

Problem Solving for Engineers

By David G. Carmichael

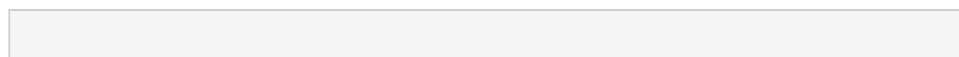


Problem Solving for Engineers By David G. Carmichael

Whatever their discipline, engineers are routinely called upon to develop solutions to all kinds of problems. To do so effectively, they need a systematic and disciplined approach that considers a range of alternatives, taking into account all relevant factors, before selecting the best solution. In **Problem Solving for Engineers**, David Carmichael demonstrates just such an approach involving problem definition, generation of alternative solutions, and, ultimately, the analysis and selection of a preferred solution.

David Carmichael introduces the fundamental concepts needed to think systematically and undertake methodical problem solving. He argues that the most rational way to develop a framework for problem solving is by using a systems studies viewpoint. He then outlines systems methodology, modeling, and the various configurations for analysis, synthesis, and investigation. Building on this, the book details a systematic process for problem solving and demonstrates how problem solving and decision making lie within a systems synthesis configuration.

Carefully designed as a self-learning resource, the book contains exercises throughout that reinforce the material and encourage readers to think and apply the concepts. It covers decision making in the presence of uncertainty and multiple criteria, including that involving sustainability with its blend of economic, social, and environmental considerations. It also characterizes and tackles the specific problem solving of management, planning, and design. The book provides, for the first time, a rational framework for problem solving with an engineering orientation.



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Editorial Review

Review

"Whatever their discipline, engineers are routinely called upon to develop solutions to all kinds of problems. To do so effectively, they need a systematic and disciplined approach that considers a range of alternatives, taking into account all relevant factors, before selecting the best solution. ... David Carmichael demonstrates just such an approach involving problem definition, generation of alternative solutions, and, ultimately, the analysis and selection of a preferred solution. ... The book provides, for the first time, a rational framework for problem solving with an engineering orientation."

?BASE

"Problem solving and systems are given a very broad perspective, encompassing key engineering tasks such as design, investigation, decision making and optimization. ...the examples and exercises make it an easy-to-read book. The exercises are not merely drill type ones, but also ones that make the reader think – this is to be commended..."

—Priyan Dias, Senior Professor, University of Moratuwa, Sri Lanka, Associate Editor, Civil Engineering & Environmental Systems

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