Navigating the Book and the MRST Modules

This book can be seen as a user guide to some of the add-on modules in the MATLAB Reservoir Simulation Toolbox (MRST). To help you navigate the book, we provide a list that connects chapters and MRST modules and also ties connections among the different chapters and other parts of MRST.

Chapter	Module	Maintained by	Comments
Part I:			
1	`upr`	NORCE/SINTEF	Developed by Berge in cooperation with SINTEF while he was a master's student at NTNU and a PhD student at the University of Bergen. Complements chapter 3 in the MRST textbook but can be read independently of the other chapters herein.
2	`nfvm`	Khalifa University, SINTEF	The authors have asked SINTEF to maintain the module, which complements the `mimetic` and `mpfa` modules discussed in Chapter 6 of the MRST textbook. The chapter can be read independently of the other chapters herein.

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Chapter	Module	Maintained by	Comments
3	`dg`	SINTEF	Can be read independently of the other chapters but includes a discussion of numerical smearing that complements Chapter 7.
4	`msrsb`	SINTEF	Can be read independently of the other chapters of the book. MsRSB is an alternative to the algebraic multigrid methods discussed in Chapter 6.
Part II:			
5	`ad-core`	SINTEF	Introduces state functions and generic model classes, which are used in modules such as `ad-blackoil`, `ad-eor`, `compositional`, and `geothermal` Complements chapter 12 in the MRST textbook and is a suggested preread for most chapters in Part III.
6	`ad-core`, `linearsolvers`	SINTEF	Introduces new AD backends and explains how to use external iterative solvers and how to set up batch simulations. The content is relevant for Chapters 4 and 7–14 but not a necessary preread.
Part III:			
7	`ad-eor`	SINTEF	Uses state functions from `ad-core` extensively and thus complements the discussion in Chapters 5 and 8.

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8	`compositional`	SINTEF	Can be read independently of the other chapters but is a suggested preread for Chapter 10. Likewise, Chapter 5 is a suggested preread.
9	`hfm`	Heriot-Watt University	Can be read independently of the other chapters but is a suggested preread for Chapter 10, because this chapter extends the EDFM method.
10	`shale`	Louisiana State University	Builds on the `compositional` and `hfm` modules from Chapters 8 and 9.
11	`fractures`	Heriot-Watt University	Uses state functions from Chapter 5 but can be read independently of the other chapters in the book.
12	`geothermal`	SINTEF	Uses state functions from Chapter 5 and grids from Chapter 1 but can be read independently of the other chapters in the book.
13	`fv-unsat` (+`fvbiot`)	University of Bergen	The new `fv-unsat` module is built on top of `fvbiot`, which provides discrete MPFA and MPSA operators, along with the coupling operators for the flow/mechanical problem. Can be read independently of the other chapters.
14	`ad-mechanics` (+`vemmech`)	SINTEF	Uses a virtual element solver from `vemmech`. Can be read independently of the other chapters in the book.

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