

INCOSE Systems Engineering Quality Management Working Group

Cohort-based Professional Development in Quality Management Provided by the Quality Management Institute

Introduction

The [Quality Management Institute \(QMI\) curriculum](#) is a comprehensive online and face-to-face professional education program designed to validate and advance our organizational values, process knowledge, and collaboration skills needed to uphold our brand promise guarantee to our customers, stakeholders and ourselves. The program is designed to integrate human competencies with engineering and business processes in an intelligent system of quality management.

Course Prerequisites

- INCOSE Membership
- INCOSE SEQM Working Group Membership

Curriculum Overview

The first part of the curriculum provides a deep dive into the values and skills of a high-performing quality management (QM) work culture – and the ‘scientific method’ of quality management. These principles provide the foundation for the second part of the curriculum that emphasizes the competencies needed to integrate people, processes, and technologies. The second part of the curriculum provides learning activities related to systems thinking, with concepts such as work process analysis, process monitoring and root cause analysis.

We will meet as a team between modules, reviewing the lessons and discussing how to apply key concepts to systems engineering. These evidence-based competencies will provide you with the skills to more safely and productively target and integrate quality planning and review activities into the systems engineering profession.

Part 1: Creating a High-Performing QM Work Culture

In this section we will learn the ethical, motivational and performance standards needed to integrate quality management into the systems engineering profession, impacting the organizations where systems engineers work and achieve reliable results, by leveraging the foundational principles of quality management.

The prerequisites for leading effectively are described, including the decision-making framework, communications style and actions required of a successful quality leader. Practical alternatives for measuring our performance and testing ourselves with "reality checks" are also suggested.

Each lesson provides insight into effectively modeling QM values in an engineering culture. Special emphasis is given to establishing reliable communications and applying a systematic decision matrix to improve organizational and strategic choices.

Part 2: Risk-Based QM and Process Monitoring Competencies

QM-WPA Project Management provides simple Work Process Analysis (WPA) techniques to

evaluate work-flow efficiency, create quality improvement projects, and design and market a new product or service with confidence.

This section of the curriculum illustrates the principles and methods for envisioning, organizing, and implementing a project to improve current products and services as well as implementing new ones. The curriculum includes techniques for systematically applying creative thinking and critical analysis to workflows and for establishing reasonable standards for development.

The lessons include detailed examples of how to acquire, document and organize the data needed to make project decisions more certain, select best practices and successfully implement a project on a tight budget.

The final sections of the curriculum teach the QM administrative principles for creating a culture of excellence, building and sustaining organizational growth, and demonstrating emotional maturity in leadership.

The curriculum also describes the actions required to function with professionalism and precision in organizational and administrative matters. The topics include a variety of human resource, problem-solving, and customer service issues that will enable us to effectively manage our teams and to maximize our impact.

The lessons provide important insights into managing time and information, delegating responsibility, holding people reasonably accountable, monitoring processes, and performing root cause searches to find and eliminate the causes of errors.

Description of Activities

The INCOSE Systems Engineering Quality Management (SEQM) Working Group has arranged to make the QMI curriculum available to members of the SEQM Working Group on a full-scholarship basis. The training can be completed online on the student's own schedule, or as part of a scheduled cohort with other student's and QMI faculty.

Cohort Course Process

- Facilitated Discussions: based on the modules and independent assignments we will be meeting in two-week intervals with our QMI facilitator [Dr. Larry Kennedy](#), QMI's founder.
- Independent Learning: prior to each session you will be expected to complete assigned online modules and assessments, also outlined below. The majority of the modules take approximately **2-3 hours per week** to complete. Please be sure to plan your time accordingly. You are expected to complete the assigned modules prior to each discussion session.
- Project Development Exercise (PDE): following the conclusion of the online learning activities, each of you will independently complete a work process analysis project to develop or improve a key process relevant to your own work. We will discuss the details, including selection of projects, as part of the team discussions.
- Those who have completed the QMI training and certification will be invited to participate in research and development projects initiated by the INCOSE SEQM Working Group.

Expectations

1. Attendance and engaged participation at all Facilitated Discussions.
2. Timely and thoughtful completion of independent assignments.
3. An open and respectful attitude and willingness to learn and apply new skills.

Outcomes

1. A strong foundation of quality values, skills, and knowledge.
2. A common lexicon and approach to integrating values-based quality management principles into the systems engineering profession.
3. Individual outcomes depend on individual contribution. As with any learning, you will receive as much or more out of the program as you dedicate to it.
4. Systems Engineering Quality Management certification requirements include:
 - a. Successfully completion of all program requirements, including graded exams for each module and your PDE.
 - b. Submitted CV.

TO REGISTER: Email barclay.brown@incose.net with your name and INCOSE member number.