

QDD Journey Course 1 Syllabus

Instructor

Dianna Deeney, BSME

ASQ Certified CQE, CRE,
CQA, CMQ/OE

IEEE Senior Member

Office Location

Virtual video
conferencing (Zoom).

*QDD Journey Discussion
Group* for forum
discussions.

Office Hours

Posted hours are “office
hours” when the
instructor is available
online and/or live chat on
the QDD Journey forum.

Hours are published on
the QDD Journey Calendar
which can be accessed
through the learning
portal.

Course Overview

Course 1: Design for Problems and Risk

Learner prerequisites

This course is created for learners involved in product design development. An engineering degree or background is useful but is not a prerequisite to this course.

Topics

We'll be covering topics in these four areas: root causes, risks, concept development, and field monitoring.

There are 3 main areas of design engineering where we'll be applying these topics:

- adjust design activities to add solving problems and controlling risks
- define problems and know when we have the root cause
- use frameworks for (you and your) teams to explore, prioritize, and iterate on the product design.

Learning objectives

The specific learning objectives of this course are:

- Evaluate problems with a team as a means of design input.
- Develop group discussions to explore potential risks in product concepts.
- Identify ways design can control risks within a system.
- Define design priorities and actions based on risk throughout the development process.
- Describe how risk analyses link and why we do different types of risk analyses (including FMEA - failure mode and effects analysis).
- Choose categories to monitor in the field based on risk analyses, following a model of continuous improvement.

Course Materials and Resources

Learners must have internet access to the website qualityduringdesign.com. Lessons include content that opens in a webpage for download.

Learners may find speakers or headphones useful to enjoy the videos, but they are not necessary: transcripts are available, and the videos have closed captioning. Learners may also want to print templates or worksheets for practice problems.

Course Schedule

All lessons are released to students at once. A recommended pace and order is listed below. Learners can expect the lesson presentation, materials, and practice problems to take approximately 1 to 2 hours per lesson. At the completion of the course and all the lesson objectives, learners may download a certificate of completion for the course.

Week	Subject	Practice Problems
Week 1	Lesson 1: Causal Chain and Root Causes	Define a problem in its 2 parts. Use a tree diagram to explore different levels of causes.
	Lesson 2: Symptoms Break-Down to Assess Risk	Explore a symptom and start assessing risk of a concept.
Week 2	Lesson 3: Design as Controls	Practice a systems viewpoint of design – look for controls outside of the product design.
	Lesson 4: FMEA in product development	Organize the design inputs from Lessons 1, 2, and 3 into an FMEA table (failure mode and effects analysis).
	Lesson 5: Risk Rating Criteria	Assign risk ratings to your draft FMEA, using the example or the rating scales at your company.
Week 3	Lesson 6: Building Risk Analyses for Design Decisions	Draft a plan for risk analyses needed to explore root causes and define actions, including hazards analysis.
	Lesson 7: Iterating through the Development Process	Define specific engineering actions to take to design for problems and risks.
	Lesson 8: Monitoring after Launch	Practice identifying characteristics to monitor based on a PDSA (plan-do-study-act) cycle and FMEA.

Quality and Reliability Engineering Tools Introduced and Used in the Course

Quality and Reliability Engineering tools introduced: Tree Diagrams, Root Causes, Why-Why, Fault Tree Analysis, Risk Management Methodologies and Planning including FMEA and hazard analysis.

Graphical tools and organizers you'll be able to reproduce: event tree analysis, symptom break-down analysis, risk analyses including FMEA (system, usability, and design) and hazard analysis.