

	List of contributors	ix
	Preface	xi
1	Probabilistic basis and code format for loading	1
	MARIOS K. CHRYSSANTHOPOULOS	
	Introduction 1	
	Principles of reliability based design 2	
	Framework for reliability analysis 10	
	Time-dependent reliability 13	
	Actions and action effects on structures 19	
	Concluding remarks 28	
	References 29	
2	Analysis for dynamic loading	31
	GEORGE D. MANOLIS	
	Introduction 31	
	The single degree-of-freedom oscillator 31	
	Multiple degree-of-freedom systems 46	
	Continuous dynamic systems 56	
	Base excitation and response spectra 58	
	Software for dynamic analysis 64	
	References 64	
3	Wind loading	67
	T. A. WYATT	
	Wind gust loading 67	
	Aerodynamic instability 81	
	Aeroelastic excitation 98	
	References 105	

4	Earthquake loading	109
	ANDREAS J. KAPPOS	
	Introduction 109	
	Earthquakes and seismic hazard 109	
	Design seismic actions and determination of action effects 125	
	Conceptual design for earthquakes 160	
	References 171	
_	Waya loading	175
5	Wave loading	
	TORGEIR MOAN	
	Introduction 175	
	Wave and current conditions 177	
	Hydrodynamic loading 186	
	Calculation of wave load effects 198	
	Dynamic analysis for design 210	
	References 226	
6	Loading from explosions and impact	231
	ALAN J. WATSON	
	Introduction 231	
	Blast phenomena 233	
	Impact phenomena 246	
	Design actions 253	
	Designed response 262	
	Damage mitigation 272	
	Design codes 276	
	References 282	
_	YY to do not destine	285
7	Human-induced vibrations	203
	J. W. SMITH	
	Introduction 285	
	The nature of human-induced dynamic loading 286	
	Methods for determining the magnitude of human-induced loading 291	
	Design of structures to minimize human-induced vibration 303	
	References 304	
8	Traffic and moving loads on bridges	307
	DAVID COOPER	
	Introduction 307	
	Design actions 308	
	Determination of structural response 311	
	References 322	

9	Machine-induced vibrations	323
	J. W. SMITH	
	Introduction 323	
	Dynamic loading by machinery 324	
	Design of structures to minimize machine-induced vibration 331	
	References 341	
10	Random vibration analysis	343
	GEORGE D. MANOLIS	
	Introduction 343	
	Random processes 344	
	System response to random input 350	
	Structures with uncertain properties 363	
	References 367	
	Index	369