

Launch Vehicles Design

运载火箭设计

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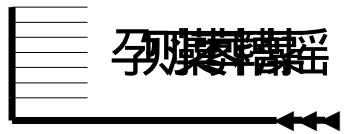
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The first edition (Oct. 1964) of this text book *Ballistic Missiles and Launch Vehicles Design* has been well received by students, especially, by foreign postgraduate students. The publishing of the second edition of this book was the suggestion of Beihang University Press. It is my pleasure to do something which can benefit students. But the second edition has the new name *Launch Vehicles Design*.

The second edition remains the frame of the first edition, since the revising time is not enough to change the whole construction. But some new materials and more detail explanations have been supplemented. Some mistakes in the first edition have certainly been corrected.

The author is very appreciative of his wife and his foreign students M. Yehia and S. Akhtar for their careful work in adding some materials and correcting some printing errors in the first edition.

He Linshu
January 1980



I have been teaching the course of Ballistic Missiles and Launch Vehicles Design for foreign postgraduate students at Beihang University for six years. Ballistic Missiles and Launch Vehicles Design is a comprehensive course related to propulsion system , structural system , control system and launching system. I have found that it is difficult to find a suitable text for those students. This book is written on the base of the lecture manuscript. The book is intended to provide a reasonably comprehensive treatment for the conceptual design of ballistic missiles and launch vehicles. Conceptual design is the most important design phase in whole procedure of ballistic missiles and launch vehicles design , especially when all concerned disciplines need to be considered. The author would like to introduce some new developing ideas on conceptual design in this book.

The book contains an introductory chapter describing the system engineering and it's the newest development—Concurrent Engineering (CE) , because system engineering is the foundation of the conceptual design of ballistic missiles and launch vehicles. Chapter Two gives the design missions of ballistic missiles and launch vehicles , explanation and analysis , which is of assistance to students in understanding the requirements of design tasks. Design of single stage rocket is the fundamentals of multistage rocket , so that the contents from Chapter Three to Chapter Seven include basic design methods pertinent to a single stage rocket with liquid rocket engine

or solid rocket motor. Chapter Eight and Chapter Nine focus on the design approaches of multistage rocket. The provided approaches are an introduction for student's future study.

This book is intended to serve as both a classroom and a reference text. About 缘 hours course might be a reasonable time to spend on the material covered in the book , however , the students need to have certain computer programming knowledge. The book has some characteristics of engineering. Some flowchart of computer programs in the book can be served as a guide for applying the basic design methods to practical system. Students may perceive a little suffering practical design process , if they do some programming assignments based on the flowcharts. This is benefit to students to experience the future design work.

The author is very greatly indebted to many people : to professor Cui Deyu for reading the manuscript and for making a number of helpful suggestions ; and to publishers for their assistance and cooperation in bringing the work to a state of completion. This book adopts many works written by Russian authors , American authors and Chinese authors. The author acknowledges all of the people who contributed to this book.

There must be some errors and defects due to time in a hurry , any criticism and comment will be acknowledged by the author.

He Linshu
February 缘

摇摇怨怨摇摇哉哉嗟嗟目目非非咎咎民民奈奈生生道道嗾嗾第第砾砾集集译译燥燥放放毛毛清清葬葬云云金金海海真真砾砾集集燥燥..... 圆愿
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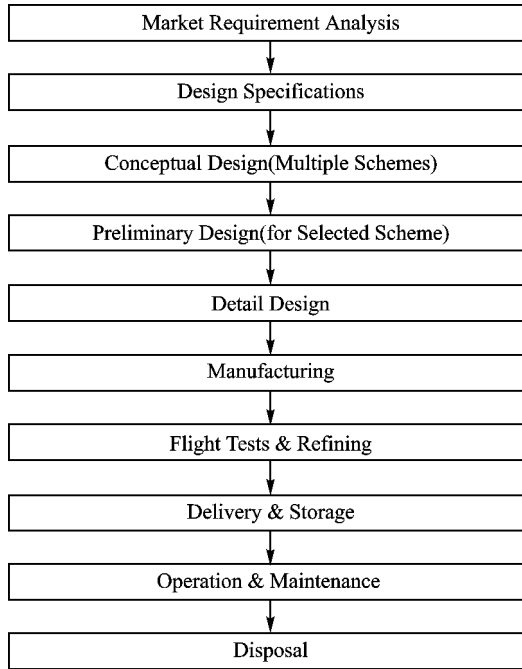


图 1-1 飞机研制流程示意图

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