

# MAGIC ANNUAL REPORT

June 2011- June 2012.

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## 1. INTRODUCTION

THE MAGIC (Mathematics Access Grid Instruction and Collaboration) project is an EPSRC sponsored which project commenced in October 2006 and is aimed at sharing postgraduate lectures in mathematics for PhD students using Access-Grid technology. The consortium currently has 19 universities as partners with both small and large departments being fully involved in the delivery of the programme of lectures in addition to their students being able to fully participate in the lectures.

Earlier annual reports on MAGIC can be found at

<http://www.maths.manchester.ac.uk/~gajjar/magicadmin>

and give extensive details of how the project has developed over the years and contains information on the suite of courses which MAGIC has delivered and some of the technical and other issues that MAGIC has encountered. The MAGIC website

<http://www.maths-magic.ac.uk>

contains details of the current programme and the courses available.

In 2010-11 the MAGIC project was reviewed by DTZ an independent management consultancy company on behalf of EPSRC, and links to their reports on MAGIC can be found at

<http://www.maths.manchester.ac.uk/~gajjar/magicadmin> .

DTZ made a number of recommendations on how MAGIC could improve its operations and with a more streamlined management structure. In addition from September 2011, EPSRC requires that all PhD students who receive its funding have to do a minimum of 100 hours of courses provided by Taught Course Centres and be formally assessed in those courses.

In 2011 the MAGIC project received renewed funding from EPSRC to continue the excellent work which MAGIC has been doing and to introduce some of the changes as suggested by DTZ. Since September 2011, MAGIC has implemented many of the DTZ recommendations and introduced changes which facilitate implementation of EPSRC policies. In March 2012 a formal legally binding agreement which sets out the terms and conditions under which MAGIC operates, was signed by all the MAGIC consortium partners, . The final signed agreement is available at

<http://www.maths.manchester.ac.uk/~gajjar/magicadmin/Legaldocs/MAGIClegalagreement.pdf>

together with supporting documents in the same directory. The major changes which affect how MAGIC works are as follows:

- All MAGIC partners pay varying contributions, based on the size of the institution and the number of students, towards the running costs of MAGIC. The current membership is listed in Table 1.
- There is a Management Committee (MC) which is responsible for management of policy and operational issues associated with membership and delivery of the MAGIC service. The Management Committee is chaired by the Director of MAGIC, currently Prof. Jitesh S.B.

Gajjar (University of Manchester). The members of the Management Committee together with their roles are listed in Table 2. The Management Committee are supported by the MAGIC Administrator (Andrew Smith) and the MAGIC Technical Support person (James Perrin).

- There is a Programme Committee whose remit is to look after the academic aspects of the MAGIC programme. The list of Programme Committee members is given in Table 3.
- There is an Academic Steering Committee (ASC) comprising representatives from all the MAGIC partners and chaired by an independent person, currently Prof. Nigel Peake (Cambridge University). The full list of members of this committee is given in Table 4. The role of the ASC is oversight and governance although day to day responsibilities are delegated to the MC and PC.

The legal agreement and schedules detail the full remit of the committees and their interaction.

## 1.1 Membership

Table 1 A list of MAGIC Consortium partners

University of Birmingham	Loughborough University
Durham University	University of Manchester
University of Cardiff	University of Newcastle
University of East Anglia	University of Nottingham
University of Exeter	University of Reading
Keele University	University of Sheffield
University of Lancaster	University of Southampton
University of Leeds	University of Surrey
University of Leicester	University of York
University of Liverpool	

## 1.2 MAGIC Management Committee (2011-2012)

Table 2 MAGIC Management Committee

Prof. Jitesh S.B. Gajjar (University of Manchester)	Director of MAGIC
Prof. Peter Ashwin (Exeter University)	
Dr Giampaolo D'Allesandro (Southampton University)	
Prof. Alastair Rucklidge (University of Leeds)	
Dr Ian McIntosh (University of York)	Chair of PC
Dr Martin Turner (University of Manchester)	
Professor Neil Strickland (Sheffield University)	
James Perrin	MAGIC Technical Officer
Andrew D Smith	MAGIC Administrator

### 1.3 MAGIC Programme Committee (2011-2012)

Table 3 Programme Committee

Dr Ian McIntosh (University of York)	Chair
Prof. Jitesh S.B. Gajjar	Ex-Officio
Prof. Peter Ashwin (Exeter University)	
Prof. Alexei Bolsinov (Loughborough University)	
Dr Gianne Derks (University of Surrey)	
Dr Tobias Kuna (University of Reading)	
Prof. Tim Phillips (Cardiff University)	
Prof. Mary Rees (University of Liverpool)	
Prof. Alastair Rucklidge (University of Leeds)	
Dr Gregor Tanner (University of Nottingham)	

### 1.4 MAGIC Academic Steering Committee (2011-2012)

Table 4 A list of members of the Academic Steering Committee

Prof Nigel Peake (Cambridge University)	Chair of ASC
Prof Jitesh Gajjar (University of Manchester)	Director of MAGIC
Dr Ian McIntosh (University of York)	Chair of PC
Prof. Peter Ashwin (Exeter University)	
Dr Mark Blyth (University of East Anglia)	
Dr Alexey Bolsinov (Loughborough University)	
Dr Giampaolo D'Alessandro (Southampton University)	
Dr Gianne Derks (University of Surrey)	
Prof. Yibin Fu (Keele University)	
Dr Tobias Kuna (University of Reading)	
Prof. Martin Lindsay (Lancaster University)	
Prof. Sergei Petrovskii (University of Leicester)	
Prof. Tim Phillips (Cardiff University)	
Prof. Mary Rees (University of Liverpool)	
Prof. Alastair Rucklidge (University of Leeds)	
Dr Dirk Scheutz (Durham University)	
Prof. Neil Strickland (University of Sheffield)	
Dr Gregor Tanner (University of Nottingham)	
Dr Qianxi Wang (University of Birmingham)	

### 1.5 Minutes

The minutes of the meetings of the MAGIC MC, PC and ASC, together with the agenda papers can be found at:

[https://maths-magic.ac.uk/admin/management/list\\_meetings.php](https://maths-magic.ac.uk/admin/management/list_meetings.php)

## **2. Progress and activities 2011-2012**

### **2.1 MAGIC Legal Agreement**

After nine months of finalising the details, the MAGIC Legal Agreement was formally signed by all parties on 21st March 2012. The agreement provides a unique opportunity for collaboration between a number of institutions and provides the framework under which the MAGIC service is delivered. This provides an important and valuable taught course environment for the training of PhD students throughout the UK. MAGIC would like to thank Sam Bibby from the contracts office at the University of Manchester for his efforts in dealing with the document, and thank also all others who have helped shape the final version of the document and who were involved dealing with queries at various stages.

### **2.2 MAGIC Administrator and Technical Support posts**

The funds collected under the MAGIC Legal agreement go towards paying for the services of the MAGIC Administrator (0.5FTE) Andrew Smith, and for the technical support provided by the MAGIC Technical Support person (0.4FTE) James Perrin and both are employed at the University of Manchester.

### **2.3 Website**

From January 2012, the MAGIC website was located to a new site independent location at

<http://www.maths-magic.ac.uk> .

Prior to the move, the website had undergone many significant changes and enhancements to facilitate implementation of the MAGIC assessment policies to comply with EPSRC requirements. In particular the new features allow lecturers to set coursework with deadlines, and students are able to pick up the assignments and upload their work. In turn the lecturers are able to mark, give feedback , return marked scripts, via the website. Overall the new features have worked really well, although there were a few technical issues to deal with regarding certain types of pdf files. The changes mean that students and PG administrators at the different sites are able to access results via the website. Other changes to the website include new features to aid management functions. The website now allows functionality to issue and collect online course reports as well as an alumni questionnaire.

MAGIC would like acknowledge it special thanks to Neil Strickland who has developed the website over many years and without whom the website would not function as it does today. The task of developing and maintaining the website is one of the duties of James Perrin, the MAGIC Technical Support person.

### **2.4 Recording of lectures**

All MAGIC lectures are now recorded automatically, although the recordings are not made publically available. At a MC meeting it was decided that because of additional resourcing and legal implications, the recordings would only be made available to special needs students, or in cases when sites needed them when their equipment was down. Lecturers are able to access the

recordings on request, provided they assume responsibility for the legal and copyright aspects. As an experiment, for the 2012-13 programme, at least one lecturer will be experimenting with different teaching strategies which will involve use of the recordings.

## **2.5 Other activities and use of the MAGIC facilities**

27th October 2011, a special lecture on 'Buying shares on horses - the industrial problem of betting' was given by Prof. Alistair Fitt (Oxford Brookes University).

The MAGIC room is used regularly to broadcast the AG Dynamics seminars organised jointly by the University of Exeter and University of Leeds.

From November 2011-July 2012, a series of lecture courses which are part of the Magicalbooks for Industry project (<http://www.maths.manchester.ac.uk/~gajjar/magicalbooks>). These have included lectures on:

'Numerical Computation' 10 hours of lectures by Dr Andrew Hazel (Manchester), November - December 2011.

'Mathematics of Risk Analysis' 10 hours Dr John Moriarty, Jhonny Gonzales, and Dr Mike Tso all at Manchester, February 2012 - May 2012.

'Advanced analytical techniques for continuum mechanics', 20 hours by Dr William Parnell and Prof. David Abrahams (Manchester), May 2012-July 2012

'The finite-volume method for CFD', 20 hours by Dr David Apsley (Manchester), May 2012.

## **2.6 Technical problems and issues**

For the period from 1st June 2011 to 1st June 2012 there have been 26 reported problems recorded on the website. This does not include other problems which may have occurred but not formally logged on the website. There do not appear to be many recurring issues. In May 2012, Loughborough have reported the failure of one of the ClearOne microphone receiver units which is to be replaced. In June 2012, the visualizer at Manchester failed but it is still covered by a warranty. In 2010-2011 all the MAGIC nodes were upgraded and the number of problems being reported are fewer than in comparable periods in previous years.

## **3. Academic Aspects 2011-2012.**

### **3.1 Academic Programme 2011-2012**

The list of courses given in the 2011-12 session (and also for previous sessions) can be viewed at the MAGIC website at

<http://maths-magic.ac.uk/courses.php>

The above site also gives details of the individual courses and syllabi.

In Tables 5 and 6 we have given details of the MAGIC courses which were given in the 2011-2012 sessions. The table contains also details of the number of students registered together with the number requiring formal assessment. The data for this has been taken from the MAGIC website.

In Tables 7 and 8 we have shown breakdown of the number of registrations per node for each course for the Autumn and Spring terms in 2011-2012.

Table 8 compares the total registrations per node for the Autumn and Spring terms in 2011-12, 2010-11 and 2009-10 sessions. This data (together with similar data for previous years) shows that for the 2011-12 session there has been a significant drop in the number of course registrations for most nodes.

### **3.2 Questionnaires and feedback**

An online system of questionnaires was set up in 2007 and implemented from Spring 2008 for all the courses delivered. The results of the questionnaire data can be viewed at (login required):

[https://maths-magic.ac.uk/admin/programme/view\\_questionnaires.php](https://maths-magic.ac.uk/admin/programme/view_questionnaires.php) .

In 2012 following a request by EPSRC, we have also initiated an online alumni questionnaire for students who have completed or in the final stages of their PhD studies. The questionnaire was issued in early June 2012 to students registered for courses in 2007-08 and 2008-09. The data from this questionnaire is still being collected and is due to be analyzed.

In 2012 we have initiated collecting online course reports from lecturers. The responses are available for viewing at the same site (cited earlier) as other questionnaire results. Prior to 2012, the feedback from lecturers was obtained via forms collected centrally.

The feedback from students and staff (via the questionnaire results, forums discussions) is used by the Programme Committee when it reviews the programme each year. The minutes of the Programme Committee contain some of the feedback and summarize the outcomes from the review.

MAGIC monitors attendance at lectures via a self registration system, ie students have to tick their attendance at lectures. The data collected as well as anecdotal evidence suggests that attendance at lectures has significantly improved in comparison to previous years and fewer students are dropping out. The improvement in attendance may be due to changes in the assessment policies at each university and students requiring assessment may be attending more lectures as compared to previous years when there was no assessment.

### **3.3 Assessment Policies**

To comply with EPSRC policies, from September 2011 MAGIC requires that all MAGIC courses need to have some kind of formal assessment which could take the form of an end of term take home examination, or course assignments or both. MAGIC requires that all assessment is moderated by a person nominated by the course leader. For each student requiring assessment on a course, the lecturer is required to give a pass/fail assessment based on the completed assignments or exam. The guidelines issued by the PC are available at

[https://maths-magic.ac.uk/admin/documentation/documentation\\_index.php](https://maths-magic.ac.uk/admin/documentation/documentation_index.php) .

Lecturers are paid £10 for each pass/fail assessment of student recorded on the MAGIC website.

Table 5 Autumn 2011-2012 Courses with numbers of registered students and number of students being assessed.

Autumn Term	Course	Registered	Assessed
MAGIC002 (Dirk Schuetz, Durham)	Differential topology and Morse theory	13	8 (61.54%)
MAGIC008 (Alexey Bolsinov, Loughborough)	Lie groups and Lie algebras	38	23 (60.53%)
MAGIC010 (Charles Walkden, Manchester)	Ergodic Theory	12	9 (75.00%)
MAGIC022 (Jitesh Gajjar, Manchester)	Mathematical Methods	32	17 (53.12%)
MAGIC025 (Yibin Fu, Keele)	Continuum Mechanics	8	7 (87.50%)
MAGIC040 (Michael Dritschel, Newcastle)	Operator Algebras	8	1 (12.50%)
MAGIC050 (Mirna Dzamonja, East Anglia)	Set Theory	18	9 (50.00%)
MAGIC057 (Karl Michael Schmidt, Cardiff)	Spectral Theory of Ordinary Differential Operators	10	4 (40.00%)
MAGIC059 (Alastair Rucklidge, Leeds)	Dynamical Systems I (Flows)	21	11 (52.38%)
MAGIC061 (Martin Lindsay, Lancaster)	Pure Functional Analysis	16	8 (50.00%)
MAGIC063 (James Vickers, Southampton)	Differentiable Manifolds	19	6 (31.58%)
MAGIC065 (Alexander Veretennikov, Leeds)	Stochastic Processes	27	11 (40.74%)
MAGIC066 (Tim Phillips, Cardiff)	Numerical Analysis	32	18 (56.25%)
MAGIC069 (Paul Busch, York)	Quantum Theory	8	5 (62.50%)
MAGIC072 (Neil Dummigan, Sheffield)	Number Theory	18	10 (55.56%)
MAGIC075 (Kay Magaard, Birmingham)	Representation Theory of Groups	17	7 (41.18%)
Total		297	154 (51.85%)



Table 6 Spring 2011-2012 courses showing numbers registered and numbers of students being assessed.

Spring term	Course Registered	Assessed
MAGIC004 (Anand Pillay, Leeds)	Applications of model theory to algebra and geometry 16	9 (56.25%)
MAGIC009 (Jonathan Kirby, East Anglia)	Category Theory 37	19 (51.35%)
MAGIC014 (Chris Jones, Leeds)	Hydrodynamic Stability Theory 24	11 (45.83%)
MAGIC021 (Roger Grimshaw, Loughborough)	Nonlinear Waves 25	10 (40.00%)
MAGIC048 (Madalin Guta, Nottingham)	Quantum Statistics 4	0 (0.00%)
MAGIC049 (Jens Funke, Durham)	Modular Forms 14	6 (42.86%)
MAGIC052 (Andrew Gilbert, Exeter)	Topological Fluid Mechanics 10	7 (70.00%)
MAGIC058 (David Harris, Manchester)	Theory of Partial Differential Equations 28	18 (64.29%)
MAGIC060 (Toby Hall, Liverpool)	Dynamical Systems II (Maps) 21	15 (71.43%)
MAGIC062 (John Pryce, Cardiff)	Applied Functional Analysis 20	10 (50.00%)
MAGIC064 (Frank Neumann, Leicester)	Algebraic Topology 28	11 (39.29%)
MAGIC073 (Moty Katzman, Sheffield)	Commutative Algebra 26	12 (46.15%)
MAGIC076 (Vladimir V. Kisil, Leeds)	The Heisenberg group in mathematics and physics 12	2 (16.67%)
Total	265	130 (49.06%)

Table 7 Data for Autumn 2011-2012 courses showing registration data broken down by node and course code. Note that in the Autumn row, the number in bold refers to a MAGIC course code, eg 61 is MAGIC061.

Autumn	2	8	10	22	25	40	50	57	59	61	63	65	66	69	72	75	Tot
Birmingham			1	4			2	1	7	2			6	1	2	2	28
Cardiff				3	2				1				5				11
Durham	1	2					1				2				2		8
East Anglia		1	2	3			1			1	1	1			3	3	16
Exeter		1	3	1		1		1	2			2				1	12
Keele					1								1				2
Lancaster		1														1	2
Leeds	3	5	1	2		1	2	2	2	1	3	4	1	1			28
Leicester													2				2
Liverpool	2	2	2	2		1	1				2	6	4				22
Loughborough	3	7	1	7	3	1	3	4	4	2	6	3	4	1	1	1	51
Manchester		2	2	2	2		3			2	1	4	4	1	4	2	29
Newcastle		1		3		1	1		2	3	1	1	2		1	1	17
Nottingham		3					1		1			2					7
Reading				2					1	1	1						5
Sheffield	1	3				1				2					3		10
Southampton	1	4		3		1					1	2	2		2	2	18
Surrey		1							1			1	1			2	6
York	2	5				1	3	2		2	1	1		4		2	23
<b>Autumn</b>	<b>2</b>	<b>8</b>	<b>10</b>	<b>22</b>	<b>25</b>	<b>40</b>	<b>50</b>	<b>57</b>	<b>59</b>	<b>61</b>	<b>63</b>	<b>65</b>	<b>66</b>	<b>69</b>	<b>72</b>	<b>75</b>	
<b>Tot</b>	13	38	12	32	8	8	18	10	21	16	19	27	32	8	18	17	297

Table 8 Data for Spring 2011-2012 courses showing registratio data broken down by node and course code.

<b>Spring</b>	<b>4</b>	<b>9</b>	<b>14</b>	<b>21</b>	<b>48</b>	<b>49</b>	<b>52</b>	<b>58</b>	<b>60</b>	<b>62</b>	<b>64</b>	<b>73</b>	<b>76</b>	<b>Tot</b>
Birmingham		7	3	5		1	1	3	1	1	2	5		29
Cardiff			2					3	1	1	1			8
Durham		3	1	1		3	1	1			1	1	2	14
East Anglia	2	1	3	1		1	1	1	3		1	1		15
Exeter			2	1			3	2	1	1	2			12
Keele				2				2						4
Lancaster												1		1
Leeds	8		1	2		1	2	1	1	1	4	1	2	24
Leicester														0
Liverpool		2				1		5	6	8	1	1		24
Loughborough		2	4	6		1	1	3	2	6	2	2	2	31
Manchester	2	3	2	3				3	2	1	4	5	1	26
Newcastle	1	2	3	1					1					8
Nottingham		2			1					1	2	1		7
Reading								1						1
Sheffield		3				3					3	3	1	13
Southampton	1	6	1	3	1	3	1				1	3		20
Surrey			2					1	3		2			8
York	2	6			2			2			2	2	4	20
<b>Spring</b>	<b>4</b>	<b>9</b>	<b>14</b>	<b>21</b>	<b>48</b>	<b>49</b>	<b>52</b>	<b>58</b>	<b>60</b>	<b>62</b>	<b>64</b>	<b>73</b>	<b>76</b>	
<b>Tot</b>	<b>16</b>	<b>37</b>	<b>24</b>	<b>25</b>	<b>4</b>	<b>14</b>	<b>10</b>	<b>28</b>	<b>21</b>	<b>20</b>	<b>28</b>	<b>26</b>	<b>12</b>	<b>265</b>

Table 9 Summary of registration data per node for the 2011-12, 2010-11, and 2009-10 sessions

	Aut 2011- 2012	Spr 2011- 2012	Tot 2011- 2012		Aut 2010- 2011	Spr 2010- 2011	Tot 2010- 2011		Aut 2009- 2010	Spr 2009- 2010	Tot 2009- 2010
Birmingham	28	29	57		22	22	44		42	19	61
Cardiff	11	8	19		17	11	28		18	13	31
Durham	8	14	22		14	9	23		19	29	48
East Anglia	16	15	31		27	18	45		15	13	28
Exeter	12	12	24		38	20	58		19	17	36
Keele	2	4	6		3	0	3		5	1	6
Lancaster	2	1	3		23	14	37		5	1	6
Leeds	28	24	52		29	25	54		22	55	77
Leicester	2	0	2		8	6	14		4	2	6
Liverpool	22	24	46		15	10	25		16	10	26
Loughborough	51	31	82		60	61	121		40	43	83
Manchester	29	26	55		73	81	154		67	41	108
Newcastle	17	8	25		20	16	36		8	21	29
Nottingham	7	7	14		2	5	7		22	5	27
Reading	5	1	6		9	2	11		5	4	9
Sheffield	10	13	23		26	11	37		11	6	17
Southampton	18	20	38		20	11	31		8	10	18
Surrey	6	8	14		12	0	12		2	1	3
York	23	20	43		12	12	24		23	7	30
Total	297	265	562		430	334	764		351	298	649