

Contents

Chapter 1.	Laplace transforms and operator families in locally convex spaces	
Summary	1	
1.1 Laplace transforms	2	
1.2 An integrated version of Widder's theorem in SCLCS	8	
1.3 Integrated, regularized semigroups	12	
1.4 Integrated, regularized cosine functions	18	
1.5 Differential operators as generators	19	
1.6 Relationship to Cauchy problems	35	
1.7 Notes	42	
Chapter 2.	Wellposedness and solvability	
Summary	45	
2.1 Basic properties	46	
2.2 Strong wellposedness	54	
2.3 Solvability	67	
2.4 Perturbation	68	
2.5 Two typical cases	74	
2.6 Notes	78	
Chapter 3.	Generalized wellposedness	
Summary	85	
3.1 Criteria for general (ACP_n)	86	
3.2 The special case (I): coefficient operators relating to integrated semigroups	91	
3.3 The special case (II): coefficient operators relating to integrated semigroups (continuation)	99	
3.4 The special case (III): coefficient operators relating to integrated cosine functions	111	
3.5 C -wellposedness	115	
3.6 The case $u^{(n)}(t) = Au(t)$	130	
3.7 Notes	139	

Chapter 4. Analyticity and parabolicity	
Summary	141
4.1 Analyticity	142
4.2 Parabolicity	150
4.3 The case of differential operators as coefficient operators	160
4.4 Entire solutions	167
4.5 Notes	176
Chapter 5. Exponential growth bound and exponential stability	
Summary	177
5.1 Exponential growth bound of the propagators	177
5.2 Exponential stability of solutions	188
5.3 Notes	196
Chapter 6. Differentiability and norm continuity	
Summary	199
6.1 Differentiability	199
6.2 Norm continuity (general case)	214
6.3 Norm continuity (a special case)	221
6.4 Operator matrices generating various semigroups	225
6.5 Notes	237
Chapter 7. Almost periodicity	
Summary	239
7.1 Incomplete second order equations	239
7.2 Complete second order equations	249
7.3 Notes	261
Appendix	263
A1 Fractional powers of nonnegative operators	263
A2 Strongly continuous semigroups and cosine functions	264
Bibliography	269
Index	299
Symbols	301