

The best book on the basics of Object-Oriented Design:
Object Design, by Rebecca Wirfs-Brock and Alan McKean

You can download the PDF of the book here:
<https://www.wirfs-brock.com/DesignBooks.html>

Rebecca and Alan describe a design process called “Responsibility Driven Design.” The idea is to identify the key objects in a design by describing their Responsibilities (the actions they perform, the operations you can ask them to do), as well as the Collaborations (identifying which other objects they must communicate with in order to do their work).

This book explains good design techniques with many small and easy-to-follow examples. There is no reason to create lots of complicated diagrams to build a design. But it is really important to define the key concepts and terms in your problem area.

It's a long book, but you don't need to read everything. Here is a plan for reading about 60 pages (out of over 400 total)... and it is not difficult reading:

Chapter 2 (10 pages - pages 60-69)

- There is a good explanation of "exploratory design" in Chapter 2, from page 60 to 69. This section introduces a design process that uses index cards -- one per class -- to record your ideas about the design. This is called "CRC Card design" (CRC = Class, Responsibilities, and Collaborators). Each class gets its own card, with the class name on top. The responsibilities are listed in the left column, the collaborating classes in the right column. It is the best and easiest informal design process for building a good object-oriented design.

Chapter 3 (22 pages - pages 84-106)

- I suggest that you then read pages 84-106 in Chapter 3 -- to get an outline of the process of searching for good objects. This is the hardest part!

Chapter 4 (6 pages - pages 140-145)

- Chapter 4 is long and complicated, but you can get the gist of it by reading the section starting with "Implementing Objects and Responsibilities" starting on page 140. Read up through page 145.

Chapter 5 (8 pages - pages 150-157)

- Collaborations is the topic in Chapter 5, and it is relatively easy -- reading pages 148-157 is sufficient. The rest of the chapter gets into some advanced ideas...
 - Rebecca and Alan introduce 6 key “stereotypes” for objects: Information Holders, Structurers, Service-Providers, Controllers, Coordinators, and Interfacers.
 - You will use these stereotypes to describe objects more and more often as you create more object-oriented designs... but you don't need to know about them yet.

Chapter 1 (8 pages - pages 28-35)

- In Chapter 1, there are so many useful ideas, but most beginners need to learn about Architectural Styles -- Centralized Control, Delegated Control, and Distributed Control. To learn these ideas, read pages 28-35.

(Outline by Dennis Mancl, dmancl@acm.org – downloadable from
https://manclswx.com/talks/object_design_notes.pdf)