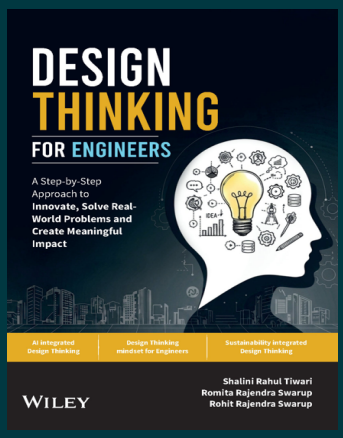
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Design Thinking for Engineers

By Shalini Rahul Tiwari, Romita Rajendra Swarup, Rohit Rajendra Swarup

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Description

Design Thinking for Engineers is a step-by-step guide for engineering students that bridges the gap between technical training and human-centred problem solving. The book was born in workshops, not a library: over two decades of running design thinking programmes across Gujarat Technological University, Jawaharlal Nehru Technological University, and engineering institutes throughout India, the authors encountered the same gap again and again — engineering students who could solve differential equations and model complex systems, but struggled when confronted with open-ended, unstructured real-world problems.

The book addresses this gap by presenting design thinking as an applied discipline that complements and enhances engineering practice. Its thirteen chapters follow the design thinking process from broad orientation to deep methodology: foundations and industry skills alignment; observation, empathy, problem articulation and ideation; concept visualisation, prototyping, agile design, lean start-up, and product development; a dedicated chapter on sustainability; and a final chapter covering final model development, technical documentation, and business model considerations. AI tools are integrated across every relevant stage — empathy, ideation, prototyping, and testing — making this among the first design thinking textbooks to treat AI as a working partner rather than a future possibility.

The book is built to be used, not just read. Every chapter moves from theory to practice with concrete tools — observation canvases, empathy mapping templates, problem articulation frameworks, ideation techniques, and prototyping strategies — reinforced by worksheets, post-class activities, and structured assignments. Sustainability is treated as a design constraint using the triple bottom line, and the book extends design thinking into patent applications, start-up building, and the Product Development Canvas. The final chapter bridges design thinking and engineering execution through additive manufacturing, manufacturing cost analysis, and mass production feasibility.

Written primarily for undergraduate and postgraduate engineering students engaged in projects, capstone courses, and innovation initiatives, the book is equally valuable for faculty teaching design or project-based courses, practising engineers building innovation capabilities, entrepreneurs, and MSMEs. Instructor resources — chapter-wise PowerPoint presentations and post-class activity solutions — are available to all adopters.

About the Author

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Dubai. Her Wiley textbooks on Design Thinking and Foundations of Sustainable Business are widely adopted across India. She is an Independent Director at Intec Capital Ltd., Cranex Ltd., and Magnum Ventures Ltd., and an Associate Editor for Emerald Emerging Markets Case Studies Journal.

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