Introduction To Optimum Design Arora

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optimization is a mathematical tool developed in the early 1960 s used to find the most efficient and feasible solutions to an engineering problem it can be used to find ideal shapes and physical configurations ideal structural designs maximum energy efficiency and many other desired goals of engineering this book is intended for use in a first course on engineering design and optimization material for the text has evolved over a period of several years and is based on classroom presentations for an undergraduate core course on the principles of design virtually any problem for which certain parameters need to be determined to satisfy constraints can be formulated as a design optimization problem the concepts and methods described in the text are quite general and applicable to all such formulations inasmuch the range of application of the optimum design methodology is almost limitless constrained only by the imagination and ingenuity of the user the book describes the basic concepts and techniques with only a few simple applications once they are clearly understood they can be applied to many other advanced applications that are discussed in the text allows engineers involved in the design process to adapt optimum design concepts in their work using the material in the text basic concepts of optimality conditions and numerical methods are described with simple examples making the material high teachable and learnable classroom tested for many years to attain optimum pedagogical effectiveness

introduction to optimum design fourth edition carries on the tradition of the most widely used textbook in engineering optimization and optimum design courses it is intended for use in a first course on engineering design and optimization at the undergraduate or graduate level in engineering departments of all disciplines with a primary focus on mechanical aerospace and civil engineering courses through a basic and organized approach the text describes engineering design optimization in a rigorous yet simplified manner illustrates various

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introduction to optimum design is the most widely used textbook in engineering optimization and optimum design courses it is intended for use in a first course on engineering design and optimization at the undergraduate or graduate level within engineering departments of all disciplines but primarily within mechanical aerospace and civil engineering the basic approach of the text is to describe an organized approach to engineering design optimization in a rigorous yet simplified manner illustrate various concepts and procedures with simple examples and demonstrate their applicability to engineering design problems formulation of a design problem as an optimization problem is emphasized and illustrated throughout the text excel and matlab are featured throughout as learning and teaching aids the 3rd edition has been reorganized and enhanced with new material making the book even more appealing to instructors regardless of the level they teach the course examples include moving the introductory chapter on excel and matlab closer to the front of the book and adding an early chapter on practical design examples for the more introductory course and including a final chapter on advanced topics for the purely graduate level course basic concepts of optimality conditions and numerical methods are described with simple and practical examples making the material highly teachable and learnable applications of the methods for structural mechanical aerospace and industrial engineering problems introduction to matlab optimization toolbox optimum design with excel solver has been expanded into a full chapter practical design examples introduce students to usage of optimization methods early in the book new

material on several advanced optimum design topics serves the needs of instructors teaching more advanced courses

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