Athena SWAN Bronze department award application

Name of university: **University Of Cambridge**

Department: **Faculty of Mathematics**

Date of application: **November 2013**

Date of university Bronze and/or Silver SWAN award: **Bronze award renewed November 2012**

Contact for application: **Dr Stephen J. Cowley**

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Departmental website address: *www.**maths**.cam.ac.uk*

*Athena SWAN **Bronze Department** awards recognise that in addition to university-wide policies the department is working to promote gender equality and to address challenges particular to the discipline.*

Not all institutions use the term 'department' and there are many equivalent academic groupings with different names, sizes and compositions. The definition of a 'department' for SWAN purposes can be found on the Athena SWAN website. If in doubt, contact the Athena SWAN Officer well in advance to check eligibility.

It is essential that the contact person for the application is based in the department.

Sections to be included

At the end of each section state the number of words used. Click here for additional guidance on completing the template.

Glossary

CATAM	Computer Assisted Teaching of All Mathematics
CCA	Cambridge Centre for Analysis
CCBI	Cambridge Computational Biology Institute
DAMTP	Department of Applied Mathematics and Theoretical Physics
Director of Studies	A person affiliated to a College responsible for the students' academic progress in a particular subject in the College
DPMMS	Department of Pure Mathematics and Mathematical Statistics
Easter	The third of the three terms in an academic year at Cambridge
E & D	Equality and Diversity
Lent	The second of the three terms in an academic year at Cambridge
Michaelmas	The first of the three terms in an academic year at Cambridge
MMath	Masters in Mathematics: A one-year Master's course taken by students as the 4th year of their undergraduate degree in mathematics at Cambridge
MASt	Masters in Advanced Studies (stand-alone course): A one-year Master's course taken by students from outside Cambridge
Part IA	The first year of the mathematical undergraduate course in Cambridge
Part IB	The second year of the mathematical undergraduate course in Cambridge
NST	Natural Sciences Tripos Natural Sciences is the framework within which most sciences subjects, both physical and biological, are taught at Cambridge
Part II	The third (and final) year of the mathematical undergraduate course in Cambridge, leading to the award of a BA degree
Part III	The one year programme of courses shared by students for either MMath or MASt
Senior Tutor	A person affiliated to a College with overall responsibility for all students' welfare and academic progress in the College
STEP	Sixth Term Entrance Paper

1. Letter of endorsement from the head of department: maximum 500 words
(671 words: 171 words of additional 1000 word allowance)

An accompanying letter of endorsement from the head of department should explain how the SWAN action plan and activities in the department contribute to the overall department strategy and academic mission.

UNIVERSITY OF CAMBRIDGE
Faculty of Mathematics

28 November 2013

Sarah Dickinson
Senior Policy Adviser,
Athena SWAN,
Equality Challenge Unit,
7th Floor Queen's House,
55/56 Lincoln's Inn Fields,
London WC2A 3U

Dear Ms Dickinson

Athena Swan Bronze Award Application by Faculty of Mathematics, University of Cambridge

We write as the Heads of the two Cambridge Mathematics Departments, the Department of Applied Mathematics and Theoretical Physics (DAMTP) and the Department of Pure Mathematics and Mathematical Statistics (DPMMS) to confirm our very strong support for the joint application of our two Departments, under the umbrella of the Faculty of Mathematics, for an Athena Swan Bronze Award.

Our two Departments together have the goal of maintaining our position as one of the world's leading centres for higher education and research in the mathematical sciences. We are both very clear that this requires that our students and staff at all levels are drawn from the widest possible field, irrespective of gender, and that any aspects of our procedures, practice or culture that discriminate or are perceived to discriminate against women or indeed other groups are likely to endanger that goal.

Our two Departments have for several years appreciated the challenges faced by women in university mathematics and have taken various measures to provide support, including for example, extra teaching and general support for students at the Part III level and clearer support structures for PhD students. We are pleased that the number of women academic staff has been steadily growing, albeit slowly, and by their success in promotion, for example with two women promoted to Reader and one to Professor in the most recent promotions round, plus the election of one of our long-standing women academic staff to one of our most prestigious established Professorships. Nonetheless we realise, not least on the basis of our gender balance at all levels of students and staff, that there is much still to do. We welcomed the London Mathematical Society Good Practice Scheme and were pleased to participate in it. We see application for an Athena Swan award as an important next step.

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Given the strong working relationship between our two Departments and, in particular, our joint responsibility for undergraduate and postgraduate courses in mathematics, we have taken the decision together with the Chairman of the Faculty Board of Mathematics that a joint application for an Athena Swan award would be much more effective than separate applications. We are pleased that Athena Swan have endorsed this approach.

We selected together, with the Chair of the Faculty, the membership of our Athena Swan panel, responsible for preparing this application and in particular for formulating an action plan,. We have provided resources to enable the work of the panel to progress quickly and we have received regular updates on the progress of the panel's work. The process leading up to the application for the Athena SWAN Bronze award has been very helpful in allowing us to review all our working practices and to focus on those that can, and should, be improved.

For the future, as articulated in the action plan, we will work to attract more women to study mathematics at Cambridge. We envisage changes to the website and aim to focus more effectively on women in our STEP preparation school for Cambridge entrants. We would like to make mathematical research, particularly in pure mathematics, more appealing to women, and are developing a scheme to encourage women to take Part III of the Mathematical Tripos (our Masters level pre-research course) and to support them as they do so. Finally we shall increase efforts to attract women to apply for positions at Cambridge, for example by undertaking active searches for strong women candidates. We are concerned about the impact of behaviour and of unconscious bias on women at Cambridge at all career stages. We will expect all staff involved in recruitment within our Departments to have completed E&D training and aim more generally to increase the number of staff who have completed such training.

As Heads of the two Mathematics Departments we confirm that we endorse the action plan on which our application is based and that we are committed to providing the resources needed to deliver the action plan and to giving the plan and those involved in its delivery our full support.

Yours sincerely,

PROFESSOR PETER H. HAYNES
Head of Department
Applied Mathematics and
Theoretical Physics

PROFESSOR MARTIN HYLAND
Head of Department
Pure Mathematics and
Mathematical Statistics

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1. The self-assessment process: maximum 1000 words

Describe the self-assessment process. This should include:

a) A description of the self assessment team: members' roles (both within the department and as part of the team) and their experiences of work-life balance.

Dr Stephen Cowley is a Senior Lecturer in DAMTP and Chair of the Faculty. He is also a Member of the Faculty Equality & Diversity Committee, Member of the University Council (and ten or so other University Committees, including the Council of the School of the Physical Sciences). Married with two teenage children. Dual-career family. He was a member of the Parents Committee of the University Nursery, which both children attended.

Dr Nilanjana Datta is a College Lecturer and Affiliated Lecturer in DPMMS. She was a member of the panel until the beginning of October 2013.

Prof Anne Davis is Professor of Mathematical Physics (1967) in DAMTP and Chair of the Athena SWAN committee. She has been on the Faculty of Mathematics Senior Promotion committee and is now on the School of Physical Sciences Senior Promotion Committee. She has a grown up daughter. For many years she was a lone parent.

Dr Giulio Del Zanna is a Senior Research Associate in DAMTP, where he moved in 2008 with an STFC advanced fellowship. Married to a medical doctor, and with a young child, he has experience on family-related issues (e.g. worked part-time) where both adults have demanding careers.

Dr Stephen Eglen is Senior Lecturer in DAMTP. He has three young children and shares childcare duties with his partner, who is a computational neuroscientist.

Dr Julia Goedecke is Graduate Education Officer (from 1st October 2013) and Affiliated Lecturer in DPMMS , and College Lecturer and Director of Studies in Newnham College (an all-female College). She has experience in undergraduate teaching and selection.

Dr Vivien Hodges is the University WiSETI (Women in Science, Engineering and Technology Initiative) Project Officer and Athena SWAN coordinator.

Ms Anastasia Kisil is a PhD student in DAMTP, who has recently taken a period of maternity leave following the birth of her baby. She shares the responsibility of looking after the baby with her husband, also a PhD student (at Warwick).

Prof Gabriel Paternain is Professor of Mathematics and Head of DPMMS elect. He has one child and shares parental duties with his wife who is a statistician.

Dr Susan Pitts is Senior Lecturer in DPMMS. Since 2006, she has been a member of the Women in Mathematics Committee of the London Mathematical Society. She is a fellow of Newnham College (a college for women students) and has been Director of Studies in Mathematics there. She undertook her graduate studies in her 30s, after having accompanied her husband on his various early-career appointments. She is currently a Governor of a girls' school.

Dr Orsola Rath Spivack is a Senior Research Associate and Affiliated Lecturer in DAMTP, and Graduate Tutor and Director of Studies in Lucy Cavendish College (an all-female College). She is also a Member of the Faculty E&D Committee. She held a Daphne Jackson Fellowship in DAMTP, partly funded by Lucy Cavendish College, during 1995-1997, on returning to academia after a career break following the birth of her second child. Funding has been provided to support Orsola as the Faculty Athena SWAN coordinator (part-time) from 1st July 2013 until at least the end of 2014.

b) an account of the self assessment process: details of the self assessment team meetings, including any consultation with staff or individuals outside of the university, and how these have fed into the submission.

A preliminary team was formed early in 2012 as a subgroup of the Faculty E&D committee to consider the progression of gender equality across the Faculty. This team met regularly (every 1-2 months) and started a series of actions:

- The London Mathematical Society (LMS) good practice checklist was reviewed by both departments and the Faculty applied for recognition as an LMS Good Practice supporter. This was achieved in February 2013 and has provided core areas for immediate action and highlighted some key issues which have been addressed in the action plan.

- A preliminary analysis by gender of correlation between STEP results at admission and subsequent performance in Tripos exams was carried out and communicated to Director of Studies committee for discussion in November 2012. The effect of A level take-up by gender on available pool of female undergraduate candidates was discussed and led to a recommendation that references to the desirability of A level Physics should dropped from admissions literature by the Faculty and by Colleges. This was endorsed by the Director of Studies Meeting and by the Faculty Board in November 2012.

- To ensure that there was no inadvertently biased language a revision of the Faculty Guide for supervisors was carried out.

- Proactive measures to encourage more participation in Faculty Committees were started, and as a result a number of women offered to serve and have been appointed: one on the Teaching Committee, one on the Curriculum Committee, one on the Part III Committee and one on the Faculty Board.

- There has been input to a subcommittee revising the Faculty website: e.g. to ensure publicity of being an LMS Good Practice Scheme Supporter (with logo and link), and to create a Faculty 'Women in Mathematics' pages.

The subgroup of E&D evolved into the current self-assessment panel, which has met regularly since July 2013: once a month during the summer holiday and once a fortnight during term-time. It reports to the Faculty Board, and consults with the Heads of Department regularly, to seek approval for the action plan and resources to support progression of Athena SWAN across the Faculty.

c) *Plans for the future of the self assessment team, such as how often the team will continue to meet, any reporting mechanisms and in particular how the self assessment team intends to monitor implementation of the action plan.*

- The Athena SWAN panel will meet initially bi-monthly, then at least termly after the submission date, to ensure progression of the action plan. Oversight of implementation of the action plan will be the responsibility of subgroups of the panel, each with responsibility for specific areas and actions.

- The panel will provide regular updates at Staff Meetings and an annual report to the Faculty Board.

- A Faculty-wide student survey and a similar staff survey will be carried out by within the next year, and the results used to monitor progress and revise the action plan as appropriate.

970/1000 words

2. A picture of the department: maximum 2000 words

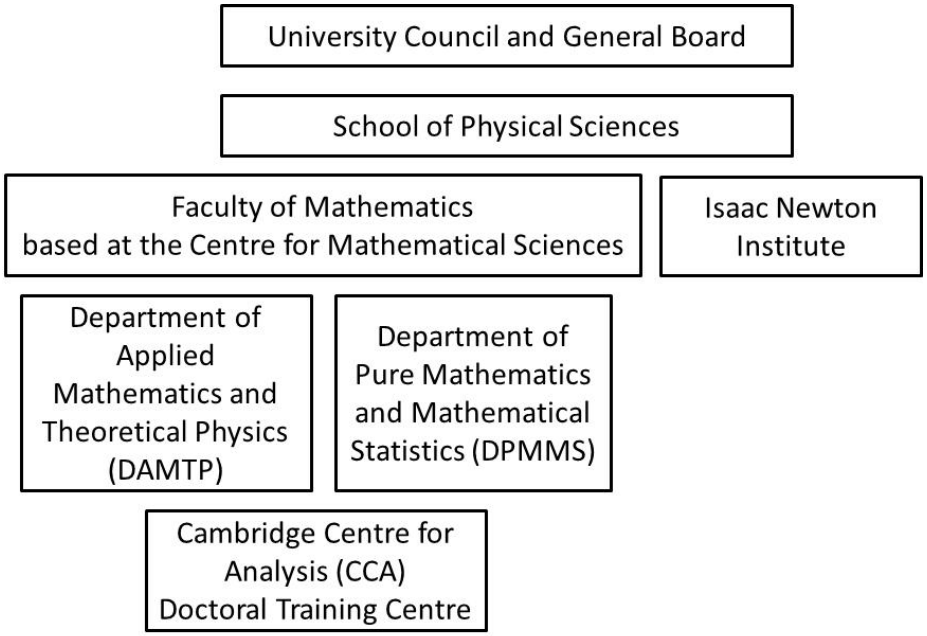
a) Provide a pen-picture of the department to set the context for the application, outlining in particular any significant and relevant features.

Organisation, history and assessment

The Faculty of Mathematics belongs to the School of Physical Sciences and comprises the Department of Applied Mathematics and Theoretical Physics (DAMTP) and the Department of Pure Mathematics and Mathematical Statistics (DPMMS); the latter includes the Statistical Laboratory as a sub-Department. Both Departments are located at the Centre of Mathematical Sciences (CMS) alongside the Isaac Newton Institute for Mathematical Sciences (INI), an international visitor research institute and a separate institution within the University (see Figure 1).

The Faculty comprises approximately 250 staff including about 110 academic and 140 research staff. Of these, significant numbers are staff employed by the Colleges and independent researchers supported by personal research grants. DAMTP comprises more than 50 tenured academic staff and over 80 post-doctoral members, DPMMS comprises about 40 tenured academic staff and over 70 post-doctoral members.

Figure 1: Structure of the Faculty and position within the University.



Research: Both Departments promote a lively research environment at the highest international level. Our strength in research was recognised in the 2008 Research Assessment Exercise, with all three of our units of assessment, Pure Mathematics, Applied Mathematics, Statistics and Operational Research gaining excellent profiles with 30% of Research judged 4* (world-leading in terms of originality, significance and rigour) and a further 45% judged 3* (internationally excellent). Many of the academic staff have been awarded medals or prizes, and we have 16 Fellows of the Royal Society and 1 Field medallist. Other awards include the Adams Prize, the Women of Outstanding Achievement in SET Award, Royal Statistical Society Guy Medal, Senior Whitehead

Prize, Fröhlich Prize, RAS Group Achievement Award and also Michael Faraday, Christopher Zeeman, Kelvin and David Crighton medals.

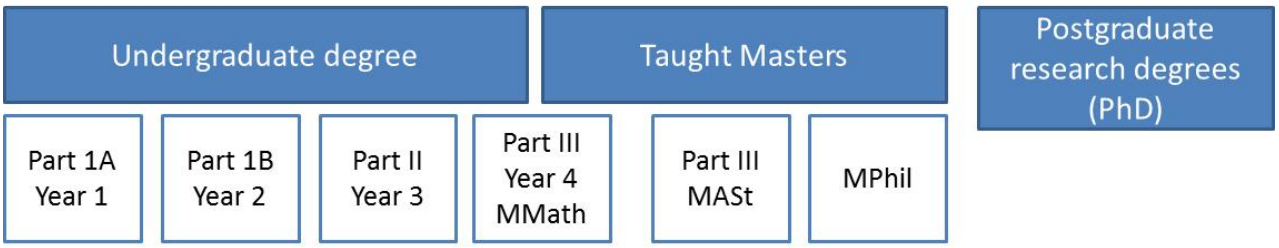
Research at DAMTP is loosely organised into eight broad subject areas: Applied and Computational Analysis, Astrophysics, Geophysics, Fluid and Solid Mechanics, Mathematical Biology, Quantum Information, High Energy Physics and General Relativity and Cosmology. Many members of staff contribute to more than one area and this is regarded as a key factor in the continuing success of DAMTP. Research in each of the subject areas involves collaboration with strong groups nationally and internationally, and participation in numerous interdisciplinary projects and programmes. Many members of DAMTP have valuable links with industry and other non-academic sectors.

Research in DPMMS is undertaken across a wide range of modern mathematics. There are no formally organised research groups; areas of particular interest include: algebra, algebraic geometry, analysis, category theory, combinatorics, differential geometry, number theory and probability and statistics.

The Cambridge Centre for Analysis (CCA), a Centre for Doctoral Training in Analysis, supported by the EPSRC and by the University of Cambridge undertakes research on the whole range of analysis, across Pure, Stochastic, Computational and Applied Analysis. Staff at CCA come from both DPMMS and DAMTP.

Teaching: Undergraduate teaching for the Mathematical Tripos (see Figure 2), apart from supervisions, which are arranged by Colleges, is arranged on a Faculty, rather than Departmental, basis. In addition, through its Degree Committee, the Faculty is responsible for recommending the admission of graduate students, making arrangements for the supervision of their work and recommending the award of degrees, diplomas and certificates.

Figure 2: Undergraduate and postgraduate degrees



History: Historically, women have been under-represented at all levels. On a number of occasions in the past the Faculty has looked at various issues regarding women in Mathematics, and some steps have been taken to address the imbalance. However, sustained improvements arising from such steps have been limited or not been measured.

- The percentage of women undergraduates was about 15% in 1993, increased to about 25% in the mid-2000s, but has since dipped back to below 20%.

- A 1993 report on 'Women and the Mathematical Tripos' identified issues of attitude and culture (such as 'inadequate and insensitive supervision by men'), as well as a disproportionately low number of firsts by women (29% of women graduated with a first, compared to 36% of men), even though overall more women finished in a class higher than a third (90% v 84%). The faculty addressed supervisors' attitude by changing official advice

(although the effect of this change was not monitored). Anecdotal evidence suggests that there has been considerable significant improvement in culture, even though some negative attitudes remain. Despite these changes, the percentage of women achieving first class degree has slightly decreased (the average for the final year of the BA in Mathematics over 2009-2012 gives 25% for women and 34% for men).

- The number of female academic staff, especially at senior level, has remained very low, although in DAMTP it has increased from one to five members of the tenured staff, with the first woman Professor appointed in 2002, and a second one appointed for 2013-14. In DPMMS it has remained virtually unchanged, and no woman has ever been appointed to Professor.

Organisation*:* The Faculty Board meets six times a year to consider education strategy and policy, and will be able to address educational actions identified in the Athena SWAN submission. The Faculty Board includes both Heads of the Departments, three members elected by the Professors in the Faculty, ten members elected by the Faculty, two members appointed by the University Council, up to four co-opted members and three elected student representatives (two undergraduates and one graduate).

A Faculty Committee recommends promotion of academic staff to the General Board. However, most staff management occurs at a Departmental level. Appointment of College Teaching Officers and College Research Fellows, who contribute in various amounts to Faculty teaching and research, are not included in this application, as their employment is the responsibility of individual Colleges.

The Faculty recognises that evidence from both Departments needs to be considered within the Athena SWAN submission, identifying specific issues and actions at both Departmental and Faculty level particularly around employment, research strategy and policy, all of which are within the remit of the individual Departments.

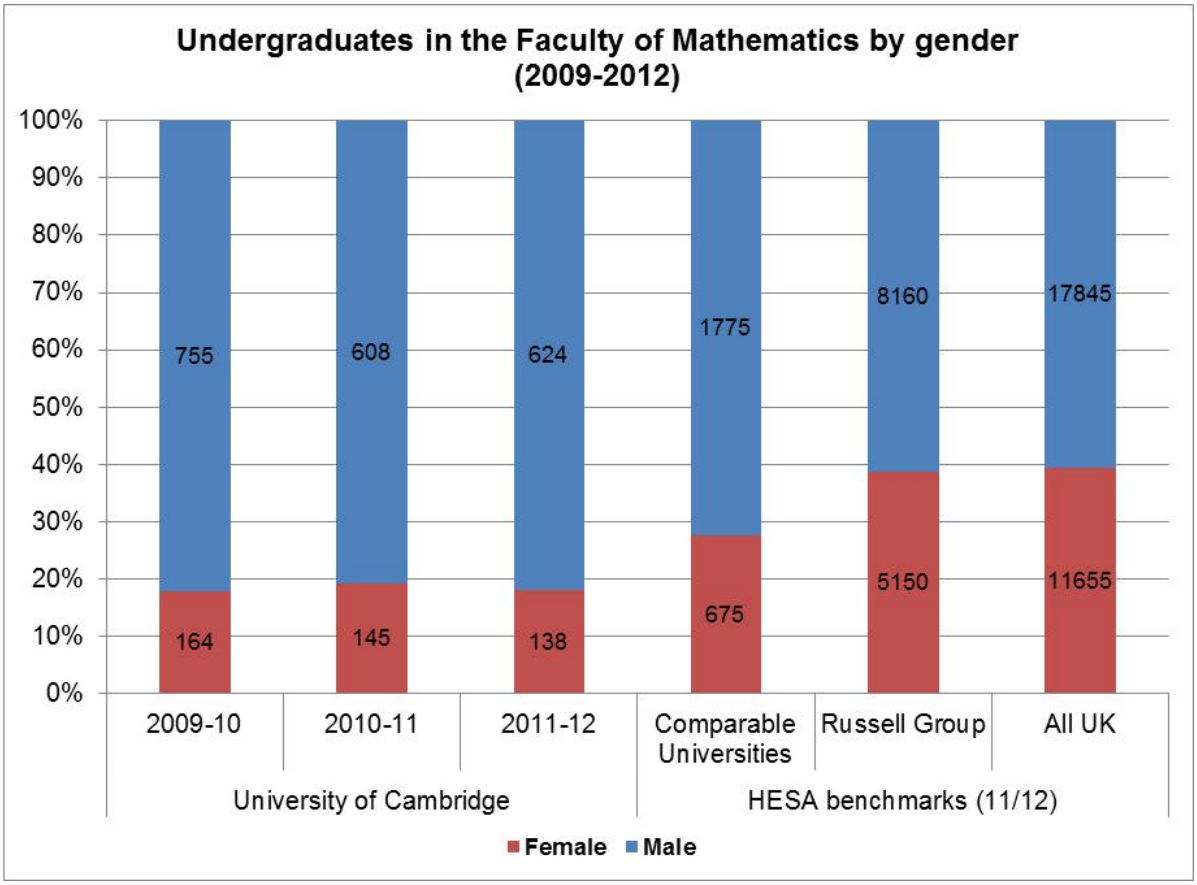
b) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

Student data

(i) Numbers of males and females on access or foundation courses
– N/A

***(ii)* Undergraduate male and female numbers** – *full and part-time – comment on the female:male ratio compared with the national picture for the discipline. Describe any initiatives taken to address any imbalance and the impact to date. Comment upon any plans for the future.*

Figure 3



The numbers and proportions of female students admitted each year have varied between 15% and 26% over the last 4 years but the overall proportions at undergraduate level are significantly lower than the UK and Russell Group averages (see Figure 3). However our proportion of female students is only slightly lower than the average proportion at some directly comparable Universities (Oxford, Imperial and Warwick). One factor affecting the proportion of female undergraduates may be the requirement for students to take our Sixth Term Entrance Paper (STEP). STEP is administered externally by Cambridge Assessment, who also blind-mark all scripts. Although offers to female applicants mirror applications, women tend to perform less well in STEP and consequently fail to make their offer. Directors of Studies in some Colleges and members of the Athena SWAN panel

have been exploring this issue, including how to encourage better STEP preparation and whether there are suitable alternatives.

ACTION 1.1 Encourage undergraduate applications by female students e.g. by making the website more attractive to potential female applicants and also by identifying key actions from systematic monitoring and analysis of undergraduate data, including STEP results and international student intake analyses.

(iii) Postgraduate male and female numbers completing taught courses – *full and part-time – comment on the female:male ratio compared with the national picture for the discipline. Describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.*

Taught courses

There are currently two taught Masters courses in the Faculty of Mathematics: Part III of the Mathematical Tripos and the MPhil in Computational Biology. Part III (see Figure 2) comprises of both students who take it as the 4th year of their undergraduate mathematical course in Cambridge (MMath), and students who come from other Universities and take it as a stand-alone Masters course (MASt). Both these cohorts attend the same lectures, sit the same exams, and are assessed and classed together (anonymously, as is the case for all Mathematics exams). Until 2009-10 (included), the Faculty also offered an MPhil in Statistical Science, which was subsequently subsumed into the Part III course.

Figure 4

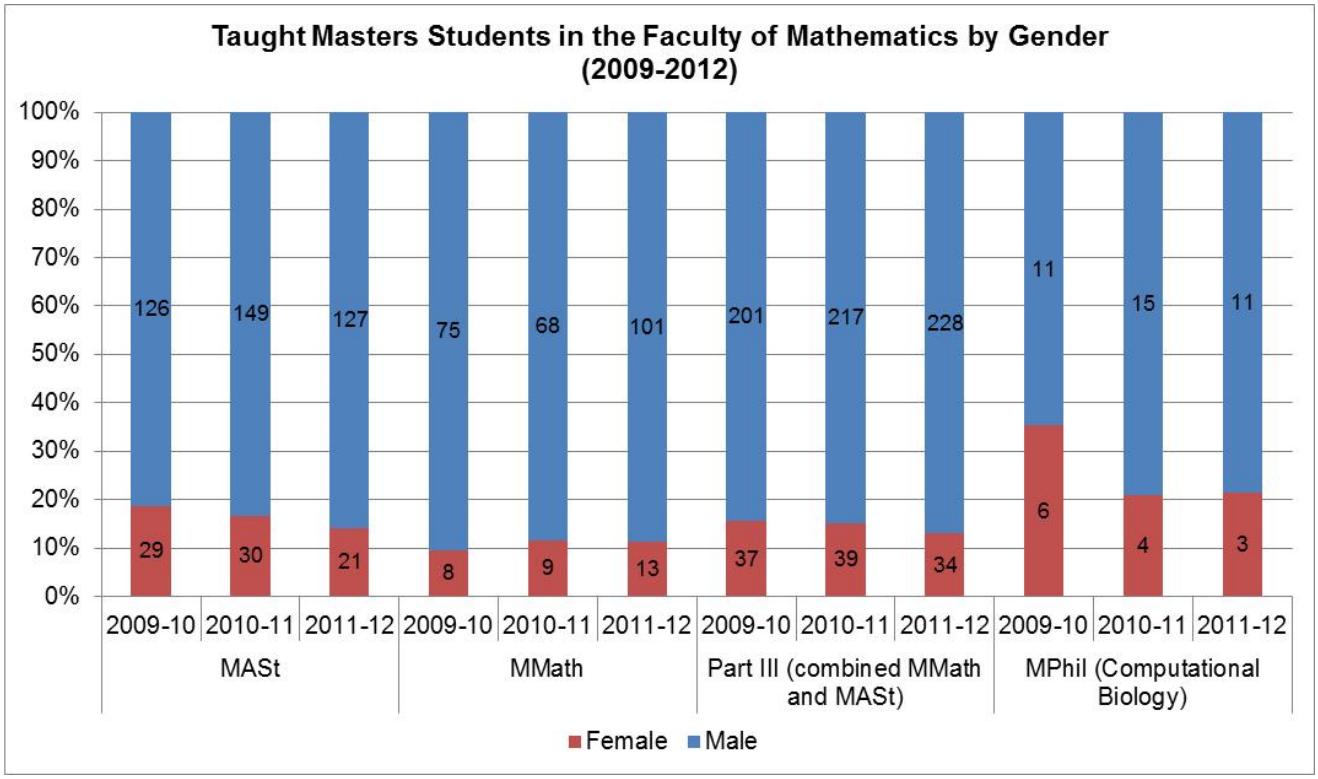


Figure 2 illustrates the proportion of female taught masters students (Part III) is consistently <20% which is lower than the UK average of 38% and comparable universities (26%)(HESA 11/12).

Table 1

Year	Part III								
	MASt/ CAdvS[1]			MMath			Combined Part III		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
2009-10	126	29 (18.7%)	**155**	75	8 (9.6%)	**83**	201	37 (15.5%)	**238**
2010-11	149	30 (16.8%)	**179**	68	9 (11.7%)	**77**	217	39 (15.2%)	**256**
2011-12	127	21 (14.2%)	**148**	101	13 (9.0%)	**114**	228	34 (13.0%)	**262**

Table 2

	MPhil in Computational Biology		
Year	**Men**	**Women**	**Total**
2009-10	11	6 (35.3%)	**17**
2010-11	15	4 (21.1%)	**19**
2011-12	11	3 (21.4%)	**14**

The MPhil in Computational Biology admits a small number of students each year, but has consistently a higher percentage of women than our other Masters courses (Table 2). The MMath course particularly has a relatively small percentage of women. This is linked to the average academic performance in the first three years of the undergraduate degree. Specifically, a First Class or very high Upper Second is needed to progress from the final undergraduate year (Part II) to the MMath, and a smaller percentage of female students achieve this, as shown in section (vi) of this submission. Some students have expressed negative views concerning the very competitive culture in Part III, and this may deter relatively more female than male students. Various initiatives, such as the Part III Café, have been put in place to foster mutual help and counteract excessive competitiveness. The figures for taught MPhils in recent years (including the MPhil in Statistical Science before it was discontinued) suggest that women might favour these courses over Part III (MASt). Table 4 supports this suggestion, and it is something that warrants further analysis.

Table 3

	MPhil in Computational Biology			MPhil in Statistical Science		
Year	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**
2006-07	19	11 (36.6%)	**30**	8	8 (50.0%)	**16**
2007-08	17	8 (32.0%)	**25**	11	6 (35.3%)	**17**
2008-09	17	6 (26.1%)	**23**	12	8 (40.0%)	**20**

We plan to investigate female numbers in Part III and the MPhil by analysing figures including applications and offers, as well as numbers admitted. We are also working towards involving Directors of Studies in all Colleges in giving better encouragement to all female students earlier in the Tripos, so that eventual progression to Part III is built into their expectation.

[1] Before 2009, the MASt course was called the Certificate in Advanced Studies in Mathematics (CAdvS)

The MPhil in Statistical Science was seen as a professional qualification, and therefore more appealing to those considering a career outside academia which may appeal more to female applicants.

ACTION 1.4: To monitor progression of final year undergraduate (Part II) students to taught Masters (Part III MMath) by gender annually, carry out a student survey and monitor the Easter meeting where final year undergraduates are encouraged to continue to Part III.

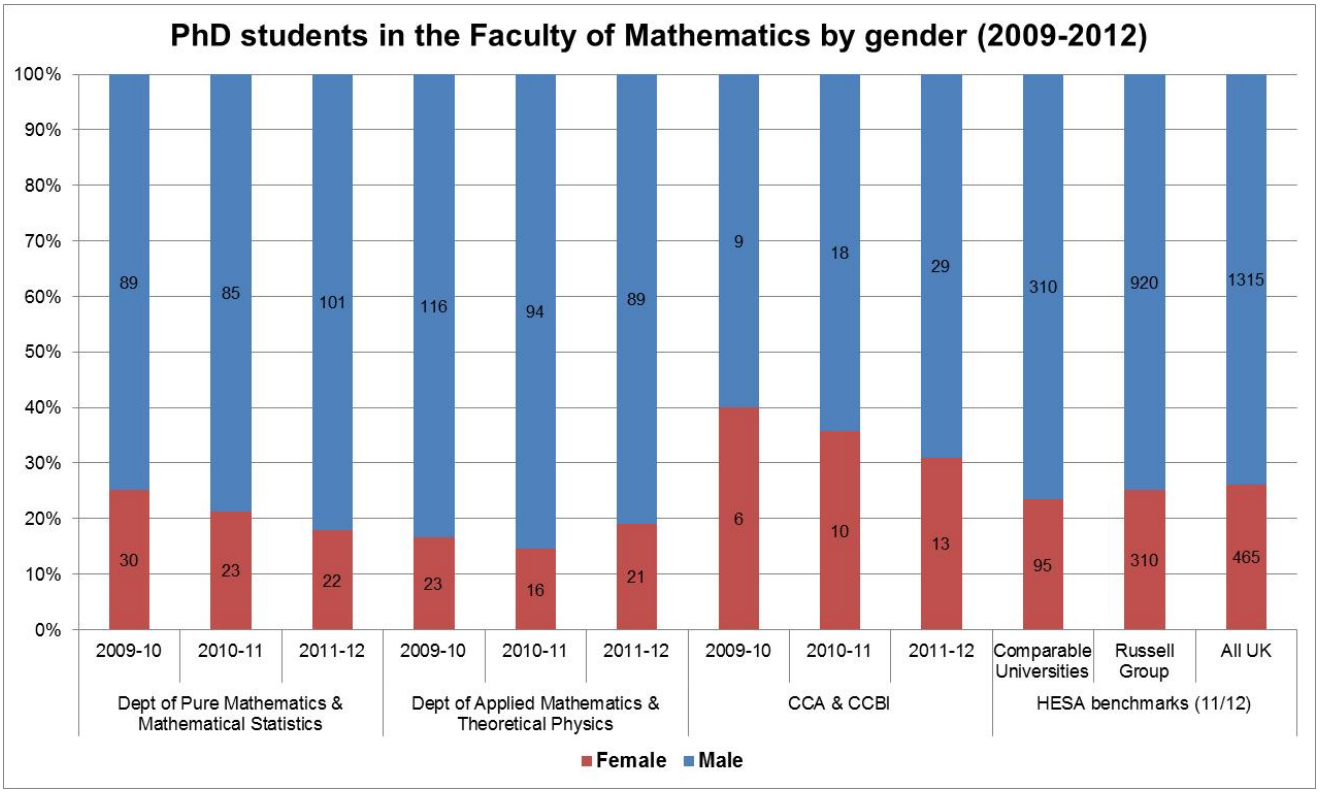
ACTION 1.5: To encourage more external female applicants to taught Masters (Part III MASt) and MPhil programmes by reviewing and updating the Part III and MPhil websites and widely publicising opportunities.

ACTION 1.6: To support female students in taught Masters courses (Part III and MPhil) and monitor their attainment.

***(iv)* Postgraduate male and female numbers on research degrees** – *full and part-time – comment on the female:male ratio compared with the national picture for the discipline. Describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.*

Figure 5 illustrates that the overall percentage of female PhD students in the Faculty of Mathematics has remained fairly static over the last 3 years at around 20% and is slightly lower than at comparable Universities (23%) and the Russell group (25%). Although the percentage of female PhD students is currently higher than the percentage of female undergraduates, it is still a cause for concern. Female students are more numerous in those areas that women in mathematical sciences have traditionally favoured, such as Statistics (particularly Biostatistics) and topics linked to Medicine, such as Mathematical Genomics. However, women also account for 28% of the cohort on average over the past three years at the Cambridge Centre for Analysis (CCA), in areas not considered traditionally more attractive to female students. It is possible that the CCA has attracted more female applicants because of its different style and structure, and we intend to investigate this further through the student survey.

Figure 5



ACTION 1.7: To monitor numbers of female PhD students, and their academic progression relative to male PhD students including analysis by status (UK, non-UK) and by research group

ACTION 1.8: To support female PhD students through monitoring of take-up of the existing initiatives and development opportunities, expanding the mentoring scheme for new PhDs and by reviewing experiences captured via the student survey.

(v) **Ratio of course applications to offers and acceptances by gender for undergraduate, postgraduate taught and postgraduate research degrees** – *comment on the differences between male and female application and success rates and describe any initiatives taken to address any imbalance and their effect to date. Comment upon any plans for the future.*

Undergraduate applications, offers and acceptances

Figure 6

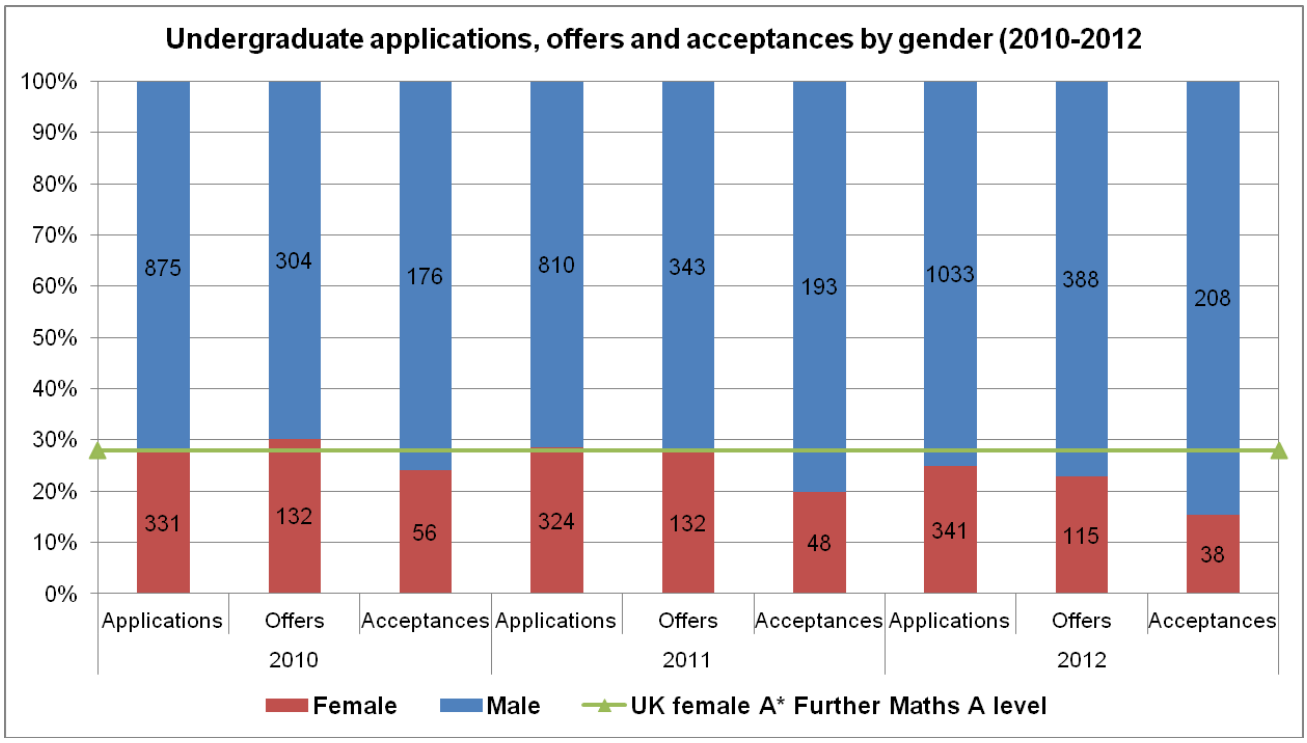


Table 4

	% offers as a proportion of applications by gender		% acceptances (offers met) as a proportion of offers by gender		% entrants as a proportion of acceptances by gender	
Entry year	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
2009	37%	41%	64%	38%	99%	96%
2010	35%	40%	58%	42%	98%	98%
2011	42%	41%	56%	36%	99%	98%
2012	38%	34%	54%	33%	99%	100%
2013	35%	36%	56%	30%	99%	100%

All undergraduate selection and admission to the Mathematical undergraduate degree is handled by the Colleges. The Faculty liaises with the Colleges through the Directors of Studies, who meet bi-annually. Recommendations regarding admissions can be forwarded via appropriate routes to the Undergraduate Admissions Committee, the Admissions Forum and the Senior Tutors Committee to the Colleges, but the Faculty has no direct control over undergraduate admissions, although many academic staff are involved in recruitment and admission through their College connections.

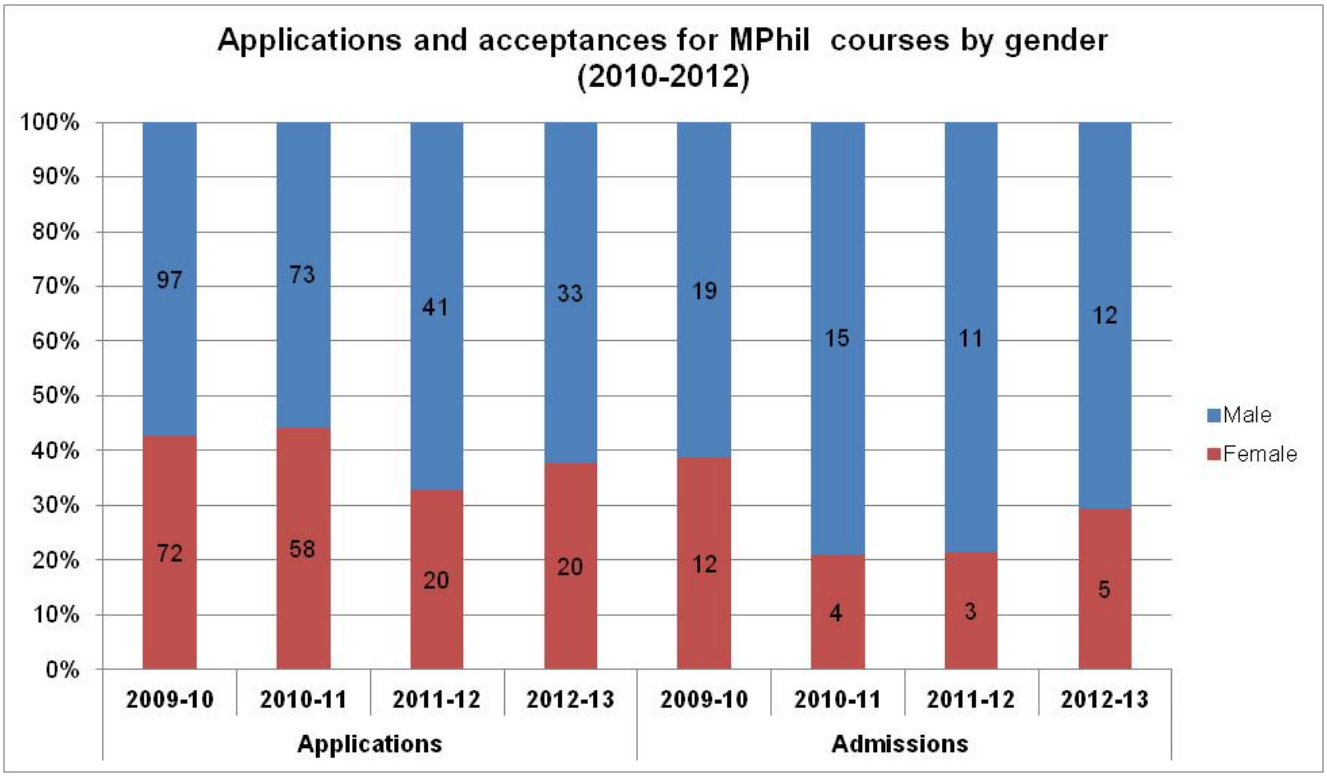
The percentage of female applicants to the undergraduate course is only slightly less than the percentage of female A level students who achieve A* in Further Mathematics (Figure 6). Hence, it

may be difficult to increase the number of female applicants, because A* in Further Mathematics is a minimum entrance requirement. The percentage of offers made is also broadly in line with the percentage who apply; the issue is that acceptances are lower. The explanation for this drop is that almost all offers are conditional on grades in STEP (Sixth Term Examination Papers, taken in late June), and more female applicants fail to meet their offer by achieving lower grades in STEP.

ACTION 1.1 Encourage undergraduate applications by female students (see action plan for details)

Taught Master applications and acceptances

Figure 7



N.B. All data in Figure 7 and table 5 refer to Part III MASt and MPhil in Computational Biology applications and acceptances only except for data for 2009-10, which also includes the MPhil in Statistical Science (discontinued after 2009-10).

Table 5

MPhil	Applications		Admissions			
Year	Male	Female	Male	% of male applicants	Female	% of female applicants
2009-10	97	72	19	20%	12	17%
2010-11	73	58	15	21%	4	7%
2011-12	41	20	11	27%	3	15%
2012-13	33	20	12	36%	5	25%
Average (2009-2013)	**61**	**43**	**14**	**26%**	**6**	**16%**

Figure 7 and table 5 illustrate that women are less likely to be admitted for MPhils than men (evidenced by over 4 years).

The initial application process for all graduate courses is handled centrally by the University Graduate Admissions offices. The process is explained and an outline of the course given on teh Faculty website. Every year a proportion of students do not start a postgraduate course for which they had received an offer, because they have insufficient funding.

We plan to gather figures for *acceptances* as well as admission by gender in order to get a full picture. We will also liaise with Graduate Admissions centrally and find ways of gathering information on how many male and female offer holders fail to take up the course because of lack of funds.

Part III (MASt). Hundreds of students apply every year to Part III from other Universities in the UK and from all over the world. They need as a minimum the equivalent of a First Class degree, usually in Mathematics or Physics, from another University. Offers by the Faculty Admission Officers are based on the candidate's whole academic record and on academic references. We do not yet have sufficient information currently on offers to MASt applicants. We plan to gather systematically figures for offers and acceptances by gender and nationality to the MASt.

ACTION 1.4: Monitor progression of final year undergraduate (Year 3) students to taught Masters (MMath) by gender.

ACTION 1.5: Encourage more female external applicants to Part III (MASt) and to the MPhil programme.

PhD applications and acceptances

Figure 8

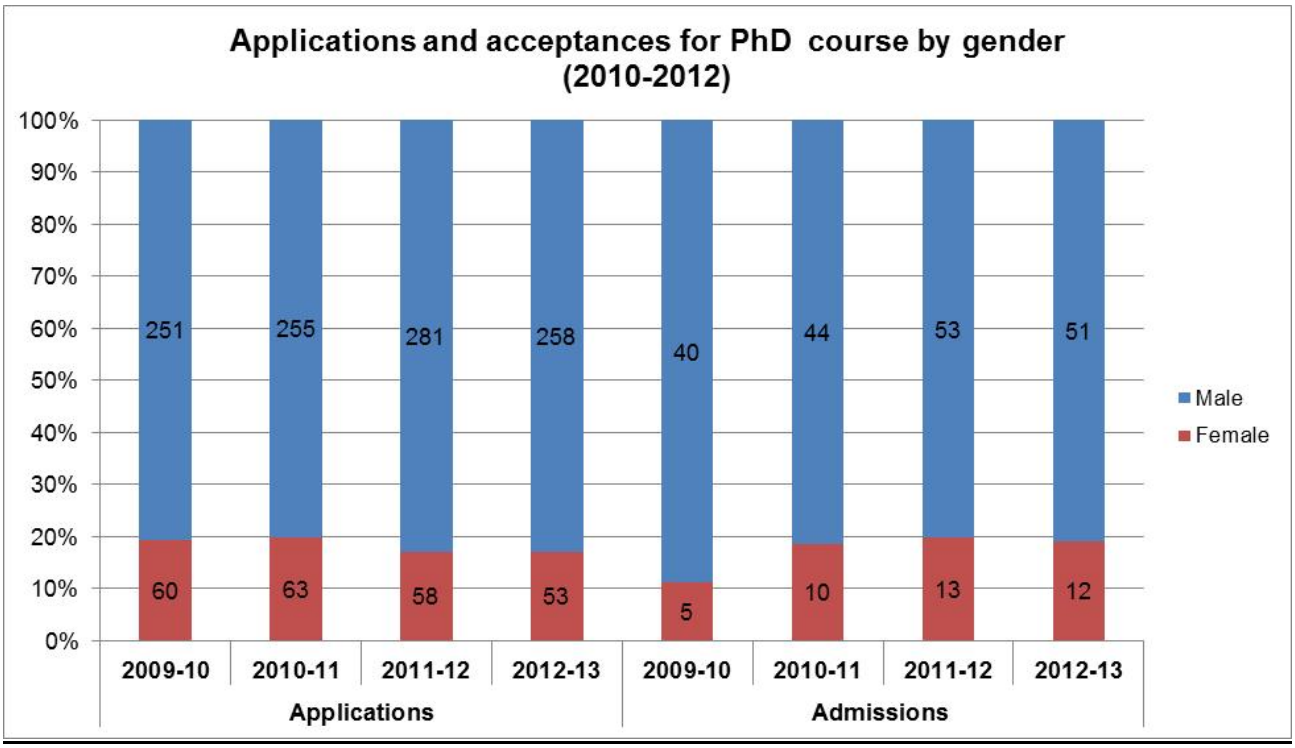


Table 6

PhD	Applications				Admissions					
Year	**Male**	**%**	**Female**	**%**	**Male**	**%**	% of Male applicants	**Female**	**%**	% of Female applicants
2009-10	251	80.7%	60	19.3%	40	88.9%	16%	5	11.1%	8%
2010-11	255	80.2%	63	19.8%	44	81.5%	17%	10	18.5%	16%
2011-12	281	82.9%	58	17.1%	53	80.3%	19%	13	19.7%	22%
2012-13	258	83.0%	53	17.0%	51	81.0%	20%	12	19.0%	23%

Admissions of female PhD students, as a percentage of applications, have more than doubled since 2009 (Table 6), and are currently slightly higher, at 23%, than the comparable figure for male admissions (20%). The number of female applicants, though, has declined by about 8%, so we need to encourage more female students to apply.

Table 7

	Data averaged over 3 years, for entry in 2010-2012			
	Progression to MMath as a percentage of original male/female cohort		**Progression to PhD** as a percentage of original male/female cohort	
	Male	**Female**	**Male**	**Female**
From undergraduate cohort	38%	24%	8%	8%
From MMath cohort			19%	23%
From MASt cohort			9%	4%
From total Part III cohort			8%	6%

Analysis of progression to graduate courses in the Department by gender shows that a smaller percentage of female undergraduates progress from year 3 to Part III (MMath), but the same percentage of male and female undergraduates eventually progress to PhD.

The smaller percentage of female students progressing from year 3 to Part III is a reflection of the reduced attainment of women at undergraduate level. Students who join the MASt course from other Universities have markedly lower progression rates across both genders, and particularly so for the female cohort.

ACTION 1.7: To monitor numbers of female MPhil and PhD students, and their academic progression.

(vi) Degree classification by gender – *comment on any differences in degree attainment between males and females and describe what actions are being taken to address any imbalance*

Figure 9 Undergraduate results by year, averaged between 2009 to 2012

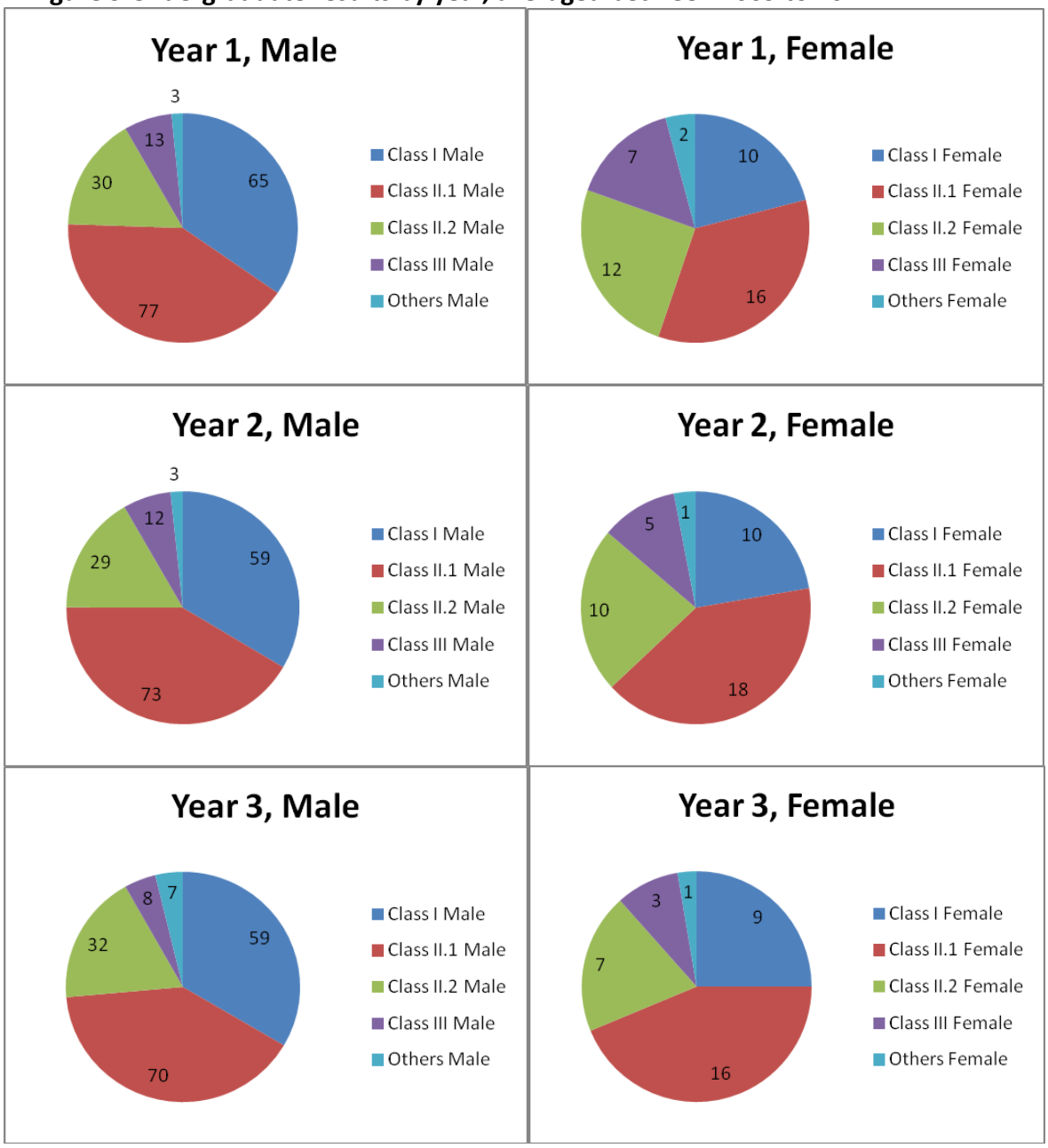
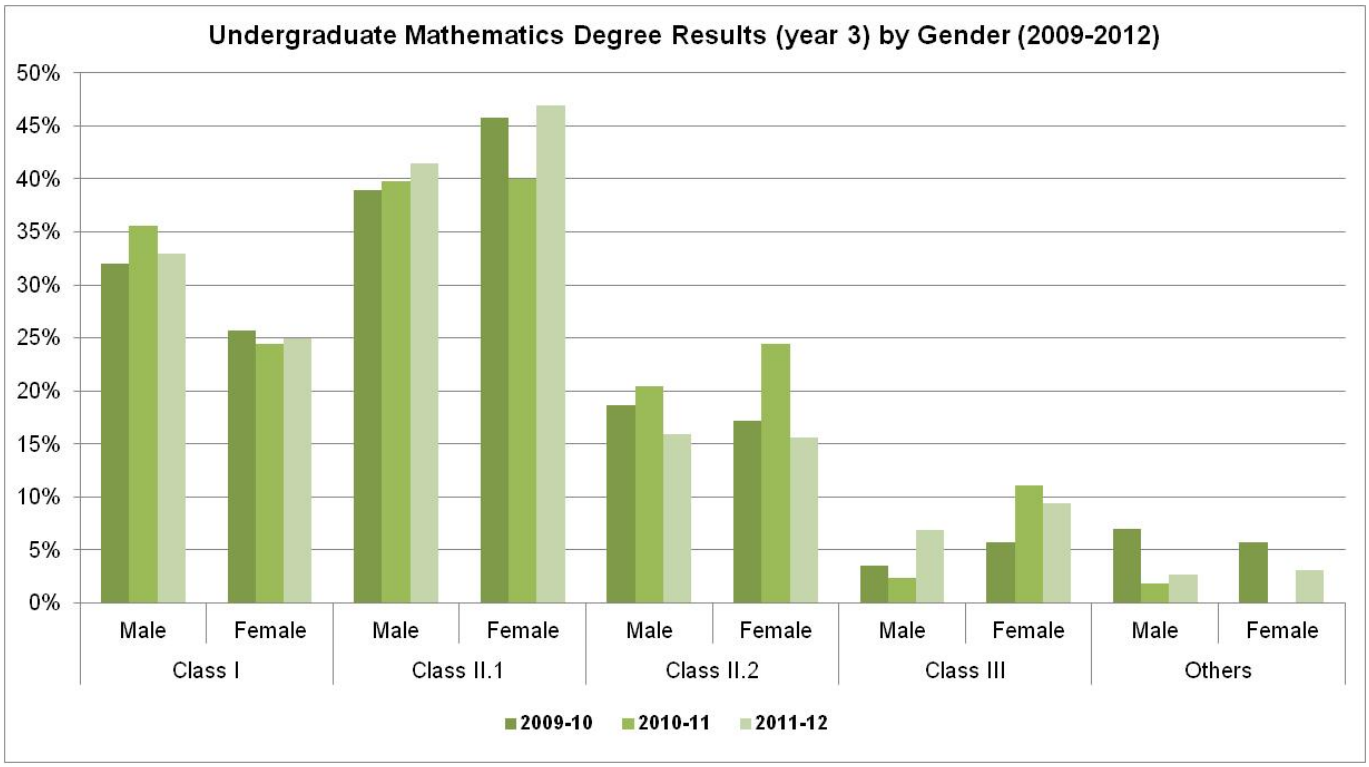


Figure 9 & 10 show that male students perform better in the undergraduate mathematical course, on average, than female students. In particular, male students achieve a higher percentage of first class results. However by year 3, the percentage of female students achieving a First has increased from 21% to 25%, whilst the corresponding male percentage has remained static at around 34%. The combined percentage of Firsts and Upper Seconds for female undergraduates similarly increases from 55% in year 1 to 63% in year 2 to 69% in year 3, whilst the corresponding figures for male undergraduates are 75%, 75% and 74% respectively. This is in part a reflection of improved average performance by female students over the course of the three-year degree. However, we need to assess whether other factors may contribute for example due to the apparently higher percentage of female students transferring either to other courses within Cambridge or leaving Cambridge.

Figure 10



Note: 'Others' includes DDH[2] , failed, and withdrawn.

ACTION 1.2: To investigate and address any imbalance in the percentage of women attaining Firsts and Upper Seconds in the undergraduate degree course by annual review of data and identification of experiences and issues via the student survey.

ACTION 1.3: To ensure that the undergraduate experience is positive for female students by promoting female role models and availability of support.

[2] DDH: Declared to have Deserved Honours, but not classed. This includes visiting and exchange students, and students who may have missed part of the examination because of illness, but have shown evidence of attainment at Honours level.

Taught Masters courses

Figure 11

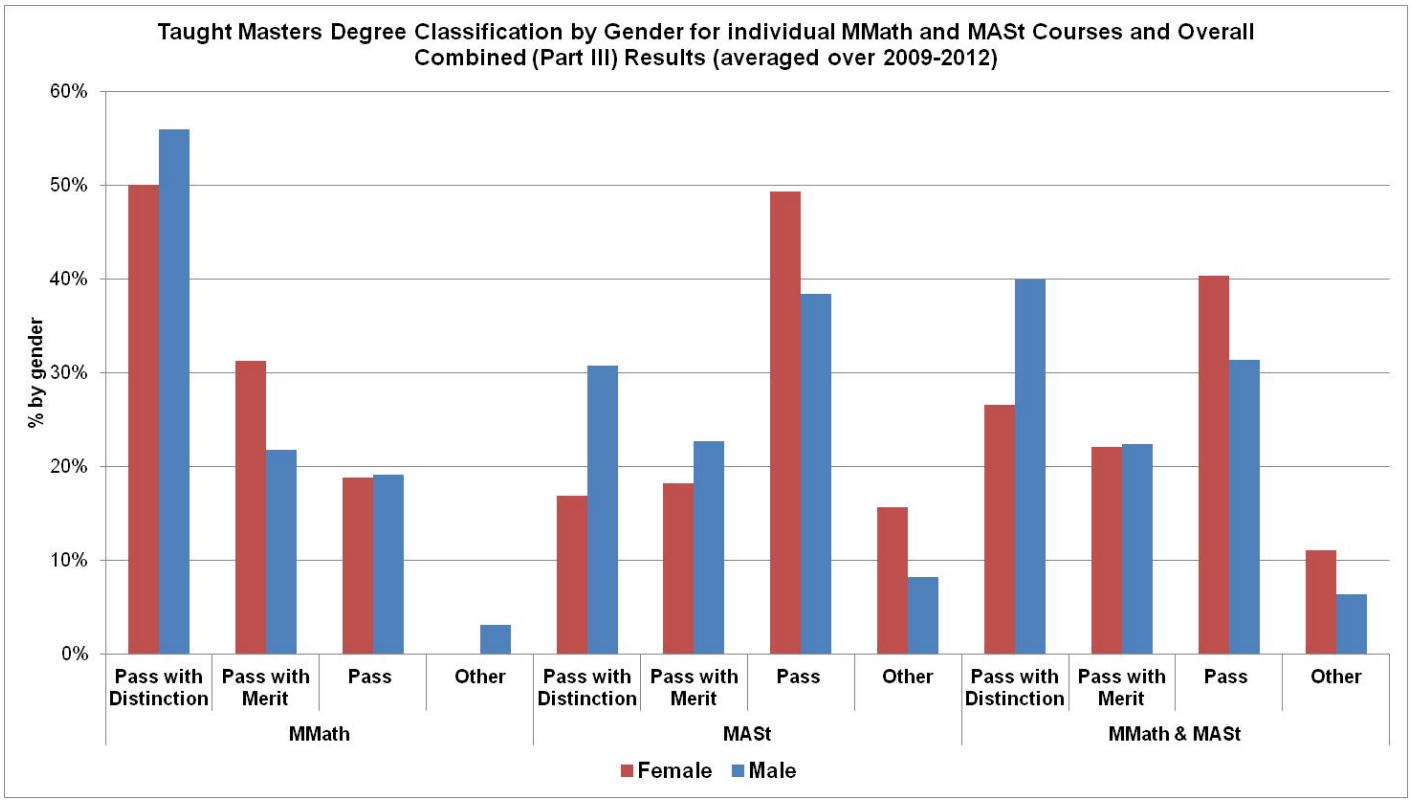


Figure 11 shows the average percentage by gender in each class averaged over three years (2009/11 to 2011/12). Year on year results show some variation.

We can see that the female MMath students, who have been undergraduates at Cambridge, perform as well, or better, than their male colleagues. Students in the MASt, who have come to Part III from other Universities, perform markedly worse, particularly the female students.

The very varied background of Mathematics courses in other Universities, with different course structures and contents can be an obstacle to good performance in this very demanding and fast-paced course. To address this, the Graduate Education Officers are increasingly organising 'catch-up' lectures in a few key subjects at the beginning of term, which should give incoming students some confidence in using important tools and techniques in key subjects. This is supplemented by weekly support meetings which carry on through the rest of the first term. This is a recent initiative, which started in 2010 with very few subjects and has been considerably expanded in 2013 (see additional information in support for female students).

We plan to gather information in a student survey about uptake of these support systems by women and whether they meet student needs.

ACTION 1.6: To support female students in taught Masters courses (Part III: both MMath and MASt) and monitor their attainment, with a particular focus on attainment for women on the MASt course

Staff data

(vii) Female:male ratio of academic staff and research staff – researcher, lecturer, senior lecturer, reader, professor (or equivalent). Comment on any differences in numbers between males and females and say what action is being taken to address any under-representation at particular grades/levels

The data presented in this section illustrates that the current gender balance among academic and research staff in the Faculty is a matter of considerable concern, which we are determined to address.

Table 8

Numbers of academic staff and research staff – by Department						
		2007-08	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Department of Applied Mathematics and Theoretical Physics	**Academic**	**44**	**43**	**47**	**48**	**49**
	Female	4	4	6	6	5
	Male	40	39	41	42	44
	Researcher	**60**	**60**	**56**	**53**	**58**
	Female	11	9	5	6	5
	Male	49	51	51	47	53
Department of Pure Mathematics and Mathematical Statistics	**Academic**	**42**	**41**	**39**	**41**	**38**
	Female	2	2	2	2	2
	Male	40	39	37	39	36
	Researcher	**16**	**21**	**24**	**24**	**23**
	Female	1	2	3	5	3
	Male	15	19	21	19	20

Note: The 'Academic' category includes all Lecturers, Senior Lecturers, Readers and Professors employed by the Faculty, as well as Graduate Education Officers in DPMMS. It does not include College Teaching Officers, employed by Colleges. The 'Researcher' category includes all Research Assistants, Post-doctoral Research Associates and Research Fellows employed by the Faculty. It does not include Research Fellows employed by Colleges.

As the numbers of female staff in each Department are low from this point onwards we present Faculty data only.

Figure 12 illustrates that the Faculty has a slightly higher proportion of lecturers, senior lecturers and readers compared to research staff but only one female Professor (2% compared to a UK average of 6% in 2011/12). The proportion of female academic staff in the Faculty has been on average 8% over the last 4 years compared to a UK Russell Group average of 16%, with 14% of female researchers compared to 22% in the Russell Group.

Figure 12

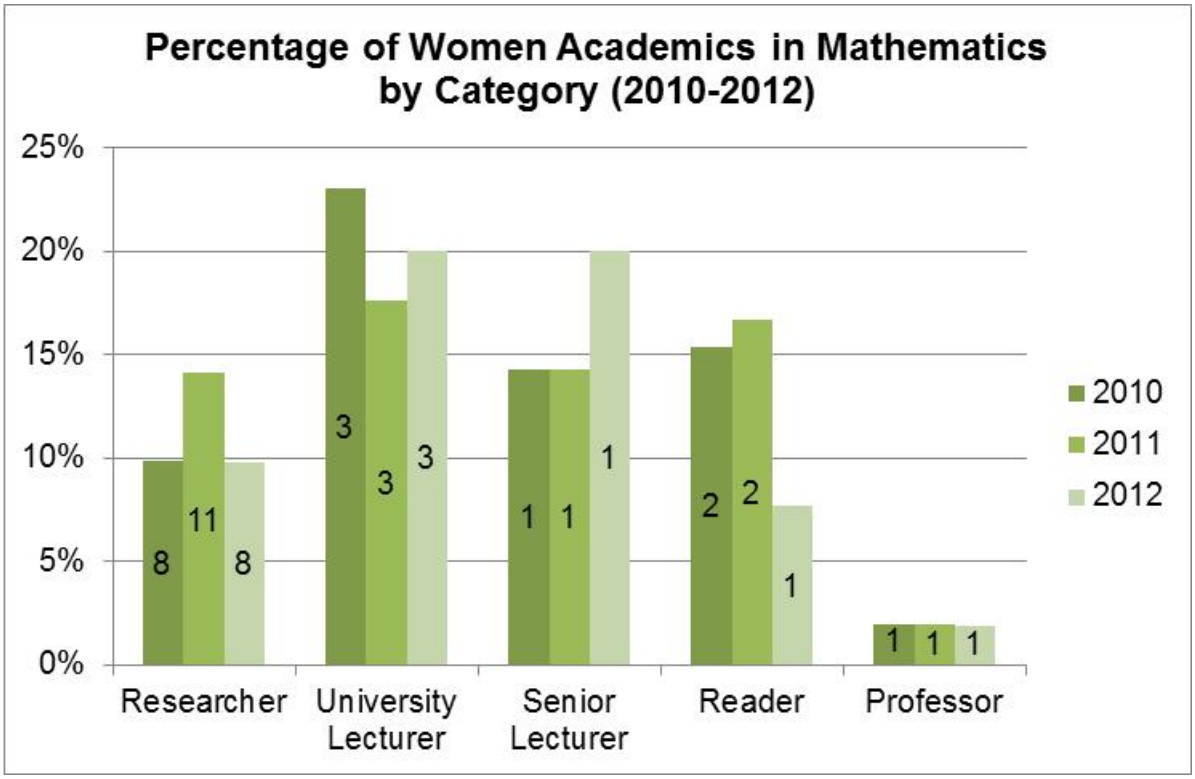


Table 9

	2008	2009	2010	2011	2012
Professor	**52**	**48**	**51**	**51**	**52**
Female	1	1	1	1	1
Male	51	47	50	50	51
Reader	**9**	**12**	**13**	**12**	**13**
Female	2	2	2	2	1
Male	7	10	11	10	12
Senior Lecturer	**5**	**6**	**7**	**7**	**5**
Female	1	1	1	1	1
Male	4	5	6	6	4
University Lecturer	**18**	**16**	**13**	**17**	**15**
Female	1	1	3	3	3
Male	17	15	10	14	12
Researcher	**78**	**81**	**81**	**78**	**82**
Female	12	11	8	11	8
Male	66	70	73	67	74

We have very low numbers of female academic staff, currently only 7 out of 87 positions (8%). There have been 16 new Academic appointments in the last five years, but only one female appointed.

Our application for Athena SWAN is prompted by our desire to attract more outstanding female applicants to our positions at all levels. Following the 2013 REF submission, there is likely to be a hiatus in appointments at Lectureship level, but similar positions will arise in the coming years and postdocs continue to arise on an annual basis.

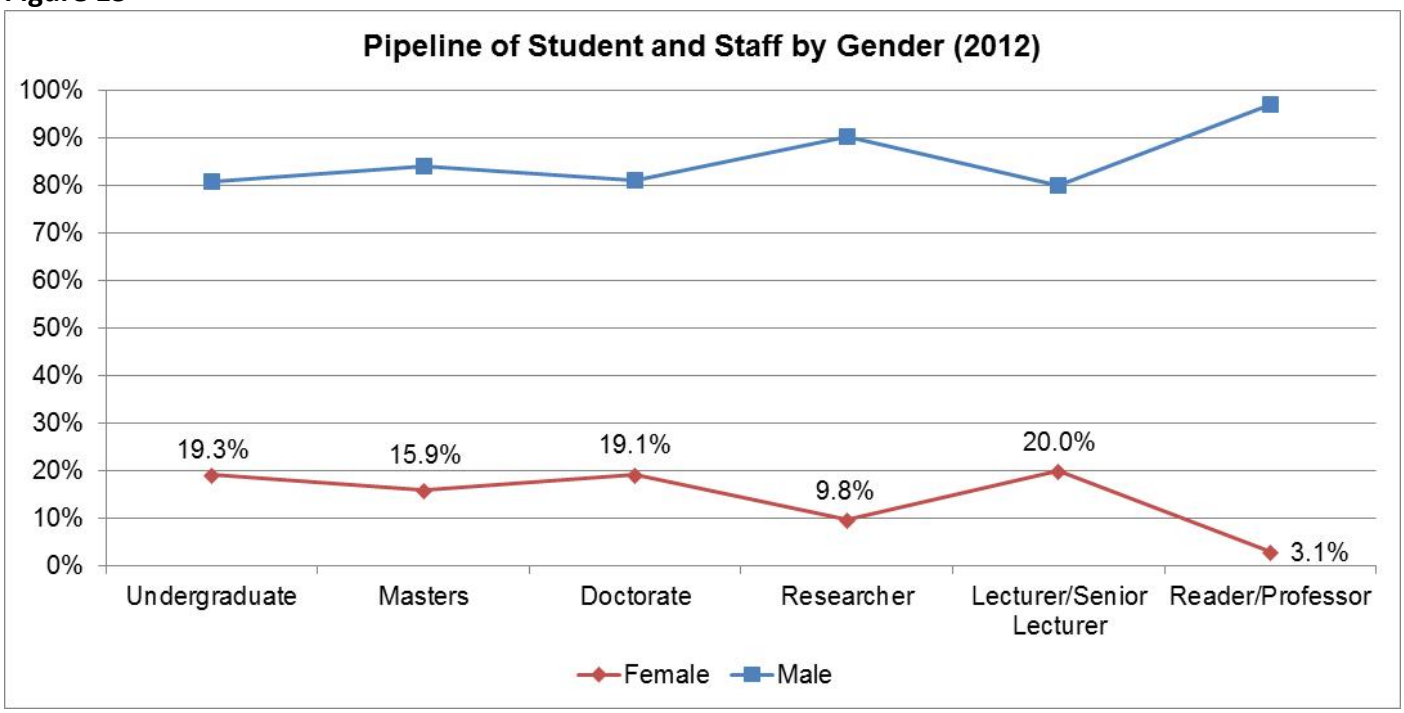
There are about 80 research staff employed in the Faculty, excluding College Research Fellows. These fall into two categories; Researchers employed on a research grants (the majority of whom are post-doctoral) and currently comprise 43 research associates and assistants (12% female); the remainder are Research Fellows who gained independent fellowships through open competition (~30 Fellows, 7% female). Currently, these include Royal Society URFs, EPSRC, STFC, NERC, AXA and Leverhulme Fellowships as well as EU Marie Curie Fellows. Cambridge is fortunate that there are bequests providing extra Fellowships e.g. the Herchel Smith Fellowships, and there are typically two or three of such Fellows in the Faculty at any one time.

ACTION 2.1: To increase the number of women applying for positions within the University for academic appointments and actively monitor the pipeline of academic appointments, to increase the proportion of female academics.

ACTION 2.2: To avoid gender bias in recruitment process

ACTION 2.3: To support the career development of women academic staff through structured review of progress and promotions support

Figure 13



The key points of action required to address issues in the pipeline of students and staff (Figure 13) are primarily to address the numbers of female students at each level but particularly those entering the pipeline at undergraduate level and the attrition between doctorate and researcher positions. The large percentage drop for female staff between the last two levels in this graph is a consequence of the very small number of female staff in these categories, where a difference of even one would make a large percentage difference.

(viii) Turnover by grade and gender – comment on any differences between men and women in turnover and say what is being done to address this. Where the number of staff leaving is small, comment on the reasons why particular individuals left.

Corrected turnover of staff is presented in the Tables below. This includes staff who left because they retired, but excludes staff who left because they reached the end of their contract.

		2008-9	2009-10	2010-11	2011-12	Average
Academics	**Female**	0.0%	0.0%	0.0%	1 (12.5%)	3%
	Male	3 (4.9%)	6 (6.3%)	6 (5.0%)	6 (6.1%)	5.6%
Researchers	**Female**	1 (8.3%)	3 (27.3%)	1 (12.5%)	3 (27.3%)	18.8%
	Male	12 (18.8%)	13 (18.3%)	24 (33.3%)	14 (19.7%)	22.5%

The turnover in academic staff is very low and mainly due to retirement. Given the low turnover of Academic staff (<5% across the University overall), the University has kept a compulsory retirement age of 67 for University Officers (including established Academics) to promote inter-generational fairness and enable career progression. The Employer Justified Retirement Age (EJRA) which was prompted by the abolition of the default retirement age, should help in redressing the gender imbalance by ensuring that a steady flow of positions become available.

For research staff the turnover is mainly due to the end of fixed term contracts. In some cases the researcher left before the end of their contract/Fellowship to take up a permanent academic post elsewhere. Taking Research Fellows together with PDRAs, during the last five years a total of 168 researchers left their Cambridge posts in one or other of the two Departments and their current employment is: 46 in long-term academic/research posts in UK, 55 in long-term academic/research posts outside UK, 18 in fixed-term academic/research posts in the UK, 38 in fixed term academic/research posts outside the UK, 11 outside academic/research. Examples of destinations for long-term posts include Oxford, Warwick, Edinburgh, Bristol (Professor), UCL (Professor), Durham (Professor), Harvard, Princeton, Caltech, UCLA, MIT, ETH (Professor), Singapore.

ACTION 2.4: To support the personal and professional development of all research staff, including non-tenured and College teaching staff though improved induction, mentoring, monitoring of career destinations and review of experiences via the staff survey.

Word count 2539 (539 words of additional 1000 word allowance)

4. Supporting and advancing women's careers: maximum 5000 words

Key career transition points

a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

(i) **Job application and success rates by gender and grade** – *comment on any differences in recruitment between men and women at any level and say what action is being taken to address this.*

Table 11

	Applicants		Shortlisted		Appointed	
Post title	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Lecturer	38	6	2	2	0	1
Lecturer	70	7	7	1	1	0
Lecturer	11	4	1	0	1	0
Lecturer	14	2	4	1	1	0
2 X Lecturer	117	13	9	2	2	0
Senior Lecturer	37	5	6	0	1	0
3 YEAR TOTAL	287	37 (11.6%)	29	6 (16.7%)	6	1 (14.3%)

Table 11 shows the numbers of applications, as well as shortlisted and appointed candidates for 7 Academic lectureships advertised over the last 3 years. The number of female applicants for academic posts is very low, however, they are appointed roughly in line with the percentage of applicants. In order to address the gender imbalance in the Faculty it is essential to encourage more female candidates to apply.

ACTION 2.1: To increase the number of women applying for positions within the University for academic appointments and actively monitor the pipeline for academic positions to increase the proportion of female academics.

Currently we do not collect figures to allow us to compare the gender profile of applicants for research positions. This will be addressed with the introduction of a University web-based recruitment system in November 2013 which will permit monitoring of recruitment data for all posts on an annual basis.

(ii) Applications for promotion and success rates by gender and grade – comment on whether these differ for men and women and if they do explain what action may be taken. Where the number of women is small applicants may comment on specific examples of where women have been through the promotion process. Explain how potential candidates are identified.

The annual University-wide Senior Academic Promotions (SAP) process is the method by which academic posts (Lecturers and above) are promoted. All eligible candidates are sent the application forms and information, and Heads of Departments or senior colleagues are available to discuss promotion applications with potential candidates. Junior academic staff seeking their first promotion can ask their mentor. Applications are reviewed by a Faculty Promotions Committee and then by the School of Physical Sciences Promotion Committee.

Heads of Departments will proactively encourage suitable candidates for promotion and in particular women.

Table 12 illustrates the Senior Academic Promotions data for the Faculty between 2006 and 2012 with low application rates for female staff.

Table 12

Category	% of female applicants	% women successful	% of male applicants	% men successful
Professor	2 (11.8%)	0.0%	15 (88.2%)	7 (46.7%)
Reader	2 (9.1%)	1 (50.0%)	20 (90.9%)	11 (55.0%)
Senior Lecturer	0 (0.0%)	0.0%	5 (100.0%)	2 (40.0%)

To encourage more female academics to apply for promotion, a SAP CV Scheme[3] has been introduced by the University. This provides the opportunity for primarily, but not exclusively, female Lecturers, Senior Lecturers and Readers to have their CV reviewed by a senior academic with experience of the SAP process. The Scheme is co-ordinated and evaluated by the University's Equality and Diversity Section. In addition, in 2013 SAP open fora were hosted by the Pro-Vice-Chancellor for Institutional Affairs which aimed to improve the transparency of the SAP procedure, dispel some common misconceptions and provide the opportunity for question and answers. These sessions were attended by 128 staff including a number from the Faculty.

ACTION 2.3: To support the career development of women academic staff including promotion of the University SAP CV Scheme and open fora

3 www.admin.cam.ac.uk/offices/hr/equality/wiseti/cv/

b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

(i) Recruitment of staff – *comment on how the department's recruitment processes ensure that female candidates are attracted to apply, and how the department ensures its short listing, selection processes and criteria comply with the university's equal opportunities policies*

The Department's recruitment processes adhere to the University's policy of equality of opportunity for all. Substantial guidance is provided centrally on how to recruit effectively and in a way that complies with University policy and procedures, employment law and equal opportunities legislation[4,5].

Job descriptions and person specifications are written carefully to avoid unconscious discrimination, and the further particulars provide prospective applicants with information about the benefits of working at the University that are likely to be important to women, such as flexible working options, generous annual leave, maternity/paternity leave, and family-friendly policies, including the salary sacrifice scheme for childcare. For academic appointments the Faculty have recently decided to ask every member of interview committees to take the University E&D online training and the Faculty's status as a supporter of the LMS good practice Scheme will be highlighted.

ACTION 2.1: To increase the number of women applying for positions within the Faculty

ACTION 2.2: To avoid gender bias in the appointments process

ACTION 3.2: To raise awareness of Athena SWAN and LMS Good Practice Scheme

(ii) Support for staff at key career transition points – having identified *key areas of attrition of female staff in the department, comment on any interventions, programmes and activities that support women at the crucial stages, such as personal development training, opportunities for networking, mentoring programmes and leadership training. Identify which have been found to work best at the different career stages.*

Academic staff

Appointments of all junior academic and research staff are subject to satisfactory completion of a period of probation. New staff are assigned a mentor with the responsibility to provide advice and support. For academic staff, the mentor is a senior member of staff in a related research area, for postdocs this is likely to be the PI. The mentoring through probationary process will be reviewed more formally in the future to ensure staff are supported.

The University has a number of programmes in place to support staff with career planning which are, in the main, offered by Personal and Professional Development (PPD). These include training in

4 www.admin.cam.ac.uk/cam-only/offices/hr/recruitment/
5 www.admin.cam.ac.uk/cam-only/offices/hr/recruitment/equality/

interview techniques, communication and presentation skills, lecturing performance, supervision of students and personal development[6,7]. At present these programmes are not widely accessed in the Faculty. We plan to publicise them widely and routinely, and encourage women to make use of these opportunities.

ACTION 2.3: To support the career development of women academic staff

Research staff

The University's Careers Service is available to all staff and students, and offers specialist careers advice for contract research staff and post-docs with a dedicated advisor for Physical Sciences and Technology researchers.

In 2013 the University appointed a new Director of Postdoctoral Affairs and this new office aims to champion the cause of post-docs at Cambridge and work with a range of offices and groups to develop a coordinated network of support services alongside the Postdocs of Cambridge (PdOC) Society offers guidance on opportunities within and outside Cambridge.[8]

PPD also runs a series of courses specifically for research staff including training in teaching and writing, managing research projects, working effectively and strategically, networking, public engagement and developing personal strengths in communicating and working with others.[9]

We plan to raise awareness of the training available and encourage research staff to participate.

ACTION 2.4: To support the personal and professional development of all Research staff, including non-tenured and College teaching staff

PhD students

Each Department within the Faculty has a designated person who plays a key role in promoting the personal and professional development of PhD students In DPMMS this is the Graduate Education Officer, Dr Julia Goedecke. In DAMTP this is the Research Student Advisor, Dr Helen Mason, who also has responsibility for supporting postdocs and is supported in her role by the Director of Graduate Education, Dr Jonathan Evans.

All research students are encouraged to attend a variety of opportunities for research, skills and career development (e.g. training for supervisions teaching of undergraduate students, training for Project Management, the STIMULUS project which places university students in local primary and secondary schools to help with STEM subjects, the 'Enterprise Tuesday' series, aimed to inspire and help them pursue entrepreneurial ambitions and develop their careers, the 'Rising Stars' Public Engagement Training, Springboard, and many more).

Graduate students, particularly in DAMTP, are regularly circulated information about workshops and programmes run by PPD, and encouraged to attend.

ACTION 1.8: To support female PhD students

6 www.training.cam.ac.uk/cppd/theme/women?providerId=36612
7 www.admin.cam.ac.uk/offices/hr/ppd/
8 http://groups.ds.cam.ac.uk/pdoc/cpd.shtml
9 www.admin.cam.ac.uk/offices/hr/ppd/information/research/

All women

The University's Women in Science, Engineering and Technology Initiative (WiSETI)[10] supports women from undergraduate to Professorial level in Science, Technology, Engineering and Mathematics at Cambridge. WiSETI organises activities such as an annual WiSETI lecture 'Cake and Careers' seminars for postdoctoral and PhD level women scientists.

The Women's Staff Network (WSN)[11] is open to all women across the University and organises events, workshops and other activities to support the personal and professional development of women and raise awareness of gender equality issues.

A number of women within the Department are also members of Cambridge AWiSE[12] (Association for Women in Science and Engineering), a regional network for in both industry and academia and also for women returning after a career break. Dr. Carola-Bibiane Schönlieb, a lecturer in Applied and Computational Mathematics in DAMTP, was a guest speaker to CamAWISE in 2012.

10 www.admin.cam.ac.uk/offices/hr/equality/wiseti/
11 www.admin.cam.ac.uk/offices/hr/equality/networks/women/
12 http://camawise.org.uk/

Career development

(a) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

(i) Promotion and career development – *comment on the appraisal and career development process, and promotion criteria and whether these take into consideration responsibilities for teaching, research, administration, pastoral work and outreach work; is quality of work emphasised over quantity of work?*

The University has a Staff Review and Development programme[13] in place which aims to enhance work effectiveness and facilitate career development. This is based on a centrally-approved framework, but adapted to the needs of individual institutions and departments.

The University has received the European Commission's 'HR Excellence in Research' badge in recognition of its work fostering career development for researchers. As part of this process the University launched its Employment and Career Management Scheme (ECMS) in April 2011, which sets out a clear framework for the induction, probation and appraisal of contract research staff.[14]

The Faculty within its action plan is committed to introducing more structured progress review and development for all academic and research staff, with particular attention to identifying, supporting and advising staff suitable for promotion. In addition, all academic staff will be encouraged to have meetings at suitable intervals (usually every 2 years) with a senior academic of their choice, to discuss aspirations and aims.

ACTION 2.3: To support the career development of women academic staff

ACTION 2.4: To support the personal and professional development of all Research staff, including non-tenured and College teaching staff

(ii) Induction and training – *describe the support provided to new staff at all levels, as well as details of any gender equality training. To what extent are good employment practices in the institution, such as opportunities for networking, the flexible working policy, and professional and personal development opportunities promoted to staff from the outset?*

The University provides a two-stage induction to help new staff orientate themselves and understanding how the University works. This takes the form of an online induction programme, and a *Welcome to Cambridge* networking event, held twice a year. Within the Faculty, academic staff induction is carried out by the Head of Department for academic issues and the Departmental Secretary for administrative issues. Researchers are given an induction by the Departmental Secretary or a senior member of the HR team as well as their PI and all staff are provided with an Induction Pack.

Junior Faculty members are assigned a mentor to support integration into the working environment and to promote opportunities for personal and professional development. Teaching

13 http://www.admin.cam.ac.uk/offices/hr/policy/appraisal/

14 www.cam.ac.uk/research-staff/employment-and-career-management

and examining duties are carefully considered and there is a well-established scheme of peer review of lectures.

The Faculty also provides informal networking opportunities which include lunches for women, dedicated women's advisers and a bullying and harassment officer.

The University's Equality and Diversity (E&D) team ensures the University complies with diversity legislation, and also provides online and face-to-face E&D training, and a wealth of welfare support for all employees[15]. The University launched an updated E&D Essential online training module in October 2013 and all new staff will be encouraged to complete the training as part of their induction[16]. In addition, all members of interview panels and appointment committees will also be required to complete the online E&D training.

ACTION 2.3: To support the career development of women academic staff

ACTION 2.4: To support the personal and professional development of all Research staff, including non-tenured and College teaching staff

> **(iii) Support for female students** – *describe the support (formal and informal) provided for female students to enable them to make the transition to a sustainable academic career, particularly from postgraduate to researcher, such as mentoring, seminars and pastoral support and the right to request a female personal tutor. Comment on whether these activities are run by female staff and how this work is formally recognised by the department.*

Undergraduates

All undergraduates benefit from academic guidance and teaching support from their College Director of Studies, and from pastoral support and general guidance from their College Tutor. Colleges differ in their internal policies and structures, but all have specific support of various kinds for female students (often a Tutor with special remit), and a Women's Officer within the College Student Union. All Colleges offer female students the opportunity to ask for a female personal Tutor.

The Faculty provides an induction meeting for all first year undergraduates on the day before lectures start, and gives all of them a booklet '*Study Skills in Mathematics*', prepared in-house, designed to help them acquire the skills needed to make the best of the Cambridge mathematics course. This booklet takes particular care to be encouraging, especially to those students who may be less confident, as well as providing practical information. Students in DAMTP also benefit from the availability of two Women advisers, who can be approached for advice.

The Faculty supports the students' Emmy Noether Society by publicising its events, being involved on their committee (Dr Vicky Neale, Senior Teaching Associate in DPMMS is their Senior Treasurer), and by providing free venues (and refreshments) for some of their events.

15 www.admin.cam.ac.uk/offices/hr/equality/

16 www.admin.cam.ac.uk/offices/hr/equality/training/online/

The Faculty supports a new venture for undergraduate students: the 'Maths Café', held in the Centre for Mathematical Sciences every Saturday afternoon, to encourage peer support amongst the students, and give them the opportunity to ask PhD students who volunteer to help with this about their experience of studying and doing research in Mathematics.

These are some of recent Faculty initiatives to address an atmosphere felt to be unattractive particularly to female students, in an effort to create a more congenial, supportive environment.

ACTION 1.3: To ensure that the undergraduate experience is positive for female students by promoting female role models and availability of support.

Taught Masters students

Part III students (whether MMath or MASt) have a 'Departmental Contact' with whom they have an interview twice a year in order to check on progress and discuss plans. The Departmental Contact is also available for a chat at other times, for example to discuss progression to PhD. The two Departmental Part III Course Directors are also available at any time for advice and to discuss any urgent matters. Students in Part III also benefit from academic guidance from their College Director of Studies.

The Faculty organises a series of talks for Part III students, every Wednesday throughout the first term and some Wednesdays in Term 2; these are especially aimed at careers guidance, and to help students who wish to continue to a PhD. Each research group organises informal meetings with students to encourage them to do a PhD. A series of presentations from current students and staff members are given on the wide range of available topics, and what doing a PhD in practice involves. Other topics include "How to prepare a talk" and "How to read a paper". These talks are also sometimes supplemented by presentations from companies who describe how mathematics is used outside academia.

To further support the students, the Faculty run several activities, most of which are organised by the Graduate Education Officers and many PhD student volunteers. They are:

- Part III Café, with help from current PhD students
- Start-of-term 'catch-up' lectures to address gaps in different academic backgrounds
- Study Groups for the Lecture Courses
- Part III Seminar series, which provides the opportunity to give talks in a relaxed and informal setting.

Many of these activities are aimed at taking the focus away from the competitiveness of Part III, and establishing a more mutually helpful and collaborative atmosphere, which we believe should on average be more helpful to women.

Postgraduates

All graduates benefit from pastoral support and general guidance from their College Tutor, in the same way as undergraduates. Additional academic guidance from within the Faculty is provided in different ways depending on their course of studies.

Students on the MPhil in Computational Biology receive academic support from the Course Director, and are particularly encouraged to provide feedback: they are asked, a short time into the first term, to elect a fellow student as a course representative, to provide feedback on any issues regarding the course, such as coursework and teaching.

Every Wednesday during the first two terms a 'Group Tea' is arranged after the Seminar Series, where all students can meet and chat with members of staff. The Seminar Series provides students with an opportunity to meet local researchers who may have research positions or jobs to be filled, and also the chance of developing useful transferable skills (as students are asked to help run the seminar programme). Help with career development is provided especially through the internship component of their course, which offers the opportunity to make useful contacts as well as to do original work.

PhD students have either a personal Mentor (DPMMS) or Advisor (DAMTP) with whom they can talk about any issue concerning their work in the Faculty, their career, and other matters they wish. In addition, Dr Julia Goedecke as Graduate Education Officer in DPMMS and Dr Helen Mason as Research Student Advisor in DAMTP are both available to students for advice and support. PhD students in DPMMS are encouraged to choose Postdocs in a similar area as mentors.

ACTION 1.3: To ensure that the undergraduate experience is positive for female students by promoting female role models and availability of support.

ACTION 1.6: To support female students in taught Masters Courses (Part III and MPhil) and monitor their attainment.

ACTION 1.8: To support female PhD students through monitoring of take-up of the existing initiatives and development opportunities, expanding the mentoring scheme for new PhDs and by reviewing experiences captured via the student survey.

Organisation and culture

(a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

(i) Male and female representation on committees – *provide a breakdown by committee and explain any differences between male and female representation. Explain how potential members are identified.*

Tables 13 & 14 below illustrate the gender balance of key committees over the last three years and the current memberships of all Faculty committees.

Table 13

Committee	**2010-11**		**2011-12**		**1012-13**	
	M	**F**	**M**	**F**	**M**	**F**
Faculty Board	20	1 (5%)	19	3 (14%)	17	5 (19%)
Degree Committee	9	0	6	0	6	0
Appointments Committee	4	2 (33%)	4	2 (33%)	4	2 (33%)
Promotions Committee	9	1 (10%)	9	1 (10%)	9	1 (10%)

Table 14: Current Faculty Committees:

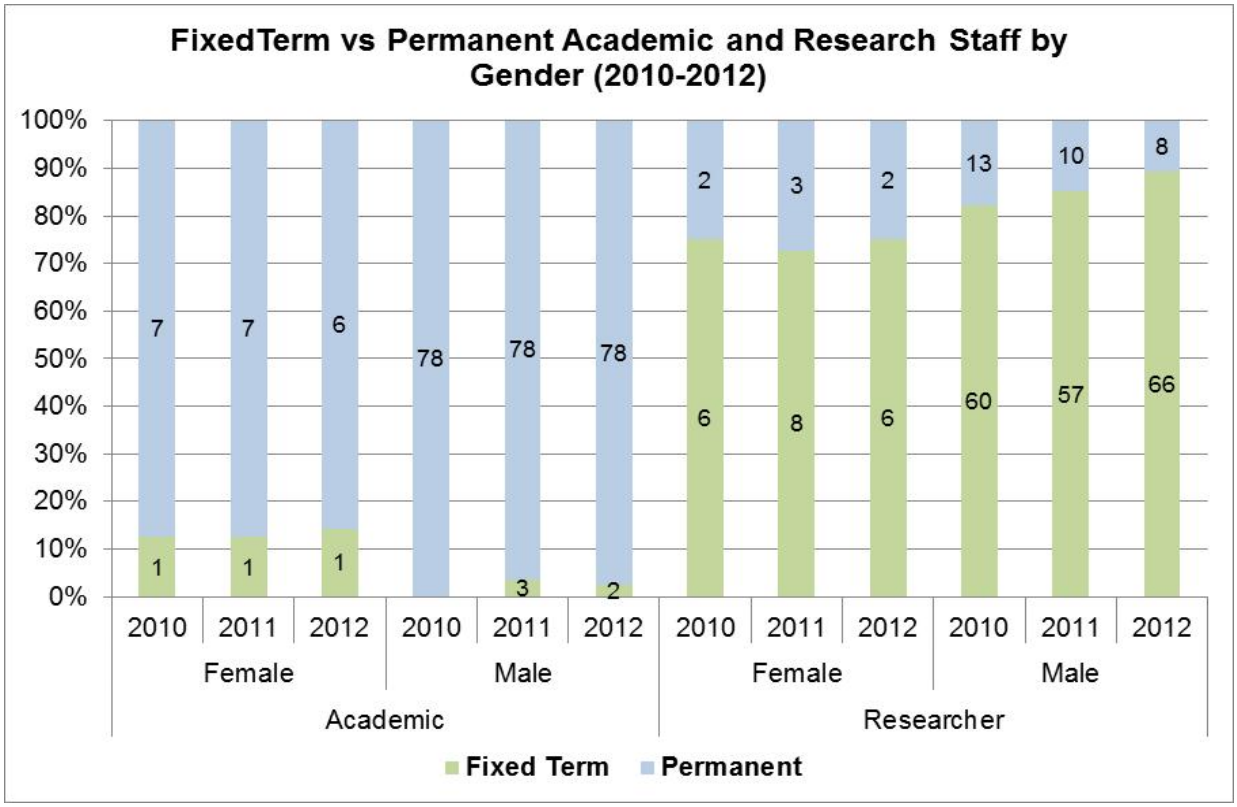
Committee	**Male**	**Female**	**% Female**
Syllabus (NST)	7	0	0%
Teaching (NST)	3	1	25%
Curriculum	7	1	12.5%
Part III	6	5	45%
Teaching	8	2	20%

In general, membership of Committees is constrained by positions held within the Faculty (e.g. Head of Department) leading to male dominated committees however the Faculty does consider gender balance and there is at least one and preferably two women on most committees. Heads of Department are careful not to overburden junior Academic staff with administrative duties. In order to achieve a better gender balance on committees the Faculty invites female (as well as male) College staff to participate. There is still however committee overload for the limited number of female Academic and College staff within the Faculty.

ACTION 2.7: To review workload of Academic staff

(ii) **Female:male ratio of academic and research staff on fixed-term contracts and open-ended (permanent) contracts** – comment on any differences between male and female staff *representation on fixed-term contracts and say what is being done to address them.*

Figure 14



Most research staff in the Faculty are employed on fixed-term contracts, whilst the reverse is true of academic staff (Figure 14). There is no significant difference between male and female research staff on fixed term contracts. All new lecturers have an initial probationary period of five years, after which they become permanent. Research staff on fixed-term contracts are encouraged to develop their career either by applying for internal posts or by moving to research posts elsewhere; they are regularly circulated with information about funding opportunities and openings for permanent positions. We intend to ensure more structured and robust delivery of advice on career development to all staff.

ACTION 2.4: To support the personal and professional development of all Research staff.

(b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

(i) **Representation on decision-making committees** – *comment on evidence of gender equality in the mechanism for selecting representatives. What evidence is there that women are encouraged to sit on a range of influential committees inside and outside the department? How is the issue of 'committee overload' addressed where there are small numbers of female staff?*

Both male and female members of the Faculty are encouraged to serve on School and University committees. Professor Anne Davis sits on the School Promotions Committee and Equality and Diversity Forum as well as being a member of the University's Senior Gender Equality Network (SGEN). The School of Physical Sciences has set up an Equality and Diversity Forum on which the two Mathematics Departments have senior members of academic staff as representatives.

(ii) **Workload model** – *describe the systems in place to ensure that workload allocations, including pastoral and administrative responsibilities (including the responsibility for work on women and science) are taken into account at appraisal and in promotion criteria. Comment on the rotation of responsibilities e.g. responsibilities with a heavy workload and those that are seen as good for an individual's career.*

In the Faculty there are guidelines for teaching allocation, and in DAMTP there is a points-based system for examining. Undergraduate courses are rotated every few years and most members of the academic staff teach one undergraduate and one graduate course per year. There is no evidence to suggest any differences in teaching or examining workload between male and female staff.

We currently have no method of assessing other contributions. However we note that given the small number of female staff, in particular at senior level, the workload is unlikely to be evenly distributed.

Current University practice is that research, teaching and general contribution are all taken into account in the Senior Academic Promotions process.

ACTION 2.7: To review workload of Academic staff

(iii) **Timing of departmental meetings and social gatherings** – *provide evidence of consideration for those with family responsibilities, for example what the department considers to be core hours and whether there is a more flexible system in place*.

The Departmental Staff meetings take place between 9.30 and 4.30. Other Faculty committees tend to meet in the early afternoon. Similarly individual research group meetings tend to meet either at coffee time in the morning or early afternoon. Whilst the Departments do not have formal working hours, in practice we tend to organise meetings and events in the middle of the day. Similarly, most seminars and journal clubs are held over lunch or early afternoon. There are a couple of seminar series which start at 4pm.

We have a Mathematical Colloquium a couple of times a term and organise cheese and wine afterwards. Both Departments in the Faculty hold Christmas parties, where families and children are included, and parties for retiring members of staff.

ACTION 3.3: To support family-friendly practices

(iv) **Culture** – *demonstrate how the department is female-friendly and inclusive. 'Culture' refers to the language, behaviours and other informal interactions that characterise the atmosphere of the department, and includes all staff and students.*

The Faculty provides a number of informal networking opportunities for women staff, both academic and research; these include termly lunches for women from across the Faculty. In addition, the Emmy Noether Society invites female academic and research staff to their informal events, often to give talks, as part of their aim to promote women studying mathematical sciences. Since the early 90's the Faculty has had two Women's Advisers in DAMTP, whose role had been flexible and not rigidly defined. We plan to widen the role of Women's Advisers to the whole Faculty. Their activities will be coordinated and more widely publicised, and they will have a specific role in furthering some of the actions identified in this submission.

The Faculty recognises the need to improve the atmosphere for female students and at all levels. The women's lunches and other planned future activities are particularly aimed at providing an inclusive and relaxed environment in which women can thrive.

Aside from organised meetings, the Faculty has outstanding facilities, with plenty of common rooms where staff and students regularly meet during coffee, lunch and tea breaks. There is also a central core area which provides a friendly space where students study and interact with staff members.

However the Faculty recognises that it could do more to promote an open, family-friendly inclusive culture.

In the action plan the Faculty outlines a series of related actions which includes:

- Reviewing induction for all new staff
- Ensuring that contributions by women are visibly valued, e.g. include photos of female lecturers on the website, include 'portraits' of successful female mathematicians
- Ensuring that seminars organisers for seminar series, and particularly for key annual lectures, always look at a broad pool of potential speakers, with the aim of increasing female representation
- Publicising the recently acquired status of Supporter of the LMS Good Practice Scheme on the Faculty website, and the current application for an Athena SWAN award.
- Raising awareness of unconscious bias
- Surveying all staff and students in the Faculty to collect information on their experiences and to identify gender specific issues.

- Creating a 'Women in Mathematics' section of the website, as a focus for resources and initiatives.
- Liaising with 'women@cl' in the Computer Lab, to explore setting up a similar group for women in Mathematics.

ACTION 3.1: To create an open and inclusive environment

ACTION 3.2: To raise awareness of Athena SWAN and LMS Good Practice Scheme

ACTION 3.3: To support family-friendly practices

ACTION 3.4: To facilitate communication, networks and peer support

(v) Outreach activities – *comment on the level of participation by female and male staff in outreach activities with schools and colleges and other centres. Describe who the programmes are aimed at, and how this activity is formally recognised as part of the workload model and in appraisal and promotion processes.*

The Faculty runs an extensive annual programme of outreach activities[17]. The 'Cambridge Maths Circle' runs a number of events each year, usually on Saturday mornings, staffed by volunteer Faculty of Mathematics students and staff. The free events are open to all and are an opportunity for children and young people to explore hands-on mathematical activities. For more information please see the Cambridge Maths Circle webpage.

The Millennium Mathematics Project (MMP) is a mathematics education and outreach initiative for ages 3 to 19 and the general public. The MMP is a collaboration between the Faculties of Mathematics and Education at the University of Cambridge, and is active nationally and internationally. The MMP's focus is on increasing mathematical understanding, confidence and enjoyment, enriching everyone's experience of mathematics, and promoting creative and imaginative approaches to mathematics.

The Cambridge Science Festival Mathematics Open Day takes place annually as part of the Cambridge Science Festival, and the Faculty invests extra effort every two years to make the event particularly special.

The Sutton Trust Summer School is a free five-day residential course in Mathematics for Year 12 (or equivalent) students from UK state-maintained schools. It helps students gain an insight into what it is like to live and study as a first-year undergraduate student at Cambridge, and includes lectures, workshops and supervisions.

[17] www.maths.cam.ac.uk/about/community/

The STEP Easter School is a four-day intensive course for students who have received an offer to read mathematics in Cambridge but whose (state) schools are unable to provide much help with STEP preparation.

The STEP summer School is a new initiative for aspiring mathematicians preparing to take the STEP exams. It is part of an early intervention strategy which includes a new section of the NRICH website specifically geared to self-study preparation for STEP.

Both STEP initiatives target home students from diverse backgrounds who are less likely to apply to Cambridge, including women. The organisers aim to achieve a measure of gender balance when choosing participants.

We hope that, by encouraging and supporting students to start STEP preparation early, this programme will attract more women and have an impact on their chances of success.

The Cambridge Mathematics Education Project (CMEP) is a new initiative which aims to support and enhance post-16 mathematics education. Funded by a grant from the DfE, the project is led by the University of Cambridge Mathematics Faculty and draws on the NRICH mathematics project's experience and expertise in working with schools. Currently in the development phase, the project will provide innovative resources to help support and inspire teachers and students of sixth-form mathematics. The aim is to help to make sixth-form mathematics a rich, coherent and stimulating experience for students and teachers, and improve women participation.

Most of these outreach activities attract a generally high number of female participants. Many of the staff involved inboth organising and delivering them are also female, thus providing good role models and encouraging more female students.

ACTION 1.1: To encourage undergraduate applications by delivering an extensive programme of outreach opportunities annually

Flexibility and managing career breaks

(a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

(i) **Maternity return rate –** ***comment on whether maternity return rate in the department has improved or deteriorated and any plans for further improvement. If the department is unable to provide a maternity return rate, please explain why.***

The University has a comprehensive set of policies covering maternity, paternity and adoption leave. Not only do they comply with the letter and the spirit of the law, in many cases they are significantly more generous. For example, statutory maternity pay mandated by law (Nov 2013) is only six weeks at 90% of average weekly earnings followed by up to 33 weeks of at most 136.78 pounds. By contrast, the University provides for up to 18 weeks at 90% of average weekly earnings, followed by the remaining 21 weeks at a lower rate. Staff may choose to request a graduated return from maternity or adoption leave, beginning at a minimum of 20% of full-time, with the expectation that they will raise their hours over the following twelve months to return to full-time by a year after their return date.

Table 15

	2006-2012	**Maternity return rate**
Academic	**0**	**N/A**
Researcher	**5**	**80%**
Returned	4	
Left	1	
Academic Related	**6**	**66.7%**
Returned	4	
Left	2	
Assistant	**8**	**42.9%**
N/A	1	
Returned	3	
Left	4	

Given the small number of women academics, no Academic staff have taken Maternity leave in the last 7 years, while the return rate for research staff is 80% (with only one researcher failing to return). The return rates for Academic-related and assistant staff are lower.

The University also enables staff to request a career break of up to two years after the end of maternity leave, where there are exceptional family responsibilities, to care for young children, to provide full-time care to an elderly dependant relative, and for other unforeseen domestic situations.

During a woman's maternity leave, she may, with the agreement of her Head of Department, carry out up to 10 days' work during her maternity leave without it affecting her statutory maternity pay. These optional paid 'Keeping in Touch' days help keep women up-to-date with colleagues and

developments within the department and may ease the transition of returning to work. www.admin.cam.ac.uk/offices/hr/policy/maternity/policy.html

ACTION 2.5: To support staff taking family leave (maternity, paternity, parental, adoption leave)

(ii) **Paternity, adoption and parental leave uptake** – *comment on the uptake of paternity leave by grade and parental and adoption leave by gender and grade. Has this improved or deteriorated and what plans are there to improve further.*

Table 16

Paternity Leave	**10**
Academic	2
Academic Related	2
Assistant	1
Researcher	5

Table 16 shows that the number of staff taking paternity leave has been low over the last 7 years. There have been no requests for parental or adoption leave.

All staff who are new fathers are entitled to two weeks paternity leave, and up to twenty-six weeks 'additional paternity leave'. If the mother returns to work before taking 39 weeks maternity leave, this is paid at the same level as statutory maternity pay. Otherwise, this additional paternity leave is unpaid. Adoption leave is also available to fathers if they are the prime carer.

Leave entitlements will be more widely promoted across the Faculty.

(iii) Numbers of applications and success rates for flexible working by gender and grade – *comment on any disparities. Where the number of women in the department is small applicants may wish to comment on specific examples.*

We have not been able to collate the data on formal requests for flexible working although these are now recorded by University HR. These will be reviewed on an annual basis.

(b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

(i) Flexible working – *comment on the numbers of staff working flexibly and their grades and gender, whether there is a formal or informal system, the support and training provided for managers in promoting and managing flexible working arrangements, and how the department raises awareness of the options available.*

University staff may request flexible working hours to fit in with care arrangements (for children or adults in need of care who live in the same address as the employee). Staff may also request to work from home, where this is appropriate and after health, safety and security checks have been carried out. Flexible working hours are common practice in the Faculty. The option to do part-time work is normally not advertised nor promoted, however the procedure is relatively straightforward

and we are not aware of any (justified) requests made by individuals that have been turned down. Specific questions on flexible working hours and part-time work will be asked in the staff survey.

One issue of concern for researchers on fixed term contracts is that many external grants (e.g. from UK research Councils or the EU) have strict fixed terms and salaries cannot be extended. Flexible opportunities within grant funding should be promoted and supported where available. For example all Wellcome Trust grants[18] can be extended both in time and in terms of extra salary, to cover a period of maternity/paternity/sick leave, while STFC advanced fellowships can be extended to allow for a period of part-time working.

Figure 15 illustrates that part-time working amongst Academic staff is unusual although two female Academics are currently on 0.5 and 0.6FTE contracts. Similarly, there are only a small number of research staff working less than full time hours.

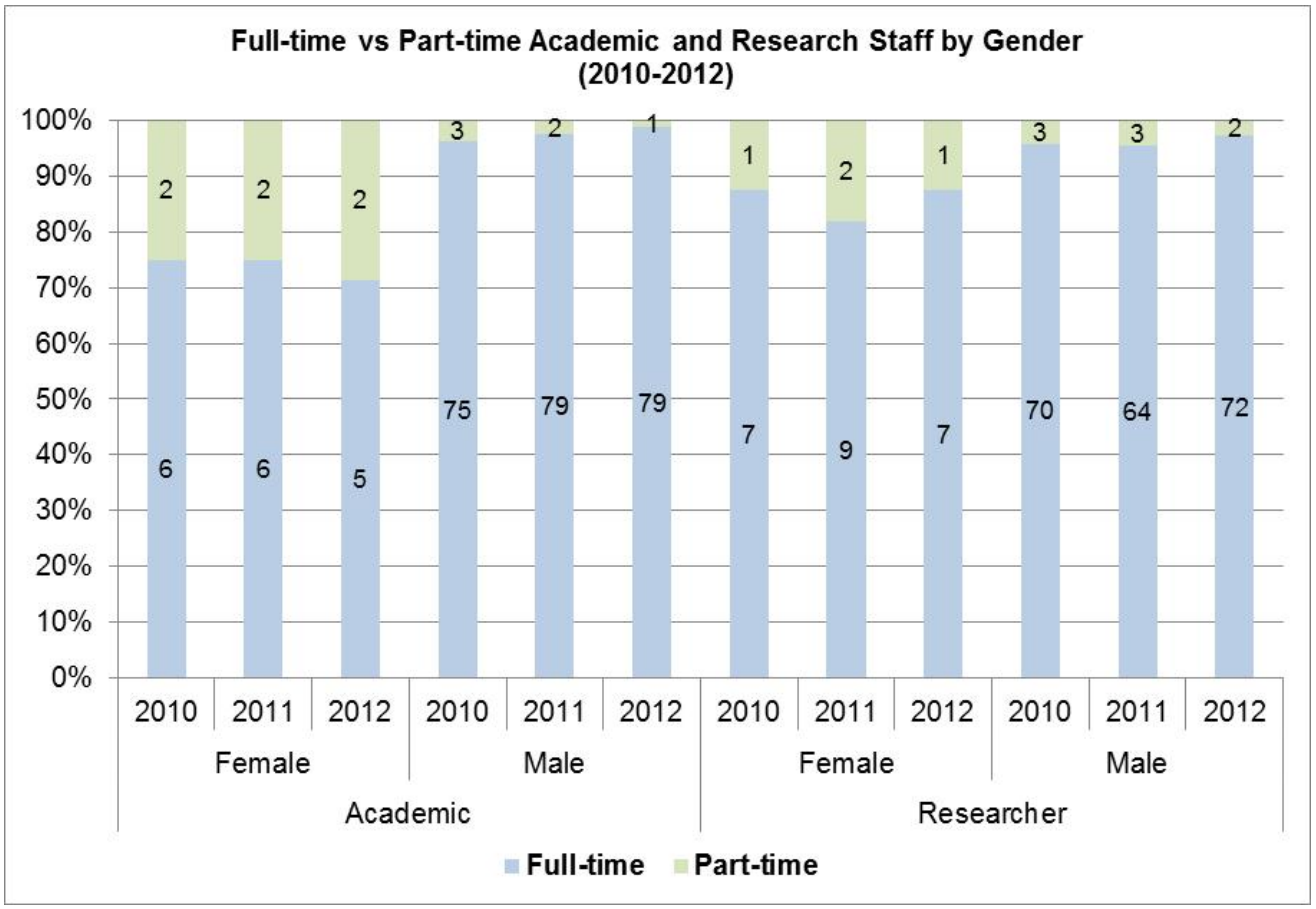


Figure 15

ACTION 3.3 To support family-friendly practices

18 www.wellcome.ac.uk/Managing-a-grant/Finance-and-employment/WTD004115.htm

ACTION 2.6: To support staff working part-time and/or on flexible working schemes including highlighting flexible working opportunities within Fellowships

c) **Cover for maternity and adoption leave and support on return** – *explain what the department does, beyond the university maternity policy package, to support female staff before they go on maternity leave, arrangements for covering work during absence, and to help them achieve a suitable work-life balance on their return.*

In August 2013, the University launched a new fund to support the development of academic and research staff careers following a break in their career or a period of leave for caring responsibilities. The fund can be used in many ways to support academic and research staff returning to work e.g. buying out teaching duties, short-term research support or conference attendance/travel. Requests of up to £10,000 will be considered and support can be tailored to the needs of an individual.

The Careers Service have also run a number of events entitled 'Combining Academia with being a parent'[19] where a selection of academics at various stages of their careers share their experiences of managing their career and being a parent.

Staff who care for young children are given priority for limited car-parking spaces across the University.

In 2014, the University will be launching Family Ties Support Network to provide a forum for parents and carers to seek support, advice and exchange information and ideas.

ACTION 2.5: To support staff taking family leave (maternity, paternity, parental, adoption leave) including the promotion of policies, benefits and the Returning Carers Fund.

ACTION 3.2: To support family-friendly practices

Words 5035 (35 words of additional 1000 word allowance)

5. Any other comments: Maximum 500 words

[19] www.careers.cam.ac.uk/notice/SessionText.asp?Code=7091&TermData=Michaelmas&YearData=2013&Listing=LifeSci

6. Action plan

P*rovide an action plan as an appendix. An action plan template is available on the Athena SWAN website.*

The Action Plan should be a table or a spreadsheet comprising actions to address the priorities identified by the analysis of relevant data presented in this application, success/outcome measures, the post holder responsible for each action and a timeline for completion. The plan should cover current initiatives and your aspirations ***for the next three years****.*

The action plan does not need to cover all areas at Bronze; however the expectation is that the department will have the organisational structure to move forward, including collecting the necessary data.

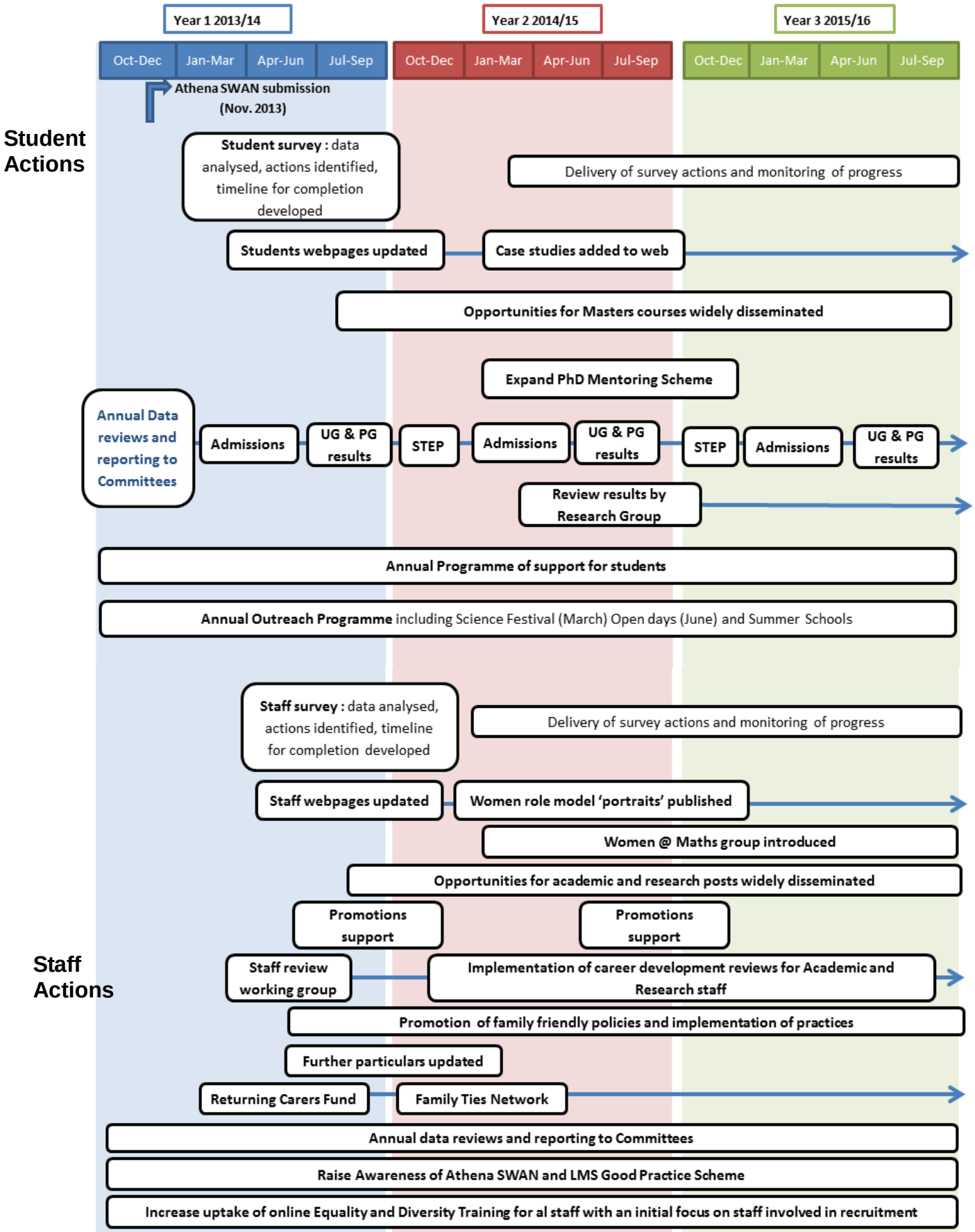
The Faculty has struggled with gender equality for a long time. Awareness of this underpins our commitment to the Athena SWAN process Considerable care and attention has been devoted to our action plan, because we recognise that there are many areas in the Faculty that need change, and we are determined to lay the groundwork that will make this possible.

The two surveys planned, for students and for staff, will help us identify the areas where change will have the biggest impact.

The action plan proposed is ambitious and will take time to implement fully, but we are encouraged by the realisation that the very process of formulating the plan and preparing the present submission has engaged a wide range of people across the Departments already produced some tangible, positive effects in the Faculty, and is providing a strong framework for a coordinated approach to gender equality.

The timeline for the proposed actions are outlined in Figure 16.

Figure 16: Action Plan timeline



	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
1	**Support the recruitment and attainment of female students**				
1.1	**To encourage undergraduate applications by female students**	1. Amended admissions information for 2013 on Faculty website, removing suggestion that A level Physics is "desirable", and achieved agreement at Directors of Studies meeting that Colleges will act similarly. All Colleges have now updated their information. 2. Ensured that at least one of the speakers on the Faculty Open Days for undergraduate admissions is female. 3. Started wider data collection of admission data by gender and wider E&D training for staff, as part of the process by which the Faculty acquired the status of LMS Good Practice Scheme Supporter. 4. Discussed gender ratio in maths applications and admissions, and correlation between STEP grades and undergraduate performance– broken down by gender as well as other parameters - at Directors of Studies meeting in 2012-13. This is part of an ongoing review of STEP as a tool for admission. 5. The newly launched STEP Prep Summer School, run by the Maths Millennium Project, will benefit women, amongst the widening participation applicants at whom it is targeted.	1. Make the Faculty website, and both Departmental websites, more attractive to potential female applicants, e.g. by using photos of students and lecturers of both genders. Funding and resources required for this have been approved by both Heads of Department. 2. Monitor more systematically the female/male ratio for applications, offers and acceptances. 3. Put in place routine reporting, so that gender data is communicated to all Directors of Studies, the Teaching Committee, the Part III Committee, and the Faculty Board: a) Improved gender data related to admissions, including STEP results broken down by gender, as well as other statistics currently circulated. b) Gender information related to participation and outcome in the Faculty STEP Easter School for offer holders (the aim is to monitor over 3 years, before deciding on any action). 4. Gather data on home versus overseas students as a means of better understanding issues related to female take-up and performance in STEP. 5. Continue extensive outreach programmes including the Millennium Maths Project, Cambridge Mathematics Education Project and open days, with annual review of female student participation.	1. Faculty webmaster 2. Teaching Committee, Directors of Studies 3. Chair of the Faculty, Teaching Committee. 4. Athena SWAN panel 5. Academics with responsibility for overseeing outreach activities	1. First changes to website in place by early 2014 (new Faculty main page, with new layout, new pictures, and logo of LMS Good Practice scheme). Further changes to be implemented over the course of 2014. 2. Enhanced annual data collection and review of admissions from 2013/14 admission round (May of each year). 3a. Data considered by relevant committees, and actions recommended to Faculty Board. 3b. Collection of STEP School data from Easter 2014 and subsequent annual reviews. 4. Annual collection and review of data from 2014/15 intake. 5. Annual programme of outreach activities delivered. Once data are regularly reviewed and there is an increased understanding of issues around intake, then realistic targets can be set for proportions of female undergraduates.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
1.2	**To investigate and address any imbalance in the percentage of women attaining Firsts and Upper Seconds in the undergraduate degree course.**	1. Current and historical data on exam results collected and analysed by gender. 2. Revised the Faculty Guide for supervisors, to ensure that any advice aimed at ensuring a level playing field did not inadvertently use biased language and did not contribute to the perpetuation of stereotypes.	1. Record and circulate routinely gender information related to attainment e.g. by adding gender statistics to the exam results circulated annually to Directors of Studies and other senior members of the Faculty. 2. Raise awareness of differences in attainment, and ensure that issues are discussed, by including "Results by gender: data and any issues" as a standard agenda item on: a) The Directors of Studies meeting in the Autumn term b) One of the Teaching Committee meetings in the Autumn term, c) The last Easter Term meeting of the Computational Projects Assessors Committee (CPAC) d) An appropriate Part III (Year 4) Committee meeting. 3. Liaise with Colleges regarding supervisions and other support for undergraduates. 4. Include a question aimed at collecting evidence of perception/experience of learning environment, encouragement and resources, in a survey of all Maths students in the Faculty. 5. Facilitate the establishment of a central meeting place with coffee/cakes for mathematicians; a) Bed down the 'Open Saturdays' initiative that encourages collaborative work (budget already approved for refreshments and graduate helpers), b) Support and publicise the Emmy Noether Society for female mathematics students.	1. Faculty Office administrator 2. Faculty Board, Teaching Committee, CPAC and Directors of Studies. 3. Directors of Studies 4. Athena SWAN panel 5. Teaching Committee.	Annual review of data collected, identification of possible causes and actions developed which are aimed at achieving better results. 1-3. Current target is to achieve consensus on actions by end of 2014. *(Expectation of higher % of Firsts and Upper Seconds by female students is premature, until causes are identified.)* 4. Survey completed by mid 2014. Issues and actions identified as part of coordinated action by end 2014. 5. Open Saturdays introduced in Autumn 2013, and support for Emmy Noether Society further promoted from early 2014.
1.3	**To ensure that the undergraduate experience is positive for female students**	1. Since the mid-90s the Faculty has made a conscious effort to ensure that at least one of the lecturers of the first year core courses is female.	1. Ongoing commitment to ensure that at least one of the lecturers in the first year is female, and that at least one of the lecturers in the second year core courses is female, whilst avoiding teaching overload for female staff. This is somewhat of a challenge given the small number of female teaching officers. 2. Promote the visibility of female mathematician role models.	1.Faculty Board, Heads of Department 2. Athena SWAN coordinator, Women's advisors	1. Female teaching representation in years one and two courses from 2013/14, reviewed annually. 2. Initial role model portraits developed and on website by end of July 2014 and regularly expanded.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
1.3			3. Survey of all students to analyse perceptions and experiences, including the teaching environment and support and resources. Identification of gender specific issues.	3. Athena SWAN Panel	3. Survey completed by mid-2014 and analysed and discussed in appropriate committees by end of Easter 2014. Athena SWAN panel to develop an appropriate timeline for identified actions between 2014-2016.
1.4	**To monitor progression of final year undergraduate (Part II) students to taught Masters (MMath) by gender.**	Currently the percentage of female students continuing to MMath and beyond reflects the percentage of female students in the top tier of final year undergraduate (Part II) students.	1. Gender information related to progression to taught Masters (Part III) recorded and circulated routinely to Directors of Studies and Teaching Committee for consideration. 2. Include a question aimed at collecting evidence of expectation and experience of progression to Part III in a survey of all Maths students in the Faculty. 3. Monitor take-up of the Easter Term meeting for students who may continue to Part III (MMath), ensure that information and handouts for meeting are gender-neutral, and encourage speakers to take equality training. Final year female undergraduates to be encouraged to consider the taught Masters course.	1. Part III Committee 2. Chair of Faculty, Athena SWAN panel 3. Part III Committee	1. Committees aware of up-to-date information on an annual basis from start of 2014/15 academic year 2. Survey completed in Lent 2014. Actions identified and monitored by Athena SWAN panel 3. All final year undergraduate students aware of Masters course opportunities and women encouraged to apply.
1.5	**To encourage more external female applicants to taught Masters (MASt) and MPhil programmes.**		1. Monitor by gender all application to taught Masters (MASt & MPhil in Computational Biology). 2. Make Faculty website more attractive to potential female applicants, in particular, on the Part III and MPhil pages include brief case studies of female (and male) students with a couple of lines from them describing their experience. 3. Advertise Masters programmes to organisations for women in Mathematics (e.g. European Women in Mathematics), to increase the potential pool of applicants. 4. Increase the visibility of the various forms of support available to Part III students, both on the web and in admissions literature.	1. Part III and MPhil Committees 2.Faculty webmaster and Part III and MPhil Committees 3. Part III and MPhil Committees. 4. Athena SWAN panel, Faculty webmaster	1. MASt and MPhil applications monitored and reviewed annually from 2014-15 intake. 2. Website initially updated by end 2014, reviewed annually and case studies developed in 2015. 3. Information sent from Easter term 2014 4. Support publicised more widely from 2014 and then reviewed regularly. We aim to have increased the proportion/number of women applying to our Masters programmes by 2016.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
1.6	**To support female students in taught Masters courses (Part III: both MMath and MASt) and monitor their attainment.**	1. Several initiatives aimed at supporting all taught Masters students, and particularly those who may lack some of the required background and/or the necessary confidence have been implemented in the past few years. Many of these focus on collaboration and a mutually helpful atmosphere, which are felt to be particularly advantageous to female students. For example: (a) 'Catch-up lectures' at the start of the academic year, to give incoming Part III students some confidence in using important tools and techniques in a range of subjects. Some of these are supplemented by weekly support meetings which carry on through the rest of Michaelmas term. (b) Part III 'Café', which provides the opportunity for Part III students to ask PhD students questions over tea and biscuits; these range from mathematical questions to practical questions about settling in Cambridge and how to apply for PhDs. The aim of the Café is to make the student experience more inclusive. (c) The Graduate Education Officer facilitates Study Groups which Part III students are encouraged to organise for their lecture courses. (d) Part III students (whether MMath or MASt) have a 'Departmental Contact' with whom they have an interview twice a year in order to check on progress and discuss plans 2. An informal survey of all Part III students was carried out in 2012-13 (although responses could not be differentiated by gender).	1. Informally monitor take-up of the existing initiatives for Part III students (Autumn term 'Catch-up lectures', Study Groups, Autumn and Winter term 'Seminar Series') 2. Include a question aimed at collecting evidence of students' experience of the Part III initiatives in a survey of all Maths students in the Faculty. 3. Include a question aimed at collecting evidence of students' experience of the interviews with their Departmental Contact, in a survey of all Maths students in the Faculty. 4. Monitor taught Masters attainment by gender, with a particular focus on female MASt results. Part III Committee to consider results along with the Degree Committee and Directors of Studies.	1. Graduate Education Officers 2.& 3. Athena SWAN panel 4. Part III Committee	1. Annual monitoring introduced from 2013/14 with the aim of increasing the take-up of available support, particularly by female students. 2. & 3. Survey completed by mid-2014. Results analysed and actions identified by Athena SWAN panel with an appropriate timeline for delivery by 2016. 4. Attainment reviewed annually from autumn 2014. Actions and interventions identified and introduced by Part III Committee where needed. We aim to support all female taught Masters students and reduce the attainment gap for the MASt course.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
1.7	**To monitor numbers of female MPhil and PhD students, and their academic progression.**		1. Monitor female/male ratio for applications, offers and acceptances, distinguishing internal and external applicants, recording funding and monitor progression to PhD of existing students. Monitor students enrolled in CCBI and CCA PhD programmes. 2. Monitor completion rate of PhDs and MPhils by gender and by status (i.e. whether continuing or from outside Cambridge). Data to be analysed by Research Group, to identify and share examples of good practice across the Faculty. 3. Ensure that reports on 1 & 2 above are included as items for consideration at Degree Committee and Faculty Board meetings.	1. Degree Committee, Graduate Education Committees. 2&3. Athena SWAN co-ordinator and panel	1. Routine annual monitoring of all postgraduate research students in place from Autumn 2014. 2. Data analyses by Research Group by mid-2016. 3. Annual reports considered by relevant committees annually from beginning of 2014/15 academic year. 1-3. Issues highlighted and actions considered by Athena SWAN panel on an annual basis.
1.8	**To support female PhD students**	All PhD students in the Cambridge Centre for Analysis (CCA) are currently paired with a mentor from amongst the current CCA student body, who plays an informal advising role helping with orientation.	1. Monitor take-up of the existing initiatives and development opportunities for PhD students (supervision training, seminars and attendance at conferences) through students logs. 2. Expand mentoring scheme for new PhDs. Encourage links and mentoring of PhDs by postdocs in similar areas. 3. Promote opportunities such as the Graduate Development Programme and those especially aimed at women, such as Springboard. 4. Include a question aimed at collecting evidence of students' experience of interaction with mentors and of their own academic progress, in a survey of all Maths students in the Faculty.	1. Faculty Office 2. & 3. Graduate Education Officers 4. Athena SWAN panel	1. Introduce collation of students log information from 2014/15 intake. 2. Expand current mentoring scheme from autumn 2014/15. 3. Promote opportunities from Lent 2014 4. Survey completed by mid-2014. Actions identified by Athena SWAN panel and a timeline agreed.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
2. Supporting the recruitment, retention and promotion of female staff					
2.1	**To increase the number of women applying for positions within the University and academic appointments and actively monitor the pipeline of academic appointments, to increase the proportion of female academics.**	1. The Faculty is required to provide academic appointment equal opportunities reports to the School of Physical Sciences.	1. Monitor academic and research staff appointments by gender on an annual basis using University web-based system (to be introduced by the end 2013). 2. Make websites more attractive to potential female applicants (by using the Athena SWAN and the London Mathematical Society Good Practice Scheme logos, having a link on the main Faculty webpage to new 'Women in Mathematics' webpages, etc.). 3. Change the wording on advertisements for academic posts (from RA to Professor), by adding positive statements on diversity and encouraging applications from under-represented groups. 4. Add further positive statements in the 'Further Particulars' for jobs, highlighting the Faculty's commitment to gender equality. This will include details of family-friendly policies and flexible working, as well as our status of LMS Good Practice supporters. 5. Ensure that advertisements for academic posts are circulated to institutions and networks where they would be brought to the attentions of potential women applicants: a) By using email lists of women in science networks (WISE, CamAWiSE, Daphnet, European Women in Mathematics) b) By emailing Heads of key Departments in the UK and overseas, for circulation to relevant staff. c) By ensuring that HR, as well as Heads of Department and their PAs, are aware of the contacts listed in (a) and (b).	1.Human Resources (HR) 2.Athena SWAN coordinator and Faculty webmaster 3. Appointments Committees. 4&5. Human Resources. Athena SWAN coordinator	1. Enhanced appointments data collection from January 2014, reviewed annually. 2. First changes to website in place by mid- 2014 (new Faculty main page, with new layout, new pictures, and logo of LMS Good Practice scheme). Further changes to be implemented over the course of 2014/15. 3-4. Advertisement and further particulars updated from mid- 2014 5. Wide circulation of job opportunities from mid-2014. Aim to increase the proportion of female applicants by 2015/16.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
2.2	**To avoid gender bias in recruitment process**	1. The Heads of Departments have agreed that all staff on interview and appointment panels should have E&D training. 2. Guidelines for all appointment panels, aimed at ensuring that appointments are only made following a thorough and documented search for a diverse set of potential applicants, are currently been drawn up by Central HR.	1. Implement the agreed requirement that all staff on interview and appointment panels should have E&D training. 2. When new central HR guidelines for all appointments are available, make sure that guidelines are tailored for the Faculty and can be adopted without delay.	1&2. Heads of Departments, Human Resources	1. All staff involved in recruitment to have completed online E&D training by end 2014. Monitored termly to review training completion rates and send targeted reminders. 2. New guidelines implemented from mid-2014
2.3	**To support the career development of women academic staff**	1. The University offers a Senior Academic Promotions (SAP) CV Scheme to encourage and support, primarily, but not exclusively, female academics to apply for promotion within the University, with the aim of addressing the under-representation of women academics in senior positions. 2. In 2013 the University introduced SAP Open Fora to increase the transparency of the promotions process, dispel promotions myths and allow for Q&A with the Pro-Vice-Chancellor for Institutional Affairs	1. Introduce a more structured progress review and development for all academic staff, with particular attention to identifying, supporting and advising staff suitable for promotion. Set up a Faculty Working Group to agree an implementation approach, develop guidelines and engage staff, particularly academics. 2. Whilst waiting for guidelines recommended by the Working Group, the Heads of Department will encourage all academic staff to have meetings at suitable intervals (usually every 2 years) with a senior academic of their choice, to discuss aspirations and aims. 3. Develop an online resource, with information and check-lists for potential candidates for promotion, to help with self-assessment and as a useful basis for 'aspirations and aims' meetings. 4. Promote University promotions support such as SAP Open Fora and SAP CV scheme. 5. To promote personal and professional development (PPD) opportunities, particularly academic-focussed events and leadership training opportunities.	1. Human Resources 2.Heads of Department 3. Athena SWAN coordinator 4& 5. Human Resources, Athena SWAN Panel	1. Working Group set up by Easter 2014 with guidelines developed and introduced during the 2014/15 academic year, and with a staged implementation 2. Heads of Department to encourage all academic staff to arrange meetings from early 2014. 3. Online resource developed in 2015. 4. University promotions support directed to all potential candidates annually in May in preparation for October promotions deadline. 5. PPD opportunities promoted via targeted emails.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
2.4	**To support the personal and professional development of all Research staff, including non-tenured and College teaching staff**	1. DPMMS organises a welcome reception and a 'buddy system' for Postdocs. 2. DAMTP has some online career development information for Postdocs, and emails Postdocs with information about funding opportunities. 3. The Computational Biology Group has implemented more structured arrangements for the probationary period of Postdocs and research staff, offering more supervision and guidance.	1. Ensure that PIs take an active interest in their Postdocs' careers. Provide a check-list of actions, particularly for the induction of new research staff, and distribute it to PIs at the first Staff Meeting of the year. 2. Ensure that a suitable induction is provided to new Postdocs. 3. Provide some form of mentoring and advice on career development to research staff, including College academic staff who contribute to research and teaching in the Faculty. Liaise with other University departments which have similar schemes. 4. Ensure that staff are aware of sources of support (including PPD events, the Careers Service, Office of Postdoctoral Affairs, CamAWiSE, WiSETI). Opportunities will be publicised widely with questionnaires used to gather feedback. Ensure that good practice identified in either Department is shared across the Faculty. 5. Continue to monitor academic and research staff turnover and formally record destinations via exit interviews/questionnaires. 6. Promote the researcher Employment and Career Management Scheme (ECMS) widely across the Faculty to PIs and researchers.	1.Heads of Department, PIs, E&D Committee 2.Human Resources 3. Heads of Department, PIs 4.Athena SWAN Panel 5. Human Resources 6. Human Resources, PIs	1. Checklist developed for 2014/15 Academic Year 2. Introduce changes to induction from start of 2014/15 academic year 3. Mentoring approach agreed and introduced by mid- 2015 4. Resources publicised from mid- 2014. Feedback sought by end 2014. 5. Exit interviews/questionnaires introduced in 2015. 6. ECMS to be promoted alongside career development meetings for academic staff from early 2014.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
2.5	**To support staff taking family leave (maternity, paternity, parental, adoption leave)**	1. The University provides maternity benefits that are in excess of the statutory requirements, and has specific policies in place to support flexible arrangements for returning from maternity leave. 2. The University has an Additional Paternity leave policy permitting parents to share caring leave. 2. Staff can benefit from paid 'Keeping In Touch' (KIT) days to facilitate communication during maternity leave and subsequent return to work. 3. The University operates a salary sacrifice scheme which can be used either for the University Nursery or to provide childcare vouchers for other nurseries 4. In August 2013 the University launched the Returning Carers Fund to support Academic and Research Staff get their research back on track after a period of care leave.	1. Ensure that staff are aware both of the support available for parental leave (including additional paternity leave), and of all available family-friendly policies (including childcare vouchers), by providing easily accessible information and links on the Faculty website. 2. Promote opportunities for keeping in touch during maternity/paternity leave and any carer's leave. Promote opportunities to support before, during and after periods of leave. 3. Promote the availability of flexible arrangements for all carers returning to work, including the possibility of part-time work, gradual increase from part-time to full-time, gradual increase of teaching responsibilities. 4. Ensure the above provisions and family-friendly policies are mentioned in all job advertisements. 5. Promote the Returning Carers Fund to all relevant staff.	1-5. Human Resources, Departmental Secretaries, Faculty webmaster. Athena SWAN coordinator	1-3. Ensure opportunities are highlighted on Faculty and Departmental websites from mid 2014. 4. Advertisement and further particulars updated from mid- 2014. 5. Promote the Returning Carers Fund to all relevant staff from Autumn 2013.
2.6	**To support staff working part-time and/or on flexible working schemes.**	1. The University has a comprehensive Flexible Working Policy	1. Ensure that staff returning to work after leave and staff working part-time have equal access to career advice and opportunities, by actively drawing attention to key meetings and opportunities. 2. Keep a record of requests for flexible working, ensure staff working part-time and on flexible working schemes are supported. 3, Highlight flexible working opportunities within research Fellowships.	1-3. Human Resources, PIs	1&3. Highlight opportunities to staff working flexibly from early 2014. 2. Annual review of formal flexible working requests (recorded by central University from October 2012).
2.7	**To review workload of Academic staff**	Departmental guidelines for teaching workload and, in DAMTP, a points-based system for examination workload. Research, teaching and general contribution all taken into account for academic promotions	1. Review Committee membership annually and introduce opportunities for senior researchers and College staff to participate. 2. Collaborate with other Departments in the University which have operational workload models.	1. Heads of Departments, Faculty Board 2. Athena SWAN panel	1. Annual review in September 2. Functional workload models investigated in 2014/15.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
3	**To improve communication and culture within the Faculty**				
3.1	**To create an open and inclusive environment**	All members of the Athena SWAN panel have been circulated literature related to understanding prejudice and unconscious bias, and have been encouraged to take online tests for example the Harvard 'Implicit Association Test'.	1. Review induction for all new staff, ensure it includes a face-to-face meeting with a senior member of the Department, to explain what support is available at key stages, and the possibility of choosing a mentor/buddy with whom to have informal chats on 'aspirations and aims'. 2. Ensure that contribution by women is visibly valued, e.g. include photos of female lecturers on the websites and develop 'portraits' of successful female mathematicians. 3. Ensure that organisers of seminar series, and particularly for key annual lectures, always look at a broad pool of potential speakers, with the aim of increasing female representation. 4. Raise awareness of unconscious bias, and encourage self-testing (e.g. with the 'Implicit Association Test') for all staff involved in: a) Training and induction (e.g. for new staff, new supervisors, including research students) b) Undergraduate and graduate admissions c) Interview panels and ensure that understanding unconscious bias is included in the training for all interviewers. 5. Survey of all staff in the Faculty to collect information on their experiences and identify gender specific issues.	1. Human Resources/ Departmental secretaries 2. Women's advisors, Faculty and Departmental webmasters. 3. Heads of Department, seminar organisers, Athena SWAN coordinator 4. Athena SWAN Panel. Heads of Departments, University Equality and Diversity Section 5. Athena SWAN Panel.	1. New induction introduced from 2014-15 2. Web content reviewed in 2014, initial 'Portraits' on website by July 2014. 3. Guidelines for seminar organisers introduced by Easter 2014. Monitor speakers by gender on an annual basis. 4. Awareness of unconscious bias raised and training introduced from 2014-15. 5. Staff survey at the start of Easter term 2014. Following the survey there will be a greater understanding of key issues for staff across the Faculty.

	Objective	Action(s) already taken	Action(s) required	Responsibility	Targets & Timelines
3.2	**To raise awareness of Athena SWAN and LMS Good Practice Scheme and supporting resources for women**		1. Publicise the recently acquired status of Supporter of the LMS Good Practice Scheme on the Faculty website, and the current application for an Athena SWAN award. 2. Publicise the Faculty's commitment to Athena SWAN (e.g. on the website and using posters around the Faculty) and encourage feedback and communication of ideas. 3. Promote links to European Women in Mathematics and Isaac Newton Institute resources for women	Athena SWAN panel and coordinator	1&3. Update website by mid-2014. 2. Set up mechanisms for providing feedback by 2015. Greater awareness of gender equality initiatives and supporting resources across the Faculty.
3.3	**To support family-friendly practices**	Committee meetings are held during 'core hours' (typically starting between 10:00 and 15:00 for the main Committees).	1. Review the timing of main seminar series, with the aim that the majority of seminars are during 'core hours' 2. Make staff aware of the University resources for parents, and include links on the websites to the Childcare Office and the University Staff Parent Guide. 3. Encourage staff to join the University parents and carers network 'Family Ties'.	1. Seminar organisers 2. Human Resources, Faculty webmaster 3.Equality and Diversity Section	1. Annual review of seminar times with recommendations added to guidelines (see Action 3.1.3). 2. Highlight resources on web from Easter 2014. 3. Family Ties launched 2014-15.
3.4	**To facilitate communi-cation, networks and peer support**	Informal lunch gatherings for women mathematicians in the Faculty have been organised on a fairly regular basis, some by the Women's Advisors and some driven by personal initiative. A 'Happy Hour' (initiated by a female member of the academic staff) is promoted to all staff and students on Friday afternoons (although not in core hours). Staff are also invited to events organised by the Emmy Noether Society for female students.	1. Maintain centrally an email list of all women in the Faculty, and facilitate regular meetings and other events. 2. Create a 'Women in Mathematics' section of the website, as a focus for resources and initiatives. 3. Support and publicise the Emmy Noether Society, WiSETI, CamAWiSE, Women's Staff Network. 4. Liaise with 'women@cl' in the Computer Lab, to explore setting up a similar group for women in Mathematics.	1. Human Resources 2. Athena SWAN coordinator and Faculty webmaster 3. & 4. Women's advisors	1. Targeted Email lists developed by 2014/15 2-3. Initial webpages launched in mid-2014 with further development over 2014/15. 4. Meetings with women@CL in summer 2014. Aim to set up women@maths group in 2015.