



# Human Factors Engineering and Ergonomics: A Systems Approach, Second Edition

*Stephen J. Guastello*

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Although still true to its original focus on the person-machine interface, the field of human factors psychology (ergonomics) has expanded to include stress research, accident analysis and prevention, and nonlinear dynamical systems theory (how systems change over time), human group dynamics, and environmental psychology. Reflecting new developments in the field, **Human Factors Engineering and Ergonomics: A Systems Approach, Second Edition** addresses a wide range of human factors and ergonomics principles found in conventional and twenty-first century technologies and environments. Based on the author's thirty years of experience, the text emphasizes fundamental concepts, systems thinking, the changing nature of the person-machine interface, and the dynamics of systems as they change over time.

See What's New in the Second Edition:

Developments in working memory, degrees of freedom in cognitive processes, subjective workload, decision-making, and situation awareness Updated information on cognitive workload and fatigue Additional principles for HFE, networks, multiple person-machine systems, and human-robot swarms Accident analysis and prevention includes resilience, new developments in safety climate, and an update to the inventory of accident prevention techniques and their relative effectiveness Problems in "big data" mining Psychomotor control and its relevance to human-robot systems Navigation in real-world environment Trust in automation and augmented cognition

Computer technology permeates every aspect of the human-machine system, and has only become more ubiquitous since the previous edition. The systems are becoming more complex, so it should stand to reason that theories need to evolve to cope with the new sources of complexity. While many books cover traditional topics and theory, they do not focus on the practical problems students will face in the future. With broad coverage that ranges from physical ergonomics to cognitive aspects of human-machine interaction and includes dynamic approaches to system failure, this book increases the number of methods and analytical tools that are available for the human factors researcher.

## Human Factors Engineering and Ergonomics: A Systems Approach, Second Edition Details

Date : Published December 19th 2013 by CRC Press (first published October 4th 2006)

ISBN : 9781466560093

Author : Stephen J. Guastello

Format : Paperback 501 pages

Genre :

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