Introduction

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The Project Management Professional (PMP) certification is a valued asset in the ever-evolving professional project management field. PMP certification in the professional arena ensures employers are hiring a project manager with thorough, tested knowledge in project management principles; years of hands-on, specific experience performing project management tasks; and a commitment to continuing education in the field of project management. Among fellow PMP-certified practitioners, PMP certification allows colleagues a commonality of experience and opportunities for networking. PMPs share the same frame of reference in project management, regardless of the field of endeavor.

PMP-certified individuals work in a wide array of industries, from aerospace to telecommunications. Many hiring supervisors specify PMP certification as a preferred skill set when soliciting project managers.

Both private and public sector employers recognize the value a PMP-certified employee brings to a project. Corporations embrace the consistent application of project management methodologies for initiating, planning, executing, controlling, and closing projects. The Project Management Institute (PMI) project framework is highly praised by companies and government entities whether they are engaged in large-scale development projects or simply undertaking small, reengineering initiatives. In both scenarios, the PMI approach offers a consistent project management methodology that can be tailored to the size and complexity of the project. This framework, coupled with the PMP certification program, ensures that PMP-certified practitioners are in high demand in the workforce.

PMI has brought the art and science of project management full circle through its PMP certification program and methodology, the Project Management Body of Knowledge (PMBOK). PMI seeks to evaluate project management professionals through the application and certification process to ensure a dependable workforce with solid credentials. The PMP

Certification Examination tests for comprehensive project management knowledge as well as a thorough understanding of the PMBOK. This approach ensures that PMP-certified practitioners have comparable qualifications and strategic competencies in all aspects of project management. PMI advocates the practice of project management as a discipline, not unlike engineering or any other precise, science-based course of study. As such, PMI developed the PMBOK as an all-encompassing standard for the practice of project management regardless of the specific industry.

The Project Management Institute

PMI is the premier project management organization in the world. It is a nonprofit, educational group intent on advancing the practice of project management through the promotion and promulgation of widely accepted standards. It has more than 150,000 members in over 150 countries with 247 charter-based local chapters. This is quite a feat for an organization that started in 1969 with five volunteers!

PMI establishes professional standards, provides continuing education opportunities for members, engages industry-specific research, and offers certifications aimed at unifying and strengthening the discipline of project management.

If you consider yourself a project management professional and want to earn your PMP, consider joining PMI. You will receive a reduced rate when sitting for your PMP examination as well as all the other benefits of PMI membership. These benefits include a community of peers offering valuable information exchange about industry trends and access to the latest knowledge through a monthly magazine and quarterly research journals.

Depending on your location, PMI offers seminars, workshops, and other continuing education opportunities as well as networking through local chapter and specific interest group involvement.

Your local chapter might also offer tutorials and other study courses in preparation for taking your PMP Certification Examination. Study groups and examination assistance through local chapters can augment the information you are learning in this book by offering opportunities to apply your newly acquired knowledge. To learn more about PMI and membership, visit PMI's website at http://www.pmi.org.

What's New in the PMBOK, Third Edition

PMI, as a member-driven organization, is continually evolving to meet the needs of its membership and the project management profession. To this end, the PMBOK has been revised to incorporate feedback from members and reflect current industry practice and developments since the last edition. For those readers familiar with the last edition—the PMBOK, 2000 Edition, in effect the second edition of the PMBOK—you will want to acquaint yourself with the changes in the third edition. This is particularly important if an earlier edition of the PMBOK was used in preparation for the PMP certification examination.

According to PMI, the new edition reflects the evolution from "generally accepted on most projects, most of the time" to "generally recognized as good practice on most projects" as the criteria for inclusion of information within the PMBOK. The use of the terminology "generally recognized" over "generally accepted" implies a higher degree of acceptance and recognition for the value and applicability of the knowledge and practices contained within this updated PMBOK.

New material has been added to reflect changes, adaptations, and additions to tools and techniques used in the current practice of project management. The number of processes increased from 39 to 44. Thirteen processes were renamed, two processes were deleted, and seven processes were added. The added processes are

➤ Develop Project Charter—Section 4.1

➤ Develop Preliminary Project Scope Statement—Section 4.2

➤ Monitor and Control Project Work—Section 4.5

➤ Close Project—Section 4.7

➤ Create Work Breakdown Structure—Section 5.3

➤ Activity Resource Estimating—Section 6.3

➤ Manage Project Team—Section 9.4

PMI avoided changing all the process names in favor of incremental change to minimize confusion. A clarification was provided between project management process groups and the knowledge areas placing greater distinction on process groups. The process designations—"facilitating processes" and

"core processes"—have been discontinued. All project management process groups have the same level of importance.

All the process inputs, tools, techniques, and outputs were revised and updated to support improved integration and process mapping. In addition, project management processes were mapped to show process integration. Also, process flow diagrams have been added to Chapters 4–12 of the PMBOK.

All these changes are the result of input from PMPs that was used to streamline and clarify the PMBOK. A complete listing of all changes to the PMBOK, Third Edition is available in Appendix A of the PMBOK, and we will also discuss these changes in more detail in Chapter 1 of this book. Each change is identified in its respective chapter in the PMBOK.

The new PMP Certification Examination goes into effect on September 30, 2005 based on the PMBOK, Third Edition.

The PMP Certification Process

PMP certification entails a number of steps, beginning with an application to PMI detailing a prospective PMP candidate's qualifications, experience, and training. Once approved by PMI to sit for the examination, a candidate registers for the exam and must comply with various procedures set forth for the actual test. The PMP certification process concludes with the passage of the examination and issuance of PMP credentials by the PMI.

Registering for the PMP Certification Exam

Prior to actually taking a PMP Certification Examination, you must submit an application to PMI for approval. Your application to the PMI for PMP certification is not a mere formality; you are asked to provide detailed documentation supporting your professional project management experience and training in specific areas of expertise.

Application Submittal

An application is included in the *PMP Handbook*, available on the PMI website. This handbook provides detailed information on every step of the application process. Your application will document your qualifications based on your education, work experience, and training. The *PMP Handbook* states the policies and procedures that must be adhered to by all applicants for PMP certification. If you believe you meet the requirements necessary for PMP candidates, you are ready to apply to the PMI.

Read the *PMP Handbook* prior to applying for PMP certification to ensure that you have a full understanding of the procedures necessary for exam signup.

The application can be submitted online through the PMI website or in hard-copy format through postal mail. The PMI processes PMP certification applications within 10–14 business days of receipt for individuals and within 20 days for applications received from corporations. PMP applicants requesting a scheduled paper-pencil examination are processed within 30 calendar days of receipt.

Apply online through the PMI website at www.pmi.org to save time.

Your PMP certification application is necessary to ensure you meet specific educational requirements and minimum experience criteria. PMI sets forth minimum standards for applicants to ensure all PMP-certified practitioners are experienced in the field of project management.

Candidates for PMP certification must meet both the educational and experience requirements for one of two categories. Verification forms showing compliance with these criteria must be submitted with your application for either category. Both categories are detailed in Tables I.1 and I.2.

Category One, shown in Table I.1, is for applicants possessing a bachelor's degree or equivalent. In this category, less personal project management experience is necessary, although you must possess a minimum of 4,500 hours of hands-on project management activity. Category Two, shown in Table I.2, is ideal for candidates with longer work histories but not in possession of a university degree. In this category, you can use 7,500 hours of project management performance to substitute for a college degree.

Table I.1 Category One Applicants		
Criteria	**Minimum**	**Explanation**
Bachelor's degree		Or equivalent from a university.
Personal project management experience within five process groups	4,500 hours	Within the last 6 years from the date of application.

(continued)

Table I.1 Category One Applicants *(continued)*		
Criteria	**Minimum**	**Explanation**
Nonoverlapping months of personal project management experience	36 months	Individual months count toward the 36 months requirement once, even if you worked on multiple projects during the same month.
Specific instruction that addresses learning objectives in project management	35 contact hours	Must include instruction on project quality, scope, time, cost, human resources, communications, risk, procurement, and integration management.

Table I.2 Category Two Applicants		
Criteria	**Minimum**	**Explanation**
Personal project management experience within five process groups	7,500 hours	Within the last 8 years from the date of application.
Nonoverlapping months of personal project management experience	60 months	Individual months count toward the 36 months requirement once, even if you worked on multiple projects during the same month.
Specific instruction that addresses learning objectives in project management	35 contact hours	Must include instruction on project quality, scope, time, cost, human resources, communications, risk, procurement, and integration management.

In the next section of this book, the PMP Exam Self-Assessment will assist you in evaluating your ability to meet these qualifications. Additional information related to the educational and experience mandates for PMP certification eligibility are provided in the *PMP Handbook*.

Application Fee and PMI Membership

The application also requires a fee tiered for PMI members and non-PMI members, with the latter paying a higher rate. As of this writing, PMI members pay $405 for the examination while nonmembers pay $555.

As part of the application process, you will be asked whether you are a PMI member and, if not, given the opportunity to join. There are many benefits to PMI membership, including a discounted rate when applying for PMP certification. If you are pursing your PMP certification, you already believe there is benefit to the PMI and should consider joining. Furthermore, the annual cost for PMI membership is $119, which is actually cheaper than the

difference between the examination cost for a nonmember. The total cost for joining PMI and sitting for PMI examination is $524. (This does not include chapter, special interest groups, and college membership that require additional fees.)

Audit

A random sample of applicants is chosen for audit prior to issuing eligibility letters. If you are selected for an audit you will be asked to provide additional information about your work experience, including supporting documentation from your supervisors detailing your work on specific projects.

Examination Administration

The PMP Certification Examination is offered globally. Computer-based administration is available within North America and other countries. PMI offers the PMP Certification Examination through computer-based administration at Prometric (formerly Sylvan Technology). In addition, a paper-pencil examination is offered at specific locations. A complete list of testing sites and vendors is available on the PMI website. More information regarding paper-pencil testing is also available in the *PMP Handbook*.

You must apply for certification through PMI prior to scheduling a PMP certification examination at Prometric. Prometric requires a PMI identification code to register; it is provided to PMP candidates by PMI when approval is granted to sit for an exam. PMP candidates can then register online or using Prometric's interactive voice-response telephone registration system.

Registration with Prometric is straightforward. Your approval letter from PMI to sit for the PMP certification exam includes an active link to Prometric's website as well as a toll-free telephone number for its interactive voice-response system. Specific instructions for registering are also included in your approval letter from PMI.

Prometric's website and telephone registration system provide the same instructions guiding you through the process of registration. It is important to register after you become approved to do so because testing locations, dates, and times are offered on a first-come, first-served basis at Prometric. The sooner you register, the more likely you will obtain your preferred testing location, testing date, and time.

> **NOTE** To learn more about Prometric and its administration of the PMP certification examination, visit Prometric's website at www.prometric.com.

The *PMP Handbook* also includes information on registering for the PMP certification examination with Prometric.

After your application has been approved by PMI as eligible for certification, passage of the actual PM Certification Examination constitutes the final step in becoming a PMP.

Reexamination

Candidates who do not pass the PMP certification exam can apply to the PMI for reexamination using a form on its website. This form must be submitted within 1 year of the original examination date.

Cancellation

Candidates within North America can cancel and reschedule an exam 2 business days prior to the scheduled testing. Candidates outside North America must do so 7 calendar days in advance.

Candidates unable to appear for a scheduled examination due to a medical emergency must submit written notification to the PMI Certification Program Department within 72 hours of the scheduled exam. A rescheduling fee will be charged, and all circumstances are reviewed on a case-by-case basis.

Refund

A refund can be obtained by written request to the PMI 1 month before your exam eligibility expires. (You have 1 year from the date of your eligibility letter in which to take the PMP certification exam.) A $200 processing fee will be retained from your original application fee.

Arriving at the Exam Site

Prior to departing for the exam site, be sure you have a form of identification with a picture and a signature (preferably your state driver's license) to show the testing center administrator. If you do not have proper identification, you will not be allowed to take the exam. Your approval letter from PMI and your registration confirmation from Prometric detail which forms of identification are acceptable.

In addition to your identification, bring a simple calculator, a watch, and pencils. Programmable calculators are not allowed. You might not have cause to use a calculator, but it is always best to be prepared. You will not want to perform even simple calculations on paper for fear of making a nervous error. Take a watch to time yourself during the examination. Some testing centers

have clocks in the room, but it is best to have your own watch to ensure accuracy. A stopwatch or timer feature might also be beneficial if you fear you cannot manually keep up with elapsed time. Take a couple of sharpened pencils to take notes.

Wear comfortable clothing and layer your clothing. You should be able to add a sweater or long-sleeve shirt or conversely remove a layer of clothing to adjust to the climate in the room. You will be spending up to 4 hours in the examination room, and your ability to concentrate and focus on the task at hand can be dramatically impacted by the room temperature and your sense of comfort.

Get to your exam site early so you can review the PMP Cram Sheet provided in this book and any additional notes you might create to quickly focus your mind on specific topics prior to the test. An early arrival will ensure you have ample time to relax and mentally prepare for the examination.

Your approval letter from PMI and your registration confirmation from Prometric instruct you to arrive at least 30 minutes prior to your exam time for check-in. You will be asked to present your identification information, your PMI identification code provided in your approval letter from PMI, and possibly your Prometric registration confirmation number.

In the Exam Room

Do not start the examination immediately. Sit down at your computer terminal and acclimate to the examination room and your immediate environment. Organize your peripherals for your comfort. Are the mouse and keyboard set correctly? Does your chair need adjusting? Is the monitor at the correct eye level for you? A few minor corrections can make all the difference over the next few hours.

Prior to the start of the examination, the test administrator will review any specific instructions and inform you what is and is not allowed during the examination period. You will be allowed to take breaks and use the restrooms as necessary.

Pretest Tutorial

Prior to beginning the examination you will be provided with a briefing and 15-minute online tutorial designed to familiarize you with the computer and operational procedures for the test. If you have taken a computer-based test previously or participated in computer-based training, you should feel comfortable in this environment. The pretest tutorial shows you how to navigate through the test using your computer mouse. You are shown how to select

an answer to a question, move forward to a new question, return to a previous question, and similar functions. The clock begins after completion of the tutorial, so if you feel comfortable with the information presented, move forward to the actual examination.

Time Allotted for the Test

You will have up to 4 hours to complete the examination. Pace yourself. There are 200 multiple-choice questions, which breaks down to 50 questions per hour and a little over a minute per question. Not all questions will require equal time. Don't agonize over every question; read the question and each possible answer in its entirety prior to selecting an answer.

Answer the PMI Way

More than one answer can seem plausible and correct. You are not asked to select the correct answer but rather the *best* answer from those provided. Attempt to rule out any obviously wrong choices immediately to narrow your field of best answers. You should strive to select the best answer based on how you believe PMI and the PMBOK would respond given the question and not necessarily from your own project management experience.

> It cannot be emphasized enough that the PMI answer is the correct answer. You might do some task a certain way in real practice, and that method might even be one of the answer choices. But for purposes of the PMP Certification Examination, the PMBOK answer is the only correct answer. Don't get caught off guard here!

The best answer as determined by PMI is provided as one of the four possible responses. Be suspicious of answers offering definitive responses like "*never*" and "*always*." Some answers might tout non-PMI methods and reflect common project management misconceptions. Some answers might offer correct information, but the information is not pertinent to the question at hand. Similarly, some questions might contain factually correct information that has no bearing on the possible answers.

Pace Yourself During the Exam

After the first hour you will be able to determine your speed and make adjustments as necessary. It is important to be aware of your time so you won't have to rush at the end to complete the examination. You should leave adequate time to review any responses you were unsure of and to return to unanswered questions. If you are spending more than 1 minute on a question, it is better to skip over the question and mark it for review later than to agonize over the question and lose the opportunity to answer other questions you know the answers to.

The examination allows you to mark questions for later review and make multiple passes through the exam. Mark every question you are unsure of even if you have selected an answer. This approach will save you time when you review your responses because you will not need to review any unmarked questions. If, on a second review, you determine an answer, unmark the question. Continue this process of going through all the marked questions until you have answered all the questions or are nearing the end of the allotted time period.

Save the last 20 minutes or so of the test to finalize any unmarked answers and ensure you have provided an answer to each question. Try to make a best guess by ruling out definitely wrong answers, as discussed earlier, but do not give up. Select an answer for each question—even if you have to guess. There is no penalty for guessing.

Remember, there is no penalty for guessing. So, be sure all questions have been answered—even if you have to guess. You at least give yourself an opportunity to get it right if you have an answer marked!

Throughout the testing period keep an eye on the clock or use your watch timer to remind you at discreet intervals to take a break. It is amazing what simply standing up and stretching for a few minutes can do for your concentration.

At the conclusion of the test, candidates can opt to complete a satisfaction survey.

Exam Room Surveillance

You will probably be under surveillance during the examination. Some testing centers use both videotape and human monitors to ensure the validity of the test. After you get underway with your examination and start to concentrate on the task at hand, you will be unaware of any other activity. Any monitoring by the testing center will be unobtrusive.

Grading Your Exam

At the end of the examination period, the administrator will immediately score your exam and provide you with a printed copy of your results indicating pass or fail status. The scores will be submitted to PMI by the end of the business day. If you have passed the exam, a PMP credential packet is mailed to you in 6–8 weeks by PMI.

If you are taking a paper-pencil examination, answer sheets are scored when they are returned to the test administrator. You can request that your exam be hand-scored for an additional $45 fee.

Any questions regarding your score using either computer-based testing or paper-pencil examination should be addressed to PMI's exam supervisor.

Study and Exam Preparation

The PMP certification examination consists of 200 four-option, multiple-choice questions developed by PMPs. Examinees must score 81.7% to pass the test, which requires answering 164 questions correctly.

There are no prescribed guidelines for a course of study because the examination is objective in scope and intended to test your knowledge of the project management field; however, emphasis is strongly placed on the PMBOK.

Do note that in March 2002, the PMP Certification Examination changed to include an additional performance requirement specific to professional responsibility in the practice of project management. The PMI PMP Code of Professional Conduct is not a component of the PMBOK; rather it is a one-page standalone document available on the PMI website which you will be tested on as part of the examination.

The PMP Certification Examination tests for professional responsibility and five process groups:

➤ Project initiation

➤ Project planning

➤ Project execution

➤ Project control

➤ Project closing

The most significant knowledge areas are project planning, project execution, and project control:

➤ **Project planning and project execution**—Each of these sections accounts for 23.5% of the test material. These two areas comprise 94 exam questions collectively.

➤ **Project control**—This section follows closely with 46 questions, totaling 23% of the test questions.

Overall, 70% of the examination deals exclusively with planning, executing, and controlling projects.

Of the six test areas, professional responsibility accounts for 14.5% of the PMP Certification Examination. This equates to 29 of the 200 multiple-choice questions.

Project initiation and project closing represent the smallest percentage of test questions at 8.5% and 7%, respectively. Approximately 17 questions will address project initiation activities, while 14 questions will focus on completing a project.

A new PMP Certification Examination goes into effect on September 30, 2005, based on the PMBOK, Third Edition. A blackout period will commence on September 25, 2005, during which the PMP Certification Examination will not be offered. All applications submitted after August 29, 2005 will be required to take the new PMP Certification Examination.

About the Book

This book offers you tools, techniques, tips, and other information to assist you in passing the PMP Certification Examination and becoming PMP certified. The emphasis is on reconciling your approach to the exam with PMI's viewpoint and perspective on the examination. This book is not a guide to general project management but rather a specific study tool aimed at distilling PMI's approach to project management as set forth in the PMBOK, Third Edition. Project initiation, planning, execution, control, and closing are the core topics in this book offered in parallel to those same key areas in the PMBOK.

Using This Book

This book prepares you to pass the PMP certification exam by highlighting important project management principles, providing insight into proven test-taking strategies, and emphasizing key information you can expect to see on the test. You will get guidance and clarification on PMBOK concepts and learn their relationships to other project management methodologies. Additional resources are cited for you in each chapter, and you will get many opportunities to apply your knowledge through practice exams and test questions.

Two practice exams are offered in this book, as well as practice questions at the end of each chapter. After you complete a chapter, take the practice questions to determine how well you comprehended the information in the

chapter. If you missed more than one or two questions, work your way through the chapter again focusing on the concepts you missed.

Similarly, you can test your knowledge and evaluate your level of preparation for the PMP certification exam by taking the practice exams under real conditions. After you've worked your way through this book once, take one practice exam. Evaluate your results. Then, based on your strengths and weaknesses, reread the chapters of this book related to those areas of the practice examination where you were less certain or did not select the correct answer. Then take the second practice exam to see whether your understanding of the material improved.

In each chapter of this book, there is a "Need to Know More?" section identifying additional resources. The books, websites, and other reference materials cited in the "Need to Know More?" section within each chapter are also collected comprehensively in Appendix B, "Additional Resources." If you feel you need more information related to any project management topic, these are the materials to consult. Some sources are cited in multiple chapters because they are seminal works in the field of project management. These resources, used in conjunction with the PMBOK, provide well-rounded preparation for any test material.

Finally, the Cram Sheet condenses the concepts, knowledge areas, process groups, terminology, and formulas presented throughout this book down to a tear-out sheet you can take with you to the exam site for quick review prior to entering the testing facility. The Cram Sheet is also a valuable tool for use in quick daily reviews after you have completed this book. Review the Cram Sheet every day; if there are any terms that seem vague, go to that particular topic in the book for a refresher course.

Chapter Formats

Each *Exam Cram 2* chapter follows a regular structure, along with graphical cues about especially important or useful material. The structure of a typical chapter is as follows:

➤ **Hotlists**—Each chapter begins with lists of the terms you'll need to understand and the techniques and concepts you'll need to master before you can be fully conversant with the chapter's subject matter. We follow these "hotlists" with a few introductory paragraphs, setting the stage for the rest of the chapter.

➤ **Topical coverage**—After the opening hotlists, each chapter covers the topics related to its subject.

➤ **Exam alerts**—Throughout the topical coverage section, we highlight the material most likely to appear on the exam by using a special exam alert layout that looks like this:

> This is what an exam alert looks like. An exam alert stresses concepts, terms, or activities that will most likely appear in one or more exam questions. For that reason, we think any information offset in exam alert format is worthy of extra attentiveness on your part.

Even if material isn't flagged as an exam alert, all the content in this book is associated in some way with test-related material. What appears in the chapter content is critical knowledge.

➤ **Notes**—This book is an overall examination of the topics covered on the PMP. Where a body of knowledge is deeper than the scope of the book, we use notes to indicate areas of concern or specialty training. The following is an example of a note:

> This is an example of a note.

➤ **Tips**—We provide tips that will help you build a better foundation of knowledge or focus your attention on an important concept that will reappear later in the book. Tips provide a helpful way to remind you of the context surrounding a particular area of a topic under discussion. The following shows you what a tip looks like:

> This is what tips look like. The intent of tip elements is to provide you with alternative ways to approach project management duties. These can be quicker ways of doing tasks or new methods that are not as well known. These elements bring real-world PM content into the boundaries of an exam prep book, too!

➤ **Exam Prep Questions**—This section presents a short list of test questions related to the specific chapter topic. Each question has a following explanation of both correct and incorrect answers. The practice questions highlight the areas we found to be most important on the exam.

The bulk of the book follows this chapter structure, but there are a few other elements we would like to point out:

➤ **Practice exams**—There are two full practice tests found at the end of this book. The questions are designed to challenge your knowledge and readiness for the PMP exam.

➤ **Answer keys**—These provide the answers to the practice exams, complete with explanations of both the correct responses and the incorrect ones.

➤ **Glossary**—This is an extensive glossary of important terms used in this book.

➤ **The Cram Sheet**—This appears as a tear-away sheet, inside the front cover of this *Exam Cram 2* book. It is a valuable tool that represents a collection of the most critical items we think you should memorize before taking the test. Remember, you can dump this information out of your head onto the margins of your test booklet or scratch paper as soon as you enter the testing room.

You might want to look at the Cram Sheet in your car or in the lobby of the testing center just before you walk into the testing center. The Cram Sheet is divided under headings, so you can review the appropriate parts just before each test.