

# MPhil in Scientific Computing

Course Directors: Dr N. Nikiforakis (email: [nn10005@cam.ac.uk](mailto:nn10005@cam.ac.uk))

Dr J. A. Elliott (email: [jae1001@cam.ac.uk](mailto:jae1001@cam.ac.uk))

Contact: [admin@csc.cam.ac.uk](mailto:admin@csc.cam.ac.uk)

Course website: <http://www.csc.cam.ac.uk/academic/MPhil%20SciComp>

All lectures will take place in the Rayleigh Seminar Room in the Maxwell Building, except on 17th/18th October, when they will be in the Ryle Seminar Room in the Rutherford Building.

## **PROFESSOR E. ARTACHO**

Foundation Course in Quantum Mechanics and Solid State Physics

6 lectures (2 hours each – 6 lectures & 6 practicals)

TuTh 9-11, starting 6th October for 6 lectures.

## **PROFESSOR E. ARTACHO**

Electronic Structure (Theory of Condensed Matter)

10 hours lectures

6 2-hour practicals

Lectures: TuTh 9-10 starting 27th October

Practicals, MWF 9-11 starting 21st November – until Friday 2nd December.

## **DR P.M. BLAKELY**

GPUs for Scientific Computing

12 lectures (12 hours total of lectures & practicals)

MWF 2-4, starting 18th November.

## **DR P.M. BLAKELY**

Scientific Programming in C++

12 lectures (2 hours each – 12 lectures & 12 practicals)

MWF 9-11, starting 7th October.

## **DR P.M. BLAKELY**

Introduction to Linux

5 lectures

MWF 2-3, starting 7th October.

### **DR A. FAUL**

NA Fundamentals, Non-linear Systems & Interpolation

16 lectures

TuTh, 11-12, starting 6th October.

### **DR A. FAUL**

Numerical Integration and ODEs.

16 lectures

W 11-12, F 12-1, starting 7th October.

### **DR A. FAUL**

Linear Systems.

16 lectures

TuTh, 12-1, starting 6th October

### **DR A. FAUL**

Numerical Differentiation & PDEs

16 lectures

M 11-12, W 12-1, starting 10th October

### **DR L. MICHAEL**

Numerical Solution of Hyperbolic Partial Differential Equations

6 lectures (2 hours each)

MWF, 9-11, starting 14th November.

### **DR M. RUTTER**

Computational Hardware

7 lectures

MWF 3-4, starting 7th October.

### **N. MACLAREN**

Software Design

6 lectures

TuTh 3-4, starting 11th October

### **DR M. RUTTER**

Message Passing Interface (MPI)

9 lectures and 6 practicals.

TuTh 2-4, F 3-4, starting 28th October (except for Tuesday 1st November, 3-5 instead).

### **N. MACLAREN**

OpenMP

6 lectures (2 hours each – 6 lectures & 6 practicals)

MW 3-5, starting 24th October

### **DR D. HUGGINS, DR J. ELLIOT**

Atomistic Modelling of Materials

12 lectures plus 6 hours practicals (practicals unscheduled as yet)

MWF 2-3, starting 21st October

### **DR C. DORAN**

Geometric Algebra

8 lectures

TuTh 2-3, starting 7th October.

### **DR K. BENKRID**

Programming for power-efficient computing

8 lectures

TuTh 10-11, starting 3rd November

### **DR A. FAUL, DR A. O'NEILL, DR L. JAMIESON, G. PILIKOS**

Machine Learning

16 lectures

M 12-1, F 11-12, starting 7th October.

Plus: Machine Learning Lunch every Friday 1pm, from 14th October.

### **DR N. NIKIFORAKIS**

Mesh Generation, Mesh Adaptation and Mesh Movement

12 lectures - Lent Term – not scheduled.