Practical Real-World Skills Gained Through Actuarial Online Modules

Whether it's **cyber breaches,** extreme weather or disruptions to global supply chains, challenges in general insurance (also known as property/casualty insurance) emerge every year. These complex threats cut across sectors and require the industry to respond with actuaries who can properly evaluate a global, fluid and diverse but connected set of risks.

To truly tackle these evolving challenges, actuaries need the most up-to-date information and experience with the latest analytical tools. It's important for actuarial educators to impart analytical skills in a dynamic, interactive way that emphasizes real-world practicality. With this in mind, the Society of Actuaries (SOA) introduced the Application of Statistical Techniques (AST) e-learning module as a key feature of its General Insurance track to Fellowship.

LEARNING FOR THE REAL WORLD

Long a part of the SOA pathway, online modules provide the dynamic environment that challenges candidates to work with real-world data sets and apply critical thinking skills to find solutions to modern problems. In particular, the AST module uses relevant case studies and scenarios of

PRACTICAL APPLICATION

One of the most fundamental and important techniques to learn in statistical analysis is the generalized linear model (GLM). In addition to explaining the concept of the model and its uses, module candidates use computer software to estimate the parameters of the GLM for a given data set and apply it to calculate a premium pricing structure.

"The generalized linear model is the basis for learning how to build a formula that incorporates all of the relevant risk factors for an insured and how they are related," Klugman said. "In the SOA's e-learning module, we give candidates real data sets to practice on and will have them build a GLM using the R environment."

"In the AST module, one does not just learn about generalized linear models; one actually works with R to create them," said Gennady Stolyarov II, ASA, ACAS, MAAA, CPCU, ARe, ARC, API, AIS, AIE, AIAF, lead property/casualty actuary for the Nevada Division of Insurance. Stolyarov is a candidate who has completed the module as he works his way through the General Insurance track.

"Direct experience with these tools that an actuary would find in a work setting bridges the gap between theory and application. As a regulatory

The Society of Actuaries incorporates e-learning modules as part of its General Insurance track to bridge the gap between theory and real-world application.

through the process and puts textbook knowledge into practice gives graders a clearer picture of the student's familiarity and understanding of the material. And it allows candidates to more clearly demonstrate their skill.

SHARPENING PREDICTIVE ANALYTICAL SKILLS

"Using real software and data to learn statistical analysis outshines textbook self-study, especially in the burgeoning field of predictive analytics," said Klugman. The e-learning module introduces candidates to modeling tools and software that can serve as a foundation for future study and applications of predictive analytics.

In addition to setting premium pricing structure, actuaries need to set a range for reserve levels. E-learning module candidates learn to choose and apply the most appropriate model — whether a GLM or a Bayesian or bootstrap method — to estimate variability in reserve estimates. Without the module software to manipulate data, a traditional test might only ask for a definition of each model, or the importance of establishing an appropriate range.

"Predictive analytics is an umbrella term, and much broader than what we cover in our statistics module, but this is a way we bring our expertise to bear on something that has become very important in actuarial education," Klugman said.

PREPARING ACTUARIES IN GENERAL INSURANCE

The SOA is committed to high standards of quality and rigor of its education pathway. It has developed an increasingly hands-on learning experience that challenges candidates' critical thinking skills, which increases their value to employers. Another important advantage of the Fellowship modules is that candidates can progress at their own pace (up to one year) and revisit previous readings and practice questions if they choose.

"The SOA's General Insurance track was particularly attractive to me because of its emphasis on exposing candidates to the most current, relevant resources for actuarial practice today," Stolyarov said. "The extensive use of online modules and the focus on applying the tools of the electronic age are immense benefits."

The SOA's reputation has been built on offering quality actuarial education. Today, it is leveraging that same experience and use of quality techniques to ensure its actuaries specializing in General Insurance are prepared for a global world, where risk is intertwined and companies operate across borders. The interconnected world calls for a modern approach to actuarial learning, and the SOA offers a fresh perspective in General Insurance actuarial education.

To learn more about the Society of Actuaries' educational offering in General Insurance, visit soa.org/Fresh.

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current challenges to relate material to real-world situations, while providing model solutions after completed exercises for feedback.

"Working with statistical models requires more than an understanding of theory. It requires practice," said Stuart Klugman, FSA, CERA Ph.D., senior staff fellow, education, at the SOA. "The e-learning module has candidates work through the problem the way they would for an employer today."

actuary, I review many predictive models from property and casualty insurers. It's difficult to replicate the calculations and data analysis steps of a GLM in a regulatory filing," Stolyarov said. "The module's hands-on practice using R gave me a superior understanding of the internal processes that insurers undergo as they develop a model to submit for regulatory review."

Seeing how a candidate works