## GCRF-EPSRC UK-APASI Programme

### UK-Africa Postgraduate Study Institute in Mathematical Sciences

**WORKSHOP 6: 24-26 May 2021**

**Statistical Methods, Crime Modelling and Financial Mathematics**

**Monday 24th May 2021**

09:30 – 09:45 **Joining** **Workshop login**

09:45 – 09:55 **Welcome** **Madzvamuse, A. Holligan, Liam**

10:00 – 10:55 **Lecture 1**: Olivier M. Pamen **Title**: *Introduction to stochastic optimal control: the stochastic maximum principle approach*

10:55 – 11:00 **Break**

11:00 – 11:55 **Lecture 2**: Olivier M. Pamen **Title**: *A Mean-Variance Asset Allocation with stochastic term structure and Hawkes jumps*

12:00 – 13:00 **Lunch**

13:00 – 13:45 **Lecture 3**: Farai Mhlanga **Title**: *Aspects of stochastic control and their applications in mathematical finance*

13:55 – 14:00 **Break**

14:00 – 14:55 **Plenary Lecture:** Prof. CW (Kees) Oosterlee **Title**: Pricing and calibration with neural networks in finance

14:55 – 15:00 **Break**

15:00 – 15:55 **Lecture 4:** Raul Manasevich **Title**: *Some crime modelling experiences in Santiago Chile*

15:55 – 16:00 **Break**

16:00 – 16:30 **Panel Discussion** **Panellists**: Pamen, Mhlanga, Oosterlee, Manasevich

16:30 **End of Day 1**

**Tuesday 25th May 2021**

09:45 – 09:55 **Welcome** **Workshop login**

10:00 – 10:45 **Lecture 5:** CW (Kees) Oosterlee **Title**: *On Monte Carlo simulation techniques in computational finance, supported by neural networks*

10:55 – 11:00 **Break**

11:00 – 11:45 **Lecture 6:** Jane White **Title:** *Building a model of crime dynamics*

11:55 – 13:00 **Lunch**

13:00 – 13:45 **Lecture 7:** Jane White **Title:** *Exploring a range of modelling approaches for criminal behaviour and criminal activity*

13:55 – 14:00 **Break**

14:00 – 14:45 **Lecture 8**: Farai Nyabadza **Title**: *A systems approach to modelling crime dynamics*

14:55 – 15:00 **Break**

15:00 – 15:45 **Lecture 9:** Farai Nyabadza **Title**: *Can we model the interplay between substance abuse and crime dynamics?*

15:55 – 16:00 **Break**

16:00 – 16:30 **Panel Discussion** **Panellists**: Oosterlee, White, Nyabadza

16:30 **End of Day 2**

**Wednesday 26th May 2021**

09:45 – 09:55 **Welcome** **Workshop login**

10:00 – 1055 **Lecture 10:** Fred Vermolen **Title**: *Introductory statistics and the central limit theorem*

10:55 – 11:00 **Break**

11:00 – 11:45 **Lecture 11:** Fred Vermolen **Title**: *Statistical testing of hypotheses*

11:55 – 13:00 **Lunch**

13:00 – 13:45 **Lecture 12:** Eduard Campillo-Funollet **Title**: *Introduction to Bayesian methods for parameter identification*

13:55 – 14:00 **Break**

14:00 – 14:45 **Lecture 13:** Max Jensen **Title**: *Hamilton-Jacobi-Bellman equations and Applications to Finance*

14:55 – 15:00 **Break**

15:00 – 15:45 **Lecture 14:** Rodwell Kufakunesu **Title**: *On the energy quanto options*

15:55 – 16:00 **Break**

16:00 – 16:30 **Panel Discussions** **Panellists**: Vermolen, Campillo-Funollet, Jensen, Kufakunesu

16:30 **End of Workshop 5**