CONTENTS

Preface 13	
Chapter 1	INTRODUCTION: WHY PROJECT MANAGEMENT? 23
ulture 60	PROJECT PROFILE: Development Projects that are Transforming Africa 23
	The Need for Projects 25 hospitales halos and the second s
	What is a Project? 25
	General Project Characteristics 27
	PROJECT PROFILE: Royal Mail: Moving with the Times 30
Teld Marketing M	Why are Projects Important? 31
	PROJECT PROFILE: London's Crossrail: Europe's Largest Construction Project 32
	Project Life Cycles 34
	■ BOX 1.1: Project Managers in Practice 36 88 miles
	Determinants of Project Success 37
	■ BOX 1.2: Project Management Research in Brief 40
	Developing Project Management Maturity 41
	Employability Skills 45 SMA InameganaM employed Strengard
	Communication 45 mod bus noiseuls va pales at halpside
	Critical Thinking 45 nime on the supplied Deposit Manager Mana
	Collaboration 45
	Knowledge Application And Analysis 45
	Business Ethics And Social Responsibility 45
	Information Technology Application And Computing Skills 46
	Data Literacy 46
	Project Elements and Text Organization 46
	Summary 50 • Key Terms 51 • Discussion Questions 51 Case Study 1.1 MegaTech, Inc. 52 • Case Study 1.2 The HealthSMART
	Program 52 • Case Study 1.3 Disney's Expedition Everest 53
	 Case Study 1.4 "Throwing Good Money after Bad": the BBC's Digital
	Media Initiative 54 • Internet Exercises 57 • PMP Certification Sample Questions 57 • Answers 57 • Notes 57
	Questions 37 • Answers 37 • Notes 37
Chapter 2	THE ORGANIZATIONAL CONTEXT: STRATEGY, STRUCTURE,
	AND CULTURE 60
	PROJECT PROFILE: The Airbus A 380: A Failure of Strategy? 60
	Implementing Strategy Through Projects 62
	Projects and Organizational Strategy 63
	Stakeholder Management 65
	Identifying Project Stakeholders 66
	Managing Stakeholders 69
	Organizational Structure 71
	Forms of Organizational Structure 72
	Functional Organizations 72
	Project Organizations 75
	Matrix Organizations 76
	Moving to Heavyweight Project Organizations 79

■ BOX 2.1: Project Management Research in Brief 80

Project Management Offices 81

Organizational Culture 84 How Do Cultures Form? 86

Organizational Culture and Project Management 88 PROJECT PROFILE: Electronic Arts and the Power of Strong Culture in Design Teams 89 Summary 90 • Key Terms 92 • Discussion Questions 92 • Case Study 2.1 Rolls-Royce Corporation 93 • Case Study 2.2 Classic Case: Paradise Lost—The Xerox Alto 94 • Case Study 2.3 Project Task Estimation and the Culture of "Gotcha!" 95 • Case Study 2.4 Widgets 'R Us 95 • Internet Exercises 96 • PMP Certification Sample Questions 96 • Answers 97 • Integrated Project—Building Your Project Plan 98 • Notes 100

Chapter 3 PROJECT SELECTION AND PORTFOLIO MANAGEMENT

PROJECT PROFILE: Project Selection Procedures: A Cross-Industry Sampler 102

Introduction: Project Selection 103

Approaches to Project Screening and Selection 106

Method One: Checklist Model 106 Myburg east

Method Two: Simplified Scoring Models 107

Limitations of Scoring Models 109

Method Three: The Analytical Hierarchy Process 110

Method Four: Profile Models 113

Financial Models 115

Payback Period 116

Net Present Value 117

Discounted Payback 119

Internal Rate of Return 119

Choosing a Project Selection Approach 121

PROJECT PROFILE: Project Selection and Screening at GE: The Tollgate Process 122

Project Portfolio Management 123

Objectives and Initiatives 124

The Portfolio Selection Process 125

Developing a Proactive Portfolio 127

Keys to Successful Project Portfolio Management 130

Problems in Implementing Portfolio Management 130

Summary 132 • Key Terms 133 • Solved Problems 133

 Discussion Questions 134
 Problems 134
 Case Study 3.1 Keflavik Paper Company 137 • Case Study 3.2 Pracht: Selecting a New Ethical Product Line 138 • Internet Exercises 140 • Notes 140

Chapter 4 LEADERSHIP AND THE PROJECT MANAGER 142

PROJECT PROFILE: NASA Taps a Leader with the Right Stuff to Run Their Mars 2020 Project 142

Introduction: Successful Projects Need Leaders 144

Leaders Versus Managers 144

How the Project Manager Leads 146

Acquiring Project Resources 146

Motivating and Building Teams 147

Having a Vision and Fighting Fires 147

Communicating 148

■ BOX 4.1: Project Management Research in Brief 151

Traits of Effective Project Leaders 151

Conclusions about Project Leaders 152

PROJECT PROFILE: Leading by Example for the London Olympics—Sir John Armitt 153 Project Champions 154 Champions—Who Are They? 155 What Do Champions Do? 156 How to Make a Champion 157 The New Project Leadership 158 ■ BOX 4.2: Project Managers in Practice 159 PROJECT PROFILE: The Challenge of Managing Internationally 160 Project Management Professionalism 160 Project Management and Ethics 162 Unethical Behaviors in Project Management 164 PROJECT PROFILE: British Luxury Automobile Maker Caught in Corruption Charges 165 Summary 166 • Key Terms 167 • Discussion Questions 168 Case Study 4.1 In Search of Effective Project Managers 168 • Case Study 4.2 Finding the Emotional Intelligence to Be a Real Leader 169 • Case Study 4.3 Volkswagen and Its Project to Cheat Emissions Tests 169 • Case Study 4.4 Problems with John 171 Internet Exercises 174 PMP Certification Sample Questions 174 Answers 175 Notes 175 PROJECT PROFILE: Berlin's Brandenburg Willy Brandt International Airport 178 The Statement of Work 183

Chapter 5 SCOPE MANAGEMENT 178

Introduction: The Importance of Scope Management 180 Conceptual Development 180 The Project Charter 186 PROJECT PROFILE: Statements of Work: Then and Now 186 The Scope Statement 186 The Work Breakdown Structure 187 Purposes of the Work Breakdown Structure 187 The Organization Breakdown Structure 192

The Responsibility Assignment Matrix 195 **PROJECT PROFILE:** Defining a Project Work Package 196

Work Authorization 197 Scope Reporting 198

■ BOX 5.1: Project Management Research in Brief 199

Control Systems 200 Configuration Management 201 Project Closeout 202

Project Management and Sustainability 203

Managing Projects for Sustainability 205

PROJECT PROFILE: Nicaragua's Canal and Sustainability Challenges 207 Summary 208 • Key Terms 209 • Discussion Questions 210 • Problems 210 • Case Study 5.1 Boeing's Virtual Fence 210 • Case Study 5.2 California's High-Speed Rail Project 212 • Case Study 5.3 Five Star Hotel ELV Project 214 • Case Study 5.4 The Expeditionary Fighting Vehicle 215 • Internet Exercises 217 • PMP Certification Sample Questions 217 • Answers 218 • MS Project Exercises 218 • Appendix 5.1: Sample Project Charter 218 • Integrated Project—Developing the Work Breakdown Structure 221 • Notes 222

	THE STATE OF THE PURISHER CONFILET AND MICCOLLATION	225
Chapter 6		225 225
	PROJECT PROFILE: Team-Building Events – Heli-skiing and Zombie Apocalypses	223
	Introduction 227	
	Building the Project Team 227	
	Identify Necessary Skill Sets 227	
	Identify People Who have the required Skills 228 Talk to Potential Team Members and Negotiate with Functional Heads 229	
	Build in Fallback Positions 229	
	Assemble the Team 230 Assemble the Team 250	
	Characteristics of Effective Project Teams 230	
	mak internal A rotal stage frocess 200	
	Catalian Abada 221/11	
	Target (224) lives 342	
	Forting the A 222 May 247	
	Results Orientation 232 Result	
	Reasons Why Teams Fail 232 Marsen Vonephino To each	
	Poorly Developed or Unclear Goals 233	
	Poorly Defined Project Team Roles and Interdependencies 233	
	Lack of Project Team Motivation 233 Autora Tollors	
	Poor Communication 234 A Propagation 234 Propagation 234	
	Poor Leadership 234 mol you see was your 234	
	Turnover Among Project Team Members 234	
	Dysfunctional Behavior 234	
	Stages in Group Development 235	
	Stage Two: Storming 236	
	Stage Three: Norming 236	
	Stage Four Performing 226	
	Stage Five: Adjourning 236 285 1862 and 18 22 1800 18	
	Punctuated Equilibrium 237 37888 Masine John 1200	
	Achieving Cross-Functional Cooperation 238 and the file	
	Superordinate Goals 238	
	Rules and Procedures 239 2200 eldsheV august bexid	
	Physical Proximity 239 200 Benderal Special Special Proximity	
	Accessibility 239 TOE noisemited too	
	Outcomes of Cooperation: Task and Psychosocial Results 240	
	Virtual Project Teams 240 — nollamited people of several project Teams 240 — nollamited people of the several	242
	Conflict Management 243 Confli	
	What Is Conflict? 243	
	Constitution and Consti	
	Methods for Resolving Conflict 246	
		247
	Negotiation 248	

Questions to Ask Prior to the Negotiation 248

to 22200 nebbill a Invent Options for Mutual Gain 251 250 20002500

Principled Negotiation 249

Insist on Using Objective Criteria 252

Summary 253 • Key Terms 254 • Discussion Questions 254

Case Study 6.1 Columbus Instruments 254 • Case Study 6.2 The Bean

Counter and the Cowboy 255 • Case Study 6.3 Johnson & Rogers

Software Engineering, Inc. 256 • Exercise in Negotiation 258

• Internet Exercises 259 • PMP Certification Sample Questions 259

Answers 260 Notes 260

Chapter 7 RISK MANAGEMENT 263

PROJECT PROFILE: Samsung's Galaxy Note 7—Failure to Manage a New Product for Risk 263

Introduction: What is Project Risk? 265

■ BOX 7.1: Project Managers in Practice 267

Risk Management: A Four-Stage Process 268

Risk Identification 268

PROJECT PROFILE: Dubai Reinstates The World Project 270

Risk Breakdown Structures 271

Analysis of Probability and Consequences 271

Risk Mitigation Strategies 274

Use of Contingency Reserves 276

Other Mitigation Strategies 277

Control and Documentation 277

PROJECT PROFILE: Collapse of Shanghai Apartment Building 279

Project Risk Management: An Integrated Approach 281

Summary 283 • Key Terms 284 • Solved Problem 284 • Discussion Questions 284 • Problems 284 • Case Study 7.1 Classic Case: de Havilland's Falling Comet 285 • Case Study 7.2 The Building that Melted Cars 288 • Case Study 7.3 Classic Case: Nicoll Highway Collapse 289 • Internet Exercises 291 • PMP Certification Sample Questions 291 • Answers 292 • Integrated Project—Project Risk Assessment 293 • Notes 295

Chapter 8 COST ESTIMATION AND BUDGETING 296

PROJECT PROFILE: New York City's Second Avenue Subway – Two Miles Completed for Only \$5 Billion Spent 296

Cost Management 298

Direct Versus Indirect Costs 299

Recurring Versus Nonrecurring Costs 300

Fixed Versus Variable Costs 301

Normal Versus Expedited Costs 301

Cost Estimation 301

Learning Curves in Cost Estimation 305

Software Project Estimation—Function Points 308

■ BOX 8.1: Project Management Research in Brief 309

Problems with Cost Estimation 311

■ BOX 8.2: Project Management Research in Brief 312

Creating a Project Budget 313

Top-Down Budgeting 314

Bottom-Up Budgeting 315

Activity-Based Costing 315

Developing Budget Contingencies 317

Summary 319 • Key Terms 320 • Solved Problems 320 • Discussion Questions 321 • Problems 322 • Case Study 8.1 The Hidden Costs of

Infrastructure Projects—The Case of Building Dams 325

Case Study 8.2 Sochi Olympics—What's the Cost of National Prestige? 327

• Internet Exercises 329 • PMP Certification Sample

Questions 329 • Answers 330 • Integrated Project—Developing the Cost Estimates and Budget 331 • Notes 333

Chapter 9 PROJECT SCHEDULING: NETWORKS, DURATION ESTIMATION, AND CRITICAL PATH 335

PROJECT PROFILE: Preparing for a Major Golf Tournament – It's a Long Road to the First Tee 335

Introduction 337

Project Scheduling 337

Key Scheduling Terminology 339

Developing A Network 341

Labeling Nodes 341

Serial Activities 342

Concurrent Activities 342

Merge Activities 343

Burst Activities 343

Duration Estimation 346

Constructing the Critical Path 350

Calculating the Network 350

The Forward Pass 351

The Backward Pass 353 14 shoW memgoleved enl

Probability of Project Completion 355 aways annual

Laddering Activities 357

Hammock Activities 358

Options for Reducing the Critical Path 359 ameldor9

■ BOX 9.1: Project Management Research in Brief (360)

Summary 361 • Key Terms 362 • Solved Problems 362

• Discussion Questions 364 • Problems 364 • Case Study 9.1 Moving

the Historic Capen House 367 • Internet Exercises 369

MS Project Exercises 369
 PMP Certification Sample

Questions 370 • Answers 370 • Notes 371

Chapter 10 PROJECT SCHEDULING: LAGGING, CRASHING, AND ACTIVITY **NETWORKS 372**

PROJECT PROFILE: Kiruna, Sweden – A Town on the Move! 372

Introduction 374

Lags in Precedence Relationships 374

Finish to Start 374

Finish to Finish 375

Start to Start 375

Start to Finish 376

Gantt Charts 377

Adding Resources to Gantt Charts 378

Incorporating Lags in Gantt Charts 379

■ BOX 10.1: Project Managers in Practice 379

Crashing Projects 381

Options for Accelerating Projects 381

Crashing the Project: Budget Effects 386

Activity-On-Arrow Networks 389

How Are They Different? 389

AOA Versus AON 394

Controversies in the Use of Networks 395

Conclusions 396

Summary 397 • Key Terms 397 • Solved Problems 398 • Discussion Questions 399 • Problems 399 • Case Study 10.1 Project Scheduling at Blanque Cheque Construction (A) 401 • Case Study 10.2 Project Scheduling at Blanque Cheque Construction (B) 402 • MS Project Exercises 402 • PMP Certification Sample Questions 403 Answers 404
 Integrated Project—Developing the Project Schedule 405 • Notes 406

ADVANCED TOPICS IN PLANNING AND SCHEDULING: Chapter 11 AGILE AND CRITICAL CHAIN 408 WATER A DIMENSION

PROJECT PROFILE: Adopting the Agile Methodology in Ericsson 409

Introduction 409

Agile Project Management 410

What Is Unique About Agile PM? 411

Tasks Versus Stories 413

Key Terms in Agile PM 413

Steps in Agile 415

Sprint Planning 415

Daily Scrums 415

The Development Work 416

Sprint Reviews 416

Sprint Retrospective 417

Keys to Success with Agile 417

Problems with Agile 418

■ BOX 11.1: Project Management Research in Brief 419

Extreme Programming (XP) 419

Theory of Constraints and Critical Chain Project Scheduling 420

Theory of Constraints 420

The Critical Chain Solution to Project Scheduling 421

Developing the Critical Chain Activity Network 424

Critical Chain Solutions Versus Critical Path Solutions 426

PROJECT PROFILE: Eli Lilly Pharmaceuticals and Its Commitment to Critical Chain Project Management 427

Critical Chain Solutions to Resource Conflicts 428

Critical Chain Project Portfolio Management 429

■ BOX 11.2: Project Management Research in Brief 432

Critiques of CCPM 433

Summary 433 • Key Terms 435 • Solved Problem 435 • Discussion Questions 436 • Problems 436 • Case Study 11.1 It's an Agile World 438 • Case Study 11.2 Ramstein Products, Inc. 439 • Internet Exercises 440 • Notes 440

Chapter 12 RESOURCE MANAGEMENT 442

PROJECT PROFILE: Environmental Concerns and Political Leadership Impact Fossil Fuel **Project Cancellations** 442

Introduction 444

The Basics of Resource Constraints 444

Time and Resource Scarcity 445

11

```
Resource Loading 447
             Step One: Develop the Resource-Loading Table 452
                 Step Two: Determine Activity Late Finish Dates 452
                 Step Three: Identify Resource Overallocation 454
                 Step Four: Level the Resource-Loading Table 454
             Resource-Loading Charts 457
                 ■ BOX 12.1: Project Managers in Practice 460
             Managing Resources in Multiproject Environments 461
                 Schedule Slippage 461
                 Resource Utilization 461
                 In-Process Inventory 462
                 Resolving Resource Decisions in Multiproject Environments 462
                    Summary 464 • Key Terms 465 • Solved Problem 465 • Discussion
                    Questions 466 • Problems 466 • Case Study 12.1 The Problems of
                    Multitasking 468 • Case Study 12.2 "First Come, First Served": Resource
                    Challenges for Sunrise Restoration 469 • Internet Exercises 470
                    MS Project Exercises 470 • PMP Certification Sample Questions 471

    Answers 472
    Integrated Project—Managing Your Project's

                    Resources 473 • Notes 473
Chapter 13 PROJECT EVALUATION AND CONTROL 474
                 PROJECT PROFILE: U.S. Army Can't Track Spending on its Spending Tracker Project 474
              Introduction 475
              Control Cycles—A General Model 476
              Monitoring Project Performance 476
                 The Project S-Curve: A Basic Tool 477
                 S-Curve Drawbacks 479
                 Milestone Analysis 479
                 Problems with Milestones 481
                 The Tracking Gantt Chart 481
                  Benefits and Drawbacks of Tracking Gantt Charts 482
              Earned Value Management 482
                 Terminology for Earned Value 483
                  Creating Project Baselines 484
                  Why Use Earned Value? 484
                 Steps in Earned Value Management 486
                  Assessing a Project's Earned Value 487
              Using Earned Value to Manage a Portfolio of Projects 492
                  Flow of Earned Value System 492
                  PROJECT PROFILE: Earned Value at Northrop Grumman 493
              Issues in the Effective Use of Earned Value Management 494
              Human Factors in Project Evaluation and Control 496
                  Critical Success Factor Definitions 498
                  Conclusions 499
                    Summary 500 • Key Terms 501 • Solved Problem 501 • Discussion Questions 502 • Problems 503 • Case Study 13.1 The IT Department
                    at Kimble College 505 • Case Study 13.2 The Superconducting
                    Supercollider 506 • Case Study 13.3 "Dear Mr. President—Please
                    cancel our project!": The Honolulu Elevated Rail Project 507 • Internet
                    Exercises 509 • MS Project Exercises 509 • PMP Certification Sample
                    Questions 510 • Answers 511 • Appendix 13.1: Earned
```

Schedule 511 • Notes 516

PROJECT CLOSEOUT AND TERMINATION 518 March 18 Ma Chapter 14

PROJECT PROFILE: Amazon's Golden Touch Fails with a High-Tech Gadget 518

Types of Project Termination 520

■ BOX 14.1: Project Managers in Practice 520

Natural Termination—the Closeout Process 522

Finishing the Work 522

Handing Over the Project 522

Gaining Acceptance for the Project 523

Harvesting the Benefits 523

Reviewing How It All Went 524 noises list

Putting It All to Bed 526

Disbanding the Team 526

What Prevents Effective Project Closeouts? 527

Early Termination for Projects 527

Making the Early Termination Decision 529

PROJECT PROFILE: Aftermath of a "Feeding Frenzy": Dubai and Canceled Construction Projects 530

Shutting Down the Project 531

Allowing for Claims and Disputes 532

■ BOX 14.2: Project Management Research in Brief 533

Preparing the Final Project Report 535

Conclusion 536

Summary 536 • Key Terms 537 • Discussion Questions 537

• Case Study 14.1 New Jersey Kills Hudson River Tunnel Project 538

• Case Study 14.2 The Project That Wouldn't Die 539 • Case Study 14.3 A Failure Eight Years in the Making 540 • Internet Exercises 541 • PMP Certification Sample Questions 542 • Answers 543 • Appendix 14.1: Sample Pages from Project Sign-off Document 544 • Notes 548

Appendix A The Cumulative Standard Normal Distribution 550

Appendix B Tutorial for MS Project 2016 551

Appendix C Project Plan Template 561

Glossary 565

Company Index 575

Name Index 577

Subject Index 581