

# Actuarial Learning

**A Guidebook to Exam Success  
and Workplace Advancement**

**Nicholas Mocchiolo, FSA, FRM  
Updated By Stephen Camilli, FSA**

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# PREFACE TO

## *Actuarial Learning*

Nicholas Mocchiolo brought to life four excellent editions of *Making the Grade* and assisted thousands of actuarial students with his wisdom and expertise on the profession and exam process. As seems to be inevitable with the actuarial exam structure, there are significant changes on the horizon, and Nicholas was no longer able to make the necessary modifications to the book. With humility and admiration, I have stepped in to update the book, and offer some modest modifications to the text itself. The spirit, structure, and main ideas of the book remain those of the original author. In a bid to update the book, and better highlight its contents, we have also modified the title.

It is my desire that this book help many students taking actuarial exams, and be a concise reference with regards to multiple aspects of the actuarial profession.

Should you have any questions or feedback on the text, or should you find any errors, please reach out to me directly at [Stephen@Actexamdriver.com](mailto:Stephen@Actexamdriver.com).

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# HISTORICAL

## *Making the Grade*

### PREFACE

Like any highly regarded credentialing process, actuarial exams are just downright hard.

The syllabus materials are long and mathematically intensive. The exams are many, and can take even the brightest candidates 5 to 10 years to complete. The length and uncertainty in completion time can create motivational difficulties, especially for candidates with active family lives and any obligations or interests that extend outside of the workplace. Candidates generally work full-time while studying for exams. While this carries the advantage of current income relative to the credentialing processes of other professions, it leaves little room for recreation and social activities, and may sometimes place pressure on study schedules. The required competencies for future actuaries are growing at an accelerated rate to accommodate the emergence of actuaries into previously unconventional areas of employment. All of these issues, and more, make for a credentialing system that is among the world's most rigorous.

Like that of many professions, the actuarial credentialing process, though arduous, does help to ensure that those who successfully complete it have acquired the requisite proficiencies. In the case of actuaries, this generally translates into mathematical aptitude, a sound work ethic, a problem-solving orientation, and a host of other qualities. This is critical to employers, who rely on the integrity of actuarial designations when making staffing decisions. It is critical for candidates, who rely on the knowledge base and employment leverage gained



through the pursuit of professional actuarial credentials for their livelihood. It sustains the prestige, health, and future viability of the actuarial profession and its members. For all of these reasons, and more, it is of paramount importance that the process remains sufficiently rigorous to ensure that the achievement of an actuarial designation provides a concrete demonstration of the acquisition of the necessary skills.

Not surprisingly, I too am interested in preserving the integrity of my actuarial designations. I am reminded of the infamous story of a future Hall-of-Fame Football player who graduated from one of America's finest institutions of higher learning, only to publicly announce years later that he was illiterate. Naturally, the alumni of the institution were outraged; how valuable could their academic credentials be if those not proficient in elementary academic skills could earn them all the same?

However, my interest in ensuring the rigor and professionalism of actuarial credentials is certainly consistent with a desire to help pave the road of passage for the actuaries of tomorrow. I first conceived of this book in a familiar position, during a moment of mental fatigue. There I was, slumped over a desk in the University of Connecticut law library, temporarily straying from the task at hand, dreaming about finishing actuarial exams. I hadn't watched nighttime television or played cards in weeks. I hadn't eaten a square meal in four days, nor had I gone a day without coffee in four months. My eyes burned, I was sleep-deprived, and I was pretty sure that nothing on earth was less important to me at that moment than claim triangles for group disability insurance. I resolved, then and there, to share whatever information I could to help future aspiring actuaries better cope with exams.

I always took notice of the study habits and exam strategies of peers. I frequently dialogued with them during study breaks about their areas of concern, the techniques they found to work for them, and the approaches they would advocate for and against. Gradually, albeit unintentionally, I collected a wealth of information about the actuarial

exam processes and the ways in which different people approached them. In addition, I had learned many valuable lessons during my own pursuit of Fellowship, mostly the hard way, and it seemed only right to save others from many of the frustrations and mishaps with which I had been forced to contend.

It is therefore with great pleasure, and great excitement, that I deliver this book to you, the current or future actuarial student. It represents not only the culmination of my own journey through the actuarial credentialing process, but also the collective wisdom of a group of colleagues with whom I have shared many of these experiences. Obviously, there was not uniform consensus regarding every issue and study tactic discussed in this book. However, it was reassuring that despite various points of view with respect to many of the details and nuances of actuarial self-study, the group consistently agreed upon the central tenets of sound exam preparation strategies. This suggests that while each student should formulate the strategy that is most congruent with his or her unique learning style, such a formulation should take place around a predefined “anchor,” a set of core competencies for passing actuarial exams that should not be ignored.

My goal in writing this book is to share that anchor with you. And, while most of the book is devoted to anchoring your voyage through actuarial exams, I have also included some general commentary on some other areas of interest to aspiring actuaries. These are a review of the major actuarial organizations in the United States and Canada, a description of the credentialing process of each, and a chapter devoted to issues of skill advancement and professionalism apart from exam success and technical competency. My sincere hope is that these pages make the transition through the actuarial exam process as smooth as possible, and provide you with a set of tips, techniques, and insights that will prove useful for years to come, even in your career after exams.

Undoubtedly, the work required to pass actuarial exams is worth the effort. A career as an actuary has many truly unique characteristics and

extraordinary benefits. The job “actuary” has consistently been rated as one of the best jobs in America, according to the *Jobs Rated Almanac*. Actuaries perform a vital function in the ongoing viability of society by modeling and mitigating risk of many different types. The public awareness of actuaries is increasing. The roles of actuaries in the business, governmental, and academic communities are expanding. Actuaries are very well compensated for their work, and most agree that they possess greater than average job security.

But apart from the salary statistics, job growth projections, and other scientific reasons that support the pursuit of an actuarial career, I can honestly say that I love what I do. I am both fulfilled and challenged by my job on an ongoing basis. I am often called upon by company management to solve important problems that are critical to ongoing business growth. I derive a great deal of personal satisfaction from performing a job function that contributes to societal well-being by adding stability to financial security systems and working to ensure that people are protected from life’s worst tragedies. In my opinion, passing the actuarial exams, while certainly a demanding undertaking, is a small price to pay for the countless benefits of a career as an actuary, and I hope that this book helps to get you there.

I wish you all the best on your exams, in your career, and in your life.

Nicholas P. Mocchiolo, FSA



# 1

## INTRODUCTION

### 1.1 Purpose

There is certainly no shortage of study manuals, textbooks, practice exams, exam-prep seminars, and other resources designed to aid aspiring actuaries in preparing for actuarial exams. Most of these products share one common characteristic: they are aimed at enhancing *subject matter expertise*, rather than improving the *methodologies* of preparation and exam-taking. Admittedly, there is the occasional blurb devoted to this topic, such as the “Society of Actuaries’ Guide to SOA Written Exams,” or a publication containing a collection of random study tips from past exam takers. Given the many nuances of actuarial self-study, however, the mixture of technical and non-technical subject matter on the exams, the sheer length of the process, and other intervening variables, these scattered resources are generally not adequate for fully preparing the next generation of actuaries. Furthermore, they are often incomplete or inaccurate, and sometimes contradict one another, making it difficult for aspiring actuaries to derive the intended level of value from them. In short, a comprehensive resource that fully addressed the plethora of issues with which actuarial students must contend was noticeably absent until the first edition of this book was published in 2005<sup>1</sup>.

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<sup>1</sup> A notable resource that came available from my publisher in May 2017 was *Actuarial Exam Tactics: Learn More, Study Less*, by Roy Ju, the world’s youngest FSA.

This book aims to fill this void by providing detailed information and recommendations regarding every aspect of the various actuarial credentialing processes from Calculus through Fellowship and beyond. While simply consolidating the information from the isolated, currently available sources might alleviate students of the burden of searching, it would do little to resolve the confusion created by conflicting advice, nor would it lend any credibility to the proposed methods. Thus, I have not aimed to provide a compilation of extraneous pieces of actuarial exam-prep literature (although in some appropriate situations, this is an unintended consequence). Rather, in addition to sharing my own outlook on exam-prep, study techniques, and test-taking skills, I have interwoven the perspectives of members of a select group of actuaries with extraordinary exam and career success who have graciously volunteered to contribute their feedback.

Actuarial credentialing is like no other professional development process; it includes among the longest and most difficult series of credentialing examinations the world over. Their successful completion requires a combination of sound analytical proficiency, good business sense, a strong work ethic, moderate writing skill, an orientation toward detail, and arguably, a little luck. This book seeks to familiarize you with actuarial exams, aid you in your journey through your chosen credentialing process, and provide you with a few words of wisdom for your career after exams.

In the rest of this chapter, I will briefly discuss some of the difficulties you will face in your excursion, but only to better equip you to grapple with these obstacles in a proactive manner. It is not my goal to scare you away from an extremely dynamic and rewarding career as an actuary. In fact, it is my opinion that these potential stumbling blocks are a small price to pay for the opportunity to learn an intricate domain of applied mathematics, to tackle some of the world's most important and complex problems, and to work with bright, motivated people in an active environment, all of which have paid countless dividends in my pursuit of happiness. This has tended to be a popular opinion; **actuary**

has consistently been rated in the top 5 jobs in America by the *Jobs Rated Almanac*.

## 1.2 Confounding Difficulties

Undoubtedly, the number of actuarial exams and the inherent difficulty of their subject matter are sufficient to create an arduous credentialing process for aspiring actuaries. There are, however, multiple other factors that exacerbate this challenge.

First, preparing for an actuarial exam is likely to be very different from preparing for most other exams that you have previously taken, such as final exams in a collegiate setting. Generally speaking, you will devote more cumulative effort to the passage of actuarial exams than to any other examination-related process in your life. There are three obvious consequences of this disparity in the required preparation effort:

- It may be possible that the most efficient and effective manner in which to prepare is not immediately clear. After all, without previously being forced to master such a large amount of material in such a short amount of time, and possibly without the aid of classroom instruction, you may find that your study skills or information retention abilities are in need of improvement;
- You may find that a boost to your will power and a shot to your ego will be necessary to be successful on actuarial exams. Though it is possible that a few college courses may allow you to pass some of the earlier exams without many additional independent study hours, this same pattern will not generally be true for your post-college exams;
- You will be forced to develop, perhaps for the first time in your life, an organizational plan or study schedule that extends for several months. You may not have had opportunities to fully develop time management skills in your previous endeavors, particularly if, as is often the case with intelligent actuarial students, you were able to succeed in college with negligible planning.

Second, the more time passes, the more difficult it is to complete actuarial exams. For many candidates, with each passing year, other responsibilities, such as family, community, and workplace obligations, begin to overshadow the importance of exams, making it progressively harder for them to justify time spent studying. This is especially true for exam candidates with children.

Third, the length of time necessary for completion of exams is significant, creating possible motivational barriers. While exceptions certainly exist, those who attain Fellowship in a professional actuarial society have tended to do so in five to ten years. This has proven to be a major deterrent for some candidates, since it subtly obscures the connection between their daily study activities and their long-term professional goals.

Fourth, the actuarial profession is one of the few whose students are forced to simultaneously work full-time and self-educate for the duration of their credentialing processes. This quasi-apprenticeship approach is unlike that of medicine, law, or most other white-collar disciplines, in which candidates graduate from professional school and begin their practicing careers only upon attainment of the terminal credential in their respective fields. This is not to ignore the typical internship, practicum, or rotation commonly completed by individuals in these other professions, but only to say that the proportion of time spent doing both activities simultaneously is less. While this arrangement has definite advantages (it enables you to begin earning a relatively significant income far earlier in your career, and reduces the need for student loans), it can sometimes create stress in balancing your work, study, and home lives.

I have undoubtedly omitted other significant obstacles in your quest for Fellowship in a professional actuarial society. Indeed, there are many macro-level dynamics that impede rapid progression through the exams, as well as many unique, personal challenges that must be overcome by each individual. It suffices to say that aspiring actuaries face a double-



edged sword; examinations of an inherently challenging nature, further complicated by the presence of many additional barriers to success that are not present in competing disciplines.

### 1.3 Fighting Back

Despite the rigor of exams and the numerous confounding factors described earlier, there are many individuals who have completed exams in a relatively short amount of time. While some would be tempted to casually attribute the widely varying rate of success on actuarial exams purely to intellect or analytical capacity, this would be a gross oversimplification. Undoubtedly, for at least one course in your educational career, you had an instructor whose teaching methods simply did not mesh with your learning style. As a result, you either expended undue effort to learn the material in accordance with your personal standards, or you moved through the course while earning less than your typical grade. You can therefore attest that the teaching and learning techniques employed are just as explanatory of the classroom results as the people trying to learn. It is certainly a reasonable inference that this relationship also holds for the nuances of actuarial self-study. As a result, focusing your energy on the *method of preparation* as well as the subject matter can significantly impact your record of success on exams.

My goal in writing this text is to present both general and specific advice on study and exam strategies that will help make your transition through exams as smooth as possible. For credibility, I have listed my personal exam record in Table 1.1.

The numbering systems in place when I took the exams were totally different from the current system. Consequently the exam names used in Table 1.1 are not likely to be meaningful to you. Note that I did not sit for an exam during the Fall 2000 exam period, since I wanted to enjoy my last semester of college without the burden of exams looming over my head!

TABLE 1.1

Sitting	Exam(s)	Score(s)
Spring 1999	100	9
Fall 1999	110, 140	10, 7
Spring 2000	3	8
Fall 2000	None	N/A
Spring 2001	4	8
Fall 2001	5	9
Spring 2002	6	10
Fall 2002	8V	10
2003	7 Pre-test	Pass
2003	7 Seminar	Pass
2004	PD	Pass
2004	FAC	Attain FSA

My record indicates that success on the first attempt on every exam is attainable. While this is certainly my hope for each of you reading this book, the strategies and techniques presented here will aid in your success even if they do not grant you invulnerability to failure. It is a commonly held view, however, that a universally correct or optimal study methodology does not exist. I will, therefore, avoid making recommendations that worked for me *merely because they worked for me*, and instead, focus on presenting preparation and exam-taking techniques that have proven successful for a cross-section of very exam-adept actuaries. Not surprisingly, their views tend to corroborate my personal beliefs within a range that is narrow enough to suggest general themes but wide enough to maintain the integrity of individual educational variation. The integration of our collective ideologies—a comprehensive set of strategies, guidelines, techniques, and tips that has produced reliably sound exam outcomes—is what lies ahead of you in this book. The hope, of course, is that it proves effective for you.

Critics have always been skeptical about the merits of such discussion, asserting that the one and only way to bolster your chance of success on an actuarial exam is to study harder. These are generally the same

individuals who pompously declare that failure despite sufficient study time is indicative of a lack of intelligence or analytical competence. While it is certainly feasible that a student may fail repeatedly due to insufficient aptitude, such broad-based criticisms exaggerate this possibility to ludicrous proportions. While it is a point of fact that extremely intelligent students may be able to get away with less work, this hardly implies that scrutiny of exam preparation strategies is useless, nor does it negate the potential impact of a concentrated effort to hone study skills. Many very intelligent, properly motivated actuarial students fail exams; this reality alone ought to be sufficient to demonstrate that proper study methods are crucial. The fact that they are taken for granted does not invalidate their significance.

In this text, I will present recommendations in a logical, organized way. I begin in Chapter 2 by providing an overview of the actuarial profession, the major actuarial organizations in the U.S. and Canada, and a brief synopsis of the current education systems of the Society of Actuaries, the Casualty Actuarial Society, the Joint Board for Enrollment of Actuaries, and the Canadian Institute of Actuaries. In Chapter 3, I discuss the preliminary actuarial examinations, including strategies and tactics aimed specifically at preparation for these exams. In Chapter 4, I provide similar coverage of upper level exams. In Chapter 5, I review some general preparation and exam-taking suggestions that are applicable to all actuarial exams, including the attitudinal dynamics of studying, the construction of study schedules, and even the power of superstition. The book concludes with Chapter 6, in which I focus on additional competencies, apart from mastery of the exam subject matter, that you will need in order to achieve career success as an actuary. After all, exams are tough, but they are only part of the overall picture.

## 1.4 A Note on Well-Roundedness

While reading this book, I encourage you, at the risk of gratuitously imposing a personal value, to be cognizant of one fundamental ideal. Exams, no matter how important they may seem, or how much of a challenge they represent, should not be pursued at the expense of your

emotional, physical, or spiritual health. I am not addressing a few all-night study binges, skipped meals, or mild fits of anxiety, all of which are generally regarded as natural expectations in the demanding pursuit of achievement. Rather, I am referring to a few occasional and unfortunate events I have witnessed during my career in which people's lives have truly been damaged in a long-lasting way due to their approach to exams. Keeping exams in perspective, and regarding them as an important and worthwhile goal but not a survival necessity, will help to ensure your health. No person should spend five to ten years as a miserable "exam machine" with deteriorating health and eroding personal relationships due to the over-prioritization of actuarial exams. No person should be afflicted with prolonged insomnia, depression, or a weakened state of health due to self-imposed exam pressure. Finally, no person should pursue exams with such passion that the cultivation of prosperity in other areas of life is precluded. After all, exams are exams—no more, and no less.