Climate Risk and Sustainability course - Syllabus

Module	Learning Outcomes
1	Evidence of Man-made Climate Change and its Physical and Transitional Impacts
	• Describe the carbon cycle at a high level and the science linking global warming to human activity • Explain the financial world consequences including insurance losses, asset valuations, stranded assets, new opportunities, GDP effects, litigation against polluters and financial market participants. • Explain the real world impacts of physical changes including rising temperatures, disruption to weather patterns and carbon concentrations. • Explain the real world impacts of transition including carbon pricing, stranded resources, technology advances, carbon capture & storage and reforestation. • Discuss the disruptions caused by physical and transition risks (eg to business operations, supply chains, agriculture, frequency of catastrophes, new technology and changing consumer behaviours).
2	UN, NGOs, Other stakeholders and Sustainability
	• Summarise the formation of the UN Framework Convention on Climate Change (UNFCCC) and the Conference of the Parties (COP) along with its implications, drawbacks and progress. • Outline the other primary UN objectives and agencies involved with sustainability and finance (including Sustainable Development Goals, UNEPFI Principles for Sustainable Insurance, Responsible Investing and Responsible Banking). • Discuss the Intergovernmental Panel on Climate Change (IPCC), its reports, conclusions and limitations. • Summarise the interlinked nature of sustainability issues and, in particular, how they relate to tackling climate change. • Understand the broad levels of adoption around the world. • Explain the range of stakeholders and their interests, including: governments, financial institutions, energy companies, other corporates and NGOs. • Understand different actions globally.

Module	Learning Outcomes
3	TCFD and Financial Regulation
	• Understand the evolving nature of financial regulation with respect to climate change and sustainability • Discuss the role of the supranational bodies including the Network for Greening the Financial System NGFS. • Outline the activities of global financial market regulators (e.g. International Association of Insurance Supervisors (IAIS), Basel, International Accounting Standards (IAS), Prudential Regulation Authority UK) in incorporating sustainability and climate risk in to regulation and the interrelation of the activities to TCFD and NGFS • Outline what the Taskforce for Climate Related Financial Disclosures (TCFD) does, including its role, objectives and operation.
4	Economics & Sustainability
	• Explain ecological economics, limits to growth and complex systems • Discuss the plurality of values • Positive and negative effects of different development paradigms (neoliberalism and sustainable development) and how they have shaped the world since the late 20th century • Outline the failings of the focus on economic growth without consideration of the wider system the market organism lies in • Debate vested corporate interests and conflicts • Outline conflicts and risk in government decision making and policy setting
5	Intergenerational Issues
	• Discuss short-term thinking vs long-term problems. • Outline intergenerational and intragenerational conflict that arise from business-as-usual approaches and the limits to growth. • Describe the baked in temperature increases and time delay impact of decisions. • Explain changing demographics and population dynamics.
6	Strategy and Risk Management
	• Discuss the factors that contribute to a firm's carbon footprint • Outline the differing needs of stakeholders in setting of a climate change strategy • Outline the considerations and interactions with the firm's current corporate strategy • Discuss the tools and mechanisms available to mitigate risk and reduce the overall carbon footprint • Discuss opportunities for innovation in a company's transition to a carbon neutral economy

Module	Learning Outcomes
7	Climate Models/Modelling

	• Understand why scenario analysis is important in assessing the impact climate change
	• Consider the types of scenario analysis for modelling the impact of climate change (exploratory/normative)
	• Develop, adapt or enhance climate and sustainability scenarios, justifying choice and alignment to the needs of the users of the model.
	• Explain the features of common used industry scenarios and their alignment to global aims. [i.e. 2 degree orderly, 2 degree disorderly and 4 degree]
	• Assess the limitations including data availability and black box risk.
	• Incorporate appropriate risks and opportunities in the scenarios, justifying simplifications and exclusions.
	• Assess the available climate change models and data and how it can be integrated into actuarial modelling.
	• Compare various scientific climate models, the timescales within the models, their rapidly evolving nature and the risk of these being out of date.
	• Compare the application and relevance of these models.
	• Identify where judgement is required on climate change for actuarial modelling.
	• Outline the additional uses of models for modelling the impact of climate change including: uninsurable risks e.g. flood risk, 4-degree world, decommissioning cost, socialization of cost and risk sharing
	• Justification of key decisions for modelling the impact of climate change including:
	  ○ methodology / model choice.
	  ○ setting key assumptions.
	  ○ key judgements made and limitations.
	  ○ amendments to existing judgements/assumptions to reflect new information
	• Considerations when assessing the Model Output
	  ○ Analyse the quantitative impact on climate change on the actuarial modelling.
	  ○ Evaluate the consequences of judgement decisions e.g. effect of climate path on the outcomes of the model.
	  ○ Understand the implications of the asymmetric nature and inherent uncertainty of climate risk for modelling choices.
	  ○ Understand the sensitivity of the results to key climate change assumptions.
	  ○ Adequate consideration of tail risk from climate change events
	  ○ Consider any qualitative issues

8	Reporting and Communication
	• Understand what a company is trying to achieve with climate change reporting / communication? • Understand who the stakeholders are that company's climate-related disclosures are aimed at & what stakeholders want from climate-related disclosures. • Consider the external factors that are relevant to companies with respect to their communications such as TCFD, regulation, other guidance such as CFRF, Climate Disclosures in AR&A etc.

Module	Learning Outcomes
9	Closing Seminar
	• Gain a better insight into the impact of sustainability on the different aspects of an actual company • Show clear understanding of all previous models and identify how it links into the work of an actuary • Be able to work as a group to present on company strategy and risk management • Discuss appropriate Scenario Analysis & modelling