University of Idaho

# Industrial Technology (IndT) 4440

# Quality Assurance Organization and Management

3 Credit Hours 16 Weeks
Fall Semester 2025 Year
Prerequisite(s): IndT 3100, and Stat 2510 or Stat 3010

## Instructor Information

*Instructor:* Dr. Alex Vakanski
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*Office Hours:* Open door policy, Friday 1 p.m. – 2 p.m. MT on Zoom
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E-mail is the preferred medium of communication for any changes to the class schedule. All e-mail notifications will be sent to the student's University of Idaho account only.

## Course Description (Catalog)

The course provides in-depth coverage of the modern practice of quality assurance organization and management. Using statistical methods and quantitative techniques, students will be exposed to concepts, models, and techniques that help organizations meet the quality needs of their customers/users.

## Course Scope

Industrial management principles for effective economic control of quality assurance activities are studied. Quality tools covered in the course include statistical process control, lean production, six sigma, value engineering, total quality management.

## Course Objectives

Upon the completion of the course, students should demonstrate the ability to:

1. Describe the foundations of quality assurance.
2. Recognize current methodologies and tools for attaining quality in pursuit of organizational excellence.
3. Define key organizational management practices for quality infrastructure.
4. Summarize lean and six-sigma principles for quality assurance.
5. Apply statistical process control methods for optimizing and controlling processes.

6. Identify industrial management principles applied to effective economic control of quality assurance activities.
7. Employ the covered methods in a real-world quality improvement project related to a product, process, or service.

**Learning Outcomes and Competencies**

The learning outcomes and competencies of the IndT 4440 course relate to the ability of students to:

1. Apply theories and principles from mathematics, physical science, and computer applications and information technology to solve practical technology problems (1a).
2. Apply quality, safety, and industrial technology skills in a professional work environment within real-world constraints (1b).
3. Apply the principles of cognitive systems and human performance to perform task analyses and evaluate human-computer/machine interfaces (1d).
4. Interpret, describe, and implement information contained in typical project specifications (1e).
5. Demonstrate project management skills by applying time value of money, select and implement cost-effective solutions and understand cost-accounting and effective scheduling principles (2a).
6. Develop, motivate, direct, and assist teams in applying critical thinking concepts to solve technology and engineering problems (2b).
7. Identify customer project goals, financial needs, timeline constraints, and other customer service-based efforts (2c).
8. Describe and evaluate professional and ethical responsibilities (4b).
9. Demonstrate the ability to adapt emerging technologies (4c).

Note: The numbers in parentheses refer to Learning Outcomes and Competencies for the Industrial Technology program at the University of Idaho, as defined by the Advisory Board. The full list of learning outcomes and competencies is available at the Industrial Technology's website.

## Project Information

A quality improvement project is required for successful completion of the course. The emphasis of the project is on quality improvement of a product, process, or service. The project can apply lean principles, six sigma, value engineering, or any other tools or methodology for quality improvement that are covered in the course. The project should include an estimate of the cost and benefits gained from the implementation of the proposed concepts. Therefore, either a process flow chart, a FAST model, or a value stream map analysis of the selected product, process, or service, must be provided in the project report. If you are having difficulties coming up with a project, please contact the instructor. Each student is expected to submit a one-page project proposal by November 11. The final project report is due by December 9.

**Course Materials**

Required Textbook: Joseph A. De Feo, Frank M. Gryna
*Juran's Quality Management and Analysis*
6th edition, 752 pages, McGraw-Hill, 2015

ISBN-10: 0073523446
ISBN-13: 978-007352344

**Optional Reference Materials**

1. Frank M. Gyrna, Richard C. H. Chua, and Joseph A. De Feo, *Juran's Quality Planning and Analysis for Enterprise Quality*, 5th edition, 704 pages, McGraw-Hill, 2007 (ISBN-10: 0072966629; ISBN-13: 978-0072966626).
2. Joseph M. Juran, and Blanton A. Godfrey, *Juran's Quality Handbook*, 6th edition, McGraw-Hill, 2010, ISBN: 0071629734.

**Evaluation Procedures**

The course is delivered in a web-based format. All course materials, related to lecture notes, assignments, recommended readings, and supplementary materials, will be posted on Canvas. In web-based courses, the students are responsible to actively participate in the course by regularly logging in on Canvas, reading the posted materials, and completing the assignments in a timely manner.

Examination: There is one midterm examination, and one final examination. The dates of each examination are indicated in the Course Outline below. Failure to take the exams on the due dates, without prior approval, will result in zero marks. Prior approval could be granted only under acceptable circumstances.

Assignments: There are five homework assignments in total. The dates for assigning and submission of the homework assignments are indicated in the Course Outline below. The section Late Assignments below provides additional information regarding the submission policy.

Project: The course requires a project, which is described in the Project Information section above.

Grading/Evaluation Procedure:

| | |
|---|---|
| *Homework assignments* (5) | 40 marks |
| *Project* | 20 marks |
| *Midterm exam* | 20 marks |
| *Final Exam* | 20 marks |
| Total | 100 marks |

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|---|---|---|
| Final Grades: | Above 90 | A |
| | 80 – 89 | B |
| | 70 – 79 | C |
| | 60 – 69 | D |
| | Below 60 | F |

**Student Honor Code**

I have read the honor code below and agree with its provisions. My continued enrollment in this course constitutes full acceptance of this code.
I will not:

- provide or receive information from another person in completing the assessment components,

- plagiarize information from books, journals, or the internet,
- copy another person's solutions and submit them as my own.

**Course Outline**

| Date | Topics | Course Objectives | Learning Outcomes | Readings | Due |
|---|---|---|---|---|---|
| 8/26 | **Introduction to Quality Assurance, Organizational Assessment of Quality** | 1, 2 | 2, 7 | Chapters 1, 2, 3 | |
| 9/2 | **Organization for Quality, Developing a Quality Culture, Understanding Customer Needs** | 1, 2, 3 | 2, 7, 8 | Chapters 8, 9, 11 | |
| 9/9 | **Quality Control, Process Management, Total Quality Tools** | 1, 2, 3 | 2, 3, 7, 8 | Chapters 6, 7 | A1 |
| 9/16 | **Lean Production** | 1, 2, 4 | 2, 6 | Lecture Notes | A2 |
| 9/23 | **Lean Production (continued)** | 1, 2, 4 | 2, 6 | Lecture Notes | |
| 9/30 | **Basic Concepts of Statistics and Probability** | 2 | 1 | Chapter 17 | A3 |
| 10/7 | **Statistical Process Control for Production Optimization** | 1, 2, 5 | 1, 2 | Chapter 20 | |
| 10/14 | **Midterm Exam** | | | | |
| 10/21 | **Six Sigma** | 1, 2, 4 | 1, 2, 6 | Chapter 4 | |
| 10/28 | **Six Sigma (continued)** | 2, 3, 4 | 1, 2, 6 | Chapter 18 | |
| 11/4 | **Value Engineering** | 1, 2, 3, 6 | 1, 2, 5 | Lecture Notes | A4 |
| 11/11 | **Designing for Quality** | 1, 6 | 2 | Chapter 12 | |
| 11/18 | **Inspection for Quality Assurance** | 1, 2, 3, 6 | 2, 3 | Chapter 10 | A5 |
| 12/2 | **Project Preparation** | 7 | 2, 4, 5, 9 | | |
| 12/9 | **Managing Quality in Operations** | 1, 3, 6 | 2, 3, 7, 8 | Chapters 13, 14 | Project |
| 12/16 | **Final Exam** | | | | |

**Policies**

**WRITING EXPECTATIONS**

All written submissions should be submitted in a font and page set-up that is readable and neat. It is recommended that students try to adhere to a consistent format, which is described below.

- Typewritten in double-spaced format with a readable style and font and submitted inside the electronic classroom (unless classroom access is not possible and other arrangements have been approved by the professor).
- Arial 11 or 12-point font or Times New Roman styles.

- Page margins Top, Bottom, Left Side and Right Side = 1 inch, with reasonable accommodation being made for special situations and online submission variances.

**CITATION AND REFERENCE STYLE**

Assignments completed in a narrative essay or composition format must follow APA or MLA style guidelines.

**LATE ASSIGNMENTS**

For each day of late submission of the homework assignments, 10 % of the assignment marks will be deducted, unless the student contacts the instructor ahead of time about an extenuating situation.

**DISABILITY ACCOMODATIONS**

This institution complies with the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and the World Wide Web Consortium's (W3C) Universal Access Guidelines. Reasonable accommodations are available for students who have a documented disability. Please notify your instructor(s) during the first week of class regarding accommodation(s) needed for the course. All accommodations must be approved through the ISU Counseling Testing and Career Services Office in Idaho Falls. For assistance, please call 282-7750 or stop by their office in the Student Union Building Room 223.

**CELL PHONE/TEXTING POLICY**

The policy does not apply for web-based courses.

**NETIQUETTE**

Online universities promote the advancement of knowledge through positive and constructive debate –both inside and outside the classroom. Discussions on the internet, however, can occasionally degenerate into needless insults and "flaming." Such activity and the loss of good manners are not acceptable in a university setting, where basic academic rules of good behavior and proper "netiquette" must persist. Remember that you are in a place for the fun and excitement of learning, which does not include descent to personal attacks, or student attempts to stifle the discussion of others.

- Technology limitations: while you should feel free to explore the full-range of creative composition in your formal papers, keep e-mail layouts simple. The Educator classroom may not fully support MIME or HTML encoded messages, which means that boldface, italics, underlining, and a variety of color-coding or other visual effects will not translate in your e-mail messages.
- Humor note: despite the best of intentions, jokes and (especially) satire can easily get lost or taken seriously. If you feel the need for humor, you may wish to add "emoticons," such as ;-), : ), or J, to help alert your readers.

**ACADEMIC INTEGRITY**

The University of Idaho expects that students will engage in academic activity with high standards of honesty and integrity. These values are central to the educational process and are also cornerstone values for citizenship and professional conduct after you leave the University.

The University of Idaho has specific academic honesty expectations described in the Student Code of Conduct. These are minimum standards that are generally applied across the University.

For more information see;

http://www.uidaho.edu/DOS/academicintegrity

**NONDISCRIMINATION POLICY**

The University of Idaho has a policy of nondiscrimination on the basis of race, color, religion, national origin, sex, age, disability or status as a Vietnam era veteran. This policy applies to all programs, services, and facilities, and includes, but is not limited to, applications, admissions, access to programs and services, and employment. Such discrimination is prohibited by titles VI and VII of the Civil Rights Act of 1964, title IX of the Education Amendments of 1972, sections 503 and 504 of the Rehabilitation Act of 1973, the Vietnam Era Veterans' Readjustment Assistance Act of 1974, the Age Discrimination Act of 1975, the Age Discrimination in Employment Act Amendments of 1978, the Americans With Disabilities Act of 1990, the Civil Rights Act of 1991, the Rehabilitation Act Reauthorization of 1992 and other state and federal laws and regulations. Sexual harassment violates state and federal law and policies of the Board of Regents, and is expressly prohibited, as stated in Faculty Staff Handbook (FSH) 3220. The University of Idaho also prohibits discrimination on the basis of sexual orientation, as stated in FSH 3215. The entire FSH can be accessed online at http://www.webs.uidaho.edu/fsh. Questions or concerns about the content and application of these laws, regulations or University policy may be directed to the Human Rights Compliance Officer (208-885-4213); Complaints about discrimination or harassment should be brought to the attention of the Human Rights Compliance Office (208-885-4212). Retaliation for bringing forward a complaint is prohibited by FSH 3810.

**LIBRARY RESOURCES**

As a UI student, you not only have access to valuable print and electronic resources from the university's library, but you also have the access to personalized assistance from the librarians. If you have assignments or research questions and aren't sure how to make the most of library resources from off campus, feel free to contact the College of Education liaison librarian with questions. Help may be obtained via phone; 208-885-2503. As always, you may also call the main reference desk anytime Monday to Thursday 9am to 9pm, Friday 9am to 5pm, and Sunday 1pm to 9pm, 208-885-6584, or visit http://www.lib.uidaho.edu for email or IM assistance.

**DISCLAIMER STATEMENT**

Course content may vary from the outline to meet the needs of this particular group.