can be quite tricky, so I've created hyperlinks below for each in the special [green](#) color.

**Tip** - ASQ has a ton of internal links to other topics that are related to the CQE Exam that I haven't copied here, so make sure to check those out as well. They also contain a [glossary of terms & definitions](#) that would be very handy to reference too during the exam.

*Also - for topics where multiple resources are present, I've just added the words ASQ next to the topic name for the ASQ link.*

## Free Practice Exam

If you're interested in testing your current knowledge level, ASQ has 2 free practice exams you can take. The first is the [hardcopy practice exam](#), and the second is the [online, interactive practice exam](#). For the online practice exam, you will have to create a free online account with ASQ, but you get much more feedback.

## Free Resource #2 - Wikipedia

Wikipedia is a killer resource for many of the topics that CQEs must know! The one drawback to Wikipedia is that many of the authors for each of the individual pages are experts on their respective topics and rarely do they take the perspective of a CQE. So for some of the topics you'll get too much detail and in other topics you won't get enough.

All of the Wikipedia links start on page 5 and are joined with the ASQ links.

## Free Resource #3 - YouTube

Everybody knows that YouTube is great for music & hilarious videos, but you may not know that YouTube also contains many resources relevant to the CQE Body of Knowledge.

*I've scoured YouTube to collect the relevant, high quality, condensed videos from credible sources & put them into a playlist for you.* These 6 playlists below are broken out by the Pillar in the Body of Knowledge. I've also included 1 random playlist of [other Quality related videos](#).

- [Management & Leadership Playlist](#)
- [The Quality System Playlist](#)
- [Product & Process Design Playlist](#)
- [Product & Process Control Playlist](#)
- [Continuous Improvement Playlist](#)
- [Quantitative Methods & Tools Playlist](#)

If you love learning on YouTube, make sure to subscribe to [my YouTube Channel](#) to get updates for new videos & playlists.

## Free Resource #4 - Academic Earth

If you're unfamiliar, [Academic Earth](#) is a website dedicated to an unparalleled collection of free online courses from the world's top universities.

**Positives:** Highly credible, high quality videos that are free!

**Negatives:** Long videos, and sometimes the content is not 100% relevant for the CQE Exam.

### Free Online Courses from Academic Earth:

- [Khan Academy Video Course - Introduction to Statistics](#) ([Equivalent YouTube List](#)) - **Relevant Topics Include:** Average, Mean, Sample v. Population, Variance, Standard Deviation, Probability Density Function, Normal Distribution, Z-Scores, Central Limit Theorem, Confidence Interval, Hypothesis Testing & P-values, One-Tailed & Two-Tailed Testing, Z-Statistics & T-Statistics, ANOVA, Correlation & Causality
- [MIT Video Course - Control of Manufacturing Process](#) - **Relevant Topics Include:** Process Variation, Manufacturing Control, Process Sampling, Sampling Distributions, Statistical Process Control, Process Capability, ANOVA, and much more!
- [UC Berkley Video Course - Introduction to Probability & Statistics](#) ([Equivalent YouTube Playlist](#), [Similar YouTube Playlist](#))
- [Harvard University Video Course - Statistics 110: Probability](#) - **Relevant Topics Include:** Probability, Distributions, Correlation, Covariance, Chi-Squared & Student-T

# Management & Leadership

## A. Quality Foundation

- History of Quality
- Certified Quality Engineer (CQE)
- Quality (Basic Quality Concepts - ASQ)
- 8 Dimensions of Quality
- Quality Control
- Quality Assurance
- QA v. QC
- Cross-Functional Management
- American Society for Quality (ASQ)
- Malcolm Baldrige National Quality Award (ASQ)

## B. Quality Philosophies

- W. Edwards Deming (ASQ), 14 points
- Phillip B. Crosby (ASQ)
- Kaoru Ishikawa (ASQ)
- Walter A. Shewhart (ASQ)
- Armand V. Feigenbaum (ASQ)
- Joseph M Juran (ASQ)
- Genichi Taguchi (ASQ)
- ASQ Guru Audiocasts

## C. The Quality Management System

- Total Quality Management (TQM) (ASQ)
- Quality Management
- Quality Teams

## D. ASQ Code of Ethics

## E. Leadership & Facilitation Techniques

- Idea Creation Tools
  - Brainstorming
  - Nominal Group Technique
- Evaluation & Decision Making Tools
  - Decision Matrix
  - Multivoting
  - Problem Solving
- Balanced Scorecard (ASQ)
- Teams

## F. Supplier Quality

# The Quality System

## A. Quality Standards

- [ISO](#)
- [ISO 9000 \(ASQ\)](#)
- [ISO 9001](#)
- [ISO 19011](#)
- [National Institute of Standards & Technology](#)
- [American National Standards Institute](#)

## B. Quality Audit

- [Internal Audit](#)

## C. Quality Costs

- [Cost of Poor Quality \(ASQ\)](#)

## Bonus Resource



[ISO 9000](#)

[ISO 9000 How To Brochure](#)

[ISO 9001 Auditing Best Practice Group](#)

[ISO 9000 Video](#)

# Product & Process Design

## A. Design Input & Review

- Design of Experiment (ASQ)
- Voice of the Customer (ASQ)
- Product Lifecycle Management
- Design for Six Sigma
- Design for Manufacturability
- Design for Assembly
- Design for X
- Design for Test'
- Critical to Quality (CTQ), CTQ Tree
- Design Specification
- Quality Function Deployment (QFD) (ASQ) / House of Quality

## B. Design Verification

## C. Technical Drawings

- Engineering Tolerance

## D. Reliability Engineering (ASQ)

- Preventative Maintenance & Predictive Maintenance
- Reliability & Maintainability Indices
  - a. Maintainability
  - b. Availability
  - c. Failure Rate
  - d. Mean Time to Failure (MTTF)
  - e. Mean Time to Repair (MTTR)
  - f. Mean Time Between Failures (MTBF)
  - g. Rolled Throughput Yield
  - h. Defects per Million Opportunities (DPMO)
- Bathtub Curve
- Reliability / Safety / Hazard Assessment Tools
  - a. Hazard Analysis
  - b. Failure Mode & Effects Analysis (FMEA) (ASQ)
  - c. Failure Mode, Effects & Criticality Analysis
  - d. Failure Reporting, Analysis & Corrective Action System (FRACAS)
  - e. Fault Tree Analysis



# Product & Process Control

## A. Material Control

- [Material Traceability](#)

## B. Acceptance Sampling

- [Statistical Sampling \(ASQ\)](#)
- [Sample Size](#)
- [Acceptable Quality Limit](#)

## C. Measurement & Test

- [Measuring Instruments](#)
  - a. [Gauge Block](#), [Durometer](#)
  - b. [Ruler](#), [Micrometer](#), [Caliper](#)
  - c. [Force Gauge](#), [Multimeter](#)
- [Non-destructive Testing](#)
  - a. [Ultrasonic Testing](#)
  - b. [Magnetic Particle Inspection](#)
  - c. [Dye Penetrant Testing](#)
  - d. [Radiographic Testing](#)
  - e. [Eddy Current Testing](#)

## D. Metrology (ASQ)

- [Calibration](#)
- [Measurement Uncertainty](#)
- [Traceability to Standards](#)
- [Accuracy & Precision](#)

## E. Measurement System Analysis

- [ANOVA Gauge R&R](#)
- [Repeatability \(ASQ\)](#)
- [Reproducibility](#)





# Continuous Improvement

## A. Quality Control Tools (ASQ)

- [Pareto Chart, Pareto Principle \(ASQ\)](#)
- [Flow Chart \(ASQ\)](#)
- [Control Chart \(ASQ\)](#)
- [Cause & Effect Diagram \(ASQ\)](#)
- [Check Sheet \(ASQ\)](#)
- [Histogram \(ASQ\)](#)
  - a. [Histogram Distribution](#)
- [Scatter Diagram \(ASQ\)](#)
  - a. [Correlation / Causality](#)

## B. Quality Management & Planning Tools (ASQ)

- [Affinity Diagram \(ASQ\)](#)
- [Tree Diagram \(ASQ\)](#)
- [Relationship Diagram](#)
- [Matrix Diagram](#)
- [Arrow Diagram](#)
- [PDPC Chart](#)

## Bonus Resource - CQE Academy

A little self-promotion never killed anyone right??

Below are links the CQE Academy page for each of 7 QC Tools.

***Every one of these pages includes a quiz at the end to test your knowledge!***

[Pareto Chart](#)

[Flow Chart](#)

[Control Chart](#)

[Cause & Effect Diagram](#)

[Check Sheet](#)

[Histogram](#)

[Scatter Diagram](#)



# Continuous Improvement

## C. Continuous Improvement Techniques (ASQ)

- [DMAIC \(ASQ\)](#)
- [Poka-yoke \(ASQ\)](#)
- [Benchmarking \(ASQ\)](#)
- [Six Sigma \(ASQ\)](#)
- [Lean Six Sigma](#), [Lean Manufacturing \(ASQ, ASQ TV\)](#)
- [PDCA \(ASQ\)](#)
- [Kaizen](#)
- [SIPOC](#)
- [Value Stream Mapping](#)
- [Kanban](#)
- [Gemba, Genchi Genbutsu](#)
  
- [Quality Circle](#), [Zero Defects](#), [7 wastes](#)
- [Spaghetti Diagram](#)

## D. Corrective Action

- [Root Cause Analysis \(ASQ\)](#)
- [5 Whys](#)

## E. Preventative Action



# Quantitative Methods & Tools

## A. Collecting and Summarizing Data

- [Data Collection Analysis](#)
- [Types of data \(ASQ\)](#)
- [Statistics \(ASQ\)](#)
- [Philosophy of Statistics](#)
- [Taguchi Method](#)

## B. Quantitative Concepts

- Terminology
  - a. [Central Limit Theorem](#)
  - b. [Average, Mean, Median, Mode](#)
  - c. [Probability & Variance \(ASQ\)](#)
  - d. [Standard Deviation, Range](#)
  - e. [Confidence Interval](#)
  - f. [Control limits](#)
- [Drawing statistical conclusions](#)

## C. Probability Distributions

- [Normal Distribution](#)
- [Weibull Distribution](#)
- [Log Normal Distribution](#)
- [Chi Squared Distribution](#)
- [Cumulative Distribution Function](#)
- [Probability Density Function](#)

## D. Statistical Decision-Making

- [Analysis of Variance \(ANOVA\)](#)
- [Linear Regression Analysis](#)
- [T-Test](#)
- [Chi-squared Test](#)



## Quantitative Methods & Tools - Cont.

### E. Statistical Process Control (SPC) (ASQ)

- [Common & Special Cause Variation](#)
- [SPC v. SQC](#)
- [Xbar & R chart](#)
- [Xbar & S chart](#)
- [p-chart](#)
- [np-chart](#)
- [c-chart](#)
- [u-chart](#)
- [CUSUM Chart](#)
- [Western Electric Trending Rules](#)
- [Nelson Trending Rules](#)

### F. Process and Performance Capability

- [Process Capability Indices](#) (ASQ)

### Bonus Resource

#### Are you a Podcast Fan??

Here's [a fantastic podcast](#) from [Keith Bower](#) who does a great job teaching many of the different Statistics Topics that every CQE must know.

Here's another Quality Podcast, [Process & Quality Excellence](#), by Thomas Pyzdek, author of The Six Sigma Handbook.

## Knowledge Gap

One thing you'll notice if you read the Body of Knowledge is that I wasn't able to cover every topic that's on the exam.

I've listed a few topics below that aren't covered anywhere in the guide above.

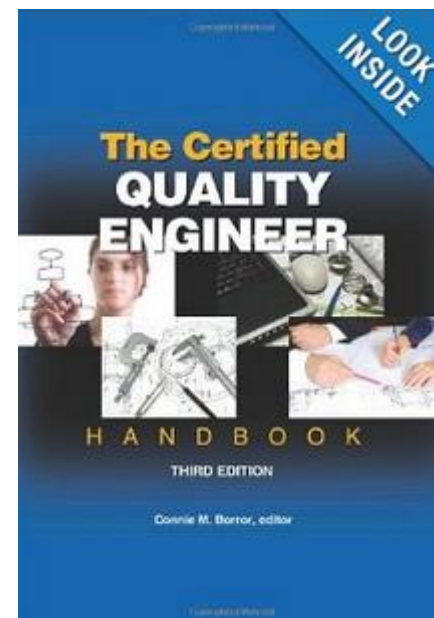
- Quality Information System
- Quality Audits
- Process Capability Studies
- Linear Regression
- Communication Skills
- Quality Training
- Discrete Probability Distribution
- Design & Analysis of Experiment
- Barriers to Quality Improvement
- Material Review Board (MRB)
- Rationale Subgrouping for SPC

If you're interested in filling this knowledge gap, I would highly recommend purchasing [The Certified Quality Engineer Handbook](#).

This book is published by ASQ and exactly follows ASQ's Certified Quality Engineer (CQE) Body of Knowledge.

It contains figures, graphs, examples, statistical tables & even a practice exam, making it the absolute best resource available for passing the CQE Exam.

*Disclosure:* The above link is an affiliate link and at no additional cost to you, I will earn a commission if you decide to make a purchase.



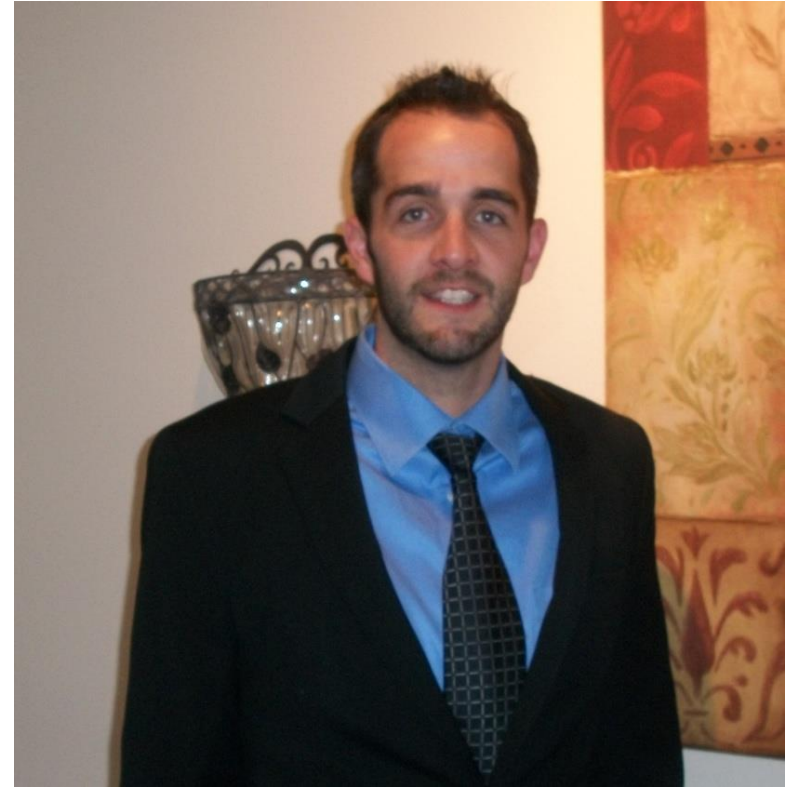
## About the Author

Hey There, my name's Andy Robertson and I'm the author behind this free resource guide, which of course I hope you've both enjoyed and also found value in it.

I did want to use this opportunity to say thank you and congratulations again.

Congrats on making it this far through the e-book and congratulations on taking the necessary steps to become a Certified Quality Engineer.

For more detailed information about me and the CQE Academy here's my [About Page on the website](#).



## BONUS Quality Tools

So I never mentioned this above, nor do I ever advertise it anywhere, but I also wanted to provide you with some links to some awesome Quality Tools available for free online.

Below are 12 different Templates that are available through ASQ for you to utilize!

I wanted to put them all here for you so you can not only read about these specific tools, but get some hands-on practice with them; source: [ASQ's Quality Tool Templates](#)

### Quality Tools

- |  |   |
|--|---|
| • <a href="#">Excel Fishbone Template</a>        | • <a href="#">Excel Box &amp; Whisker Plot Template</a> |
| • <a href="#">Excel Check Sheet Template</a>     | • <a href="#">Excel Design of Experiment Template</a>   |
| • <a href="#">Excel Control Chart Template</a>   | • <a href="#">Excel FMEA Template</a>                   |
| • <a href="#">Excel Histogram Template</a>       | • <a href="#">Excel Gantt Chart Template</a>            |
| • <a href="#">Excel Pareto Chart Template</a>    | • <a href="#">Excel Stratification Template</a>         |
| • <a href="#">Excel Scatter Diagram Template</a> | • <a href="#">Excel Flowchart Template</a>              |

One Last and Final Resource: [ISixSigma](#) has a few great Continuous Improvement resources that you might find useful!

Cheers & Good Luck!

**Andy**