

# THE ACTUARIAL SURVIVAL GUIDE - YOUR DESIGNATION

Third Edition, Part 2

THE UNIVERSITY OF MANITOBA ACTUARIAL CLUB

## SECTION FOUR

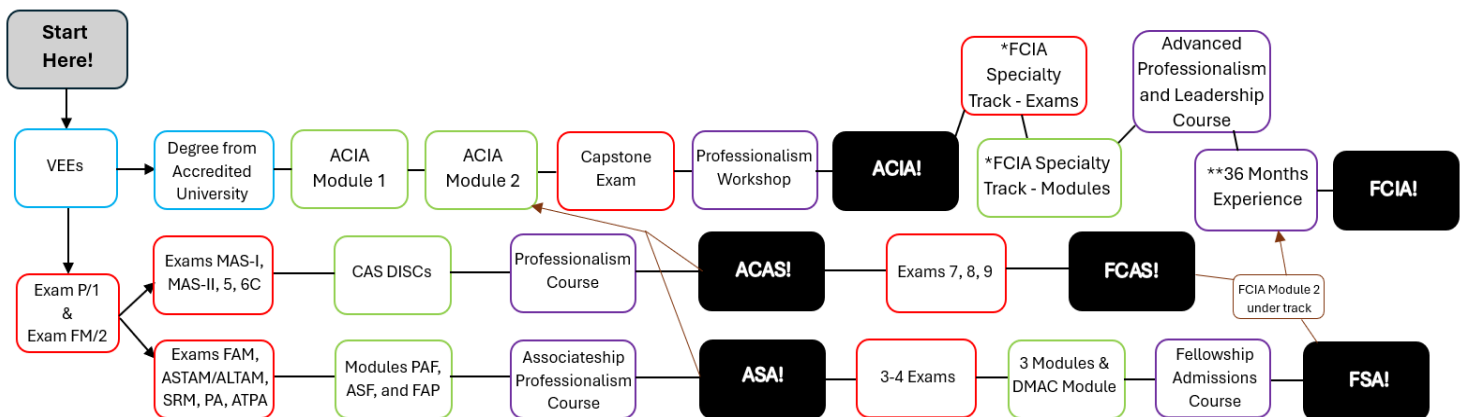
# OTHER REQUIREMENTS & INFORMATION

## INTRODUCTION

By Katherine Stobbe, with “Pathway Breakdown” updated by Eric Strick

You may have noticed that there are more requirements than just the exams! This section will first compare the requirements for each actuarial society, and then break down exactly what they are, when to complete them, and how they work. We will also include some information on university accreditation!

## PATHWAY BREAKDOWN



Legend for Boxes:	Legend for Lines/Arrows:
University-Related Exams Modules Other	Traditional Track Special Crossover Tracks
<p>*For the FCIA specialty tracks, candidates pursuing the CAS track should take the Property and Casualty Insurance (PC) track; candidates pursuing the SOA track can take any other track.</p> <p>**For the 36 months experience requirement for the FCIA designation, this will vary depending on the path taken. Click <a href="#">here</a> for details of varying pathways.</p> <p><u>Note:</u> Beginning in Fall 2025, the FSA pathway will be changed to just require 4 courses (i.e. exams), plus DMAC and FAC modules to attain the FSA designation.</p>	

		Society of Actuaries	Casualty Actuarial Society	Canadian Institute of Actuaries
	<b>Description</b>	Society for life, health, or pension actuaries	Society for property and casualty actuaries	Governing body for actuaries in Canada
	<b>Website</b>	<a href="https://www.soa.org/">https://www.soa.org/</a>	<a href="https://www.casact.org">https://www.casact.org</a>	<a href="https://www.cia-ica.ca/home">https://www.cia-ica.ca/home</a>
	<b>Available Designations</b>	Associate of the Society of Actuaries (ASA) of the Society of Actuaries (FSA) Chartered Enterprise Risk Analyst (CERA)***	Associate of the Casualty Actuarial Society Fellow (ACAS) Fellow of the Casualty Actuarial Society (FCAS) Chartered Enterprise Risk Analyst (CERA)***	Associate of the Canadian Institute of Actuaries (ACIA) Fellow of the Canadian Institute of Actuaries (FCIA)
Associate	<b>Average Timeline*</b>	5.38 years	6.73 years	No Data
	<b>Exam Requirements</b>	P FM FAM (made up of FAM-S & FAM-L) ASTAM ALTAM SRM PA (project-based assessment) ATPA (take-home project-based assessment)	P/1 FM/2 MAS-I MAS-II Exam 5 Exam 6C	N/A
	<b>Exam Equivalencies</b>	FAM-S & ASTAM = Former STAM FAM-L & ALTAM = Former LTAM ATPA = IFM Replacement	SOA Exam P = CAS Exam 1 SOA Exam FM = CAS Exam 2	N/A
	<b>Exam Format</b>	CBT MC + WA at designated testing center	CBT MC + WA at designated testing center	N/A
	<b>University Credit Program</b> i.e. Is there a program which provides exam credit for university courses?	Yes, UEC program	Yes, UAP program	No (UAP credits no longer effective as of Oct 31/23)
	<b>Exams Eligible for University Credit</b>	FM FAM ASTAM ALTAM SRM	P/1 FM/2	N/A
	<b>University Degree Designation</b> i.e. Can completing my degree lead to this designation?	No	No	Yes
	<b>Other Requirements**</b>	3 VEE: Economics, Accounting & Finance, Mathematical Statistics 3 Modules: Pre-Actuarial Foundations Module; Actuarial Science Foundations Module; Fundamentals of Actuarial Practice Professionalism Course	2 VEE: Economics, Accounting & Finance 3 Online Courses: Risk Management & Insurance Operations, Insurance Accounting, Coverage Analysis, Insurance Law & Insurance Regulation; Introduction to Data & Analytics Professionalism Course	ACIA Modules 1 and 2 Capstone exam Professionalism Workshop
	<b>Notes</b>			
	<b>Transferability</b>	ASA can be used to attain ACIA	ACAS can be used to attain ACIA	Eligibility can be attained through either: -Attaining ASA or ACAS credentials OR -Completing degree at an accredited university AND completing both modules AND writing the capstone exam AND attending the professionalism workshop ACIA cannot be used to attain ASA or ACAS
Fellowship	<b>Timeline*</b>	7.90 years	8.08 years	No Data
	<b>Specialty Track Options</b>	Yes, 6 options	No	Yes, however those committed to the CAS track should take the Property and Casualty Insurance (PC) track 3 total, exact details depend on track chosen
	<b>Exam Requirements</b>	3-4 total, dependent on track	Exam 7 Exam 8 Exam 9	Remotely proctored, open book
	<b>Exam Format</b>	WA at designated testing center	WA at designated testing center	No
	<b>University Credit Program</b> i.e. Is there a program which provides exam credit for university courses?	No	No	No
	<b>Exams Eligible for University Credit</b>	None	None	None
	<b>University Degree Designation</b> i.e. Can completing my degree lead to this designation?	No	No	No
	<b>Other Requirements</b>	3 Modules, dependent on track, plus the DMAC module Fellowship Admissions Course	None	2 Modules Professionalism Course 36 months relevant Canadian experience
	<b>Notes</b>	ASA is required to obtain FSA.	ACAS is required to obtain FCAS	Required to sign off on actuarial evaluations in Canada. Eligibility can be attained through either: -Attaining FSA/FCAS credentials through SOA/CASAND completing 36 months relevant Canadian experience OR -Attaining ASA/ACAS credentials through SOA/CAS AND completing CIA fellowship exams, modules, and professionalism course AND completing 36 months relevant Canadian experience OR -Attaining ACIA credentials through CIA AND completing CIA fellowship exams, modules, and professionalism course AND completing 36 months relevant Canadian experience FCIA cannot be used to attain FSA or FCAS Transferrable internationally
	<b>Transferability</b>	FSA can be used to attain all exam/module requirements of FCIA. Transferrable internationally.	FCAS can be used to attain all exam/module requirements of FCIA. Transferrable internationally.	FCIA cannot be used to attain FSA or FCAS Transferrable internationally
Other	<b>Pros</b>	-Transferrable to an FCIA -Examinations are eligible for study days, study bonuses, paid study material, etc.	-Transferrable to an FCIA -Examinations are eligible for study days, study bonuses, paid study material, etc.	-Since an FCIA designation is required to sign off on actuarial evaluations in Canada, it is generally required of actuaries to receive this designation, either through CIA exams, or SOA/CAS exams. -More flexibility in ways to attain designation -Potentially fewer exams
	<b>Cons</b>	-Several exams -Likely will be required to also attain FCIA	-Several exams -Likely will be required to also attain FCIA	-Accrediting preliminary exams can make writing upper-level exams harder since one would lack the experience of writing actuarial examinations -FCIA cannot be used to attain FSA/FCAS -Salary is generally based on number of exams passed, and some companies do not count accredited exams as a passed exam
	<b>Notes</b>	SOA also has Micro-Credentials, which act as "check-points" or "segments" that make up the ASA Credential. -Pre-Actuarial Foundations: VEE Accounting & Finance, VEE Economics, Exam P, Exam FM, Pre-Actuarial Foundations Module -Actuarial Science Foundations: Pre-Actuarial Foundations Micro-Credential, VEE Mathematical Statistics, Exam SRM, Exam FAM, Actuarial Foundations Module -Data Science for Actuaries: Exam SRM, Exam PA, Exam ATPA		
<b>Footnotes</b>	* Average travel time according to <a href="http://www.actuarial-lookup.com/travel-times">http://www.actuarial-lookup.com/travel-times</a> ** See our "VEE Guide" for more information on completing the VEE requirements ***Not covered in this chart			

## VALIDATION BY EDUCATIONAL EXPERIENCE (VEE)

By Katherine Stobbe, with VEE Options table updated by Eric Strick

*What are VEE Credits?* VEE (Validation by Educational Experience) are educational requirements for ASA/ACAS designations.

*How do I finish VEE credits?* VEEs can be completed by completing specific university courses with the required grades through an approved university, or by completing an online course and exam through an approved organization. You must apply for VEE credit with the SOA once you have completed them.

*How do I apply for VEE credits?* Once you have completed the VEE course(s), you must apply and pay for the VEE to be recognized through the SOA website. Some online courses (such as Coaching Actuaries) will automatically send your VEE results to the SOA, and thus a separate application is not required. You must apply for each VEE separately.

*When should I apply for VEE credits?* You must complete two SOA/CAS exams before you are eligible to apply for VEE credits. We recommend waiting until you are employed full-time before applying for VEE credits since most employers will reimburse the application fee.

*What is the difference between the University Credit and Other options?* Completing VEEs at an approved university allow you to complete them at the same time as your university degree. Completing VEEs as an online course will require you to go through a separate organization and pay an additional fee (i.e. a fee that is not simply part of a "tuition" payment). The format of online VEE courses vary, with some courses including assignments and quizzes, and the format of the proctored final will vary, with some courses using remote proctoring and others using a testing center.

*Where can I find more info?*

SOA: <https://www.soa.org/education/exam-req/edu-vee/>

CAS: <https://www.casact.org/exams-admissions/validation-educational-experience>

General Directory: <https://www.soa.org/education/exam-req/instructions-for-vee-directory/>

VEE Registration: <https://www.soa.org/education/exam-req/registration/edu-registration/>

## COMPARING VEE OPTIONS

General Info		University Credit		Other Options	
VEE	Society	U of M Course	Grade Requirement	Online Courses	Links
Economics	SOA & CAS	ECON 1010 + ECON 1020	B or higher	Coaching Actuaries Microeconomics + Macroeconomics The Infinite Actuary Micro & Macro Economics ACTEX VEE Economics	<a href="https://www.coachingactuaries.com/vee">https://www.coachingactuaries.com/vee</a> <a href="https://www.theinfiniteactuary.com/econ">https://www.theinfiniteactuary.com/econ</a> <a href="https://www.actexlearning.com/exams/vee/economics">https://www.actexlearning.com/exams/vee/economics</a>
Accounting & Finance	SOA & CAS	FIN 2200 + ACC 1100	B or higher	Coaching Actuaries Accounting + Finance The Infinite Actuary Accounting & Corporate Finance ACTEX VEE Accounting & Finance	<a href="https://www.coachingactuaries.com/vee">https://www.coachingactuaries.com/vee</a> <a href="https://www.theinfiniteactuary.com/ACF">https://www.theinfiniteactuary.com/ACF</a> <a href="https://www.actexlearning.com/exams/vee/accounting-and-finance">https://www.actexlearning.com/exams/vee/accounting-and-finance</a>
Mathematical Statistics	SOA	STAT 3100	B or higher	Coaching Actuaries Mathematical Statistics The Infinity Actuary Mathematical Statistics ACTEX VEE Mathematical Statistics	<a href="https://www.coachingactuaries.com/vee">https://www.coachingactuaries.com/vee</a> <a href="https://www.theinfiniteactuary.com/MS">https://www.theinfiniteactuary.com/MS</a> <a href="https://www.actexlearning.com/exams/vee/mathematical-statistics">https://www.actexlearning.com/exams/vee/mathematical-statistics</a>

# SURVIVING THE EXAMS

## PRELIMINARY SOA/CAS EXAMS

### EXAM P/1

By *Devin Kinley, with 2022 exam updates by Eric Strick*

The course STAT 2400 covers most of the material on Exam P, which will greatly help students in preparing for this exam. STAT 2800 will be taken for the university degree requirement and to satisfy upper actuarial course prerequisites, but from the 2022 exam updates, there is no longer a large amount of multivariate probability on Exam P. Also, ACT 2020 covers the section on calculating expectations and variance of insurance payments with deductibles, coinsurance, and/or policy limits, which is not covered in the stats courses.

Unfortunately, the stats courses will not give you the same type of questions you will see in Exam P. For those of you who will be taking the STAT courses on probability, here are a couple of tips specifically for these courses:

- You will have to do a lot of proofs. I used to hate proofs but take this opportunity to understand the proofs rather than memorize them, as these can help you to remember the formulas better.
- Generally the textbook questions suck. If you are finding them too hard, go online to do practice questions or use the ACTEX study manual (I found this particularly useful when doing permutations and combinations). When I took STAT 2400, I was provided with great practice questions for the exams, and hopefully this is the same for you.

#### *Study Options*

- I believe taking the courses then taking practice tests on Coaching Actuaries (CA) ADAPT for 4 weeks is sufficient to pass Exam P. I did about 20 Exam P practice exams on ADAPT, which is probably more than necessary.
- Getting the CA manual, along with ADAPT, can be helpful, especially for learning the section on 'Insurance and Risk Management'. We have a really good UMAC student discount for purchasing the CA learn manual + adapt!
- The SOA publishes sample questions for every preliminary exam on their website, which I would also recommend looking at. They're representative of exam questions and they are also free.

#### *Important Concepts on Exam*

Since the number of units on this exam is small, I will provide the most important topics from each unit:

##### **General Probability**

- I think in this section the most important concepts are understanding conditional probabilities and Bayes' Theorem. These can be derived amongst each other and if you feel

confident in doing this, then you will feel comfortable with the majority of questions from this section.

$$\begin{aligned}P(E_i|A) &= \frac{P(A \cap E_i)}{P(A)} \\&= \frac{P(E_i)P(A|E_i)}{P(A)} \text{ (by multiplication rule of probability)} \\&= \frac{P(E_i)P(A|E_i)}{\sum_{j=1}^n P(E_j)P(A|E_j)} \text{ (by the result of theorem of total probability)}\end{aligned}$$

***Distributions - this is not an exam unit but is important to know!***

- Understanding what each distribution does and how they are related to one another will absolutely save you time. Success in the actuarial career cannot be achieved by just performing the mathematics without understanding the concepts. You must always understand the concepts. Looking at the proofs for these formulas and how they were developed is massively beneficial.

***Univariate Probability Distributions***

- This section has the most weight for Exam P, so it is very important to have this section down! The survival function,  $S(x)$ , is very important for Exam P. This is one of those functions they hardly touch on in the stats courses. It becomes especially helpful for calculating expected losses given there is a deductible and a limit. Other important functions are the probability mass function (PMF), the probability density function (PDF),  $f(x)$ , and the cumulative distribution function (CDF),  $F(x)$ . Understanding the connections between the PDF, CDF, and survival function for continuous forms, the PMF for discrete forms, as well as relating these to moments, are essential for this exam. It is also important that you can quickly recognize given distributions when functions are given in questions.

***Multivariate Probability Distributions***

- With the 2022 exam changes, a lot of material was cut from this section, which includes no longer needing to calculate double integrals. For the current exam, the most important topic to understand is knowing how to read and utilize probabilities given for a joint PMF,  $p(x,y)$ . Within this, it is important to understand double summation notation. It is also important to be able to convert to marginal PMFs from this function and to be able to find expectations (including conditional expectations), covariance, and correlation.

***Insurance and Risk Management***

- This section boils down to really one beautiful formula that you will absolutely use:

### Expected Value of Payment, Y

$$E(Y) = \int_d^{d+u} S(x) dx$$

- Where  $S(x)$  is the survival function ( $1-F(x)$ )
- $d$  = deductible
- $u$  = limit

#### *Formula Sheet Tip*

For this exam, when studying, it can be helpful to have at hand the Coaching Actuaries formula sheet, which is free to download. In particular, I found it very helpful to reference the formulas for the PMF/PDF, CDF,  $E(X)$ , and  $\text{Var}(X)$  for the common distributions, as well as to reference the formula for the expectation of payment  $E(Y)$  with deductibles, policy limits, and coinsurance.

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#### EXAM FM/2

By Alex Morakis, with 2022 exam updates by Eric Strick

After completing Interest Theory, you have learned most of the syllabus that is on Exam FM. Typically students either take Exam P or FM first, the decision is up to you. The course does a pretty good job in preparing you for the exam, however I believe additional practice will increase your probability of succeeding on exam day. Here are some things I would recommend for preparing for the exams:

#### *Study Options*

- Coaching Actuaries (CA) is the best resource to use for this exam, especially the Adapt tool. Adapt has a large question bank where you can get lots of practice questions, as well as you can practice under actual exam conditions. CA also has learn manuals and visually attractive videos with descriptive explanations of concepts. This is a more expensive option, but we have discounts through UMAC!!
- The SOA publishes sample questions for every preliminary exam on their website. They're representative of exam questions and they are also free.
- The ASM Manual is a great resource for more practice questions as well as solved examples. If you purchase the manual, you get access to GOAL, a question bank of exam style questions. There is an ASM manual in reserve in the Drake Library. Currently the Warren Centre provides a subscription to GOAL if you are enrolled in Interest Theory.
- TIA has comprehensive video lectures for all the material, practice questions and practice exams. It is also an expensive option, however there is a full-time discount available.

#### **Tip by Eric Strick:**

Personally I purchased CA learn + adapt, as well as used the SOA sample questions (which may be a little bit too much if you complete Interest Theory beforehand). I got the CA manual to review immunization, cash flow matching, and loans/bonds units, as I wanted a second perspective from these sections on top of taking Interest Theory. However, I feel the Interest Theory course covers

most concepts well in that you can just get CA Adapt and jump into practice exams.

### *Exam Tips*

- Make sure you are very comfortable with annuity-type problems! General annuity-type questions are the heaviest weighted topic on this exam and annuities show up in every unit after learning the general concept, as well as in upper ASA-level exams.
- Make sure you are focusing on your mistakes when practicing questions, however uncomfortable and frustrating that it is.
- Get familiar with your calculator! On a TI-30 calculator, one shortcut that saved a lot of time was storing a discount rate ( $v$ ) on  $\text{Sto}>$  when calculating the present value of an annuity. The TVM functions on a Ba-II plus can also be a timesaver for some questions, however there are some problems where the TVM keys will not work. Know when you can and cannot use the TVM functions!
- If a question is asking to rearrange a formula, it can be faster to plug in numbers to each possible solution instead of solving the actual question. In particular, this can be the case when having to solve for the annual effective interest rate,  $i$ .



### EXAM FAM

By *Shaun Moore*

#### *Overview*

Fundamentals of Actuarial Mathematics (FAM) is a 3.5-hour exam consisting of 34 multiple choice questions. This exam is divided into two components with the first being Life Contingencies and the second as Short-Term Modeling. FAM is the first exam where you will dive into standard actuarial concepts that you will use for the rest of your career. In Life Contingencies you will explore the concepts of mortality, annuities, and life insurance. In Short Term Modeling you will be exposed to basic ratemaking, reserving, and short-term coverages. To be fully transparent, this exam is definitely a jump from your other preliminaries like P and FM because there is much more content included in one sitting. With a designated study schedule, determination, and lots of practice you should be comfortable to write. The remainder of this guide will go over the exam's relation to our UofM courses, study material available, and study tips.

#### *Note*

As this exam is new, the SOA has made previous updates between sittings. Please remember to check the exam page and syllabus before you write. The link can be found [here](#). Exam FAM is offered 3 times a year in the months of March, July, and November.

#### *U of M Courses for FAM*

I strongly recommend writing exam FAM after you have completed Models 1 (ACT 3130) and Short Term 1 (ACT 4020). These two courses combined cover about 80-85% of the material that is included in exam FAM. This material is highly weighted on the exam and will be fresh in your head. The remaining material can be learned with an actuarial study tool like Coaching Actuaries or ACTEX. If you want to cover the remaining material with UofM courses before beginning your practice with an Actuary Study Material, you will have to take Valuations for Actuarial Practice (ACT 3340).

#### *Actuarial Study Materials*

For this exam you can use Coaching Actuaries or ACTEX as your preparation. Either should be fine but my personal preference for this exam was Coaching Actuaries (CA). It has a built-in study schedule, lots of quiz questions, and practice exams that mimic the difficulty and testing conditions of the real sitting. I also highly recommend having a study tool while taking ACT 3130 and ACT 4020 at the U of M. I find that sometimes class notes are not as coherent for certain sections of the material and that the online study tool can fill these gaps.

#### *My Study Tips*

I recommend 4-6 months of preparation. You want to have enough time to learn the material, do practice quizzes and LOTS of practice exams. I aim to hit CA level 5 difficulty on most quiz sections before moving to practice exams. I usually like to write at least 7-10 practice exams before my sitting. Always take breaks, mimic your testing conditions with practice exams, and review the questions you got incorrect. All the best and good luck with FAM! I am sure you will do great!

Exam writeup to come soon. However, a lot of tips and the preparation process is similar to Exam ALTAM (below).

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## EXAM ALTAM

By *Ben Kroeker*

Advanced Long-Term Actuarial Mathematics (ALTAM) is one of the most challenging and intensive ASA-level exams. While that may sound daunting, the exam difficulty is only a natural progression above the difficulty level of exam Fundamentals of Actuarial Mathematics (FAM). My goal is to outline the background of the exam, give you advice on how to study and to provide you with helpful tips and tricks to approach the exam day so that you may feel confident in your preparation for ALTAM.

### *Background/Breakdown*

ALTAM is a new addition to the exam requirements of the ASA designation. The exam has a unique format amongst the ASA-level exams, as it is the first exam consisting of entirely long answer questions. The written answer format of ALTAM should be approached with a significantly different strategy than the previous multiple-choice exams. This strategy will be discussed later in further detail.

Here is a breakdown of ALTAM's format:

**Length:** Three-hours

**Questions:** Six questions, worth up to 60 points

- Five long-answer questions
- One Excel based long-answer question

### *Study Material*

There are many options for study material as you prepare for ALTAM. Coaching Actuaries (CA), Actex, and The Infinite Actuary are amongst the most popular options available. My advice for selecting a study material comes down entirely to which program you are most comfortable using. Each of these programs covers the required material in different ways and I would advise the candidate to select the program which has been most conducive to their style of learning during past exams they've written. Personally, I found CA prepared me sufficiently to write and pass ALTAM.

## Preparation

It's important to remember that every candidate's preparation looks different. But I would advise anyone to leave more time than you think you will need to prepare for ALTAM. Do not procrastinate in your preparation for ALTAM! Typically, I would suggest leaving no less than a month to work solely on practice questions and exams.

The Excel based question is a new addition to ALTAM. The SOA has published Excel based questions similar to what may be seen on the exam. I would highly recommend practicing these questions to gain understanding of the Excel based question format.

## Exam Day Tips

One of the most important criteria to success on ALTAM is effective time management. ALTAM has easily the most significant time crunch of the exams I've written. For reference, I finished roughly 4.5 out of 6 six questions, and still passed with a margin. Here are some helpful tips with how to approach a written-answer exam such as ALTAM:

- Be scrappy for marks! Every mark counts on a written-answer exam such as ALTAM. Keep in mind that partial marks are awarded for partially correct answers. Even showing a formula could be the difference between a pass and a fail.
- If you don't finish all the questions, don't panic! Very few candidates are able to answer all the questions on the exam due to the time crunch. If a candidate can answer 4 out of 6 questions with near 100% accuracy, they may still be in good standing to pass.
- Show your work! If you get a final answer incorrect, you could still be awarded with marks for correct formulas.

Be prepared! ALTAM is difficult, but very doable. If you get stuck on a question, don't panic, take a deep breath, and move on to the next question. Focus on getting a pass, not a 10!

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## EXAM SRM

By *Brenden Gingras*

### About the Exam

Exam SRM (Statistics for Risk Modeling) is offered three times per year; January, May, and September. It is a 3.5-hour exam consisting of 35 multiple choice questions. This exam will test your understanding of several analytical methods (regression, time series, decision trees, etc.) and is a prerequisite to Exam PA (Predictive Analytics). With 35 questions in 210 minutes, that equates to 6 minutes per question. However, unlike the previous exams you've written, the challenge of SRM does not come from the time pressure. Instead, the challenge comes from needing a good understanding of the material to identify the (usually tricky) points that make a statement true or false. The exam is heavily weighted towards qualitative questions, meaning if you know what a question is asking then you can often solve it in just 1 or 2 minutes, but if you don't then there isn't too much you can do other than guess.

### U of M Courses for SRM

ACT 4010 and ACT 4040 are the two university courses that prepare you for SRM. ACT 4010 does a good job introducing some of the concepts you'll see on the exam, but it generally tests the much more quantitative aspects, which is not as representative of the types of questions you can expect to see on SRM. ACT 4040 is a newer class, and thus is much more tailored specifically towards the

exam in terms of both material covered and concepts tested. I won't go into too much detail as it may change from year to year, but this course would likely save you some time studying. In short, both courses would help (4040 more than 4010), but you'd still have a lot of work to do after taking them.

### *Study Materials*

There are many study materials you can use to prepare for the exam, but the main three people usually use are ACTEX, Coaching Actuaries, or TIA. I'll share my opinion later, but I encourage you to ask around to see what others have used and to get a better idea of what material best matches your learning style. You may also choose to supplement your primary study material with the two source textbooks, "SOA: Regression Modeling with Actuarial Applications" and "Introduction to Statistical Learning with Applications in R" (ISLR), which is where the SOA gets their information to make questions. Both can be found online for free, so it doesn't hurt to take a look.

### *My Study Tips*

Now for the subjective section. This is a mix of my personal experience and the experiences I've heard from other students. Take what I say here with a grain of salt as everyone's situation is different and what worked for me may not be feasible nor work for you.

I studied a little over 2 months for this exam, on top of having already taken ACT 4010. I read through the CA manual for the first month, then did ADAPT questions and reviewed notes and the source textbook (ISLR) for the second month, having completed a little over 400 practice questions by the end of studying. I thought the CA manual did a good job of teaching all the concepts that could appear, although there was probably a little bit too much emphasis on some of the quantitative sections. The practice questions on ADAPT were also good, however, after doing so much practice I started seeing questions that I had already seen before, which made it hard to judge if I was actually understanding the concepts or just remembering the answers. I've heard ACTEX and TIA also do a great job at going in-depth in the material being tested, but I can't add too much more as I didn't use either one. I would recommend giving ISLR a read (at least for the sections you're not as confident in) as getting a secondary, different explanation can really help solidify concepts in your head.

In the exam, I found for the qualitative questions I could usually eliminate 3 of the choices quickly but deciding between the remaining 2 would take more time. My advice for writing the exam is to not get too caught up on these questions during your first run through; mark them and come back once you've finished the questions you're more confident with, you should have plenty of time.

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## EXAM PA

By *Vianca Gamboa*

### *About the Exam*

- **Exam offering:** Twice a year - April and October
- **Length:** 3.5 hours
- **Number of questions:** Usually around 9-12 tasks with subtasks worth a total of 70 points
- **Topics Covered:**
  - 1) Predictive Analytics Problem Definition
  - 2) Data Exploration, Visualization, and Transformations

- 3) Supervised Learning Techniques
  - i) Generalized Linear Models
  - ii) Tree-Based Models
- 4) Unsupervised Learning Techniques
  - i) Principal Components Analysis
  - ii) Clustering

### *Study Options*

- ACTEX (highly recommend)
- Coaching Actuaries

### *Exam Tips*

Exam PA is a computer-based written answer exam that consists of several tasks related to analyzing a given business problem. Each task is independent, so you will be able to answer the questions in any order. You can expect to encounter these 3 types of questions:

1. **Conceptual Questions:** Describe or explain concepts covered in the syllabus.
2. **Analytical Questions:** Provide explanations, interpretations, or recommendations for a given graph or output.
3. **Calculation Questions**

The exam tests both your technical knowledge and your communication skills. Therefore, it is crucial to ensure that your responses are clear and concise. Avoid unnecessary details and fluff. Make good use of paragraphing or bullet points to separate your ideas and address every part of the question. Ensure to make appropriate connections to the business problem in your responses.

Note that coding in R is no longer required during the exam. However, you should still understand the code and be able to interpret the given outputs. Manage your time effectively and aim not to spend more than 3 minutes per exam point.

### *Preparation Process*

I strongly recommend taking this exam after you have taken Exam SRM. Many of the topics covered overlap: where Exam SRM teaches you the concepts, while Exam PA involves applying those concepts.

I spent 3 months preparing for this exam. During the first two months, I focused on studying the ACTEX manual and understanding the syllabus concepts. I recommend completing all the exercises and case studies in the ACTEX manual to practice exam-style tasks. After going through the manual, I dedicated the last month to reviewing past PA exams and writing practice exams. When studying past exams, pay close attention to the SOA's commentary on common candidate mistakes and their provided sample solutions to understand their expectations. The ACTEX manual also provides additional commentary on the past exams and tips on how to effectively complete each task. A few days before the exam, review all concepts, definitions, and formulas.

I highly recommend purchasing the graded mock exam from ACTEX. Since Exam PA is an open-ended exam, self-evaluating practice exams can be challenging. The graded mock exam will assess your preparedness and provide detailed, personalized feedback on your responses, along with advice on how to improve them for better performance on the actual exam.

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## EXAM ATPA

By Khai Jen (Mike) Chew

### *Exam Registration and Schedules*

- 3 final assessment sittings for the ATPA modules (Feb-Apr, Jun-Aug, Oct-Dec).
- 96 hours (4 days) are given to complete the final assessment.
- Registration for the modules and the final assessment is not separate like the FAP modules. However, you can register months early to get access to the modules first. The final assessment will only be available until the period specified when you register.
- There are no end-of-module assessments (EMAs), just the final assessment. Feel free to run through all the modules except the last one without worrying.

### *Intro to the ATPA Final Assessment*

- Final Assessment is like a take-home test and is open book. You can freely reference online materials or the modules.
- There are around 6-7 tasks, consisting of mostly technical reports. The structure is normally structured as follows:
  1. Task 1: Data cleaning, prepping, and exploration
  2. Task 2: Conceptual Issues
  3. Task 3+: Constructing and tuning predictive models
  4. Last Task: Communicate findings (executive summary)
- There is a large amount of data work where you will apply statistical models (GLMs, decision trees, neural networks and many more) in a software or programming language of your choice.
- Unlike exam PA, only the data is given, and you will be building everything else and providing reports as commentary.

### *Studying for the ATPA Final Assessment*

- The modules and the ATPA sample assessment provided are sufficient. Make sure to study the sample assessment thoroughly to have a better understanding overall.
- The ATPA modules primarily showcases both R and Python code examples. However, I recommend R as it is more intuitive, and there are more references online. There are also models where Python didn't have examples in the modules like Bayesian Regression.
- Since it's a fairly new module, there aren't a lot of study materials. ACTEX did recently create one in 2024, it helps as extra study material or exercises, but is not necessary.
- The module assumes you have knowledge from PA as well. Linear models/GLMs/Decision trees/Random forests/Boosting are not shown in the modules but can come up during the final assessment so remember to brush up on those as well.

### *Tips for the ATPA Final Assessment*

- A helpful tip is to make sure to create generic code templates. You don't want to write any code from scratch as it can take up a lot of time, especially when debugging.

- Having a cheat sheet so you can look up pros and cons or diagnostic tools of different models can be helpful.
- The final assessment mainly tests your writing ability as you will only be required to deliver a work document outlining your work. No actual codes have to be submitted.
- Try not to overthink too much on each task and spend too much time on them. In the nature of predictive modelling, there are a lot of tools and techniques that you could apply to make it better, but they would only give marginal improvements after a certain extent.
- Always justify why and why didn't you make your considerations. Outline all your concerns and limitations if there are any.
- Be very familiar with data manipulation (creating fields, modifying, resolving data type issues, other errors etc.). While modelling work can be similar across different data, data cleaning is unique to every dataset.
- Lastly, starting the final assessment late like 5pm might be a strategy as you'll feel like you have 5 days.

## CAS EXAMS

These exams are specific to the Casualty Actuarial Society (CAS) exam path, so you should only prepare for them once you are committed to pursuing an actuarial career that requires an associate/fellow designation from the CAS (ACAS/FCAS).

### EXAM MAS-1

By *Braeden Hamm*, updated for 2022 exam changes

MAS-1 is a significant step-up in terms of difficulty from P and FM, both in the breadth of material covered and the complexity of the questions. It is the first CAS exam for many test-takers and requires a somewhat different approach than the prior prelims. For P and FM, ADAPT has these exams down to a science, and there should not be too many surprises on exam day for well-prepared students. CAS exams, on the other hand, frequently pull questions from previously untested sections of the syllabus, making the “brute-force” ADAPT strategy less effective. Passing this exam therefore requires having a good understanding of the frequently tested topics, and a moderate understanding of many smaller topics that may come up. There are a few options for study materials below that do a good job of teaching in this manner.

#### *Study Options*

- Mahler Study Guide - My personal recommendation for MAS-1. Yes, it is extremely long, and the formatting is not perfect, but if you are able to get through it, you will pass as it covers all topics thoroughly. It is also very cost-effective.
- Mahler Practice Exams - Extremely valuable resource even if you did not use Mahler’s study guide. The questions are similar in style to the actual exam and often touch on previously untested topics.
- TIA - A good option if you like video lessons. Practice questions are on the easier side, so mixing in past/Mahler exams is recommended. Student discount available to those in university.
- ASM/ADAPT - Would not personally recommend for this exam, but I have heard of people passing that used them.
- Source Material - Reading the source material is not required to pass, but it can help in sections where the study manual explanation is not clear. I would recommend reading the covered parts of Introduction to Statistical Learning, as the text is free online and very well written.

#### *Exam Tips*

- Get a Multiview calculator and learn how to use it. The data functions are a massive time saver.
- Create a schedule and stick to it. Make sure the schedule is realistic (i.e. include days off), otherwise you will burn out before exam day. As mentioned above, this exam covers a very large amount of material, and you want to ensure you have time to get through it all.
- If you have the time, a quick first pass through the material to familiarize yourself with the topics can help. Just watching/reading and absorbing it at a high level over the course of a few weeks.
- The bulk of the time you spend studying will be grinding through the manual over the course of a few months. I recommend doing questions as you work through each section to retain the information better. The number of questions you do should be inversely



proportional to how much the section made sense to you when read/watched it (i.e. if the section made sense and you got the first question or two correct, skip the rest and move on to the next part). This is very important as it will allow you to spend your time as effectively as possible and progress through the syllabus quicker.

- If you still can't wrap your head around a particular section after trying to grind through it, add it to a list and move on. It may click later or make more sense in the context of other material, and if not, you can always come back to it later once you have finished getting through the manual.
- At around 2-3 weeks before the exam, you should have completed the manual and be trying to increase your understanding of the topics you are struggling with. Practice/past exams can be a great tool for this, and you should look for patterns in the questions you get wrong to see which topics require the most focus. I wrote about 8 practice exams during this time when I was studying. Past Exam S papers can also be used if you skip the questions which are no longer on syllabus.
- Flashcards can be done in this final period as well, or as you go through the manual. There are a decent number of free marks on the exam for knowing random facts and formulas.

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## EXAM MAS-2

By *Keren Chheang*

In my opinion MAS-2 is a unique exam because there is a shift of focus from quantitative questions to qualitative questions. Consequently, there will be a shift in study strategy. Buying a 2- week Adapt subscription and grinding out questions like a lunatic won't work here— unfortunately, you *actually have to understand the material* to get by.

### *Study Options*

- Source Material - I recommend using the source material as your main study reference. Going through the material several times is necessary to pass.
  - Section A: The readings for section A can be skimmed over if you have taken ACT 4030 since credibility is already covered well in the course.
  - Section B: This section makes up the second largest portion of the exam, and case study questions will be based on this material. I highly recommend going through this textbook twice and pay attention to the accompanying R examples since you will be given R output to read through as part of the case study questions.
  - Section C: This section makes up the largest portion of the exam, reading this at least **three** times should be a requirement since majority of the topics covered here cannot be tested computationally. This means that you will be given difficult theoretical questions which will only be easy to answer if you have a thorough understanding of the concepts. The CAS also includes a study note for this section from which past exam questions have been drawn from.
  - Section D: The exam typically has a few questions from this section that are straightforward so make sure to understand this for free marks. Basically, know all the concepts that's the bottom line.
- Manuals - ASM, ACTEX, and TIA all have manuals for MAS-2 but they should not be your primary source of studying. Each of these manuals have several practice problems but I don't believe that they are indicative of what the actual exam will look like.
- Past exams - There are three of these available and they are very good practice, but don't get too comfortable with questions style that appears on these exams. The CAS is known for throwing a lot of curve balls when it comes to the MAS exams so don't expect any copy pasta.

### *Tips*

- Just read the source, you'll be surprised at how much of a better understanding you'll get through the source material compared to a manual.
- When reading the source text, I recommend the first pass through to be quick. Don't take any notes just try to get exposure to all the topics just so you can gauge what you'll have to spend more time on.
- Cue cards can be valuable for this exam since there are a lot of definitions to know
- Get familiar with Pearson's Excel spreadsheet which can be found here at the very bottom of the site. This will be available during the exam and if you are familiar with basic excel functions it is much faster than using the Multiview.
- Some of the questions on the exam deal directly with examples from the textbooks so I don't know if I got this point across yet but read the source, it is more than enough to pass.
- The textbooks for sections A and B can be found online for free on the U of M library, the reading for section D is also available on the CAS website for MAS-ii. The source text for section C is the only one you must buy but you can rent a pdf for a fairly low price. I got it on VitalSource.

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## EXAM 5

By *Shine Wang*

Exam 5 seems far away for university students. But it is actually the exam that is most relevant to actual P&C work. During my internship on a pricing team, I was working with extension of exposure models, which is covered in the first half of the exam (rate making). My full-time job is on the reserving team, everything we do on the daily basis can be found in the second half of the exam (reserving). By studying these two books, students can gain better knowledge of the industry, which can also help with your interviews in the coming recruitment season.

### *Study Options*

I personally used TIA. TIA has nice video lessons and they converted all historical exams into excel form, which is really nice to have. Other options include Bedford, battleacts, ALL10, etc.

### *Exam Tips*

Take ACT4160! This course covers half of the material for exam 5 - the ratemaking. And it is the harder part. If you can take the 4 months to study hard on this course, everything else will come naturally.

During CAS exams you have access to spreadsheets (no excel shortcuts tho!). So get yourself used to spreadsheet calculation while doing exercise (no more calculators!).

Starting from this exam, it is no longer MC. Be prepared for short paragraph answers. One widely accepted rule is one sentence (or one point if the question asks you to list out things) per 0.25 point. This also applies to ACT4160!

If you had enough time in your previous MC exams. This one will be different. It is 24 written answer questions (some may have 3 or 4 parts) in 4 hours - 10 mins per question. Time yourself well.

## ADVANCED SOA/CAS EXAMS

### FSA TRACKS

By Devin Kinley, with updates by Eric Strick



**Figure 1.6 The path to FSA**

Recall this big scary graph. Now let's look at the big scary part of the big scary graph.

These descriptions reflect my general understanding of the tracks based on research and speaking with dozens of actuaries about their opinions on the different options.

#### Update by Eric Strick:

Note that beginning in Fall 2025, the SOA will be eliminating tracks that you must strictly follow and instead adopt flexible pathways. This will mean that you pick a total of 4 courses (per the SOA, a course includes a course syllabus, study materials, plus an exam as a final assessment) to obtain your FSA designation. This change will allow candidates to choose courses that they feel will provide the most benefit to them in their career and also allow them to pick courses they find that will interest them the most.

Link for flexible pathways: <https://fsa2025.soa.org/flexible-pathway/>

### INDIVIDUAL LIFE AND ANNUITIES

The Life and Annuities track is the most traditional actuarial path. These exams deal with the design, pricing, and reserving of individual life and annuity products. This path is considered one of the easier tracks and is the preferred track for those working at life insurance companies. If you enjoyed exam FAM-L and ALTAM (if you chose to take it), this track might be for you.

### QUANTITATIVE FINANCE AND INVESTMENTS

The QFI track is notoriously difficult. This track deals with investments, hedging strategies, and variable annuity products. Great for those who hate memorizing and are interested in the world of investments. If you enjoyed Exam IFM (before it was removed from the ASA track) and/or Options Pricing from Exam FAM, this track might be for you.

### CORPORATE FINANCE AND ENTERPRISE RISK MANAGEMENT

The ERM track will allow you to gain a thorough understanding of risk evaluation and strategic decision-making areas. It is meant to be applicable across all industries, making it an appealing option for those looking to eventually work outside of the actuarial world.

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## GENERAL INSURANCE

The General Insurance track is the FSA equivalent of the FCAS as it prepares you for the world of Property & Casualty. Currently, the general consensus is that students interested in working in the world of P&C in North America should consider the FCAS designation over FSA-General Insurance. This is evidenced by the fact that as of now there is currently only 15 FSA's in the world who pursued this track. Perhaps this track will improve in coming years, but for now, stay away.

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## GROUP AND HEALTH

This track will prepare you for the world of group insurance. A wise move if you plan to start your career in group insurance, and if you have lots of room in your brain because you have to be ready for loads of memorization.

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## RETIREMENT BENEFITS

Generally, the track of choice for those working in pension consulting as it will prepare you for working with pensions, their design and ensuring their proper reporting. If you choose this route and work in the US, you may also want to consider pursuing the Enrolled Actuary (EA) designation.

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## BONUS: CERA DESIGNATION

From *soa.org*

The CERA designation was introduced in 2007 to meet current and future market changes on critical Enterprise Risk Management (ERM) including actuarial approaches to risk. This designation is one you can attain while achieving your FSA with a small addition of 2 exam hours to help improve your opportunities and further your risk management knowledge.

## FCAS TRACKS

By Devin Kinley, with updates by Eric Strick

There is only one CAS track that every CAS actuary takes to become an FCAS. Below is a list from the CAS website on the path to becoming an FCAS.



It's as simple as that - no more decision for you if you've chosen the FCAS route!

## OVERALL TIPS AND ADVICE

By *Lynette Rutbeek*

1. Don't be afraid to take breaks during the exam progress when needed.
2. Always seek advice from students who have previously taken the exam. These exams can feel very daunting at times, and having the support of someone who understands how grueling they are helps so much!
3. Tailor your studying to your learning type. If you learn best from listening to lectures, perhaps video lessons and taking the courses first would be your preferred method of studying. However if you are a visual learner and feel as though you gain very little from attending university classes; then grinding through manuals, even before taking the class, may be a suitable approach.
4. Make sure your study schedule is not overly ambitious. If you do not schedule breaks, and time to engage in social activities - not only will you be burnt out in a couple months, but in the long run, you will regret absolutely slaving over these exams when you could have benefited greatly from a more balanced approach.