

Systems Engineering Book List

Systems Thinking Texts

Checkland P. "Systems Thinking, Systems Practice, 1999, Wiley, ISBN 0-471-98606-2

The updated version of Peter Checkland's ground breaking text on Soft System Methodologies. Rather academic so it's hard to find the useful bits

Checkland P. Scholes J. Soft Systems Methodology in Action, 1990, John Wiley, ISBN 0-471-98605-4

Much more readable than Checkland's book

Anderson V. and Johnson L. Systems Thinking Basics, 1997, Pegasus Communications, ISBN 1-883823-12-9

Not a bad book at all – easy to read and not too long. The focus is on analysis using causal loops and feedback – which is good stuff, but what it lacks is more on purpose.

Sterman J.D. Business Dynamics: Systems Thinking and Modeling for a Complex World, 2000, McGraw-Hill, ISBN 978-0-07-231135-8

If you really want to get into modelling business systems then this is the book. It's good, but heavy going.

Meadows, D. Thinking in Systems, 2008, Chelsea Green, ISBN 1603580557

This is a really good book that has been well written. If you need an easy introduction to systems thinking this is it.

Kim D. Introduction to Systems Thinking, 1999, Pegasus Communications, ISBN 1-883823-X

On one level good because it is concise and has some key messages. On another level irritating the writer tries to crack jokes in the text – not very well which distracts from the importance of what he is saying.

Haines S.G. Systems Thinking & Learning, 1998, HRD Press, ISBN 0-87425-435-1

Some good bits in this pocket book, but its central frame is the ABCD Systems model, which is a simple control model. This is not wrong but not all systems are like this, moreover, feedback is internal to the system etc.

Gharajedaghi. J. Systems Thinking: Managing Chaos and Complexity, Butterworth-Heinemann, ISBN 0-7506-7973-5

Another view on system thinking which is valuable. It can be hard going at times and ends up talking about designing systems with examples – sounds good but there is no clear process for design and the tool set is not really described.

Ed: Elliot C. And Deasley P. Creating Systems That Work, 2007, The Royal Academy of Engineering, ISBN 1-903496-34-9.

It is hard to decide whether this should sit in the Systems Engineering group or here. It is actually quite good and short that introduces the important idea of a systems approach to designing systems.

Design Related Texts

French, M.J. 'Conceptual Design for Engineers' Design Council London, 1985

Perhaps the first bloke to recognise that design has a process. A bit random and covers those aspects that interest him any other points are dismissed as trivial (like requirements determination)

Finkelstein, I. And Finkelstein, A.C.W. 'Review of Design Methodology, IEE proc. Vol 30, 1983

Some good stuff here but a bit academic

Hales, C. 'Managing Engineering Design' Longman Scientific & Technical, 1993, ISBN 0-582-03933-9.

Some big conclusions from just one case study

Pugh, S. 'Total Design' Addison-Wesley, 1999

A bit dated now but still very good with useful tools and examples

Pahl G. and Beitz W. "Engineering Design" , Springer, 1995, ISBN3-540-19917-9

A bit inaccessible but some good references and views on what other people do

Cross N. "Engineering Design Methods" , 1994, Wiley, ISBN 0-471-94228-6

Good coverage of tools

Wright I. "Design methods in Engineering and Product Design" McGraw-Hill 1998, ISBN 0 07 709376 3

A bit academic but some good descriptions of tools

Bradley D, Seward D, Dawson D. and Burge S "Mechatronics and the design of Intelligent Systems" 2000, Stanley Thornes, ISBN 0-7487-5443-1

Some interesting thoughts on the future

Systems Engineering Related Texts

Hitchins D.K. "Putting Systems to Work" 1992, John Wiley & Sons, ISBN0-471-93426-7

A bit dated now but some useful ideas

Brook P., Arnold, S, Stevens R. and Jackson K. "Systems Engineering" 1998, Prentice Hall, ISBN 0 -13-095085-8

Good on the "what to do" and "when to do it" but very light on the "how to do it"

'NASA Systems Engineering Handbook' Available from the US Govt. Information Superintendent of Documents, Stock Number 033-000-00156-3.

Well it got Neil Armstrong to the Moon!

Sage A.P and Rouse W. B. (Eds) Handbook of Systems Engineering Management, 1999, John Wiley, ISBN0-471-15405-9

Big and expensive series of articles about systems engineering. Not really coherent but some good bits here and there.

Buede D.M. "The Engineering Design of Systems", 2000, John Wiley, ISBN 0-471-28225-1

I quite like this book, a bit too prescriptive in terms of tools (IDEF is the main tool) but shows the thinking that went in to DoDAF.

Martin J.N, "Systems Engineering Guidebook" 1996, CRC Press, ISBN 0-8493-7837-0

Heavy on process but some good thoughts

Blanchard B.S and Fabrycky W.F "Systems Engineering and Analysis" (Prentice Hall International Series in Industrial & Systems Engineering), 2010, ISBN-13: 978-0132217354

Rather expensive (£100+) but generally good

Weilkiens T Systems Engineering with SysML/UML Morgan Kaufmann OMG Press, 2008, ISBN 978-0-12-324274-2

The emphasis is on the SysML/UML rather than how it could be used within a project. Very hard to see the big picture and doesn't really talk about design which is what SE is about.

Alexander I and Beus-Dukic L "Discovering Requirements", 2009, Wiley, ISBN978-0-470-71240-5

"Does what it says on the tin". Conceptually its good but I found it a bit glib because the product-based examples from an engineering viewpoint are a bit naïve. Don't be put off there is some useful stuff.

Alexander I and Stevens R ,Writing better Requirements, 2002, Addison-Wesley, ISBN 0-321-13163-0

A short book with some good points

Software Based Texts

Sommerville I. and Sawyer P. "Requirements Engineering" 1997, Wiley, ISBN 0-471-97444-7

Not bad at all – a bit wordy and light on tools but good

Kotonya G and Sommerville I, "Requirements Engineering – processes and techniques"1998, John Wiley, ISBN 0 -471-97208-8

Some of the tools but not all and not sufficient detail to be able to apply them

D J Hatley and I. A. Pirbhai, Strategies for Real-Time Systems Specification, 1988, Dorset House, ISBN 0-932633-11-0

Modern object oriented software engineers would be horrified with this book. I think it's very good particularly if it's read with

S. Goldsmith, "A practical guide to Real-time Systems Development" 1993, prentice Hall, ISBN 0-13718503-0

A good compliment to Hatley and Pirbhai's book. It also starts to introduce more of the object oriented stuff and actually explains it quite well

B Powel Douglas "Doing hard Time" 1999, Addison Wesley, ISBN 0-201-49837-5

There is some good stuff in this book, such a shame is spoilt by an author who seems to have more chips than a Barnsley chip shop

Robertson S. and Robertson J. "Mastering the Requirements Process", 1999, Addison-Wesley, ISBN 0-201-36046-2

In general a good book. Gets a bit hung up on the Volere Specification Template but at least they understand the concept of functional and non-functional requirements.

Wiegers K.E "More about Software Requirements" 2006, Mircosoft Press, ISBN 13-978-0-7356-2267-8

It maybe software oriented but it's rather good with lots of really good practical advice

Cockburn A "Writing Effective Use Cases" 2001, Addison-Wesley, ISBN 0-201-70225-8

As a practical introduction to use cases this is the book. Well written and easy to read.

Robust Design including Design Experiments

Kolarik W.J. "Creating Quality" McGraw-Hill 1995, ISBN 0 07 035217-8

Not too bad. In terms of theory it's more accessible than most

DeVor R.E, Chang, T. and Sutherland J.W. “ Statistical Quality Design and Control” Prentice Hall, 1992, ISBN 0 02 329180 X

Quite a good “explanation by pictures” book. Not heavy on theory, but links nicely with outputs from Minitab.

Phadke M.S “Quality Engineering using Robust Design” Prentice Hall, 1989, ISBN 0-13-745167-9

One of the best, if not the best, books written on Taguchi’s approach to Design of Experiments

Moen R.D, Nolan T.W. and Provost L.P. “Quality Improvement through Planned Experimentation” Mc Graw-Hill, 1998, ISBN 0-070913781-4

Thick, heavy going in parts but actually quite good on Design of Experiments - the first version was hopeless!

Quality Function Deployment Texts

Bossert J.L Quality Function Deployment, 1991, Marcel Dekker, ISBN0-8247-8378-6

I found this book rather poor.

ReVelle J.B., Moran J.W. and Cox C.A The QFD Handbook, 1988, John Wiley, ISBN 0-471-17381-9

I was looking forward to reading this book since the authors are industrialists and it might be practical rather than academics. It’s more like a collection of poor papers with the odd gem but basically disappointing.

Terninko J Step-by-Step QFD, 1997, St Lucie Press ISBN 1-57444-110-8

Reasonably good even if it doesn’t distinguish between broad and narrow markets. Does not use functionality as the basis for the HOWs so could lead to confusion if used in a systems context. Only covers QFD 1.

Cohen L. Quality Function Deployment 1995, Addison Wesley Longman, ISBN 0-201-63330-2

It’s about the best QFD book out there. Packed full of useful stuff, but does not distinguish between broad and narrow markets so following Cohen’s recipe in a narrow market could result in confusion. Also it concentrates on QFD 1

Akao Y Quality Function Deployment, 1990, Productivity Press, ISBN 0-915299-41-0

This is the guy that started QFD but what an awful book, almost incomprehensible