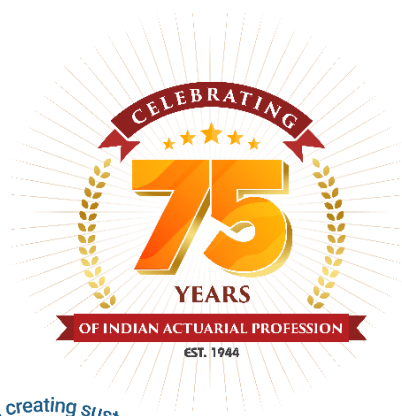




International Actuarial Association  
Association Actuarielle Internationale



Institute of Actuaries of India  
Statutory body established under an Act of Parliament



**21<sup>st</sup> Global  
Conference  
of Actuaries**

17<sup>th</sup> - 19<sup>th</sup> February 2020 | Mumbai, India

# Evolving Educational Pathways to Serve a Changing World

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FCAS CERA

February 19 2020

# Evolving Educational Pathways

How has the Casualty Actuarial Society addressed the changing needs of its members?



# Who is the Casualty Actuarial Society?

World's only  
actuarial  
organization  
focused exclusively  
on P&C risks

9,000+  
members  
worldwide and  
growing

100+ year track  
record in training  
property/casualty  
actuaries

Vibrant, growing  
community with  
deep and extensive  
resources

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# Why Evolve?

General Insurance risks are continually changing

New data, methods and tools require actuaries to have different skills

Actuaries need to be equipped for non-traditional roles

# CAS Basic Education Strategy

Determining the basic education for the actuary of the future and adjusting the CAS system accordingly.

Reviewing foundational requirements

Transformation of content delivery and validation methods

# CAS Basic Education - Changes

## Syllabus Changes

- Modern Actuarial Statistics
- Predictive Modelling

## Delivery of Exams

- Integrative Questions
- Technology Based Exams

## Other Skills

- Communication

# Modern Actuarial Statistics (MAS I and II)

Introduced in 2018, replacing prior requirements to address the emerging needs of future actuaries and their employers

Increases the relevance of the CAS exam syllabus with respect to emerging statistical and analytics skills

## MAS I Key Topics

- Probability Models
- Statistics
- Extended Linear Models
- Time Series with Constant Variance

## MAS II Key Topics

- Introduction to Credibility
- Linear Mixed Models
- Bayesian Analysis and Markov Change Monte Carlo
- Statistical Learning

# Basic Education – Predictive Modelling

## Short Term

- Adding material to upper level exams - advanced ratemaking and advanced reserving work
- MAS exams added more statistical methods and modeling learning objectives to the lower level exams
- Students will have new tools at their disposal to apply to real world actuarial problems

## Long Term

- Additional material on Exams 7, 8, and 9 will cover predictive analytics in 2021 exam structure
- Changes will incorporate applications of advanced analytical techniques in ratemaking and reserving while reorganizing existing material among the exams.



# Integrative Questions

Require candidates to demonstrate multiple skills using a common, more comprehensive set of data, assumptions and scenarios.

More job-relevant:

- Actuarial work involves coordinating several skills and broad knowledge, not merely replicating separate and unrelated tasks.
- Testing at higher cognitive levels – synthesis and evaluation

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# Transform Delivery & Validation Methods

Excel-based  
exams offered  
for Exam 5 in  
Spring 2018

Lessons learned  
from the first  
pilot

Task Force  
formed to  
evaluate  
options

Announcement  
on new user  
experience  
coming in early  
2020

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# Deliver Education – Skills Integration

CAS Course on  
Professionalism  
expanded to  
include  
Communication  
Skills

- Expanded from 1 ½ days to 2 days
- Pre-work to introduce effective communication skills
- Application of communication skills in small group environment
- Began with August 2019 course
- COP now offered four times per year

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# Basic Education in Summary

Curriculum reflects experience of practicing actuaries who understand what is required to practice in casualty actuarial field

Most robust and comprehensive framework for training property/casualty actuaries

Proven commodity and highly-valued around the world by employers and other stakeholders

Adaptive to meet the future needs of employers and other stakeholders

# Continuing Education - New Initiatives

Speaker  
mentoring for  
live events

Virtual  
seminar pilot  
(In Focus in  
October)

“Crash  
Course”  
seminar

Microlearning

# Continuing Education – Predictive Modelling

Introduction to Predictive Analytics (2007-2017)

Introduction to R Seminar (2011-2017)

Introductory Predictive Modeling (2016-2017)

Intermediate Predictive Modeling (2016-2017)

CAS R for the P&C Practitioner Boot Camp (2017-)

CAS Predictive Modeling Boot Camp (new in 2019)

# Continuing Education - Research

## Current Projects

- Exploring the Use of Machine Learning Techniques for P&C Loss Reserving
- Multi-Period Pricing Strategies

## Past Projects

- Market-based Ratemaking Model Selection
- Towards Explainability of Machine Learning Models in Insurance Pricing
- Maximum Likelihood Inference of Predictive Models for Misrepresentation Risk in GLM Ratemaking
- Embedded Predictive Analysis of Misrepresentation Risk in GLM Ratemaking Models
- Enhanced Predictive Modeling for Usage-Based Auto Insurance

# New Credentials – The CAS Institute

What is iCAS? A subsidiary of the Casualty Actuarial Society.

Provides specialist credentials and resources for quantitative professionals in selected areas, such as:

Predictive  
Analytics/Data  
Science

Catastrophe Risk  
Management  
and Modelling



# Why iCAS?

## Insurance Related Content

- Topics useful for insurance context

## Education is a combination of:

- Self-paced study
- Online courses
- Exams
- Case study projects

## Open to All

- Not just actuaries

## Membership in a Professional Society – The CAS Institute

- Professional responsibilities
- Continuing education opportunities
- Community

# International Initiatives

## Exam 6- International

- Developing an international version of the nation-specific regulatory exam.

## International Events

- Sponsoring or contributing speakers to an increasing number of international events

## International Webinars

- Offering free webinars for members working internationally; first one held April 30 on IFRS 17

## China-Based Staff Actuary

- Hired Ran Guo, FCAS, as Director of International Relations

# Additional Resources for International

## University of the CAS

- Live Webinars, On-Demand Courses

## CAS Academic Central

- Free membership program for those teaching actuarial science and related courses

## CAS Student Central

- Free membership program for university students pursuing an actuarial career

Visit the CAS Website at [www.casact.org](http://www.casact.org) to learn more!

# Current CAS Preliminary Exam Waivers

Waivers  
granted for  
exams offered  
by the  
following  
organizations:

- Society of Actuaries
- Actuaries Institute (Australia)
- Actuarial Society of South Africa
- Canadian Institute of Actuaries
- China Association of Actuaries
- Institute and Faculty of Actuaries (UK)
- Institute of Actuaries of India

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# Thank You