

## Contents

Editorial	3-4
– Peter Rowlett and Matthew M. Jones	
CASE STUDY: Programming in the Mathematics Curriculum at Manchester Metropolitan University	5-12
– Stephen Lynch	
CASE STUDY: Programming as a mathematical activity	13-17
– Peter Rowlett	
CASE STUDY: Programming in Groups: developing industry-facing software development skills in the undergraduate mathematics curriculum	18-24
– Matthew M. Jones and Alison Megeney	
CASE STUDY: Using Python in the Teaching of Numerical Analysis	25-32
– D. Rhys Gwynllyw, Karen L. Henderson, Jan Van lent and Elsa G. Guillot	
SHORT UPDATE: Programming in the recently-updated pre-university maths curriculum – Further Pure Mathematics with Technology (FPT)	33-35
– Stephen Lee and Tom Button	
CASE STUDY: Automated assessment in a programming course for mathematicians	36-44
– Henning Bostelmann	
OPINION: Automated Assessment of Python Code	45-48
– Sam Morley	
CASE STUDY: Assessment of computing in the mathematics curriculum using Numbas	49-58
– Chris Graham	
CASE STUDY: Developing computational mathematics provision in undergraduate mathematics degrees	59-65
– Richard Elwes and Rob Sturman	

For information about how to submit an article, notifications of new issues and further information relating to *MSOR Connections*, please visit <https://journals.gre.ac.uk/index.php/msor>.

#### Editors

Joe Kyle, (formerly) University of Birmingham, UK;  
Tony Mann, University of Greenwich, UK;  
Alun Owen, Coventry University, UK;  
Peter Rowlett, Sheffield Hallam University, UK;  
Robert Wilson, Cardiff University, UK.

#### Editorial Board

Shazia Ahmed, University of Glasgow, UK;  
Noel-Ann Bradshaw, London Metropolitan University, UK;  
Cosette Crisan, University College London, UK;  
Anthony Cronin, University College Dublin, Ireland;  
Francis Duah, University of Chichester, UK;  
Jonathan Gillard, Cardiff University, UK;  
Michael Grove, University of Birmingham, UK;  
Duncan Lawson, Coventry University, UK;  
Michael Liebendörfer, Paderborn University, Germany;  
Birgit Loch, La Trobe University, Australia;  
Ciarán Mac an Bhaird, Maynooth University, Ireland;  
Eabhnaí Ni Fhloinn, Dublin City University, Ireland;  
Matina Rassias, University College London, UK;  
Josef Rebenda, Brno University of Technology, Czech Republic;  
Frode Rønning, Norwegian University of Science and Technology, Norway.

This journal is published with the support of the **sigma** network and the Greenwich Maths Centre.



UNIVERSITY  
of  
GREENWICH