#### COURSE TIMETABLE

*This is a provisional timetable and is subject to change.*

**Monday 31st March 2025**

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| **Time** | **Venue** | **Activity** |
| 12:00 – 13:30 | Charles Carter Breakout Area | Course registration and light lunch |
| 13:30 – 14:15  **RS** | Charles Carter LT A15 | Welcome to the course; introduction to modelling random processes |
| 14:15 – 15:00  **RS** | Charles Carter LT A15 | Markov chains in discrete time |
| 15:00 – 15:30 | Charles Carter Breakout Area | Tea/coffee |
| 15:30 – 17:00  **RS** | Hannaford Computing Laborarory | Computer modelling of simple random processes including Markov chains |
| 17:00 – 18:30 | Charles Carter Breakout Area | Accommodation keys will be distributed; time for you to go and check in to your accommodation |
| 18:30 – 19:30 | Outside John Creed building | Woodland walk around campus. Meet outside the accommodation (John Creed building). If you want to join us for the woodland walk, please make sure you have suitable outdoor footwear. |
| 19:30 | InfoLab Building, Floor D | Hot buffet will be served at the Sky Café. (Note: the woodland walk will finish at the InfoLab Building.) |

**Tuesday 1st April 2025**

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| **Time** | **Venue** | **Activity** |
| 09:15 – 10:00  **RS** | LUMS LT06 | Reflections from computer exercise; Markov chains in continuous time; introduction to queues |
| 10:00 – 10:45  **CK** | LUMS LT06 | Markovian queues; networks of queues; decomposition approaches; Little’s Law |
| 10:45 – 11:15 | Charles Carter Breakout Area | Tea/coffee |
| 11:15 – 12:00  **CK** | LUMS LT06 | Multiclass queueing models, including scheduling and priority policies |
| 12:00 – 13:30 | n/a | Lunch break |
| 13:30 – 14:15  **CK** | LUMS LT 6 | Control of queueing systems; optimal routing and scheduling policies |
| 14:15 – 15:00  **DW** | LUMS LT 6 | Non-exponential queues |
| 15:00 – 15:30 | Charles Carter Breakout Area | Tea/coffee |
| 15:30 – 16:15  **AL** | LUMS LT 6 | Inventory Control I: Continuous review models |
| 16:15 – 17:00  **AL** | LUMS LT 6 | Inventory Control II: Periodic review models |

**Wednesday 2nd April 2025**

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| **Time** | **Venue** | **Activity** |
| 09:15 – 10:00  **DL** | Charles Carter LT A15 | Introduction to dynamic programming |
| 10:00 – 10:45  **DL** | Charles Carter LT A15 | Approximate dynamic programming |
| 10:45 – 11:15 | Charles Carter Breakout Area | Tea/coffee |
| 11:15 – 12:00  **AL** | Charles Carter LT A15 | Inventory Control III: multi-item and newsboy models |
| 12:00 – 13:00 | n/a | Lunch break |
| 13:00 – 14:00  **SL/AK** | LUMS LT 8 | ***Guest lecture from members of Tesco’s Data Science Team*** |
| 14:00 – 14:30 | Charles Carter Breakout Area | Tea/coffee |
| 14:30 – 16:00  **DL/RS** | Hannaford Computing Laboratory | Introduction to the computing assessment; implementation of an exact algorithm to solve a DP problem in Python or R |
| 16:00 – 16:30 | n/a | Free time |
| 16:30 | Outside Charles Carter Building | Travel into town centre for castle tour followed by a meal at Sultan of Lancaster |
| 17.45 | Lancaster Castle Main gate | Castle tour |
| 19.30 | The Sultan of Lancaster restaurant | Social meal |

**Thursday 3rd April 2025**

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| **Time** | **Venue** | **Activity** |
| 09:15 – 10:00  **LJ** | LUMS LT 6 | Fundamentals of maintenance in safety-critical systems |
| 10:00 – 10:45  **LJ** | LUMS LT 6 | Maintenance modelling techniques |
| 10:45 – 11:15 | Charles Carter Breakout Area | Tea/coffee |
| 11:15 – 12:00  **LJ** | LUMS LT 6 | Applications and future trends in maintenance |
| 12:00 – 13:00 | n/a | Lunch break |
| 13:00 – 13:45  **DL** | LUMS LT 6 | Introduction to reinforcement learning |
| 13:45 – 14:30  **DL** | LUMS LT 6 | Temporal difference methods: Q-learning and SARSA |
| 14:30 – 15:00 | Charles Carter Breakout Area | Tea/coffee |
| 15:00 – 17:30  **DL/RS** | Hannaford Computing Laborarory | Finalisation of computing assessment |

**Friday 4th April 2025**

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| **Time** | **Venue** | **Activity** |
| 09:15 – 10:00  **DW** | Charles Carter LT A15 | Time-dependent behaviour in queues |
| 10:00 – 10:45  **RW** | Charles Carter LT A15 | ***Guest lecture from Richard Wood (NHS)*** |
| 10:45 – 11:15 | Charles Carter Breakout Area | Tea/coffee |
| 11:15 – 12:15  **RS** | Hannaford Computing Laboratory | Individual assessment (multiple choice quiz) |
| 12:15 – 13:00  **RS et al.** | Charles Carter LT A15 | Discussion; reflections; announcement of group assessment winners; feedback survey |

**Contributors**

**LN** – Mrs Lindsay Newby (Administrator, Lancaster)

**RS** – Dr Rob Shone (Course Director, Lancaster)

**CK** – Dr Chris Kirkbride (Lancaster)

**DW** – Dr David Worthington (Lancaster)

**AL** – Professor Adam Letchford (Lancaster)

**DL** – Professor Dong Li (Lancaster)

**LJ** – Professor Lisa Jackson (Loughborough)

**SL** – Dr Sebastian Lautz (Tesco)

**AK** – Dr Aleksandar Kolev (Tesco)

**RW** – Dr Richard Wood (NHS)