

PREFACE

This book is a substantial revision of our *Statistical Quality Assurance Methods for Engineers* published in 1999 by Wiley. It has evolved with the Iowa State University course that originally motivated the writing of that first book and fairly accurately represents the current technical content of Industrial Engineering 361 at ISU. (The biggest exception to this is that Sect. 6.2 is not formally part of the course for all students, but does end up being important for a substantial fraction of them as providing tools for their out-of-class process improvement project.)

This book has in Chap. 2 a substantially expanded treatment of measurement and associated statistical methods. This has grown out of the realization that a very large fraction of process improvement projects taken on by ISU IE 361 students ultimately turn out to be problems of measurement (or at least have important measurement components).

There has been some reorganization and extension of the qualitative material that in *Statistical Quality Assurance Methods for Engineers* was split between Chaps. 1 and 9 into this book's Chap. 1. Material from the former text's Sect. 2.2.3 on lower limits of detection, its Chap. 4 on advanced methods of process monitoring, its Sect. 5.5 on balanced hierarchical studies, its Chap. 8 on sampling inspection, and its Sect. 7.3 on mixture studies has been moved out of this book in the interest of concentrating on the most central issues and what can actually be profitably covered in a one-semester course for undergraduates. It is our intention to put this material onto a website as supplemental/optional resources for those interested.

There are currently both .pdf slides for lectures on the material of this text and videos on the material available on the website www.analyticsiowa.com. University instructors interested in obtaining laboratories used at ISU since 2006 to teach IE 361 in a “flipped” environment to juniors in industrial engineering

are invited to contact the first author. A complete solutions manual for the end-of-chapter exercises is available from the publisher to adopters of the book for university courses.

The authors wish to express their deep gratitude, love, and appreciation for their respective families. These have given form and substance to lives in which the kind of meaningful work represented by this book has been possible and enjoyed. The first author especially thanks his dear wife Jo Ellen Vardeman, their cherished sons Micah and Andrew Vardeman and their wonderful wives and children. The second author especially thanks his beloved parents, John and Caryl Jobe for their guidance, example, and love.

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