

FUTURE FELLOWS

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TBE Edition

CAS Initiates Technology-Based Examination

The CAS is transitioning its exams to a computer-based environment called Technology-Based Examination (TBE). Beginning with Exam 5 in spring 2018, candidates will use Excel to take their exams on personal computers that will be overseen by remote proctors. With this transformation of examinations, the CAS continues to evolve its basic education system. TBE will more closely imitate on-the-job assignments in which actuaries use computers for work, thus making CAS exams more relevant to real-life actuarial practice.

“Implementing TBE shows our continued commitment to adapting the CAS examination

sional remote proctors administering the exams will monitor candidates through a webcam and microphone throughout the exam sitting.

“TBE will provide a variety of benefits to candidates sitting for exams, as well as to the volunteers and staff who administer our exams,” said Steve Armstrong, Immediate Past CAS Vice President-Admissions. “Following our initial offering of Exam 5 through the TBE platform in the spring, we’re aiming to implement TBE for additional exams in fall 2018 and beyond.”

The CAS has partnered with two technology firms to administer TBE: TrueAbility will be providing the online, Excel-based testing




TBE

system in innovative ways to meet the needs of candidates, employers and other stakeholders,” said CAS President Nancy Braithwaite. “The CAS credentials are already proven assets and highly valued worldwide,” said Braithwaite. “TBE reinforces the position of the CAS’s education system as the most robust and comprehensive framework for training property-casualty actuaries in the world.”

Candidates will sit for exams in the TBE environment using Excel software on their own computers, and at the location and time of their choosing, within certain parameters. Profes-

sional remote proctors administering the exams will monitor candidates through a webcam and microphone throughout the exam sitting.

To learn more about TBE, visit the TBE section of the CAS website, which includes a link to the frequently asked questions and responses, TBE computer requirements, and other resources. In addition, a complimentary webinar about TBE with leaders from the Admissions area was held on November 28, and a recording of the webinar is available.

For questions about TBE, write to TBE@casact.org. 

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TBE FAST FACTS

What: A transition in the format of CAS exams, beginning with Exam 5. The CAS is moving from paper and pencil exams given at an exam center to an Excel-based exam accessed via a virtual desktop on a candidate’s computer and overseen by a remote proctor.

When: The spring 2018 exam sitting — May 4, 2018 for Exam 5. The CAS plans to implement TBE for additional exams in fall 2018 and beyond.

Why: To make CAS exams more closely imitate an on-the-job assignment in which actuaries use computers for their work and to mitigate a variety of candidate concerns with the current format of exams, among other factors.

Visit casact.org/tbe for complete details.

The Path to Technology-Based Examination

An Interview with Steve Armstrong, Immediate Past CAS Vice President of Admissions (2014-2017)

By Celeste Bremen, ACAS, Candidate Representative to the Candidate Liaison Committee

The path to Technology-Based Examination (TBE) began about 10 years ago. It has been complicated by the technological and proctoring requirements for bringing the CAS exams to the online environment.

Steve Armstrong, immediate past vice president-admissions for the CAS, had initially raised this idea of TBE a long time ago. Back then, Armstrong said that there were no vendors who could “bring it to life.” Nonetheless, he kept the idea alive knowing that the CAS would need the right partnership to make TBE happen.

After several years of sending CAS volunteers and staff to educators’ conferences and submitting requests for proposals to potential partners, CAS found the right vendor in late 2015: TrueAbility. What makes TrueAbility the right vendor for the CAS is its ability to administer exams in an Excel-based environment and to include essay questions rather than just multiple choice questions.

After nine months of CAS staff and volunteers working to ensure that TrueAbility could offer CAS exams in the required format, the CAS Board of Directors approved the partnership in spring 2017. Then the TBE implementation team moved into full execution mode so that the spring 2018 sitting of Exam 5 can be offered in the TBE format.

“The CAS will not rush anything that they feel is not appropriate,” says Armstrong, while also noting that “there is no reason for delay.”

Eager to inform readers, *Future Fellows* interviewed Armstrong to learn more about TBE.

Beyond finding the right partners, what was the biggest challenge in moving this project to reality?

The biggest challenges really became a combination of change management and logistics. CAS Admissions has never undertaken a project quite so large, with so many moving pieces, and with so much impact to numerous stakeholders. Admissions even created a new general officer role to oversee this project specifically given its importance and focus.

What brings you the most satisfaction when considering your role in implementing a change of this magnitude for the CAS?

I have always been looking for ways to transform CAS examinations such that the kinds of questions we could ask would be more work-relevant, where our exams could be taken by more international students, and where time would not become an issue on a candidate’s ability to successfully pass an examination. I believe TBE hits this trifecta of strategic goals that I have been wanting to see come true for CAS Admissions. While we will not be moving to new kinds of questions with this first sitting of TBE on Exam 5, the opportunity to do so will be there in the future.

As the CAS examination system continues to evolve, what do you think it will look like in five years?

I see CAS examinations being predominantly open book. I envision exams having only a few questions that will require candidates to perform a series of calculations and then develop a report to explain their methodologies, conclusions and implications of their work. On Part 5, it could be feasible that the exam could be two questions: One could be to perform a rate level review and structure the review into a rate filing that would be submitted to a regulator for approval; the second question could be on reserving, where the candidate would perform a series of reserving analyses and then develop a report for their client.

In addition to your work on TBE, you’ve served as the VP-Admissions for the past three years. How did you first get involved in volunteering for the CAS, and how did that lead to your current role?

I started as a grader/writer in 1998, then moved to vice chair of Exam 8, then general officer of fall exams, then general officer of grading and pass mark panels, then Chair

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Technology-Based Examination (TBE) Frequently Asked Questions

This FAQ is an excerpt for the complete FAQ available in the TBE section of the CAS website. The information is current as of November 1, 2017; see the online FAQ for the most up-to-date information. If you have a question that has not been addressed in the online FAQ, please send it to TBE@casact.org.

1. Q: Reasons for TBE: Why has the CAS decided to pursue TBE?

A: TBE will more closely imitate an on-the-job assignment in which actuaries use computers for their work, making CAS exams more relevant to real-life actuarial practice. In addition, TBE will mitigate a variety of current candidate concerns, including time pressures, writing cramps, hand-writing legibility, distance to exam sites and rigid exam schedules.

The adoption of TBE continues the evolution of the CAS's credentialing process to meet the needs of candidates, employers and other stakeholders. TBE also allows the CAS to demonstrate its leadership and innovation within the actuarial profession.

2. Q: Exam Administration: Could you provide more detail around how the CAS will administer TBE?

A: Candidates will take the exam within Excel 2016 via a virtual desktop that is accessed on the candidate's computer. Candidates will sit for the exam at the location of their choosing that meets certain criteria and at a time of their choosing, within certain windows on a specific date. Therefore, to sit for an exam, candidates will need to have an internet connection, be familiar with Excel and have a computer that meets certain requirements. The candidate's computer does not need to have Excel 2016 installed as it will be installed on the virtual desktop.

A professional remote proctor will administer the exam for each candidate, with the ability to monitor candidates through a webcam and microphone throughout the exam sitting.

3. Q: Timing: When will the CAS offer the first exam within the TBE environment?

A: Exam 5 in spring 2018 will be the first exam offered within the TBE environment. All other spring 2018 exams will be administered in the traditional paper and pencil format.

4. Q: Paper and Pencil Option: Do I have the option of taking Exam 5 in spring 2018 in the traditional paper and pencil format?

A: No, a paper and pencil version of Exam 5 will not be available as an option in spring 2018.

5. Q: Future Exams: Will TBE be expanded beyond Exam 5 in the future?

A: Yes, the CAS plans to implement TBE for additional exams in fall 2018 and beyond. Details will be announced in 2018.

6. Q: Exam Integrity: How will the CAS maintain the integrity of its examination process with TBE?

A: The remote proctoring model provides numerous protections to ensure the integrity of the examination process. Live,

online proctoring provides real-time monitoring by professional remote proctors, who authenticate the identity of the candidate and monitor the candidate's behavior throughout the exam session. The entire exam session is recorded, including both the webcam feed and the virtual desktop activity; both recordings are available to the CAS.

As has always been the case, candidates for CAS examinations are required to adhere to the Code of Professional Ethics for Candidates, which reflect the high standards of conduct and practice of the actuarial profession. All candidates, on their applications for examinations, are required to acknowledge that they have read and agree to be bound by the rules and regulations concerning the examinations. In addition, Associates of the CAS who are sitting for exams are bound by the CAS Code of Professional Conduct.

The CAS considers engaging in improper examination conduct to be a serious violation that can result in the CAS disqualifying a candidate's exam and other disciplinary action as may be deemed appropriate.

7. Q: Exam Costs: How does the adoption of TBE change the costs of exams?

A: The registration fee for exams offered in the TBE environment is the same as for other CAS upper-level exams, which is \$675. Furthermore, the introduction of TBE will not change the costs of required syllabus materials. However, candidates will need to have an appropriate computer to sit for exams offered in the TBE environment and may choose to purchase a practice exam in the TBE environment for a fee.

Additionally, candidate travel costs to exam centers may be reduced, and employers who provide exam sites may see a reduction in costs related to providing meeting space and volunteer proctors.

8. Q: Registration with CAS: How do I register for Exam 5 in spring 2018?

A: The CAS exam registration process for exams offered in the TBE environment is the same as for paper and pencil exams. Candidates will register for the exam by completing an online registration form on the CAS website. Registration opens in December 2017.

9. Q: Scheduling with Remote Proctor: How do I schedule my exam with PSI, the remote proctoring vendor?

A: After completing your regular CAS exam registration, the



TBE Frequently Asked Questions


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CAS will notify PSI that you have registered for the exam. You will then receive an email from PSI with information about how to set up a PSI account.

To schedule an exam with PSI, you will need to log on to your account and choose your start time to take the exam. PSI will open exam scheduling 90 days before the examination. CAS candidates will have 24/7 access to PSI's online system via computer or mobile device. Candidates will be able to select the starting time for their exam session among available options on the scheduled exam day. Candidates can change their scheduled exam time up until two weeks before the exam.

Additional details and step-by-step instructions will be available in early 2018.

10. Q: **Exam Format:** How does TBE change the format and style of questions on Exam 5 in spring 2018?



A: While the TBE environment will allow for more sophisticated test questions and the use of larger datasets in the future, those changes will not be implemented for the spring 2018 exam. For the first offering, the CAS is focused solely on the transition from paper and pencil to Excel. The questions on Exam 5 in spring 2018 will be the same as those that would have been asked if the exam had remained a paper and pencil exam; in other words, the questions will be similar in format and style to previous offerings of Exam 5.

11. Q: **Exam Length:** How much time is allotted for Exam 5 in spring 2018?

A: The exam is developed to be a four-hour exam; however, candidates will have five hours to take the exam under TBE. An additional hour is possible under TBE due to the flexibility of the exam conditions; there are fewer scheduling restrictions than with coordinated exam sites. Please note that a reading period will not be offered.

12. Q: **Exam Preparation:** How can I prepare for Exam 5 in spring 2018?

A: It is important that candidates understand that the format and style of questions that will be tested on Exam 5 in spring 2018 will not differ from previous offerings of Exam 5. Additionally, the 2018 syllabus is very similar to the 2017 syllabus, with the same learning objectives and readings. Therefore, the information available in prior Examiner's Reports is still relevant, and the CAS strongly encourages candidates to include this information in their study plans.

To prepare candidates for what the exam will look like in the TBE environment, the CAS will release a TBE Sample Exam, a TBE Practice Exam and TBE sample solutions by early 2018.

These materials will all be based on the spring 2016 Exam 5. The materials are intended to aid candidates in understanding how the CAS will transition questions from a paper and pencil environment to the TBE environment, as well as to provide guidance on how candidates can show their work in a TBE environment.

13. Q: **Computer Requirement:** I don't have a computer that is compatible with the TBE environment. Will the CAS provide one to me?

A: Candidates need to provide their own computers to take an exam in the TBE environment. A Chromebook might be an appropriate option that meets all of the requirements described in the computer requirements infographic included in this issue. The CAS will not provide computers to candidates.

14. Q: **Ensuring an Appropriate Space:** What are the requirements regarding the location where I plan to take the exam?

A: Identify a quiet area where you will be alone and not interrupted for the time necessary to check in for and take the exam. You should ensure you have a computer that meets the requirements, a steady internet connection and a clear workspace, aside from your government-issued identification and the quiet food and beverage that are allowed.

15. Q: **Taking the Exam in a Group Setting:** I don't have access to a quiet personal space to take my exam. Can I take it at my company in a room with others taking the same exam?

A: No, in order to sit for the exam, you will need to have access to a quiet area where you will be alone and not interrupted for the entire duration of the exam.

16. Q: **Grading:** How is the exam graded?

A: The grading process is similar to the process used for the paper and pencil constructed-response exams. The major difference is that graders will receive electronic copies of the Excel file with candidate responses instead of answer sheets.

17. Q: **Results:** When will I receive the results of my exam?

A: As with all other CAS examinations, exam results will be available approximately eight weeks after the examination date.


18. Q: **My Answers:** Can I get the answers back from my exam?

A: No. The CAS will not provide your answers to the exam questions.

19. Q: **Access to Exam:** Will the CAS release Exam 5 after the spring 2018 exam sitting?

A: Yes. The CAS will make the exam available in an Excel format.

20. Q: **Examiner's Report:** Will the CAS produce an examiner's report for Exam 5 in spring 2018?

A: Yes. An examiner's report will be produced for Exam 5 in spring 2018. 

Remote Proctoring Provides Flexibility to CAS Candidates

Technology-Based Examination (TBE) offers CAS candidates a lot of flexibility. Under TBE, you can sit for the exam at the location of your choosing such as your kitchen table at home or a conference room at work. You can also sit for the exam at the time that works best for you. Morning person? Sit for your exam at 7:00 a.m. Night owl? Start the exam at 7:00 p.m. How is that flexibility possible? Remote proctoring.*

With TBE, you will take your exam within Excel 2016 via a virtual desktop that is accessed on your own computer. A professional remote proctor will administer the exam, with the ability to monitor you through a webcam and microphone throughout the exam sitting.

The CAS selected the firm PSI to administer its remotely proctored exams. Along with the CAS, other PSI clients include Amazon Web Services, the Federal Aviation Administration, CISCO, Accenture and hundreds of domestic and international certification bodies.

Your first contact with PSI will occur after you have registered for the exam with the CAS. The CAS will notify PSI that you have registered and then you will receive an email from PSI with information about scheduling your exam.

To schedule the exam, you will need to create an account with PSI and choose your start time to take the exam. You will be able to select the starting time for your exam session among available options on the scheduled exam day. You can change your scheduled exam time up until two weeks before the exam.

PSI will open exam scheduling 90 days before the exam. Additional details and step-by-step instructions for scheduling your exam will be available in early 2018.

On exam day, the professional remote proctor will contact you via a chat window to check you into the exam. As part of

the check-in process, you will be required to scan your room with your webcam to ensure that you are alone and that your workspace is clear. If you have unapproved items on your workspace or in the room during the check-in process, you will be given time to correct this, but the remote proctor will move on to check in other candidates and you may need to wait to be checked in again. When the check-in is complete, the remote proctor will release the exam to you.

Following the initial check-in, you will only be contacted by the remote proctor if there is an issue that needs to be addressed. If you need to contact the remote proctor, you may do so at any time using the chat feature.

Situations in which you may interact with the remote proctor include:

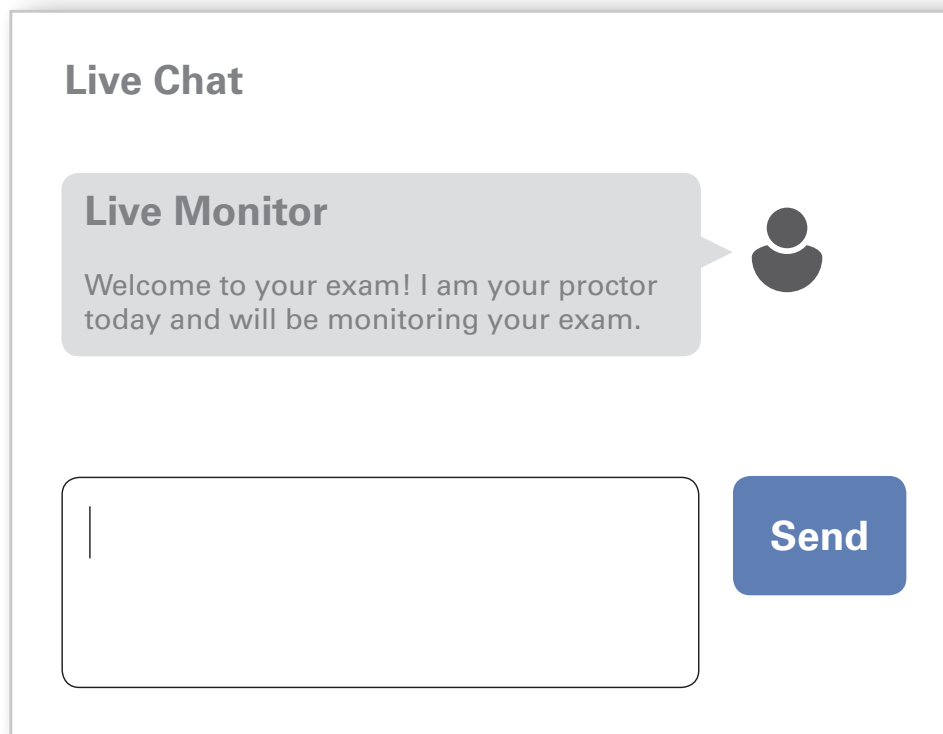
- If someone enters your workspace during the exam. In this situation, you will be warned by the remote proctor and the person should leave your workspace immediately.
- You have an emergency situation. If feasible, you should communicate the emergency situation to the

remote proctor. Should you need to stop taking the exam, it will be submitted with the responses that you completed before stopping.

For most candidates, there will be limited interaction with remote proctors, who will be in the background monitoring your behavior. Remote proctors will be watching eye and lip movements, and listening for questionable noises. While remote proctors provide

real-time monitoring, as a back-up, the entire exam session is recorded, including both the webcam feed and the virtual desktop activity. The recordings are available to the CAS.

* Candidates should note that there are parameters for both the location and time of taking an exam under TBE. See the TBE section of the website at casact.org/tbe for details. **ff**



Preparing for Exam 5 Under TBE

For candidates sitting for CAS Exam 5 in spring 2018 under Technology-Based Examination (TBE), the CAS is providing new tools to assist in their exam preparation.

Under TBE, candidates will take the exam within Excel 2016 via a virtual desktop that is accessed on the candidate's computer. The TBE environment will allow for more sophisticated test questions and the use of larger datasets in the future, however, those changes will **not** be implemented for the spring 2018 exam. For the first offering, the CAS is focused solely on the transition from paper and pencil to Excel.

The questions on Exam 5 in spring 2018 will be the same as those that would have been asked if the exam had remained a paper and pencil exam. In other words, the questions will be similar in format and style to previous offerings of Exam 5. In addition, the 2018 syllabus is similar to the 2017 syllabus, with the same learning objectives and readings. Therefore, the information available in prior Examiner's Reports is still relevant, and the CAS encourages candidates to include this information in their study plans.

New study tools are also available to candidates. The CAS is releasing a TBE Sample Exam, a TBE Practice Exam and TBE Sample Solutions. These materials will all be based on the spring 2016 Exam 5. The materials are intended to aid candidates in understanding how the CAS will transition questions from a paper and pencil environment to the TBE environment, as well as to provide guidance on how candidates can show their work in a TBE environment.

The TBE Sample Exam is a downloadable Excel file available to anyone for free. The file can be accessed with Excel 2007 or later. The Sample Exam is the spring 2016 Exam 5, presented in Excel in the same format that candidates can expect for the spring 2018 Exam 5.

A separate file showing sample solutions may also be downloaded. The sample solutions will contain solutions from the spring 2016 Examiner's Report to provide examples of how candidates may show their work in the Excel environment.

The TBE Practice Exam will allow candidates to familiarize themselves with how questions will be presented in Excel, as well as the actual TBE environment. The Practice Exam is the spring 2016 Exam 5 in the TBE virtual desktop (without a remote proctor). The Excel file in the Practice Exam is the same Excel file that is downloadable as the Sample Exam. The primary reason for candidates to access the Practice Exam would be to familiarize themselves with Excel 2016 *and* the TBE virtual environment before exam day. A registration fee of \$40 will be required to access the Practice Exam, which provides candidates with five hours of access.

Candidates will not have access to their responses to the Practice Exam after the exam is completed. Candidates who wish to access the Practice Exam more than once can do so by registering and paying the fee more than once.

The TBE Sample Exam, TBE Practice Exam, and TBE Sample Solutions will be available by early 2018. **ff**

The Path to Technology-Based Examination

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of the Exam Committee (at the same time serving on the CAS Board of Directors), and then became VP-Admissions. I have a hard time saying "no" and I like to see things that I start come to fruition. Even though I will no longer be VP-Admissions in 2018, I will still help see TBE through.

What other initiatives have you worked on during your time as VP?

During my tenure, I have worked to:

- Get Exams 5 and 6 offered twice a year.
- Develop the process for a consistent and objective way to approach grading (done on a standard basis now as opposed to curves).
- Get more statistics onto the CAS exams.

- Get better syllabus material for Parts 5, 6 and 8 (large comprehensive study notes).
- Create the Examiner's Report.
- Create more transparency of our examination process.
- Seek more feedback from our candidates.

What have you gained personally from volunteering with the CAS, and what advice do you have for young actuaries who want to get more involved with the CAS?

Newly credentialed actuaries should dive right in and push for change. The CAS has lots of orthodoxies that need to be broken, and we always benefit from new people and new ideas and fresh energy! For me personally, it has always been about giving back, meeting new people, and the ability to influence bigger and bigger topics in the CAS. **ff**



Technology-Based Examination Computer Requirements



The Casualty Actuarial Society (CAS) is transitioning its exams to a computer-based environment, called Technology-Based Examination (TBE), in which candidates will use Excel to take their exams on their own computers overseen by professional remote proctors, beginning with Exam 5 in spring 2018.

Candidate computers must meet certain criteria to take an exam in the virtual TBE environment.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Operating System: Windows (XP, Vista, 7, 8 or 10) 32bit (x86) and 64bit (x64), Mac OS X version 10.9 and above, Linux and Chrome OS.													
2	Browser: Google Chrome or Chromium version 32 and above.													
3	Browser Settings: Browser must accept third-party cookies for the duration of the exam.													
4	Google Chrome Extension: Installed prior to examination time.													
5	Webcam/Microphone: Minimum VGA 640 x 480 resolution, enabled built-in or external microphone.													
6	Internet Bandwidth: Minimum 256kb/s download and 256kb/s upload.													
7	Hardware: 1GB RAM & 2GHz dual core processor, minimum 1400 x 900 resolution, 16GB free space for installation.													

Candidates need to provide their own computer to take an exam in the TBE environment. A Chromebook might be an appropriate option that meets all of the requirements. Candidates do not need to have Excel installed as it will be installed on the virtual desktop. A computer compatibility check that will allow you to ensure your computer meets the requirements will be available.

Live Chat

Live Monitor

Welcome to your exam! I am your proctor today and will be monitoring your exam.

Send

To learn more about TBE, visit the TBE section of the CAS website, which includes a link to the frequently asked questions and responses, and other resources. Questions about TBE should be sent to TBE@casact.org.

Last Updated December 13, 2017

Candidate Liaison Committee Mission

The Candidate Liaison Committee communicates with CAS candidates, collectively and individually, who are taking CAS examinations. The committee informs candidates as to appropriate courses of action available to them. Through periodic communication, this committee informs candidates of results of examination administrations, actions taken on complaints received regarding examination questions and reasons for syllabus and examination changes being implemented. Communication encompasses existing policies and procedures as well as changes being considered. The committee should advise the CAS and its committees of the interests of the candidates regarding matters that come before the CAS and its committees. Candidates may contact the Candidate Liaison Committee at the CAS office address. The Casualty Actuarial Society is not responsible for statements or opinions expressed in the articles, discussions or letters printed in *Future Fellows*.

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Vendor Links

EMAIL STUDY GROUPS

Email study groups are available for candidates preparing for CAS examinations. Information about each study group list is available on each exams syllabi landing page.

STUDY AIDS AND SEMINARS

Information on study aids and seminars is provided only as a convenience to CAS candidates. The CAS takes no responsibility for the accuracy or quality of the study aids and seminar announcements attached to this notice.

Please note that the Examination Committee expects candidates to read the material cited in the *Syllabus* and to use other material as a complement to the primary sources rather than a substitution for them. 

Actex Learning/Mad River Books
Exams 1, 2, 3F, 4, S, 5, 6, 7, 8, 9, ST9 and VEE

Coaching Actuaries
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