## Content

	Acknowledgements			
	ACKnowledgements	9		
	Conoral disclaimer	7		
		Exercises		
	Preface	9		
1	Introduction	13		
	1.1 Introduction	15		
	1.2 Uncertainty and geostatistical modelling	16		
	1.3 The modelling workflow	19		
	1.4 Book structure	23		
2	Basic assumptions of geostatistics	25		
	2.1 Spatial continuity	27		
	2.2 Modelling approaches	28		
	2.3 Data support	30		
	2.4 Building a spatial model from data	32		
	2.5 Stochastic modelling nature and statistical assumptions	33		
	2.6 Characteristics of a spatial random process	30		
3	Discovery and modelling of spatial correlation using variography	45		
	3.1 Spatial continuity and correlation	47		
	3.2 Spatial correlation described by variography	49		
	3.3 Variogram modelling	62		
	3.4 Summary	15		
4	Geostatistical estimation and stochastic simulation	77		
	4.1 Kriging	80		
	4.2 Stochastic simulations	101		
	4.3 Summary: geostatistical predictors and stochastic simulations	129		
5	Learning-based models for reservoir description	131		
	5.1 Learning from data — a concept for modelling	133		
	5.2 Learning algorithms	135		
	5.3 Modelling approaches and a model choice	136		
	5.4 Model complexity in a reservoir description — a simple example	142		
	5.6 Semi-supervised models for reservoir description	144		
	5.7 Feature selection with multiple kernel learning	140		
	5.8 Summary	157		

6	Uncertainty qua	antification of reservoir prediction	159
	6.1 Introduction	to uncertainty quantification	161
	6.2 Bayes' theor	em and history matching	165
	6.4 Geological r	uncertainty model	170
	6.5 Geological r	riors in history matching and uncertainty quantification	1/1
	6.6 Interpretation	n. model setup, and parameterisation	182
	6.7 Application	of uncertainty quantification workflow to a fracture reservoir	model example 187
	6.8 Summary		197
T			
7	Exercises		199
	Answers and rec	ommendations to the exercises	248
	Bibliography		255
	Index		i.i Introduction
	Index		261
		partitional from data	